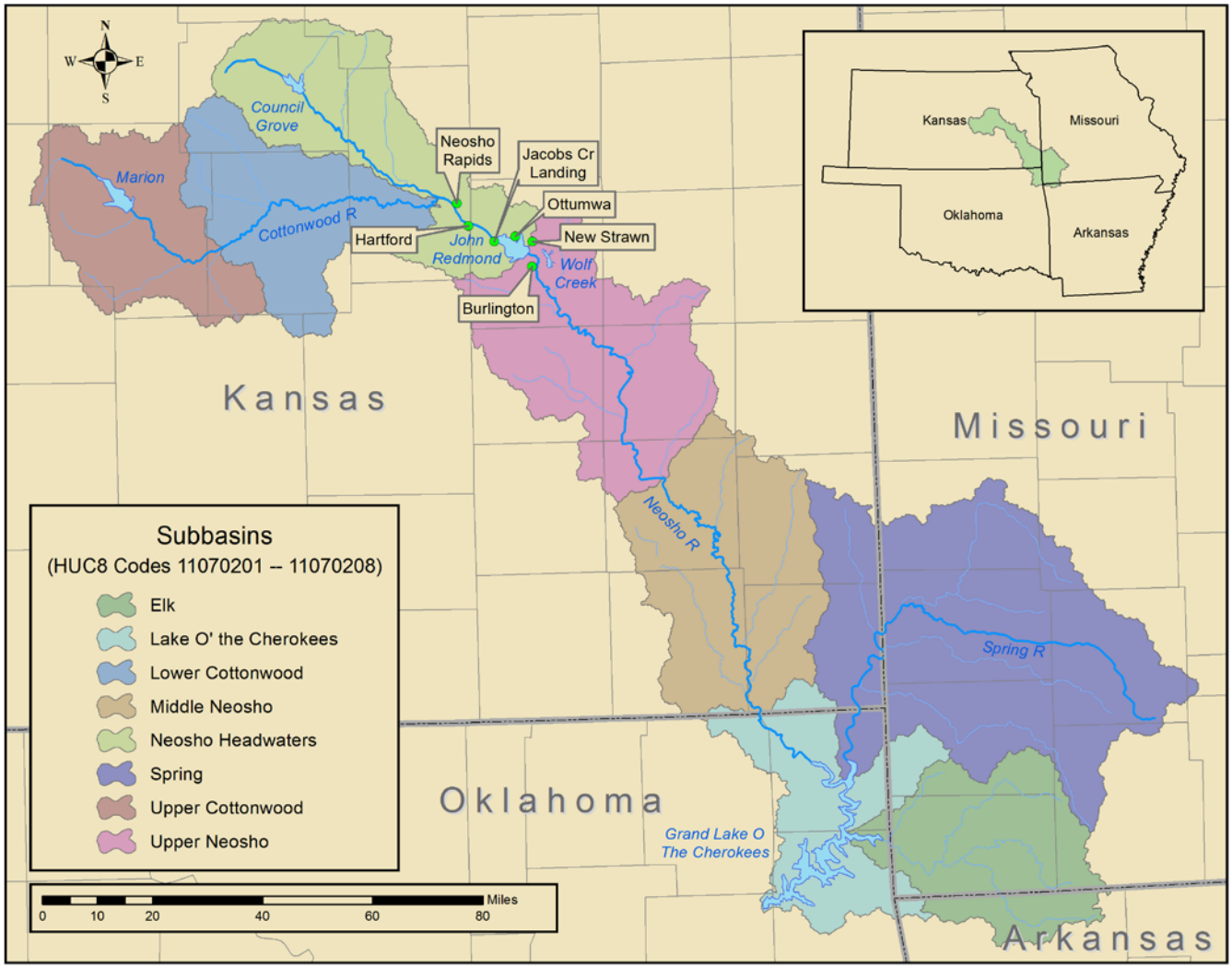

Draft

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (DPEIS)

Prepared for the:

REMOVAL AND DISPOSAL OF SEDIMENT AND RESTORATION OF WATER STORAGE AT JOHN REDMOND RESERVOIR, KANSAS
April 2014

Project Proponent:

Kansas Water Office
901 S. Kansas Avenue
Topeka, KS 66612
www.kwo.org

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
REMOVAL AND DISPOSAL OF SEDIMENT AND RESTORATION OF WATER STORAGE AT JOHN REDMOND RESERVOIR, KANSAS

ABSTRACT

Lead Federal Agency: U.S. Army Corps of Engineers

Project Proponent: State of Kansas, Kansas Water Office

Title: Draft Programmatic Environmental Impact Statement – Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir, Kansas

Designation: Draft Programmatic Environmental Impact Statement

Proposed Action: Remove sediment deposited in the conservation pool of John Redmond Reservoir at a quantity sufficient to ensure water supply is available to meet the contractual obligations of the Kansas Water Office to customers of the lower Neosho basin.

Affected Jurisdiction: The John Redmond Reservoir and approximately 190 miles downstream of the dam, as well as, land within a four-mile buffer of the dam at John Redmond Reservoir.

USACE Point of Contact: David Gade; Limnologist; U.S. Army Corps of Engineers, Environmental Technical Services Branch, Regional Planning & Environmental Center; 1645 S. 101st East Ave., Tulsa, OK 74128; Telephone: (918) 669-7579; Email: David.Gade@usace.army.mil

State of Kansas Point of Contact: Susan Metzger, Chief of Planning and Policy, Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612; Telephone: (785) 296-3185; Email: Susan.Metzger@kwo.ks.gov

Abstract: This PDEIS addresses alternatives and environmental impacts associated with the removal and disposal of sediment from the conservation pool at John Redmond Reservoir. This proposed action would restore water storage capacity lost to sedimentation since the construction of the reservoir in 1964. A range of alternatives was developed and screened to determine viable alternatives to carry forward for analysis. The three alternatives that are evaluated in this PDEIS are: no action, dredge and dispose of sediments from the conservation pool at a rate and quantity to ensure 55,000 acre-feet of conservation storage is available for authorized project purposes; and dredge and dispose of sediments to restore the conservation pool to near original capacity. Disposal areas will initially include two locations on federal government fee lands and later move to privately-owned locations. Assessment topics include downstream changes to water quality and habitat resulting from the re-suspension and release of sediments from the reservoir and impacts to surrounding land use from the deposition of dredged sediment.

The Kansas Water Office (KWO), a state of Kansas agency, is the project proponent. The Kansas Water Office is responsible for development of a state plan of water resource management, conservation and development. In addition, KWO administers the state's Water Marketing and Water Assurance programs which provide water supply from the storage owned with thirteen of the Kansas' federal reservoirs. As the project proponent, KWO is seeking all required permits and permissions necessary to modify a federal project through dredging and construction of sediment disposal locations. The KWO will be responsible for the preparation of future NEPA documents. The actions described and evaluated in this DPEIS will be funded entirely with non-federal funds.

The USACE, acting as the lead agency, will use the DPEIS in its consideration of dredging John Redmond Reservoir. For the proposed action, the USACE responsibility as the lead federal agency authorizes the proposed action to occur on fee lands through the use of appropriate real estate instrument, issuing the NEPA document prepared by the project proponent and executing the Record of Decision (ROD), issuing the 33 U.S.C. Section 408 permit authorizing the project proponent to modify a federal project, and, if necessary, issuing the Department of the Army permit to authorize the placement of fill into Waters of the United States (WOUS), which includes wetlands. A mitigation monitoring and reporting program will be required for reporting or monitoring mitigation measures that are adopted and will become a condition of project approval. This DPEIS is intended to provide decision makers, responsible agencies and citizens with enough information on the potential range of environmental impacts to make decisions on the alternatives analyzed in the document.

Review Comments Deadline: May 26, 2014

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
REMOVAL AND DISPOSAL OF SEDIMENT AND RESTORATION OF WATER STORAGE AT JOHN REDMOND RESERVOIR, KANSAS

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EXECUTIVE SUMMARY

John Redmond Dam was initially authorized as the Strawn Dam and Reservoir under the Flood Control Act of May 17, 1950. The intent of design and construction was to provide flood control, water conservation, recreation and water supply storage for communities along the Neosho River in southeastern Kansas. The John Redmond Project is also operated for wildlife purposes. Before construction the Neosho River had flooded 57 times in 34 years of recorded history. The project was renamed John Redmond Dam and Reservoir by an act of Congress in 1958, to posthumously honor John Redmond, publisher of the *Burlington Daily Republican* newspaper and one of the first to champion the need for flood control and water conservation along the Neosho River.

Dam construction by the U.S. Army Corps of Engineers (USACE) was undertaken between 1959 and 1964, at a site west of Burlington, KS. Water storage began during September 1964, collecting drainage from a basin approximately 3,015 square miles. John Redmond Dam lies below Marion Dam, constructed on the Cottonwood River (a tributary to the Neosho River), and Council Grove Dam, also constructed on the Neosho River and is the integral component of this flood control system. Uncontrolled drainage to the John Redmond Dam includes approximately 2,569 square miles below the upper two dams. Below John Redmond Dam to the Grand Lake O' the Cherokees in Oklahoma, an additional 3,285 square miles of uncontrolled drainage releases water to the Neosho River.

To perform the functions described above, John Redmond Reservoir contains two types of water storage: flood control pool and conservation pool. The upper zone provides 574,918 acre-feet of flood control storage and is reserved to contain floodwaters; it otherwise remains empty and is managed for agriculture, wildlife habitat and recreation under the Otter Creek Wildlife Area (OCWA), Flint Hills National Wildlife Refuge (FHNWR) and USACE authorities. The conservation pool provides 67,302 acre-feet of storage at elevation 1041.0 for water supply, water quality and space to contain sediment. The pools, dam structure, agricultural land, wildlife habitat and recreation sites are contained within approximately 29,801 acres.

The state of Kansas and the federal government entered into a water supply storage agreement in 1975, for 34,900 acre-feet of water storage annually and at the design life of the project (CY 2014). The water is provided to the Cottonwood and Neosho River Basins Water Assurance District Number 3 (CNRWAD) and the Wolf Creek Nuclear Generating Station (WCGS). The CNRWAD includes 19 municipal and industrial water users. Water supply storage was to occur within the conservation pool when maintained at the surface elevation of 1,039.0 feet.

When completed in 1964, the design life of the reservoir was 50 years. At construction, the reservoir had a surface area of about 9,800 acres and a conservation pool storage capacity of 82,700 acre-feet. In 2007, the Kansas Biological Survey (KBS) completed a bathymetric survey of the reservoir and concluded the surface area had reduced to about 8,800 acres with a water storage capacity of 50,200 acre-feet. Decreases in surface area and volume are attributed to sedimentation. Since 1964, John Redmond has lost an estimated 42 percent of its conservation-pool storage capacity as of 2010. The estimated sedimentation rate of 739 acre-feet per year is about 80 percent more than the sedimentation rate (404 acre-feet/year) that was originally projected for the conservation pool by the USACE at the time the reservoir was completed.

In 2013, the storage reallocation was approved, permitting the reallocation from the flood control to the conservation pool by raising the conservation pool elevation two (2) feet, in a single permanent pool raise, from an elevation of 1039 ft to 1041 ft. This action will provide a more equitable redistribution of the remaining storage capacity, depleted as a result of greater influx of sediment than originally expected and the uneven sediment accumulation and distribution within the conservation pool.

This Draft Programmatic Environmental Impact Statement (DPEIS) addresses the *Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir, Kansas,* and the proposed alternatives. The DPEIS has been prepared by the Kansas Water Office, Topeka, KS, in accordance with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. § 4332 (1994).

Purpose and Need for the Action

The purpose and need of the proposed federal action is to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem that has been lost due to sedimentation. Sediment has been collecting mainly in the conservation pool, thereby reducing the conservation pool faster than was designed, reducing storage capacities. The project area is defined as the John Redmond Reservoir site and the Neosho River to near the Oklahoma border or approximately 190 river miles of the approximately 350 mile extent of the Neosho River. The actions described and evaluated in this DPEIS will be funded entirely with non-federal funds.

As addressed under the Council on Environmental Quality (CEQ) regulations, an environmentally preferred alternative is identified in Chapter 2.0. For purposes of the NEPA analysis, direct and indirect environmental consequences or impacts are those associated with the two dredging alternatives and the No Action Alternative and cumulative environmental impacts are associated with other activities in the drainage basin. The USACE will consider all environmental impacts identified in the DPEIS in its decision process before issuing a Record of Decision.

The Kansas Water Office (KWO), a state of Kansas agency, is the project proponent. The Kansas Water Office is responsible for development of a state plan of water resource management, conservation and development. In addition, KWO administers the state's Water Marketing and Water Assurance programs which provide water supply from the storage owned with thirteen of the Kansas' federal reservoirs. As the project proponent, KWO is seeking all required permits and permissions necessary to modify a federal project through dredging and construction of sediment disposal locations. The KWO will be responsible for the preparation of future NEPA documents. The actions described and evaluated in this DPEIS will be funded entirely with non-federal funds.

The USACE, acting as the lead agency, will use the DPEIS in its consideration of dredging John Redmond Reservoir. For the proposed action, the USACE responsibility as the lead federal agency authorizes the proposed action to occur on fee lands through the use of appropriate real estate instrument, issuing the NEPA document prepared by the project proponent and executing the Record of Decision (ROD), issuing the 33 U.S.C. Section 408 permit authorizing the project proponent to modify a federal project, and, if necessary, issuing the Department of the Army permit to authorize the placement of fill into Waters of the United States (WOUS), which includes wetlands. A mitigation monitoring and reporting program will be required for reporting or monitoring mitigation measures that are adopted and will become a condition of project approval. This DPEIS is intended to provide decision makers, responsible agencies and citizens with enough information on the potential range of environmental impacts to make decisions on the alternatives analyzed in the document.

Other project-related studies have been or are being undertaken, including the preparation of the Flint Hills National Wildlife Refuge Comprehensive Conservation Plan, SUPER modeling performed for the John Redmond Reallocation Study; United States Geological Survey (USGS) studies of channel widening, low-volume dams and sediment quality; a Biological Assessment of the reallocation to threatened or endangered species identified as occurring in the project area; annual census for waterfowl and raptor populations; and research performed to study the distribution, abundance and life history of threatened fish and mussel species, Bathymetry Survey conducted by the Kansas Biological Survey (KBS) and Streambank Erosion Assessments conducted by the Kansas Water Office (KWO).

This DPEIS provides a comprehensive, programmatic evaluation that is broad enough in scope to assist in the evaluation of future sediment removal and disposal actions for water supply storage restoration at John Redmond. This DPEIS was prepared as a programmatic National Environmental Policy Act (NEPA) review applicable to future projects, or for use as a base from which NEPA analyses or decision documents could tier. That tiering approach could help minimize the need for repeated analyses for future dredging activities. USACE would use the NEPA process to evaluate any future changes to sediment removal and disposal actions. If it were determined that a need for additional analysis and documentation exists, the NEPA process would serve as a base document to reduce the level of effort required to prepare future decision documents.

This DPEIS documents the anticipated environmental effects at a basic level, because the dredging activities at John Redmond would be subject to continuous evaluation and adaptive change as dredging equipment and technologies, available land for disposal, and water supply needs of the basin were identified in the future. This document cannot provide a quantitative analysis of the potential site-specific effects for all sediment removal and disposal activities. USACE staff and partners with the state of Kansas would consider site-specific effect at a second level of decision making.

Scoping Process

The NEPA process is designed to involve citizens in federal and local decision making. As required by the Council on Environmental Quality regulations for implementing NEPA (40 CFR 1500–1508), the USACE provided an early and open scoping process to determine issues to be addressed and those considered significant to concerned citizens, organizations and agencies. The NEPA process is designed to involve the public in federal and state decision making. Opportunities to comment on, and participate in, the process were provided during preparation of the draft DPEIS. Comments from citizens and agencies were solicited to help identify the primary issues associated with the reservoir dredging project. Public meetings were held as part of the reservoir dredging process to obtain comments on the alternatives under consideration and to identify favorable elements or offer differing opinions.

Public involvement opportunities to date include the NEPA notification process, the Notice of Intent and the opportunity to comment on the Notice of Intent, and interagency and public scoping meetings. On Feb. 5, 2013, the KWO held a public scoping meeting in Burlington, KS. Approximately 85 individuals representing the public, county state and federal agencies attended the meeting. No written comments were received at the meeting, but attendees could also obtain comment forms to fill out later and return by mail. Two written comments were provided via mail following the public meeting (Appendix A). The public input, as well as feedback from resource and permitting agencies, will be used to evaluate the alternatives and environmental impacts prior to making final decisions. Section 1.4.1 provides more information on the public coordination process. Additionally, public hearings will be held on the DPEIS following the requisite comment period.

The purpose of scoping is to identify potential environmental issues and concerns regarding water storage restoration through the dredging project. The scoping process for the DPEIS included public notification via the *Kansas Register, Federal Register*, newspaper press releases, direct mail and one public meeting. USACE and the state considered comments received during the scoping process in determining the range of issues to be evaluated in the DPEIS.

In conformance with the requirements of NEPA (40 CFR 1501.7), a Notice of Intent (NOI) to prepare the DPEIS for the John Redmond Reservoir Dredging project, KS, was published in the *Kansas Register and Federal Register* on 29 January 2013 (Appendix A). Alternatives to be evaluated were identified in the NOI as the No Action and various alternatives to remove sediment through dredging.

A project website is maintained at www.kwo.org to provide information on project activities and upcoming meetings.

Proposed Alternatives

A range of alternatives was developed and screened to determine viable alternatives to carry forward for analysis. The three alternatives that are evaluated in this DPEIS are: no action; dredge and dispose of sediments from the conservation pool at a rate and quantity to ensure 55,000 acre-feet of conservation storage is available for municipal and industrial demand; and dredge and dispose of sediments to restore the conservation pool to near original capacity.

Under the No Action Alternative, no sediment removal through dredging would occur. Sediment will continue to accumulate in the reservoir, reducing the water supply storage capacity at design life by approximately 25 percent. Storage available for water supply purposes in John Redmond Reservoir will continue to be depleted by the distribution of sediment such that the water supply storage agreement obligations with the KWO and its water supply customers cannot be met. This alternative provides the baseline to assess the environmental effects of other alternatives.

Another alternative would allow for the dredging and disposal of sediments from the conservation pool to restore the pool to near original capacity. Restoration of the pool would require removal of approximately 45 million cubic yards of sediment. This alternative seeks to remove sediment from areas of heaviest deposition with the greatest likelihood of benefiting water supply storage. This alternative would achieve the project goal of restoring water supply storage for the benefit of the regional water users and to restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem, but it not preferred by the state and USACE due to cost.

The alternative preferred by the project prononent (Preferred Alternative) would allow for the dredging and disposal of sediments from the conservation pool at a rate and quantity to ensure 55,000 acre-feet of conservation storage is available for authorized project purposes. In the first five years of the dredging activity, approximately 3 million cubic yards of sediment will be removed. Phasing of removal will continue through 2045 which corresponds to the expiration of the Federal Energy Regulation Committee (FERC) license for WCGS. Project methodology and impacts will be assessed after the first five years and periodically throughout the full project period.

The Dredge John Redmond Reservoir Alternative would achieve the project goal to restore water supply storage for the benefit of the regional water users and to restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem, and is preferred by the state and USACE.

Section 3.0 of the DPEIS provides a description of the existing environmental conditions in the Neosho River Basin, including John Redmond Reservoir. Existing conditions are described in the following resources categories: geology and soils; hydrology and water resources; biological resources; air quality; aesthetics; prime or unique farmlands; socioeconomic resources; cultural resources; and hazardous, toxic or radiological wastes. Potential cumulative impacts are also described in this section.

Environmental Impacts

The DPEIS evaluates potential environmental impacts of the dredging alternatives. The report compares potential environmental impacts with NEPA and the Council on Environmental Quality impact significance thresholds for each of the environmental resource categories described under Section 3.0 “Description of the Affected Environment.” To satisfy the stated Purpose and Need for the proposed project, NEPA requires the

DPEIS include a presentation of the alternatives in comparative form to define the issues and to provide a clear basis for choice among options by decision makers and citizens. The environmental impacts of the alternatives described above are summarized in Table ES-1.

Table ES-1. Summary of Potential Environmental Impacts and Mitigation Measures

Environmental Resource	No Action Alternative	Project Proponent Preferred Alternative	Alternative #2
Geology and Soils	No short, medium or long-term, insignificant or significant, beneficial or adverse effects. No mitigation measures would be required.	Long-term, localized, adverse effects, the magnitude of which would be dependent upon the geology or soil resource and upon mitigation measures.	Long-term, localized, adverse effects, the magnitude of which would be dependent upon the geology or soil resource and upon mitigation measures.
Hydrology and Water Resources	Long-term, regional, major adverse effect. Mitigation measures would be required.	Long-term and major, regional beneficial effects on storage capacity. Short term and minor effects related to discharge of sediments downstream. No effects to reservoir releases in terms of inflows or reservoir discharge operations. Mitigation measures may be required.	Long-term, regional, and major beneficial effects on storage capacity. Short term and minor effects related to discharge of sediments downstream. No effects to reservoir releases in terms of inflows or reservoir discharge operations. Mitigation measures may be required.
Biological Resources	No short-term, beneficial or adverse effects. Long-term, moderate to major adverse effects. No mitigation measures would be required.	Long-term, major and beneficial effects to fisheries and aquatic wildlife from long-term improved water quality. Short-term, minor, adverse effects from increased sediment load. Mitigation measures may be required.	Long-term, major and beneficial effects to fisheries and aquatic wildlife from long-term improved water quality. Short-term and long-term, minor, adverse effects from increased sediment load. Mitigation measures may be required.
Wetland Resources	No short-term, beneficial or adverse effects. No mitigation measures would be required.	Due to avoidance, no long-term, major adverse impacts to Waters of the United States.	If CDF Sites impact wetlands, long-term, major and adverse impacts to Waters of the United States. Mitigation will be required.
Threatened and Endangered Species	No short-term, beneficial or adverse effects. Long-term, moderate to major, adverse effects as trapping efficiency of reservoir decreases. No mitigation measures would be required.	May affect but not likely to adversely affect listed species.	May affect but not likely to adversely affect listed species.
Noise	No short or long-term, beneficial or adverse effects.	Effects of this alternative on noise conditions could occur both within and outside of federal lands, and would be short-term, localized, minor and adverse.	Medium term, localized, minor and adverse effects.
Transportation	No short or long-term, beneficial or adverse effects.	Short-term, localized, minor and adverse.	Short-term, localized, minor and adverse.
Air Quality	No short or long-term,	Short-term localized minor,	Short-term, localized, minor,

	beneficial or adverse effects. No mitigation measures would be required.	adverse effects. No long-term, beneficial or adverse effects. No mitigation measures would be required.	adverse effects. No long-term, beneficial or adverse effects. No mitigation measures would be required.
Aesthetics	No short-term, insignificant or significant, beneficial or adverse effects. Long-term, moderate, adverse impacts. No mitigation measures would be required.	Short-term, localized, moderate, adverse effects. Long-term moderate, beneficial effects. No mitigation measures would be required.	Short-term, localized, minor, adverse effects. Long-term moderate, beneficial effects. No mitigation measures would be required.
Prime or Unique Farmlands	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	Long-term, minor, adverse effect because of the abundance of additional prime and unique farmlands in the area. No mitigation measures would be required.	Long-term, minor, adverse effect or long-term, moderate, beneficial effect depending on the selection of sites for dredge material. No mitigation measures would be required.
Socioeconomic Resources	Long-term, major adverse effects on economic and demographic conditions. Mitigation measures would be required.	Short-term, moderate to major, beneficial effects on economic and demographic conditions. No mitigation measures would be required.	Short-term, moderate to major, beneficial effects on economic and demographic conditions. No mitigation measures would be required.
Land Use	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	Short-term and long-term, localized, minor, adverse or beneficial depending on the reclamation activity. No mitigation measures would be required.	Short-term and long-term, minor, adverse or beneficial depending on the reclamation activity. No mitigation measures would be required.
Recreation	Long-term, major and adverse.	Short-term, localized, minor, adverse effect.	Medium-term, minor, adverse effect.
Cultural Resources	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long term, beneficial or adverse effects. Efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources. Site specific investigations and further literature review may be needed. Mitigation measures may be required. The Programmatic Agreement (PA) will outline procedures to identify and evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).	No short or long-term, beneficial or adverse effects. Efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources. Site specific investigations and further literature review may be needed. Mitigation measures may be required. The Programmatic Agreement (PA) will outline procedures to identify and evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).
Hazardous, Toxic, or Radiological Wastes	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.
Cumulative Impacts	No cumulative impacts. No mitigation measures would be	Positive, long-term cumulative impacts experienced in the	Positive, long-term cumulative impacts experienced in the

	required.	increased ability to meet water supply demands in the basin. No cumulative adverse impacts on resources. No mitigation measures would be required.	increased ability to meet water supply demands in the basin. No cumulative adverse impacts on resources. No mitigation measures would be required.

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

This Draft Programmatic Environmental Impact Statement (DPEIS) addresses the *Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir, Kansas,* and the proposed alternatives. The DPEIS has been prepared by the Kansas Water Office, Topeka, KS, in accordance with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. § 4332 (1994). The actions described and evaluated in this DPEIS will be funded entirely with non-federal funds. The state of Kansas is the project proponent, but the action is occurring on federal property and will require federal permits.

The USACE project manager operates the John Redmond Dam and Reservoir under the direction of the Operations Division, Tulsa District. It is a multi-purpose dam project filled in 1964 and authorized for flood control, water supply, water quality, recreation and fish and wildlife habitat. In addition to site management by the USACE, leases have been signed with other federal (United States Fish and Wildlife Service (USFWS) and state (Kansas Department of Wildlife, Parks, & Tourism) agencies to provide land management for the Flint Hills National Wildlife Refuge (FHNWR) and the Otter Creek Wildlife Area (OCWA) (USACE 2013).

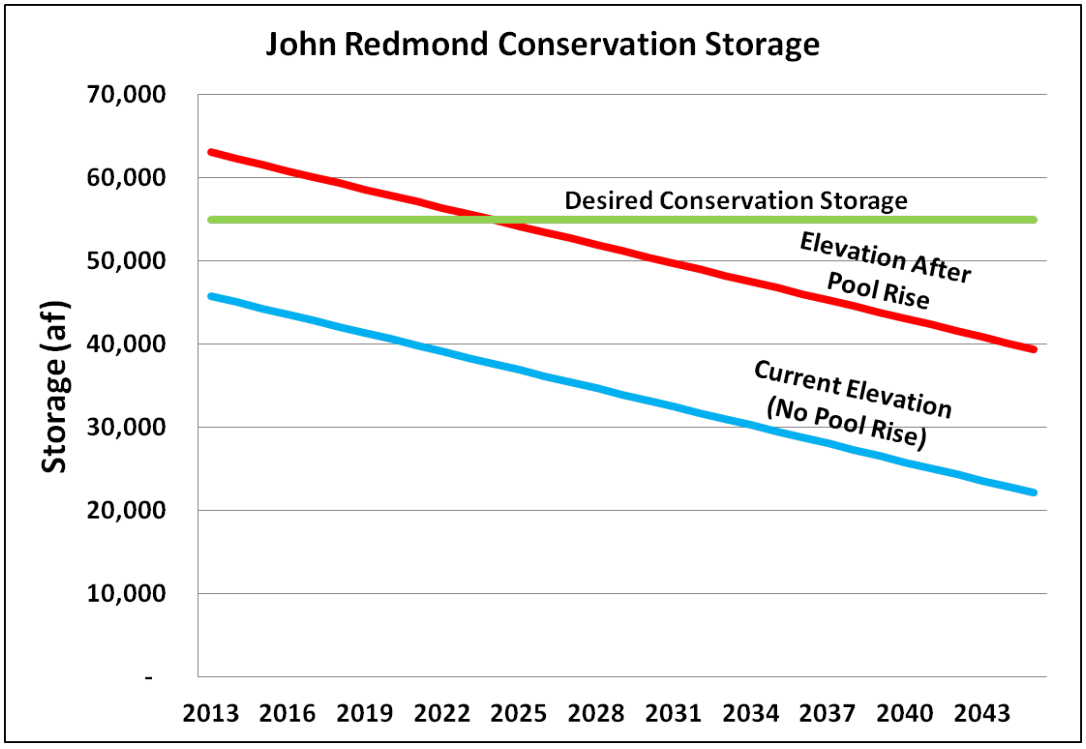
Figure 1-1. John Redmond Reservoir and the Neosho River to the Grand Lake O' the Cherokees

John Redmond Dam is located on the Neosho River, about three miles north and one mile west of Burlington, KS (Figure 1-1). Other communities in the vicinity of the dam and reservoir include New Strawn, Hartford, Neosho Rapids, Jacob's Landing, and Ottumwa, KS. Downriver effects on the Neosho River to the vicinity of Grand (Pensacola) Lake (Lake O' the Cherokees) are also examined in the DPEIS. The Neosho and Spring

Rivers join near Miami, Oklahoma (OK) to form the Grand River, approximately ten miles upriver of Grand (Pensacola) Lake (USACE 2013) (Figure 1-1).

The state of Kansas and the federal government entered into a water supply storage agreement at John Redmond Reservoir to provide water for the Cottonwood and Neosho River Basins Water Assurance District Number 3 (CNRWAD) and the Wolf Creek Generating Station (WCGS). The CNRWAD includes 13 cities, one wholesale water supplier, and five industrial water users (Wendt, B. KWO personal communication, Biery (WAD) November 28, 2012). An estimated 34,900 acre-feet of storage remaining after 50 years of sedimentation (design life = Calendar Year [CY] 2014) forms the basis of the 1975 agreement (USACE 2013). Even with a pool rise occurring at John Redmond from elevation 1039.0 feet to 1041.0 feet, the conservation pool is losing capacity, due to the accumulating sediment (Figure 1-2). With the loss of capacity the Kansas Water Office (KWO) cannot meet its water supply contractual agreements.

Figure 1-2. John Redmond Conservation Storage



1.2 Scope of the Analysis

This DPEIS provides a comprehensive, programmatic evaluation that is broad enough in scope to assist in the evaluation of future sediment removal and disposal actions for water storage capacity at John Redmond. This DPEIS was prepared as a programmatic National Environmental Policy Act (NEPA) review applicable to future projects, or for use as a base from which future NEPA analyses or decision documents could tier. That tiering approach could help minimize the need for repeated analyses for future dredging activities. USACE would use the NEPA process to evaluate any future changes to sediment removal and disposal actions. If it were determined that a need for additional analysis and documentation exists, the NEPA process would serve as a base document to reduce the level of effort required to prepare future decision documents.

This DPEIS documents the anticipated environmental effects at a basic level, because the dredging activities at John Redmond would be subject to continuous evaluation and adaptive change as dredging equipment and

technologies, available land for disposal, and water supply storage needs of the basin were identified in the future. This DPEIS provides a process that the USACE can use to guide future decisions.

This DPEIS does evaluate and document anticipated effects of initial, first-phase dredging activities, but cannot provide a quantitative analysis of the potential site-specific effects for all sediment removal and disposal activities far into the future. USACE staff and partners with the state of Kansas would consider site-specific effects at a second level of decision making. Consistent with the NEPA and other applicable statutes and regulations, USACE would make an independent determination of the scope and level of additional documentation, if any that may be necessary.

1.3 Purpose and Need for Action

The purpose and need of the proposed action is to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem that has been lost due to sedimentation. Sediment has been collecting mainly in the conservation pool, thereby reducing the conservation pool faster than was designed, reducing storage capacities. The project area is defined as the John Redmond Reservoir site and the Neosho River to near the Oklahoma border or approximately 190 river miles of the approximately 350 mile extent of the Neosho River.

The state of Kansas, as the project proponent, is seeking to modify a federal project to restore water supply storage. The federal action includes the authorization of the project on fee lands through the issuance of 33 U.S.C. Section 408 and Clean Water Act Section 404 permits; issuance of the DPEIS and executing the Record of Decision (ROD); and exercising a real estate instrument to allow for access to and use of fee lands.

As addressed under the Council on Environmental Quality (CEQ) regulations, an environmentally preferred alternative is identified in Chapter 2.0. For purposes of the NEPA analysis, direct and indirect environmental consequences or impacts are those associated with the two dredging alternatives and the No Action Alternative and cumulative environmental impacts are associated with other activities in the drainage basin. The USACE will consider all environmental impacts identified in the DPEIS in its decision process before issuing a Record of Decision.

The USACE, acting as the lead federal agency, will use the DPEIS in its consideration of dredging John Redmond Reservoir. A mitigation monitoring and reporting program will be required for reporting or monitoring mitigation measures that are adopted and will become a condition of project approval. This DPEIS is intended to provide decision makers, responsible agencies and citizens with enough information on the potential range of environmental impacts to make decisions on the alternatives analyzed in the document.

Other project-related studies have been or are being undertaken, including the preparation of the Flint Hills National Wildlife Refuge Comprehensive Conservation Plan, SUPER modeling performed for the John Redmond Reallocation Study; United States Geological Survey (USGS) studies of channel widening, low-volume dams and sediment quality; a Biological Assessment of the reallocation to threatened or endangered species identified as occurring in the project area; annual census for waterfowl and raptor populations; and research performed to study the distribution, abundance and life history of threatened fish and mussel species, Bathymetry Survey conducted by the KBS and Streambank Erosion Assessments conducted by the KWO.

1.4 Public Information and Involvement

The NEPA process is designed to involve citizens in federal and local decision making. As required by the Council on Environmental Quality regulations for implementing NEPA (40 CFR 1500–1508), the State of Kansas and USACE provided an early and open scoping process to determine issues to be addressed and those

considered significant to concerned citizens, organizations and agencies. Opportunities to comment on, and participate in, the process were provided during preparation of this draft DPEIS. Comments from citizens and agencies were solicited to help identify the primary issues associated with the reservoir dredging project. Public meetings were held as part of the reservoir dredging process to obtain comments on the alternatives under consideration and to identify favorable elements or offer differing opinions.

Public involvement opportunities to date include the Notice of Intent (NOI) and the opportunity to comment on the NOI, and interagency and public scoping meetings. The public input, as well as feedback from resource and permitting agencies, was used to evaluate the alternatives and environmental impacts prior to making final decisions. Section 1.4.1 provides more information on the public coordination process.

The purpose of scoping is to identify potential environmental issues and concerns regarding water storage restoration through the dredging project. The scoping process for the DPEIS included public notification via the *Kansas Register, Federal Register*, newspaper press releases, direct mail and one public meeting. USACE and the state considered comments received during the scoping process in determining the range of issues to be evaluated in the DPEIS.

In conformance with the requirements of NEPA (40 CFR 1501.7), a NOI to prepare the DPEIS for the John Redmond Reservoir Dredging project, KS, was published in the *Kansas Register and Federal Register* on 29 January 2013 (Appendix A). Alternatives to be evaluated were identified in the NOI as the No Action and various alternatives to remove sediment through dredging.

The scoping period ended on March 12, 2013.

The purpose of these meetings was to inform the public of the condition of the reservoir and to allow citizens an opportunity to comment on the proposed alternatives. A notice for the Feb. 5, 2013 public scoping meeting was submitted to the Coffey County Republican newspaper the week of Jan. 21, 2013. A press release was also distributed across the state to newspapers, radio and television stations for the hearing notice (Appendix A). The meeting announcement was also distributed through the KWO social media outlets. Copies of the presentation and handout materials are also included in Appendix A.

In addition to the public scoping meeting, the KWO met with representatives from the following agencies and organizations to discuss the project purpose and need as well as receive feedback on alternatives and issues to address in the DPEIS:

- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- Kansas Department of Wildlife, Parks and Tourism
- Kansas Department of Health and Environment
- Westar Energy

On Jan. 22, 2013, the USACE provided letters formally inviting the following to act as cooperating agencies. Only the Kansas Department of Health and Environment accepted (KDHE) (Appendix A). KDHE assisted the Kansas Water Office with the evaluation of laboratory results of sediment samples, provided KWO with references to Risk Based Standards for constituents, and conducted preliminary review of proposed CDF designs and offered recommendations related to ensuring sufficient quality of water from the effluent discharge from the CDFs.

- U.S. Fish and Wildlife Service

- Kansas Department of Wildlife, Parks and Tourism
- Kansas Department of Health and Environment
- U.S. Environmental Protection Agency, Region VII
- Oklahoma Water Resources Board
- U.S. Department of Agriculture, Natural Resources Conservation Service
- Kansas Historical Society

A project website is maintained at www.kwo.org to provide information on project activities and upcoming meetings.

1.4.1 Summary of Public Involvement

On Feb. 5, 2013, the KWO held a public scoping meeting in Burlington, KS. Approximately 85 individuals representing the public, county state and federal agencies attended the meeting. No written comments were received at the meeting, but attendees could also obtain comment forms to fill out later and return by mail. Two written comments were provided via mail following the public meeting (Appendix A).

Oral comments provided during the public scoping meeting can be summarized as support for initiatives to restore storage that benefits water supply in the basin.

1.5 Environmental Setting

1.5.1 Climate and Topography

The John Redmond Reservoir project area is influenced by a continental climate with average annual precipitation of approximately 35 inches in the vicinity of Emporia, KS to the north, 40 inches at Chanute, KS to the south and 43 inches at Miami, OK (to the south) (USACE 2013). Historically, most precipitation occurs from late spring through early summer, with about 75 percent falling during the growing season. Temperatures range from below zero (-30F was recorded historically at Chetopa, KS) to above 100F (117F was recorded historically at Columbus, KS) and the winds are predominantly from the south averaging approximately 12 mph. Evaporation rates ranged from approximately 73 inches during normal years to approximately 111 inches during drought years in the vicinity of Emporia, KS (USACE 2013).

The topography is that of a broad floodplain within low, rounded hills. The hills result from generally westerly to northwesterly dipping strata that create resistant bend and irregular cuesta-like ridges (USACE 2013). The broad, shallow Neosho River Valley is the most prominent topographical feature on the landscape. The maximum relief is about 225 feet in the dam and reservoir area, with most of the site ranging from approximately 1,020 foot elevation near the south recreation area below the dam to approximately the 1,100-foot elevation west of Neosho Rapids, KS, within the northwestern-most flood pool boundary. The lowest elevations are downriver near the Grand Lake O' the Cherokees (Pensacola Lake) where the Grand (Pensacola) Lake surface elevation lies at approximately 742 feet (USACE 2013).

The Neosho and Spring Rivers join to form the Grand River, approximately 10 miles southeast of Miami, OK. The Grand River receives drainage from tributaries on the western slopes of the Ozark Mountains. The river channel varies from one to two miles in width and flows through rolling hills topography (USACE 2013).

Recent Drought Conditions

Severe drought conditions were experienced in 2012. Municipal water utilities implemented mandatory conservation measures and releases for Wolf Creek were limited to only about 69 percent of their annual contract. The year started with full conservation storage but inflows diminished to well below the statistical one (1) percent chance of inflow by June. Reservoir projections of similar inflows showed that storage would be insufficient to supply the full Wolf Creek contract and also warranted continuation of conservation measures by the municipalities. Water quality releases were used sparingly and downstream flows were below Minimum Desirable Streamflow levels for the majority of the year, resulting in water right administration.

Table 1-1. Calculated inflow probabilities (1952-2012) and 2012 observed flow, June – December (acre-feet)

	1%	2%	5%	2012
June	14298	22265	39704	8876
July	4673	7625	14696	3898
August	3751	5595	9531	5445
September	1547	2856	6189	5574
October	615	1722	4919	4056
November	3094	4998	9402	3560
December	1476	2460	4981	2936

1.5.2 Land Ownership and Land Management in the Planning Area

Most of the lands of the Neosho River floodplain downstream of John Redmond Dam are privately owned. Approximately 29,801 acres of land are owned by the USACE; this land is upriver from and includes John Redmond Dam and outlet structures. The USACE project manager operates the dam and reservoir under the direction of the Operations Division, Tulsa District. The principal regulation/management issue identified historically was riverbank erosion which occurs after periods of high flows in the Neosho River below the dam. To minimize any riverbank erosion, reservoir releases are decreased as slowly as possible to slow the rate of fall in the river stage, since this erosion has been attributed to the fast rate of fall from natural and regulated flows (USACE 2013). However, recent research determined aside from localized channel widening, there was little post-dam construction change in bank-full channel width on the Neosho River below John Redmond Dam (USACE 2013).

The USACE maintains six public-use areas, five of which have recreation parks providing camping, picnic areas, drinking water and sanitary facilities (USACE 2013). Additional recreation facilities present on USACE managed lands include five boat ramps, an overlook and a swimming beach. In addition to site management by the USACE, leases have been signed with the USFWS and Kansas Department of Wildlife, Parks and Tourism (KDWP&T) to provide land management for the FHNWR and OCWA.

Flint Hills National Wildlife Refuge (FHNWR) was established in 1966 and consists of approximately 18,545 acres located on the upriver portion of John Redmond Reservoir (USACE 2013). The refuge is managed primarily for migratory waterfowl and shorebirds. OCWA was established in 1966 and consists of approximately 1,472 acres adjacent to FHNWR and the southeast portion of John Redmond Dam. This wildlife area is managed primarily for big game and upland species: white-tailed deer, wild turkey, mourning dove, bobwhite quail, cottontail rabbit and squirrel.

Permitted activities on the FHNWR include wildlife observation, hiking and sightseeing, photography, boating, picnicking, camping, fishing, hunting, wild food gathering, and fish bait collection. Interpretive trails are present and include Dove Roost Trail and the Headquarters Trails. OCWA provides wildlife observation, sightseeing, photography, boating, fishing, and hunting opportunities.

1.5.3 Project Development History

The project was authorized as the Strawn Dam and Reservoir under the Flood Control Act of 17 May 1950 (Public Law 516, 81st Congress, Chptr 188, 2nd Session) (USACE 2013). It was to provide flood control, water conservation, recreation and water supply. The project was renamed John Redmond Dam and Reservoir by an Act of Congress (Public Law 85-327, 85th Congress, HD 3770, 15 February 1958). Construction of John Redmond Dam began in June 1959, and final water storage began during Sept. 1964 (USACE 2013).

John Redmond Dam is an integral component of a three-dam and reservoir system that includes Council Grove Reservoir, also on the Neosho River, and Marion Reservoir on the Cottonwood River (USACE 2013). The drainage area occupied by all three dams is 3,015 square miles, of which 2,569 square miles below Council Grove and Marion Reservoirs is uncontrolled and drains directly to John Redmond Reservoir. The following data and Table 1-2 presents the post-construction John Redmond Reservoir baseline. Specific physical data describing the dam (USACE 2013) include:

- Earthfill Dam Structure: 20,740 feet long (not including spillway); dam top = 1,081.5 feet National Geodetic Vertical Datum (NGVD); maximum height = 86.5 feet above the Neosho River bed; crest width = 35 feet 7 inches.
- Spillway: located near left abutment; concrete chute, gated ogee weir; crest elevation = 1,033.0 feet NGVD; length = 560 feet; control = 14 (40 ft. x 35 in.) tainter gates; hoists are individual electric motors.
- Outlet Works: two 24 inch circular pipes for low flow; one 30 inch circular pipe for water supply; invert elevation = 1,015.5 feet NGVD; invert placed through left abutment of spillway; control = motor-operated butterfly valves for low flows and manually operated gate valves.
- Land Acquisition: taking line is semi-blocked to elevation 1,063.0 feet; easement is elevation 1,073.0 feet or limits of backwater envelope curve.

Table 1-2. Project Elevations, Surface Areas and Storage Volumes (Source: KWO)

Project Feature	Elevation (ft)	Surface Area (Acres)	Storage Volume (AF)	Spillway Capacity (cfs)
Top of Dam	1081.5	52,957	1,140,775	732,000
Maximum Pool	1074.5	41,773	816,795	575,000
Surcharge Pool	1073.0	39,984	755,330	542,000
Flood Control Pool	1068.0	31,606	573,157	430,000
Conservation Pool	1041.0	9,181	67,302	38,000
Spillway Crest	1033.0	4,951	8,639	0
Inactive Pool	1020.0	0	0	-
Streambed – Dam	995.0	-	-	-
Flood Control Storage	1041.0 – 1068.0		505,855	
Conservation Storage	1020.0 – 1041.0		67,302	

1.6 Relevant Federal, State and Local Statutes, Regulations and Guidelines

The DPEIS has been written in compliance with recognized federal and state guidelines, regulations and statutes presented as Table 1-3. Further identification and descriptions of applicable environmental laws and regulations are presented in Section 6.0. Permits, licenses and other entitlements which must be obtained by the state of Kansas before implementing the proposed project and modification of the federal project are included in Table 1-4.

Table 1-3. Relevant Laws and Regulations

Environmental Law or Regulation	General Description
National Environmental Policy Act of 1969, as amended (NEPA)	Requires the disclosure of the environmental impacts of any major federal action.
Council on Environmental Quality Regulations, Implementing NEPA	The Council on Environmental Quality was established by NEPA and consists of three members appointed by the president to 1) analyze and interpret environmental trends and information, 2) appraise programs and activities of the federal government under NEPA, 3) be aware of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the nation, and 4) formulate and recommend national policies to promote the improvement of the quality of the environment.
Clean Water Act of 1977, as amended	Provides the principle framework for national, state and local efforts to protect water quality, including protection of wetlands.
Executive Order 11988 of 1977, Flood Plain Management	Federal agencies are directed to consider the proximity of their actions to or within floodplains, to 1) reduce the risk of flood damage, 2) minimize the impacts of floods on human safety, health and welfare, and 3) restore and preserve the natural and beneficial values served by floodplains.
Kansas Administrative Regulations 28-16-28c, Surface Water Quality Standards	General provisions state that no degradation of water quality by artificial sources shall be allowed that would have harmful effects on threatened or endangered aquatic life in a critical habitat.
Executive Order 11990 of 1977, Protection of Wetlands	Requires federal agencies to minimize or avoid wetland destruction, loss, or degradation and to preserve and enhance natural and beneficial wetland values.
Endangered Species Act of 1973, as amended	Requires federal agencies that fund, authorize, or implement actions to avoid jeopardizing the continued existence of federally listed, threatened, or endangered species, or destroying or adversely affecting their critical habitat.
Fish and Wildlife Coordination Act	Requires consultation with the Fish and Wildlife Service and the fish and wildlife agencies of the States where waters of any stream or other water body are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified by any agency under a Federal permit or license. Consultation is to be undertaken for the purposes of preventing loss of and damage to wildlife resources.
Clean Air Act of 1970, as amended	Provides the principle framework for national, state and local efforts to protect air quality.
Kansas Administrative Regulations 28-19-17, Prevention of Significant Deterioration of Air Quality	Applies to the construction of major stationary sources and major modifications of stationary sources in areas of the state designated as attainment areas or unclassified areas for any pollutant under the procedures prescribed under the federal Clean Air Act of 1970, as amended.
Antiquities Act of 1906	Authorizes the scientific investigation of antiquities on federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.
National Historic Preservation Act of 1966, as Amended	Establishes as policy that federal agencies are to provide preservation of the nation's prehistoric and historic resources, and establishes the National Register of Historic Places.
Archaeological Resources Protection Act of	Protects materials of archaeological interest from unauthorized

Environmental Law or Regulation	General Description
1979, as amended	removal or destruction and requires federal managers to develop plans and schedules to locate them.

Table 1-4. Permits, Licenses and other Entitlements.

Permit or License	General Description
U.S.C. Section 408	Permission from the Secretary of the Army for non-federal entity to alter or modify existing USACE projects. As the project proponent, the state of Kansas will prepare and submit a Section 408 request to modify the federal project (John Redmond Reservoir) to dredge sediment and for use of federal lands to construct sediment disposal facilities.
Real Estate Instruments	The Kansas Water Office will also coordinate with USACE to secure the appropriate real estate instruments to allow the state of Kansas, as the project proponent, to access and utilize federal lands for dredging, construction of sediment disposal locations, and pipeline right of ways, staging areas, and other activities associated with the dredging project. Depending on the phase of the project appropriate real estate instruments may include leases, easements, consents to easement, early rights to entry, and licenses. The State of Kansas will not retain permanent occupancy of any of the sites.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The proposed *Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir, Kansas,* and proposed alternatives to the proposed action are described in this section. NEPA requires an EIS objectively evaluate a reasonable range of alternatives that are practical or feasible from a technical and economic perspective, and based on common sense (46 FR 18026, as amended, 51 FR 15618). All of the action alternatives evaluated herein meet the basic project goal of increasing the water storage capacity in the conservation pool of John Redmond Reservoir.

In 1975, the state of Kansas and the federal government entered into a water storage agreement at John Redmond Reservoir to provide water for the CNRWAD and the WCGS. The CNRWAD includes 19 municipal and industrial water users (Wendt, B. KWO personal communication, Biery (WAD) November 28, 2012). Construction of John Redmond Dam began in June 1959, and final water storage began during September 1964 (USACE 2013) John Redmond Dam is an integral component of a three-dam and reservoir system that includes Council Grove and Marion Reservoirs. The three structures provide flood control, water supply, water quality, recreation and other benefits to the Neosho River Basin. The conservation pool of John Redmond Reservoir was filled to its initial elevation of 1,036.0 feet during November 1964 and was raised to the 1,039.0 foot elevation during April 1976. In 2013, the reallocation request was approved and the conservation pool elevation was authorized to increase to 1041.0. The CNRWAD and Western Resources, the operators of WCGS, have contracted with the State of Kansas for all the water supply storage in the reservoir (USACE 2013). The WCGS pumps water from the Neosho River below the dam structure to store in Coffey County Fishing Lake, approximately three miles east of John Redmond Dam. The remaining water users divert flows using low-elevation dams and/or pump the water from the river.

A recent Tulsa District water supply yield analysis indicated a 25 percent reduction in the water supply capacity at design life (CY 2014) because of sediment deposition. Most of the sediment deposition has been below the top of the conservation pool. The USACE was directed by Congress to study an equitable redistribution (reallocation) of water storage between the flood control and conservation pools, and therefore, the USACE evaluated an alternative to raise the conservation storage pool to an elevation of 1041.0 feet. A Record of Decision was approved in June 2013 on the Supplement to the Final Environment Statement for the pool raise and reallocation. Even with the authorization of the pool rise, John Redmond Reservoir will still accumulate sediment and its conservation storage will be depleted. Therefore the KWO is evaluating the alternative actions described in this section to resolve the depleting water storage situation, due to accumulating sediment. The actions proposed to resolve the loss of water storage due to sedimentation at John Redmond Reservoir are:

- Proposed (Preferred) Action: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity.
- Alternative #2 - Dredge and dispose of sediments to restore the conservation pool to near original capacity
- No Action

2.2 Proposed (Preferred) Action: Dredge and Dispose of Sediments to Ensure 55,000 Acre-Feet of Conservation Storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

This alternative would allow for the dredging and disposal of sediments from the conservation pool at a rate and quantity to ensure 55,000 acre-feet of conservation storage is available for authorized project purposes. In the

first five years of the dredging activity, approximately 3 million cubic yards of sediment will be removed (Figure 2-1). No parent material (non-deposited sediment) would be removed under this alternative. Phasing of removal will continue through 2045 which corresponds to the expiration of the Federal Energy Regulation Committee (FERC) license for WCGS. Project methodology and impacts will be assessed after the first five years and periodically throughout the full project period.

Under this alternative sediment removal would be conducted with a barge-mounted, portable hydraulic dredge with a cutter head ranging from 16" to 20". Only sediment deposited since lake construction will be removed; there will be no excavation of the original, pre-impoundment, surface. Staging for equipment assembly and mobilization will be conducted at the Dam Site Area, but if needed, the Hickory Creek, Otter Creek or Ottumwa public use areas may be used (Figures 2-1 and 2-2). The staging area will be two to three acres in size with a portion of the area graveled to provide a stable working surface. Activities at the staging area will include the loading and unloading of trucks, assembly of dredge equipment, storage of parts, and will serve as a support area during dredging for crew change and parts delivery.

2.2.1 Determination of CDF Sites

Approximately five 100-acre sites may be needed for the first five years of dredging activities. Confined Disposal Areas (CDFs) will initially include two locations on federal government fee lands and later move to privately-owned locations. Initially three parcels were identified on federal property as potential disposal sites are located below the dam (Figure 2-4). To avoid fill and impact to wetlands and other Waters of the United States (CDF Site C), only two of the sites (CDF Sites A and B) will be used. CDF Sites A and B will likely be sufficient for disposal of approximately 700,000 cubic yards of sediment disposal. Identification of additional suitable disposal sites on private property will be focused within an area four miles east and west of the reservoir (Figure 2-7). If the dredging action were to continue beyond the initial five years and remove a quantity greater than three million cubic yards, approximately 2,000 additional acres, for a total of about 2,500 acres, may be needed for CDF sites over next 30 years to maintain the 55,000 acre feet of storage in John Redmond Reservoir.

Potential sites for sediment disposal on private property will be evaluated for feasibility based on the following criteria: (1) proximity to dredging location in John Redmond Reservoir, (2) avoidance of impacts to gas and utility lines, (3) a topography that minimizes CDF cell wall height, (4) avoidance of Waters of the U.S. and (5) cost for compensation. Sites meeting the criteria will be evaluated for historical and cultural resources and potential impacts to threatened and endangered species and habitat. Under the Programmatic approach of this EIS, future disposal sites selection will be coordinated with relevant local, state and federal agencies, including the U.S. Army Corps of Engineers, Tulsa District Regulatory Office. Future sites will be evaluated through the NEPA process or permit process, or both, whichever is appropriate.

CDFs will be constructed with multi-cell designs with berms and weirs to slowly dry deposited sediment (Figures 2-3, 2-4, 2-5, 2-6 and 2-7). All materials required for berm construction will be collected on-site from within the containment area. Materials will be excavated using hydraulic excavators or tractor pulled scrapers. Once excavated, the material will be transported using off-road trucks or scrapers to the berm area being built. The material will be deposited within the footprint of the berm and spread using a D6 class bulldozer. Compaction of each lift will be achieved by either using a sheeps-foot roller or using tires from the scraper to compact the soil. As each lift progresses upward the side slopes will be graded using the same D6 dozer into the final design template.

Excavation to create berms for CDF A will be from soil on site with an average depth of 22.1 inches, more or less, graded to drain as shown in Figure 2-6. Berms and excavated soil will be equal cut and fill with no additional soil being added or removed from site. Total elevation change across the site is approximately 34 feet

with an average grade of 1.5% with the high point near the northern line and low point near the south end. Excavation to create berms for CDF B will be from soil on site with an average depth of 10.3 inches, more or less, graded to drain as shown in Figure 2-5. Total elevation change across the site is approximately 6 feet with an average grade of 0.2% with the high point near the center and low point near the southwest corner.

Effluent water will be piped and discharged into the nearest river or stream surrounding the CDFs unless analysis determines this approach would adversely impact the quality of downstream waters in which case the effluent will be piped back to the reservoir. CDF areas will be reclaimed or repurposed after the sediment has dewatered.

For CDF Site A (Figure 2-4), approximately 111,000 cubic yards of soil is needed to construct the berms and cells. As described above, all material for construction of the CDFs will be collected on-site from within the containment area. The total holding capacity of CDF Site A is 351,000 cubic yards. CDF Site B is approximately 36.5 acres with a similar holding capacity as CDF Site A. CDF Site C is approximately 93 acres in size with a holding capacity of approximately two to three times as CDF Sites A and B; however, due to potential fill of wetlands and Waters of the United States CDF Site C has been excluded from consideration as a CDF site.

A mix of dredged material and water would be transported from the reservoir to CDFs via 24” high-density polyethylene (HDPE) pipe. Piping routes from the reservoir to the federal-government owned sites are shown in Figure 2-4. Pipes will remain above ground. Road crossings for sites on non-federal property will either be placed through culverts or over the road surface (Figure 2-9). Where the pipe crosses Embankment Road between the dredging site within the reservoir and the CDF, the roadway will be bored and jacked with a 24” casing. The remaining road crossings will be cut and covered whenever possible with the road surface returned to original condition. If placed over the road surface, the pipe will be covered to allow vehicle passage. The pipeline route was selected to avoid contact with and impact to the dam and tainter gates.

Each 50’ section will be fused together using a model 500 McElroy fusing machine and pushed into the lake. At 75’ intervals, the pipeline will be attached to steel floating pontoon tanks. Pontoon pipeline will be fused into 1,000’ sections and secured in the lake until dredging begins. Two different wall thickness of pipe will be used on the project based on internal pressure at any given location. The pipe near the stern of the dredge and the discharge of the booster will be exposed to the highest pressure therefore 20” Standard Dimensional Ration (SDR) 13 pipeline will be used. The SDR 13 pipeline has a working pressure of 160 psi and nearly a 2” wall thickness. The remaining pipeline in the system will be 18” SDR 17 with a working pressure of 100 psi and a wall thickness of 1”. Both the 20” SDR 13 and the 18” SDR 17 have the same basic inner diameter of 16”. The pipe will cross the Neosho River approximately 3,000 feet below the dam. No materials will be excavated from the Neosho River and the pipe will lay passively on the floor of the river. If the slope of the streambanks at the point where the pipe crosses the Neosho River is too steep, trenches will be cut into the bank to lay the pipe at a more gradual slope. These trenches will be covered with the excavated materials and reinforced with riprap.

Pipelines throughout the project will be inspected multiple times each day. Should a leak develop in the pipeline, dredging activities will be shut down immediately and the pipeline will be repaired. Any material which may have leaked will be cleaned up and transported to the nearest CDF site. Where the pipe crosses the Neosho River, new, thicker walled pipe will be used to minimize the possibility of any leaks occurring in the river.

Effluent from the CDF sites A and B will be released into the Neosho River or piped between each CDF for additional water clarification. The CDFs will be designed to retain suspended materials and provide adequate long-term storage capacity. The quality of effluent discharged from these sites will meet the conditions and

standards established by the Section 401 State water quality certification, as well as, the wastewater permitting limits established in a National Pollutant Discharge Elimination System (NPDES) permit.

For the purpose of this PDEIS, the period of analysis begins at the construction of the first CDF Site (CDF Site A) and the deployment of equipment to the staging area. Construction of the first two CDF sites (CDF Sites A and B) will take approximately three months. Dredging will commence at the completion of the construction of these two sites. Removal of 700,000 cubic yards of sediment (capacity of CDF Sites A and B) will take approximately 12 to 17 months depending on weather conditions. Upon fill of CDF Sites A and B, the sites will be allowed to dewater sufficiently to allow the sites to be remediated to native grass habitat. Dewatering may take up to two to three years. After the sites are dewatered, berm walls will be collapsed to cover the dredge materials and the sites will recontoured to the elevation and gradient necessary to support the native grasses.

The Dredge John Redmond Reservoir Alternative would achieve the project goal to restore water supply storage for the benefit of the regional water users and to restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem, and is preferred by the state and USACE.

Figure 2-1. Proposed dredge location for removal of up to 3 million cubic yards of sediment, Preferred Alternative.

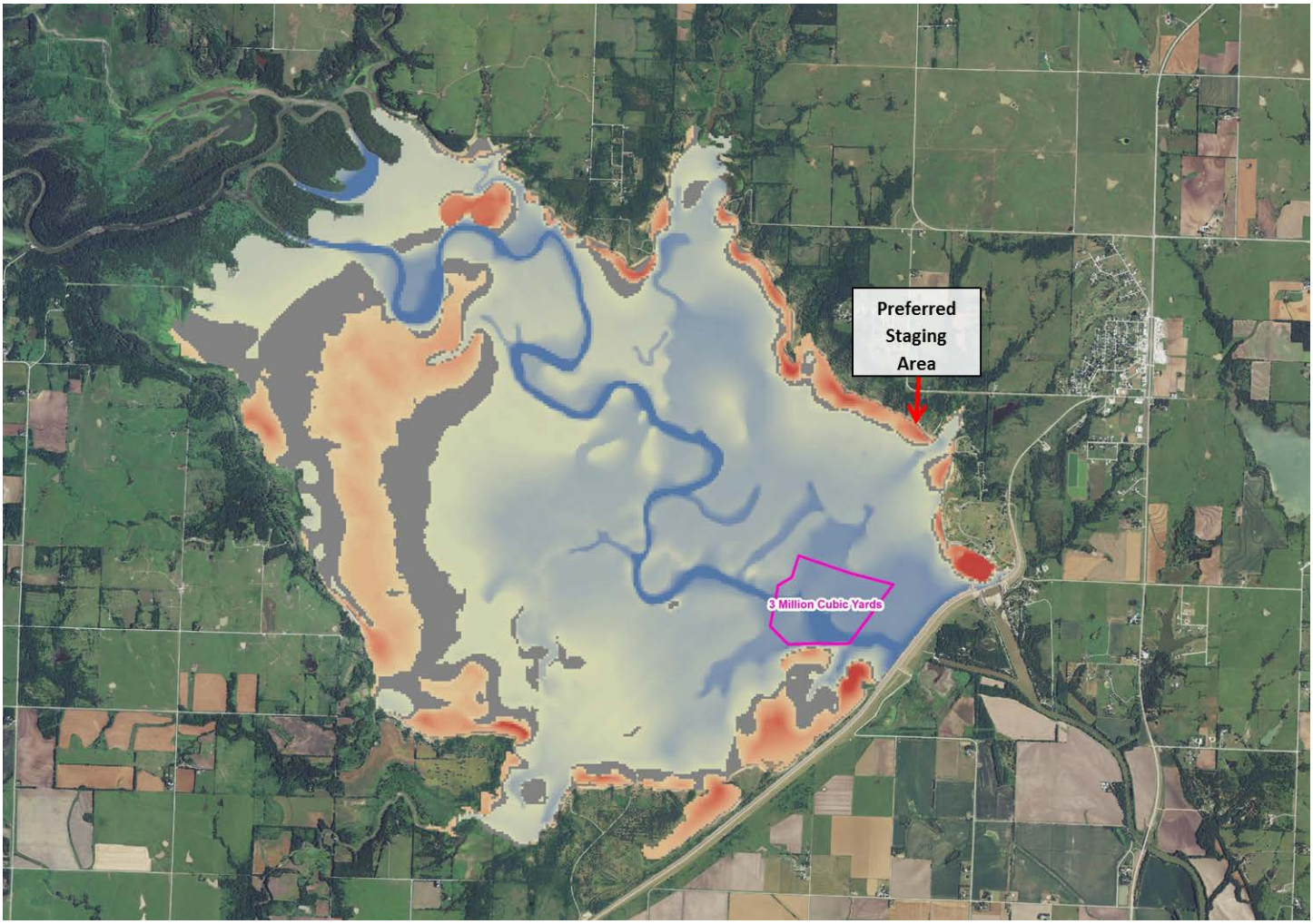


Figure 2-2. John Redmond Reservoir Public Use Areas.

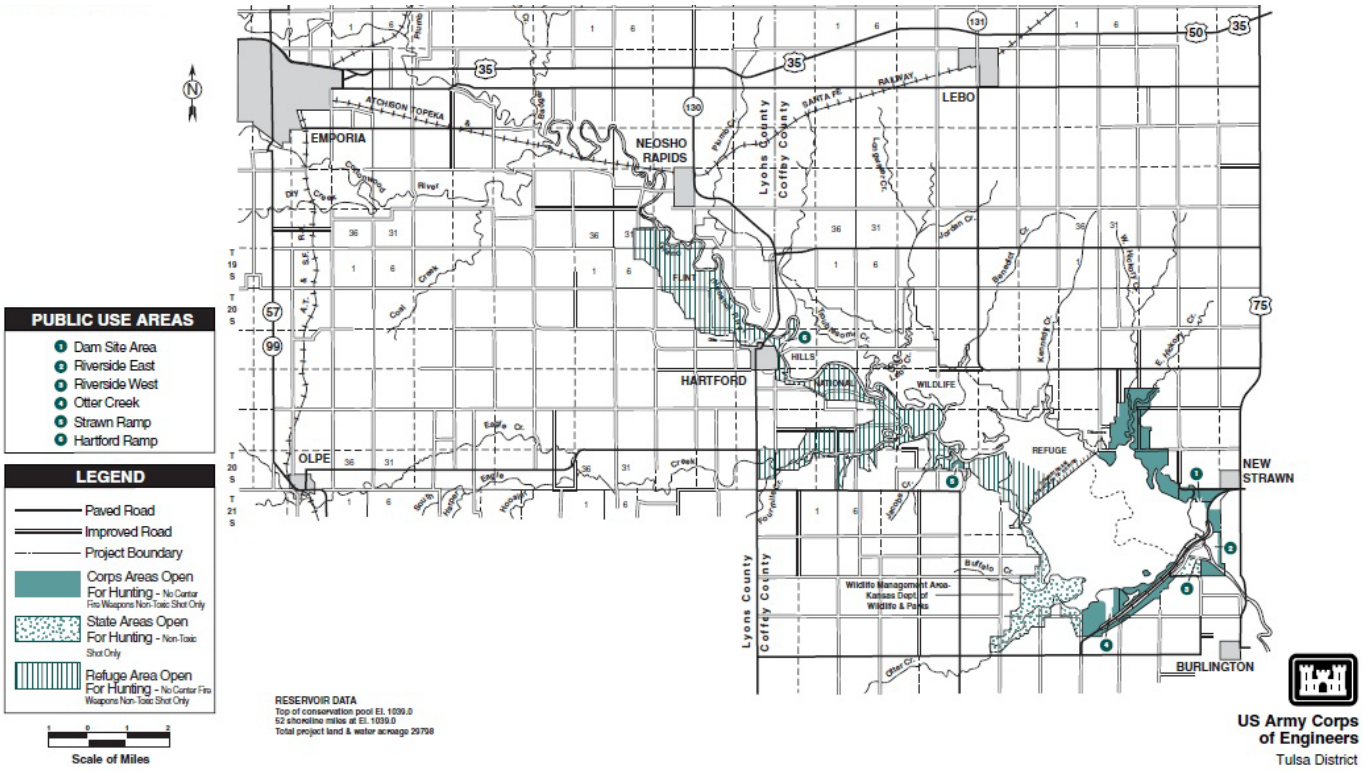


Figure 2-3. Draft Schematic of Confined Disposal Facility (CDF) Typical Dike Profile.

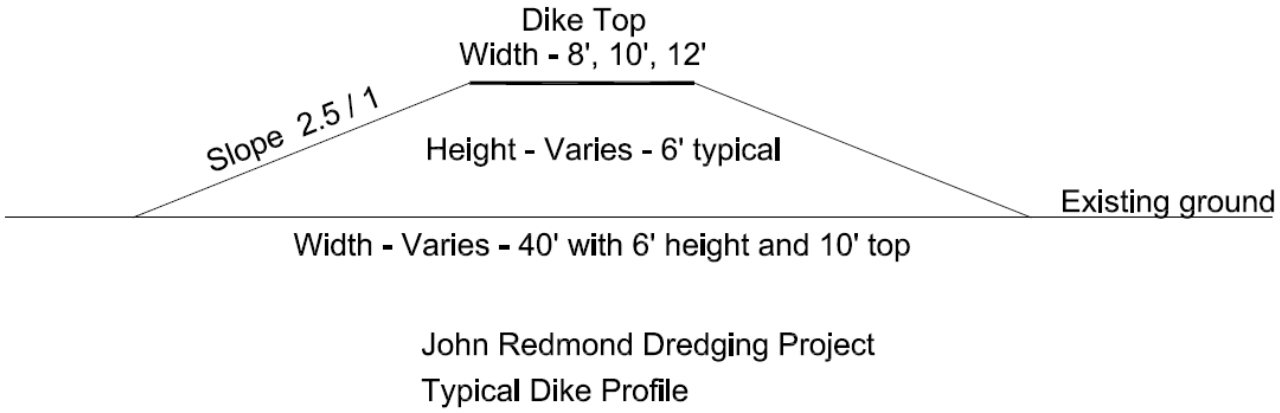
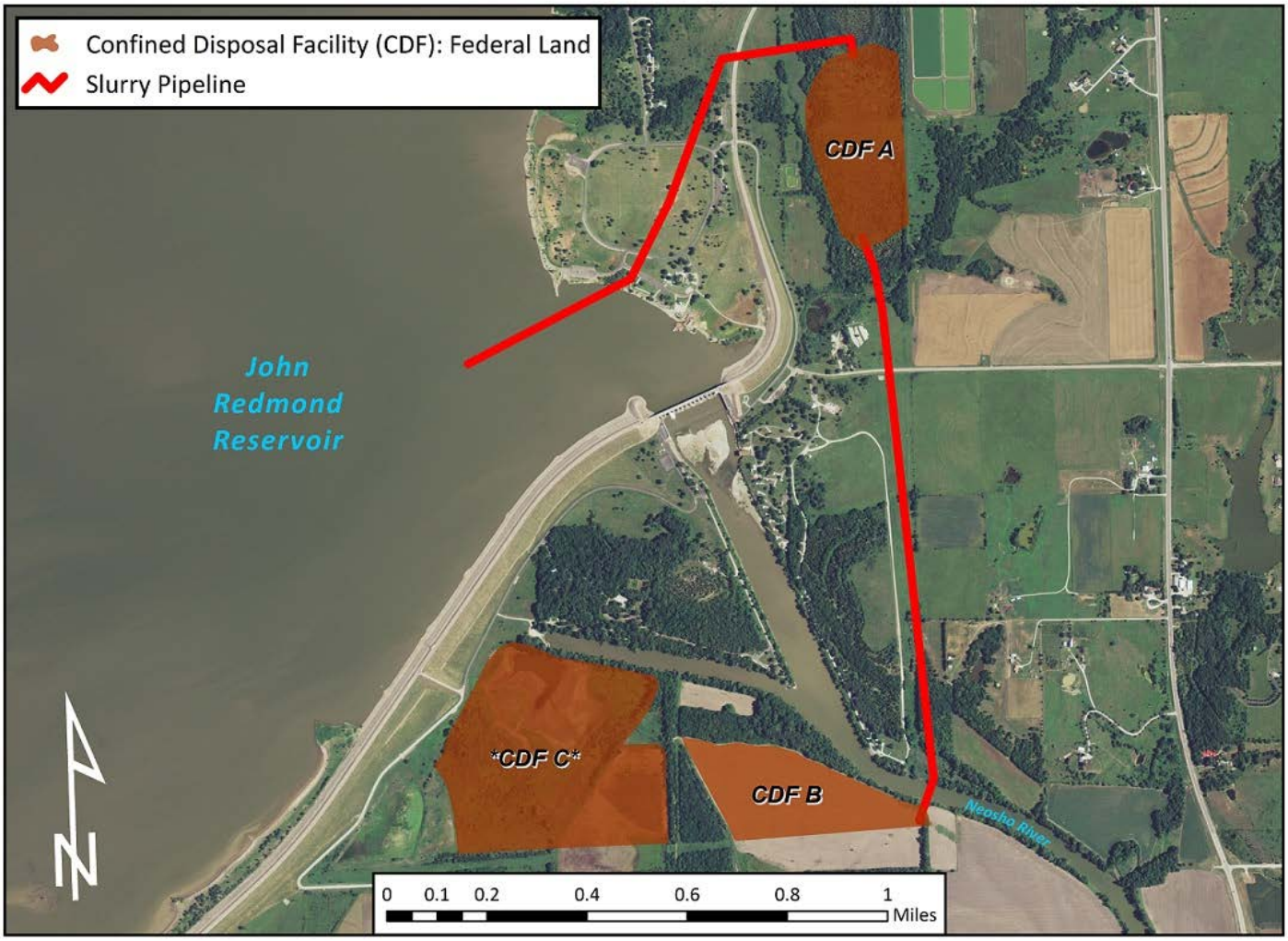


Figure 2-4. Potential sediment disposal locations on federal property.



CDF C removed from consideration due to potential impacts to Waters of the United States

Figure 2-5. Draft Schematic Design of Potential sediment disposal locations on federal property.

Figure 2-6. Draft Design Drawings for CDF A

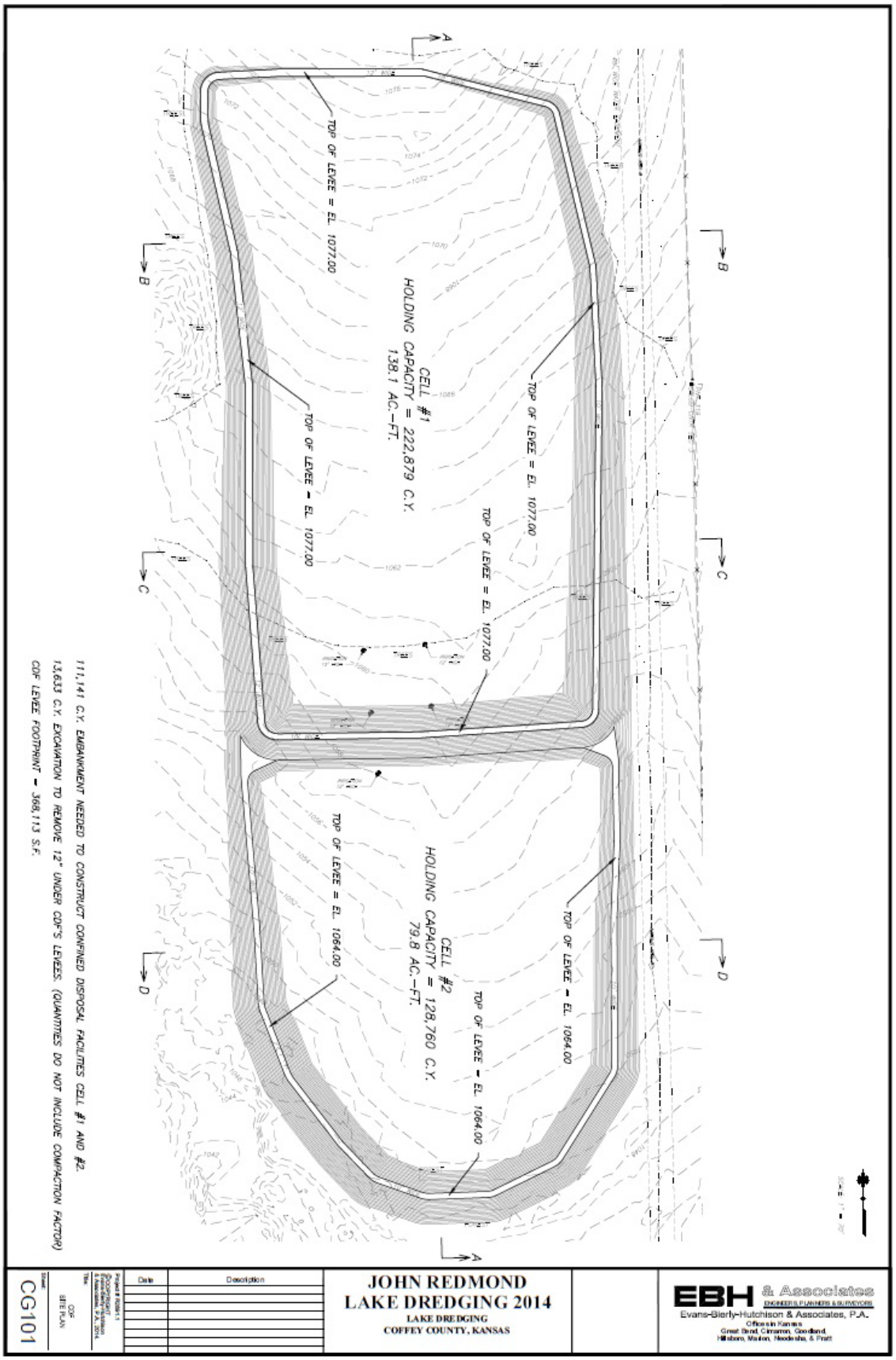


Figure 2-7. Draft Design Details of CDF Site A.

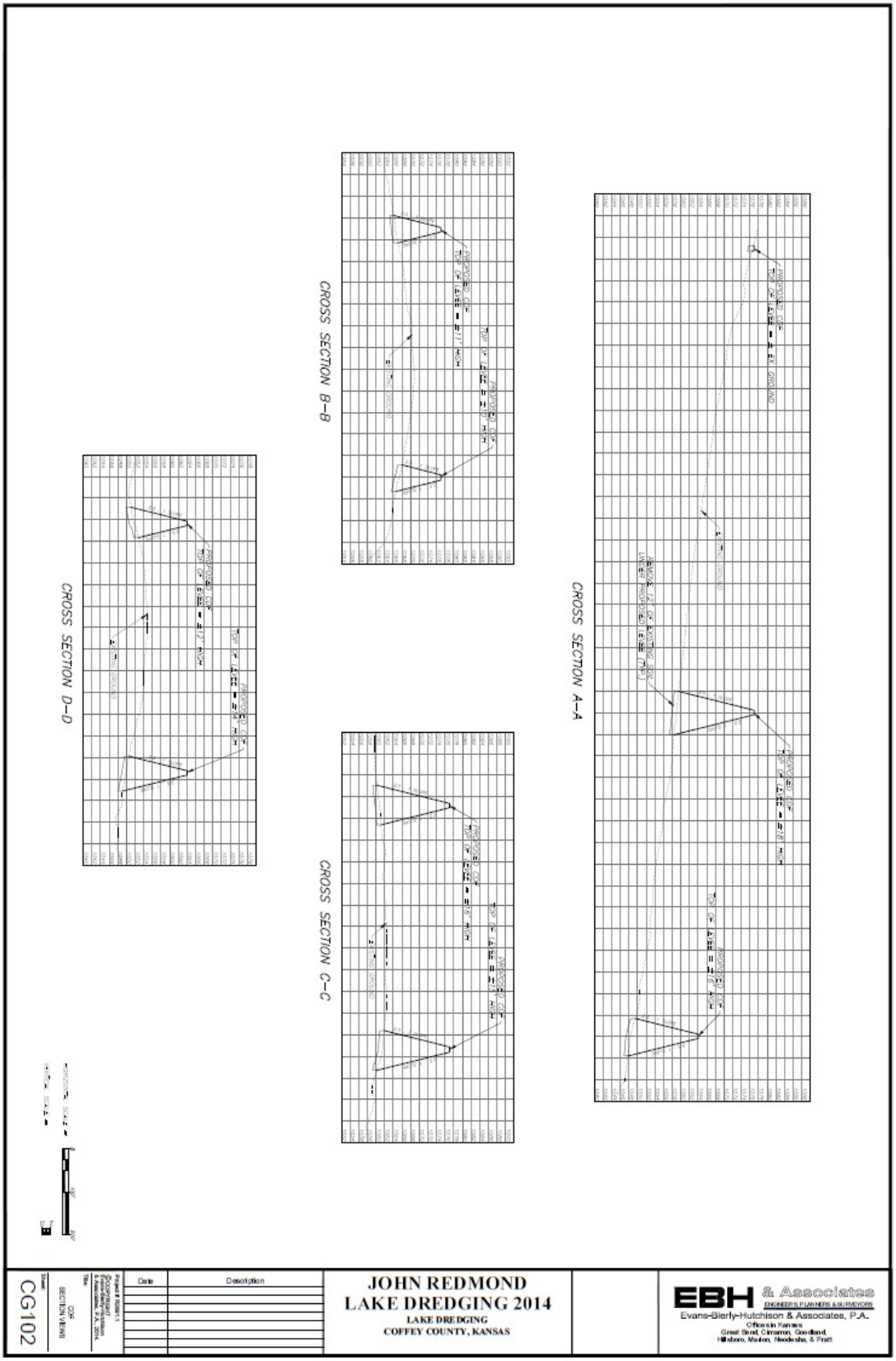


Figure 2-8. Focus area for identification of suitable non-federal land for sediment disposal.

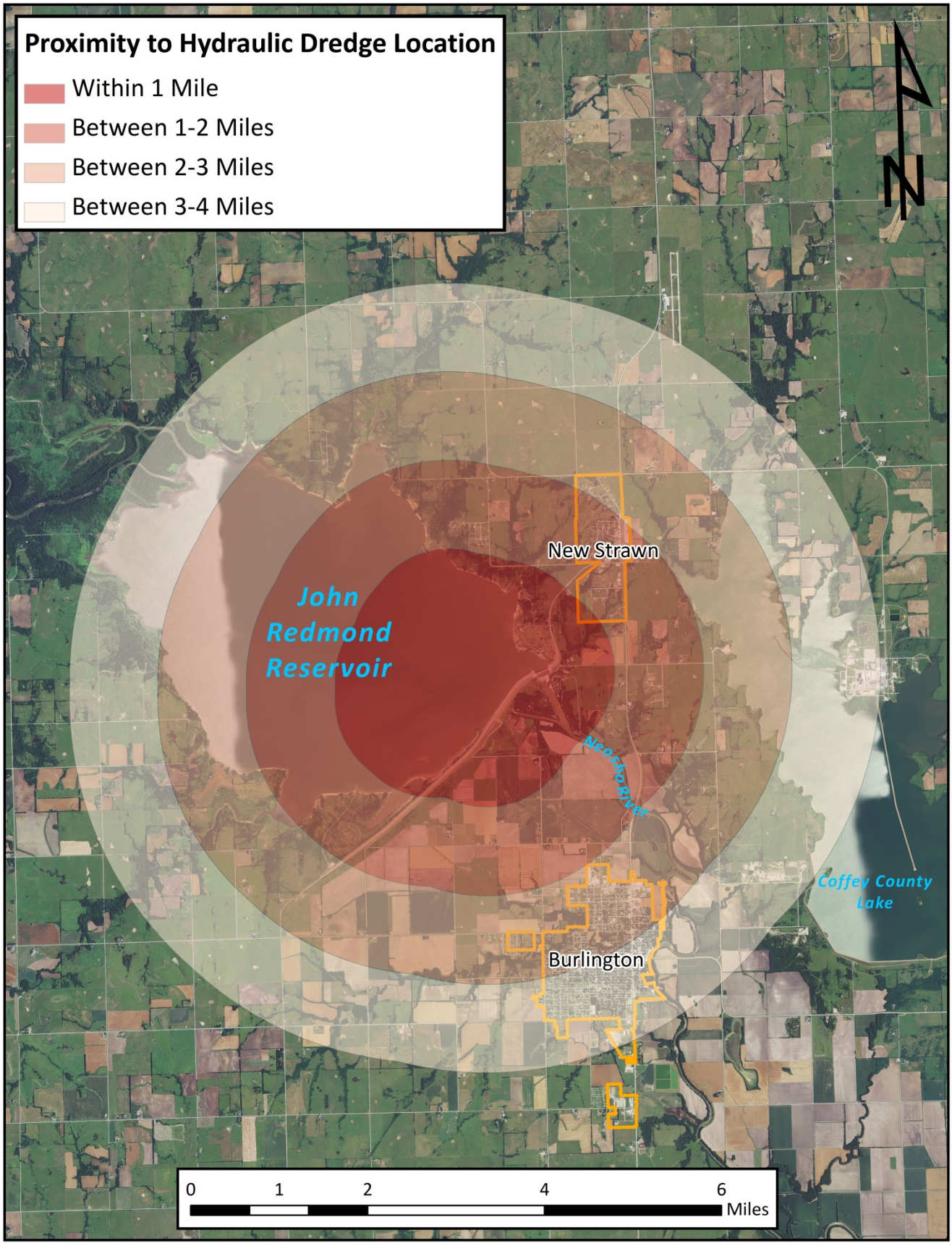
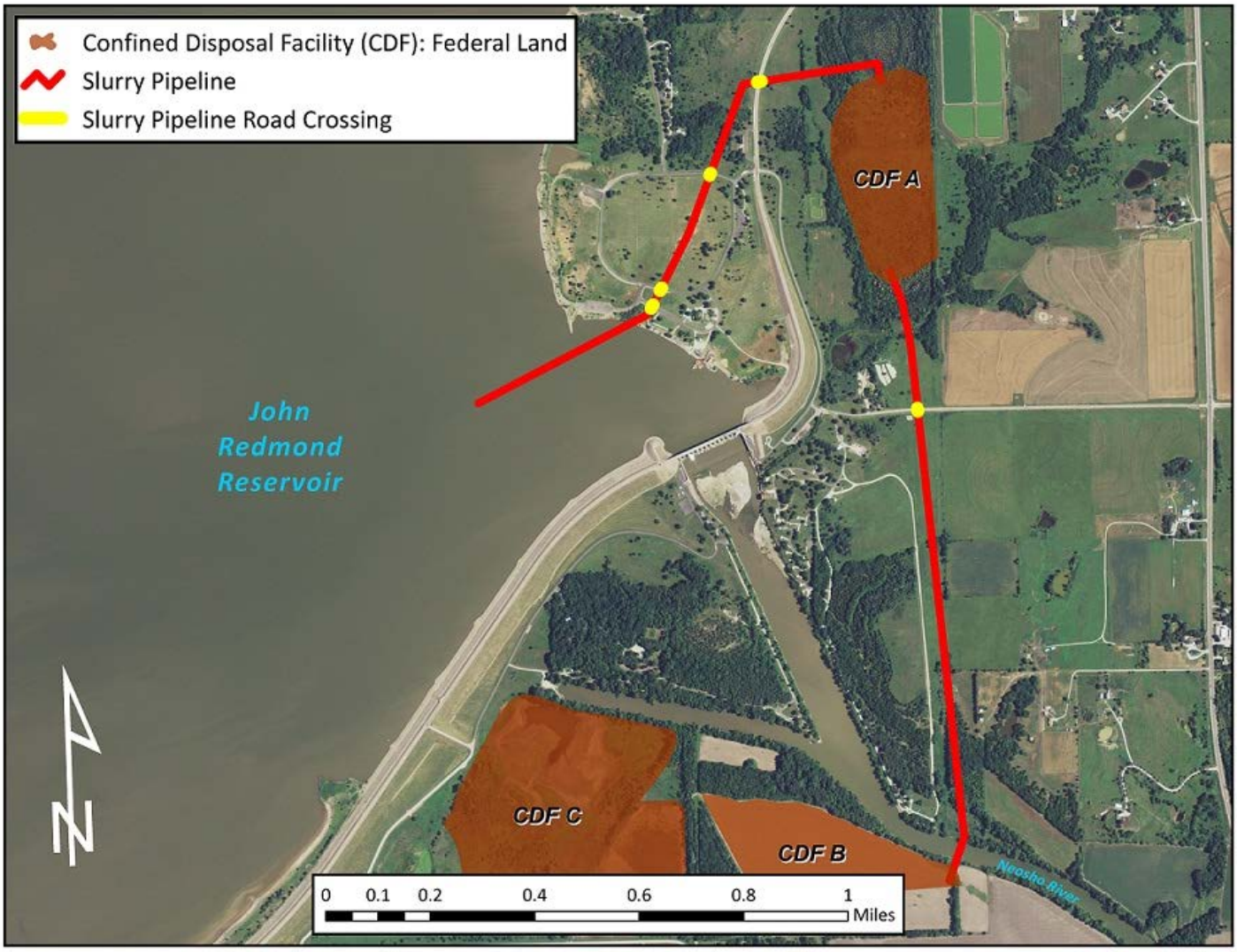


Figure 2-9. Pipeline Road Crossings.



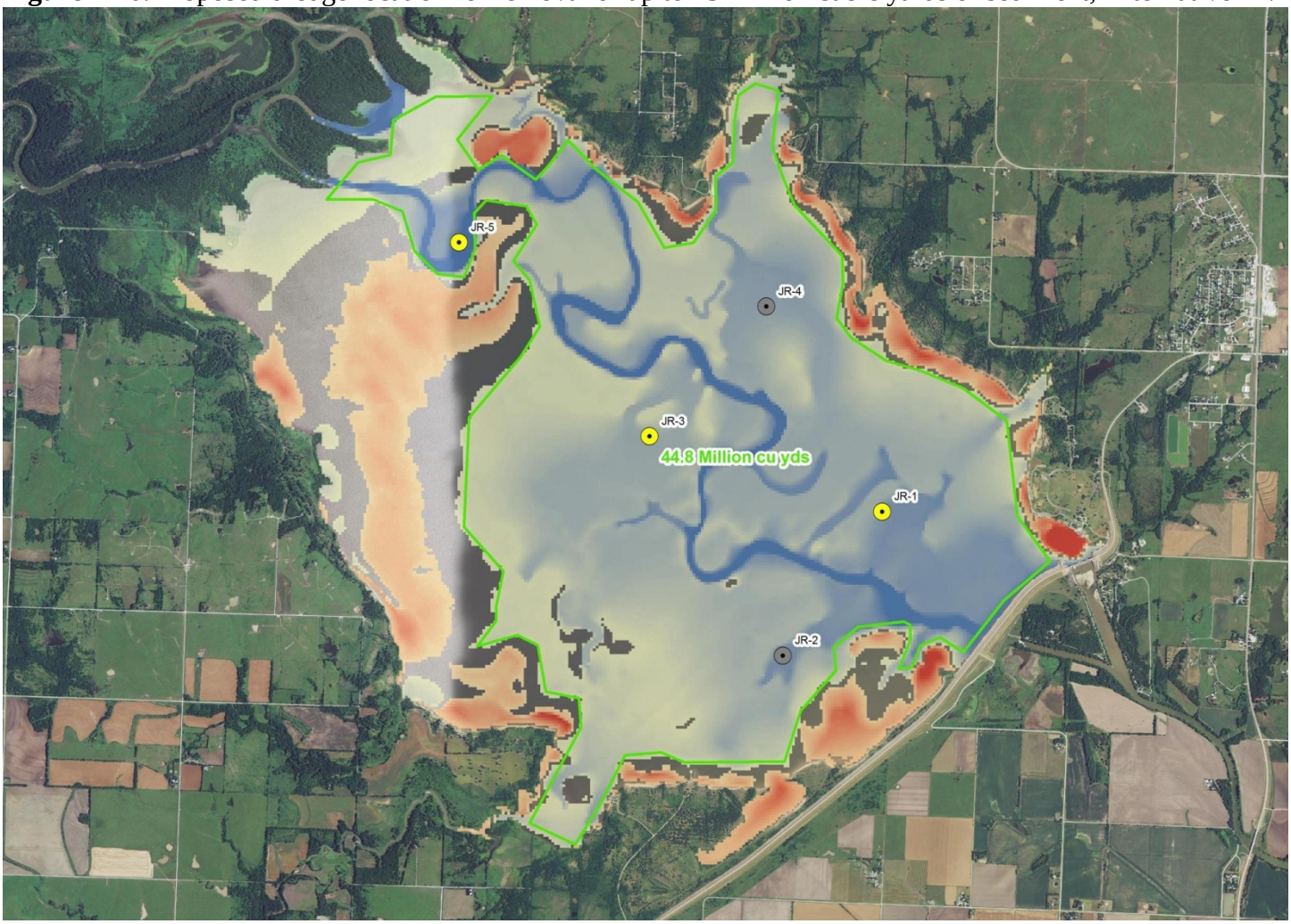
2.3 Alternative #2: Dredge and Dispose of Sediments to Restore the Conservation Pool to Near Original Capacity

This alternative would allow for the dredging and disposal of sediments from the conservation pool to restore the pool to near original capacity and approximate configuration. No parent material (non-deposited sediment) would be removed under this alternative. Restoration of the pool would require removal of approximately 42 million cubic yards of sediment (Figure 2-8). Although 30,000 acre-feet (48 million cubic yards) of storage has been lost to sedimentation since construction, accretion and deposition has occurred variably throughout the reservoir. This alternative seeks to remove sediment from areas of heaviest deposition with the greatest likelihood of benefiting water supply storage.

Under this alternative sediment removal and disposal would be conducted with similar equipment and methodology as described in the preferred alternative; however, additional land would be required for disposal sites. Over time, approximately 38 100-acre disposal sites may be needed to store the quantity of sediment described in this alternative.

Alternative #2 would achieve the project goal of restoring water storage capacity for the benefit of the regional water users and to restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem, but is not preferred by the state due to cost.

Figure 2-10. Proposed dredge location for removal of up to 45 million cubic yards of sediment, Alternative #2.



2.4 No Action Alternative

The No Action Alternative evaluated in the DPEIS is in compliance with NEPA (40 CFR § 1502.14(d)). No Action may be defined as the continuation of an existing plan, policy or procedure, or as failure to implement an action. The No Action Alternative also provides a benchmark to compare the magnitude of the environmental effects of the various alternatives.

Under the No Action Alternative, no sediment removal through dredging would occur. Sediment will continue to accumulate in the reservoir, reducing the water supply storage capacity at design life by approximately 25 percent. Storage available for water supply purposes in John Redmond Reservoir will continue to be depleted by the distribution of sediment such that the water supply agreement obligations with the KWO cannot be met.

The No Action Alternative could have adverse ecological effects. Kansas reservoirs have lower flow velocities, greater depth of flow, and longer water residence times than streams and rivers supplying them and therefore act as deposition zones (sinks) for sediments. Over time, sediment deposition in reservoirs reduces reservoir depth which can increase the frequency, magnitude and duration of suspended sediment concentrations in the water

column. The resulting impact to the organisms, including invertebrates and fish communities in those areas can lead to a change from desirable sediment-sensitive organisms being replaced by less-desirable, sediment-tolerant organisms. These population changes would reduce the size of recreational sport harvest, in the case of fish, by lowering both the total abundance of organisms and their individual size. These changes negatively affect recreational anglers and subsistence anglers (USEPA 2009).

In addition, increased sediments and turbidity reduce the aesthetics of a waterbody, which can reduce recreational users enjoyment of their experience and their choices of how often and where to recreate. Sediment and turbidity may also affect recreational anglers by reducing the distance over which fish can see lures, resulting in lower catch rates (Clark et al. 1985).

Birds, mammals, reptiles, and amphibians that consume aquatic plants, invertebrates, fish, and other aquatic organisms or otherwise utilize aquatic habitats for shelter and reproduction can also be affected by elevated sediment and turbidity levels in surface waters. Some species are sufficiently mobile that they can avoid impacted aquatic communities and seek substitutes, if available and accessible (Berry et al. 2003).

2.5 Alternatives Considered but Eliminated

Pursuant to the NEPA, KWO had one public scoping period, extending from Feb. 5, 2013 through March 12, 2013 to solicit comments for the purpose of determining the scope of the DPEIS. Comments received through scoping were used to identify issues to be addressed in this DPEIS. No comments were received during the public scoping period that identified alternatives to consider. Alternatives evaluated in this DPEIS were developed by KWO. The USACE and KWO, prior to issuing the Notice of Intent to prepare the DPEIS, had identified four alternatives that may meet the project purpose and need, but have been eliminated from further consideration in this DPEIS for a variety of reasons.

1. Sediment removal through less extensive dredging to only manage the accumulation of sediment, but not increase capacity.
2. Sediment removal through flushing of John Redmond Reservoir.
3. Construction of a new water supply reservoir in the Neosho River basin.
4. Construction of a pipeline transferring water supply from the Missouri River to the Neosho River basin.

These alternatives were considered but eliminated from further evaluation in this DPEIS for a variety of reasons and each alternative is discussed separately below.

2.5.1 Evaluating the feasibility of sediment removal through less extensive dredging to only manage the accumulation of sediment, but not increase capacity.

KWO maintains that if dredging action is to occur it is more efficient to remove incoming sediment as well as remove sediment that has already accumulated to increase conservation storage capacity to ensure water for current and future needs. Simply removing the sediment at a pace to manage the future accumulation of sediment would not provide the water storage capacity long-term to meet downstream needs.

2.5.2 Evaluating the feasibility of sediment removal through flushing of John Redmond Reservoir.

KWO maintains that if flushing were to occur extensive research on this method would be needed to understand the full benefits of this process to ensure this change in operation could efficiently remove an adequate quantity of incoming sediment as well as remove sediment that has already accumulated to increase conservation storage capacity to ensure water for current and future needs. The ramifications on downstream users and biological

resources of moving the accumulated and incoming sediment through the reservoir would also need to be considered.

2.5.3 Construction of a new water supply reservoir in the Neosho River basin

Potential site selection and the requisite costs associated with this alternative to identify an appropriate site, acquire property, relocate infrastructure, as well as the impacts to the environment while maintaining the contractual commitments to customers of the state's Water Marketing and Water Assurance District Program preclude further consideration of this alternative.

In 2011, CDM Federal Programs Corporation (CDM) prepared a *Neosho River Water Supply Analysis* for the Kansas Water Office, under a Planning Assistance to States (PAS) agreement with the Tulsa District, U.S. Army Corps of Engineers (Contract No. W912BV-09-D-1001, Task Order 0004). The analysis included a planning-level construction cost estimate for four proposed reservoir locations in the Neosho River basin. Total planning level costs for the four sites ranged from $250 million to $560 million. KWO conducted a desktop review of the four proposed reservoir locations to estimate the cost of compensatory mitigation. Costs for mitigation of these four sites ranged from $316 million to $1.1 billion.

2.5.4 Construction of a pipeline transferring water supply from the Kansas River to the Neosho River basin

Transferring water from the Kansas River to the Neosho basin would require more than 60 miles of approximately 36" pipeline, as well as at least one raw water intake facility constructed on the Kansas River and multiple booster stations to lift the water. Projected capital costs for this pipeline may exceed $288 million and may require annual operation and maintenance investments greater than $3 million. In addition to the cost, transferring water from the Kansas River may impact water supply availability for municipalities and industries in the Kansas River basin.

2.6 Environmentally Preferable Alternative

The No Action Alternative would have no significant unmitigatible impacts and, for the purposes of NEPA, would be the environmentally preferable alternative. However, the No Action Alternative would not increase available water storage or address the stated purpose and need.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Introduction

This chapter sets forth the Affected Environment of the proposed action and describes the present physical conditions within the area of the proposed action. The area, or region of influence, is defined for each environmental issue based upon the extent of physical resources that may be affected directly or indirectly by the proposed action and appropriate guidelines of regulatory agencies or common professional practice. Table 3-1 summarizes the environmental issues and associated region of influence described in the Affected Environment sections of the DPEIS.

Table 3-1. Environmental Issues and Region of Influence

Environmental Issue	Region of Influence
Geology and Soils	Reservoir, Surrounding Federal lands and Disposal Areas
Hydrology and Water Resources	John Redmond Reservoir and downriver effects
Biological Resources	Sediment disposal areas, Upriver, John Redmond Reservoir, and downriver effects
Air Quality	John Redmond Reservoir vicinity
Aesthetics	Sediment disposal area, John Redmond Reservoir, and downriver effects
Prime or Unique Farmlands	Reservoir, Surrounding Federal lands and Disposal Areas
Socioeconomic Resources	John Redmond Reservoir and surrounding counties
Cultural Resources	Sediment disposal areas, John Redmond Reservoir and downriver effects
Hazardous, Toxic or Radiological Waste	Sediment disposal areas, John Redmond Reservoir, and downriver effects

Section 3.0 of the DPEIS describes the baseline conditions for each environmental resource against which the potential impacts of the proposed action will be compared. Generally, the baseline used for the analysis of environmental impacts under NEPA reflects the conditions present during the year 2010. The original sediment analysis conducted to determine rates and location of accumulation in John Redmond Reservoir was performed during 1963 and resurveys were completed in 1974, 1983, 1991, 1993, and 2007 (USACE 2013 and KBS 2007).

3.2 Geology and Soils

3.2.1 Geology

John Redmond Reservoir lies among low, rounded hills. The topography is a result of generally westerly to northwesterly dipping strata that create resistant bend and irregular cuesta like ridges (USACE 2013). The Neosho River Valley and most of the John Redmond Reservoir site is composed of Holocene, Post-Kansan alluvium and is bordered by the Pennsylvanian – Virgilian, Wabaunsee Group on the western end and the Shawnee Group on the eastern end of the site. Both the Wabaunsee and Shawnee Groups are sedimentary exposures, which were deposited in shallow seas and swamps approximately 300 million years ago. Some very small exposures of tertiary terrace deposits are present at the western end of the conservation pool of the reservoir, above the northern floodplain boundary of the Neosho River (USACE 2013).

To the west of John Redmond Reservoir in the Flint Hills Region are formations of the Permian Period, deposited approximately 250 million years ago (USACE 2013). A portion of the sediments deposited as Holocene alluvium along the Neosho River within the John Redmond Reservoir project area were eroded from these Permian Formations. The alluvial deposits have been further described as cherty gravel, cobble, and sand

with small amounts of boulders and mud present (USACE 2013). Gravel-sized alluvium was most commonly observed along the Neosho River above and below John Redmond Dam and Lake.

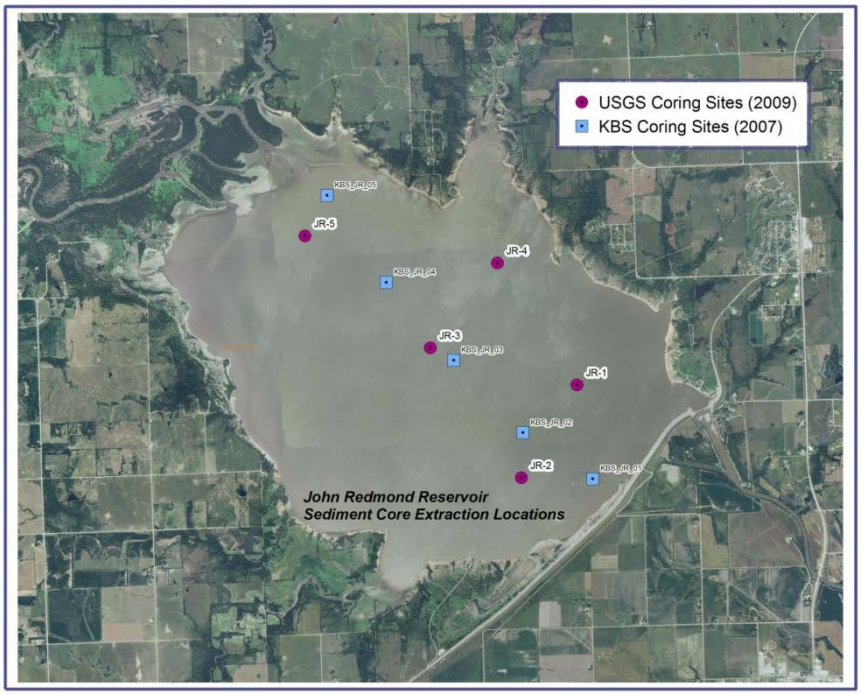
3.2.2 Lake Sediment

Soils formed within the John Redmond Reservoir site and the project area are relatively shallow, silty loam and silty, clay loams that are fertile, but low in organic matter and phosphoric acid. Soils form through the physical and chemical weathering of parent material (USACE 2013), and the characteristics of soil thus formed are determined by the:

- physical and mineral composition of the parent material
- climate under which the soil material has accumulated and existed since accumulation
- plant and animal life on the soil
- relief, or topography
- length of time the soil forces have acted upon the soil material

In the 2007 bathymetric survey conducted by the KBS, five sediment core samples and one replicate sediment core sample from the Neosho River thalweg, now covered by the reservoir, were taken. The top six inches of each core sample was analyzed for particle size. With the exception of site KBS_JR_01 nearest the dam, silts and clays dominate the sediment of John Redmond Reservoir. The exception near the dam was sandier with 5-10 percent of the core being sand. No explanation was provided for this. The thicknesses (lengths) of the six cores taken ranged from three to nine feet.

Figure 3-1. John Redmond Coring Sites.



The USGS also collected five cores from John Redmond Reservoir (Figure 3-1 in 2009). The USGS devoted much of their report to the chemical and nutrient analysis of the cores they pulled from John Redmond Reservoir. The core thicknesses ranged from 5.5 to seven feet and the average bulk density was approximately 39 lbs/ft^3. The sediment quality was compared to EPA non-enforceable sediment quality guidelines for trace elements (mostly metals). Both the probable and threshold effect levels were used for this assessment (threshold values are lower than probable effect levels). The guidelines are shown in Table 3-2.

The chemical analysis of sediment from John Redmond Reservoir showed no issue at the probable effects level, but exceed the threshold values for arsenic, chromium and nickel. At site JR-3, zinc was also higher than the threshold effects guideline. When compared to other eastern Kansas reservoirs in which the USGS has analyzed sediment, the arsenic, chromium and nickel levels at John Redmond are similar to and generally slightly lower than the levels at Perry, Clinton, Fall River and Toronto. The similarity between lakes for arsenic, chromium and nickel indicates the source of those elements is likely natural (from eastern Kansas soils and/or bedrock). No organochlorine compounds (PCBs and DDT) were above the probable effects level and typically were not even detected in the sediment. Particle size analysis of the cores showed silts and clays composed nearly all of the sediment at all the USGS core sites. John Redmond Reservoir has as good or better sediment quality in terms of nutrients, metals and/or organochlorine concentrations than any other eastern Kansas lake the USGS has studied to date (USGS 2010).

Table 3-2. Sediment-quality guidelines for selected trace elements and organochlorine compounds, and associated bioaccumulation index.

Constituent	USEPA (1997)		MacDonald and others (2000)		Bio-accumulation index[1]
	TEL	PEL	TEC	PEC	
Trace elements					
Arsenic	7.24	41.6	9.79	33.0	moderate
Cadmium	.676	4.21	.99	4.98	moderate
Chromium	52.3	160	43.4	111	moderate
Copper	18.7	108	31.6	149	high
Lead	30.2	112	35.8	128	moderate
Nickel	15.9	42.8	22.7	48.6	moderate
Silver	.733	1.77	--	--	moderate
Zinc	124	271	121	459	high
Organochlorine compounds[2]					
Chlordane	2.26	4.79	--	--	--
p,p'-DDD	1.22	7.81	--	--	--
p,p'-DDE	2.07	374	--	--	--
p,p'-DDT	1.19	4.77	--	--	--
Dieldrin	.715	4.3	--	--	--
Gross PCBs	21.6	189	--	--	--

[1]Bioaccumulation index information for trace elements

[2]TEL & PEL values for organochlorine compounds converted from milligrams per kilogram to micrograms per kilogram.

[Values in milligrams per kilogram for trace elements and micrograms per kilogram for organochlorine compounds. Shading represents guidelines to which sediment concentrations were compared in this report. USEPA, U.S. Environmental Protection Agency; TEL, threshold-effects level; PEL, probable-effects level; TEC, threshold-effects concentration; PEC, probable-effects concentration; --, not available; PCBs, polychlorinated biphenyls]

Comparing the samples collected by USGS to the Risk-Based Standards for Kansas, levels of arsenic, chromium and nickel fall well below Tier 2 levels for non-residential scenarios (Table 3-3). The Risk-Based Standards for Kansas Manual is a guidance document which describes the process for establishing chemical-specific and site-specific cleanup goals for soil, ground water, and indoor air that are protective of human health and the environment (KDHE BER 2010). The cleanup values, based on current EPA toxicity values for the contaminants and default exposure factors, represent the concentrations at which the contaminants pose an acceptable human health risk to receptors, including sensitive groups (children or the elderly), over a lifetime. Comparing the chemical analysis results to the Risk-Based Standards for non-residential scenarios is relevant because the areas identified for sediment disposal are in agricultural settings with low home densities.

Table 3-3. Comparison of USGS Chemical Analysis Results from John Redmond with the Risk-Based Standards for Kansas Manual.

Contaminant	Non-Residential Scenario Soil Pathway (mg/kg)	USGS Chemical Analysis Results All Intervals (2010 Analysis), All Samples Median (mg/kg)	USGS Chemical Analysis Results All Intervals (2013 Analysis), Composite Sample (mg/kg)
Arsenic	38	11	6.1
Chromium	111	80	28.6
Nickel	32400	39	20.6
Zinc	61300	120	62.2

In April 2013, USGS collected five additional samples within the preferred dredge location (Figure 2-1) for a composite analysis using both total sediment quality analysis and the Toxicity Characteristic Leaching Procedure (TCLP). Results from the analysis are included in Appendix F. TCLP is a soil extraction method for chemical analysis employed as an analytical method to similar leaching through soils and is used to characterize if a waste is characteristically hazardous. Analytical results for the total sediment quality analysis of the composite sample were below the results for the 2009 samples. All parameters evaluated in the TCLP analysis were non-detectable.

3.2.3 Surface Soils

A slurry pipeline will connect the dredging activity in the reservoir with each of the sediment disposal locations. The soils along the slurry pipeline route include Dennis silt loam (1 to 3 percent slopes), Kenoma silt loam (1 to 3 percent slopes), Eram silt loam (1 to 3 percent slopes), Eram silt loam (3 to 7 percent), Kenoma - Olpe complex (3 to 15 percent slopes) and Verdigris silt loam, occasionally flooded.

The soils mapped at CDF Site A are Eram silt loam (1 to 3 percent slopes) and Kenoma silt loam (1 to 3 percent slopes). The Eram series consists of moderately deep, moderately well drained soils that formed from the shale interbedded with thin layers of sandstone of Pennsylvanian age. The Kenoma series consists of deep, moderately well drained, very slowly permeable soils that formed in old alluvial sediments. These soils are on uplands and terraces. The soils mapped at CDF Site B are Verdigris silt loam, occasionally flooded; Osage silty clay loam, occasionally flooded; and Osage silty clay, occasionally flooded. The Verdigris series consists of very deep well drained soils that formed in silty alluvium on floodplains. According to the National Cooperative Soil Survey, most of the Verdigris soils are cultivated as is the condition at CDF Site B. The Osage series consists of very deep, poorly drained, very slowly permeable soils that formed in thick clayey alluvium. These soils are on floodplains along major streams. As with the Verdigris series, Osage series soils are cropped to wheat, soybeans and corn. The soils mapped at CDF Site B are classified as hydric, however, both the soils and slope have been modified to allow for productive row crop agriculture and do not currently support the hydrology or vegetation necessary to be classified as wetlands. A wetland delineation and jurisdictional determination will be conducted on CDF Site B by USACE Regulatory Personnel.

No geotechnical analysis has been conducted to date at the proposed CDF sites; however, prior to final design of the CDFs, split spoon samples will be taken and sieve analysis performed along with visual classification to assess unconfined compressive strength, Atterburg limits and other soil features needed to complete the final CDF design. All materials required for berm construction for the CDFs will be collected on-site from within the containment area and will not be transported off site.

3.3 Hydrology and Water Resources

3.3.1 Introduction

The Neosho River is one of the many alluvial rivers draining the semiarid western United States. Approximately 200 tributary streams and creeks deliver water to the Neosho River as it traverses the Neosho Basin in Kansas (USACE 2013). From its source in the Flint Hills region of east-central Kansas, the Neosho River flows southeasterly for 314 miles to the Kansas border with Oklahoma and drains about 5,973 square miles. Approximately 34 miles south of the border, the Neosho and Spring Rivers join at Grand Lake O' the Cherokees, then flows as the Grand River an additional 130 miles to the confluence with the Arkansas River (Figure 1-1).

Annual precipitation across the Neosho Basin ranges from approximately 30 inches in the northwestern portion (Flint Hills) to approximately 43 inches in the southeastern portion (Miami, OK). The average annual precipitation in the region above John Redmond Dam is approximately 32.5 inches per year. A majority, 71.4 percent of the precipitation falls from April through September, including the major storms of record (USACE 2013). Major storm duration averages are approximately six days in the vicinity of John Redmond Dam.

Prior to 1964, the Neosho River flooded 57 times over a period of 34 years, which prompted many public requests to the USACE for flood protection. The largest of the floods occurred in 1951 and had physical effects on the Neosho River channel that remain observable today. The result of petitions for flood protection was the planning of four dams and the design and construction of three dams, e.g., Marion (Cottonwood River) and Council Grove and John Redmond (Neosho River) (Figure 1-1). The Cottonwood River is a major tributary to the Neosho River and the fourth dam, at Cedar Point, was authorized on the Cottonwood River but never constructed. The project is a part of the authorized seven-reservoir system in the Neosho and Grand Rivers Basin in Kansas and Oklahoma. The associated dam projects in Oklahoma include Pensacola (Grand Lake O' the Cherokees), Fort Gibson and Markham Ferry (USACE 2013).

Marion Lake has a total storage capacity of 145,500 acre-feet; 59,900 acre-feet and is available for storage of floodwater from approximately a 200-square mile drainage basin. Council Grove Lake has a total storage capacity of 114,300 acre-feet; 76,000 acre-feet is available for storage of floodwater from an approximate 246 square mile drainage basin. John Redmond Reservoir has a total storage capacity of 807,941 acre-feet; 574,918 acre-feet are available for storage of floodwater from an approximate 3,015-square mile drainage basin, with 2,569-square miles uncontrolled below the Marion and Council Grove dams. Downriver from John Redmond Dam to the Kansas border are 2,958-square miles of uncontrolled drainage, with additional uncontrolled drainage from the border to Pensacola Reservoir (Grand Lake O' the Cherokees). All of the lakes provide flood control, maintenance of downstream water quality, water supply storage, recreation, and fish and wildlife habitat.

John Redmond Dam and Reservoir is the integral component of the upper Neosho River system, lying approximately 180 miles downriver from its source, and located at river mile 343.7. This site is approximately three miles northwest of Burlington, KS. The dam structure is 20,740 feet long with an average height above the Neosho Valley floor of 60 feet. The lake at the top of the conservation pool is approximately three miles wide at its maximum width. It then extends northwesterly, upriver from the dam, approximately 11 miles for the entire length of the flood control pool.

Water management systems, of which storage and flood control reservoirs form an important part, greatly change the natural flow regime of rivers as well as the properties of the water. The extent of these changes is determined by: 1) the relative size and function of a reservoir, 2) the hydrologic regime of the inflows, 3) the release condition, 4) the geomorphological condition of the reservoir, and 5) the quality of the inflow water.

3.3.2 Precipitation Data Collection and Monitoring

As part of the effort to operate John Redmond Dam, the USACE maintains a system of data collection (hydrometeorological stations) and reliable communications networks with the USGS and the National Weather Service (NWS). The important river gaging stations on the Cottonwood and Neosho Rivers are equipped with automated gages with Data Collection Platforms (DCP) (USACE 2013). Data recorded at the DCPs are transmitted to the Hydrology-Hydraulics branch computer through a system of satellites and downlinks. River gages are a source of data used to forecast inflows into John Redmond Reservoir and are located near Florence and Plymouth, KS on the Cottonwood River and near Dunlap and Americus, KS on the Neosho River. River gages used to regulate flows downriver from the dam are located near Burlington, Iola, Chanute and Parsons, KS as well as and Commerce, OK. All of the automated river gages are maintained by the USGS, who periodically record stream flow measurements to develop accurate rating curves.

In accordance with the primary objectives of John Redmond Dam, flood releases are made with the predicted inflow volume, the predicted runoff from the uncontrolled basin drainage area downriver and the downriver regulating stage/flow restraints at the gaging stations seen in Table 3-4. Automated precipitation gages, are located at the entire automated river gaging stations along the Cottonwood and Neosho Rivers (USACE 2013). In addition, automated precipitation stations are located above John Redmond Reservoir near Durham, Diamond Springs, Cassoday, Matfield Green, Cottonwood Falls and Neosho Rapids; they are also located on the dams at Marion, Council Grove and John Redmond.

Table 3-4. Regulating Stages and Discharges (Source USACE 2013)

Station	River	Regulating Reservoir	Regulating State (ft)	Discharge (cfs)
Burlington	Neosho	John Redmond	23	14,000
Iola	Neosho	John Redmond	19	18,000
Chanute	Neosho	John Redmond	22	18,000
Parsons	Neosho	John Redmond	19	17,000
Commerce	Neosho	John Redmond	15	22,000

The NWS maintains a network of local rainfall observers throughout the Neosho River Basin, who report on a daily basis as well as weather stations at the Marion, Council Grove and John Redmond project offices monitor precipitation, evaporation, wind speed and direction and temperature (USACE 2013). The local reports are entered into the Automated Field Observing Station (AFOS) computer network by the NWS. John Redmond Reservoir pool elevations are monitored by an automated gage and a recording chart located on the dam structure.

The AFOS data (precipitation, river and pool gage readings) are available for direct access by the USACE District Office, Hydrology-Hydraulics Branch via the Data Output Message Satellite (DOMSAT) downlink. Reporting criteria for pertinent precipitation and river gaging stations are used to place these data into the District Office database (USACE 2013). Site-specific data from John Redmond Reservoir (precipitation, evaporation, wind speed and direction, and sky conditions) are collected, recorded and reported to the District Office daily.

3.3.3 Surface Water

The average yearly runoff or inflow into John Redmond Reservoir is 1,082,000 acre-feet, calculated from the period of record from 1922-2012, which includes 42 years of pre-operation data and 48 years of post-operation data. The upriver dams at Marion and Council Grove regulate slightly less than 15 percent of the total inflow into John Redmond Reservoir.

John Redmond Reservoir is a relatively shallow body averaging 5.5 feet in depth with a relatively short hydraulic residence time (0.5 months) (KBS 2010). Those conditions are likely the reason the reservoir has never been reported to thermally stratify during summer (KBS 2000, ESU 1966). The lake is light limited rather than exhibiting a phosphorous or nitrogen limit to algae growth (KDHE 2000).

Prior to 1964, the Neosho River flooded 57 times and subsequent flooding has occurred to the present year. Upriver from John Redmond Reservoir are the gaging stations along the Cottonwood River, the Neosho River at Council Grove Reservoir, and the Neosho River at Americus, KS. Downriver gaging stations are located on the Neosho River at Burlington, Iola, and Parsons, KS as well as Commerce, OK.

John Redmond Reservoir water elevation level is maintained based on the entire reservoir system needs, the immediate upriver and downriver conditions and the effort to manage the water level for all entities at the reservoir.

Surface Water Quality

The state of Kansas established a stream chemistry monitoring program that currently operates 320 monitoring sites spanning all the major river basins and physiographic regions of Kansas. About 165 core sites are sampled on a bimonthly basis every year, whereas the remaining 155 sites are monitored using a four-year rotational approach (KDHE 2013). Placement of many sampling stations on smaller order streams in 1990 facilitated a more thorough analysis of rural and agricultural effects to surface water quality.

The USGS also monitors water quality in real-time. Real-time computed concentrations of water-quality constituents such as suspended sediment, total nitrogen and total phosphorus are calculated using ordinary least squares regression models. The results of these models, along with direct water-quality measurements, can be viewed as time series graphs, or downloaded as tabular data. Ordinary least squares regression models on this site use conventional sensor measurements (for example, discharge, temperature, pH, specific conductance, turbidity and dissolved oxygen) to compute concentrations and loads of other water-quality constituents in real time. This makes it possible to compute instantaneous values of many constituents in real time for public safety without the lengthy time delay of collecting a sample and waiting for a sample analysis at a laboratory. In the Cottonwood-Neosho River basin five sites are monitored (USGS 2013).

Water quality measurements obtained in the Neosho River above John Redmond Reservoir and below the dam found that water temperature was cooler by approximately 3C above the dam than below. Turbidity was also higher above the dam than downriver of the dam, but the pH was nearly the same. Dissolved oxygen increased downriver of the dam; however, conductivity, alkalinity and hardness were all higher above the dam structure. In addition, species of catfish were more common above John Redmond Reservoir than below the dam (USACE 2013).

USGS has collected baseline real-time turbidity information below John Redmond Reservoir dam on the Neosho River at Burlington, Kansas from February 2007 – April 2011 (USGS 2011a). Statistically discernible differences from the magnitude, frequency and duration of the baseline turbidity concentrations can be monitored during the dredge operation. Above John Redmond Reservoir, USGS has collected baseline real-time turbidity data at three gage locations from August 2009 through present (USGS 2011b, USGS 2011c, and USGS 2011d). Statistically discernible differences from the magnitude, frequency and duration of the baseline turbidity concentrations entering John Redmond Reservoir can be monitored during the dredge operation.

John Redmond Reservoir traps over 90 percent of the suspended sediment transported in inflows. The sediment load discharged from John Redmond Reservoir is primarily related to the magnitude of release flows. The

suspended sediment concentrations vary relatively little in releases, as compared to inflows (USGS 2008) and observed turbidity ranges immediately downstream are similar to those collected in the water column of John Redmond Reservoir (KDHE 2000). Higher releases generally have higher sediment loads and higher releases are associated with larger flood pool storage evacuations.

In 2013, USGS, under a cooperative agreement with KWO, will install and operate water quality monitors and collect sediment samples on the Neosho River at Burlington, Iola, and Parsons. Data from the monitors and samples will be baseline sediment data on the Neosho River below John Redmond to compare with changes to water quality that may result from dredging or other sediment management practices.

The Kansas Department of Health and Environment (KDHE) has classified segments of the Cottonwood and Neosho Rivers as follows:

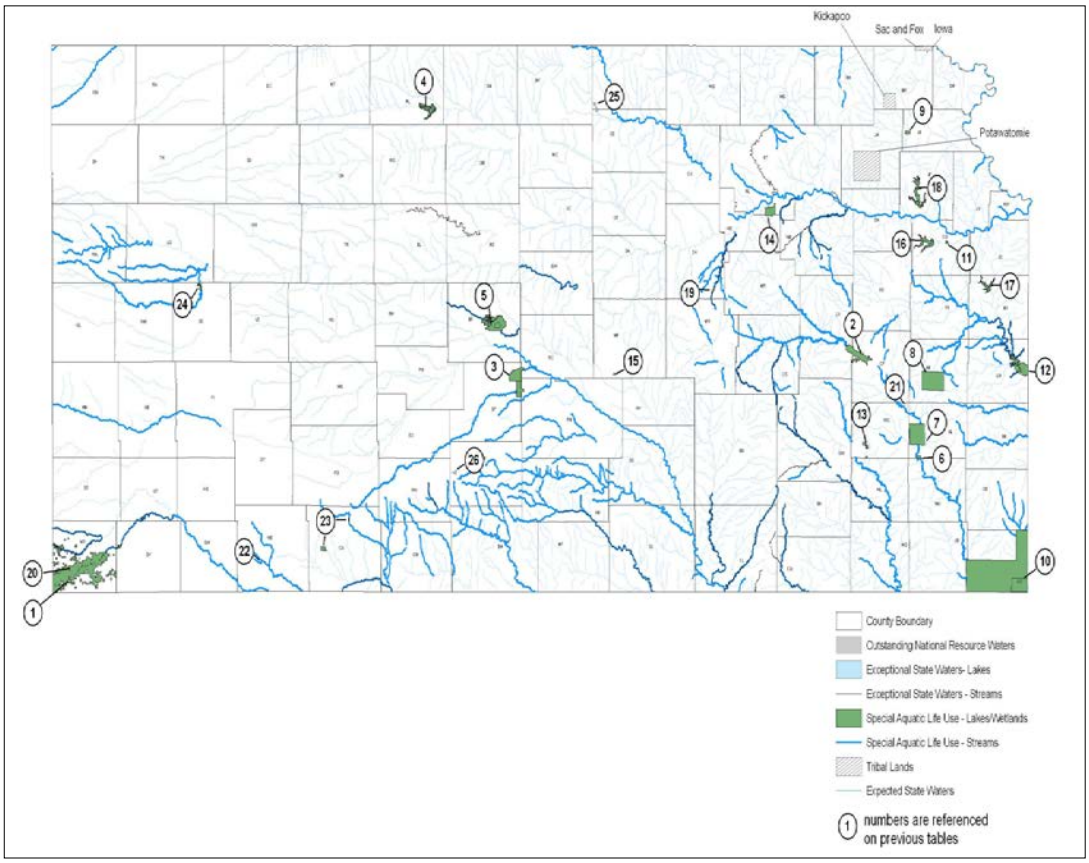
Outstanding National Resource Water, K.A.R 28-16-28b (pp), "means any of the surface waters or surface water segments of extraordinary recreational or ecological significance identified in the surface water register, as defined K.A.R. 28-16-28b (zz), and afforded the highest level of water quality protection under the anti-degradation provisions of K.A.R. 28-16-28c(a) and the mixing zone provisions of K.A.R. 28-16-28c(b)."

> K.A.R. 28-16-28c(a)B(3) -"Wherever state surface waters constitute outstanding national resource waters existing water quality shall be maintained and protected. New or expanded discharges shall not be allowed into outstanding national resource waters."
>
> Exceptional state waters, K.A.R. 28-16-28b(y), "means any of the surface waters or surface water segments that are of remarkable quality or of significant recreational or ecological value, are listed in the surface water register as defined in K.A.R. 28-16-28b(zz), and afforded the highest level of water quality protection under the antidegradation provisions of K.A.R. 28-16-28c(a) and the mixing zone provisions of K.A.R. 28-16-28c(b)."
>
> K.A.R. 28-16-28c(a)B(2)-"Wherever state surface waters constitute exceptional state waters, discharges shall be allowed only if existing uses and existing water quality are maintained and protected."
>
> Special Aquatic Life Use, K.A.R. 28-16-28d (b)(2)(A), "means surface waters that contain combinations of habitat types and indigenous biota not found commonly in the state, or surface waters that contain representative populations of threatened or endangered species."

Table 3-5. Exceptional State Waters, Special Aquatic Life Use Waters and Outstanding National Resource Waters by County.

County	Exceptional State Waters	Special Aquatic Life Use Waters	Outstanding National Resource Waters
Allen		Neosho River	
Chase	Cottonwood River	Cottonwood River	
Cherokee	Neosho River	Neosho River	
Coffey		Neosho River	Flint Hills National Wildlife Refuge
Labette	Neosho River		
Lyon		Cottonwood River & Neosho River	Flint Hills National Wildlife Refuge
Neosho		Neosho River	

Figure 3-2. Exceptional State Waters, Special Aquatic Life Use Waters and Outstanding National Resource Waters.

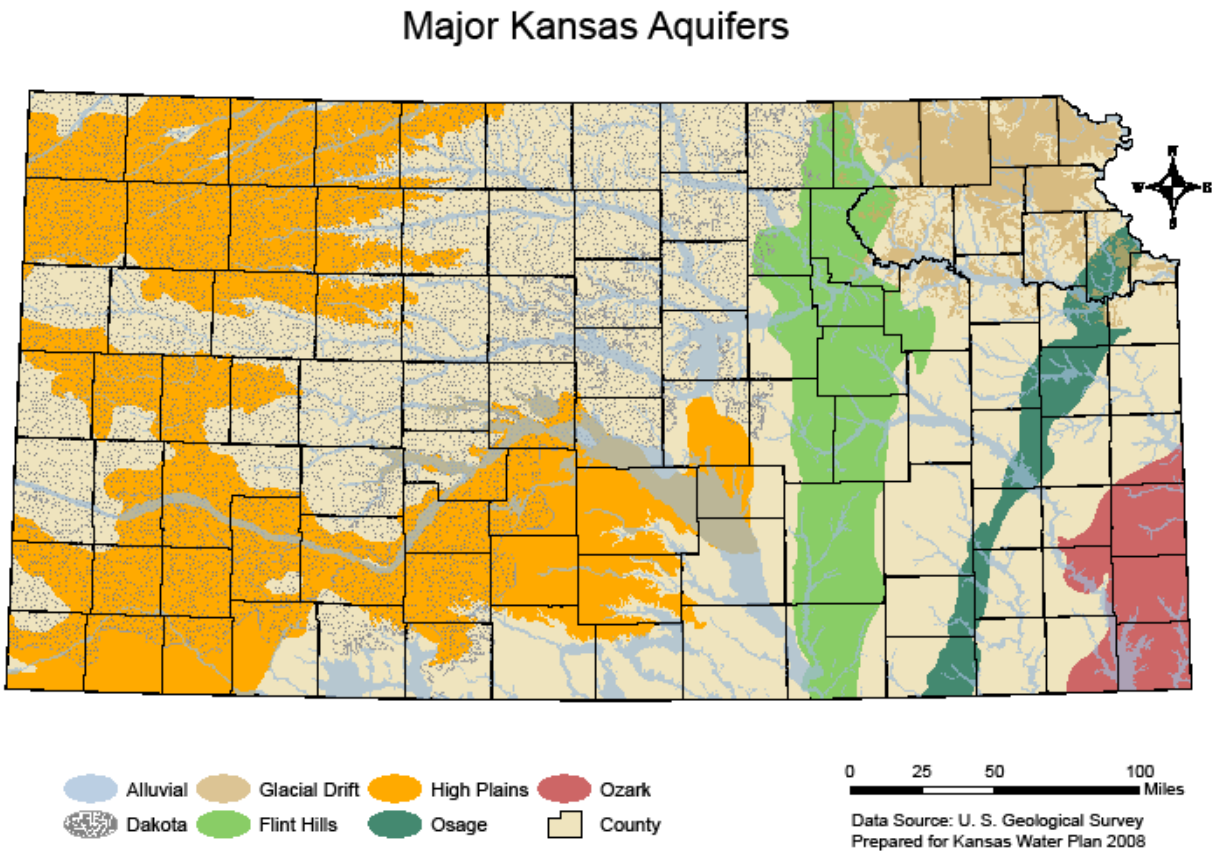


Water quality concerns have been documented for most of the surface water entering John Redmond Reservoir, including contaminants (USACE 2013). Consumption advisories are issued most years for the Neosho River due to chlordane compound concentrations in fish. During the 1970s, several fish kills were related to runoff from confined livestock feedlots. Investigations by the USFWS, Kansas Field Office, identified PCB, atrazine, and heavy metals, including lead, mercury and arsenic in biota samples, along with lead in sediment samples (USACE 2013).

3.3.4 Ground Water

Ground water is a minimal resource along the Neosho River. One reason is the abundance of surface water and another is because the alluvium is shallow and lies on shale and limestone bedrock, which are not good aquifer materials (Figure 3-3). Floodplain alluvium near John Redmond Reservoir averages approximately 26 feet in thickness and the water table is typically 10–15 feet below the land surface (USACE 2013). Although a few wells have been drilled in the northwest area, most ground water use in the Neosho Basin occurs in Crawford and Cherokee counties, east of the Neosho River (Figure 3-3) where the western extremity of the Ozark aquifer protrudes out in the state.

Figure 3-3. Map of Major Aquifers



Ground Water Quality

The state of Kansas established a cooperative ground water monitoring program between the USGS and the KDHE in 1976. The program objectives are to provide reliable information on ground water quality for use in the identification of temporal and spatial trends in aquifer chemistry associated with: 1) alterations in land-use patterns 2) advances in land treatment methods and other resource management practices 3) changes in ground water availability or withdrawal rates 4) variations in regional climatic conditions.

Initially the USGS performed sample collection and data interpretation, while sample analyses were performed by KDHE. In 1990, KDHE assumed all operational and managerial aspects of the Kansas ground water quality monitoring program. The basic sampling network was left intact, but several improvements were made, as follows:

- Legal descriptions were reviewed for all network sites
- Wells were tagged with a unique site identification number
- The Kansas Water Database (electronic repository for ground water quality data) was updated to reflect changes and corrections to the list of monitoring well locations

Sampling frequency previously reflected a two year rotational sampling schedule in which half of the network was sampled each year. The sampling network is no longer actively sampled due to budget and staff reductions.

3.3.5 Water Rights

Within the John Redmond Reservoir flood pool, above John Redmond Dam, the USFWS holds rights to 4,574 acre-feet of water under Approved Certificates of Appropriation (USACE 2013). These rights are of two types, e.g., natural flow diversion (3,102 acre-feet) and pumping (1,472 acre-feet) for recreational purposes, which include fish and wildlife. These water rights are used to provide water to constructed and naturally-occurring wetlands within the refuge. Water rights for natural flows in the Neosho River, downriver from John Redmond Dam, are issued by the Division of Water Resources, Kansas Department of Agriculture.

The breakdown of reported water used per beneficial use is shown in Figure 3-4. Industrial use is the highest quantity of water use reported in the basin. This is due largely to the water released from John Redmond and pumped from the Neosho River by WCGS into their cooling lake. Municipal use is the second highest use reported in the basin, used to satisfy the water rights of the 16 municipalities that pump surface water and the remaining 21 that use ground water, with one entity relying on both, but does not include those pumping water from the Spring River or the Ozark aquifer. The recreational use captures mainly the water pumped to fill duck marshes in the fall near St. Paul, including the Neosho Wildlife Area owned and operated by KDWP&T. The remaining use is scattered throughout the basin and represents producers operating farming operations.

Figure 3-4. 2011 Reported Water Use (excludes Spring River and Ozark aquifer use)

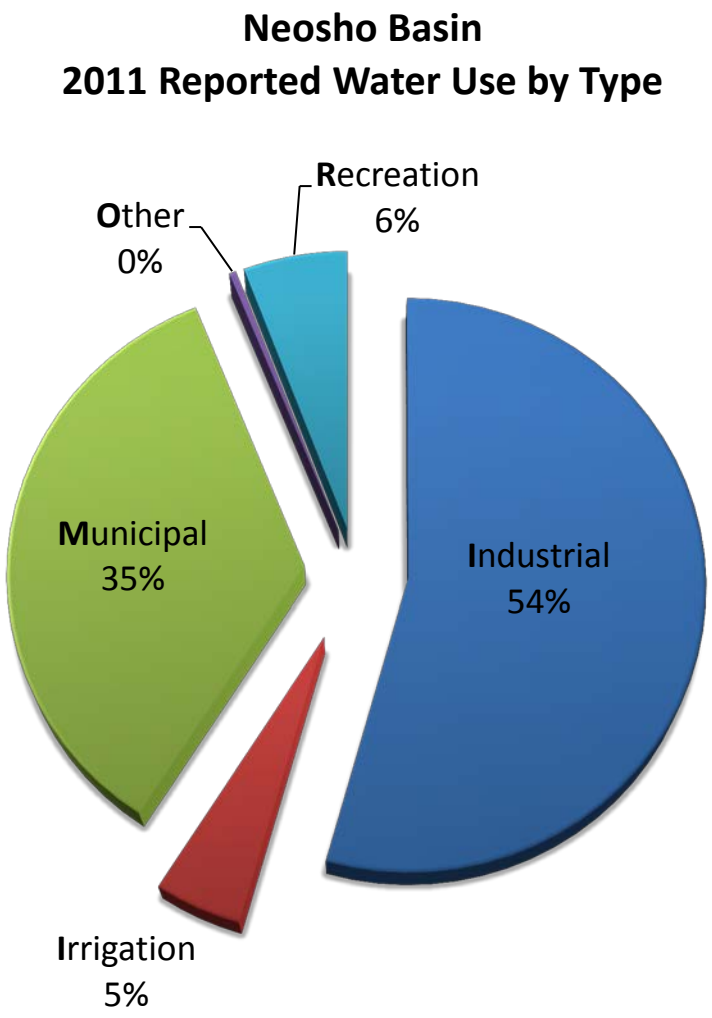
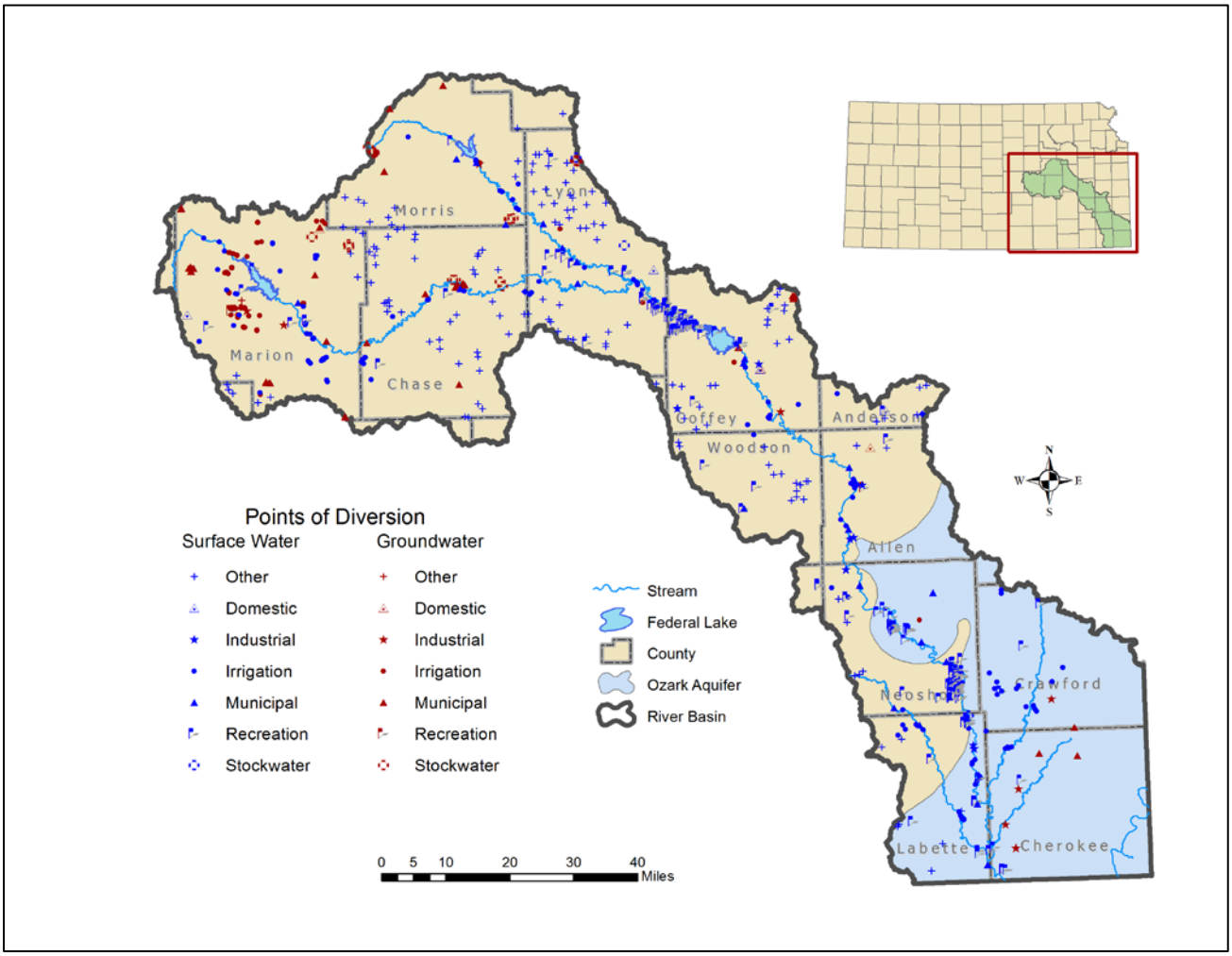


Figure 3-5 illustrates the distribution of water rights and their associated use throughout the basin. The map shows authorized water rights, not just reported use as shown in Figure 3-4. The largest number of water rights in the basin have a surface water source, as there is little alluvium in the basin to provide adequate water at sufficient rates. Of the authorized water rights, the foremost beneficial use in the basin is municipal use, for quantity authorized. However, there are more irrigation water rights, with recreation following third in number of rights behind municipal use. The municipal and industrial water rights below John Redmond Reservoir greatly depend on water stored and released for them in dry times to satisfy either their Water Marketing Contracts or Water Assurance District Contracts.

Figure 3-5. Water Right Distribution.



The state of Kansas has established a Water Marketing Program (WMP) to contract with water supply customers. Several significant events converged during the 1950s leading to the creation of the WMP:

- Floods of 1951, followed by the 1952–1957 drought
- Creation of the Kansas Water Resources Board (KWRB now KWO) (1955), with responsibility for water resources planning, water policy development and coordination of water-related activities at all levels of government
- Federal Water Supply Act (1958) passage with provisions allowing non- federal entities to add water supply storage space to planned flood control structures

- Kansas voter approval (1958) of a constitutional amendment allowing Kansas to financially participate in the development of flood control works or works for the conservation or development of the state's water resources

Under the KWRB, the 1961 Kansas legislature passed a House Concurrent Resolution (H.C.R. 5) allowing the state to provide assurances to the federal government for repayment of costs for add-on water supply storage in Council Grove (18,200 acre-feet), Marion (31,930 acre-feet) and John Redmond Reservoir (27,450 acre-feet), among others. The estimated yield capability of this storage space during periods of prolonged drought for these three reservoirs is 29.66 million gallons per day (mgd), with 19.9 mgd assigned to John Redmond Reservoir.

The quantity of water obligated to purchasers is based upon an estimate of the quantity of water that can be expected to be withdrawn from storage with a two percent chance of shortage during a drought, having a statistical chance of occurrence once every 50 years. A yield analysis was conducted on John Redmond Reservoir and the recalculation results were as follows:

- Sediment deposition differs significantly from that expected during project design
- Flood control pool has excess capacity and the conservation pool has diminished capacity
- The diminished storage capacity of the conservation pool can be recovered – a lower yield results until corrective measures are taken
- The two percent chance yield has been recalculated to be 19.9 mgd (formerly calculated to be 26.5 mgd) for the original water supply pool purchased from the USACE to serve the WMP
- The portion of the water supply pool purchased in 1985 (Memorandum of Understanding [MOU] with the USACE) was calculated to yield 7.3 mgd
- The USACE has been directed by Congress to conduct a study to determine the feasibility of a pool raise to restore storage lost to sedimentation

To date, withdrawals for water supply storage have not had a major effect on the operation of John Redmond Reservoir (USACE 2013). All of the water supply storage is contracted by the state of Kansas, and the WCGS has contracted from the state all of the water in the storage to use for cooling and other uses. The state has also formed water assurance districts with downriver communities in anticipation of purchasing additional water supply storage in the reservoir to release for downriver water supply during drought periods.

Westar Energy holds the only Water Marketing Contract supplied by John Redmond Reservoir through KWO to support operation of WCGS (53,916 acre-feet); the remainder of water rights holders are members of the CNRWAD (3,500 acre-feet).

Water Assurance Districts were formed under the Water Assurance Program Act of 1986 (K.S.A. 82A. 82a-1330 *et seq*.), which gives the KWO authority to enter into contracts with the federal government for storage space to be used for water assurance. It was under this act that the CNRWAD was formed. Ten thousand acre-feet of water were purchased under this act, 3,500 acre-feet were from John Redmond Reservoir.

3.4 Biological Resources

Biological resources include the vegetation, wetland, wildlife, fisheries and aquatic resources, and the endangered, threatened and candidate species present in the vicinity of John Redmond Reservoir. In addition, a national wildlife refuge and a Kansas wildlife management area are present within John Redmond Reservoir project lands and are summarized under this report section.

Several biological surveys have been completed at John Redmond Reservoir and in the project region. A countywide plant species list and description of plant communities was prepared for FHNWR during 1999 and published in 2000. Additionally, lists of avifauna, mammals, and herpetiles have been prepared by the refuge or by the Kansas Natural Heritage Inventory (KNHI) and were published for FHNWR during 2000. Waterfowl and raptor census data are taken at John Redmond Reservoir annually/bimonthly between the months of October and March by the KDWP&T. Fishery data for the Neosho madtom and other catfish were collected during the late 1990s for the Neosho River upstream and downstream of the dam and reservoir during a number of years and published during 2000. Similarly, data for freshwater mussels was collected during the mid-1990s for the Neosho River upstream and downstream of the dam and reservoir and published during 1997 (USACE 2013).

3.4.1 Vegetation Resources

Plant species have been inventoried for Coffey and Lyon Counties, and number 776 (USACE 2013). Many of these species grow in the variety of vegetation types that also serve as wildlife habitat within the John Redmond Reservoir project area, including woodland, shrubland and herbaceous terrestrial and aquatic plant communities. The terrestrial herbaceous communities are comprised of native and introduced grasslands in addition to agricultural crops and fallow cropland that supports weedy annual forbs and grasses. Forested, shrub scrub, and emergent wetland and aquatic plant communities are discussed in Section 3.4.2.

The John Redmond Reservoir project area lies within the Prairie Division–Forest-steppes and prairies ecoregion province (formerly the Prairie Parkland Province) Osage Plains section (USACE 2013). The lowest elevations support riparian woodlands along the Neosho River and its tributaries as well as the John Redmond Reservoir shoreline, upland woodlands on adjacent slopes and hills, and tall and mid-grasses on open sites of the higher elevations. Shrubs are invading some grasslands where land management practices are not sufficient to prevent their establishment. These sites will eventually support predominantly shrub and woodland species, unless stewardship practices such as hand grubbing, mowing, controlled burning, or herbicide application are employed.

Woodlands

Riparian woodlands are characterized as a bottomland hardwood type (Elm-Ash-Cottonwood Woodland). These stands are dominated by American elm, green ash, eastern cottonwood, black willow, black walnut, sycamore, silver maple, burr oak, boxelder, and hackberry. They are lowland sites, typically have heavy soils with poor surface drainage and are located along the Neosho River (both up and downstream of the dam and reservoir), on the shoreline of John Redmond Reservoir, and along Otter, Buffalo, Jacobs, Eagle, Plum, Troublesome, Lebo, Benedict, Kennedy and Hickory Creeks.

Downriver from John Redmond Dam, most of the floodplain vegetation that has become established along the Neosho River and its major tributaries can be described as the riparian woodland type. When observed during a site field visit and on black-and-white aerial photography of the countywide soil surveys USACE 2013, it is a closed-canopy forest type extending the length of the Neosho River. The type occupies islands and point bars and first and second terraces along the river. Islands, point bars, and first terraces are dominated by eastern cottonwood, silver maple, boxelder, and black willow, while slightly higher elevation second terraces support eastern cottonwood, green ash, American elm, black walnut, hackberry and burr oak. It is common to observe seedlings and saplings of these trees in the forest understory, in addition to the eastern red cedar.

Shrublands

Downriver of the John Redmond Dam, shrublands occupy recently scoured islands, point bars and riverbanks. On these sites, which are disturbed during flood events, sandbar willow, rough dogwood, and buttonbush invade

rapidly and form stands of shrubs up to 15 feet tall. On some sites, silver maple, eastern cottonwood and black willow seedlings make up a significant portion of the shrub canopy cover. As the shrubs mature, the stands are gradually replaced by black willow, silver maple and eastern cottonwood trees (USACE 2013).

Grasslands

Only small patches of grassland were observed along the Neosho River downriver of John Redmond Dam. These occurred on steep, southerly exposed banks and in canopy breaks, where disturbances for road and power line maintenance activities had occurred. Some pasture grasses had been planted to support grazing livestock on a few sites above the primary floodplain.

Agricultural Land

Downriver from John Redmond Dam, agricultural fields occupy the upland along nearly the entire 190 mile corridor. One parcel identified for sediment disposal is currently leased by the federal government for agricultural production. For much of the corridor, riparian forests form a narrow to broad belt along the river, intercepting runoff from adjacent agricultural land, but at a few sites fields are farmed to nearly the river's edge.

Exotic Plant Species

Several exotic plant species are present in the project area; two targeted for control and occurring within John Redmond Reservoir lands are Johnson grass and Sericea lespedeza. State and county law mandates control of exotic plant species. Typically, control efforts incorporate mowing and farming, although biological controls are being investigated. Pesticide and herbicide use are restricted in the Neosho River floodplain within the refuge and an integrated pest management approach is taken, using farm management practices, prescribed burning and chemical application where appropriate (USACE 2013).

Vegetation on Federal Disposal Sites

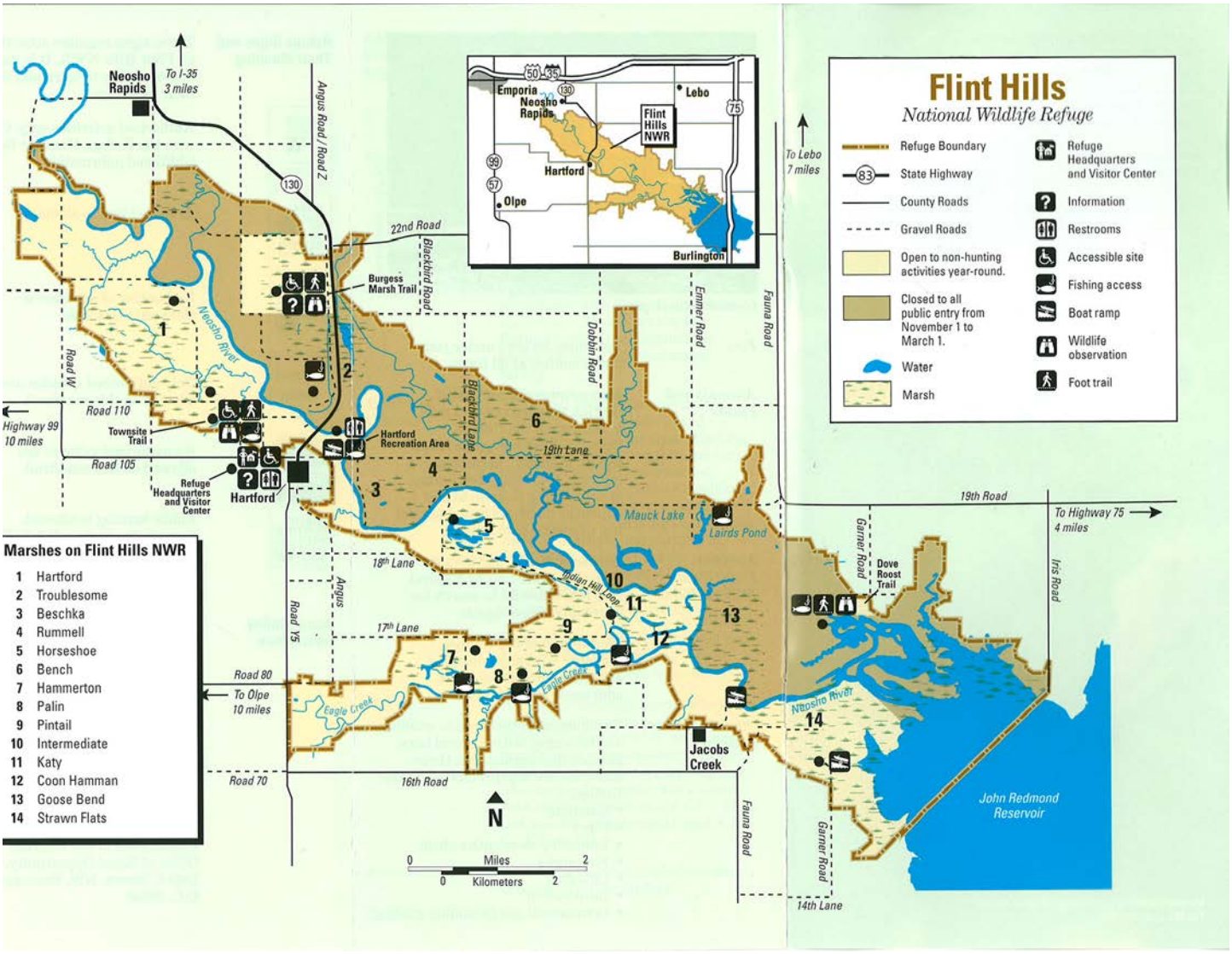
One property identified on federal property for sediment disposal, CDF Site B, is currently out-leased for agricultural production. The parcel is planted and maintained for row crops. Approximately 85% (31 acres) of CDF Site B is farm ground and 15% (5.5 acres) is mixed native grasses and forbs. A second federally-owned parcel identified for sediment disposal, CDF Site C, has been excavated and contoured for fish rearing habitat. Vegetation on this parcel is a mix of grasses, forbs and shrubs. The third sediment disposal site on federal property, CDF Site A, is a mix of grasses and Eastern Red Cedar. Approximately 35% (13 acres) of CDF Site A is mixed timbers with a variety of species, 60% (22 acres) is grasses, and 5% (2 acres) is terraces. Grasses on site are dominated by Old World bluestem, an undesirable and invasive grass species in Kansas. Grasses on site also include brome. Typical species associated with the habitat provided by both CDF Sites A and B include, but are not limited to white tailed deer, squirrel, rabbit, bob-white quail, turtle dove, variety of song birds, Bald Eagle, bobcat, beaver, opossum, red fox, raccoon, skunk, and coyote.

3.4.2 Wetland Resources

Wetlands of John Redmond Reservoir consist of natural wetlands (approximately 123 acres) that have become established upriver from the reservoir in abandoned oxbows of the Neosho River and deeper floodplain depressions (that are now known as lakes). Wetlands also persist along the shoreline of the reservoir and at the base of John Redmond Dam, where shallow water supports emergent and aquatic types, which have been introduced into FHNWR (USACE 2013).

Approximately 1,934 acres of wetland units have been created on the FHNWR using a dike and levee system and pumping or natural flow diversion water rights that equal 4,574 acre-feet. Two wetland units, Strawn and Goose Bend #4, lie in relatively close proximity to the upper shores of John Redmond Reservoir. The hydrology supporting wetlands within John Redmond Reservoir and along the Neosho River is predominantly surface water that inundates sites during high water periods or is pumped into constructed, shallow impoundments (USACE 2013). Figure 3-6 illustrates the location of the Strawn and Goose Bend #4 wetland units as well as the other wetland units at FHNWR.

Figure 3-6. Marshes on the Flint Hills National Wildlife Refuge



Natural wetland communities support species of sedge, flatsedge, spike-rush, bulrush, rush, and grasses such as prairie cordgrass, switchgrass, and rice cutgrass (USACE 2013). An aquatic component is typically present in wetlands of the John Redmond Reservoir project area and includes swamp smartweed, pondweed species, duckweed, bladderwort, arrowhead, water plantain and hornwort. A fringe of willow and buttonbush shrubs is typically present on upper wetland margins.

Wetlands established in the wetland units and in shallow coves of the reservoir are dominated by swamp smartweed, in addition to other smartweed species, bulrush, cattail, spike-rush and sedge. Some stands of seedling silver maple, eastern cottonwood and black willow were also present. On the reservoir drawdown

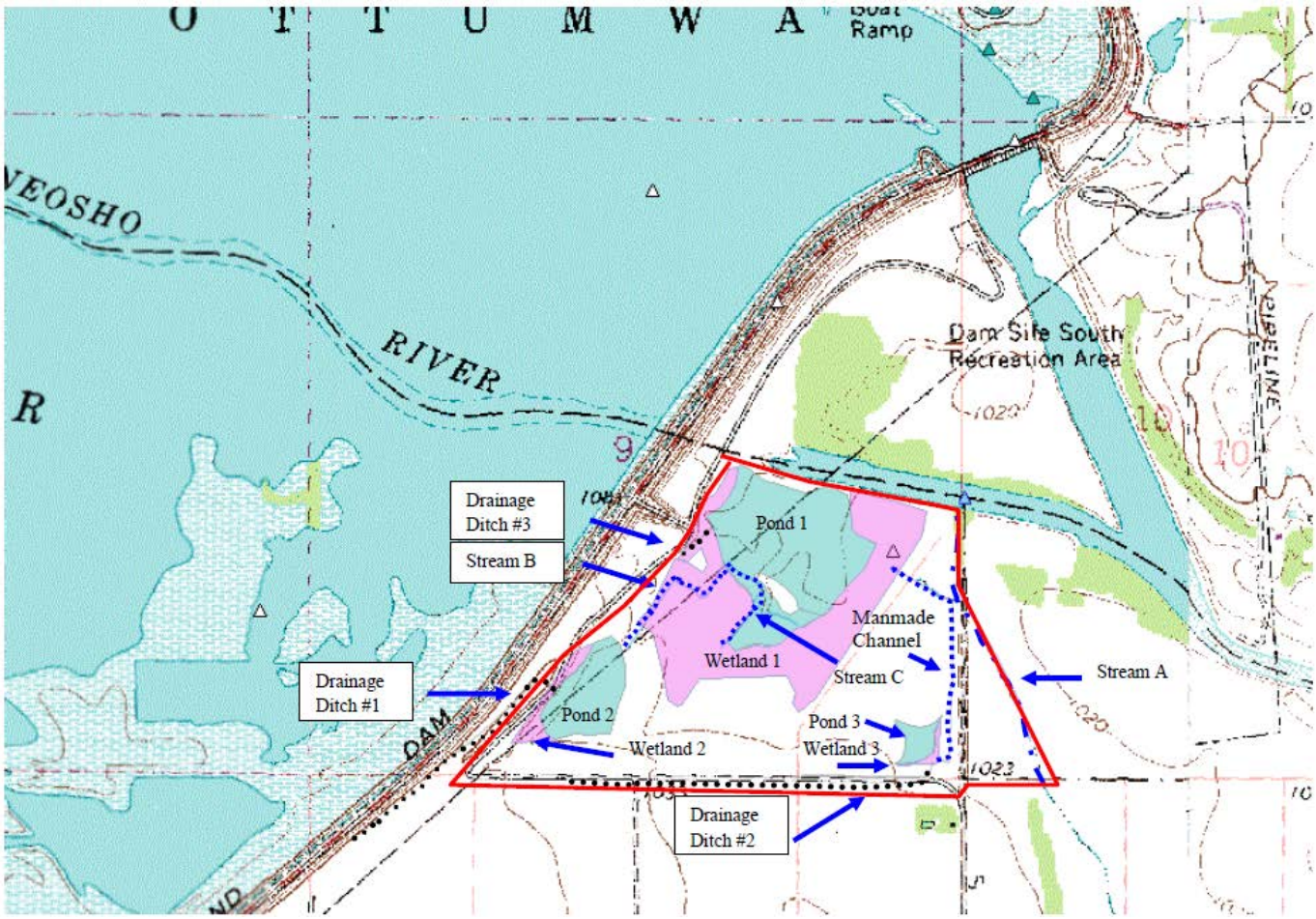
zones, weedy annuals such as cocklebur, foxtail grass and barnyard grass are common species. Reservoir drawdown zones are sometimes aerially seeded with millet to provide waterfowl and fisheries forage (USACE 2013).

As compensatory mitigation for the reallocation and 2-foot pool raise at John Redmond Reservoir, from 1039 to 1041, the state of Kansas replaced 243 acres of wetlands, along with 166 acres of riparian forest, and some wetland infrastructure.

Downriver from the dam, wetlands on the Neosho River banks and on islands in the river are predominantly shrub-scrub and dominated by species of willow and buttonbush shrubs, and sapling black willow, silver maple, and eastern cottonwood trees. Herbaceous species, including bulrush, cattail and spikerush are commonly observed. In areas of ponded water such as oxbows, aquatic species including smartweed and duckweed are common (USACE 2013).

In November 2013, Regulatory Personnel from USACE Tulsa District performed a wetland delineation on the proposed CDF Site C (South ½ of Section 9, Township 21 South, Range 15 East; Figure 2-4 and Figure 3-7; Appendix G). The delineation report identified 38.6 acres of ponds, 30.5 acres of wetlands, and 6,780 linear feet of stream channel over which USACE asserts jurisdiction. Due to the results of the wetland delineation, CDF Site C has been excluded from consideration as a viable sediment disposal location. A wetland delineation and jurisdictional determination will be conducted on CDF Site B by USACE Regulatory Personnel.

Figure 3-7. Wetland delineation of proposed CDF Site C. Jurisdictional streams are shown as blue dotted line; ponds are shown in blue; wetlands are shown in pink. Non-jurisdictional drainage ditches are shown as black broken dotted lines.



Clean Water Act Section 404 and Permits

Following is a brief description of the purpose of Section 404 of the Clean Water Act and the type of permits that could be required under the Clean Water Act. If waters of the United States and jurisdictional wetlands are impacted by the placement of dredge or fill materials that Kansas Water Office will adhere to the process and permits as described in this section. The USACE Regulatory Office will follow its procedures as required by the 10 April 2008, Final Compensatory Mitigation Rule, Department of the Army, Corps of Engineers 33 CFR Parts 325 and 332, and the Tulsa District Mitigation and Monitoring Guidelines.

The purpose of Section 404 of the Clean Water Act is to ensure that the nation's waterways are protected from irresponsible and unregulated discharge of dredged or fill material. Generally, if any action or proposed action is expected to result in the addition of any fill material to navigable waters, or result in the loss to an established threshold of acreage, then the action is subject to regulation under Section 404. A jurisdictional determination decides whether the specific body of water in question is subject to Section 404. If the water body is subject to Section 404, the proposed action then enters into the permitting process.

Determining whether a specific action is subject to Section 404 requires that the body of water be determined to be jurisdictional or non-jurisdictional. If the action is expected to impact wetlands, those wetlands must first meet the criteria of (1) being identified as a wetlands established by the U.S. Army Corps of Engineers and (2) being defined as "navigable waters of the United States" (33 CFR 329) or "waters of the United States" (33 CFR 328). "Navigable waters of the United States" are those waters that are subject to the ebb and flow of the tide or may be used for interstate or foreign commerce. "Waters of the United States" are those waters that may be used for foreign or interstate commerce; are interstate (including wetlands); are impoundments of waters otherwise defined as waters of the U.S.; or are wetlands adjacent to other waters of the U.S., except other wetlands. If the wetland meets any of these criteria, then a jurisdictional determination is made and the action must begin the permitting process.

Once it has been established that a wetland is jurisdictional, the applicant must enter into the permitting process. There are two types of permits that are issued for wetlands: (1) nationwide permits and (2) individual permits. Under Section 404, the USACE has authority to review and issue these permits.

Applying for a nationwide permit allows a proposed action with minimal impacts to proceed more quickly through the approval process. If a project site does not exceed one-half acre and falls into one of the broad categories of projects established by the USACE, it is eligible to enter into the nationwide permitting process. The proposed action must meet a number of mitigation and impact standards, such as having no impact to endangered species or historical properties, for the proposed action to be approved for a nationwide permit.

If a project is not eligible for a nationwide permit, it must apply for an individual permit. Individual permits are generally issued for those actions that are larger in scope and thought to have a more significant impact on the environment. As such, the process usually takes over six months and requires a very detailed analysis of the proposed action. After approval of the application, the proposed action is subject to a review period and the USACE considers all comments before issuing a final decision.

3.4.3 Wildlife Resources

The John Redmond Reservoir project area supports a wide variety of bird, herptile and mammal species. FHNWR lists 294 species of birds, including 90 species that are known to nest on the refuge. Species lists

prepared for Coffey and Lyon Counties included 47 mammals and 58 herptiles that likely occur within the John Redmond Reservoir site (USACE 2013).

The project site and region provide habitat for a variety of avifauna that use the upland, grassland, agricultural land, hardwood riparian stands, marshes, and flooded sloughs and ponds present. The peak of migration is April–May for passerine species, July–August for shorebirds and November–December for waterfowl species. The John Redmond Reservoir area avifauna provides a destination for conduct of both naturalist activities such as bird watching and for hunting waterfowl, turkey, northern bobwhite quail and mourning dove.

One roost used by turkeys is known within the FHNWR adjacent to the Neosho River near Mauck Lake. There are likely to be additional turkey roosts within riparian habitats in the vicinity (USACE 2013).

Raptors common to the area include the American kestrel, prairie falcon, northern harrier, red-tailed hawk, great-horned owl, barred owl and wintering bald eagles. Although not strictly raptors, the turkey vulture and American crow are also common. Passerine birds common to and nesting within John Redmond Reservoir include the American goldfinch, eastern meadowlark, red-winged blackbird, northern cardinal, common yellowthroat, brown thrasher, northern thrasher, northern mockingbird, American robin, house wren, black-capped chickadee, barn swallow, horned lark, eastern kingbird and red-bellied woodpecker among many other species (USACE 2013). The introduced European starling and house sparrow are also considered abundant passerine birds for the area.

Shorebirds common to John Redmond Reservoir and vicinity include: killdeer, American avocet, herons, plovers, sandpipers, yellowlegs, dowitchers, gulls and terns. Common waterfowl species present during the fall migration include the mallard, teal (green-winged, cinnamon, and blue-winged), northern shoveler, common merganser, lesser scaup, redhead, wood duck and American coot (USACE 2013). Commonly observed goose species include the Canada, Ross, snow and white-fronted.

The numbers of waterfowl present through the season are variable, depending on habitat availability and quality. During the year 2000 migration, a total of approximately 48,600 geese and 48,000 ducks were counted on John Redmond Reservoir. During the year 1996 migration, approximately 103,000 geese and 236,000 ducks were counted. The primary use of John Redmond Reservoir and the FHNWR by waterfowl is for resting and foraging during migration; little waterfowl nesting activity occurs in the area (USACE 2013).

Herptiles common to John Redmond Reservoir and vicinity uplands include species such as Woodhouse’s toad, box turtle, common garter snake and species of skink (USACE 2013).

A variety of game and non-game mammals are present in the John Redmond Reservoir site vicinity. The principal game mammals include the eastern cottontail, eastern fox squirrel and white-tailed deer. Common furbearers present include the muskrat, raccoon, a few beaver and the carnivores coyote, red and gray fox, mink and species of weasel. The river otter has been reintroduced to the region and a few have been observed using the Neosho River (USACE 2013).

Raccoon denning behavior and response to flooding has been studied along the Neosho River within the FHNWR. Eighty-three percent of dens used by raccoons in the FHNWR were tree cavities. Cavities in silver maple and sycamore trees were most commonly used by raccoons for den sites and suitable trees occurred at a density of 5.5 trees/ha in the FHNWR. Extensive flooding (69 and 78 days) of the Neosho River Valley above John Redmond Dam did not force raccoons out of the floodplain or contribute to raccoon mortality. Rather, the partly arboreal raccoons remained within floodwaters and swam from tree-top to tree-top during these two flooding events at John Redmond Reservoir (USACE 2013).

The Kansas Department of Transportation (KDOT) maintains records of total deer-related vehicle accidents (DVA) by county and has calculated the DVA per billion miles traveled for each county. The John Redmond Dam and Reservoir lies in the western half of Coffey County and the eastern half of Lyon County. Data for these counties show a 15-year total of 1,317 and 1,759 DVAs for Coffey and Lyon Counties, respectively (USACE 2013).

3.4.4 Fisheries and Aquatic Resources

Fish species have been listed for Coffey and Lyon Counties and number 68. Those common to John Redmond Reservoir include the channel and flathead catfish, common carp, white bass, walleye, white crappie and several species of sunfish. Amphibians present in the aquatic system include the plains leopard frog, bullfrog and tiger salamander. Common aquatic reptiles include the snapping turtle, map turtles, softshell turtles and northern water snake (USACE 2013).

The lake environment supports both sport and rough fish species, with gizzard shad as the predominant forage base for the sport fish. The population of walleye is considered to be in fair condition and spawn among the rocks on the face of the dam. Typically, walleye spawn in one to four feet of water among riprap on the dam face. White crappie may spawn throughout the shallow portions of John Redmond Reservoir, but their preferred location is in coves protected from wave action. White bass and channel catfish populations tend to be insensitive to moderately fluctuating water levels in the reservoir and wipers are primarily an open water fish species. Bigmouth and smallmouth buffalo, common carp and the river carpsucker are rough fish present throughout John Redmond Reservoir (USACE 2013).

The John Redmond Reservoir was recently studied to determine its effect within the Neosho River on the associated ictalurid (catfish) populations. Comparative studies were conducted to determine differences in the Neosho River fishery above the reservoir and below the dam structure (USACE 2013). Generally, more catfish were present above John Redmond Reservoir than below the dam (Table 3-6).

Table 3-6. Mean Density of Ictalurid Fish Species Captured Above John Redmond Reservoir and Below John Redmond Dam, Kansas (Source: USACE 2013).

Fish Species	Mean Density Above John Redmond Reservoir	Mean Density Below Dam
Neosho Madtom	19.82/100m^2	5.64/100m^2
Channel Catfish	34.31/100m^2	18.73/100m^2
Stonecat	4.61/100m^2	2.82/100m^2
All catfish excluding Neosho Madtom	45.50/100m^2	25.66/100m^2
Note: Research was conducted at an average water depth - velocity of 0.33m - 0.34m/s above John Redmond Reservoir and 0.38m - 0.35m/s below the dam		

Several attributes of the Neosho River were compared above and below the reservoir and dam (USACE 2013), including:

- Water temperature was cooler by approximately 3^{o}C above the dam than below
- Turbidity was higher above the dam than downriver of the dam
- The pH was nearly the same
- Dissolved oxygen increased downriver of the dam
- Conductivity, alkalinity, and hardness were all higher above the dam structure, but it was unknown if these factors limit ictalurid populations.

An analysis of sediments indicated the Fredle Index (geometric mean adjusted for distribution of particle sizes) was lower above the dam than downriver from the dam (5.52 vs. 7.82). Although not significantly different, this index indicates that more evenly distributed substrate sizes occur upriver from the reservoir and a shift to the predominance of larger gravel below the dam may be occurring. This increased coarseness of the substrate is considered a common effect of reservoirs and could be a limiting factor for some fish populations (USACE 2013).

3.4.5 Endangered, Threatened, and Candidate Species, Species of Special Concern and Sensitive Communities

Eight species, e.g., Western Prairie Fringed Orchid, Neosho Madtom, Neosho Mucket Mussel, Rabbitsfoot Mussel, Ouachita Kidneyshell Mussel, Butterfly Mussel, Flutedshell Mussel, and Western Fanshell Mussel, are listed as federal or Kansas endangered or threatened for the John Redmond Reservoir project area (Table 3-7) (KDWP&T 2013). Additionally, two species were discussed in the FHNWR Comprehensive Conservation Plan, the Peregrine Falcon and Flat Floater Mussel (Kansas-endangered). One additional species, Sprague's Pipet, is being reviewed but did not warrant listing in 2012.

The KDHE has classified the Neosho River (downstream from Council Grove Reservoir) and the Cottonwood River as special aquatic life-use waters (USACE 2013). These are waters that contain unique habitat types and biota, or species that are listed as threatened or endangered in Kansas.

Table 3-7. Federally and Kansas Listed Species for the John Redmond Reservoir Project Area (Sources: USFWS 2013, KDWP&T 2013, and USACE 2013) (Appendices B and C).

Species	Status/Rank	Comments
Common Name (Scientific Name)	**Federal/Kansas/Global**	**Source and Habitat**
Bald Eagle *(Haliaeetus leucocephalus)*	Delisted. Protected by The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and Migratory Bird Treaty Act.	USFWS response letter. Transient use of larger trees in the vicinity of open water. Personal communication–Wendt (KWO) and Johnson and Luginbill (KDWP&T) on January 8, 2013.
Peregrine Falcon *(Falco peregrinus)*	Not listed as threatened or endangered. Protected by Migratory Bird Treaty Act.	FHNWR management plan. Migrates through the John Redmond Reservoir area, but does not nest. Personal communication – Wendt (KWO) and Johnson and Luginbill (KDWP&T) on January 8, 2013.
Sprague's Pipit (*Anthus spragueii*)	Not yet listed	Personal communication – Metzger (KWO) and USFW Manhattan, KS. Federal Register / Vol 77, No. 225/ Nov. 21, 2012. North American grassland and tied to native prairie habitat.
Neosho Madtom (*Noturus placidus*)	US – Threatened KS – Threatened G2/S2	USFWS and KDWP&T response letters. Use shallow riffles with loose/uncompacted gravel bottoms.
Western Prairie Fringed Orchid (*Platanthera praeclara*)	US – Threatened KS – Does not list plants G2/S1	USFWS response letter. Grows in tallgrass silt loam soils, moist sand prairies or hay meadows with full sunlight.
Neosho Mucket Mussel	US – Endangered	USFWS & KDWP&T response letter. Requires

Species Common Name (Scientific Name)	Status/Rank Federal/Kansas/Global	Comments Source and Habitat
(*Lampsilis rafinesqueana*)	KS– Endangered G2/S1	clean, in-stream gravel beds.
Rabbitsfoot Mussel (*Quadrula cylindrica cylindrica*)	US – Threatened KS– Endangered G3/S1	USFWS & KDWP&T response letter. Requires clean, in-stream gravel beds.
Ouachita Kidneyshell Mussel (*Ptychobranchus occidentalis*)	KS – Threatened G3G4/S1	KDWP&T response letter. Requires clean, in-stream gravel beds.
Flat Floater Mussel *(Anodonta suborbiculata)*	KS – Endangered G5/S1	FHNWR management plan. Requires ponds, lakes or sluggish mud-bottomed pools of creeks and rivers.
Butterfly Mussel *(Ellipsaria lineolata)*	KS – Threatened	Personal communication – Wendt (KWO) and Luginbill (KDWP&T) on July 18, 2013. Requires clean, in-stream gravel beds.
Flutedshell Mussel *(Lasmigona costata)*	KS – Threatened	Personal communication – Wendt (KWO) and Luginbill (KDWP&T) on July 18, 2013. Requires clean, in-stream gravel beds.
Western Fanshell Mussel *(Cyprogenia aberti)*	KS - Endangered	Personal communication – Wendt (KWO) and Luginbill (KDWP&T) on July 18, 2013. Found in mud, sand, gravel and cobble substrate, generally associated with less than three feet of water.

Rank: G2: Globally imperiled because of rarity; typically 6-20 occurrences, G3: Globally vulnerable because it is very rare and local throughout its range; typically 21-100 occurrences, G4: Globally apparently secure, uncommon but not rare, widespread; typically 100 occurrences or more. G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery. S1: State critically imperiled because of extreme rarity; typically five or fewer occurrences, S2: State imperiled because of rarity; typically 6-20 occurrences, SZN: Zero occurrences/non-breeding population, occurs during migration (USACE 2013).

Bald Eagle (Haliaeetus leucocephelus)

The Bald Eagle was delisted from the Endangered Species Act in 2007.; however, it is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

The Eagles are also protected under The Migratory Bird Treaty Act (MBTA). The MBTA is a Federal law that carries out the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia. Those conventions protect birds that migrate across international borders.

The take of all migratory birds, including Bald Eagles, is governed by the MBTA's regulations. The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except as authorized under a valid permit (50 CFR 21.11). Additionally, the MBTA authorizes and directs the Secretary of the Interior to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take (for example, hunting seasons for ducks and geese).

The Bald Eagle is considered transient through the project area, but some nest initiation behavior has been observed on the FHNWR. Bald Eagles are listed as common during the winter months and counts occur every other week from the latter half of October through the end of March (USACE 2013).

The total season counts have ranged from as few as one bald eagle in 1974, to as many as 280 in 1988. On average, 10 to 20 individual bald eagles use the John Redmond Reservoir area at any one time. Bi-weekly counts over the past 30 years have yielded no bald eagles observed (several periods), and as many as 104 individuals present in the latter half of February 1987. During the year 2000, 65 bald eagle observations were recorded during the season: four in late December, zero in early January, eight in late January, seven in early February, 29 in late February, 15 in early March and two in late March (USACE 2013).

In approximately three of the last 10 years, a pair (or possibly different pairs) of Bald Eagles performed nest initiation but rapidly abandoned the behavior. It is possible these were young eagles as they did not complete nest construction or initiate breeding or egg laying activities. A successful nest site was reported from near the Coffey County Fishing Lake and the WCGS (USACE 2013).

Typically, Bald Eagles use trees around John Redmond Reservoir and along the Neosho River and its tributaries as perches for foraging, resting and as roosts. When ice formed on John Redmond Reservoir, Bald Eagles were observed resting directly on the ice where they consumed waterfowl and fish from an open portion of the lake (USACE 2013). Bald Eagles may take fish and waterfowl directly, in addition to foraging or scavenging for dead or wounded animals.

Peregrine Falcon (Falco peregrinus)

The Peregrine Falcon is not a federal or Kansas listed raptor. The Peregrine Falcons are also protected under MBTA, along with the eagles. They are recorded as passing through the project area during spring and fall migration but do not nest there.

Sprague's Pipit (Anthus spragueii)

The Sprague's Pipit is a relatively small passerine endemic to the North American grasslands. It has a plain buff colored face with a large eye-ring. The Sprague's Pipit is a ground nester that breeds and winters on open grasslands. It feeds mostly on insects, spiders and some seeds.

The Sprague's Pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota and South Dakota as well as south-central Canada. Wintering occurs in the southern states of Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana and New Mexico.

The USFWS reviewed the conservation status of Sprague's Pipit to determine whether the species warrants protection under the Endangered Species Act. The status review found that listing Sprague's Pipit as threatened or endangered is warranted, but that listing the species at this time is precluded by the need to complete other listing actions of a higher priority. To ensure this review was comprehensive, the service solicited information from state and federal natural resource agencies and all interested parties regarding the Sprague's Pipit and its habitat.

Western Prairie Fringed Orchid (Platanthera praeclara)

The Western Prairie Fringed Orchid (WPFO) is federally listed as threatened. The species may be found within unplowed mesic to wet mesic prairies and sedge meadows on unglaciated, level to hilly sites, and on

Pennsylvanian-age sediments covered with a thin, discontinuous mantle of loess residuum. The Western Prairie Fringed Orchid distribution in Kansas is generally north John Redmond Reservoir (Douglas, Franklin, Jackson, Jefferson, Leavenworth, Lyon, Osage, and Shawnee Counties) and the project area; the nearest population was known in the vicinity of Reading, KS in northeastern Lyon County. One historical report of the western prairie fringed orchid in Waverly Prairie of Coffey County was reported during 1969, but the prairie was converted to cropland, destroying the former western prairie fringed orchid habitat (USACE 2013).

In eastern Kansas, Western Prairie Fringed Orchid habitat was described as mesic to wet mesic prairies, and in northeastern Kansas it was described as wet mesic to mesic tallgrass prairie. The populations of Western Prairie Fringed Orchid in Kansas are small and none support greater than 50 individual plants. Western Prairie Fringed Orchid decline is principally attributed to the conversion of habitat to cropland (USACE 2013).

The WPFO has not been documented within the John Redmond Reservoir project boundaries.

Neosho Madtom (Notorus placidus)

The Neosho Madtom is both a federal and State of Kansas listed threatened species of catfish that occupies gravel bars and smaller areas of gravel in rivers of the Neosho Basin. Neosho Madtoms are protected by the Kansas Nongame and Endangered Species Conservation Act, the Federal Endangered Species Act and state and federal regulations applicable to those acts (KDWP&T 2011).

Designated Critical Habitats as defined by Kansas Administrative Regulations, critical habitats include those areas documented as currently supporting self-sustaining population(s) of any threatened or endangered species of wildlife as well as those areas determined by the KDWP&T to be essential for the conservation of any threatened or endangered species of wildlife.

Currently, the following areas are designated critical for Neosho Madtom:

(1) The main stem Cottonwood River from the point it enters Chase County at Sec. 1, T21S, R5E to its confluence with the Neosho River at Sec. 23, T19S, R12E, Lyon County
(2) The main stem Neosho River from its point of discharge from Council Grove Reservoir in Sec. 10, T16S, R8E, Morris County to the point it leaves Lyon County in Sec. 15, T20S, R13E
(3) The main stem Neosho River from its point of discharge from John Redmond Reservoir at Sec. 10, T21S, R15E to Coffey County to the Kansas-Oklahoma border at Sec. 18, T35S, R22E, Cherokee County
(4) The main stem Spring River from the Kansas-Missouri border to a point where it crosses the west boundary of Sec. 36, T33S, R25E, Cherokee County
(5) The main stem of the South Fork of the Cottonwood River in Chase County where it enters Sec. 14, T20S, R8E, until its confluence with the Cottonwood River (Sec. 25, T19S, R8E). The U.S. Fish and Wildlife Service also has authority to designate areas of critical habitat for federally listed endangered species, but has not done so for Neosho Madtoms in Kansas (KDWP&T 2011)

Neosho Mucket Mussel (Lampsilis rafinesqueana)

The Neosho Mucket Mussel is both a federal and State of Kansas listed endangered species and is proposed for listing as a species by the USFWS, an action that may occur during the year 2013 (Wendt, B. KWO personal communication, Johnson and Luginbill (KDWP&T January 8, 2013). The Neosho Mucket Mussel occupies gravel bars in the Neosho, Spring, and Verdigris Rivers. The overall distribution of Neosho Mucket Mussel shows regional endemism to the Arkansas River system, including the Neosho, Spring, Elk, Illinois, and Verdigris basins of Kansas, Missouri, Oklahoma and Arkansas (USACE 2013).

The Neosho Mucket Mussel occupies shallow riffles and runs (mean depth 15.0-33.7 cm) across gravel bars, with stable and moderately compacted substratum, predominantly gravel with a minimum of silt. The mussels prefer riffles and runs with relatively clear, flowing water. Gravel bar stability is usually the result of some stabilizing force in the river, such as bedrock exposed along the river edge or bedrock on the river bottom. The Neosho Mucket Mussel is a bradytictic breeder; the females attract hosts with a mantle lure. Potential larval hosts for the Neosho Mucket Mussel include smallmouth and largemouth bass (USACE 2013).

The Neosho Mucket Mussel is probably extirpated from the Neosho River above John Redmond Reservoir (USACE 2013). Downriver from the John Redmond Dam, 32 living Neosho Mucket Mussel and some weathered dead shells were located. The living individuals occupied six of 21 sites surveyed and were greater than 20 years old based on counts of annular rings. In contrast, 1,192 individual Neosho Mucket Mussel were collected in the Spring River and 77 in the Verdigris River. In the Neosho River, the observed habitat used by NMMs had the following characteristics: depth = 39.6 cm; current speed = 16.0 cm/s and 27.0 cm/s (100 percent and 60 percent depths); substratum character = 41.3 percent gravel, 35.9 percent cobble, 14.9 percent sand, 4.4 percent boulder, and 3.3 percent mud; compaction rated 1.1 and siltation rated 1.4 (USACE 2013).

Rabbitsfoot Mussel (Quadrula cylindrica cylindrica)

The Rabbitsfoot Mussel is both a federal and State of Kansas listed endangered species that occupies gravel bars in the Neosho and Spring Rivers (Wendt, B. KWO personal communication, Johnson and Luginbill (KDWP&T January 8, 2013). The overall distribution of Rabbitsfoot Mussel includes the Ozarkian and Cumberland faunal regions of 13 states, but it is most abundant in the Black River system of Arkansas (USACE 2013).

The Rabbitsfoot Mussel occupies shallow riffles and runs (mean depth 15.0–33.7 cm) across gravel bars, with stable and moderately compacted substratum, predominantly gravel with a minimum of silt. The mussels prefer riffles and runs with relatively clear, flowing water. Gravel bar stability is usually the result of some stabilizing force in the river, such as bedrock exposed along the river edge or bedrock on the river bottom. The Rabbitsfoot Mussel is a tachytictic breeder whose larval hosts may include species of shiner (USACE 2013).

The Rabbitsfoot Mussel is probably extirpated from the Neosho River above John Redmond Reservoir (USACE 2013). Downriver from John Redmond Dam, two living Rabbitsfoot Mussel and some weathered dead shells were located. A reproducing Rabbitsfoot Mussel population is known to occupy a gravel bar near Iola, KS. In the Neosho River, the observed habitat used by Rabbitsfoot Mussel had the following characteristics: depth = 12.5 cm; current speed = 27.5 cm/s and 38 cm/s (100 percent and 60 percent depth); substratum character = 60.0 percent gravel, 32.5 percent cobble, 7.0 percent sand, and 0.5 percent mud; compaction rated 1.0; and siltation rated 1.0 (USACE 2013).

Ouachita Kidneyshell Mussel (Ptychobranchus occidentalis)

The Ouachita Kidneyshell Mussel (OKM) is a Kansas listed threatened species that occupies gravel bars in the Spring, Verdigris, and Fall Rivers. The overall distribution of OKMs includes the Arkansas, Black, Red, St. Francis and White River systems in Arkansas, Kansas, Missouri, and Oklahoma (USACE 2013).

The Ouachita Kidneyshell Mussel occupies shallow riffles and runs (mean depth 15.0-33.7 cm) across gravel bars, with stable and moderately compacted substratum, predominantly gravel with a minimum of silt. The mussels prefer riffles and runs with relatively clear, flowing water. Gravel bar stability is usually the result of some stabilizing force in the river, such as bedrock exposed along the river edge or bedrock on the river bottom.

The Ouachita Kidneyshell Mussel is a bradytictic breeder; the females attract potential hosts with a mantle lure. Potential larval hosts include orangethroat, greenside, and rainbow darters (USACE 2013).

Flat Floater Mussel (Anodonta suborbiculata)

The Flat Floater Mussel is a Kansas endangered species. The Flat Floater Mussel is considered locally abundant in the floodplain lakes, sloughs, and oxbows of the Mississippi and Ohio Rivers and their tributaries. Its habitat is described as ponds, lakes or sluggish mud-bottomed pools of creeks and rivers (USACE 2013). In Kansas, the Flat Floater seems to prefer shallow areas of relatively permanent oxbow lakes having organically rich mud bottoms. This preferred habitat is subject to water level changes due to fluctuations in runoff water and flood flows that recharge oxbow lakes. Flat Floaters appear, however, to be able to repopulate suitable areas when favorable habitat conditions return. The current probable range of the Flat Floater in Kansas is restricted to the lower reaches of the Neosho and Marais des Cygnes Rivers (KDWP&T 2013).

Butterfly Mussel (Ellipsaria lineolata)

The Butterfly Mussel is a Kansas threatened species. This species is an obligate riverine mussel preferring clean water with good current over gravel substrate. Its historic range included the Neosho, Spring, Fall and Verdigris Rivers. Although rare, the Butterfly Mussel has been found at some mussel survey sites in the Verdigris and Marais des Cygnes Rivers between 2000 - 2010 and the Neosho River in the mid 1990's (KDWP&T 2013).

Flutedshell Mussel (Lasmigona costata)

The Flutedshell Mussel is a Kansas threatened species. This species is an obligate riverine species preferring clear water riffles with moderate current on substrate of medium to small sized gravel. Historically occurred in the Fall, Elk, Verdigris, Cottonwood, Spring and Marais des Cygnes Rivers. It still occurs in the same watersheds, but at greatly reduced numbers and distribution (KDWP&T 2013).

Western Fanshell Mussel (Cyprogenia aberti)

The Western Fanshell Mussel is a Kansas listed endangered species. This species is an obligate riverine species found in mud, sand, gravel and cobble substrate, generally associated with less than three feet of water. Historically found in low densities in the Fall, Verdigris, Neosho, and Spring Rivers. Appears to be extirpated from the Neosho River. Surveys from 2000-2010 have documented populations in the Verdigris and Spring Rivers (KDWP&T 2013).

Sensitive Communities

The KDHE has classified the Neosho River downstream from Council Grove Reservoir and the Cottonwood River as special aquatic life-use waters. The general provisions of the Kansas surface water quality standards (K.A.R. 28-16-28c) state in part: "…no degradation of water quality by artificial sources shall be allowed that would result in harmful effects on populations of any threatened or endangered species of aquatic life in a critical habitat…" The KDHE could issue a variance, however, if "important social and economic development" is impaired.

In addition, according to KDWP&T: "The Neosho River immediately upstream from John Redmond Reservoir is Kansas-designated critical habitat for the Neosho Madtom and Ouachita Kidneyshell Mussel. The Neosho River immediately downstream from the John Redmond Dam is designated critical habitat for the Neosho Madtom, Ouachita Kidneyshell Mussel and Rabbitsfoot Mussel. The Cottonwood River immediately upstream

of John Redmond Reservoir is designated critical habitat for the Neosho Madtom, Ouachita Kidneyshell Mussel, and the Neosho Mucket Mussel." (USACE 2013, Correspondence from KDWP&T)

3.4.6 Invasive Species

Zebra mussels were first confirmed to be present in John Redmond Reservoir in August, 2010. Since that time the larval stage, veligers, have moved downstream, and were confirmed to have infested Coffey County Lake in August, 2012. Additional downstream infestation is likely, however infestation can also occur in separate, or upstream water bodies through equipment that is not properly cleaned and movement of water and sediment infested with Zebra mussels.

3.4.7 Wildlife Refuges and Wildlife Management Areas

Approximately 29,801 acres of land along the Neosho River are owned by the USACE from below John Redmond Dam to near Neosho Rapids, KS. In addition to overall site management by the USACE and direct management of approximately 9,784 acres, leases have been signed with the USFWS and KDWP&T to provide land management for the FHNWR (18,545 acres) and OCWA (1,472 acres) (USACE 2013).

FHNWR was established in 1966 under the Fish and Wildlife Coordination Act of 1958 (16 U.S.C. § 644) and is located on the upriver portion of John Redmond Reservoir, including the approximately upper one-third of the conservation pool (USACE 2013). The refuge is managed primarily for migratory waterfowl.

The breakdown of habitat types supported in the refuge is presented in Table 3-8.

Table 3-8. Acreage of Habitat Types within the Flint Hills National Wildlife Refuge.

Habitat Type	Acreage
Wetland	4,572
Open Water	1,400
Riparian Wetlands	680
Cropland	3,917
Grassland	3,200
Woodland	2,400
Brushland	2,255
Administrative/Recreational	120
Total	**16,544**
Source: USFWS 2002. (USACE 2013)	

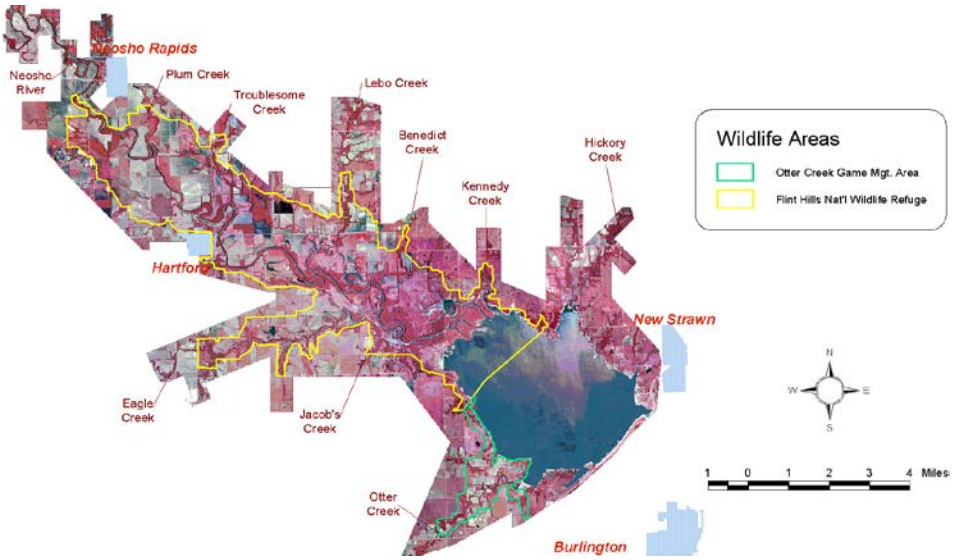
Further, the Refuge Recreation Act (16 U.S.C. § 460-1) states that a refuge may provide incidental fish and wildlife oriented recreational development, the protection of natural resources and the conservation of endangered or threatened species. A Comprehensive Conservation Plan (CCP) has been prepared and will guide management decisions at FHNWR for the next 15 years.

Otter Creek Wildlife Area (OCWA) was established in 1966 and is located on the southeastern boundary of FHNWR and the southeastern portion of John Redmond Dam. This state wildlife area is managed primarily for big game and upland species, e.g., white-tailed deer, wild turkey, mourning dove, bobwhite quail, cottontail rabbit and squirrel.

Permitted activities on the FHNWR include wildlife observation, hiking and sightseeing, photography, boating, picnicking, camping, fishing, hunting, wild food gathering and fish bait collection. Interpretive trails are present

and include Dove Roost Trail and the Headquarters Trails. OCWA provides wildlife observation, sightseeing, photography, boating, fishing and hunting opportunities.

Figure 3-8. Approximate Boundaries of the Flint Hills National Wildlife Refuge and the Otter Creek Wildlife Management Areas.



3.5 Air Quality

Air pollution is generated from many different sources including stationary (factories, power plants, smelters, dry cleaners, degreasing operations, etc.), mobile (cars, trucks, trains, airplanes, etc.) and naturally occurring (windblown dust, volcanic eruptions, etc.) (USACE 2013). The Federal Clean Air Act of 1970 (CAA) (43 U.S.C. § 7401 *et seq*., as amended in 1977 and 1990) provides the principle framework for national and state efforts to protect air quality and requires the adoption of National Ambient Air Quality Standards (NAAQS) to protect the public health, safety and welfare from known or anticipated effects of air pollution. Amendments to the CAA require the U.S. Environmental Protection Agency (USEPA) to promulgate rules to ensure that federal actions conform to the appropriate state implementation plan. These requirements are known as the General Conformity Rule (40 C.F.R. § 51.100 *et seq*. and § 93.100 *et. seq*.).

Federal agencies responsible for an action must determine if the action conforms to pertinent guidelines and regulations that control or maintain air quality in the region. Certain actions are exempt from conformity determination, including those actions associated with transfers of land or facilities where the federal agency does not retain continuing authority to control emissions associated with the properties. Federal actions may also be exempt if the projected emission rates would be less than the specified emission rate threshold known as *de minimis* limits.

National Ambient Air Quality Standards (NAAQS) have been established by the USEPA, Office of Air Quality Planning and Standards (OAQPS), for six criteria pollutants that are deemed to potentially impact human health and the environment. These include: 1) carbon monoxide (CO); 2) lead (Pb); 3) nitrogen dioxide (NO_2); 4) ozone (O_3); 5) particulate matter <10 microns (PM_{10}); and 6) sulfur dioxide (SO_2). Ground level or "bad" ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC (USEPA 2011)

The primary and secondary NAAQS concentrations are presented in Table 3-9. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation and buildings (USEPA 2011).

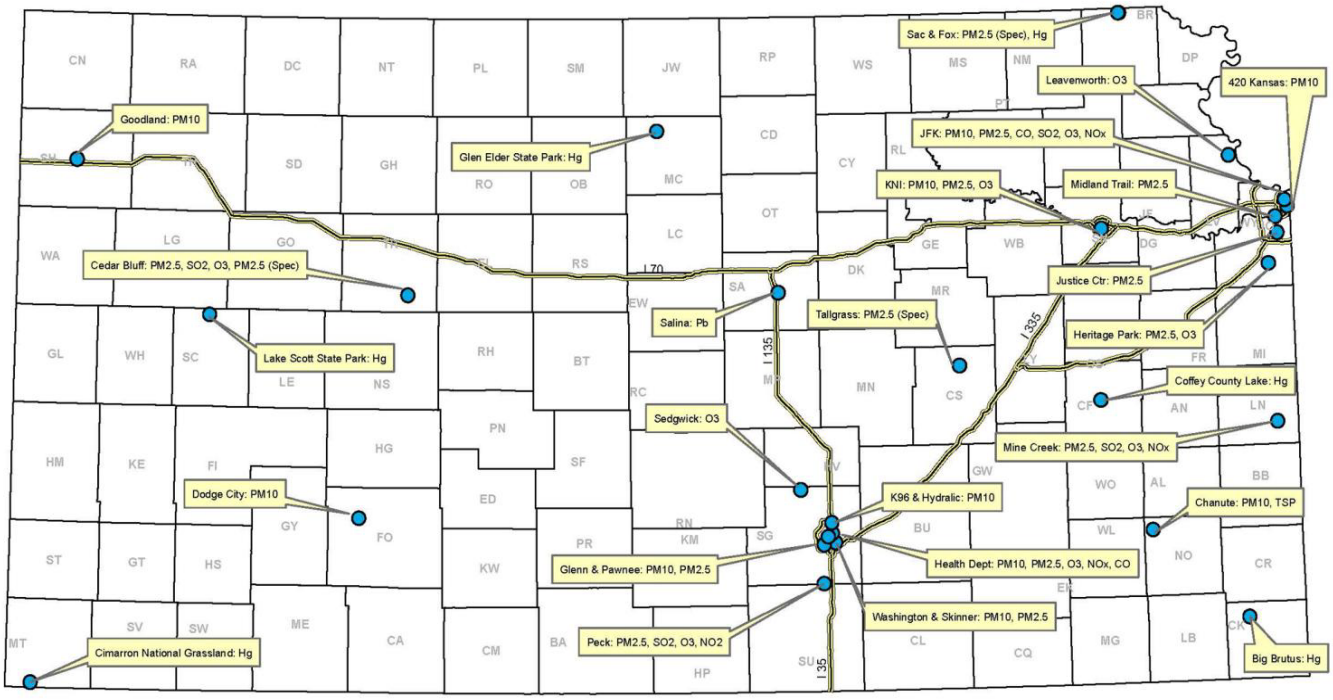
Table 3-9. National Ambient Air Quality Standards

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 μg/m^3	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution Dec 14, 2012	PM	primary	Annual	12 μg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 μg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 μg/m^3	98th percentile, averaged over 3 years
	PM	primary and secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010]		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
[38 FR 25678, Sept 14, 1973]		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year
Source: USEPA NAAQS http://www.epa.gov/air/criteria.html					

Since both short and long-term exposures are addressed, a single pollutant may have more than one primary standard.

The state of Kansas has adopted the federal standards under the Kansas Administrative Regulations (K.A.R.), Section 28-19-17a: Incorporation of Federal Regulations by Reference. Under K.A.R. Section 28-19-17b (d), "National ambient air quality standard, national primary ambient air quality standard, and national secondary ambient air quality standard mean those standards promulgated at 40 CFR Part 50, as in effect on July 1, 1989, which are adopted by reference." Air monitoring is conducted at 26 sites within the state, which is considered somewhat more extensive than USEPA requirements (KDHE 2012-2012-2013 Ambient Air Monitoring Network Plan).

Figure 3-9. Kansas Air Monitoring Sites, May 2012



It is important to understand the terms exceedance and violation of a standard, as they are not interchangeable. An exceedance is any single value greater than the standard. A violation occurs when the limits for both concentration and frequency of occurrence, as established in the CAA and its amendments, are exceeded.

Air quality has not been monitored by KDHE in the Emporia, KS area since the early to mid-1970s; at that time particulate matter was monitored. The current statewide monitoring network is focused on metropolitan areas where fine particulate matter and ozone tend to be more of a problem. The WCGS is located adjacent to John Redmond Reservoir and regularly monitors selected radionuclide levels in the air (USACE 2013).

Radionuclides are monitored as part of the operation of the WCGS by weekly collection and laboratory analysis of continuous air samples taken at five locations on and in the vicinity of John Redmond Reservoir. The five sampling locations are: 1) Sharpe, 2) east of the Coffey County Lake dam, 3) Burlington, 4) New Strawn, and 5) Hartford. The site at Hartford serves as the control location for analysis and data interpretation. The major airborne isotope of concern is radioiodine (I^{131}) and it is tested using a flow rate of about 30 liters per minute (lpm) through 47 millimeter (mm)-diameter glass fiber particulate filters and 5 percent triethylene diamine impregnated carbon cartridges. In addition, gross beta and gamma isotopic analyses are performed on the same cartridges.

Airborne sample analyses indicated that no radionuclides attributable to WCGS operation were present above the lower limits of detection during State Fiscal Year (SFY) 2000. The highest gross beta activity observed was 0.092 picoCuries per cubic meter (pCi/m^3), due primarily to naturally occurring Radon-222 (Rn222) progeny, specifically the long- lived isotope Lead-210 (Pb^{210}). The range of gross beta activity was 0.010-0.092 pCi/m^3. For comparison, the range of gross beta activity recorded at the Hartford control site was 0.017–0.077 pCi/m^3. No gamma emitters attributable to WCGS operation were present above the lower limits of detection in any air particulate filters or charcoal cartridges evaluated (USACE 2013).

3.6 Aesthetics

The general viewscape of the John Redmond Reservoir project area is rural, consisting of wooded rolling hills, wooded drainages, open agricultural fields, farmsteads, towns, infrastructure elements (roads, parking lots, powerlines, property fencing, etc.), the Neosho River and John Redmond Dam and Lake. The most visibly dominant features include John Redmond Dam and Lake and the pump facility for the WCGS, below the dam.

3.6.1 Visual Characteristics of the John Redmond Reservoir Site and Surrounding Area

Features present within the John Redmond Reservoir site include the large dam and reservoir on the southeastern portion. The dam is an earthfill structure nearly four miles long and is 86.5 feet higher than the Neosho River at its crest. The reservoir covers approximately 9,490 surface acres under normal operation, but could cover as much as 40,220 surface acres or higher during a major flood. The reservoir shoreline is approximately 58 miles long under normal operation (USACE 2013).

The community of Burlington, KS lies approximately three miles downriver from the dam, and New Strawn, KS is located approximately one mile northeast of the reservoir. West of the reservoir are the towns of Hartford and Neosho Rapids, KS which lie approximately five and seven miles upriver, respectively. A few structures are also present at Ottumwa, KS and at Jacob's Creek Landing, KS, both within approximately one mile of the reservoir shoreline. There are no direct views of the lake from these communities, because of the relatively flat land surfaces and medium-tall woodland vegetation.

The visual impression of Burlington is a small community with predominantly red brick office buildings and stores, and modest, family-oriented residential areas. Most residences have ample yards with landscaping and mature trees and the yards become larger at the outskirts of town resembling small farms. Hartford, Neosho Rapids and New Strawn are smaller residential communities with a minimum of businesses. The overall visual impression is one of modest, family-oriented towns, with large lawns and numerous trees to accent the urban landscape. Existing utilities such as electricity and telephone are provided via aboveground poles, which results in some visual clutter.

Available views onto a site are affected by distance, viewing angle, as well as the number and type of visual obstacles, both natural and human made. Views can be from stationary areas such as campgrounds, or from mobile sources such as motor vehicles. Typically, views are analyzed as foreground (less than 0.25 miles), middle ground (0.25-3.0 miles) and background (more than 3.0 miles). Background views of John Redmond Dam and Lake would be very rare and may only be achieved from the corner of the dam structure.

Recreational facilities are scattered throughout the project site and include campgrounds, day use sites with boat ramps and hiking/walking trails. Most of these sites have large parking areas, access roads, large grassy fields, and/or open agricultural fields, providing an expansive experience in an otherwise wooded environment. Many acres are leased to grow agricultural crops and the fields provide breaks in the tree-covered landscape of the Neosho River Valley. Agricultural fields that are not under cultivation, or fallow, become rapidly invaded by tall, coarse annual herbs in contrast to the row crops and alfalfa hay grown in cultivated fields. These recreational facilities and agricultural fields provide for clear, relatively unobstructed middle ground views across portions of the project area.

3.6.2 Viewer Groups and Sensitivity

Visual sensitivity is dependent upon viewer attitudes, the types of activities in which people are engaged when viewing the site and the distance from which the site will be seen. Overall, higher degrees of visual sensitivity are correlated with areas where people live, are engaged in recreational outdoor pursuits, or participate in scenic

or pleasure driving. Conversely, visual sensitivity is considered low to moderate in industrial or commercial areas where the scenic quality of the environment does not affect the value of the activity.

Site visibility may also be affected by air quality, the measure of which involves human perception and judgment and has been described as the maximum distance that an object can be perceived against the background sky. Visibility is of value by citizens, although the value of good visibility is inherently subjective and difficult to quantify. Visibility can vary from clear to regional haze. There is no qualitative visibility standard for pristine and scenic rural areas, however, Section 169A of the CAA (1970, as amended), created a qualitative standard of the prevention of any future and the remedying of any existing impairment of visibility in mandatory Class I federal areas which impairment results from human-caused air pollution.

The expectation of many visitors to John Redmond Reservoir is to fish in the lake, river, or nearby Coffey County Fishing Lake, or to seek hunting opportunities, particularly waterfowl. Therefore, these visitors are not considered to be sensitive viewers because of the nature of their recreational pursuits. There are views of the dam and reservoir from the surrounding area, particularly from the highway across the dam, the OCWA day use area, the dam site area (including Redmond Cove) and the Hickory Creek Area. Below the dam at Riverside East and Riverside West campgrounds, the view is of the dam structure, pumping station for WCGS and the Neosho River. Many of the views from below the dam are at least partially obstructed by landscape plantings and tall trees.

Most views from the north and south access roads are of the woodlands growing along the Neosho River and its tributary drainages, with occasional glimpses of the lake and/or the dam structure. A full view of the lake and dam structure only occurs from shoreline sites or while boating on the lake surface. The dam, but not the lake, can be viewed from recreational sites downstream. Views from bridges across the Neosho River result in only short distances before the river meanders and is hidden by riparian woodlands (USACE 2013).

3.7 Prime or Unique Farmlands

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture (USDA). It is of major importance in providing the national short and long range needs for food and fiber (USACE 2013). In Coffey and Lyons Counties, the principal crops grown on prime farmland are grain sorghum, wheat, soybeans and corn. Approximately 70 percent of the soils in Coffey County meet the requirements for prime farmland (USACE 2013).

Prime farmland is defined by the USDA as: “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is available for these uses. Further, it could be cultivated land, pastureland, forestland, or other land, but it is not urban or built up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0-6 percent.”

Unique farmland is defined by USDA as: “land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree-

grown nuts, olives, cranberries, fruit, and vegetables." The soils supporting pecan orchards along the Neosho River would be an example of unique farmland.

The state of Kansas has further identified farmland of statewide importance and defined it as: "farmland, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage and oilseed crops. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. Additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by state law."

The common soils within John Redmond Reservoir and along the Neosho River, fit the criteria for prime farmland, unique farmland and farmland of statewide importance, e.g., Woodson silt loam, Verdigris silt loam, Summit silty clay loam (1-4 percent slopes), Kenoma silt loam (1-3 percent slopes), Eram silt loam (1-3 percent slopes), and Dennis silt loam (1-4 percent slopes) are considered prime farmland. The Kenoma silty clay loam (1-3 percent slopes - eroded), and Dennis silty clay loam (2-5 percent slopes - eroded) soils are considered farmland of statewide importance (USACE 2013). In addition, Osage silty clay, Osage silty clay loam, Lanton silty clay loam, and Hepler silt loam soils meet the prime farmland designation if they are drained (NRCS 1993).

For compliance with the Farmland Protection Policy Act (FPPA),), a component of the Agriculture and Food Act of 1981, this project was coordinated with the NRCS using a Farmland Conservation Impact Rating Form (AD 1006, Appendix E). On May 3, 2013, KWO staff received a letter a copy of the AD 1006 form mentioned above with parts completed from Natural Resources Conservation Service (NRCS). In this letter KWO staff was instructed to complete parts VI and VII and return the completed copy of the form to the NRCS office in Emporia, Kansas. KWO staff completed and returned the AD 1006 form as previously instructed to the NRCS Assistant State Conservationist in Emporia, Kansas.

A majority of the lands designated as prime or unique farmlands within this area were in agricultural production prior to the passage of the FPPA. Because prime or unique farmland could be impacted as noted within the Preferred Alternative as well as Alternative #2 noted within Section 4.8, coordination has and will continue to be conducted to determine the effects of these alternatives on prime or unique farmlands, as defined by FPPA, for all potential off-site dredging disposal areas.

Soil types occurring on potential sediment disposal site areas were summarized by Farmland of Statewide Importance, Prime Farmland if drained, and Prime Farmland (Appendix E). Disposal of sediment on the federal property would impact approximately 29.6 acres of Prime Farmland if drained soils and 24.2 acres of Prime Farmland. Use of sites on non-federal property would impact approximately 81.2 acres of Farmland of statewide importance, 33.4 acres of Prime Farmland if drained soils and 329.7 acres of Prime Farmland.

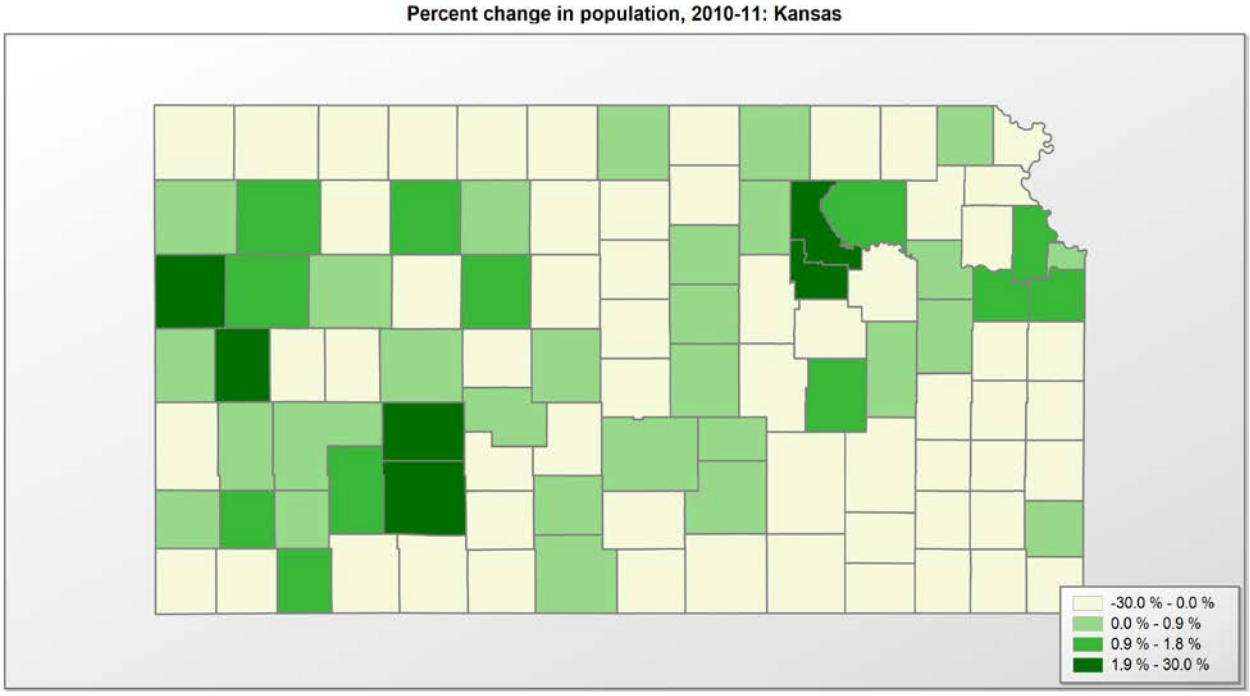
Within the John Redmond Reservoir site boundary, approximately 5,098 acres of land are available for lease to be farmed under cooperative farming agreements with the USACE, FHNWR and OCWA. Much of the land under farming agreements also meets prime farmland criteria. The number of acres potentially farmed under each management program, include 400 acres (USACE), 4,298 acres (FHNWR) and 400 acres (OCWA). Because of flooding events along the Neosho River during the 1990s, successful farming of lower land tracts in the flood storage pool has occurred only about two of every five years (USACE 2013).

3.8 Socioeconomic Resources

The assessment area for socioeconomic effects of the Proposed Action and alternatives includes Coffey and Lyon Counties in southeastern Kansas, and lands within the floodplain downriver from John Redmond Reservoir. Potentially affected socioeconomic conditions include area economic and population conditions, land use, recreation and transportation. Activities in the Neosho River floodplain between John Redmond Reservoir and Grand Lake could also be affected.

3.8.1 Economic and Demographic Trends and Conditions in Coffey and Lyon Counties

Figure 3-10. Percent Change in Population, 2010-11: Kansas.

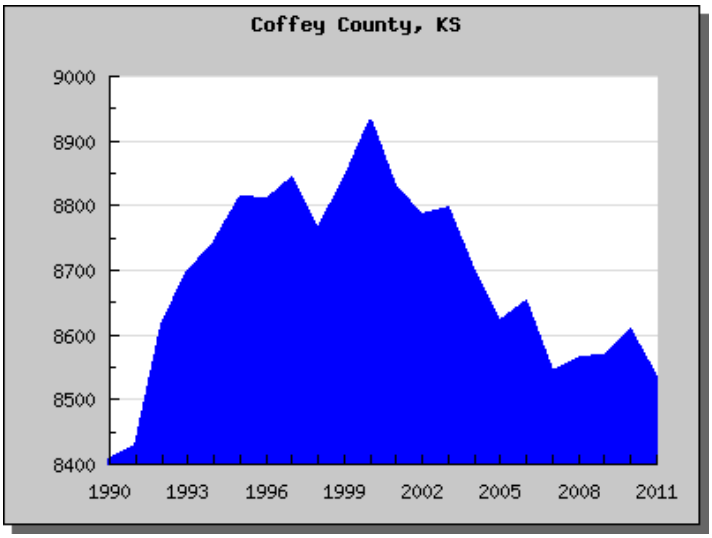


Population

County Level Data Sets, Percentage Change in Population 2010-2011 (USDA 2012)

The majority of counties in Kansas are following the trend of decreasing population as can be seen on Figure 3-9. Between 2000 and 2011, Coffey County population fell from 8,932 to 8,533, (Figure 3-10) a 4 percent decline. This decline is typical of many counties in Kansas that are not located in highly metropolitan areas. Burlington, the Coffey County seat, had a 2011 population of 2,790, about 33 percent of total county population (US Census Bureau 2010).

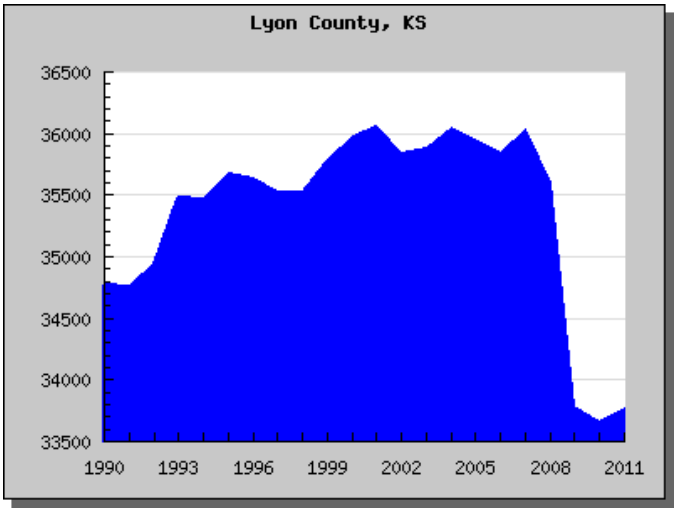
Figure 3-11. U.S. Census Decreasing Population Trends Coffey County



Source: U.S. Census Bureau, Population Estimates Division.

Figure 3-11 displays recent U.S. Census population counts for Lyon County. Between 2000 and 2011, Lyon County population decreased from 35,967 to 33,764, a 6 percent decline. This decline is typical of many counties in Kansas that are not located in highly metropolitan areas. However, from 2010 to 2011 the population in Lyon County did increase by 0.2 percent (USDA). Emporia, the Lyon County seat, had a 2011 population of 24,971, about 74 percent of total county population (US Census Bureau 2010).

Figure 3-12. U.S. Census Decreasing Population Trends Lyon County



Source: U.S. Census Bureau, Population Estimates Division.

Economy

Coffey County

The U.S. Bureau of Economic Analysis (BEA) publishes estimates of full and part-time employment by the North American Industry Classification System (NAICS). These statistics reflect employment by industry. A community's economic base includes those industries and businesses that bring income into the community from other areas of the state, nation and the world.

The Coffey County economy is based on electric power generation, agriculture and manufacturing. The tourism/recreation industry also brings income into the county; most is spent in the retail and service sectors which also serve local residents. The government sector is the largest employer in Coffey County, with 1,242 jobs in 2011. Almost 91 percent of government jobs were in local government, including school district employment (NAICS 2012 BEA US Dept. of Commerce). The retail and services sectors provided nine percent and five percent of total employment, respectively (BEA 2011).

The combined farming and agricultural services sectors comprised about five percent of total 2011 BEA employment in the county. Between 1990 and 2007, the total number of farms in the county increased from 610 to 681, but the total acres farmed decreased from 345,000 to 324,827 (NASS USDA 2011).

During 2011, Coffey County had a per capita personal income of $46,517, which was 14 percent above the statewide average (BEA 2011).

Wolf Creek Generating Station

Wolf Creek Generating Station is an integral part of Coffey County's local economy. The plant is owned by Kansas City Power & Light Co. (a Great Plains Energy Inc. company), Westar Energy and Kansas Electric Power Cooperative Inc. Wolf Creek Nuclear Operating Corp. operates the facility.

Operation of the Wolf Creek plant increased Coffey County's economic output by $7.9 million in 2003. Adding the direct value of the plant's electricity generation brings the county's economic output attributable to Wolf Creek to $607.9 million in Coffey County. The operation of Wolf Creek and the secondary effects of the plant account for 682 jobs in Coffey County and account for $57.7 million in earnings to workers in Coffey County. Wolf Creek employs 1,028 people, with 55 percent living in Coffey County. Economic activity generated by Wolf Creek creates another 121 jobs in the county.

Wolf Creek pays an estimated $24.8 million in state and local taxes annually. The economic activity generated by the plant contributes another $5 million in state and local taxes through increased business, corporate, payroll and personal taxes. By combining direct and indirect tax benefits, the Wolf Creek plant pays nearly $30 million in state and local taxes.

Besides the economic benefits Wolf Creek provided, the plant generated more than 10 million megawatthours of electricity in 2004, approximately 19 percent of Kansas' electricity needs. This low-cost electricity helped keep energy prices affordable in the Southwest Power Pool North Sub-Region, where the Wolf Creek plant resides. In 2004, Wolf Creek's production cost was 1.44 cents per kilowatt-hour, compared to an average production cost of 1.69 cents per kilowatt-hour for the rest of the regional market (NEI 2005).

Lyon County

Manufacturing is still considered the largest sector in the county and includes the Tyson plant, a Dolly Madison plant, and firms that manufacture automotive and industrial products, among others. However, in the past few years production has decreased at the Tyson plant and Dolly Madison has closed its plant in Emporia. The statistics for this are not available yet and do not reflect in the recorded 2,826 jobs provided in the 2011 Economic Analysis. The government sector, which employs 2,628 individuals, includes Emporia State College (BEA 2011)). The retail and service sectors provide slightly larger percentages of employment in Lyon County, reflecting its larger population and Emporia's position as a regional trade center. In 2011, Lyon County retail and services sectors provided 12 percent and seven percent of total employment, respectively (BEA 2011).

Farming and agricultural services provided about five percent of total Lyon County employment. In 2007, there were 930 farms in the county, 60 more than in 1990. The total acres farmed decreased, from 485,000 in 1990 to 473,679 in 2007 (NASS USDA 2011).

During 2011, Lyon County had a per capita personal income of $29,493, which was 28 percent below the statewide average for Kansas (BEA 2011).

3.8.2 Land Use

The assessment area for land use includes lands associated with the John Redmond Reservoir and surrounding areas.

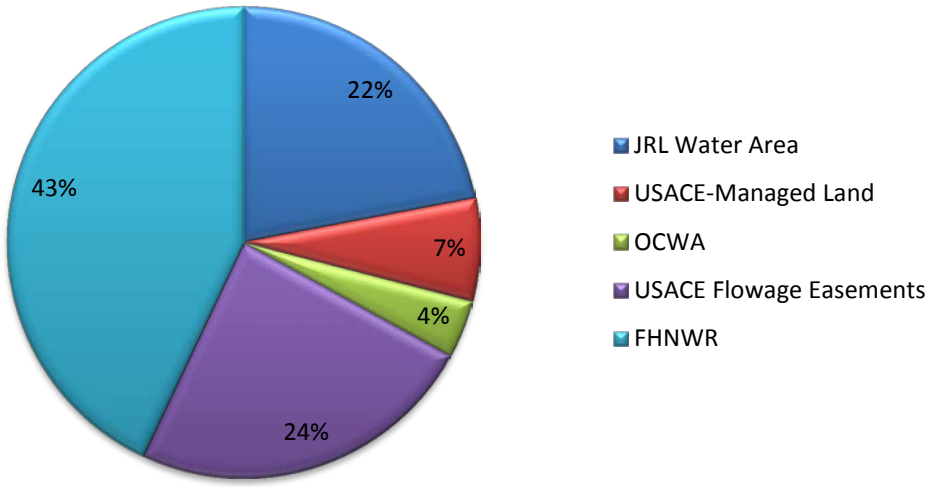
Lands Associated with John Redmond Reservoir

The John Redmond Reservoir complex includes the lake, dam, and associated lands and flowage easements, the FHNWR and the OCWA. The land area of each of these facilities is displayed in Table 3-10. The percentage of each of the total project area is shown in Figure 3-12.

Table 3-10. John Redmond Reservoir Land Area (Source: USACE 2013)

USACE			USFWS	KDW&P
John Redmond Reservoir Water Area[1]	Flowage Easement	Land	Flint Hills NWR	Otter Creek
9,710 acres	10,505 acres	3,160 acres	18,545 acres	1,472 acres
[1]*Acreage at 1039 msl conservation pool level.*				

Figure 3-13. Land Percentages by Managing Agency or Category (Source: USACE 2013)



John Redmond Reservoir

The USACE holds fee title to approximately 29,801 acres of land associated with John Redmond Reservoir and has flowage easements on an additional 10,502 acres.

John Redmond Reservoir was developed for flood control, water supply, water quality and recreation purposes. The reservoir and associated lands are also managed for wildlife objectives. USACE lands associated with John

Redmond Reservoir include lands designated for intensive and low-density recreation use and wildlife management. There are six developed public-use areas on USACE managed land, including five that have recreation parks providing camping (recreational vehicle, tent and trailer), picnic areas, drinking water and sanitary facilities. Additional recreation facilities present on USACE managed lands include an overlook facility, parking areas, trails, a swimming beach and five boat ramps.

USACE lands include approximately 400 acres of land that has been leased for agricultural purposes in the past. Currently, the land is not leased because of frequent flooding and the difficulty in removing the resultant wood debris (USACE 2013).

US Fish and Wildlife Flint Hills National Wildlife Refuge

The FHNWR, located on the upper portion of John Redmond Reservoir, consists of 18,545 acres owned by the USACE, which is leased and managed by the USFWS under a cooperative agreement. The total land area is 25 percent wetlands (4,572 acres), eight percent open water (1,400 acres), three percent riparian wetlands on the Neosho River and associated creeks (5,999 acres), 17 percent grasslands (3,200 acres), 13 percent woodlands (2,400 acres), 12 percent brushlands (2,255 acres), 21 percent croplands (3,917 acres) and 0.6 percent administrative and recreational roadways (120 acres) (USACE 2013).

The FHNWR is managed primarily to benefit migrating and wintering waterfowl in the Central Flyway. A variety of management practices are used to provide food and cover for waterfowl, shorebirds, neotropical migrants and native species. The refuge also provides habitat for white-tailed deer, wild turkey, bobwhite quail, and an assortment of other mammals, birds, reptiles and insects.

Public use activities currently permitted at FHNWR include wildlife observation, hiking, photography, sightseeing, boating, picnicking, camping, fishing, wild food gathering and hunting. Fish bait gathering is allowed for personal use and firewood gathering is allowed by permit. Public facilities on FHNWR include parking areas, boat ramps, hiking trails and an observation tower (USACE 2013).

Currently, the USFWS maintains 3,917 acres of croplands on FHNWR, which is leased to 14 cooperative farmers. The USFWS share of crops ranges from 10 percent in flood-prone areas to 45 percent on higher ground. The land is difficult to lease because it floods frequently in low lying areas, and removing the resulting wood debris is expensive and time consuming (USACE 2013).

Otter Creek Wildlife Area

The USACE has licensed the KDWP&T to manage the 1,472 acre OCWA. Otter Creek is managed primarily for upland game species, including bobwhite quail, mourning dove, wild turkey, cottontail rabbit, squirrel and white-tailed deer. The OCWA also provides fishing access and management, particularly for channel and flathead catfish, as well as wildlife observation, sightseeing, photography, boating and hunting opportunities. There are no developed facilities on OCWA. Interpretive trails are present and include the Dove Roost Trail and the Headquarters Trails.

Approximately 400 acres of the OCWA is available for agricultural leases, but these lands have been flooded about three out of every five years in recent times. During productive years, the KDWP&T leaves approximately 25 percent of the crop in the field to provide forage for wildlife. The cropland is becoming more difficult to lease and the KDWP&T may convert a portion of the cropland to natural grasses for wildlife cover and forage (USACE 2013).

Federal Government Owned Sediment Disposal Areas

Three parcels owned by the federal government below the dam have been identified as potential sediment disposal locations, CDF Sites A, B and C. CDF Site C is under a fee agreement between the federal government and the KDWP&T. The land had been used for fish rearing habitat but has not served that function in recent years. Due to the presence of wetlands and other Waters of the United States, CDF Site C has been excluded from consideration as a viable sediment disposal location. CDF Site B is located along the Neosho River and is owned by the federal government, but is currently out-leased for agricultural production. CDF Site A is located north of the Neosho River and is owned by the federal government.

Land Use on Adjacent Areas

Coffey County adopted the John Redmond Reservoir Plan for Land Use and Transportation about the time John Redmond Reservoir was first constructed. The land immediately outside the boundary of the USACE land is zoned agricultural, which allows for a wide variety of land use. Other nearby land use within Coffey County includes an airstrip and several small cemeteries. The Coffey County communities of New Strawn (2010 population 394) and Ottumwa (2010 population unknown) are all located within close proximity to John Redmond Reservoir.

A portion of the FHNWR lies within Lyon County. Most Lyon County land in the vicinity of FHNWR is zoned agricultural, except for a quarry and several parcels in conservation easements. The Lyon County communities of Hartford (2010 population 371) and Neosho Rapids (2010 population 265) are located adjacent to FHNWR.

Recreation Activities

Recreation resources exist on John Redmond Reservoir, FHNWR and OCWA. In all areas, sightseeing and fishing, primarily for channel and flathead catfish, are the recreation activities that generate the greatest number of year-round visits. Although the KDWP&T has had recent success in maintaining a population of hybrid white bass/wiper, maintaining a sport fish population on John Redmond Reservoir has proven difficult, because young fish are flushed downstream on an annual basis (USACE 2013). Fishing visitation has declined in recent years because several more attractive (in terms of sport fish populations and water quality) fishing alternatives have been developed in the vicinity of John Redmond Reservoir. These include the Coffey County Fishing Lake and several municipal lakes. Although the presence of these lakes has generally reduced fishing activity on John Redmond Reservoir and adjacent lands, it has resulted in an increase in camping activity in John Redmond Reservoir campgrounds, because camping facilities are not available at these alternative lakes.

Seven recreation areas, 126 camping sites, two playgrounds, six trails, and two boat ramps are available at John Redmond Reservoir. In 2010, more than 110,000 visitors were recorded at the lake, including 8,471 picnickers, 1,480 campers, 6,342 swimmers, 101 water skiers, 1,510 boaters, 59, 446 sightseers, 31,977 fisherman and 4,242 hunters (USACE 2010).

Table 3-11 displays visitation statistics by management area for 1998 through 2000. Recreation visits have been increasing in all areas except OCWA. The decrease in OCWA use may be the result of increased fishing opportunities elsewhere in the area.

Table 3-11. Annual Visits, By Management Area 1998–2000 (Source: USACE 2013)

	1998	1999	2000	2011
USACE John Redmond Reservoir	17,012	21,507	32,372	148,447
USFWS FHNWR	35,030	37,000	52,000	N/A
KDWP&T OCWA	30,635	21,672	10,675	N/A
Total	82,677	80,127	95,047	148,447

Recreation Activities on John Redmond Reservoir

Table 3-12 displays seasonal percentages of recreation use by major activity for John Redmond Reservoir. Totals for all activities are greater than 100 percent because some visitors engage in more than one recreation activity per visit. Sightseeing is the major recreation activity on John Redmond Reservoir during all seasons, ranging from 45 percent to 65 percent of total visits during the period. Fishing is the second most popular activity ranging from 23 percent to 39 percent of total visits, except during winter, when hunting is the second most popular activity, totaling 34 percent of all visits (USACE 2013).

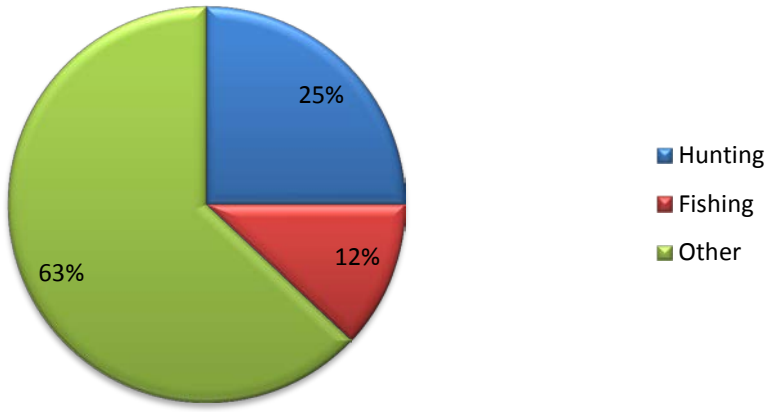
Table 3-12. Seasonal Percentage Recreation visits by Activity: Spring 1999 through Summer 2000. (Source: USACE 2013)

Recreation Activities on FHNWR

	Camp	Picnic	Boat	Fish	Hunt	Water Ski	Swim	Other	Sight-See
Spring 1999	2.49%	8.26%	0.08%	23.28%	7.03%	0%	0%	6.19%	63.87%
Summer 2000	17.28%	11.11%	2.24%	32.74%	0%	0.13%	9.12%	5.41%	46.66%
Fall 2000	0.0%	5.12%	0.96%	39.22%	8.63%	0.0%	0.0%	5%	45.32%
Winter 2000	0.0%	2.19%	0.02%	18.13%	35.28%	0.0%	0.0%	1.18%	49.68%

Recreation facilities are discussed in Section 3.8.2, Figure 3-13 displays the percentage of each of the major recreation uses on FHNWR for 2000. Other activities, which include wildlife viewing, generate the most recreation visits for FHNWR. Hunting and fishing are also major activities. In years when the water level plan has been implemented or in years when natural conditions allow for lowered water levels in the spring followed by raised water levels in the fall, both bird watching and waterfowl hunting visits increase dramatically (USACE 2013).

Figure 3-14. FHNWR Percentage of Recreation use by Type: 2000



(Source: USACE 2013) Other includes wildlife viewing, walking, driving, photography, visitor's center, etc.

Recreation Activities on OCWA

Most visitors to OCWA engage in wildlife viewing, hunting or fishing activities. Of those visitors who either fish or hunt, an estimated 60 percent of visitors hunt and the remaining 40 percent engage in fishing, primarily for channel catfish along Otter Creek. The white bass spring run also generates a number of fishing visits (USACE 2013).

3.8.3 Economic Effects of John Redmond Reservoir

The economic effects of John Redmond Reservoir include those associated with flood control, water storage and supply and recreation. Other economic effects include employment and the procurement of local goods and services for the operation and maintenance of the reservoir and associated facilities, which would not be affected by the Proposed Action or alternatives and are not considered in this assessment.

Flood Control

John Redmond Reservoir provides flood protection for lands along the Neosho/Grand River below the dam. While the dam does not prevent all flooding, it substantially reduces the amount of flooding downstream. The economic value of flood control is calculated as the dollar amount of damage prevented. In Fiscal Year 2010 (FY2010), $12,548,800 in flood damage protection was provided by the reservoir. Cumulative flood damage protection exceeds $739 million (Wendt, B. KWO personal communication, Goff (USACE), 2011).

Water Storage and Supply

John Redmond Reservoir provides water storage for two programs operated by the KWO: the Water Marketing Program and the Water Assurance Program. These programs are operated by the KWO to ensure that an adequate supply of water is developed, managed, and maintained to meet, as nearly as possible, the long range water supply needs of municipal and industrial water users within Kansas.

Wolf Creek Nuclear Generating Station (WCGS)

Under the Water Marketing Program, the KWO is contracted for an annual 9,672 million gallons per year (MGY) of water supply at John Redmond Reservoir, for use by Westar Energy in supplementing the cooling lake at the WCGS. This supplemental source of water is necessary because evaporation in most years is greater than inflow in the WCGS cooling lake (USACE 2013). Westar Energy pays $0.10 per thousand gallons of water, based on a formula that requires payment for 50 percent of the allotment at the beginning of the contract year and subsequent payment for water used over that amount on a per thousand gallon basis. Westar Energy has typically used less than half of their contract and paid the minimum annual amount of $483,600; however, in 2011 Westar Energy used about 65 percent of their contract maximum.

Cottonwood and Neosho River Basins Water Assurance District Number 3

The Water Assurance Program provides supplemental water to a number of municipal and industrial users. The Kansas Water Assurance Program was developed to meet the needs of municipal and industrial water supply users whose needs could not be economically and institutionally met by other means. During periods of drought, natural stream flow may be significantly reduced. Municipal and industrial water users along a stream who hold appropriation rights to the natural flow may find their ability to use the surface water is severely limited, at a time when their demand for water is at its highest. Many of these users are located below federal lakes.

The Cottonwood and Neosho River Basins Water Assurance District Number 3 (CNRWAD) was formed on August 31, 1993. The contract and operations agreement with this district were signed on August 28, 1996. The operations agreement is updated every five years or as needed. There are 19 municipal and industrial members of this district including:

Municipalities	Wholesale Water Suppliers	Industrial
Burlington	Public Wholesale Water Supply District #5 (Iola)	Ash Grove Cement Company
Chanute		Day & Zimmerman*
Chetopa		Great Plains Industrial Park*
Cottonwood Falls		Monarch Cement Company
Council Grove		Westar Energy
Emporia		
Erie		
Humboldt		
Iola		
Le Roy		
Oswego		
Parsons		
St. Paul		*Formerly Kansas Army Ammunition Plant

Each of these customers, except the cities of Council Grove, Cottonwood Falls, Emporia, and Hartford, are hydrologically below John Redmond Reservoir. There are no other major reservoirs in this reach of the river to supplement flows during periods of drought. In addition, ground water is only available in limited quantities within the alluvial valley. These 15 municipalities and industries located downriver from John Redmond Reservoir are directly dependent upon water provided from assurance storage during times of low streamflow.

Members receive water supply service through releases from storage in Marion, Council Grove Lakes and John Redmond Reservoir. The district pays the state for costs associated with the storage space for 10,000 acre- feet of water in these lakes and reservoirs. John Redmond Reservoir stores 3,500 acre-feet of the total, for which CNRWAD paid the state $291,370 in ten annual installments. The district continues to make annual payments for operation, maintenance, and repairs associated with the storage space dedicated to district use and an annual cost for administration and enforcement.

Recreation

The John Redmond Reservoir and associated facilities (OCWA and FHNWR) provide a variety of recreation opportunities including fishing, hunting, wildlife viewing, hiking, camping and boating. Each of these activities results in economic activity in the study area and elsewhere in the state. Over 29,100 angler days per year of angler use occurs on the river between Council Grove and John Redmond, and 63,900 angler days of use between the John Redmond Reservoir and the Kansas-Oklahoma State line. Both reaches are considered to have an excellent sport fishery, especially for catfish. The principal fishing areas are limited, and generally restricted to, adjacent towns, road crossings, low ware or overflow dams and reservoir tailwaters (USACE 2013).

The USFWS, KDWP&T and USACE prepared a study on the economic impact of water level management for John Redmond Reservoir. That study, based on previous studies of the economic contributions of bird and waterfowl recreation, estimated that each hunting trip contributed $162 to the economy. In 1996, this estimate yielded an economic value of $3,240,000 for wildlife-related recreation trips. Many shorebird watching and waterfowl hunting visits to John Redmond Reservoir are made by out-of-area and out-of-state visitors,

particularly in years when natural conditions or implementation of the water level management plan results in large numbers of migrating birds (USACE 2013).

According the USACE Value to the Nation 2010 report, the visits to the reservoir resulted in $2,504,450 in visitor spending within 30 miles of the lake.

Coffey County Economic Development (CCED) estimates that overnight visitors to nearby Coffey County Fishing Lake spend $100 per day and day visitors spend $30 per day (CCED undated). Although fishing generates a substantial number of visits to John Redmond Reservoir, FHNWR, and OCWA, most fishing visits are believed to be associated with catfish and hybrid bass, and most are made primarily by local residents. The Coffey County Fishing Lake and several nearby municipal lakes are believed to attract the bulk of out-of-area visitors (USACE 2013).

3.8.4 Lands within the Floodplain Downriver from John Redmond Reservoir

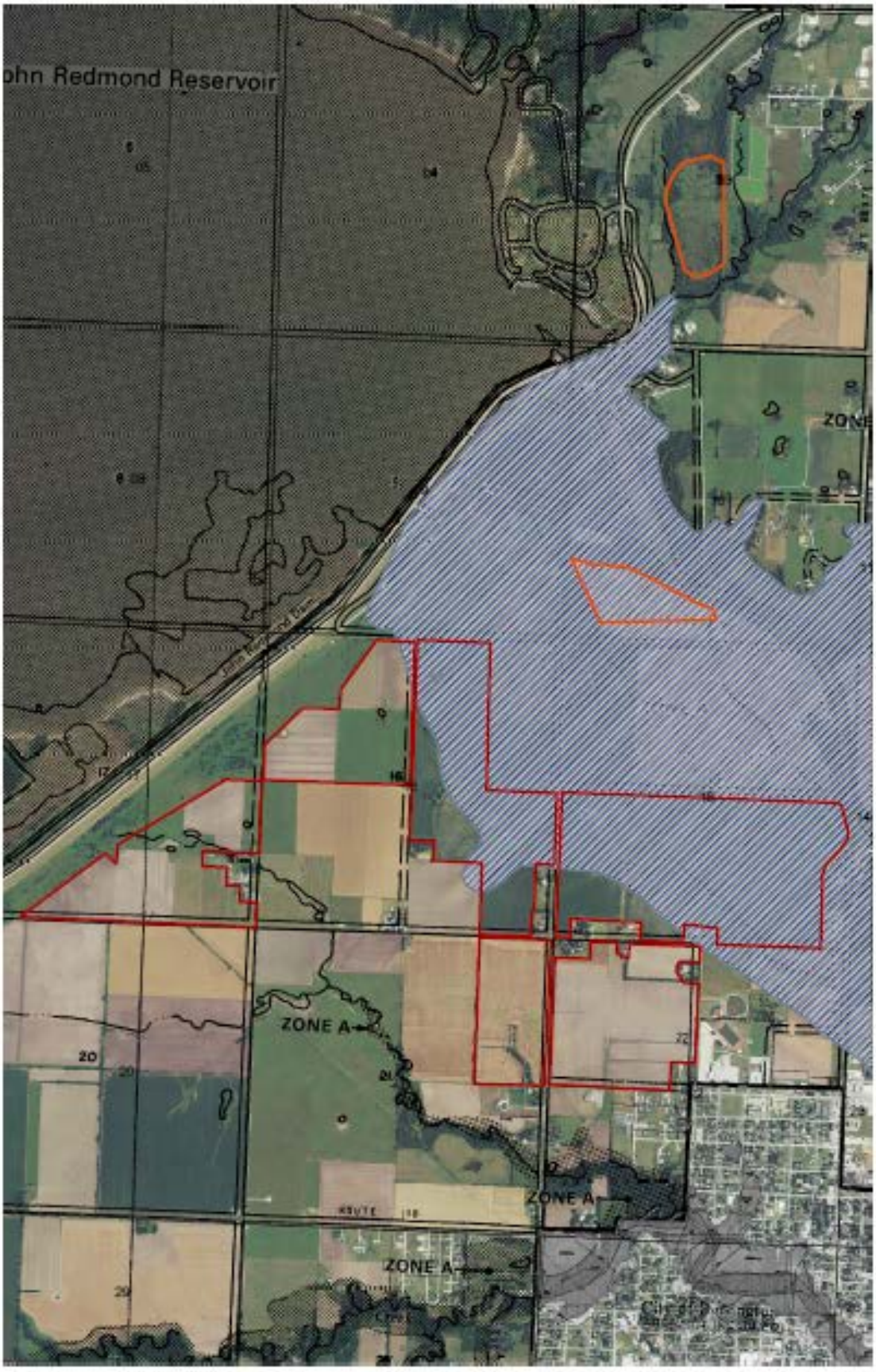
Lands within the floodplain along the Neosho River from John Redmond Reservoir to Grand (Pensacola) Lake are largely privately held and primarily in agricultural use. Agriculture is a major land use and economic activity throughout the Neosho/Grand River Basin. The alluvial soils within the floodplain, which support row crop production (primarily corn and soybeans), livestock grazing, timber production and pecan orchard cultivation, play a key role in area productivity.

Flooding in the Neosho River basin occurs primarily on agricultural lands and riparian woodlands within the floodplain. Flooding occurs during high rainfall/runoff events in the basin between John Redmond Reservoir and Grand (Pensacola) Lake, when high rainfall/runoff events are combined with channel capacity or lower releases from John Redmond Reservoir, or when greater than channel capacity releases are passed downstream from John Redmond Reservoir to avoid risk of project failure. In recent years, inundation of portions of the floodplain has occurred, on average, about once a year according to local estimates.

Flooding effects on crops have ranged from major to minimal, depending on the water depth, duration and time of year that the inundation occurred. Other effects of flooding include bank caving, channel degradation, loss of soil, and movement of nutrients, fertilizer and pesticides. Flooding affects agricultural lands, water quality, and aesthetic and recreational resources along the river (USACE 2013). There are no known studies of the effects of flooding on the agricultural economy in the Neosho River basin between John Redmond Reservoir and Grand (Pensacola) Lake (USACE 2013).

Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) Zone A areas in the vicinity of John Redmond Reservoir are shown as shaded gray areas in Figures 3-15. By definition, these areas are subject to inundation by the one (1)-percent-annual-chance flood event generally determined using approximate methodologies. Areas within the boundary of the Flint Hills National Wildlife Refuge are excluded from designation as SFHA Zone A.

Figure 3-15. Special Hazard Zone A areas – John Redmond Reservoir vicinity



3.8.5 Noise

Noise is defined as unwanted sound that interferes with normal activities or in some way reduces the quality of the environment. Response to noise varies according to its type, perceived importance, appropriateness in the setting and time of day, and the sensitivity of the individual receptor.

Much of the project area, including both the dredge site location within John Redmond Reservoir and the CDF locations, are not near residential or commercial development. Recreational facilities such picnic areas and boat ramps are located immediately adjacent to the reservoir. The U.S. Army Corps of Engineers project office is located approximately 4,000 feet from the dredging site within the reservoir and approximately 1,500 feet from the nearest CDF site. Commercial development along Highway 75 is approximately 1.5 miles from the dredging site approximately 4,000 feet from the nearest CDF site. The nearest residential development is the City of Burlington which is approximately three miles from the dredging site and approximately two miles from the nearest CDF site.

The types of sources that contribute to existing ambient noise levels include street traffic such as cars and trucks, small aircraft overflights, noise from existing power lines, and rural environment sources (wildlife, etc.).

3.8.6 Transportation

John Redmond Reservoir and associated facilities are located about eight miles south of I-35. State Highway 75, located one mile east of John Redmond Reservoir, provides access to the area from the north and south. State Highway 130 provides access from I-35. A variety of Coffey and Lyon County roads provide access to John Redmond Reservoir, as well as, the proposed CDF Sites A and B (Figure 3-16). Average annual daily volumes on the county and major collector roads near John Redmond Reservoir are shown in Figure 3-17.

USACE, USFWS and KDWP&T maintained roads provide access within these facilities. Certain roads within these facilities are inundated during periods when the USACE is required to impound waters to prevent downstream flooding (USACE 2013).

Figure 3-16. Highways and Roads near John Redmond Reservoir.

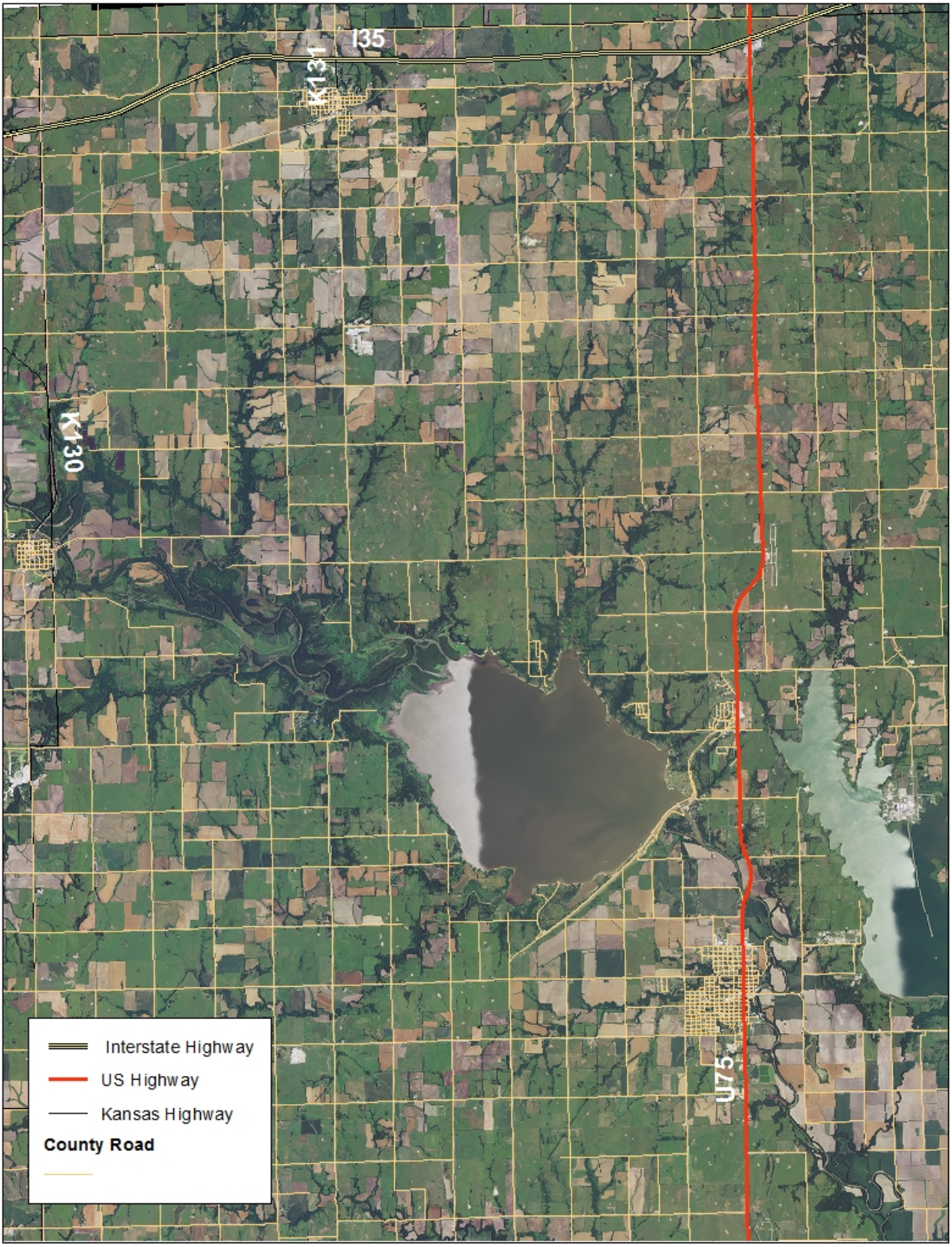
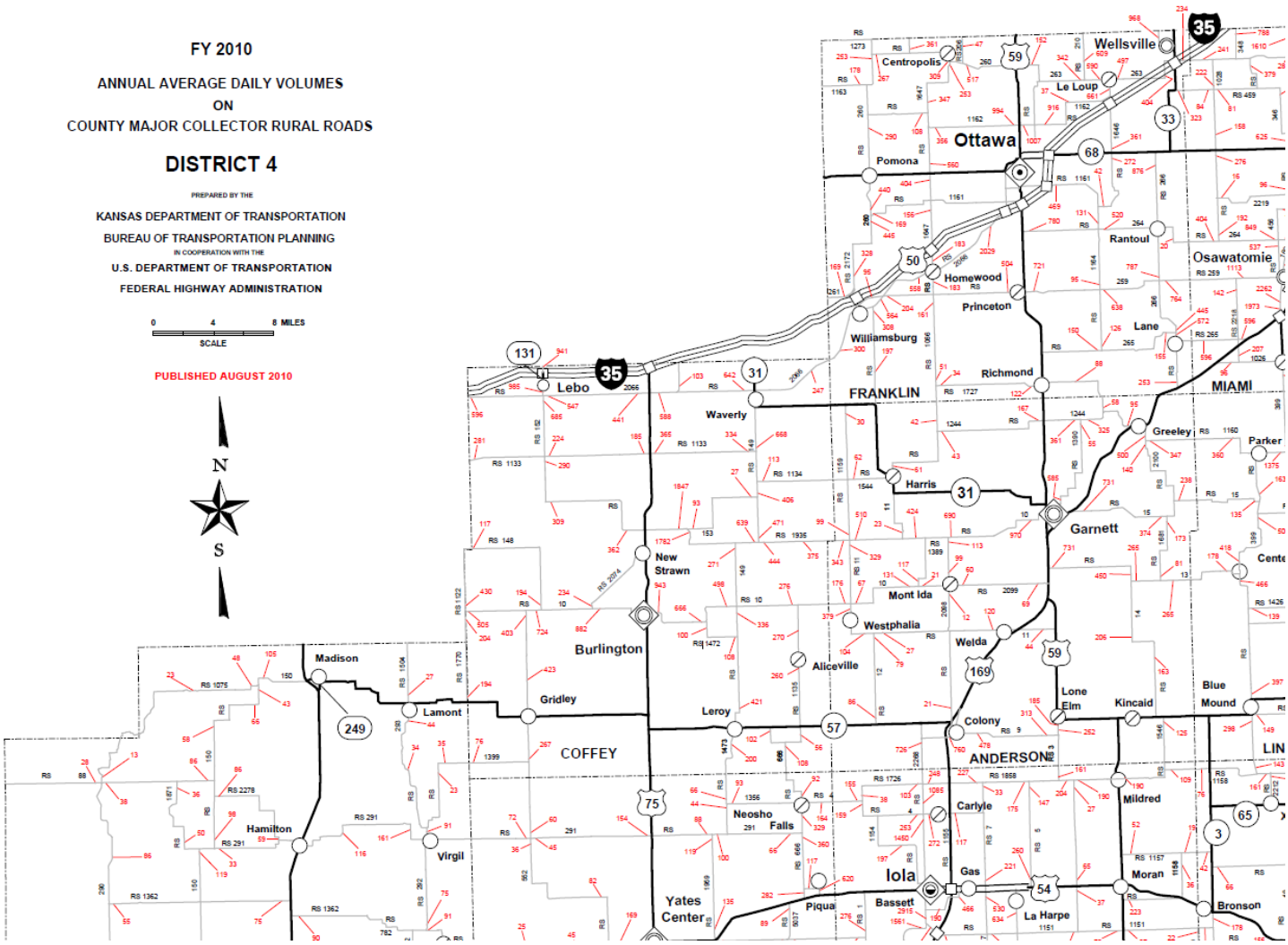


Figure 3-17. Annual Average Daily Volumes on County Major Collector Rural Roads.



3.9 Cultural Resources

Archaeological sites representative of the Paleo-Indian, Plains Archaic, Plains Woodland, Plains Village, Protohistoric (Contact), and Historic Periods are known in the larger vicinity of John Redmond Reservoir in southeastern Kansas. This culture-historical sequence falls generally within the overall sequence that has been established for eastern Kansas. Many archaeological sites in this area have undisturbed, deeply-buried deposits; many are comprised of multi-component prehistoric and/or historic occupations. Several cultural resources investigations, including archaeological survey and excavation, were conducted incident to the construction of John Redmond Reservoir. In the larger regional area there are hundreds of archaeological sites and historic standing structures on record with the Kansas State Historical Society (KSHS). Ultimately, as a major waterway in the Central Plains, the entire Neosho River Valley can be classified as an area of high sensitivity for the location of cultural resources (USACE 2013).

3.9.1 Cultural History Sequence

The following regional chronology is adopted in the DPEIS:

- Paleo-Indian 12,000 to 8500 BP

- Plains Archaic 8500 to 2500 BP
- Plains Woodland 2000 to 1000 BP (AD 1 to 1000)
- Plains Village AD 1000 to 1600
- Protohistoric AD 1500 to 1825
- Historic AD 1825 to present

To aid in comparing divergent cultures and sequences in the Central Plains, the following general adaptation types are used to characterize prehistoric cultural traditions.

Paleo-Indian

Specialized, large-game hunting by small bands of hunter-gatherers was the adaptation type associated with this period. Signature stone tools are unnotched projectile points of fluted or lanceolate type, often found in contexts where mammoth or bison remains also occur. Structural remains are poorly understood, the probable result of a mobile lifestyle and the use of perishable construction materials. Three main complexes identified within this period are Clovis, Folsom, and Late Paleo-Indian (Dalton). The extent of the Paleo-Indian period was approximately 12,000 BP to 10,000 BP (Hoard and Banks 2006).

Plains Archaic

Plant foraging was an important subsistence strategy of hunter gatherer groups in this period and was associated with increased seasonal variability of resources during the mid-Holocene Hypsithermal period. Repeated occupation of sites and features such as rock-lined hearths and roasting pits, and grinding tools reflect intensive plant processing and the cyclical exploitation of resources. Bison were hunted on a smaller scale than previously, with greater reliance on small mammals, mussels and fish. Stone tools were often thermally cured, and included distinctive stemmed and notched projectile points. The Plains Archaic period is traditionally divided into Early, Middle, and Late periods, the overall extent of which was approximately 8,000 BP to 2,500 BP (Hoard and Banks 2006).

Plains Woodland

Archaeologists in Kansas use the term Early Ceramic to describe Woodland cultural components. Incipient horticulture was the adaptation type associated with this period, marked by the introduction of cultigens in the Central Plains. Evidence for semi-permanent villages, increased reliance on wild and domestic plants, widespread use of ceramics and elaborate burials reflect the more sedentary lifestyle of Woodland cultures. Small game remained essential in subsistence. Tool assemblages are distinguished by small, corner-notched projectile points, which suggest invention of the bow and arrow (Hoard and Banks 2006).

Plains Village

Horticulture, supplemented by hunting and gathering, was the adaptation type associated with Village societies. Gardening tools were recognized in artifact assemblages, along with triangular arrowpoints for hunting and pottery types that in Kansas serve to denote this period as the Middle Ceramic. Villager cultures are often identified in lowland terraces of waterways where gardening was viable. The Pomona culture variant is associated with watersheds in southeastern Kansas. Distinguishing traits include shell tempered pottery and a scarcity of cultigen remains such as maize, possibly reflecting less dependence on farming than in other Villager cultures (Hoard and Banks 2006).

Protohistoric

This period was defined by transitory contacts of European explorers in the Central Plains, substantiated by little or no historical documentation. Lifeways were subsumed under the Plains Village adaptation type, but distinctive Late Ceramic archaeological complexes were identified, including the Great Bend aspect with sites in south-central Kansas. Great Bend manifestations likely represent the proto-Wichita villages encountered by Francisco Coronado in 1541. Proto-Wichita sites are also identified in north-central Oklahoma (Hoard and Banks 2006).

Historic

The Reservation Period (1825-1900) was marked by the displacement and resettling of Native American tribes throughout the greater study region. Between 1825 and 1835 reserves were established for the Osage and New York Indians in southeast Kansas. The Cherokee Nation was created in northeastern Oklahoma in 1828, soon thereafter incorporating the Quapaw and Seneca tribes. After the Civil War, the area was further divided into reserves for the Peoria, Ottawa, Wyandotte and others. From 1838 to 1871 the Neosho Agency held jurisdiction over all tribes but the Cherokee. Between the 1830s and 1850s Anglo-Americans legally occupied tribal lands to operate mission schools, trading posts, ferries, mills and blacksmith shops. The early part of the American Period (1850-present) is marked by increasing Anglo-American land speculation and enhanced military supply lines through the study region that connected Fort Gibson, Fort Scott and Fort Leavenworth during the Civil War. Pioneer settlement of homesteads and towns began in earnest in southeastern Kansas during the 1860s following the removal of Native American tribes to Oklahoma. This trend was somewhat delayed in northeastern Oklahoma where the Cherokee Nation maintained a loose hold on sovereignty. By the 1890s, however, towns such as Miami and Ottawa were firmly rooted.

3.9.2 Previous Investigations

Forty-eight archaeological sites have been recorded over the past 30 years in the conservation pool and flood pool at John Redmond Reservoir, which is comprised of land between 1035.0–1045.0 feet above mean sea level (amsl) in elevation. Comprehensive investigations have been published in several reports, including "Appraisal of the Archaeological Resources of the John Redmond Reservoir," (Witty 1961); "Salvage Archaeology of the John Redmond Reservoir," (Kansas State Historical Society 1980); "Archaeological Investigations in the John Redmond Reservoir Area," (Rogers 2001); "Archaeological Investigations at John Redmond Reservoir, East-Central Kansas, 1979," (Thies 1981); and "John Redmond Reservoir Historic Properties Management Plan," U.S. Army Corps of Engineers, Tulsa District 1997). More recently, a Phase II shoreline survey was undertaken by e2M in 2000 with results presented in "An Archaeological Survey of John Redmond Reservoir," (Rust 2001). The survey was followed by Phase III test excavation and evaluation of selected sites by e2M in 2001 (Rust 2005). A review of Historic Preservation Management Plan (HPMP) Database files prior to the e2M fieldwork indicated that 27 of the 47 sites had been destroyed, mitigated, or otherwise determined insignificant. Sites revisited during the Phase II survey determined that an additional 15 sites had been impacted by reservoir operations or lacked evidence of significance (not eligible for the National Register of Historic Places). Six sites, three of which were discovered in 2000, were the focus of Phase III investigations in 2001.

Four historic archaeological sites were recently investigated in the John Redmond Reservoir area of potential effects (Rust 2005). Sites 14CF101, 14CF102, 14CF103, and 14CF105 lie within close proximity to each other and are remnants of the historic Otter Creek community (Pleasant Township), which was first settled in 1858. Phase III test excavations on the first three sites, all originally farmsteads, revealed *in situ* courses of stone foundation walls associated with deep deposits of artifacts. More than 2,000 artifacts were recovered from four excavated units. Preliminary analysis, combined with historical research and extensive oral interviewing of living descendants, suggest 14CF101 and 14CF102 may date to circa 1860 and 14CF103 to the 1880s. 14CF105

preserves substantial surface remains and an early phase probably also dates to the late 19th century (Rust 2005). Sites 14CF101, 14CF102, 14CF103, and 14CF105, and prehistoric sites 14CF311 and 14CF313 (these last two now defined together as one site) were determined not eligible for nomination to the National Register of Historic Places (NRHP). Site 14CF104 was tested and considered ineligible for listing.

Thirty-one sites have been recorded downstream of John Redmond Reservoir. These were inventoried during record searches at Kansas State Historical Society Center for Historical Research in Topeka, the Oklahoma Archaeological Survey in Norman and the State Historic Preservation Office in Oklahoma City. State archaeological site and survey forms were collected from these agencies, along with locations of properties indicated on historical General Land Office (GLO) maps of Kansas (1878) and Oklahoma (1898). Archival research was undertaken at the Kansas State Historical Society Archives, the Kansas Collection at the University of Kansas in Lawrence, and the Western History Collection at the University of Oklahoma in Norman. Only one comprehensive survey has yet been undertaken in this area, "An Assessment of Prehistoric Cultural Resources of the Neosho (Grand) River Valley." Unlike the John Redmond Reservoir sites, many of the downstream sites lack recent first-hand assessment. The sites are briefly described in Appendix D under the appropriate period. General location information for these sites may be found in Final Supplement to the Final Environmental Statement (USACE 2013).

3.9.3 Area of Potential Effect (APE)

Tulsa District has determined the Area of Potential Effect (APE) for the proposed action to include all federal property around the entire John Redmond Reservoir, including the conservation pool and flood pool. Additionally, the APE includes private property surrounding the reservoir where dredge disposal pits may be constructed. The APE will include access roads, utility lines, staging areas, borrow areas, and other connected features. While the APE will include dredge disposal pits and associated features that may be located on private property outside the reservoir footprint, the APE cannot be fully determined because the location of these elements has not been fully identified. Therefore, in order to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended), a set of alternate procedures must be implemented in the form of a Programmatic Agreement (PA). The PA will identify a set of procedures to be implemented as each dredge disposal pit and associated features is designed. Archaeological investigations will subsequently be carried out to identify historic properties in those locations.

3.10 Hazardous, Toxic, or Radiological Wastes

This section describes existing conditions within the John Redmond Reservoir project area with regard to potential environmental contamination on the site, or that may enter the site, via surface water and the sources of releases to the environment. Contaminant pathways have been identified by the USFWS (USACE 2013) and radiological analyses are conducted by WCGS (USACE 2013), using portions of the John Redmond Reservoir site as controls.

A Contaminant Assessment Process (CAP) was completed by the USFWS for FHNWR and radionuclides are monitored for the WCGS, including sites within and near John Redmond Reservoir (USACE 2013). The most likely pathways for contaminants to enter John Redmond Reservoir are through runoff water and the activities associated with agriculture, flood control and public recreation. Radionuclides could enter the John Redmond Reservoir environment via air or water pathways. The highways and roads, railroads, and oil and gas pipelines in the vicinity could also provide sources of contaminants to the project site.

Since establishment in 1966, the entire refuge (95 percent) has been flooded more frequently than one in 10 years, e.g., 1973, 1985, 1986, 1993, 1995, 1998, and 1999 (USACE 2013). Floodwater can bring contaminants to the project site and are a major contaminant pathway. Some sources of contaminants potentially carried in

floodwater from the drainage basin include: 1) municipalities (Emporia, Neosho Rapids, Hartford, etc.,) which have sanitary sewage, automobile parts manufacturing, a slaughterhouse and meat packing plant, commercial bakery, dog food plant, and petroleum product storage facilities; 2) agricultural land where livestock feedlot runoff and chemicals used for fertilizer, weed control, and insect control are applied, and sediments are washed from fields, and 3) lead deposited historically through hunting and fishing activities.

A summary of contaminant issues identified in Blackford (1999 in USACE 2013) includes:

- Chlordane compound concentrations in fish sufficient to result in consumption advisories annually; Fish kills associated with livestock feedlot runoff during the 1970s
- Biota samples containing levels of PCB, atrazine, heavy metals (lead, mercury, and arsenic)
- Sediment samples containing lead
- Detection of strong chemical/pesticide odors by onsite personnel following precipitation events during the spring planting season
- Surface water analyses that identified triazines, 2,4-D, and alachlor
- All drainages are turbid
- Eagle Creek has documented heavy metal concentrations and a livestock feedlot is currently in operation on its banks, updrainage of John Redmond Reservoir

The KDHE Wolf Creek Environmental Radiation Surveillance (ERS) program began in 1979 in accordance with Kansas Administrative Regulation (K.A.R.) 28-19-81 with the initial selection of surface water sampling locations. The ERS program parallels (and partially overlaps) the WCNOC Radiological Environmental Monitoring Program (REMP). The purpose of the ERS program is to detect, identify, and measure radioactive material and direct radiation released to the environment from the operation of WCGS. Data indicating the release of elevated levels of radioactive material will be used to determine the need for corrective and/or protective actions to protect the health and safety of the public. (KDHE 2011)

Environmental samples are collected within 90 miles of the Wolf Creek Nuclear Power Plant site. These samples include, but are not limited to, surface water, ground water, sediment/soil, vegetation, food (e.g. milk), fish and biota. While this routine and frequent measurement of radionuclide activity is primarily at environmental background levels and serves to establish baseline data, it would quickly detect any unplanned release from the power plant. Capabilities exist to detect low-level activities of actinides, fission products, and naturally occurring radionuclides (KDHE 2013).

The most significant radionuclide present in surface water samples collected in the Coffey County Lake is tritium (3H), a beta emitter. The highest 3H concentration measured in the Coffey County Lake during SFY 2011 was 16,890 pCi/l in March, 2011. This maximum Coffey County Lake 3H concentration is 84 percent of the National Primary Drinking Regulation maximum contaminant level (MCL) of 20,000 pCi/l. *The water from the Coffey County Lake is not used as a drinking water source*. The average CCL surface water 3H concentration for SFY 2011 was 12,457 pCi/l, or 62 percent of MCL. Coffey County Lake is not approved for any aquatic recreation other than fishing. All other non-CCL surface water and ground water samples collected in the environs of WCGS during SFY 2011 indicated no radionuclides present attributable to the operation of WCGS.

Aquatic vegetation samples are the best indicators for monitoring the seasonal fluctuations of fission and activation product levels in the Coffey County Lake. No aquatic vegetation sample showed any nuclides attributable to WCGS operation. Five trending samples and six random samples were analyzed.

Sediment samples have been excellent indicators for the long-term buildup of fission and activation product activity levels in the Coffey County Lake. The highest fission product activity in sediments during SFY 2011 was 326.3 pCi/kg-dry 137Cs found at the Environmental Education Area (WCBS-AR-1).

Airborne sample analysis indicated that no radionuclides attributable to the operation of WCGS were present above the lower limits of detection during SFY 2011. Sample analysis of terrestrial vegetation, soil, milk, grain, and vegetable samples collected in the environs of WCGS during SFY 2011 indicated no radionuclides present attributable to the operation of WCGS. Samples of nine species of fish were taken from the Coffey County Lake during SFY 2011. Sample analysis of edible fish portions collected in the environs of WCGS during SFY 2011 indicated that no gamma emitters attributable to WCGS operation were present.

Data from direct radiation monitoring sites revealed no significant changes from preoperational data. The lowest direct radiation levels are found closest to the WCGS. The direct radiation levels on the Coffey County Lake baffle dikes at the 1,200 m exclusion area boundary are the lowest of any monitored site. The limestone used to construct the baffle dikes has a lower natural background radioactivity than the original soil present before the construction of the Coffey County Lake. This effect of construction on the terrestrial component of natural background radiation was noted on radiation surveys conducted around the WCGS site before bringing the initial fuel load on the site. The water from the Coffey County Lake also acts as an effective shield from terrestrial radiation that was present before Coffey County Lake filling (KDHE 2011).

In April 2013, USGS collected five samples within the preferred dredge location (Figure 2-1) for a composite analysis using the Toxicity Characteristic Leaching Procedure (TCLP). TCLP is a soil extraction method for chemical analysis employed as an analytical method to similar leaching through soils and is used to characterize if a waste is characteristically hazardous. Results from the analysis are included in Appendix F. All parameters evaluated in the TCLP analysis, including pesticides, fungicides and herbicides, were non-detectable.

Table 3-13. TCLP Analysis Parameters on Composite Sample from Preferred Dredge Location, All parameters resulted in non-detect.

Arsenic	1,4- Dichlorobenzene	Nitrobenzene	Carbon tetrachloride
Barium	2,4-Dinitrotoluene	Pentachlorophenol	Chlorobenzene
Cadmium	Hexachloro-1,3-butadiene	Pyridine	Chloroform
Chromium	Hexachlorobenzene	2,4,5-Trichlorophenol	1,2-Dichloroethane
Lead	Hexachloroethane	2,4,6-Trichlorophenol	1,1-Dichloroethene
Selenium	2-Methylphenol(o-Cresol)	Benzene	Tetrachloroethene
Silver	3&4-Methylphenol(m&p Cresol)	2-Butanone (MEK)	Trichloroethene
			Vinyl chloride

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This section examines potential environmental impacts of the project proponent's preferred alternative: dredge and dispose to maintain 55,000 acre-feet of conservation storage; alternative #2: dredge and dispose of 45 million cubic yards of sediment; and the No Action alternative on the nine resource areas identified in the affected environment section of this document: geology and soils; hydrology and water resources; biological resources; air quality; aesthetics; prime or unique farmlands; socioeconomic resources; cultural resources; and hazardous, toxic and radiological wastes. For each resource area, consideration is given to whether potential environmental consequences would result from the proposed action or alternatives. For each resource, potential effects are described with respect to the type, duration, extent, magnitude and the likelihood of impact Consideration of potential cumulative effects is also presented.

As defined by NEPA, significant impacts are those that have the potential to significantly affect the quality of the human environment. "Human environment" is a comprehensive phrase that includes the natural and physical environments and the relationship of people to those environments (40 CFR 1508.14). Whether or not a proposed action "significantly" affects the quality of the human environment is determined by considering the context in which it will occur and the intensity of the action. The context of the action is determined by studying the affected region, the affected locality, and the affected interests within both. Significance varies depending upon the setting of the proposed action (40 CFR 1508.27). The intensity of an action refers to the severity of the impacts, both regionally and locally. The level at which an impact is considered significant varies for each environmental resource area.

The area, or region of influence for an action, is defined for each environmental resource based upon the areal extent that would be affected directly or indirectly by the proposed action. The determination of the region of influence is based upon guidance provided by regulatory agencies or professional judgment (Table 4-1).

Table 4-1. Environmental Resources and Region of Influence

Environmental Resource	Region of Influence (No Action Alternative)	Region of Influence (Project Proponent Preferred Alternative)	Region of Influence (Alternative #2)
Geology and Soils	No region of influence	Sediment disposal areas	Sediment disposal areas
Hydrology & Water Resources	John Redmond Reservoir.	John Redmond Reservoir and downriver effects	John Redmond Reservoir and downriver effects
Biological Resources	John Redmond Reservoir	Sediment disposal areas, Upriver, John Redmond Reservoir, and downriver effects	Sediment disposal areas, Upriver, John Redmond Reservoir, and downriver effects
Air Quality	No region of influence	John Redmond Reservoir vicinity; construction of disposal areas	John Redmond Reservoir vicinity; construction of disposal areas
Aesthetics	No region of influence	Sediment disposal area, John Redmond Reservoir, and downriver effects	Sediment disposal area, John Redmond Reservoir, and downriver effects
Prime or Unique Farmlands	No region of influence	Sediment disposal areas	Sediment disposal areas
Socioeconomic Resources	Allen, Anderson, Bourbon, Cherokee, Coffey, Crawford, Labette, Lyon, Neosho, Wilson, and Woodson Counties, Kansas	John Redmond Reservoir vicinity, and Coffey and Lyon Counties, Kansas	John Redmond Reservoir vicinity, and Coffey and Lyon Counties, Kansas
Cultural Resources	John Redmond Reservoir	Sediment disposal areas, John Redmond Reservoir	Sediment disposal areas, John Redmond Reservoir
Hazardous, Toxic or Radiological Wastes	No region of influence	Sediment disposal areas, John Redmond Reservoir, and downriver effects.	Sediment disposal areas, John Redmond Reservoir, and downriver effects.

4.2 Geology and Soils

Geology and soil resources for an area consist of the surface and subsurface soils and bedrock, and their respective physical characteristics. Concerns relating to geology and soil resources include the impacts of an action that would result in geologic or soil related hazards, i.e., subsidence, land sliding, erosion, expanding or collapsing soils and bedrock and seismic activity. The limiting of access to mineral resources, unique geologic features, or paleontological resources are also areas of concern.

Topography is the change in elevation over the surface of an area, and is generally the product of the geology and soil resources for a given area. Therefore, effects on topography are also included under this geology and soil resources section.

No Action Alternative

Potential effects on geology and soil resources through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing conditions. There would be no short, medium or long-term, beneficial or adverse effects on geology or soil resources as a result of implementing the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging would be accomplished through the use of a hydraulic dredge which would pump sediment from the lake to an offsite disposal facility. The Preferred Alternative would result in potential effects on geology and soil resources regarding the placement of dredge materials. The selected location for the dredge materials would potentially bury geology or soil resources resulting in long-term, localized, adverse effects, the significance of which would be dependent upon the geology or soil resource.

No geotechnical analysis has been conducted to date at the proposed CDF sites; however, prior to final design of the CDFs, split spoon samples will be taken and sieve analysis performed along with visual classification to assess unconfined compressive strength, Atterburg limits and other soil features needed to complete the final CDF design. All materials required for berm construction for the CDFs will be collected on-site from within the containment area and will not be transported off site.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on geology and soils would be similar to the impacts described under the preferred alternative. However, because more land would be required for disposal of dredged sediments the potential to burry geology or soil resources would be greater, but still dependent upon the geology or soil source; resulting in long-term, localized, adverse effects, that magnitude of which would be dependent on the geology or soil resource

4.3 Hydrology and Water Resources

Hydrology and water resources for an area consist of the surface and ground water within a region. Environmental concerns pertaining to hydrology and water resources include the availability, quality, and quantity of surface and ground water and control of floodwaters.

No Action Alternative

The potential effect on hydrology and water resources through the implementation of the No Action Alternative is a decrease in availability of surface water resources for the state of Kansas. USACE has an agreement with the state of Kansas for water storage for industrial and municipal uses, and as the sediment continues to accumulate in the conservation pool at John Redmond Reservoir, the storage capacity is diminishing, thereby reducing the availability of water for the state of Kansas. At the current sedimentation rate, the conservation pool at John Redmond Reservoir will be unable to store enough water to meet the requirements of the state of Kansas. The inability of John Redmond Reservoir to store adequate water volume would result in a long-term, regional, major adverse effect on water resources for Kansas.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The Preferred Alternative would potentially result in both long-term, significant beneficial and short-term, insignificant adverse effects on hydrology and water resources for John Redmond Reservoir. The beneficial effects would be an increase in storage capacity of the reservoir thereby creating a greater availability of surface water resources for the state of Kansas. This alternative would also allow the state of Kansas to meet the needs

of its water supply customers. The effects of implementing the Preferred Alternative on storage capacity would be considered long-term, major, regional and beneficial.

Another long-term and major benefit of restoring storage capacity to John Redmond Reservoir has to do with increasing reservoir trap efficiency. Reservoir trap efficiency is not a constant through time but is influenced by 1) reservoir operation, 2) inflowing sediment characteristics and 3) hydraulic detention time. No changes to reservoir operations in terms of the magnitude, duration, or timing of water releases are anticipated as a result of dredging. The state of Kansas is currently involved in implementing a number of sediment reduction activities upstream of the lake such as streambank restoration within the drainage of John Redmond Reservoir. A reservoir's trap efficiency declines through time due to sediment accumulation which reduces the capacity: inflow ratio (Sedimentation Engineering 2008). Improving capacity at John Redmond Reservoir as a result of dredging will improve the sediment rating curve below the reservoir. In other words, in terms of benefits, the Preferred Alternative will in the long-term, result in lower suspended sediment concentrations below the reservoir than the No Action Alternative, especially under low flow release conditions. A final beneficial short and long-term effect of the Preferred Alternative is a reduction to resuspension of in-reservoir sediment by wind induced waves. The magnitude of reservoir bottom sediment shear stress caused by wave action is a function of wave length and water depth (Laenen 1996). In dredged areas the water depth is increased reducing potential shear stress for a given wind speed and fetch over No Action Alternative. The result should be decreased concentrations of suspended sediments in low flow releases over time as dredging results in increased reservoir depth and decreased wind-induced sediment resuspension.

Because the effluent from CDF Sites A and B, located below the dam, will be released into the Neosho River the state will apply for and adhere to the conditions set forth in the National Pollutant Discharge Elimination System (NPDES) permit. The Neosho River below John Redmond is designated as Tier 2, meaning, in regard to antidegradation, it is a high quality waters where water quality exceeds the criteria associated with the assigned designated uses. Limited water quality degradation is allowed in high quality water where the degradation is necessary to accommodate important social or economic development, but only if designate uses are still maintained and the highest statutory and regulatory requirements for all point sources of pollution and all cost effective and reasonable best management practices for nonpoint sources of pollution are achieved. The CDFs will be designed to retain suspended sediment materials and provide adequate long-term storage capacity. The quality of effluent discharged from these sites will meet the conditions and standards established by the Section 401 State water quality certification, as well as, the wastewater permitting limits established in a National Pollutant Discharge Elimination System (NPDES) permit. If limits are exceeded, the effluent will be piped back to John Redmond Reservoir.

Proposed CDF Site B is within the 100-year floodplain for the Neosho River, in flood zone A. Soils mapped within CDF Site B, Osage and Verdigris Soils, are hydric and can have a high water table. Excavating on-site soils to use in the berm construction may affect the hydrologic regime of the site, which could affect the adjacent wetlands. The Kansas Water Office will ensure that measures are in place to avoid impacts to other aquatic resources. Such measures may include limiting excavation near the area; digging a dewatering trench and pumping the water back to the wetland; installing a cutoff wall; and limiting excavation to a time of year least likely to impact the wetland hydrology. These measures could be employed during the construction of the CDF. Once the berms are constructed and the placement of dredged slurry commences, a hydraulic boundary will be in place and the water will equalize.

A potential adverse effect of the Preferred Alternative is the possibility of causing sediments to become suspended in the vicinity of hydraulic dredging activities. Although some resuspension of deposited sediment is anticipated during the dredging activities, the increase to the suspended sediment concentration in the water column is expected to be localized to areas immediately surrounding the dredge (VBKO 2003). According to a literature review summarizing the factors influencing resuspended sediment due to dredging operations (Anchor

Environmental 2003) sediment concentrations: 1) are greater toward the bottom of the water column near the sediment/water interface, 2) rapidly decrease with distance from the active dredge site, 3) are greater when ambient water currents are sufficient to entrain mobilized sediment and 4) are greater when the particle size distribution of sediment is small (silts/clays). Removal of sediment from John Redmond Reservoir will be accomplished with a hydraulic dredge equipped with a dredging ladder which allows dredging at depths down to 38 feet. The *maximum* depth of John Redmond Reservoir is about 14 feet at 1,041 feet MSL (conservation pool elevation), therefore dredging will be maintained at the bottom of the water column. Resuspension rates and sediment concentrations increases over ambient conditions during dredging operations were found to be minimized by hydraulic dredges (rather than mechanical dredging).

The same literature review also found that the shape and size of resuspended sediment plumes are predominately determined by hydrodynamic condition in the water body being dredged and the vast majority of resuspended sediments resettle close to the source within one hour. Water moves much more slowly in reservoirs than the streams that feed them (as evidenced by the sediment accumulation within them) and with proper low flow reservoir operations, there should be little opportunity for resuspended sediment to be discharged from the reservoir. Any impact of a release of nutrients to the water column from disturbed sediment due to dredge project on algal production would be minimized by the water body being light limited (KDHE 2003).

Given the above findings, the anticipated change to the annual, low flow sediment load discharged from John Redmond Reservoir due to the dredging project should be, at most, negligible. Some potential increase to suspended sediment concentrations downstream of John Redmond Reservoir could occur if dredging activities are conducted near a discharging John Redmond Reservoir gate. Current low-flow releases from John Redmond Dam are made through two 24-inch low flow conduits located near the left abutment. However, the dam is equipped with the capacity to make the same releases through any one of the fourteen tainter gates which discharge from a higher elevation in the water column. This provides a high degree of flexibility in both the lateral location (i.e., distance from dredging operations) and reservoir depth for low flow releases. Proper communications between dredge activities and reservoir operations will minimize the chance of occurrence of significant increases in suspended solids concentrations in low flow releases during dredging activities. Should such an issue arise, impacts are expected to be short-term in duration and low in magnitude and of substantially lower frequency, duration, and magnitude than normal fluctuations in ambient stream chemistry in the Neosho River downstream of John Redmond Reservoir owing to processes not related to reservoir releases.

Starting in 2013, as an added assurance toward maintaining no increases to the existing sediment rating curve under all flow conditions below John Redmond Reservoir, USGS under a cooperative agreement with KWO will install and operate water quality monitors and collect sediment samples on the Neosho River at Burlington, Iola, and Parsons, KS. Data from the monitors and samples will form baseline sediment data on the Neosho River below John Redmond to compare with *any* changes to water quality that may result from dredging or other sediment management practices.

USGS has shown (USGS 2008) in the Neosho basin above and below John Redmond Reservoir that sediment transport, in term of loads, occurs under higher flow events. Although John Redmond Reservoir tends to modestly mute the episodic nature of sediment transport in the Neosho basin through its control of flow, the difference between sediment loads associated with low flow releases and the sediment loads during medium or high flow releases is still over an order of magnitude to two orders of magnitude (USGS 2008; Figure 8 - comparing 90%, 50% and 95% suspended sediment load exceedances). Increasing the suspended sediment concentration in low flow releases would not substantially change the sediment load released from John Redmond Reservoir over the course of a normal precipitation year since the annual sediment load is driven by high flow releases. As previously noted, if the concentration of suspended sediments is of concern, rather than the sediment load, low flow reservoir releases can be coordinated with dredging activities to abate the downstream impact to suspended sediment concentrations. The first phase of dredging will be staged near the

dam and outlet structures. Gate operations could be modified to select gates to open for reservoir releases that are not within an immediate vicinity of dredging operation. Future phases of dredging will be staged further and further away from the dam and outlet structures, therefore, any concerns related to unintentional release of suspended sediments will diminish as the distance of dredging from the dam increases.

A final concern with impacts to water resources could be the potential for release, as a result of dredging operations, of sediment-bound chemical contaminants to both reservoir and downstream aquatic systems. While minimal point-source discharges occur in the reservoir's watershed, the lake does drain a large agricultural area, thereby increasing the potential for accumulation of legacy agricultural chemicals (e.g., chlorinated pesticides) and other chemical constituents associated with past or current agricultural practices. In response, the KWO coordinated with the USGS to conduct sediment sampling on several occasions to quantify the extent, if any, of chemical contaminants in sediments. The USGS collected five cores from John Redmond Reservoir in 2009. The chemical analysis of sediment from John Redmond Reservoir showed no issue at the probable effects level, but exceed the threshold values for arsenic, chromium and nickel. When compared to other eastern Kansas reservoirs in which the USGS has analyzed sediment, the arsenic, chromium and nickel levels at John Redmond are similar to and generally slightly lower than the levels at Perry, Clinton, Fall River and Toronto. The similarity between lakes for arsenic, chromium and nickel indicates the source of those elements is likely natural (from eastern Kansas soils and/or bedrock). No organochlorine compounds (PCBs and DDT) were above the probable effects level and typically were not even detected in the sediment. John Redmond Reservoir has as good or better sediment quality in terms of nutrients, metals and/or organochlorine concentrations than any other eastern Kansas lake the USGS has studied to date (USGS 2010). In April 2013, USGS collected five additional samples within the preferred dredge location (Figure 2-1) for a composite analysis using both total sediment quality analysis and the Toxicity Characteristic Leaching Procedure (TCLP). Results from the analysis are included in Appendix F. Analytical results for the total sediment quality analysis of the composite sample were below the results for the 2009 samples. All parameters evaluated in the TCLP analysis were non-detectable. Because of a general lack of detected contamination there is a low potential for adverse effects of contaminant release.

No significant change to the current operations to John Redmond Reservoir is anticipated due to dredging project. As noted above, gate operations could be modified to select gates to open for reservoir releases that are not within an immediate vicinity of dredging operation. There should be no impact to John Redmond Reservoir releases in terms of inflow management or reservoir discharge operations. During significant flood control operations, dredging activities would cease and all dredging equipment would be relocated/disabled to allow for normal and unhindered flood control operations.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on hydrology and water resources would be similar to the impacts described under the preferred alternative. The effects of implementing the Preferred Alternative on water supply storage capacity would be considered long-term, major and beneficial. Although more sediment would be removed from the reservoir and the potential to resuspend sediment with concentrations of trace elements increases, impacts would be localized to the dredge area. Such impacts are considered to be short-term and minor.

4.4 Biological Resources

Biological resources for the John Redmond Reservoir area include vegetation resources or land cover types, i.e.: woodlands, shrublands, grassland, wetland resources, wildlife resources, fisheries and aquatic resources, and wildlife refuges and wildlife management areas. Environmental concerns pertaining to biological resources include the disturbance, alteration, or destruction of wildlife and plant species and their habitat. Potential effects

to endangered, threatened, and candidate species, species of special concern, and sensitive communities are described in Section 4.5 below.

No Action Alternative

Potential effects on biological resources through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing conditions. There would be no short-term, minor or major, beneficial or adverse effects on biological resources as a result of implementing the No Action Alternative. However, there would be long-term, moderate to major, adverse impacts with no removal of sediment, as John Redmond Reservoir would eventually fill with sediment and reduce areas of pooled water, changing the aquatic community.

The No Action Alternative could have adverse ecological effects. Kansas reservoirs have lower flow velocities, greater depth of flow, and longer water residence times than streams and rivers supplying them and therefore act as deposition zones (sinks) for sediments. Over time, sediment deposition in reservoirs reduces reservoir depth which can increase the frequency, magnitude and duration of suspended sediment concentrations in the water column. The resulting impact to the organisms, including invertebrates and fish communities in those areas can lead to a change from desirable sediment-sensitive organisms being replaced by less-desirable, sediment-tolerant organisms. These population changes would reduce the size of recreational sport harvest, in the case of fish, by lowering both the total abundance of organisms and their individual size. These changes negatively affect recreational anglers and subsistence anglers. (EPA 2008)

In addition, increased sediments and turbidity reduce the aesthetics of a waterbody, which can reduce recreational users enjoyment of their experience and their choices of how often and where to recreate. Sediment and turbidity may also affect recreational anglers by reducing the distance over which fish can see lures, resulting in lower catch rates (Clark et al. 1985).

Birds, mammals, reptiles, and amphibians that consume aquatic plants, invertebrates, fish, and other aquatic organisms or otherwise utilize aquatic habitats for shelter and reproduction can also be affected by elevated sediment and turbidity levels in surface waters. Some species are sufficiently mobile that they can avoid impacted aquatic communities and seek substitutes, if available and accessible (Berry et al. 2003).

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Potential effects on biological resources through implementation of the Preferred Alternative are both beneficial and adverse. The beneficial effect as a result of this alternative is the increased water storage capacity of John Redmond Reservoir, which in turn would result in the availability of improved water quality and quantity for downriver releases during drought conditions in the region of the Neosho River. The ability to release better quality water and for a longer duration would substantially aid in the preservation of the fisheries and aquatic wildlife below John Redmond Dam, particularly the riverine mussels. This effect is considered long-term, major and beneficial.

Potential adverse effect for this alternative, depending on the time of year the dredge activities are performed, may include the potential to disturb wildlife as a result of the presence and noises of human and heavy equipment activity.

Selection of sites for construction of CDFs and disposal of sediments will seek to avoid fill of wetlands and other Waters of the United States when feasible. CDF Site C was initially selected for sediment disposal but has

since been excluded as a viable CDF site because of the presence of jurisdictional Waters of the United States (WOUS).

Construction of a temporary sedimentation basin which does not include the placement of fill into WOUS is exempted from a Clean Water Act Section 404 permit. Efforts will be made to also avoid construction of additional CDFs and associated outlet features below the ordinary high water elevation. If construction of CDFs impacts the hydrology of adjacent wetlands, the state of Kansas will ensure that measures are in place to avoid impacts to other aquatic resources.

If the slope of the streambanks at the point where the pipe crosses the Neosho River is too steep, trenches will be cut into the bank to lay the pipe at a more gradual slope. These trenches will be covered with the excavated materials and reinforced with riprap. A Clean Water Act Section 404 permit will be completed to address the impacts associated with the pipeline crossing.

Construction of CDF Site B will temporarily replace approximately 31 acres of farm ground and 5.5 acres of mixed native grasses and forbs with a sediment disposal basin. Following remediation of the site, the parcel will be replaced with approximately 36 acres of native grasses. Construction of CDF Site A will temporarily replace approximately 13 acres of mixed timbers with a variety of species, 22 acres of grasses, and 2 acres of terraces with a sediment disposal basin. Following remediation of the site, the parcel will be replaced with approximately 216 acres of native grasses. Species associated with the original habitat provided by both CDF Sites A and B will also make use of the native grass habitat following the remediation of the sediment disposal basins.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on biological resources would be similar to the impacts described under the preferred alternative. More water supply storage capacity would be restored under this alternative. This effect is considered long-term, major and beneficial. Similar to the preferred alternative, potential adverse impacts may include the potential to disturb wildlife. This effect is considered short-term, localized, and minor. Alternative #2 would require the construction of a greater number of CDFs, increasing the possibility of fill of wetlands and other Waters of the United States. While every effort would be made to avoid fill of jurisdictional waters, if fill was unavoidable, the impact would be considered long-term, major and adverse.

4.5 Threatened and Endangered Species

No Action Alternative

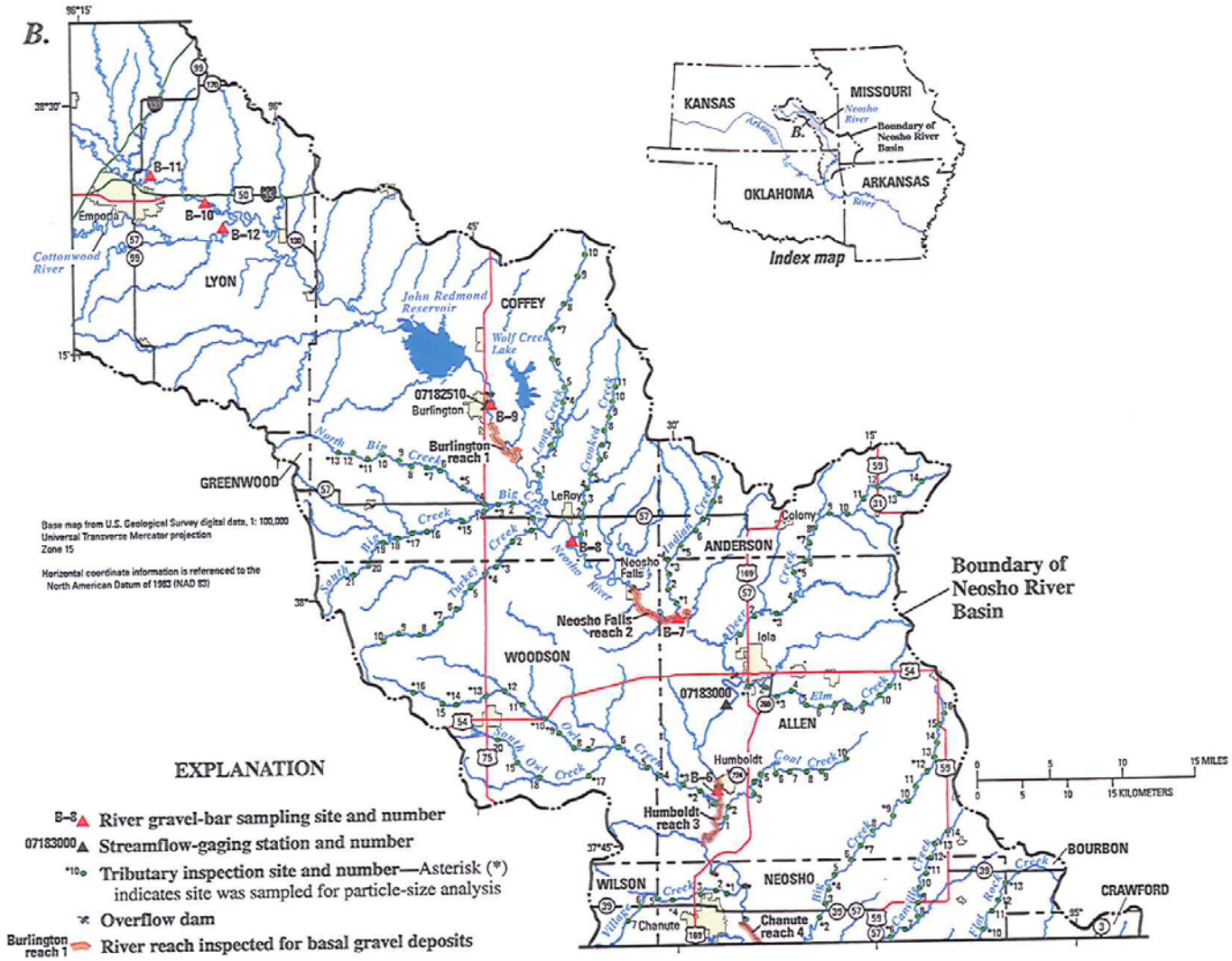
Potential effects on threatened and endangered species through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing conditions. There would be no short-term, insignificant or significant, beneficial or adverse effects on threatened and endangered species as a result of implementing the No Action Alternative. As the reservoir continues to accumulate sediment and the trapping efficiency of the reservoir decreases, more sediment will be passed through the reservoir (ASCE 2008). This could result in long-term, moderate to major and adverse effects on threatened and endangered species.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Federally Listed Species

The Neosho madtom, Neosho mucket mussel, and rabbitsfoot mussel occupy gravel beds below John Redmond Reservoir. The nearest gravel bed downstream of John Redmond Reservoir is approximately 5.3 miles from the dam, located near Streamflow-gaging station 07182510 (USGS 2004). Figure 4-1 shows the location of this gravel bed as denoted as B-9. Proposed dredging and disposal activities would not alter current operations of John Redmond Dam and Reservoir with regard to the magnitude, duration, or timing of water releases. Sediment quality sampling in the areas proposed for dredging indicate low or non-detectable levels of chemical constituents which could potentially be released to the reservoir water column or downstream through releases. Likewise, substantial increases in suspended sediments in the Neosho River downstream of John Redmond Dam are not anticipated owing to dredging-induced reservoir sediment re-suspension which should largely be confined to the immediate area of dredging, as well as operational flexibility regarding gates from which to make low flow releases.

Figure 4-1. Location of River Gravel Bar Sampling Sites in the Neosho River Basin.



Erosion and control measures will be employed at the staging area, as well as, during construction of the sediment disposal locations. A riparian corridor along the Neosho River at CDF Site B will remain intact to provide a set back from construction activities and the river. Pipelines throughout the project will be inspected

multiple times each day. Should a leak develop in the pipeline, dredging activities will be shut down immediately and the pipeline will be repaired. Any material which may have leaked will be cleaned up and transported to the nearest CDF site. Where the pipe crosses the Neosho River, new, thicker walled pipe will be used to minimize the possibility of any leaks occurring in the river.

Based on analyses of potential impacts of dredging activities and coordination with the U.S. Fish and Wildlife Service (USFWS), proposed activities "may affect – not likely to adversely affect" the Neosho madtom, Neosho mucket mussel, and rabbitsfoot mussel. Proposed actions should have "no effect" on the western prairie fringed orchid. By letter dated September 16, 2013 (Appendix G), the USFWS concurred with these determinations, concluding coordination under Section 7 of the Endangered Species Act for the proposed action. All related correspondence is included in Appendix G. Coordination has been requested with the USFWS on the Fish and Wildlife Coordination Act.

State Listed Species

Similar to the Neosho madtom, the Neosho Mucket Mussel, and the Rabbitsfoot Mussel occupy gravel beds below John Redmond Reservoir and prefer gravel bars with minimal silt, and riffles and runs with relatively clear flowing water. As described above for the Neosho madtom, no short-term or long-term major adverse effects are anticipated to state listed species and associated habitat as a result of the Preferred Alternative.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on threatened and endangered species would be similar to the impacts described under the preferred alternative.

4.6 Air Quality

Air quality for an area pertains to the condition of the ambient air whether the result of natural or manmade causes. Primary concerns regarding air quality are the impacts on ambient air quality conditions (NAAQS); impacts on attainment or non-attainment areas; and compliance with local, state and federal implementation plans, including air emission permits.

No Action Alternative

Potential effects on air quality that would result from the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing air emissions. There would be no short or long-term, major, beneficial or adverse effects on air quality as a result of the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The Preferred Alternative would result in potential short-term, localized, minor, adverse effects on air quality owing to minor, temporary emissions from construction and dredging equipment. No long-term, major, moderate or minor, beneficial or adverse effects on air quality are anticipated as a result of implementing the Preferred Alternative.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

Alternative #2 would result in potential short-term, localized, minor, adverse effects on air quality. Given the extended duration of activities, the temporary impacts to air quality would be greater than the Preferred Alternative. No long-term, major, moderate or minor, beneficial or adverse effects on air quality are anticipated as a result of implementing Alternative #2.

4.7 Aesthetics

Aesthetics for a location is the product of the appearance of an area to an individual and is highly subjective. Aesthetics are often measured by the visual characteristics of a site or the visibility a location may offer on another site. Potential impacts pertaining to aesthetics include effects of an action on aesthetic character and visual resources within a site or surrounding area. The methodology for determining the significance of an action's impact was based on the identification of sensitive viewsheds, review of site photographs and evaluation of topographic alterations. Determination of the significance of an action is based on the extent of the alteration to landforms, vegetation, natural appearance and the project's increased visibility.

No Action Alternative

Potential effects on aesthetics through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing site conditions for the short-term. There would be no short-term, major, moderate or minor, beneficial or adverse effects on aesthetics as a result of implementing the No Action Alternative. However, there would be long-term, moderate, adverse impacts with no removal of sediment, as increased sediments and turbidity reduce the aesthetics of a waterbody, which can reduce recreational users enjoyment of their experience and their choices of how often and where to recreate. Sediment and turbidity may also affect recreational anglers by reducing the distance over which fish can see lures, resulting in lower catch rates.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The dredging methodology may result in potential effects on aesthetics, particularly in the area of staging and hydraulic dredge activities, as well as, placement of dredge materials. Depending on the selected location for the excavated sediments, there would be a potential for effects on aesthetic character and visual resources through the changing of the topography in the vicinity of John Redmond Reservoir. In addition, dredging activities would likely result in the presence of heavy construction equipment and trucks. Effects on aesthetics through the implementation of the Preferred Short-term, localized, moderate to major, adverse impacts to aesthetics are expected during the dredging process, but would dissipate as dredging was discontinued at the completion of the project. Long-term, moderate, beneficial impacts to aesthetics are expected as a result of implementing the Preferred Alternative.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to original capacity

The effects of Alternative #2 on aesthetics would be identical to those of the Preferred Alternative. Therefore, Alternative #2 would result in long-term, moderate, beneficial impacts on aesthetics.

4.8 Prime or Unique Farmlands

No Action Alternative

Potential effects on prime or unique farmlands through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing conditions. There would be no short or long-term, major, moderate or minor, beneficial or adverse effects on prime or unique farmlands as a result of implementing the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The Preferred Alternative would result in potential effects on prime or unique farmlands; particularly in the area of the placement of dredge materials. Due to most of the Neosho River Valley being classified as prime or unique farmlands, the selected location for the dredge materials would likely bury prime or unique farmlands.

Soil types occurring on potential sediment disposal site areas were summarized by Farmland of Statewide Importance, Prime Farmland if drained, and Prime Farmland (Appendix E). Disposal of sediment on the federal property would impact approximately 29.6 acres of Prime Farmland if drained soils and 24.2 acres of Prime Farmland.

The excavation and piping of lake sediments could result in a long-term, minor, adverse effect because of the abundance of additional prime and unique farmlands in the area. The excavation and piping of lake sediments could also result in a long-term, major, beneficial effect because of the improvement of soil quality from the placement of sediment on the farmland, such as occurs in a flooding event that would, when eventually dried out, increase crop production. The suitability and benefits of the dredged materials for agricultural production will depend on soil particle size distribution, chemical quality and organic matter content (Townsend, 2009). Topsoil removed from sites for CDF construction can be stockpiled on site to replace following site remediation to improve the opportunity to return sites to production.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

Similar to the Preferred Alternative, the impact of Alternative #2 on prime or unique farmlands will depend on the selection of sites for dredge materials. For the purposes of quantifying potential impacts, soil types occurring in a four-mile buffer around John Redmond Reservoir were summarized by Farmland of Statewide Importance, Prime Farmland if drained, and Prime Farmland (Appendix E). Based on an estimate that an additional 450 acres may be needed on non-federal property for sediment disposal, it is estimated that use of sites on non-federal property would impact approximately 81.2 acres of Farmland of statewide importance, 33.4 acres of Prime Farmland if drained soils and 329.7 acres of Prime Farmland. Alternative #2 would either result in long-term, minor, adverse effect or long-term, moderate, beneficial effect.

4.9 Socioeconomic Resources

Potential socioeconomic impacts of the Proposed Action and alternatives include effects on economic and demographic conditions, recreation, land use, transportation and agricultural activities in the Neosho River basin below John Redmond Reservoir.

Socioeconomic issues identified during scoping and agency coordination include the following:

- Effects on recreation resources on John Redmond Reservoir, FHNWR, and OCWA
- Economic and land-use effects of dredging
- Effects on end users of water sold to the KWO under the No Action Alternative

4.9.1 Economic and Demographic Conditions

No Action Alternative

Under the No Action Alternative, the role played by John Redmond Reservoir in local economic and demographic conditions would remain unchanged during normal rainfall years. However, during severe drought years, direct effects of the No Action Alternative would include potential loss of a portion of the water supply for the CNRWAD and for Westar Energy's WCGS. Therefore, the long-term economic and demographic impact of the No Action Alternative would be major and adverse.

The approved reallocation of flood control storage to the conservation pool storage through a two foot rise in the conservation pool to 1041.0 recovered about 17,300 acre-feet of conservation pool storage. Continued siltation of John Redmond Reservoir is expected to reduce the conservation pool by about 800 acre-feet per year. CNRWAD contracts for storage of 10,000 acre-feet in Marion Lake, Council Grove Lake and John Redmond Reservoir. John Redmond Reservoir stores 3,500 acre-feet of the total. The reduction of 1.2 percent of John Redmond Reservoir storage capacity would represent a loss of about 60 acre-feet per year of CNRWAD storage from the reservoir. The 19 municipalities and industries in the district are directly dependent upon water provided from assurance storage during times of low stream flow. In severe drought years, this reduction in water storage could result in loss of water supply for communities, rural users, and industries in CNRWAD. Depending on the severity and duration of the drought, indirect impacts could include economic distress for commercial and industrial users, hardship for residential users, and a reduction in the amount of water available for fire suppression and other municipal purposes.

The conservation pool at John Redmond Reservoir serves to meet the annual demand of Westar Energy by supplementing the cooling lake at its WCGS with as much as 29,682 acre-feet of stored water. This supplemental source of water is necessary because evaporation in most years is greater than inflow in the WCGS cooling lake. The loss of 1.2 percent of conservation pool per year would reduce the amount available to meet the WCGS water supply contract by approximately 550 acre-feet per year. Although WCGS has not used its full water allotment since filling the cooling lake, it has used as much as 75 percent (2012). The reduction in water available for cooling purposes at WCGS could reduce Westar Energy's ability to operate the plant during years when additional water capacity is needed.

Effects of the No Action Alternative on area economic and demographic conditions would be short or long-term, major, and adverse depending on the severity and duration of a drought.

> *Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity*

For this assessment, estimated costs for dredging vary widely depending on the project sponsor, location and scale of the activity. In 2010, the state of Kansas and the city of Horton in Brown County, KS removed 1,000,000 cubic yards of sediment using hydraulic dredging at a cost of about $6.60 per cubic yard. Estimates provided in a draft dredging assessment of John Redmond prepared by the Corps in 2009 are much higher, approximately $36 per cubic yard. Actual costs could vary depending on such factors as economies of scale,

dredging methods, location of the disposal area for dredged material and composition of the sediment. In January 2013, the KWO posted a request for proposals for the design-dredge of the reservoir. Responses to the bid solicitation provided an estimated cost of less than $5.00 per cubic yard for the dredging at John Redmond reservoir. All financing for the dredging at John Redmond Reservoir would be with non-federal funds.

The Preferred Alternative would result in additional economic activity in Coffey and Lyon Counties, in terms of direct and indirect employment and income. A local contractor has been selected to eventually conduct the earthwork associated with the proposed construction of the CDFs and a Kanas-based company has been selected to provide the engineering, design and permitting. Direct employment and income will occur because local contractors and/or workers were selected to perform portions of the dredging work. Indirect employment and income would result from local expenditures by dredging contractors and employees for goods and services.

Depending on the location of the sediment disposal sites, the Dredge John Redmond Reservoir Alternative has the potential to affect land use and transportation conditions in Coffey and/or Lyon Counties. Landowners of sediment disposal sites will receive financial compensation for temporary use of their land, offsetting a portion of the potential economic loss while the property was out of production. Dredging activities could negatively affect recreation activities on John Redmond Reservoir, FHNWR, and OCWA by disturbing fish and wildlife and diminishing the quality of the recreation experience. A reduction in recreation visits would have a corresponding negative effect on the local tourism and recreation economy. These short-term impacts would be localized and cease upon completion of dredging activities. In the long term, impacts on recreation activities would be positive, as water depth to bottom of the lake would increase, providing additional boating access.

The effects of this alternative on area economic and population conditions would likely be beneficial although there could be some minor reduction in recreation-related spending in the county. If local contractors and employees were hired, this alternative would be significantly beneficial to the area economy in the short term. Over all, the Preferred Alternative would result in short-term, moderate to major, beneficial effects on economic and demographic conditions.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on economic and demographic conditions would be the same as the Preferred Alternative. Therefore, Alternative #2 would result in short-term, moderate to major, beneficial effects on economic and demographic conditions.

4.9.2 Land Use

No Action Alternative

The No Action Alternative would not affect land use conditions as described in Section 3.8.2. There would be no short or long-term, minor, moderate or major, beneficial or adverse effects on land use resources as a result of implementing the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Under the Preferred Alternative, land use associated with John Redmond Reservoir would remain similar to existing conditions with three possible exceptions. A relatively small portion of land would be required for a

staging area during dredging operations. Staging operations would displace approximately two to three acres of existing land use for the duration of dredging operations, after which the land would be reclaimed.

Dredging would require land for disposal of sediment. Potential sites for sediment disposal on private property will be evaluated for feasibility based on the following criteria: (1) proximity to dredging location in John Redmond Reservoir, (2) avoidance of impacts to gas and utility lines, (3) a topography that minimizes CDF cell wall height, (4) avoidance of Waters of the U.S. and (5) cost for compensation. Sites meeting the criteria will be evaluated for historical and cultural resources and potential impacts to threatened and endangered species and habitat. Under the Programmatic approach of this EIS, future disposal sites selection will be coordinated with relevant local, state and federal agencies, including the U.S. Army Corps of Engineers, Tulsa District Regulatory Office. Future sites will be evaluated through the NEPA process or permit process, or both, whichever is appropriate.

Land use conditions of the CDF Sites A and B would change under the Preferred Alternative. Sediment disposal on both of these sites would result in vegetation removal and recontouring of the site. CDF Site A is currently a mix of grass, forbs, shrubs and cedar trees. CDF Site A is not currently under a fee agreement or in productive use. CDF Site B which is currently under a fee agreement between the federal government and a private landowner is in cropland. Use of this parcel would temporarily change to a dredge disposal facility. Following sediment disposal, plans for both CDF Sites A and B include restoration to native prairie grasses. Potential privately-owned properties for sediment disposal have been identified but no formal agreements with landowners have been negotiated. Sediment disposal would displace existing land use for the duration of dredging activities and perhaps permanently, depending on the reclamation plan for the site. Potential reclamation activities could include return to agricultural production, construction of wetlands, and restoration of native prairies.

Approximately five 100-acre sites will be needed for CDF sites in the first five years of dredging. This represents 1.5% of the land within a four-mile radius of the dredging project. If the dredging action were to continue beyond the initial five years and remove a quantity greater than three million cubic yards, approximately 2,000 additional acres, for a total of about 2,500 acres, may be needed for CDF sites over next 30 years to maintain the 55,000 acre feet of storage in John Redmond Reservoir. This represents approximately 7% of the total land available within a four-mile radius of the dredging project.

Land use effects of the Preferred Alternative would be localized, short-term, minor, and adverse during the dredging activities. Reclamation of CDF Sites A and B to native prairie would have long-term beneficial impacts.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to original capacity

Similar to the Preferred Alternative, the effects of Alternative #2 on land use would be short-term and long-term, minor, adverse or beneficial depending on the reclamation activity.

4.9.3 Recreation

No Action Alternative

Potential effects on recreation resources associated with the No Action Alternative would be limited to a continued deterioration of boating conditions, as the depth to bottom in portions of the reservoir would continue to be reduced by siltation. Fish population changes would reduce the size of recreational sport harvest, in the case of fish, by lowering both the total abundance of organisms and their individual size. These changes negatively affect recreational anglers and subsistence anglers. Sediment and turbidity may also affect

recreational anglers by reducing the distance over which fish can see lures, resulting in lower catch rates. The effect of the No Action Alternative on recreation resources would be long-term, major and adverse.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Impacts on recreation resources and activities would result from noise and activity in the vicinity of the dredge site, staging area, disposal site and along the haul route. The noise and associated activities may displace wildlife and result in a diminished recreation experience for some users. Some recreation facilities and wildlife habitat could be temporarily displaced by the staging area, haul route and sediment disposal sites. Staging operations would displace approximately two to three acres of existing land use and dredging operations would occupy about 10 reservoir surface acres for the duration of dredging operations. The Preferred Alternative would have a short-term, localized, minor, adverse effect on recreation resources.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to original capacity

The effect of Alternative #2 on recreation would be the same as the Preferred Alternative. Therefore, Alternative #2 would result in medium-term, minor, adverse effects on recreation.

4.9.4 Economic Effects of John Redmond Reservoir

No Action Alternative

Under the No Action Alternative the economic effects of John Redmond Reservoir would be similar to the descriptions in Section 3.8, with the exception of those associated with water storage and supply. The diminished capacity of the conservation pool would mean that the USACE could not guarantee the fulfillment of its water storage and supply contracts with the KWO. In severe drought years, when full water supply commitments are required, the member communities, rural water districts, and industrial users in the CNRWAD could experience economic losses from the 1.2 percent reduction in committed water supply. Westar Energy could also experience economic losses associated with the 25 percent reduction in water to supplement the cooling lake at WCGS. The effects of the No Action Alternative on John Redmond Reservoir would be short or long-term, major, and adverse depending on the severity and duration of a drought.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The Preferred Alternative would increase economic activity in Coffey and Lyon counties from the expenditures associated with project cost. The amount accruing to the local economy would depend on the number of local contractors and employees hired to perform portions of the project and on the amount of goods and services contractors and employees obtain from local vendors. These economic benefits could be offset by a reduction in recreation activities related to impacts of dredging activities on wildlife and on the recreation experience. However, in the aggregate, the effects of the Preferred Alternative would be short-term, major and beneficial.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The economic effect of Alternative #2 would be the same as the Preferred Alternative. Therefore, Alternative #2 would result in short-term, major and beneficial economic effects.

4.9.5 Land and Crops within the Floodplain Downriver from John Redmond Reservoir

According to the scoping record and subsequent interviews conducted for the Pool Raise EIS, the primary concern raised at that time by residents downriver of John Redmond is the loss of flood pool capacity, which would result from a raise in the conservation pool level. However, these concerns were not voiced during the scoping process of the Removal and Disposal of Sediment and Restoration of Water Storage DPEIS. In fact it was noted that areas below the John Redmond Dam would be more at risk for flooding if the sediment was not removed from the Reservoir.

No Action Alternative

The potential for flooding of lands within the floodplain between John Redmond Reservoir and Grand (Pensacola) Lake would be unaffected by the No Action Alternative. There would be no short or long-term, minor, moderate or major, beneficial or adverse effects on land or crops within the floodplain downstream from John Redmond Reservoir as a result of the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Compliance with the laws and regulations as described below will ensure the effects of the Preferred Alternative on lands within the floodplain between John Redmond Reservoir and Grand (Pensacola) Lake would be negligible.

The proposed sediment removal project will require construction of several confined disposal facilities (CDF) to store and dewater dredge material. These facilities will be located partially in Zone A, Special Flood Hazard Areas (SFHA) identified by FEMA. By definition, these areas are subject to inundation by the one percent annual-chance flood event generally determined using approximate methodologies.

K.S.A. 12-766 authorizes cities and counties in Kansas to adopt floodplain zoning ordinances, to meet the requirements of the National Flood Insurance Program (NFIP.) At this time, Coffey County does not participate in the NFIP; therefore local floodplain permits are not required in unincorporated areas of the county. Local floodplain development permits will not be required for the proposed CDF sites.

K.S.A. 24-126 makes it unlawful to construct fills and levees without prior approval from the Kansas Department of Agriculture, Division of Water Resources (DWR). A DWR floodplain fill permit will be required for each CDF site located in the mapped floodplain. The permit application must include an analysis of the impacts of the project on flood elevations. DWR regulations allow up to a one foot increase in the base flood elevation as a result of levees and fills. If the impact exceeds this standard, the applicant must demonstrate that the excess rise is contained within property or easements controlled by the applicant. If this standard cannot be met, the CDF design will be adjusted to reduce the impacts to flood elevations.

The proposed sediment removal project will require construction of several confined disposal facilities (CDF) to store and dewater dredge material. K.S.A. 82a-301 makes it unlawful to construct dams or stream obstructions without prior approval from the Kansas Department of Agriculture, Division of Water Resources (DWR). Each CDF site will require a permit determination from DWR.

A dam is defined as an impoundment with a height of 25 feet or more, or a height of 6 feet or more with a stored volume of 50 acre-feet or more at the auxiliary spillway. An exemption may apply if the dam is classified as a low hazard dam based on downstream roadways and buildings. If a dam permit is required, DWR has identified a list of regulatory requirements that will be waived for these facilities. Each CDF site will be required to meet these standards:

- Structure would meet the classification of Hazard Class A (low hazard) dam
- CDF walls would be no steeper than 2.5:1, less than 20 feet in height, and with a minimum top width of 10 feet
- Outlet discharge channel will be designed and remain adequate and stable
- Storage would be adequate for 100-year rainfall over the area covered
- Storage sites will be reclaimed in less than 5 years

If a structure does not require a dam safety permit, a stream obstruction permit will be required if the upstream drainage area exceeds one square mile. None of the proposed CDF sites will obstruct streams of this size.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

Similar to the Preferred Alternative, compliance with the laws and regulations will ensure there would be no short or long-term, minor, moderate or major, beneficial or adverse effects on land or crops within the floodplain downstream from John Redmond Reservoir as a result of Alternative #2.

4.9.6 Noise

No Action Alternative

The No Action Alternative would not affect existing noise conditions. There would be no short or long-term, minor, moderate or major; beneficial or adverse effects on noise conditions as a result of the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Operation of the hydraulic dredge at John Redmond Reservoir would result in temporary increases in ambient noise levels for the duration of dredging operations. Typical dredge equipment set up and operations may include the following noise-generating equipment: tug boat, work barge, hydraulic dredge, support crews, and generators. Construction activities associated with the proposed CDF sites and pipeline construction would result in temporary increases in ambient noise levels for approximately eight (8) months while the sites are being constructed. Typical construction equipment for the CDF sites and pipeline construction may include backhoes, clam shovels, compactors, excavators, and boring hydraulic jacks. Default noise emission reference levels within 50 feet of the typical equipment associated with the preferred alternative are described in the table below.

Equipment Description	Reference Sound Level per Unit (dBA)[1]	Equipment Description	Actual Measured L_{max} @ 50 feet (dBA, slow)[2]
Tug Boat	87	Backhoe	78
Dredge	77	Clam Shovel	87
Support Crews	81	Compactor	83
Generators	63	Excavator	81
		Boring Hydraulic Jack	82

[1] Epsilon 2006
[2] USDOT 2006

For comparison noise levels are commonly compared to typical noise sources encountered are shown in the table below.

Sound Source	Pressure Decibels dBA[1]
Normal conversation	55-65
Phone	66-75
Lawn mower	88-94
Vacuum cleaner	84-89

[1] Typical noise levels; Noise Pollution Clearinghouse Online Library

The effects of this alternative on noise conditions could occur both within and outside of federal lands, and would be short-term, localized, minor and adverse.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The effect of Alternative #2 on noise conditions would be similar to the Preferred Alternative, but would likely be longer in duration. Therefore, the effects of this alternative on noise conditions would be medium-term, localized, minor and adverse.

4.9.7 Transportation

No Action Alternative

The No Action Alternative would not affect existing area transportation conditions. Consequently, transportation conditions in and adjacent to John Redmond Reservoir, FHNWR and OCWA would remain essentially as they are today under this alternative. There would be no short or long-term, insignificant or significant, beneficial or adverse effects on transportation conditions as a result of the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The effects of the Preferred Alternative on area transportation conditions would be dependent on the dredging equipment and the selection of a sediment disposal site. Mobilization and assembly of the dredging equipment will require several truckloads to deliver the equipment to the staging site. During mobilization and construction of the disposal sites an increase in the number of vehicles on Embankment Road, US Highway 75 and the county roads below the dam to the disposal sites would be expected. . Road crossings for sites on non-federal property will either be placed through culverts or over the road surface (Figure 2-9). Where the pipe crosses

Embankment Road between the dredging site within the reservoir and the CDF, the roadway will be bored and jacked with a 24" casing. The remaining road crossings will be cut and covered whenever possible with the road surface returned to original condition. If placed over the road surface, the pipe will be covered to allow vehicle passage. The proposed pipeline crosses five roads between the dredging site within John Redmond Reservoir and CDF Sites A and B. Kansas Water Office staff have and will continue to coordinate with the Coffey County Engineer and Zoning Administrator to discuss the pipeline route.

The effects of this alternative on transportation conditions could occur both within and outside of federal lands, and would be short-term, localized, minor and adverse.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

Similar to the effects of the Preferred Alternative, the effects of Alternative #2 on transportation conditions would be short-term, localized, minor and adverse.

4.9.8 Environmental Justice (EO 12898)

Executive Order (EO) 12898, "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations" was published in the *Federal Register* (59 FR 7629) (1994). EO 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low- income populations (defined as those living below the poverty level).

The potentially affected areas for the Proposed Action and No Action Alternative include Coffey and Lyon Counties, and counties in the Neosho River drainage below John Redmond Reservoir, including Allen, Anderson, Bourbon, Cherokee, Crawford, Labette, Neosho, Wilson and Woodson.

Table 4-2 displays minority and poverty status for the state of Kansas and potentially affected counties. The percentage of racial minorities in every affected county except Lyon County is well below the statewide average for minority populations. In Lyon County, the minority population is concentrated in the city of Emporia. In contrast, the percentage of people living below the poverty level in every affected county, except Coffey County, is greater than the statewide percentage.

The conclusion of this assessment is that the No Action Alternative, Preferred Alternative and Alternative #2 would not result in significant adverse effect for human populations and therefore minority and low income persons would not be disproportionately affected by any of the alternatives.

Table 4-2. Minority and Persons Living Below Poverty Level: State of Kansas and Counties in the Neosho River Watershed

	Percent Minority (2010)	Percent Below Poverty Level (2010)
State of Kansas	16.2	13.5
Allen County	6.7	18.4
Anderson County	2.8	14.6
Bourbon County	7.0	15.7
Cherokee County	9.7	20.1
Coffey County	3.5	9.7
Crawford County	8.8	19.2
Labette County	12.0	17.1
Lyon County	16.5	19.6

	Percent Minority (2010)	Percent Below Poverty Level (2010)
Neosho County	5.9	16.4
Wilson County	4.4	16.0
Woodson County	4.5	17.2
(Source: US Bureau of the Census: 2010 Decennial Census and Small Area Income and Poverty Estimates Program, 2010)		

4.9.9 Protection of Children (EO 13045)

EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," was signed during 1997. The policy of the EO states that each federal agency:

1. Shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children.
2. Ensure that its policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks.

EO 13045 defines environmental health risks and safety risks as "… risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest, such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to."

No health and safety impacts resulting from exposure to environmental contamination or hazardous materials have been identified for the No Action Alternative. Potential disposal sites identified at this time are not located near residences, schools or other areas frequented by children. Therefore, it is not anticipated that the Preferred Alternative or Alternative #2 would have adverse effects on children.

4.10 Cultural Resources

No Action Alternative

The No Action Alternative would not affect existing cultural resources. There would be no short or long-term, insignificant or significant, beneficial or adverse effects on cultural resource conditions as a result of the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

The proposed John Redmond Reservoir dredging project has the potential to impact cultural resources. Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) requires agencies to evaluate the impacts of federal undertakings on historic properties, which include prehistoric and historic archaeological sites, and historic standing structures. Section 106 requires the identification of all historic properties, and emphasizes an evaluation of eligibility for listing on the National Register of Historic Places (NRHP). Agencies must then determine which historic properties (those eligible for listing on the NRHP) will be adversely impacted. Section 106 requires that agencies resolve adverse effects to these properties. Plans for resolving adverse effects are determined through consultation with the Kansas State Historic Preservation Office (SHPO), potentially the Advisory Council on Historic Preservation (ACHP), and appropriate and interested Native American tribes and other interested parties.

In order to comply with Section 106 requirements, Tulsa District has entered into Section 106 consultation with the Advisory Council on Historic Preservation, Kansas State Historic Preservation Office, Kaw Nation of Oklahoma, Osage Nation of Oklahoma, and Wichita and Affiliated Tribes of Oklahoma. Tulsa District is in the process of drafting and executing a Programmatic Agreement (PA) with these signatories, which will guide compliance with Section 106. The PA will outline Tulsa District responsibilities in the identification and evaluation of historic properties, and the resolution of adverse effects to historic properties if necessary. Copies of cultural resources correspondence and a copy of the draft PA are included in Appendix D of this DPEIS.

An archeological survey will be conducted prior to the development of final designs for each CDF site. All criteria included in the PA will be met and will occur before any land disturbing activities occur.

No short or long term, beneficial or adverse effects are anticipated due to the preferred alternative because efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources. Site specific investigations and further literature review may be needed. The Programmatic Agreement (PA) will outline procedures to identify and evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

Similar to the effects of the Preferred Alternative, efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources under Alternative #2.

4.11 Hazardous, Toxic, or Radiological Wastes

Environmental concerns pertaining to hazardous, toxic, or radiological wastes consist of impacts to storage and disposal of these materials: spill contingency, waste management, pollution prevention; asbestos, radon, lead-based paint, PCBs, and radioisotopes; ordinance use and disposal; and storage tanks.

No Action Alternative

Potential effects on hazardous, toxic or radiological wastes through the implementation of the No Action Alternative are precluded by the fact that the No Action Alternative for John Redmond Reservoir does not involve any activities that would contribute to changes in existing conditions. There would be no short or long term, minor, moderate or major, beneficial or adverse effects on hazardous, toxic or radiological wastes as a result of implementing the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Potential effects on hazardous, toxic, or radiological wastes through the implementation of the Preferred Alternative would be a result of the disturbance of lake sediments. Being located within an agricultural region, John Redmond Reservoir has the potential of having pesticide and fertilizer contamination of sediments; however, no pesticides, herbicides or fungicides were detected from a composite sample collected and analyzed from the first-phase dredging location within the reservoir (Figure 2-1, Appendix F) The two federal properties identified for sediment disposal and other areas near the reservoir suitable for sediment disposal are rural and have no history of industrial use of waste disposal. All potential disposal sites will be evaluated prior to construction to ensure no signs of industrial waste are present.

Staging for equipment assembly and mobilization will be conducted at the Dam Site Area and will include activities that involve the storage and use of petroleum products. Appropriate storage and adherence to an adequate plan of operations including a spill control plan will minimize any effects of potentially hazardous materials at the staging site.

Implementing the Preferred Alternative would have no short-term or long-term, minor, moderate or major, adverse or beneficial effects on hazardous, toxic, or radiological wastes.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

As with the Preferred Alternative, implementing Alternative #2 would have no short-term or long-term, minor, moderate or major, adverse or beneficial effects on hazardous, toxic, or radiological wastes.

4.12 Cumulative Impacts

Cumulative impacts on environmental resources result from incremental impacts of an action when combined with past, current and other reasonably foreseeable future actions. Cumulative impacts can result from individually insignificant, but collectively significant, actions undertaken over the same period of time by individuals or various agencies (federal, state, and local). In accordance with NEPA, consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed or anticipated to be implemented in the near future is required.

Cumulative impacts due to dredging and sediment disposal will be negligible. The Kansas Water Office use of private lands will be temporary, and after each disposal area has been filled, the land will be reverted back to the use of the landowner. Landowner use will most likely be for the original (pre-dredging) purpose, generally agriculture. The lands in the vicinity of John Redmond Reservoir are rural, and modifying lands temporarily used for disposal of dredged materials are not expected to change land use to municipal, commercial, industrial or other purposes. Disposal areas on federal lands will also be temporary, and future land management will be by the USACE for project purposes and use by the public. No other activities within the watershed have been identified that may result in land use changes similar to the proposed action.

In 2013, the Final Supplement to the Final Environmental Statement for Storage Reallocation: John Redmond Dam and Reservoir, Kansas was completed. The reallocation and associated pool rise by USACE was approved in 2013. The Preferred Alternative and Alternative #2 evaluated in this DPEIS combined with the reallocation would result in positive, long-term cumulative impacts.

Since 2009, the state of Kansas, in partnership with local stakeholders and landowners, is implementing streambank restoration projects along the Neosho and Cottonwood Rivers in the watershed above John Redmond Reservoir. Restoration and stabilization of the streambanks and riparian areas will decrease the sediment transport and ultimately slow the rate of storage loss in the reservoir.

When considering the reallocation and watershed restoration activities, cumulative impacts will be experienced in the increased ability to meet water supply demands in the basin.

The state of Kansas will continue to coordinate the construction of the CDFs, utility lines, and other appurtenances associated with the CDFs, to determine if Department of Army authorization is required.

Although minimal growth and development are expected to continue in the vicinity of John Redmond Reservoir, cumulative adverse impacts on resources would not be expected when added to the impacts of activities associated with the Preferred Alternative, Alternative #2 or No Action Alternative.

4.13 Comparison of Alternatives and Conclusion

Based upon the comparison of the Proposed Action: Dredge John Redmond Reservoir and the No Action Alternative (Table 4-3), the environmentally preferred action is the No Action Alternative, where there is the least amount of environmental impacts. Dredging of John Redmond Reservoir would primarily result in short and long-term, insignificant, adverse impacts depending upon the mitigation measures employed. Cumulative Impacts for the Proposed Action and No Action Alternative are also presented in Table 4-3 and indicate there are no cumulative impacts as a result of the proposed action or alternative.

Table 4-3. Summary of Potential Environmental Consequences and Mitigation Measures

Environmental Resource	No Action Alternative	Project Proponent Preferred Alternative	Alternative #2
Geology and Soils	No short, medium or long-term, insignificant or significant, beneficial or adverse effects. No mitigation measures would be required.	Long-term, localized, adverse effects, the magnitude of which would be dependent upon the geology or soil resource and upon mitigation measures.	Long-term, localized, adverse effects, the magnitude of which would be dependent upon the geology or soil resource and upon mitigation measures.
Hydrology and Water Resources	Long-term, regional, major adverse effect. Mitigation measures would be required.	Long-term and major, regional beneficial effects on storage capacity. Short term and minor effects related to discharge of sediments downstream. No effects to reservoir releases in terms of inflows or reservoir discharge operations. Mitigation measures may be required.	Long-term, regional, and major beneficial effects on storage capacity. Short term and minor effects related to discharge of sediments downstream. No effects to reservoir releases in terms of inflows or reservoir discharge operations. Mitigation measures may be required.
Biological Resources	No short-term, beneficial or adverse effects. Long-term, moderate to major adverse effects. No mitigation measures would be required.	Long-term, major and beneficial effects to fisheries and aquatic wildlife from long-term improved water quality. Short-term, minor, adverse effects from increased sediment load. Mitigation measures may be required.	Long-term, major and beneficial effects to fisheries and aquatic wildlife from long-term improved water quality. Short-term and long-term, minor, adverse effects from increased sediment load. Mitigation measures may be required.
Wetland Resources	No short-term, beneficial or adverse effects. No mitigation measures would be required.	Due to avoidance, no long-term, major adverse impacts to Waters of the United States.	If CDF Sites impact wetlands, long-term, major and adverse impacts to Waters of the United States. Mitigation will be required.
Threatened and Endangered Species	No short-term, beneficial or adverse effects. Long-term, moderate to major, adverse effects as trapping efficiency of reservoir decreases. No mitigation measures would be required.	May affect but not likely to adversely affect listed species.	May affect but not likely to adversely affect listed species.
Noise	No short or long-term,	Effects of this alternative on	Medium term, localized, minor

Environmental Resource	No Action Alternative	Project Proponent Preferred Alternative	Alternative #2
	beneficial or adverse effects.	noise conditions could occur both within and outside of federal lands, and would be short-term, localized, minor and adverse.	and adverse effects.
Transportation	No short or long-term, beneficial or adverse effects.	Short-term, localized, minor and adverse.	Short-term, localized, minor and adverse.
Air Quality	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	Short-term localized minor, adverse effects. No long-term, beneficial or adverse effects. No mitigation measures would be required.	Short-term, localized, minor, adverse effects. No long-term, beneficial or adverse effects. No mitigation measures would be required.
Aesthetics	No short-term, insignificant or significant, beneficial or adverse effects. Long-term, moderate, adverse impacts. No mitigation measures would be required.	Short-term, localized, moderate, adverse effects. Long-term moderate, beneficial effects. No mitigation measures would be required.	Short-term, localized, minor, adverse effects. Long-term moderate, beneficial effects. No mitigation measures would be required.
Prime or Unique Farmlands	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	Long-term, minor, adverse effect because of the abundance of additional prime and unique farmlands in the area. No mitigation measures would be required.	Long-term, minor, adverse effect or long-term, moderate, beneficial effect depending on the selection of sites for dredge material. No mitigation measures would be required.
Socioeconomic Resources	Long-term, major adverse effects on economic and demographic conditions. Mitigation measures would be required.	Short-term, moderate to major, beneficial effects on economic and demographic conditions. No mitigation measures would be required.	Short-term, moderate to major, beneficial effects on economic and demographic conditions. No mitigation measures would be required.
Land Use	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	Short-term and long-term, localized, minor, adverse or beneficial depending on the reclamation activity. No mitigation measures would be required.	Short-term and long-term, minor, adverse or beneficial depending on the reclamation activity. No mitigation measures would be required.
Recreation	Long-term, major and adverse.	Short-term, localized, minor, adverse effect.	Medium-term, minor, adverse effect.
Cultural Resources	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long term, beneficial or adverse effects. Efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources. Site specific investigations and further literature review may be needed. Mitigation measures may be required. The Programmatic Agreement (PA) will outline procedures to	No short or long-term, beneficial or adverse effects. Efforts will be made to avoid dredging or disposal in areas known to contain significant cultural resources. Site specific investigations and further literature review may be needed. Mitigation measures may be required. The Programmatic Agreement (PA) will outline procedures to identify and

Environmental Resource	No Action Alternative	Project Proponent Preferred Alternative	Alternative #2
		identify and evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).	evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).
Hazardous, Toxic, or Radiological Wastes	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.	No short or long-term, beneficial or adverse effects. No mitigation measures would be required.
Cumulative Impacts	No cumulative impacts. No mitigation measures would be required.	Positive, long-term cumulative impacts experienced in the increased ability to meet water supply demands in the basin. No cumulative adverse impacts on resources. No mitigation measures would be required.	Positive, long-term cumulative impacts experienced in the increased ability to meet water supply demands in the basin. No cumulative adverse impacts on resources. No mitigation measures would be required.

5.0 MITIGATION REQUIREMENTS

5.1 Introduction

The John Redmond, Marion, and Council Grove Dams were constructed in the upper Neosho basin as mitigation for uncontrolled flooding along the Cottonwood and Neosho Rivers. The Neosho basin covers approximately 6,300 square miles, with 3,015 square miles draining through the reservoir system while 3,285 square miles are uncontrolled in Kansas and Oklahoma below John Redmond Dam. The dam structures were introduced to decrease the intensity of flood peak flows and provide a more controlled and less damaging release of floodwaters downriver. All three dams were constructed following the heaviest flooding of the Neosho River on record, which occurred during 1951 (USACE 2013).

In the DPEIS, mitigation refers to actions that allow project-related impacts, identified in Section 4.0, to be minimized or in some cases nullified. Mitigation is typically developed after all impacts have been identified; however, some mitigation measures may be identified earlier in the NEPA process. Mitigation measures must be feasible in order to receive consideration during the impact analysis process. Under Section 1508.20 of NEPA (1969), the description of mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

Certain assumptions were considered relative to normal dam and reservoir operation by the USACE as well as attempting to manage the reduction of sediment entering the Reservoir and other purposes before mitigation measures were developed. These assumptions included:

- The Neosho basin covers and drains approximately 6,300 square miles, approximately 3,015 square miles drain through John Redmond Dam and Reservoir and approximately 3,285 square miles drain uncontrolled below John Redmond Dam.
- Sediments would continue to deposit in the reservoir, in approximately the same locations as currently, and would continue to reduce the storage capacity and flood control volume of the John Redmond Reservoir through the design life of the project (CY 2014).
- Debris and sediments would continue to deposit in the flood control pool upriver of the conservation pool in the area known as the logjam.
- Steambank erosion control projects above John Redmond Reservoir would continue to be implemented and/or completed.
- Best Management Practices would continue to be implemented to control overland erosion.
- Sediment disposal sites will be selected to avoid impacts to Waters of the U.S.

The following sections present each resource area for which impacts were assessed.

5.2 Geology and Soils

No Action Alternative

Geology and soil resources in the project area would not receive additional impacts under the No Action Alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging would be accomplished through the use of a hydraulic dredge which would pump sediment from the lake to an offsite disposal facility. The Preferred Alternative would result in potential effects on geology and soil resources regarding the placement of dredge materials. The selected location for the dredge materials would potentially bury geology or soil resources. All materials required for berm construction for the CDFs will be collected on-site from within the containment area and will not be transported off site. Soils collected on-site for construction of the containment areas will be replaced over the dredge materials after the CDFs have sufficiently dried. Further, the soils may be classified as prime or unique farmland and are discussed under Section 5.7. Specific mitigation measures to be considered for the dredging alternative are:

- Conduct geotechnical analysis at the proposed CDF sites, including split spoon samples and sieve analysis along with visual classification to assess unconfined compressive strength, Atterburg limits and other soil features prior to the completion of the final CDF design.
- Survey potential disposal sites for important geologic and soils features and avoid using sites of high geologic and soils values.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for geology and soils for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.3 Hydrology and Water Resources

Hydrology and water resources would receive impacts related to all of the alternatives under consideration.

No Action Alternative

A decrease in water storage capacity due to sedimentation would result under the No Action Alternative. Under present conditions, this loss could not be mitigated and adequate water would not be available during drought years. The DPEIS evaluates two alternatives that mitigate this loss of water storage capacity under contract with the state of Kansas.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Water storage sufficient to meet the needs of the state of Kansas would result from this alternative. Dredging from John Redmond Reservoir could disturb sediments that become waterborne, causing release downriver. Potential mitigation measures for this alternative could include the following:

- Baseline sediment data from the water quality monitors on the Neosho River at Burlington, Iola, and Parsons will be compared with changes to water quality that may result from dredging or other sediment management practices.
- Sediment sampling has been conducted within the area of the reservoir slating for the first phase of dredging, In future phases of the dredging project, additional sediment sampling could be conducted to determine the chemical composition and nature of any contaminants present
- Separate the work area from active reservoir storage to the extent possible

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for hydrology and water resources for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.4 Biological Resources

The site vegetation, wetlands, wildlife, fisheries, rare species and management areas are currently affected because of flood storage events and water level management for wildlife resources at John Redmond Reservoir.

No Action Alternative

No significant impacts to the biological resources would occur nor would mitigation be required for the No Action Alternative. Biological resources would receive project-related impacts from the Dredge John Redmond Reservoir alternative.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging sediments would result in additional water storage for the state of Kansas, which would result in improved water quality and quantity downriver, over the long term. This would benefit the downriver fishery and particularly the Neosho Madtom (Federally-listed threatened), Rabbitsfoot Mussel (state-listed), and Neosho Mucket Mussel (state-listed), species of concern that occupy gravel bar habitats. In addition, dredging would avoid drowning shoreline vegetation, particularly woodland and wetland habitats.

Potential adverse impacts for the dredge alternative include increased sediment load in the Neosho River below John Redmond Dam, and potential wildlife exposure to contaminants. Zebra mussels are present in John Redmond Reservoir. Potential adverse impacts include infestation of other water bodies through equipment that is not properly cleaned and movement of water and sediment infested with Zebra mussels. Specific mitigation measures to be considered for the dredging alternative are:

- Avoid existing vegetation to the extent possible during dredging, hauling, and disposal operations, and revegetate disturbed sites with appropriate native vegetation following dredging activities
- Survey disposal sites for rare species of plants and wildlife
- Avoid existing wetlands during dredging and disposal operations
- Where avoidance of existing wetlands is determined not to be feasible, complete Clean Water Act Section 404 permit and compensatory mitigation

- Ensure that equipment used is not infested with Zebra mussels as it leaves John Redmond Reservoir. Cleaning, draining, and drying the equipment before use in another location.
- Water and sediment taken from John Redmond Reservoir is not placed in areas where Zebra mussels can infest other water bodies by direct contact or by water draining from the disposal area.
- Mandate that persons contracted to dredge, haul, and dispose of sediment create and follow a management plan to ensure the Zebra mussels are not transported from John Redmond Reservoir and/or allowed to be disposed of in or near water bodies creating possible infestation.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for biological resources for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.5 Air Quality

No Action Alternative

Air quality would not receive further impacts under the No Action Alternative. Because the John Redmond Reservoir area is in attainment for all criteria pollutants, mitigation is not required.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Under the dredging alternative, mitigation measures to abate emissions (dust) would be required, particularly in areas of excavation and sediment disposal sites and during periods of low precipitation. Airborne pollutants would also be generated from the exhaust of heavy dredging, excavating, and earth-moving equipment and vehicles driven to the site by workers. Potential mitigation measures that could be implemented include the following:

- Apply water as necessary to provide dust abatement from all actively disturbed sites, for all unpaved roads, parking lots, and staging areas, and sediment disposal area
- Use electricity from power lines/poles rather than temporary diesel or gasoline powered generators
- Reduce truck speeds to15 mph or less on all unpaved roads
- Encourage ride-sharing or other forms of shared transportation to reduce worker vehicle emissions to the site
- Continue monitoring airborne radionuclide concentrations at the WCGS and vicinity per KDHE sampling and emergency response protocols

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for air quality for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.6 Aesthetics

No Action Alternative

Aesthetics as a resource would not receive further impacts under the No Action Alternative and mitigation would not be required.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging would result in the short-term presence of dredge, excavation, and spreading equipment, private vehicles and construction workers. This equipment and activity would be visible in the conservation pool from the John Redmond Dam road, the reservoir shoreline, a few other access points at sufficient elevation above the intervening trees (observation tower south of Ottumwa, etc.), and at the disposal site. During the late fall and winter the visual effect would be greater because of leaf drop from the deciduous trees growing along the drainages and the reservoir shoreline.

Some visitor experiences during this time frame would be negatively affected, particularly those seeking to observe different species of wildlife. White-tailed deer, upland gamebird, turkey and waterfowl hunters would also experience a diminished visual perception of open space. Shorebirds could avoid the area during the summer migration. Dust generated from dredging activities could become noticeable to visitors and local citizens and would require abatement per the air quality sections of this report. Similar visual effects would result at any site selected for sediment disposal, storage or application. Specific mitigations to be considered for the dredging alternative are:

- Time dredging activities to avoid the peak site visitation by sensitive user groups, shorebirds, and waterfowl, including consideration of high quality viewing and hunting hours, e.g., early morning and late afternoon, to the extent possible
- Provide dust abatement as necessary, per the air quality section of the DPEIS
- Stage, maintain, and service equipment on an upland site outside of lake viewscape
- Contour dredged spoil piles to reflect local topography
- Revegetate disposal areas using native vegetation to restore the viewscape

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for aesthetics for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.7 Prime or Unique Farmlands

No Action Alternative

Prime or unique farmlands would not receive further impacts under the No Action Alternative and mitigation would not be proposed.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of conservation storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging sediments may result in long-term loss of prime or unique farmland, dependent on the method used and the location of the sediment disposal site and the size required per the volume of sediment. Specific mitigations to be considered for the dredging alternative are:

- Dispose sediments on land that does not fit the criteria for prime or unique farmland.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for prime or unique farmlands for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.8 Socioeconomic Resources

Socioeconomic resources may receive impacts relative to each alternative, as described below. Social and economic effects related to precipitation events and present managed flows from John Redmond Dam and uncontrolled flows below the dam would continue into the foreseeable future. No beneficial or adverse effects would occur regarding Environmental Justice or Protection of Children for any of the alternatives assessed.

No Action Alternative

The principal socioeconomic impact under this alternative would be the inability of the USACE to fulfill contractual obligations to the KWO for water supply storage. Under present conditions, this loss could not be mitigated and adequate water would not be available during drought years. The DPEIS evaluates one alternative to mitigate this loss of water supply storage capacity under contract with the state of Kansas.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of water supply storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Dredging sediments would result in additional water storage for the state of Kansas and increased economic activity in the vicinity, beneficial impacts requiring no mitigation. The principle adverse impacts of this alternative include transportation and land use effects associated with the staging area and sediment disposal sites. Affects to recreation activities, such as hunting, could also occur under the dredge alternative. Specific mitigation measures to be considered for the dredge alternative are:

- Implement standard transportation and waste disposal operating procedures, including road safety and control of dust, noise and vehicle emissions
- Limit hours and locations of operations during key recreation periods such as hunting season
- Contractors are to adhere to the following provisions while using land for staging equipment – (1) the area is within the flood pool. If high inflow events result in inundation of the ramp and staging area, the contractor may need to be prepared to move equipment to a higher ground; (2) the boat ramp access needs to be remain available for public boat access; and (3) the contractor is responsible for marking off a designated work area (“lay down area”) to restrict public access from dredging equipment.

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for socioeconomic resources for Alternative #2 is the same as the Preferred Alternative and is presented above.

5.9 Cultural Resources

In compliance with Section 106 of the National Historic Preservation Act and regulations issued by the Advisory Council on Historic Preservation (36 CFR Part 800), Federal agencies are required to consult with the Kansas State Historic Preservation Officer (SHPO) and the Advisory Council in the event that an undertaking may have an impact on historic or prehistoric sites.

The Programmatic Agreement (PA) will outline procedures to identify and evaluate historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended). If historic properties are identified in areas where dredge disposal pits and/or associated features are planned, those project features will be redesigned if possible. Avoidance of historic properties will therefore be the first goal in designing and constructing disposal pits for the reservoir dredging project. However, if historic properties cannot be avoided and if they will be adversely affected, the PA will provide procedures to resolve adverse effects as required by Section 106. Resolution of adverse effects is usually accomplished in the Section 106 process by means of a Memorandum of Agreement (MOA), which outlines specific mitigation measures used to offset the loss of historic properties. With the implementation of the PA, however, resolution of adverse effects will be accomplished through that existing process.

5.10 Hazardous, Toxic, or Radiological Wastes

No significant impacts from hazardous, toxic, or radiological wastes would occur, nor would mitigation be proposed for the No Action Alternative or proposed action of the Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir. Monitoring of the WCGS and environs for radiological contamination would continue under the authority of the KDHE for sample methodology, laboratory analysis and response.

Preferred Alternative: Dredge and dispose of sediments to ensure 55,000 acre-feet of water supply storage with removal of approximately three (3) million cubic yards in the first five years of dredging activity

Potentially hazardous materials such as petroleum products, coolants, and heavy metals could be introduced by heavy equipment used in the dredging, hauling and disposal of sediments. Specific mitigations to be considered for the dredging alternative are:

- Store all fuel and lubricants out of the floodplain and service vehicles and equipment at a dedicated storage site
- Prepare an adequate plan of operations including a spill control plan and a hazardous waste management plan that outlines disposal procedures, under the regulations of 40 CFR, CERCLA 1980 (42 U.S.C. 6901), or RCRA (42 U.S.C. 6901), as appropriate

Alternative #2: Dredge and dispose of sediments to restore the conservation pool to near original capacity

The mitigation discussion for hazardous, toxic or radiological wastes for Alternative #2 is the same as the Preferred Alternative and is presented above.

6.0 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

Laws and regulations in place and addressed in this DPEIS are presented in Table 6-1. In addition to those described in the table below, the Kansas Water Office will complete a Section 408 request (U.S.C. Section 408) seeking permission from the Secretary of the Army for a non-federal entity to alter or modify existing USACE projects. As the project proponent, the state of Kansas will prepare and submit a Section 408 request to modify the federal project (John Redmond Reservoir) to dredge sediment and for use of federal lands to construct sediment disposal facilities. The Kansas Water Office will also coordinate with USACE to secure the appropriate real estate instruments to allow the state of Kansas, as the project proponent, to access and utilize federal lands for dredging, construction of sediment disposal locations, and pipeline right of ways, staging areas, and other activities associated with the dredging project. Depending on the phase of the project appropriate real estate instruments may include leases, easements, consents to easement, early rights to entry, and licenses. The State of Kansas will not retain permanent occupancy of any of the sites.

Table 6-1. Applicable Environmental Laws and Regulations

Environmental Law or Regulation	Description
National Environmental Policy Act of 1969	Requires the disclosure of the environmental impacts of any major federal action significantly affecting the quality of the human environment.
AGRICULTURE	
Farmland Protection Policy Act of 1981	Minimizes the extent to which federal programs contribute to the unnecessary conversion of farmland to non-agricultural uses.
AIR QUALITY	
Clean Air Act (1970), as amended	Provides the principal framework for national, state, and local efforts to protect air quality.
BIOLOGICAL RESOURCES	
Clean Water Act of 1977	Requires consultation with the USACE for major wetland modifications under Section 404
Endangered Species Act of 1973	Requires federal agencies that fund, authorize, or implement actions to avoid jeopardizing the continued existence of federally-listed threatened or endangered species, or destroying or adversely affecting their critical habitat.
Executive Order of 11990, Protection of Wetlands	Requires that federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural beneficial values of wetlands.
Federal Noxious Weed Act of 1990	Requires the use of integrated management systems to control or contain undesirable plant species and an interdisciplinary approach with the cooperation of other federal and state agencies.
CULTURAL RESOURCES	
Antiquities Act (1906)	Authorizes the scientific investigation of antiquities on federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.
American Indian Religious Freedom Act (1978)	Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.
Archaeological and Historic Preservation Act (1974)	Directs the preservation of historic and archaeological data in federal construction projects.
Archaeological Resources Protection Act of 1979, as amended	Protects materials of archaeological interest from unauthorized removal or destruction and requires federal managers to develop plans and schedules to locate archaeological resources.

Environmental Law or Regulation	Description
Executive Order 13007 Indian Sacred Sites (1996)	Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.
Native American Graves Protection and Repatriation Act (1990)	Requires federal agencies and museums to inventory, determine ownership, and repatriate cultural items under their control of possession.
National Historic Preservation Act (1966), as amended	Establishes as policy that federal agencies are to provide preservation of the nation's prehistoric and historic resources, and establishes the National Register of Historic Places.
Protection of Historic and Cultural Properties (1986)	Provides an explicit set of procedures for federal agencies to meet obligations under the National Historic Preservation Act (NHPA), including the inventory of resources and consultation with SHPOs.
Executive Order 13007, Indian Sacred Sites	Requires that federal agencies accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.
Executive Order 13084, Consultation and Coordination with Indian Tribal Governments (1998)	Requires that each federal agency have an effective process to permit elected officials and other representatives of Indian tribal governments to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities.
Kansas Historic Preservation Act	Sets forth the policy for historic preservation and details procedures to be followed by state agencies in nominating properties to the Register and in dealing with undertakings affecting listed properties.
Kansas Antiquities Act	Prohibits unauthorized individuals, institutions, and corporations from excavating in, removing material from, vandalizing, or defacing any archaeological site or features on lands that are owned or controlled by the State, or any county or municipality.
Kansas Unmarked Burial Sites Preservation Act	Establishes procedures to be followed in dealing with discoveries of human remains and funerary objects associated with unmarked burial sites in Kansas.
HAZARDOUS WASTES	
Resource Conservation and Recovery Act	Principal source of regulatory control over the generation, storage, treatment, and disposal of hazardous wastes.
HYDROLOGY RESOURCES	
Clean Water Act of 1977	Requires consultation with the USACE for major wetland modifications under Section 404.
Water Quality Act of 1987, as amended	Establishes as policy restoration and maintenance of the chemical, physical and biological integrity of the nation's waters and, where attainable, to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.
SOCIOECONOMICS	
Executive Order 11988, Flood Plain Management	Requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains.
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income populations	Directs federal agencies to assess the effects of their actions on minority or low-income communities within their region of influence.
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	Directs federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children, and ensure that policies, programs, activities, and standards address disproportionately high environmental health and safety risks to children.
Farmland Protection Policy Act of 1981	Minimizes the extent to which federal programs contribute to the

Environmental Law or Regulation	Description
	unnecessary conversion of farmland to non-agricultural uses.

7.0 ENVIRONMENTAL CONSULTATION AND COORDINATION

Federal, state and local agencies were consulted prior to and during the preparation of this DPEIS. Agencies were notified of plans for Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir by mail, scheduled public meetings, and publication of a Notice of Intent announcing preparation of a Draft DPEIS as required by NEPA and by one public scoping meeting. The agencies contacted are listed below.

7.1 Federal Agencies

U.S. Army Corps of Engineers
U.S. Department of Agriculture
    Natural Resources Conservation Service
Department of Energy
    Westar Energy: Wolf Creek Nuclear Generating Station
Department of the Interior
    U.S. Environmental Protection Agency
    U.S. Fish and Wildlife Service
    U.S. Geological Survey

7.2 State Agencies

Emporia State University
Kansas Biological Survey
Kansas Department of Health and Environment
Kansas Department of Transportation
Kansas Department of Wildlife, Parks, & Tourism
Kansas State Historic Preservation Office
Kansas State Historical Society
Kansas State University Agricultural Extension

7.3 Local Agencies

City of Burlington, Kansas
Neosho River Communities
Coffey County, Kansas
Lyon County, Kansas
Flint Hills RC&D

7.4 Project Mailing List

The notice of DPEIS availability is being sent to the following:

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USDA-NRCS
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Burlington – Post Office
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Burlington, KS 66839

Coffey County Commissioners
Courthouse
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Burlington, KS 66839-1798

USDA – Farm Services Agency
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Burlington, KS 66839-1190

USDA–Farm Services Agency
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Lyon County Commissioners
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9.0 ACRONYMS AND ABBREVIATIONS

3H	Tritium
AD	Ano Domani
AF	Acre Feet
AFOS	Automated Field Observing Station
BEA	U.S. Bureau of Economic Analysis
BP	Before Present
CAA	Clean Air Act
CAP	Contaminant Assessment Process
CCED	Coffey County Economic Development
CCL	Coffey County Lake
CCP	Comprehensive Conservation Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
CNRWAD	Cottonwood and Neosho River Basins Water Assurance District Number 3
CO	Carbon Monoxide
CY	Calendar Year
Dbh	Diameter at Breast Height
DCP	Data Collection Platform
DOMSAT	Data Output Message Satellite
DVA	Deer-Related Vehicle Accidents
E^2M	Engineering-environmental Management, Inc.
EEMI	Engineering-Environmental Management, Inc.
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ERS	Environmental Radiation Surveillance
FPPA	Farmland Protection Policy Act
FHNWR	Flint Hills National Wildlife Refuge
FR	Federal Register
GLO	General Land Office
H.C.R.	House Concurrent Resolution
HPMP	Historic Preservation Management Plan
I^{131}	Radioiodine
K.A.R.	Kansas Administrative Regulations
KBS	Kansas Biological Survey
KDHE	Kansas Department of Health & Environment
KDOT	Kansas Department of Transportation
KDWP&T	Kansas Department of Wildlife Parks & Tourism
KNHI	Kansas Natural Heritage Inventory
K.S.A.	Kansas Statutes, Annotated
KS	Kansas
KSHSSR	Kansas State History Society Site Report
KSU	Kansas State University
KWO	Kansas Water Office
KWRB	Kansas Water Resources Board
lpm	Liters Per Minute

MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MGD	Million Gallons Per Day
MGY	Million Gallons Per Year
mm	Millimeter
MO	Missouri
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NAICS	North America Industry Classification System
NEPA	National Environmental Policy Act of 1969, as amended
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NMM	Neosho Mucket Mussel
NO_2	Nitrogen Dioxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSRA	Natural Science Research Associates
NWR	National Wildlife Refuge
NWS	National Weather Service
O_3	Ozone
OAQPS	Office of Air Quality Planning and Standards
OCWA	Otter Creek Wildlife Area
OK	Oklahoma
OKM	Ouachita Kidneyshell Mussel
Pb	Lead
Pb^{210}	Lead-210
PCB	Polychlorinated Biphenyl
pCi/m^3	picoCuries per Cubic Meter
PEC	Probably Effects Concentration
PEL	Probably Effects Level
PSSA	Palustrine, Scrub-Shrub, Temporarily Flooded
PSSAh	Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded
PM_{10}	Particulate Matter <10 microns
RCRA	Resource Conservation and Recovery Act
REMP	Radiological Environmental Monitoring Program
RM	River Mile
Rn^{222}	Radon-222
SFY	State Fiscal Year
SH	State Highway
SHPO	State Historic Preservation Officer
SO_2	Sulfur Dioxide
SUPER	USACE Suite of Computer Programs
TEC	Threshold Effects Concentration
TEL	Threshold Effects Level
US	United States
USACE	United States Army Corps of Engineers, Tulsa District
U.S.C.	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
VOC	Volatile Organic Compound
WCGS	Wolf Creek Nuclear Generating Station
WMP	Water Marketing Program
WPFO	Western Prairie Fringed Orchid

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APPENDIX A

Public Notification and Participation

NOTICE OF INTENT

To Prepare a Draft Programmatic Environmental Impact Statement for the Removal and Disposal of Sediment and Restoration of Water Storage at John Redmond Reservoir, Kansas and to Announce Public Scoping Meeting

AGENCY: Kansas Water Office

ACTION: Notice

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended (NEPA) (42 U.S.C. § 4332 (1994), the Kansas Water Office (KWO) announces its intent to prepare a Draft Programmatic Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of removing sediment from John Redmond Reservoir to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation as well as lake ecosystem due to sedimentation. These activities include outdoor operations that require the use of dredge and sediment disposal sites.

DATES AND ADDRESSES: A public scoping meeting will be held February 5, 2013 at 9:30 a.m. at the Coffey County Courthouse, 110 S. 6th Street in Burlington, KS, to receive oral and written comments on environmental concerns which should be addressed in the EIS.

Anyone requiring special accommodations, such as a sign language interpreter, should contact: Kansas Water Office at 901 S. Kansas Ave., Topeka, KS 66612-1249 or call (785) 296-3185 at least five working days prior to the meeting.

SUPPLEMENTARY INFORMATION: The Action Proponent, KWO, entered into a water supply storage agreement with the U.S. Army Corps of Engineers (USACE) at John Redmond Reservoir to provide water for the Cottonwood and Neosho River Basins Water Assurance District Number 3 (consisting of 19 members) and the Wolf Creek Generating Station. An estimated 34,900 acre-feet of storage remaining after 50 years of sedimentation forms the basis of the 1975 agreement. Sediment has been collecting mainly in the conservation pool, reducing the pool faster than designed, reducing storage capabilities.

The Proposed Action is to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation as well as the lake ecosystem due to sedimentation.

In addition to a no action alternative, reasonable alternatives to be considered could include varying combinations of the quantities, locations, and phasing of sediment removal from the reservoir. Alternatives could also consider varying locations, design, and methods of disposal for removed sediments, including potential beneficial use of dredged materials.

The USACE, acting as the lead agency, will use the EIS in its consideration of dredging John Redmond Reservoir. This EIS is intended to provide decision makers, responsible agencies and citizens with enough information on the potential range of environmental impacts to make decisions on the alternatives analyzed in the document.

Issues to be addressed in the EIS include but are not limited to: (1) geology and soils, including sediment composition; (2) hydrology and water resources to include both surface and groundwater; (3) air quality; (4) aesthetics; (5) biological resources to include wildlife, fisheries, vegetation, threatened and endangered species; (6) prime and unique farmlands; (7) socioeconomic issues to include economic and population considerations,

land use, recreation, transportation; (8) cultural resources; (9) issues related to potentially contaminated sediments and their disposal; (10) safety; (11) impacts to wetlands and permitting requirements under Section 404 of the Clean Water Act; and (11) cumulative impacts associated with past, current, and reasonably foreseeable future actions at John Redmond Reservoir.

The KWO is initiating the scoping process to identify community concerns and local issues that should be addressed in the EIS. Federal, state and local agencies as well as interested persons are encouraged to provide oral and/or written comments to the KWO to identify specific issues or topics of environmental concern. The KWO will consider these comments in determining the scope of the EIS.

Written comments on the scope of the EIS must be postmarked by March 12, 2013 and should be mailed to:

Kansas Water Office
c/o Bobbi Wendt
901 South Kansas Avenue
Topeka, KS 66612

Comments can also be submitted by phone: 785-296-3185, fax: 785-296-0878 or email:
bobbi.wendt@kwo.ks.gov

Kansas Register

Kris W. Kobach, Secretary of State

Vol. 32, No. 4 January 24, 2013 Pages 75-110

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State of Kansas

Kansas Water Office

Notice of Intent

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended (NEPA) (42 U.S.C. § 4332 (1994), the Kansas Water Office (KWO) announces its intent to prepare a programmatic environmental impact statement (EIS) to evaluate the potential environmental consequences of removing sediment from John Redmond Reservoir to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation as well as lake ecosystem due to sedimentation. These activities include outdoor operations that require the use of dredge and sediment disposal sites.

A public scoping meeting will be held at 9:30 a.m. Tuesday, February 5, at the Coffey County Courthouse, 110 S. 6th St., Burlington, to receive oral and written comments on environmental concerns that should be addressed in the EIS. Anyone requiring special accommodations, such as a sign language interpreter, should contact the Kansas Water Office, 901 S. Kansas Ave., Topeka, 66612-1249, 785-296-3185, at least five working days prior to the meeting.

Supplementary Information

The action proponent, KWO, entered into a water supply agreement with the U.S. Army Corps of Engineers (USACE) at John Redmond Reservoir to provide water for the Cottonwood and Neosho River Basins Water Assurance District Number 3 (consisting of 19 members) and the Wolf Creek Generating Station. An estimated 34,900 acre-feet of storage remaining after 50 years of sedimentation forms the basis of the 1975 agreement. Sediment has been collecting mainly in the conservation pool, reducing the pool faster than designed, reducing storage capabilities.

The proposed action is to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation as well as the lake ecosystem due to sedimentation. In addition to a no action alternative, reasonable alternatives to be considered could include varying combinations of the quantities, locations and phasing of sediment removal from the reservoir. Alternatives could also consider varying locations, design and methods of disposal for removed sediments, including potential beneficial use of dredged materials.

The KWO, acting as the lead agency, will use the EIS in its consideration of dredging John Redmond Reservoir. This EIS is intended to provide decision makers, responsible agencies and citizens with enough information on the potential range of environmental impacts to make decisions on the alternatives analyzed in the document.

Issues to be addressed in the EIS include but are not limited to: (1) geology and soils, including sediment composition; (2) hydrology and water resources to include both surface and groundwater; (3) air quality; (4) aesthetics; (5) biological resources to include wildlife, fisheries, vegetation, threatened and endangered species; (6) prime and unique farmlands; (7) socioeconomic issues to include economic and population considerations, land use, recreation and transportation; (8) cultural resources; (9) issues related to potentially contaminated sediments and their disposal; (10) safety; (11) impacts to wetlands and permitting requirements under Section 404 of the Clean Water Act; and (11) cumulative impacts associated with past, current and reasonably foreseeable future actions at John Redmond Reservoir.

The KWO is initiating the scoping process to identify community concerns and local issues that should be addressed in the EIS. Federal, state and local agencies as well as interested persons are encouraged to provide oral and/or written comments to the KWO to identify specific issues or topics of environmental concern. The KWO will consider these comments in determining the scope of the EIS.

Written comments on the scope of the EIS must be postmarked by March 12 and should be mailed to the Kansas Water Office, c/o Bobbi Wendt, 901 S. Kansas Ave., Topeka, 66612. Comments also can be submitted by phone at 785-296-3185, by fax at 785-296-0878 or by email at bobbi.wendt@kwo.ks.gov.

Tracy Streeter
Director

Doc. No. 041253

State of Kansas

Department of Revenue
Division of Vehicles

Notice of Intent to Establish a New Location for an Existing New Motor Vehicle Dealer

Scholfield Bros. Inc. Buick GMC has filed an intent to change dealership location. Scholfield Bros. Inc. Buick GMC currently conducts business as Scholfield Bros. Inc. Buick GMC at 7633 E. Kellogg, Wichita, Kansas. Scholfield Bros. Inc. Buick GMC seeks to relocate its location and line-make vehicles to 1333 N. Greenwich, Wichita, Kansas.

Pursuant to K.S.A. 8-2430(a)(5), any existing new motor vehicle dealer with standing may protest the proposed relocation of the new-line make vehicles by Scholfield Bros. Inc. Buick GMC. K.S.A. 8-2430(c) provides standing to any existing new motor vehicle dealer who has a franchise agreement for the same line-make vehicles as that which are to be sold or offered for sale by Scholfield Bros. Inc. Buick GMC, at 1333 N. Greenwich, Wichita, Kansas, and provided that the existing new motor vehicle dealer is physically located such that its relevant market area, as defined in K.S.A. 8-2430(e), includes the location where the Scholfield Bros. Inc. Buick GMC dealership will be relocated.

Pursuant to K.S.A. 8-2430(a), any petition or complaint by any dealer with standing to protest must be filed with the director of vehicles within 30 days of this notice. Such petition or complaint must be directed to the director of vehicles, Kansas Department of Revenue, Docking State Office Building, 915 S.W. Harrison, Topeka, 66612

Donna Shelite
Director of Vehicles

Doc. No. 041257

www.regulations.gov as they are received without change, including any personal identifiers or contact information.

FOR FURTHER INFORMATION CONTACT: Ms. Jody Sinkler, DLA FOIA/Privacy Act Office, Headquarters, Defense Logistics Agency, ATTN: DGA, 8725 John J. Kingman Road, Suite 1644, Fort Belvoir, VA 22060–6221, or by phone at (703) 767–5045.

SUPPLEMENTARY INFORMATION: The Defense Logistics Agency's systems of records notices subject to the Privacy Act of 1974 (5 U.S.C. 552a), as amended, have been published in the **Federal Register** and are available from the address in **FOR FURTHER INFORMATION CONTACT.** The proposed deletion is not within the purview of subsection (r) of the Privacy Act of 1974 (5 U.S.C. 552a), as amended, which requires the submission of a new or altered system report.

Dated: January 24, 2013.

Aaron Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

Deletion:
S900.20 CA

Workforce Composition, Workload, and Productivity Records (December 6, 1996, 61 FR 64709).

REASON:

Records are covered by an existing DoD-wide Privacy Act system of records identified as DMDC 02 DoD, entitled "Defense Enrollment Eligibility Reporting Systems (DEERS)." Therefore, S900.20 CA, Workforce Composition, Workload, and Productivity Records can be deleted.

[FR Doc. 2013–01791 Filed 1–28–13; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Intent To Prepare an Environmental Impact Statement for Sediment Dredging Activities at John Redmond Dam and Reservoir, KS

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The purpose of the Environmental Impact Statement (EIS) is to address alternatives and environmental impacts associated with proposed dredging (sediment removal and disposal) activities by the State of Kansas at John Redmond Dam and Reservoir, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform removal of excessive accumulated sediment from John Redmond Reservoir for the purpose of at least partially restoring conservation pool storage capacity. The proposed action would restore water supply storage for water users as well as regain lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Dredging activities are proposed by the State of Kansas in response to accumulation of excessive amounts of sediment at unanticipated in-lake settling locations and resulting adverse impacts to a critical water supply as well as an important recreational and biological resource.

ADDRESSES: Questions or comments concerning the proposed action should be addressed to Mr. Stephen L. Nolen, Chief, Planning and Environmental Division, Tulsa District, U.S. Army Corps of Engineers, CESWT–PE, 1645 S. 101st E. Ave., Tulsa, OK 74128–4629.

FOR FURTHER INFORMATION CONTACT: Mr. Stephen L. Nolen, (918) 669–7660, fax: (918) 669–7546, email: *Stephen.L.Nolen@usace.army.mil.*

SUPPLEMENTARY INFORMATION: The Tulsa District, U.S. Army Corps of Engineers manages John Redmond Dam and Reservoir, KS for the authorized purposes of flood control, water supply, water quality control, and recreation. John Redmond Dam is located on the Grand (Neosho) River at river mile 343.7, about 3 miles northwest of Burlington in Coffey County, KS. The project was completed for full flood control operation in September 1964 with all major construction completed in December 1965. The KWO is under contract with the U.S. Army Corps of Engineers for all water supply storage in John Redmond Reservoir and provides water for the Cottonwood and Neosho River Basins Water Assurance District Number 3 (CNRWAD) and the nearby Wolf Creek Generating Station, a nuclear power facility. The CNRWAD includes 13 cities, one wholesale water supplier, and five industrial water users. As such, the reservoir serves as a critical source of municipal and industrial water for the region. The reservoir also provides scarce and important recreational opportunities for the region in the form of fishing, hunting, boating, swimming, and related water-based activities. Water supply and recreational purposes are severely impacted owing to loss of lake capacity resulting from excessive sedimentation and deposition in unanticipated areas since reservoir construction. In addition to a potential increase in conservation pool elevation currently being considered in ongoing storage reallocation studies, dredging provides a means of restoring storage or at least slowing the rate of loss storage capacity at John Redmond Reservoir. Proposed dredging would be fully funded and performed by the State of Kansas. In addition to considerations under the National Environmental Policy Act (NEPA), the proposed action would also likely require review and approval of alterations/modifications of Corps of Engineers projects under 33 U.S.C. 408.

In addition to a no action alternative, reasonable alternatives to be considered could include varying combinations of the quantities, locations, and phasing of sediment removal from the reservoir. Alternatives could also consider varying locations, design, and methods of disposal for removed sediments, including potential beneficial use of dredged materials.

Issues to be addressed in the EIS include but are not limited to: (1) Geology and soils, including sediment composition; (2) hydrology and water resources to include both surface and groundwater; (3) air quality; (4) aesthetics; (5) biological resources to include wildlife, fisheries, vegetation, threatened and endangered species; (6) prime and unique farmlands; (7) socioeconomic issues to include economic and population considerations, land use, recreation, transportation; (8) cultural resources; (9) issues related to potentially contaminated sediments and their disposal; (10) safety; (11) impacts to wetlands and permitting requirements under Section 404 of the Clean Water Act; and (11) cumulative impacts associated with past, current, and reasonably foreseeable future actions at John Redmond Reservoir.

A public scoping meeting for the proposed action is currently planned for 9:30 a.m., Tuesday, February 5, 2013 at the Coffey County Courthouse, 110 S. 6th Street, Burlington, KS 66839. News releases and notices informing the public and local, state, and Federal agencies of the proposed action and date of this and any additional public scoping meeting(s) will be published in local newspapers. Comments received as a result of this notice, news releases, and the public scoping meeting will be used to assist the Tulsa District Corps of Engineers in identifying potential impacts to the quality of the human or natural environment. Affected Federal, state, or local agencies, affected Indian tribes, and other interested private organizations and parties are encouraged to participate in the scoping

process by forwarding written comments to (see **ADDRESSES**) or attending the scoping meeting. Scoping comments must be postmarked by March 12, 2013.

The draft EIS will be available for public review and comment. While the specific date for release of the draft EIS has yet to be determined, all interested agencies, tribes, organizations and parties expressing an interest in this action will be placed on a mailing list for receipt of the draft EIS. In order to be considered, any comments and suggestions should be forwarded to (see **ADDRESSES**) in accordance with dates specified upon release of the draft EIS.

Dated: January 17, 2013.

Michael J. Teague,

Colonel, U.S. Army, District Commander.

[FR Doc. 2013–01723 Filed 1–28–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2012–ICCD–0062]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Student Assistance General Provisions—Financial Assistance for Students With Intellectual Disabilities

AGENCY: Department of Education (ED), Federal Student Aid (FSA).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before February 28, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2012–ICCD–0062 or via postal mail, commercial delivery, or hand delivery. Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted. Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room 2E117, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: Electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Student Assistance General Provisions—Financial Assistance for Students with Intellectual Disabilities.

OMB Control Number: 1845–0099.

Type of Review: Extension without change of an existing collection of information.

Respondents/Affected Public: State, Local, or Tribal Governments.

Total Estimated Number of Annual Responses: 60.

Total Estimated Number of Annual Burden Hours: 21.

Abstract: The Department of Education is requesting an extension of the approved collection for the regulations allowing students with intellectual disabilities who enrolled in an eligible comprehensive transition and postsecondary program to receive Title IV, HEA program assistance under the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, and Federal Work Study programs.

Dated: January 24, 2013.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–01861 Filed 1–28–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

[Docket No. Ed–2012–ICCD–0059]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Mathematics and Science Partnerships Program: Annual Performance Report

AGENCY: Office of Elementary and Secondary Education (OESE), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing a revision of an existing information collection.

DATES: Interested persons are invited to submit comments on or before February 28, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2012–ICCD–0059 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 2E117, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: Electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

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901 S. Kansas Avenue
Topeka, KS 66612

Kansas Water Office

Phone: (785)-296-3185
Fax: (785)-296-0878
www.kwo.org

Tracy Streeter, Director

Sam Brownback, Governor

FOR IMMEDIATE RELEASE:
January 23, 2013

Contact: Katie Patterson-Ingels, 785-296-3185
katie.ingels@kwo.ks.gov
www.kwo.org

Kansas Water Office to Hold Public Meeting in Burlington

John Redmond Reservoir Dredging Scoping Meeting on February 5

The Kansas Water Office (KWO) is proposing to dredge John Redmond Reservoir to restore water supply lost to sedimentation. KWO is initiating the scoping process to identify community concerns and local issues that should be addressed in the Programmatic Environmental Impact Statement (EIS) for the dredging project proposal.

A public scoping meeting will be held February 5, 2013 at 9:30 a.m. at the Coffey County Courthouse, 110 S. 6th Street in Burlington, KS, to receive oral and written comments on environmental concerns which should be addressed in the EIS dredging proposal.

KWO will be conducting several public meetings in 2013 to receive feedback on alternatives and impacts from the proposed dredging project. Additional information on John Redmond dredging planning and public outreach can be found on the KWO website at www.kwo.org/projects_programs/JohnRedmondDredging.htm.

Written comments on the scope of the EIS must be postmarked by March 12, 2013 and should be mailed to: Kansas Water Office, attention Bobbi Wendt, 901 South Kansas Avenue, Topeka, KS 66612 or comments can also be submitted by phone, 785-296-3185 or email: bobbi.wendt@kwo.ks.gov .

If accommodations are needed for persons with disabilities, please notify the KWO at least five working days prior to the meeting.

###

As the state's water office, KWO conducts water planning, policy coordination and water marketing as well as facilitates public input throughout the state.

The agency prepares the KANSAS WATER PLAN, a plan for water resources development, management and conservation. KWO also reviews all water laws and makes recommendations to the Governor and Legislature for needed legislation.

Public Scoping Meeting

Environmental Impact Statement (EIS)

Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

Coffey County Courthouse
February 5, 2013

Public Scoping Meeting Agenda

1. Introductions
2. Scoping Meeting Format
3. Project Purpose and Need
4. U.S. Army Corps of Engineers Partnership Role
5. Public Comments

Public Scoping Meeting
Environmental Impact Statement (EIS)
Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

INTRODUCTIONS

Public Scoping Meeting
Environmental Impact Statement (EIS)
Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

SCOPING MEETING FORMAT

Meeting Format

- Brief presentation from KWO and Corps describing project purpose and need
- Public comments provided first by those individuals who collected a number when arriving
- Following the numbered registrants, open comments accepted from those in attendance
- To ensure all who attend have the opportunity to speak, comments will be limited to **2 minutes**

Your comments and feedback about this activity are welcomed and important. Written comments can be provided to the following:

Katie Patterson-Ingels
Kansas Water Office
Communications Director
901 S. Kansas Avenue
Topeka, KS 66612
Katie.Ingels@kwo.ks.gov
(785) 296-3185

What is NEPA and an EIS?

- The National Environmental Policy Act (NEPA) is a national charter for the protection and restoration of the environment.
- NEPA includes a requirement to prepare a detailed statement of major Federal actions significantly affecting the quality of the human environment. In this case, the statement is an Environmental Impact Statement (EIS).

What is the purpose of public scoping?

- Early and open process for determining the scope of issues to be addressed.
- Based on your comments, KWO will refine the John Redmond EIS to focus on significant issues, as well as eliminate issues that are not significant from further detailed study.
- Pursuant to NEPA, KWO will ensure the EIS is available to the public before decisions are made and actions are taken.

Public Scoping Meeting

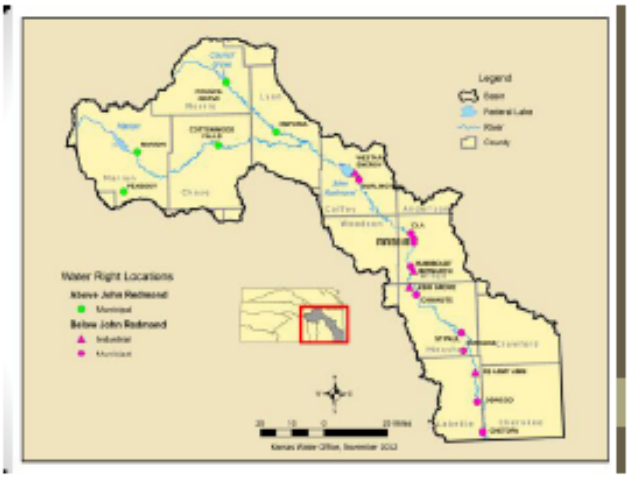
Environmental Impact Statement (EIS)

Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

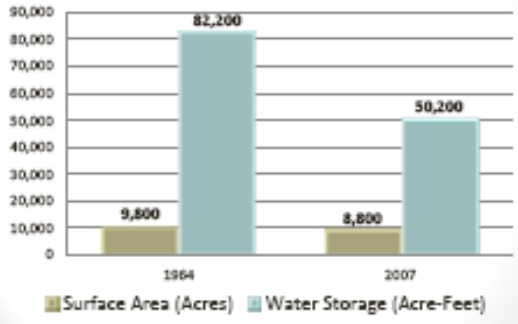
JOHN REDMOND RESERVOIR – BACKGROUND

John Redmond Reservoir

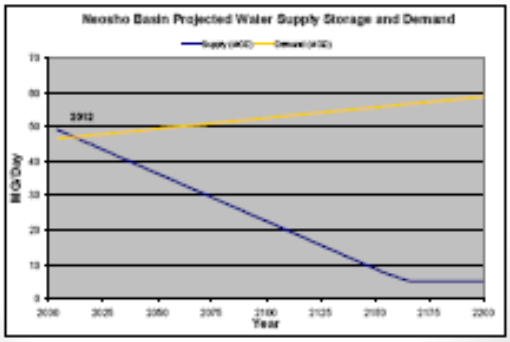
- Constructed in 1964
  - Design Life 50 years
- Bathymetric Survey in 2007
  - Has lost 42 % of Storage
  - Sedimentation rate is 739 AF/year
  - 80% more than projected



Lost Surface Area and Capacity



Neosho Basin Supply v. Demand



Current Initiatives to Reduce Sediment

- Streambank Stabilization and Other Watershed Restoration Practices
- Reallocation Request and Pool Rise

The purpose and need of the proposed federal action is to restore water supply storage for the benefit of the regional water users and restore the lost aquatic habitat for the benefit of public recreation and the lake ecosystem that has been lost due to sedimentation.

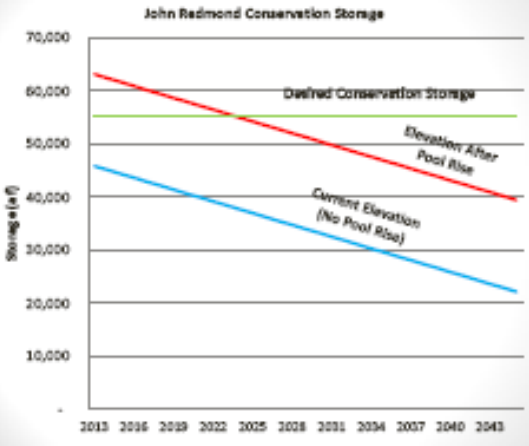
Purpose and Need
Environmental Impact Statement (EIS)
Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

Alternative – Restore Water Supply through Sediment Removal

- First – continue sediment reduction BMPs above John Redmond
- Remove sediment at a pace and purpose to maintain storage for current demands
- State seeking Request for Proposals to help provide better cost estimates and recommendations for project scope of work

How much sediment will be removed?

- KWO estimates that approximately 600,000 CY of sediment will need to be removed each year to maintain the volume necessary to meet customer demands during the 2% chance drought.



Where will the sediment be deposited?

- KWO is conducting preliminary reconnaissance to identify land near the reservoir suitable for disposal
- Disposal sites will likely involve construction of temporary impoundments to pump sediment/water mix
- After a period of a few years of draining, the walls can be removed and the land can return to a original or new purpose (agricultural production, recreational fields, etc)

Where will the sediment be deposited?

- Land use for disposal will only be acquired by donation or negotiated agreements between the state and landowner
- If you own land near the reservoir and are interested in learning more about the possibility of using the property for temporary sediment disposal, please contact KWO.

Who will pay for the project?

- Cost borne solely by State or other non-federal partners
- Costs include:
  - Planning
  - Permits & Studies
  - Land Acquisition
  - Disposal & Dewatering
  - Dredging

What other alternatives have been considered?

- KWO, in coordination with other state, federal and local partners, have evaluated other options to increase water supply storage in the Neosho basin. These alternatives, which have been eliminated from consideration in this EIS, include interbasin transfer using a pipeline and construction of a new reservoir.
- For the purpose of the EIS, KWO will also evaluate the "No Action" alternative.
- KWO may also consider alternatives provided during the scoping process.

Where can I find more information?

http://www.kwo.org/projects_programs/JohnRedmondDredging.html

Public Scoping Meeting

Environmental Impact Statement (EIS)

Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

U.S. ARMY CORPS OF ENGINEERS PARTNERSHIP ROLE

Public Scoping Meeting

Environmental Impact Statement (EIS)

Removal of Sediment and Restoration of Water Supply Storage at John Redmond Reservoir

PUBLIC COMMENT

Public Comment

What issues do you think the Kansas Water Office should address in the Environmental Impact Statement?

Public Comment Format

- Public comments provided first by those individuals who collected a number when arriving
- Following the numbered registrants, open comments accepted from those in attendance
- To ensure all who attend have the opportunity to speak, comments will be limited to 2 minutes

Your comments and feedback about this activity are welcomed and important. Written comments can be provided to the following:

Katie Patterson-Ingels
Kansas Water Office
Communications Director
901 S. Kansas Avenue
Topeka, KS 66612
Katie.Ingels@kwo.ks.gov
(785) 296-3185

Removal and Disposal of Sediment and Restoration of Water Storage
at John Redmond Reservoir
Environmental Impact Statement (EIS)
Public Scoping Meeting
February 5, 2013 at 9:30am
Coffey County Courthouse
Burlington, KS

The State of Kansas is proposing to dredge John Redmond Reservoir to restore water supply storage lost to sedimentation. Information on the project purpose and need, schedule, and additional upcoming meetings are available at:

http://www.kwo.org/projects_programs/JohnRedmondDredging.html

1. Introductions
2. Scoping Meeting Format
3. Project Purpose and Need
4. U.S. Army Corps of Engineers Partnership Role
5. Public Comments

Your comments and feedback about this activity are welcomed and important. Public comments can be offered verbally during the scoping meeting. If you prefer to provide comments following this meeting, they can be provided to:

Katie Patterson-Ingels
Kansas Water Office, Communications Director
901 S. Kansas Avenue
Topeka, KS 66612
(785) 296-3185
Katie.Ingels@kwo.ks.gov

Public comment period ends on March 12, 2013

John Redmon Dredging Meeting
2/5/2013 9:30

Name	Representing/Occupation	City
James Cowll	Oonouo Coust	Chicago, Il
Regina R Kewley	City Clerk	Burlington, Ks
Mark Petterson	Coffey County Republican	Burlington, Ks
Larry Davico	Johnson Const Co	Jacksonville, Fl
Warren Bell	Farmer	Burlington, Ks
Bob Culbertson	KDWPT	New Strawn, Ks
Darl Henson	CFG Exterson	Burlington, Ks
L. Sawesesg	Farm	LeRoy, Ks
Carolyn Smalley	D&Z	Parsons, Ks
J.D. Lester	City Manager	Chanute, Ks
Larry Gates	Utility Director	Chanute, Ks
Terry McCormick	Westar Energy	Topeka,Ks
Angie Kirchner	Coffey County Clerk	Burlington, Ks
Russel Stukey	Coffey County Emergency Mgmt	Burlington, Ks
Cortney Bartley	Coffey County Emergency Mgmt	Burlington, Ks
Bobbie Wendt	KWO	Topeka,Ks
Craig Seibert	Southwind Const	Evansville, In
Brian Meier	BMc D	Wichita, Ks
Kevin Kremkau	GBA	Tampa, Fl
Elmer Tatsch	PWWSD #5	Iola, Ks
John Johnson	KDWPT	Woodson, Co
Justin Morrison	KDWPT	Woodson, Co
Jason Deal	KDWPT	Woodson, Co
Bryan Taylor	USACE	Tulsa, Ok
Steve Nolen	USACE	Tulsa, Ok
Nate Herring	USACE	Tulsa, Ok
Eugene Goff	USACE	
Keith Francis	USACE	Tulsa,Ok
Paul Liechti	Ks Biological Survey	Lawrence, Ks
Jon Nieman	GLDD	Burlington, IA
Zack Monat	GLDD	Oak Brook, Il
Steve Pegg	GLDD	Burlington, IA
Doug Mays	GLDD	Topeka, Ks
Glenn Fischer	Oswego Mayor	Oswego, Ks
Nancy G. Billings		Burlington, Ks
Chuck W. Cordell	Retired	Burlington, Ks
Jim Stephens		Oswego, Ks
Cheri Peine		Oswego, Ks
Donnie Allison		Oswego, Ks
Daniel Williamson	citizen	Burlington, Ks
Bob Hammond	WCNOC	New Strawn, Ks
Ron Wood	Mayor	Chetopa, Ks
Scott Jones	Flint Hill ACLD	Emporia, Ks
Jim Putnam	USGS	Lawrence, Ks
Scott Satterthwaite	KDHE	Topeka, Ks

John Redmon Dredging Meeting
2/5/2013 9:30

Name	Representing/Occupation	City
Hakim Saadi	KDA/DOC	Topeka, Ks
Vince Adamrk		Tulsa,Ok
Nick Crawford		Tulsa,Ok
Larry Hastings	Great Plains Dev Auth	Parsons, Ks
Fred Rowley	Commissioner	Lebo, Ks
John Mitchell	KDHE	Topeka, Ks
Wayne Mudd	City of Chanute	Chanute, Ks
Derek Clevenger	City of Parsons	Parsons, Ks
Cassie Bailey	WCNOC	Burlington, Ks
Kyle Manwaring	USACE	
Gary Simmons	USACE	Burlington, Ks
Greg Lamberson	Genesis Water	Denver, Co
Art Freund	Farmer	Emporia, Ks
Dan Haines	WCNOC	Burlington, Ks
Alex Dick	Modum Dredging & Pump Co	Chester, Pa
Arlin Meats	CC Commissioner	Leroy, Ks
Sarah Reznicek	USACE	ElDorado, Ks
Eric Johnson	KDWPT	Pratt,Ks
Toby Ross	Iola Water Plant	Iola, Ks
Donna L Berland	Coffey County	Burlington, Ks
Kenneth L Combes	Coff ey County Commission	Burlington, Ks
Brett A. Skillman		New Strawn, Ks
Forrest T Rhodes		Burlington, Ks
John Schlageck	Kansas Farm Bureau	Manhattan, Ks
Gene Merry	City of Burlington	Burlington, Ks
Galen Biery	CNRBWAD #3	Topeka, Ks
Mike Skillman	Skillman Const	Burlington, Ks
Jim George		Hartford, Ks
Gary Romium		Hartford, Ks
Bob Saueressig	CC Commission	Burlington, Ks
Kimberly Robrahn	CC Commission	Burlington, Ks
Vic Elam	US Fish & Wildlife Service	Hartford, Ks
Aaron Hackman	ENVIRON	Overland Park, Ks
Steve McGinnis	ENVIRON	Overland Park, Ks
Art Pope	ENVIRON	Overland Park, Ks
Michael Eddings	EEC	New Strawn, Ks
Jeff Hodges	Hodges Farms & Dredging	Lebo, Ks
Brad Loveless	Westar Energy	Topeka, Ks
Paul Lambert	Denovo Properties	Chicago, Il
Loren Neanosky	BAS	ElDorado, Ks

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. Dan Mulhern, Acting Field Supervisor
U.S. Fish and Wildlife Service
Kansas Ecological Services Office
2609 Anderson Avenue
Manhattan, KS 66502

Dear Mr. Mulhern:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

A notice of intent (NOI) to prepare an Environmental Impact Statement is scheduled to be published in the Federal Register on or around January 29, 2013. A public scoping meeting for this action is scheduled for 9:30 AM, Tuesday, February 5, 2013, at the Coffey County Courthouse, 110 S. 6th Street, Burlington, Kansas 66839. We welcome your attendance at this meeting.

By this letter, we are also requesting your participation as a cooperating agency in the NEPA process in accordance with 40 CFR 1501.6. As a cooperating agency, you would be asked to participate in the scoping process, help identify issues and alternatives, and commit resources in your area(s) of expertise

to this study. In addition to your attendance at the public scoping meeting, we are requesting a response from your office regarding your willingness to participate as a cooperating agency for this study.

We appreciate your assistance with this matter. Written responses and any questions regarding this matter should be addressed to me at U.S. Army Corps of Engineers, CESWT-PE, 1645 S. 101st E. Ave, Tulsa, Oklahoma 74128-4629. I can also be reached by phone at 918-669-7660, fax 918-669-7546, or e-mail: Stephen.L.Nolen@usace.army.mil.

Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. Robin Jennison, Secretary
Kansas Department of Wildlife, Parks, and Tourism
512 SE 25th Avenue
Pratt, KS 67124-8174

Dear Mr. Jennison:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

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Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. John Mitchell, Director
Division of Environment
Kansas Department of Health and Environment
1000 SW Jackson, Suite 400
Topeka, KS 66612-1367

Dear Mr. Mitchell:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

A notice of intent (NOI) to prepare an Environmental Impact Statement is scheduled to be published in the Federal Register on or around January 29, 2013. A public scoping meeting for this action is scheduled for 9:30 AM, Tuesday, February 5, 2013, at the Coffey County Courthouse, 110 S. 6th Street, Burlington, Kansas 66839. We welcome your attendance at this meeting.

By this letter, we are also requesting your participation as a cooperating agency in the NEPA process in accordance with 40 CFR 1501.6. As a cooperating agency, you would be asked to participate in the scoping process, help identify issues and alternatives, and commit resources in your area(s) of expertise

to this study. In addition to your attendance at the public scoping meeting, we are requesting a response from your office regarding your willingness to participate as a cooperating agency for this study.

We appreciate your assistance with this matter. Written responses and any questions regarding this matter should be addressed to me at U.S. Army Corps of Engineers, CESWT-PE, 1645 S. 101st E. Ave, Tulsa, Oklahoma 74128-4629. I can also be reached by phone at 918-669-7660, fax 918-669-7546, or e-mail: Stephen.L.Nolen@usace.army.mil.

Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental
Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. Karl Brooks, Regional Administrator
USEPA Region VII
11201 Renner Blvd.
Lenexa, KS 66219

Dear Mr. Brooks:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

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Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. J.D. Strong, Executive Director
Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118

Dear Mr. Strong:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

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Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Mr. Eric B. Banks, State Conservationist
USDA, NRCS
760 South Broadway
Salina, KS 67401

Dear Mr. Banks:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

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Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental Division

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

January 22, 2013

Planning and Environmental Division

Ms. Jennie A. Chinn
Kansas Historical Society
6425 SW 6th Avenue
Topeka, KS 66615-1099

Dear Ms. Chinn:

This is to inform you that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, Coffey County, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fund and perform sediment removal and disposal actions at the reservoir in response to accumulation of excessive amounts of sediment at unanticipated locations in the reservoir. Purposes for the dredging activities would include restoring water supply storage for water users as well as regaining lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Presently, we are initiating preparation of an EIS for compliance with the National Environmental Policy Act of 1969 (NEPA) and would appreciate any initial information you might have regarding threatened and endangered species, fish and wildlife issues, water quality, important natural or cultural resources, or other matters pertaining to our analysis.

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Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental
Division

Division of Environment
Curtis State Office Building
1000 SW Jackson St., Suite 400
Topeka, KS 66612-1367

Phone: 785-296-1535
Fax: 785-296-8464
www.kdheks.gov

Robert Moser, MD, Secretary

Kansas
Department of Health & Environment

Sam Brownback, Governor

January 29, 2013

Mr. Stephen L. Nolen
Chief, Planning and Environmental Division
U.S. Army Corps of Engineers, CESWT-PE
1645 S. 101st E. Ave.
Tulsa, Oklahoma 74128-4629

Dear Mr. Nolen,

This is in reply to your January 22, 2013 letter regarding preparation of an Environmental Impact Statement (EIS) for proposed dredging of sediments from John Redmond Dam and Reservoir, located in Coffey County, Kansas.

We look forward to attending the public scoping meeting for this project on February 5, 2013, in Burlington. We will also serve as a cooperating agency in the NEPA process, and are willing to participate in the scoping process, help identify issues and alternatives, and provide necessary resources to support this study.

We look forward to working with you on this project.

Sincerely yours,

John W. Mitchell
Director, Division of Environment

C Mike Tate
Tracy Street – Kansas Water Office

JAN 29 2013

KSR&C No. 13-02-001

6425 SW 6th Avenue
Topeka, KS 66615

Kansas

phone: 785-272-8681
fax: 785-272-8682
cultural_resources@kshs.org

Kansas Historical Society

Sam Brownback, Governor
Jennie Chinn, Executive Director

January 31, 2013

Stephen L. Nolen
Chief, Planning and Environmental Division
U.S. Army Corps of Engineers, CESWT-PE
1645 S. 101st E. Avenue
Tulsa, OK 74128-4629

RE: Sediment Dredging
John Redmond Reservoir
Coffey and Lyon Counties

Dear Mr. Nolen:

The Kansas State Historic Preservation Office has reviewed the description of proposed sediment dredging at John Redmond Reservoir as contained in your letter dated January 22, 2013. It is our understanding that the Tulsa District is initiating preparation of an Environmental Impact Statement (EIS). Sediment accumulation has become a serious problem in a number of the region's reservoirs, and we certainly understand the need for the dredging project.

John Redmond Reservoir was constructed at a time when cultural resource laws were very similar to those now in force. Extensive cultural resource investigations were therefore undertaken, including archeological survey, testing, and mitigation projects. Other investigations have followed in the years since as areas around the lake have been developed. As a result, the locations of large numbers of extant archeological sites throughout the reservoir area are well established. However, given what we understand to be the nature of sediment dredging, we believe that major cultural resource impacts are unlikely to result from the proposed project.

We appreciate the invitation to become involved in this project through the NEPA process. However, we do not have any major concerns at this time and so do not see the need to participate as a cooperating agency. We do look forward to reviewing specific dredging locations through the Section 106 process once they become available.

If you have questions or need additional information regarding these comments, please contact Tim Weston at 785-272-8681 (ext. 214) or Kim Gant at 785-272-8681 (ext.225).

Sincerely,

Jennie Chinn, Executive Director and
State Historic Preservation Officer

Patrick Zollner
Deputy SHPO

APPENDIX B

Federally Listed Species for the John Redmond Reservoir Project Area

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

KANSAS ECOLOGICAL SERVICES FIELD OFFICE
2609 ANDERSON AVENUE
MANHATTAN, KS 66502
(785) 539-3474

Project Name:

Dredge_SpeciesList

Project Counties:

Coffey, KS

Project Type:

Dredge / Excavation

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of 3 threatened, endangered, or candidate species, and/or designated critical habitat on your species list. Species on this list are the species that may be affected by your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Please contact the designated FWS office if you have questions.

Species that may be affected by your project:

Clams	Status	Species Profile	Contact

U.S. Fish and Wildlife Service

Natural Resources of Concern

Neosho Mucket (*Lampsilis rafinesqueana*)	Endangered	species info		Kansas Ecological Services Field Office
rabbitsfoot (*Quadrula cylindrica cylindrica*)	Threatened	species info		Kansas Ecological Services Field Office
Fishes				
Neosho madtom (*Noturus placidus*) Population: Entire	Threatened	species info		Kansas Ecological Services Field Office

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are 1 refuges in your refuge list

Flint Hills National Wildlife Refuge (620) 392-5553 P.O. BOX 128 HARTFORD, KS66854	refuge profile

FWS Migratory Birds (USFWS Migratory Bird Program).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to

wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

APPENDIX C

Kansas Listed Species for the John Redmond Reservoir Project Area

KANSAS

THREATENED & ENDANGERED SPECIES

(T&E)

THREATENED:

INVERTEBRATES

Butterfly Mussel, *Ellipsaria lineolata*
Delta Hydrobe, *Probythinella emarginata*
Flutedshell Mussel, *Lasmigona costata*
Ouachita Kidneyshell Mussel, *Ptychobranchus occidentalis*
Rock Pocketbook Mussel, *Arcidens confragosus*
Sharp Hornsnail, *Pleurocera acuta*

FISH

Arkansas Darter, *Etheostoma cragini*
Blackside Darter, *Percina maculata*
Chestnut Lamprey, *Ichthyomyzon castaneus*
Flathead Chub, *Platygobio gracilis*
Hornyhead Chub, *Nocomis biguttatus*
Neosho Madtom, *Noturus placidus*
Plains Minnow, *Hybognathus placitus*
Redspot Chub, *Nocomis asper*
Shoal Chub, *Macrhybopsis hyostoma*
Silverband Shiner, *Notropis shumardi*
Sturgeon Chub, *Macrhybopsis gelida*
Topeka Shiner, *Notropis topeka*
Western Silvery Minnow, *Hybognathus argyritis*

AMPHIBIANS

Eastern Newt, *Notophthalmus viridescens*
Eastern Narrowmouth Toad, *Gastrophryne carolinensis*
Green Frog, *Rana clamitans*
Green Toad, *Bufo debilis*
Longtail Salamander, *Eurycea longicauda*
Spring Peeper, *Pseudacris crucifer*
Strecker's Chorus Frog, *Pseudacris streckeri*

REPTILES

Broadhead Skink, *Eumeces laticeps*
Checkered Garter Snake, *Thamnophis marcianus*
Common Map Turtle, *Graptemys geographica*
Longnose Snake, *Rhinocheilus lecontei*
Redbelly Snake, *Storeria occipitomaculata*
Smooth Earth Snake, *Virginia valeriae elegans*
Texas Blind Snake, *Leptotyphlops dulcis*

BIRDS

Piping Plover, *Charadrius melodus*
Snowy Plover, *Charadrius alexandrinus*

MAMMALS

Eastern Spotted Skunk, *Spilogale putorius*

ENDANGERED:

INVERTEBRATES

American Burying Beetle, *Nicrophorus americanus*
Ellipse Mussel, *Venustaconcha ellipsiformis*
Elktoe Mussel, *Alasmidonta marginata*
Flat Floater Mussel, *Anodonta suborbiculata*
Mucket Mussel, *Actinonaias ligamentina*
Neosho Mucket Mussel, *Lampsilis rafinesqueana*
Optiosevus Riffle Beetle, *Optioservus phaeus*
Rabbitsfoot Mussel, *Quadrula cylindrica*
Slender Walker Snail, *Pomatiopsis lapidaria*
Western Fanshell Mussel, *Cyprogenia aberti*

FISH

Arkansas River Shiner, *Notropis girardi*
Arkansas River Speckled Chub, *Macrhybopis tetranema*
Pallid Sturgeon, *Scaphirhynchus albus*
Sicklefin Chub, *Macrhybopsis meeki*
Silver Chub, *Macrhybopsis storeriana*

AMPHIBIANS

Cave Salamander, *Eurycea lucifuga*
Many-ribbed Salamander, *Eurycea multiplicata*
Grotto Salamander, *Typhlotriton spelaeus*

BIRDS

Black-capped Vireo, *Vireo atricapilla*
Eskimo Curlew, *Numenius borealis*
Least Tern, *Sterna antillarum*
Whooping Crane, *Grus americana*

MAMMALS

Black-footed Ferret, *Mustela nigripes*
Gray Myotis, *Myotis grisescens*

KANSAS DEPARTMENT OF WILDLIFE & PARKS
Updated: August, 2009

Operations Office
512 SE 25th Ave.
Pratt, KS 67124-8174

Kansas
Department of Wildlife, Parks and Tourism

Phone: (620) 672-5911
Fax: 620-672-6020
www.kdwp.state.ks.us

Robin Jennison, Secretary

Sam Brownback, Governor

July 17, 2013

Bobbi Wendt
Kansas Water Office
901 S Kansas Avenue
Topeka, KS 66612

Track: 20121424-3
Ref.: D1.1103
CF

Dear Ms. Wendt:

This letter is a follow up response to comments sent out June 20, 2013, regarding the dredging project proposed for John Redmond Reservoir (JRR) and state listed threatened and endangered species and associated habitats. The JRR project entails dredging operations to insure 55,000 acre-feet of conservation storage is available annually for municipal and industrial demand. John Redmond Reservoir is located in Coffey County, Kansas.

Our initial review of the Kansas Water Office (KWO) draft Programmatic Environmental Impact Statement (PEIS) stated concerns with potential adverse impacts to many state listed species and associated habitats downstream of JRR dam. In a recent revision of the PEIS all concerns were addressed, such as sediment loads and concentrations, water quality, reservoir releases, floods, etc. and incorporated into project logistics and operations.

Therefore, we acknowledge that KWO has addressed all concerns of the Kansas Department of Wildlife, Parks and Tourism with the dredging operations that will take place within JRR. We are in agreement that the Preferred Alternative will not likely adversely affect state listed threatened and endangered species and habitats with implemented avoidance and minimization measures coupled with monitoring of the Neosho River.

In addition, we still advocate the timely releases of water from JRR, subsection 4.4 of PEIS, Biological Resources, to benefit state listed threatened and endangered fish and mussel species, associated habitats, and all other natural resources that are located in the Neosho River downstream of JRR.

If you have any questions or concerns please contact me at (620) 672-0795 or jason.luginbill@ksoutdoors.com

Sincerely,

Jason S. Luginbill, Aquatic Ecologist
Ecological Services Section

PRATT OPERATIONS OFFICE
512 SE 25th Ave., Pratt, KS 67124-8174
(620) 672-5911 • Fax: (620) 672-6020

APPENDIX D

Historical and Cultural Resources

Sites around John Redmond Reservoir

Site	Status	Reference
14CF027	Recommended Not NRHP Eligible	Rogers 1979
	Destroyed	HPMP 1997
14CR037	Recommended Not NRHP Eligible	Rogers 1979
	Destroyed	HPMP 1997
14CF041	Recommended Not NRHP Eligible	Rogers 1979
	Destroyed	HPMP 1997
14CF047	Recommended Not NRHP Eligible	Rogers 1979
	Destroyed	HPMP 1997
14CF101	Formerly Determined Not NRHP Eligible	Rust 2001b
14CF102	Formerly Determined Not NRHP Eligible	Rust 2001b
14CF103	Formerly Determined Not NRHP Eligible	Rust 2001b
14CF104	Formerly Determined Not NRHP Eligible	Rust 2001b
14CF105	Formerly Determined Not NRHP Eligible	Rust 2001b
14CF302	Destroyed	Rust 2001a
14CF303	Destroyed	Rust 2001a
14CF311	Formerly Determined Not NRHP Eligible	Rust 2001b (forthcoming)
14CF313	Formerly Determined Not NRHP Eligible	Rust 2001b
	South extension of current 14CF311	Wilmeth 1960 (KSHSSR)
14CF314	Recommended Not NRHP Not Eligible	Witty 1961
	Destroyed	HPMP 1997
14CF319	Recommended Not NRHP Eligible	Theis 1979 Wilmeth 1960 (KSHSSR) Rust 2001a
14CF320	Recommended Not NRHP Eligible	Wilmeth 1960 (KSHSSR)
	Destroyed	Theis 1979 HPMP 1997
14CR321	Recommended Not NRHP Eligible	Witty 1961
	Destroyed	HPMP 1997
14CF324	Destroyed	Rust 2001a
14CR325	Recommended Not NRHP Eligible	Witty 1961 HPMP 1997
	Destroyed	Rust 2001a
14CF326	Destroyed	Rust 2001a
14CF327	Recommended Not NRHP Eligible	Witty 1961 Theis 1983 (KSHSSR) HPMP 1997
14CF330	Mitigated	Witty 1980
	Destroyed	Rust 2001a
14CF331	Mitigated	Witty 1980 HPMP 1997
14CF333	Recommended Not NRHP Eligible	Witty 1961 Rust 2001a
14CF343	Destroyed	HPMP 1997
14CF350	Recommended Not NRHP Eligible	Theis 1979 HPMP 1997
14CF351	Recommended Not NRHP Eligible	Maul 1979 (KSHSSR) HPMP 1997 Rust 2001a
14CF352	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997

Site	Status	Reference
14CF353	Recommended Not NRHP Eligible	Theis 1981
	Destroyed	HPMP 1997
14CF354	Destroyed	HPMP 1997
14CF355	Destroyed	HPMP 1997
14CF356	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
14CF357	Recommended Not NRHP Eligible	Theis 1981 Rust 2001b
14CF360	Recommended Not NRHP Eligible	Theis 1981
	Destroyed	HPMP 1997
14CF361	Recommended Not NRHP Eligible	Theis 1981
	Destroyed	HPMP 1997
14CF362	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
14CF363	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
14CF364	Recommended Not NRHP Eligible	Theis 1979
	Destroyed	HPMP 1997
14CF365	Recommended Not NRHP Eligible	Theis 1981
	Destroyed	HPMP 1997
14CF369	Recommended Not NRHP Eligible	Rust 2001b
14CF389	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
14CF390	Recommended Not NRHP Eligible	Theis 1981
	Destroyed	HPMP 1997
14CF391	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
14CF1316	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
	Destroyed	Rust 2001a
14CF1318	Recommended Not NRHP Eligible	Theis 1981 HPMP 1997
	Destroyed	Rust 2001a
14CF1329	Recommended Not NRHP Eligible	Theis 1983 (KSHSSR)
	Destroyed	HPMP 1997
14CF1335	Destroyed	Rust 2001a
14CF1336	Destroyed	Rust 2001a
KSHSSR = Kansas State Historical Society Site Report		

Sites Downriver of John Redmond Dam

Site (N-S By County)	Reference	Summary Description
14CF8	Schmits 1973	Prehistoric: hearths in riverbank
14CF9	Schmits 1973	Prehistoric: lithic and burned stone deposit in riverbank
14CF10	Schmits 1973	Prehistoric: lithic and burned stone deposit in riverbank
14CF11	Schmits 1973	Prehistoric: mussel and charcoal deposit in riverbank
14CF12	Schmits 1973	Prehistoric: lithic and animal bone deposit in riverbank
14CF13	Schmits 1973	Prehistoric: lithic and burned earth deposit in riverbank
14AN6	Schmits 1973	Prehistoric: animal bone and lithic deposits in riverbank
14NO6	Schmits 1973	Prehistoric: hearths and lithic deposits in riverbank

Site (N-S By County)	Reference	Summary Description
14NO7	Schmits 1973	Prehistoric: pottery and animal bone deposits in riverbank
14NO8	Schmits 1973	Prehistoric: bone and burned earth deposit in riverbank
14NO9	Schmits 1973	Prehistoric: hearth in riverbank
14NO10	Schmits 1973	Prehistoric: mussel and charcoal deposits in riverbank
14NO11	Schmits 1973	Prehistoric: lithic scatter on top of riverbank Historic: nails, glass, china on top of riverbank
14NO376	KSHSSR 1976	Prehistoric: hearths and bison bone in riverbank
14NO398	KSHSSR 1994	Prehistoric: burials and lithics in riverbank
14LT9	Schmits 1973	Prehistoric: lithic deposit in riverbank
14LT10	Schmits 1973	Prehistoric: lithic and charcoal deposits in riverbank
14LT11	Schmits 1973	Prehistoric: hearth and burned earth deposit in riverbank
14LT12	Schmits 1973	Prehistoric: mussel and charcoal deposit in riverbank
14LT355	KSHSSR 1991	Prehistoric: hearth and lithic deposit in riverbank
14CH60	Schmits 1973	Prehistoric: lithic and charcoal deposit in riverbank
14CH61	Schmits 1973	Prehistoric: lithic and burned stone deposit in riverbank
14CH62	Schmits 1973	Prehistoric: described as thin occupation level in riverbank
GLO1	GLO Map 1898	Historic: sawmill
GLO2	GLO Map 1898	Historic: structure
Bridge 1	King 1993	Historic: Pratt-type bridge, 1901
Bridge 2	King 1993	Historic: mixed truss type bridge, 1916
OHSS-OT10	OK Historical Society 1958	Historic: Pooler Ferry
GLO 3	GLO Map 1898	Historic: Berry Ferry
GLO 4	GLO Map 1898	Historic: structure
GLO 5	GLO Map 1898	Historic: structure
KSHSSR = Kansas State Historical Society Site Report		

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

April 5, 2013

Planning and Environmental Division

Mr. Reid Nelson, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Ave., NW, Suite 803
Washington, DC 20004

Dear Mr. Nelson:

This letter is to invite the participation of the Advisory Council on Historic Preservation (ACHP) in the development of a Programmatic Agreement (PA). The proposed PA would address Section 106 procedures for the proposed dredging of portions of John Redmond Reservoir. The U.S. Army Corps of Engineers, Tulsa District, owns and operates John Redmond Reservoir, which is located in Coffey County, southeastern Kansas.

The Kansas Water Office (KWO) plans to conduct dredging in order to offset the effects of long-term sedimentation and associated loss of conservation pool storage in the reservoir. As proposed, KWO will conduct limited dredging within the John Redmond conservation pool over a number of years (see attached figure). Once removed from the reservoir bottom, the slurry material will be pumped to dredge disposal pits located outside the reservoir footprint.

Dredge disposal pits will each comprise up to 100 acres in area and will consist of excavated earth formed into berms approximately 10 feet in height (see attached figure). Each completed disposal pit will resemble a large bathtub, with a rim above ground and a bowl below the surface of the surrounding land. Ultimately, in order to accomplish a significant long-term reduction in sedimentation, construction of as many as 35-40 dredge disposal pits may be required around the perimeter of the reservoir. Some of the proposed dredge disposal pits will be located on government property, but most will probably be located on private property.

Tulsa District proposes to enter into a Programmatic Agreement (PA) in order to address the effects of the long-term effort to reduce sedimentation in John Redmond Reservoir. The PA would guide Tulsa District's compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and ensure procedures are in place throughout the life of this long-term effort.

John Redmond Reservoir is within the pre-contact range of the Wichita and Affiliated Tribes of Oklahoma and the Kaw Nation of Oklahoma, and is within lands adjudicated to the Osage Nation of Oklahoma under the Indian Claims Commission of 1978. Therefore, tribal consultation will be initiated with these Native American groups, and they may be invited as signatories to the PA.

At your earliest convenience, please advise Tulsa District on your willingness to participate in drafting the proposed PA. We look forward to working with you. If you have any questions, please contact Mr. Ken Shingleton at 918-669-7661.

Sincerely,

Jeff Knack
Chief, Planning and Environmental
Division

2 Encls

PROGRAMMATIC AGREEMENT

AMONG

THE U.S. ARMY CORPS OF ENGINEERS, TULSA DISTRICT,

THE KANSAS WATER OFFICE,

THE KANSAS STATE HISTORICAL SOCIETY,

THE WICHITA AND AFFILIATED TRIBES OF OKLAHOMA,

THE KAW NATION OF OKLAHOMA, AND

THE OSAGE NATION OF OKLAHOMA

REGARDING COMPLIANCE WITH SECTION 106 OF THE

NATIONAL HISTORIC PRESERVATION ACT OF 1966 (AS AMENDED)

FOR THE

JOHN REDMOND RESERVOIR DREDGING PROJECT,

COFFEY COUNTY, KANSAS

WHEREAS, the U.S. Army Corps of Engineers, Tulsa District (hereafter, Tulsa District) owns and operates John Redmond Reservoir, which is located on the Neosho River in Coffey County, southeastern Kansas; and

WHEREAS, construction on John Redmond Reservoir was completed in 1965, and the conservation pool was raised an additional three feet in 1976 to its current elevation of 1,041 ft. amsl; and

WHEREAS, conservation storage at elevation 1,041 ft. amsl was estimated in 2000 to be 50,501 acre-feet; and

WHEREAS, conservation storage is believed to be severely impacted by sedimentation from the upper Neosho River basin, with recent estimates being a 50% reduction; and

WHEREAS, the Kansas Water Office (KWO) proposes to conduct long-term dredging within the John Redmond Reservoir conservation pool to offset the effects of sedimentation and improve both conservation storage and water quality in the reservoir; and

WHEREAS, one reasonable alternative being considered is the “No Action” alternative, which would require the reservoir conservation pool volume to remain at less than authorized capacity as affected by sedimentation; and

WHEREAS, Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulation 36 CFR Part 800 require Tulsa District to ensure that historic properties are identified, and that adverse effects to those historic properties are identified and resolved; and

WHEREAS, Tulsa District has determined the Area of Potential Effect (APE) for this project to consist of several components, including (1) the reservoir conservation pool to elevation 1,041 ft. amsl; (2) the reservoir flood storage pool, elevation 1,041-1,068 ft. amsl.; (3) all government fee-owned property around the reservoir; and (4) all private, non-government owned, property adjacent to or in close proximity to government fee-owned property surrounding the reservoir; and

WHEREAS, each component of the APE shall additionally include the full horizontal and vertical extent of any identified cultural or historic resources intersected by or adjacent to any of the above listed project component boundaries and associated impact areas; and

WHEREAS, prior to and at contact with Europeans, the Neosho drainage in southeastern Kansas was occupied by ancestors of the Wichita and Affiliated Tribes of Oklahoma (hereafter, Wichita Tribe), the Kaw Nation of Oklahoma (hereafter, Kaw Nation), and the Osage Nation of Oklahoma, and thus may retain historic properties of importance to the Wichita Tribe, Kaw Nation, and Osage Nation; and

WHEREAS, as part of adjudicated lands identified by the United States Indian Claims Commission of 1978, the Neosho drainage in southeastern Kansas is historically a part of the Osage Nation of Oklahoma (hereafter, Osage Nation), and thus may retain historic properties of importance to the Osage Nation; and

WHEREAS, the effects of this undertaking on historic properties cannot be fully determined prior to commencement of the undertaking; and

WHEREAS, Tulsa District has consulted with the Kansas State Historical Society (SHPO) and the Advisory Council on Historic Preservation (ACHP) in accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. 470 (NHPA), as amended, and its implementing regulations (36 CFR Part 800.6(b)(1)) to resolve potential adverse effects on these historic properties; and

WHEREAS, the ACHP has decided not to participate in consultation regarding this Project at this time, but may re-enter consultation at any time, particularly functioning to resolve potential disputes between Tulsa District , SHPO, and/or other Signatories to this PA; and

WHEREAS, Tulsa District and SHPO agree that it is advisable to accomplish compliance with Section 106 through the development and execution of this PA in accordance with 36 CFR 800.6 and 36 CFR 800.14(b)(3); and

NOW, THEREFORE, Tulsa District , Kansas Water Office, SHPO, the Osage Nation of Oklahoma, the Kaw Nation of Oklahoma, and the Wichita and Affiliated Tribes of Oklahoma agree that upon the Tulsa District and Kansas Water Office decision to proceed with the Undertaking, Tulsa District shall ensure that the following stipulations are implemented in order to take into account the effects of the John Redmond Reservoir Dredging Project on historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended), and that these stipulations shall govern the Project and all of its parts until this PA expires or is terminated.

STIPULATIONS

Tulsa District and the Kansas Water Office shall ensure that the following measures will be carried out. All work conducted under this PA will be performed in a manner consistent with the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716-44740; September 23, 1983), as amended, or the Secretary of the Interior's "Standards for the Treatment of Historic Properties" (36 CFR 68), as appropriate.

I. IDENTIFICATION OF HISTORIC PROPERTIES.

A. ARCHAEOLOGICAL INVESTIGATIONS. Kansas Water Office will conduct a complete archaeological investigation, in multi-year phases if necessary because of funding, of proposed action areas within the Area of Potential Effect (APE). Technical guidance will be provided by Tulsa District as appropriate. Proposed action areas will consist primarily of, but not be limited to, the following types of project features, including dredging locations; dredge disposal structures and areas; borrow areas; access and transport routes; and equipment and materials staging areas. Proposed dredge locations within the conservation pool will be addressed as appropriate through review of site records and literature review, as it may be impractical to conduct further archaeological investigations in these areas. However, proposed dredge locations within the floodpool will be fully investigated.

Investigations and associated results will be coordinated as appropriate to the Section 106 process. Investigation methods will include, but not be limited to, pedestrian survey conducted at appropriate intervals and excavation of shovel tests at appropriate intervals, including screening of excavated material where appropriate. In certain instances subsurface testing will be conducted by 1X1 meter excavation units, soil coring, or backhoe trenching. Additionally, archival research may be necessary to establish chain of title or to establish historical significance to support National Register eligibility determinations for sites dating to the historic period.

B. NATIONAL REGISTER ELIGIBILITY EVALUATIONS AND DETERMINATIONS. When archeological or historic resources are identified within the APE, their eligibility for inclusion in the National Register of Historic Places (NRHP) will be assessed using the criteria outlined in 36 CFR Part 60. If in the event an archeological or historic resource is intersected by the limits of a project element or is immediately adjacent to the APE boundary, the entire property will be considered when determining National Register eligibility of that property. In some instances, information beyond that readily available from survey and archival research may be necessary to complete an eligibility determination. In these instances,

additional work in the form of subsurface test excavations or further archival research may be necessary. If additional work is required to establish National Register eligibility, Kansas Water Office will ensure that the work is appropriately conducted, with technical guidance provided by Tulsa District. The actual amount of work conducted will vary from resource to resource, but it must obtain data sufficient to allow an independent assessment.

In addition to archeological and historic resources, non-archeological resources will be identified within the APE as well. Non-archeological resources may consist of, but not be limited to, historic standing structures, Traditional Cultural Properties (TCP's), Sacred Sites, and historic landscapes. TCP's and Sacred Sites will be identified through consultation with the Wichita and Affiliated Tribes of Oklahoma, Kaw Nation of Oklahoma, and the Osage Nation of Oklahoma. Historic standing structures should be documented in accordance with SHPO guidance.

Tulsa District will coordinate National Register eligibility determinations with all signatories, and each will have 30 calendar days in which to provide written comment. Should Tulsa District, SHPO, the Wichita and Affiliated Tribes of Oklahoma, the Kaw Nation of Oklahoma, and the Osage Nation of Oklahoma agree that a property is or is not eligible for the National Register such consensus shall be deemed conclusive for the purpose of this PA. Should Tulsa District or SHPO disagree regarding the eligibility of a property, Tulsa District shall obtain a determination of eligibility from the Keeper of the National Register pursuant to 36 CFR 63. Resources determined to be ineligible for inclusion in the NRHP shall require no further protection or evaluation. Archeological or historic resources that are eligible for listing on the NRHP are "historic properties," consistent with terminology defined in 36 CFR Part 800.16. Until resources have been conclusively determined to be eligible or not eligible for the NRHP, they will be treated as though they are eligible.

II. DETERMINATION OF ADVERSE EFFECT. Tulsa District shall make a reasonable and good faith effort to evaluate the effect of the undertaking on historic properties in the APE. Tulsa District and SHPO shall apply the criteria of adverse effect to historic properties within the APE in accordance with 36 CFR 800.5.

III. RESOLUTION OF ADVERSE EFFECT. Tulsa District shall consult with SHPO to resolve adverse effects in accordance with 36 CFR 800.6. Tulsa District will consult with all signatories to develop and evaluate alternatives or modifications to the undertaking that could avoid or minimize the adverse effects, with preference to avoidance if possible. Adverse effects to historic properties that cannot be avoided will be mitigated in order to offset the loss of those properties. Accordingly, mitigation will be accomplished by the Kansas Water Office with Tulsa District guidance. Tulsa District shall prepare a historic properties treatment plan (Plan) that describes the mitigation measures the District proposes to resolve the undertaking's adverse effects and shall provide this Plan for review and comment to SHPO and other consulting parties. All parties will have 30 calendar days in which to provide a written response to Tulsa District. The Plan shall include, as appropriate, excavation and recordation strategies; work and report schedules; and curation of artifacts and records. It shall specify at a minimum: a) the historic property or properties where data recovery is to be conducted; b) the excavation or recordation that will be performed; c) the methods to be used; and d) the methods to be used in analysis, data management, and dissemination of data, including a schedule of work and report submission.

If Tulsa District and SHPO fail to agree on how adverse effects will be resolved, the District shall request that the ACHP join the consultation and provide the Council and all consulting parties with documentation pursuant to 36 CFR 800.11(g).

IV. CURATION AND DISPOSITION OF RECOVERED MATERIALS, RECORDS, AND REPORTS.

A. CURATION. Tulsa District shall ensure that all archaeological materials and records that result from identification, evaluation, and treatment efforts conducted under this PA are ultimately accessioned into the University of Kansas, Museum of Anthropology in Lawrence and curated to 36 CFR Part 79 standards.

B. REPORTS. Tulsa District shall provide copies of final technical reports of investigations to the signatories and consulting parties. The signatories and consulting parties shall withhold from the public all site location information and other data that may be of a confidential or sensitive nature pursuant to 36 CFR 800.11(c).

C. ANNUAL REPORT. Tulsa District will provide an annual status report on implementation of the PA to SHPO and other Signatories.

V. TECHNICAL REPRESENTATIVES OF THE SIGNATORIES.

The parties to this PA will designate technical representatives which will communicate to fulfill the terms outlined in order to comply with the Section 106 process. Technical representatives will conduct consultation required to establish determinations of eligibility for the National Register, determinations of adverse effect, and the methods for resolving adverse effects to historic properties.

VI. EXECUTION AND APPLICABILITY OF THIS AGREEMENT.

This Agreement will go into effect when signed by Tulsa District and SHPO, and when an executed version is received by the Advisory Council on Historic Preservation (ACHP).

VII. TREATMENT OF HUMAN REMAINS.

A. PRIOR CONSULTATION. Tulsa District shall comply with the Native American Graves Protection and Repatriation Act (NAGPRA) and its associated regulation, 43 CFR Part 10. If investigations conducted on Federal land pursuant to Stipulation I of this PA indicate a high likelihood that human remains may be encountered, Tulsa District shall develop a treatment plan (e.g., NAGPRA Plan of Action) for these remains in consultation with the Wichita and Affiliated Tribes of Oklahoma, Kaw Nation of Oklahoma, and Osage Nation of Oklahoma. Tulsa District shall ensure that these Nations are afforded a reasonable opportunity to identify concerns, provide advice on identification and evaluation, and participate in the resolution of adverse effects in compliance with the terms of this PA and all related federal laws.

B. INADVERTENT DISCOVERY. Tulsa District shall comply with the Native American Graves Protection and Repatriation Act (NAGPRA) and its associated regulation, 43 CFR Part 10. Immediately upon the inadvertent discovery of human remains during historic properties investigations or construction activities conducted on Federal land pursuant to this PA, Tulsa District shall ensure that all ground disturbing activities cease in the vicinity of the human remains and any associated grave goods, and that the site is secured from further disturbance or vandalism. Within 48 hours of the discovery, Tulsa District shall initiate consultation with SHPO, the Wichita and Affiliated Tribes, the Kaw Nation, and the

Osage Nation to resolve adverse effects. Because of the sensitivity of inadvertent discovery issues, no information about site locations or burial contents will be provided to the media.

VIII. INADVERTENT DISCOVERIES OF HISTORIC PROPERTIES.

If historic resources (aside from pre-contact burials or other human remains discussed in Stipulation VII) are inadvertently discovered during any activities directly related to this project, Tulsa District shall ensure that all construction activity ceases within a reasonable distance of the find, ensure the area is secured and the historic property is protected, and will notify SHPO within 48 hours of discovery. Tulsa District and SHPO will consult and formulate an appropriate course of action to address the effect on the discovery, consistent with a forthcoming, defendable determination of National Register eligibility.

IX. PROFESSIONAL QUALIFICATIONS.

All investigations specified in this PA shall be carried out by principal investigators meeting the pertinent professional qualifications of the Secretary of the Interior's (SOI) *Professional Qualification Standards* (36 CFR Part 61) in a discipline appropriate for the task and the nature of the historic properties.

X. DISPUTE RESOLUTION.

Should any signatory or concurring party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, the objector is encouraged to consult the other signatories in resolving the objection. If that objector determines that such objection cannot be resolved, Tulsa District shall perform the following tasks.

A. CONSULT ACHP. Forward all documentation relevant to the dispute, including proposed resolution, to the ACHP. The ACHP shall provide the agency with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the agency shall prepare a written response that takes into account advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. The agency will then proceed according to its final decision.

B. FINAL DECISION. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, the agency may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Tulsa District shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the PA, and provide them and the ACHP with a copy of such written response.

XI. ANTI-DEFICIENCY ACT.

It is understood that the implementation of this Agreement is subject to Federal and State anti-deficiency statutes.

XII. DURATION, AMENDMENT, WITHDRAWAL, AND TERMINATION.

A. DURATION. Unless terminated or amended as outlined below, this PA shall remain in effect for a period of 10 years from the date that the PA goes into effect and may be extended for a second, five-year term with the written concurrence of all of the signatories. During the time in which this PA is in effect, relevant portions of this PA will be superseded, if appropriate, by future revisions to 36 CFR Part 800 or other federal historic preservation law or regulation.

B. AMENDMENT. If any signatory to the PA determines that the Agreement cannot be fulfilled or that modification of the Agreement is warranted, that signatory shall consult with the other signatories to seek amendment of the Agreement. The Agreement may be amended after consultation among the signatories and all parties agree in writing with such amendment.

C. WITHDRAWAL. Any signatory may withdraw their involvement in this Agreement by providing 30 days written notice to the other parties, provided that the parties will consult during this period to seek amendments or other actions that would prevent withdrawal. Withdrawal of Tulsa District or SHPO will invalidate the PA.

D. TERMINATION. This Agreement will be fully terminated if Tulsa District or SHPO provide notice of termination and after 30 days or more of unsuccessful consultations to amend the Agreement. This Agreement may also be terminated by the implementation of a subsequent Programmatic Agreement per 36 CFR Part 800 that explicitly supersedes this Agreement.

XIII. COMPLIANCE WITH 36 CFR PART 800.

Execution of this Programmatic Agreement and implementation of its terms is evidence that U.S. Army Corps of Engineers, Tulsa District and the Kansas Water Office have taken into account the effects of the agencies' undertakings on historic properties and has afforded the ACHP an opportunity to comment.

SIGNATORIES

_____

COL Richard A. Pratt

Commander

U.S. Army Corps of Engineers, Tulsa District

_____

Mr. Tracy Streeter, Director

Kansas Water Office

_____

Ms. Jennie Chinn

Kansas State Historic Preservation Officer

INVITED SIGNATORIES

_____

President Terri Parton

Wichita and Affiliated Tribes of Oklahoma

_____

Chairman Guy Monroe

Kaw Nation of Oklahoma

_____

Principal Chief John Red Eagle

Osage Nation of Oklahoma

APPENDIX E

Prime and Unique Farmlands

MEMO

DATE: April 11, 2013
TO: USACE and NRCS
FROM: Kansas Water Office
RE: Prime or Unique Farmlands

901 S. Kansas Avenue
Topeka, KS 66612
Phone: (785) 296-3185
Fax: (785) 296-0878
www.kwo.org

Included with this memorandum is an information sheet for evaluators of farmland within the site boundaries of the *Removal and Disposal of Sediment at John Redmond Reservoir Draft Programmatic Environmental Impact Statement (DPEIS)* project.

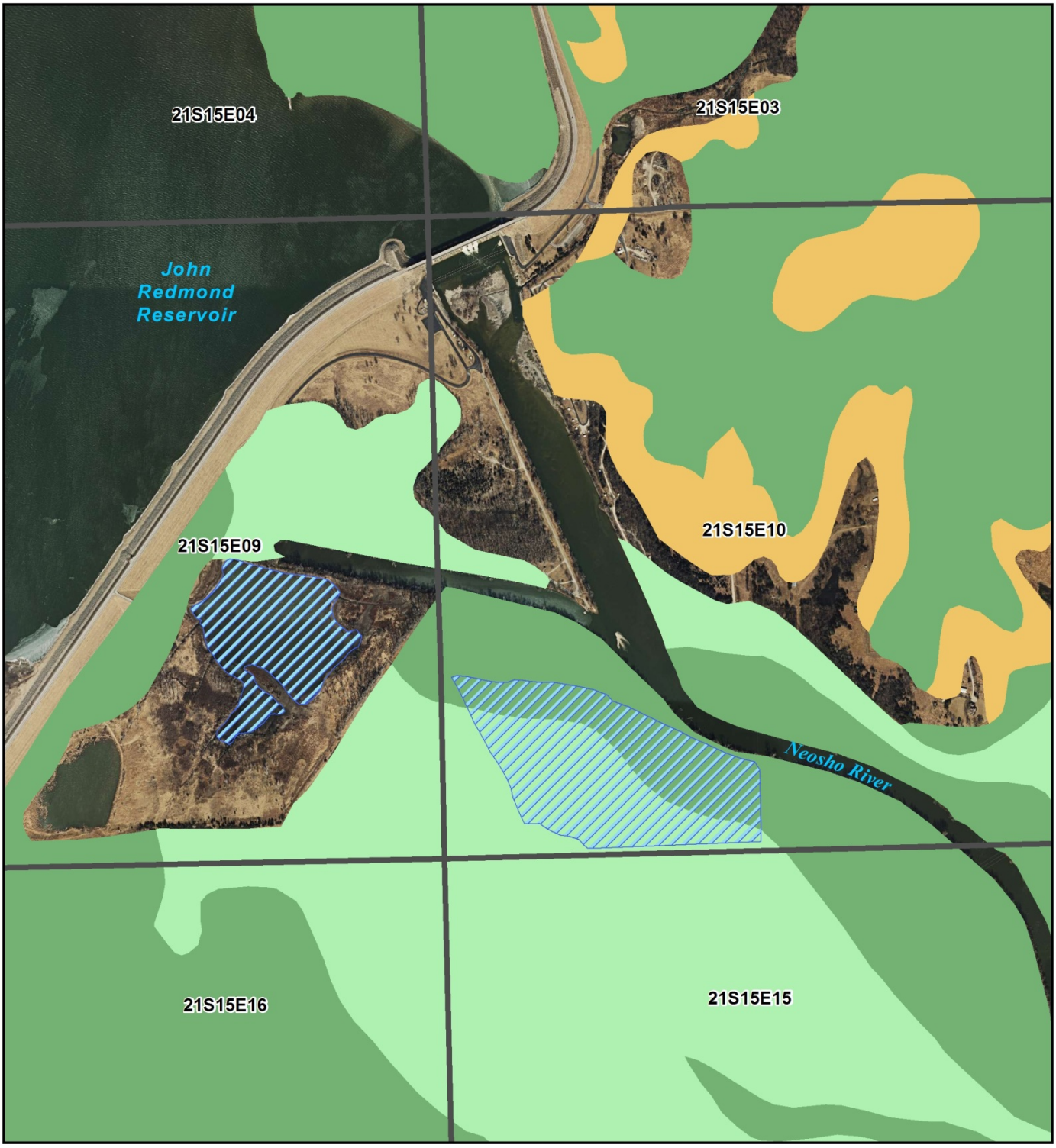
The preferred alternative evaluated in this DPEIS would seek to dredge and dispose of sediments from the conservation pool at a rate and quantity to ensure 55,000 acre-feet of water supply storage is available for municipal and industrial demand. In the first five years of the dredging activity, approximately 3 to 6 million cubic yards of sediment will be removed. Phasing of removal will continue through 2045 which corresponds to the expiration of the Federal Energy Regulation Committee (FERC) license for WCGS. Approximately five 100-acre sites may be needed for sediment disposal for the first five years of dredging activities. Two parcels have been identified on federal property below the dam as potential disposal sites (Alternative A in the table below). Identification of additional suitable disposal sites will be focused within an area four miles east and west of the reservoir (Alternative B in the table below).

Alternative Site	Alternative Site Description	Farmland of Statewide Importance (acres)	Prime Farmland if Drained (acres)	Prime Farmland (acres)	Total
A	4 Mile Buffer	10672.9	4284.6	42404.2	57361.7
		18.6%	7.5%	73.9%	100.0%
B	Federal Land Below Dam	0.0	29.6	24.2	53.8

Soil types occurring within each alternative site areas were summarized by Farmland of Statewide Importance, Prime Farmland if drained, and Prime Farmland (see table above and associated maps). Disposal of sediment on the federal property (Alternative B, 53.8 acres total)) would impact approximately 29.6 acres of Prime Farmland if drained soils and 24.2 acres of Prime Farmland. Use of sites on non-federal property (Alternative A, 446.2 acres total) would impact approximately 81.2 acres of Farmland of statewide importance, 33.4 acres of Prime Farmland if drained soils and 329.7 acres of Prime Farmland.

Also attached with this memorandum is Form AD-1006, Farmland Conversion Impact Rating. This information has been provided for your consideration and evaluation of the farmland within the boundaries of the project described above.

Should you require additional information, please contact Susan Metzger, Kansas Water Office, at (785) 296-3185. Thank you for your cooperation with this DPEIS project and Form AD-1006 evaluation.

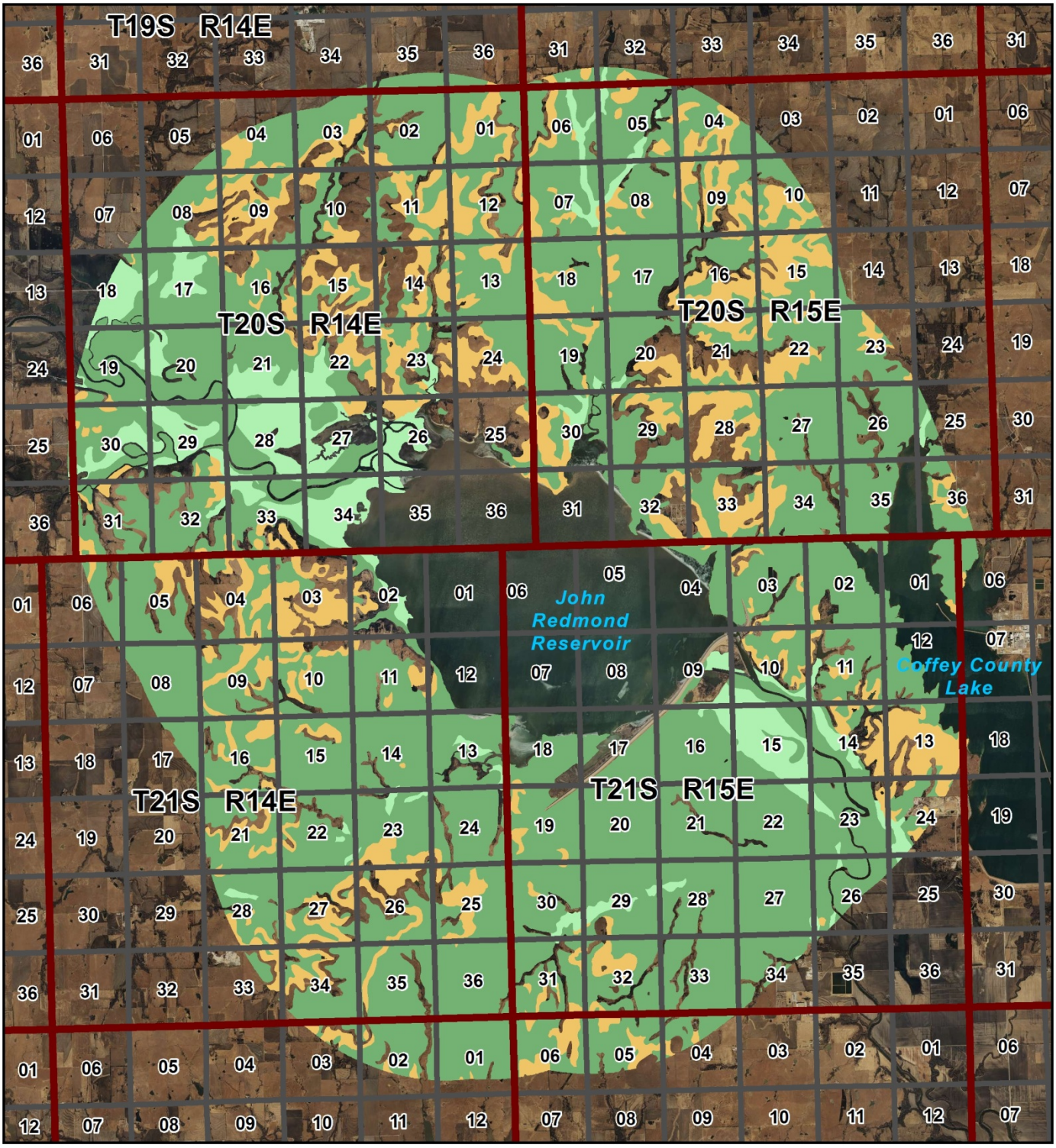


LEGEND

- Prime Farmland
- Prime Farmland if Drained
- Farmland of Statewide Importance
- Potential CDF - Federal Property
- Section Boundary

N

0 0.1 0.2 0.4 Miles


T19S R14E
T20S R14E
T20S R15E
T21S R14E
T21S R15E
John Redmond Reservoir
Coffey County Lake
LEGEND
Prime Farmland
Prime Farmland if Drained
Farmland of Statewide Importance
Township/Range Boundary
Section Boundary
N
0 0.5 1 2 3
Miles

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
3020 West 18th, Suite B
Emporia, Kansas 66801

Phone: 620-343-7276
FAX: 620-343-7871
www.ks.nrcs.usda.gov

May 3, 2013

Susan Metzger
Kansas Water Office
901 S. Kansas Avenue
Topeka, Kansas 66612

Re: Removal and Disposal of Sediment at John Redmond Reservoir Programmatic Environmental Impact Statement (PEIS) project.

Dear Ms. Metzger:

The Farmland Protection Policy Act (FPPA) applies to projects where federal technical or financial assistance is being requested. FPPA provides a process for determining an impact rating when important farmlands are being considered for conversion to non-agricultural uses.

Enclosed is Form AD-1006, Farmland Conversion Impact Rating with the Natural Resources Conservation Service's (NRCS) parts completed. The originator should complete Parts VI and VII and return a completed copy to this office at the above address.

Sincerely,

CLIFFORD THORNTON
Assistance State Conservationist

Enclosure(s)

ec:
Susan M. Furgason, Soil Conservationist, NRCS, Salina, Kansas
Robert K. Harkrader, Supervisory District Conservationist, NRCS, Burlington, Kansas

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MAY 07 2013

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request April 12, 2013		
Name of Project John Redmond Dredging Initiative	Federal Agency Involved KWO/USACE		
Proposed Land Use CDF for dredge material	County and State county and state		
PART II *(To be completed by NRCS)*	Date Request Received By NRCS April 26, 2013	Person Completing Form: John Conway	
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 0	Average Farm Size 553
Major Crop(s) Corn & Soybean	Farmable Land In Govt. Jurisdiction Acres: 177,357% 42.3	Amount of Farmland As Defined in FPPA Acres: 27080% 64.7	
Name of Land Evaluation System Used LESA	Name of State or Local Site Assessment System N/A	Date Land Evaluation Returned by NRCS May 01, 2013	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	~500	~79.5		
B. Total Acres To Be Converted Indirectly	--	--		
C. Total Acres In Site	~500	~79.5		
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	500	79.5		
B. Total Acres Statewide Important or Local Important Farmland	--	--		
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	<1	<1		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	29	94		
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	73	40		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15	15		
2. Perimeter In Non-urban Use	(10)	10	10		
3. Percent Of Site Being Farmed	(20)	1	13		
4. Protection Provided By State and Local Government	(20)	0	0		
5. Distance From Urban Built-up Area	(15)	15	10		
6. Distance To Urban Support Services	(15)	0	0		
7. Size Of Present Farm Unit Compared To Average	(10)	8	0		
8. Creation Of Non-farmable Farmland	(10)	0	0		
9. Availability Of Farm Support Services	(5)	5	5		
10. On-Farm Investments	(20)	20	5		
11. Effects Of Conversion On Farm Support Services	(10)	0	0		
12. Compatibility With Existing Agricultural Use	(10)	0	0		
TOTAL SITE ASSESSMENT POINTS	160	74	58	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	73	40	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	74	58	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	147	98	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form: Bobbi Wendt — Date: May 8, 2013

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

901 S. Kansas Avenue
Topeka, KS 66612

Kansas Water Office

Phone: (785)-296-3185
Fax: (785)-296-0878
www.kwo.org

Tracy Streeter, Director

Sam Brownback, Governor

May 13, 2013

Clifford Thornton
Assistant State Conservationist
Natural Resources Conservation Service
3020 West 18th, Suite B
Emporia, KS 66801

Dear Mr. Thornton:

This is to inform you that the Kansas Water Office (KWO) has completed the USDA Farmland Conversion Impact Rating - Form AD-1006. This form was initiated and completed for the preparation of the Draft Programmatic Environmental Impact Statement (DPEIS) for the proposed removal of sediment from John Redmond Reservoir. The KWO appreciates your assistance in completing this form and looks forward to your review and any further information you can provide. We request that once the form is reviewed and found to be satisfactory, that a letter be addressed to the US Army Corps of Engineers (USACE) stating the outcome of your review in reference to the DPEIS.

We appreciate your assistance in this matter. If you have any questions, comments, or concerns please contact the KWO for assistance.

Sincerely,

Susan Metzger
Chief of Planning and Policy

cc: Susan M. Furgason, Soil Conservationist, NRCS, Salina, KS
Robert K. Harkrader, Supervisory District Conservationist, NRCS, Burlington, KS

Appendix F

Sediment Quality Sampling Data

PREVIOUS SEDIMENT QUALITY ASSESSMENTS REFERENCED WITHIN DPEIS

Sedimentation, Sediment Quality, and Upstream Channel Stability, John Redmond Reservoir, East-Central Kansas, 1964-2009. Prepared by U.S. Geological Survey in cooperation with the U.S. Army Corps of Engineers, Tulsa District. Scientific Investigation Report 2010-5191.

http://www.kwo.org/projects_programs/JohnRedmondDredging/rpt_USGS_JohnRedmond_020413_sm.pdf

Bathymetric Survey of John Redmond Reservoir, Coffey County, Kansas. Prepared by Kansas Biological Survey Applied Science and Technology for Reservoir Assessment (ASTRA). December 2007, updated January 2010.

http://www.kwo.org/reservoirs/ReservoirBathymetry/JohnRedmondReservoir_revised_12010_kbs.pdf

Sediment Quality
Toxicity Characteristic Leaching Procedure (TCLP) Results
Composite Sample Collected Near John Redmond Reservoir Dam and Outlet Structures - Proposed Initial Site for Dredging

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

May 17, 2013

Teresa Rasmussen
USGS
4821 Quail Crest Place
Lawrence, KS 66049

RE: Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Dear Teresa Rasmussen:
Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emily Webb

emily.webb@pacelabs.com
Project Manager

Enclosures

cc: Kyle Juracek, USGS

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CERTIFICATIONS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60143883001	1A	Solid	04/30/13 13:00	05/03/13 13:15

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SAMPLE ANALYTE COUNT

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60143883001	1A	EPA 6010	JGP	7	PASI-K
		EPA 7470	TJT	1	PASI-K
		EPA 8270	JMT	18	PASI-K
		EPA 8260	RAB	14	PASI-K
		ASTM D2974	DWC	1	PASI-K

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ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Sample: 1A **Lab ID: 60143883001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 05/07/13 00:00							
Arsenic	ND	mg/L	0.50	1	05/09/13 14:15	05/10/13 14:00	7440-38-2	
Barium	ND	mg/L	2.5	1	05/09/13 14:15	05/10/13 14:00	7440-39-3	
Cadmium	ND	mg/L	0.050	1	05/09/13 14:15	05/10/13 14:00	7440-43-9	
Chromium	ND	mg/L	0.10	1	05/09/13 14:15	05/10/13 14:00	7440-47-3	
Lead	ND	mg/L	0.50	1	05/09/13 14:15	05/10/13 14:00	7439-92-1	
Selenium	ND	mg/L	0.50	1	05/09/13 14:15	05/10/13 14:00	7782-49-2	
Silver	ND	mg/L	0.10	1	05/09/13 14:15	05/10/13 14:00	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 05/07/13 00:00							
Mercury	ND	mg/L	0.0020	1	05/13/13 09:45	05/13/13 14:52	7439-97-6	
8270 MSSV TCLP Sep Funnel	Analytical Method: EPA 8270 Preparation Method: EPA 3510							
	Leachate Method/Date: EPA 1311; 05/07/13 00:00							
1,4-Dichlorobenzene	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	106-46-7	
2,4-Dinitrotoluene	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	121-14-2	
Hexachloro-1,3-butadiene	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	87-68-3	
Hexachlorobenzene	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	118-74-1	
Hexachloroethane	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	67-72-1	
2-Methylphenol(o-Cresol)	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	200	1	05/10/13 00:00	05/14/13 00:48		
Nitrobenzene	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	98-95-3	
Pentachlorophenol	ND	ug/L	500	1	05/10/13 00:00	05/14/13 00:48	87-86-5	
Pyridine	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	110-86-1	
2,4,5-Trichlorophenol	ND	ug/L	500	1	05/10/13 00:00	05/14/13 00:48	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	100	1	05/10/13 00:00	05/14/13 00:48	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	79	%	42-120	1	05/10/13 00:00	05/14/13 00:48	4165-60-0	
2-Fluorobiphenyl (S)	74	%	43-120	1	05/10/13 00:00	05/14/13 00:48	321-60-8	
Terphenyl-d14 (S)	73	%	38-120	1	05/10/13 00:00	05/14/13 00:48	1718-51-0	
Phenol-d6 (S)	71	%	41-120	1	05/10/13 00:00	05/14/13 00:48	13127-88-3	
2-Fluorophenol (S)	71	%	40-120	1	05/10/13 00:00	05/14/13 00:48	367-12-4	
2,4,6-Tribromophenol (S)	85	%	38-126	1	05/10/13 00:00	05/14/13 00:48	118-79-6	
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 05/13/13 00:00							
Benzene	ND	ug/L	50.0	1		05/14/13 18:59	71-43-2	
2-Butanone (MEK)	ND	ug/L	1000	1		05/14/13 18:59	78-93-3	
Carbon tetrachloride	ND	ug/L	50.0	1		05/14/13 18:59	56-23-5	
Chlorobenzene	ND	ug/L	50.0	1		05/14/13 18:59	108-90-7	
Chloroform	ND	ug/L	200	1		05/14/13 18:59	67-66-3	
1,2-Dichloroethane	ND	ug/L	50.0	1		05/14/13 18:59	107-06-2	
1,1-Dichloroethene	ND	ug/L	50.0	1		05/14/13 18:59	75-35-4	
Tetrachloroethene	ND	ug/L	50.0	1		05/14/13 18:59	127-18-4	
Trichloroethene	ND	ug/L	50.0	1		05/14/13 18:59	79-01-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Sample: 1A **Lab ID: 60143883001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 05/13/13 00:00							
Vinyl chloride	ND	ug/L	100	1		05/14/13 18:59	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		05/14/13 18:59	17060-07-0	
Toluene-d8 (S)	100	%	80-120	1		05/14/13 18:59	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		05/14/13 18:59	460-00-4	
Dibromofluoromethane (S)	105	%	80-120	1		05/14/13 18:59	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**58.2**	%	0.50	1		05/06/13 00:00		

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

QC Batch: MERP/7324 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 60143883001

METHOD BLANK: 1183644 Matrix: Water
Associated Lab Samples: 60143883001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	ND	0.0020	05/13/13 14:30	

LABORATORY CONTROL SAMPLE: 1183645

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0049	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1183646 1183647

Parameter	Units	60143762001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	.015	.015	ND	.0012J	6	8	75-125		20	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

QC Batch: MPRP/22612
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Associated Lab Samples: 60143883001

METHOD BLANK: 1183889 Matrix: Water
Associated Lab Samples: 60143883001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.50	05/10/13 13:39	
Barium	mg/L	ND	2.5	05/10/13 13:39	
Cadmium	mg/L	ND	0.050	05/10/13 13:39	
Chromium	mg/L	ND	0.10	05/10/13 13:39	
Lead	mg/L	ND	0.50	05/10/13 13:39	
Selenium	mg/L	ND	0.50	05/10/13 13:39	
Silver	mg/L	ND	0.10	05/10/13 13:39	

LABORATORY CONTROL SAMPLE: 1183890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	1	0.86	86	80-120	
Barium	mg/L	1	0.94	94	80-120	
Cadmium	mg/L	1	0.85	85	80-120	
Chromium	mg/L	1	0.89	89	80-120	
Lead	mg/L	1	0.89	89	80-120	
Selenium	mg/L	1	0.83	83	80-120	
Silver	mg/L	.5	0.42	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1183891 1183892

Parameter	Units	60143762001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	10	10	9.3	9.4	92	94	75-125	2	20	
Barium	mg/L	ND	10	10	9.1	9.5	90	95	75-125	4	20	
Cadmium	mg/L	ND	10	10	8.5	8.7	85	87	75-125	2	20	
Chromium	mg/L	ND	10	10	9.1	9.3	91	93	75-125	3	20	
Lead	mg/L	ND	10	10	8.4	8.6	84	86	75-125	3	20	
Selenium	mg/L	ND	10	10	9.4	9.7	93	97	75-125	3	20	
Silver	mg/L	ND	5	5	4.3	4.4	86	89	75-125	3	20	

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

QC Batch: MSV/53640 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP
Associated Lab Samples: 60143883001

METHOD BLANK: 1186748 Matrix: Water
Associated Lab Samples: 60143883001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	ND	50.0	05/14/13 17:42	
1,2-Dichloroethane	ug/L	ND	50.0	05/14/13 17:42	
2-Butanone (MEK)	ug/L	ND	1000	05/14/13 17:42	
Benzene	ug/L	ND	50.0	05/14/13 17:42	
Carbon tetrachloride	ug/L	ND	50.0	05/14/13 17:42	
Chlorobenzene	ug/L	ND	50.0	05/14/13 17:42	
Chloroform	ug/L	ND	200	05/14/13 17:42	
Tetrachloroethene	ug/L	ND	50.0	05/14/13 17:42	
Trichloroethene	ug/L	ND	50.0	05/14/13 17:42	
Vinyl chloride	ug/L	ND	100	05/14/13 17:42	
1,2-Dichloroethane-d4 (S)	%	99	80-120	05/14/13 17:42	
4-Bromofluorobenzene (S)	%	98	80-120	05/14/13 17:42	
Dibromofluoromethane (S)	%	103	80-120	05/14/13 17:42	
Toluene-d8 (S)	%	100	80-120	05/14/13 17:42	

LABORATORY CONTROL SAMPLE: 1186749

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	1000	1020	102	70-127	
1,2-Dichloroethane	ug/L	1000	959	96	72-122	
2-Butanone (MEK)	ug/L	5000	5020	100	69-124	
Benzene	ug/L	1000	956	96	73-122	
Carbon tetrachloride	ug/L	1000	1130	113	73-125	
Chlorobenzene	ug/L	1000	975	97	80-120	
Chloroform	ug/L	1000	921	92	76-120	
Tetrachloroethene	ug/L	1000	1040	104	79-122	
Trichloroethene	ug/L	1000	986	99	76-120	
Vinyl chloride	ug/L	1000	838	84	57-140	
1,2-Dichloroethane-d4 (S)	%			99	80-120	
4-Bromofluorobenzene (S)	%			98	80-120	
Dibromofluoromethane (S)	%			101	80-120	
Toluene-d8 (S)	%			100	80-120	

MATRIX SPIKE SAMPLE: 1186750

Parameter	Units	60143889001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	ND	1000	967	97	66-142	
1,2-Dichloroethane	ug/L	ND	1000	918	92	53-144	
2-Butanone (MEK)	ug/L	ND	5000	5280	104	54-127	
Benzene	ug/L	ND	1000	909	91	48-150	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

MATRIX SPIKE SAMPLE: 1186750

Parameter	Units	60143889001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Carbon tetrachloride	ug/L	ND	1000	997	100	68-145	
Chlorobenzene	ug/L	ND	1000	942	94	68-131	
Chloroform	ug/L	ND	1000	877	88	69-126	
Tetrachloroethene	ug/L	ND	1000	957	96	66-139	
Trichloroethene	ug/L	ND	1000	910	91	67-130	
Vinyl chloride	ug/L	ND	1000	861	86	47-159	
1,2-Dichloroethane-d4 (S)	%				96	80-120	
4-Bromofluorobenzene (S)	%				100	80-120	
Dibromofluoromethane (S)	%				99	80-120	
Toluene-d8 (S)	%				99	80-120	

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

QC Batch: OEXT/38312 Analysis Method: EPA 8270
QC Batch Method: EPA 3510 Analysis Description: 8270 TCLP MSSV
Associated Lab Samples: 60143883001

METHOD BLANK: 1184281 Matrix: Water
Associated Lab Samples: 60143883001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	ND	100	05/13/13 22:02	
2,4,5-Trichlorophenol	ug/L	ND	500	05/13/13 22:02	
2,4,6-Trichlorophenol	ug/L	ND	100	05/13/13 22:02	
2,4-Dinitrotoluene	ug/L	ND	100	05/13/13 22:02	
2-Methylphenol(o-Cresol)	ug/L	ND	100	05/13/13 22:02	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	200	05/13/13 22:02	
Hexachloro-1,3-butadiene	ug/L	ND	100	05/13/13 22:02	
Hexachlorobenzene	ug/L	ND	100	05/13/13 22:02	
Hexachloroethane	ug/L	ND	100	05/13/13 22:02	
Nitrobenzene	ug/L	ND	100	05/13/13 22:02	
Pentachlorophenol	ug/L	ND	500	05/13/13 22:02	
Pyridine	ug/L	ND	100	05/13/13 22:02	
2,4,6-Tribromophenol (S)	%	80	38-126	05/13/13 22:02	
2-Fluorobiphenyl (S)	%	75	43-120	05/13/13 22:02	
2-Fluorophenol (S)	%	69	40-120	05/13/13 22:02	
Nitrobenzene-d5 (S)	%	77	42-120	05/13/13 22:02	
Phenol-d6 (S)	%	72	41-120	05/13/13 22:02	
Terphenyl-d14 (S)	%	83	38-120	05/13/13 22:02	

LABORATORY CONTROL SAMPLE: 1184282

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	500	385	77	42-120	
2,4,5-Trichlorophenol	ug/L	500	407J	81	51-120	
2,4,6-Trichlorophenol	ug/L	500	390	78	50-120	
2,4-Dinitrotoluene	ug/L	500	346	69	53-120	
2-Methylphenol(o-Cresol)	ug/L	500	370	74	46-120	
3&4-Methylphenol(m&p Cresol)	ug/L	1000	761	76	35-120	
Hexachloro-1,3-butadiene	ug/L	500	391	78	43-120	
Hexachlorobenzene	ug/L	500	387	77	51-120	
Hexachloroethane	ug/L	500	361	72	38-120	
Nitrobenzene	ug/L	500	394	79	47-120	
Pentachlorophenol	ug/L	500	336J	67	39-123	
Pyridine	ug/L	500	229	46	1-120	
2,4,6-Tribromophenol (S)	%			82	38-126	
2-Fluorobiphenyl (S)	%			76	43-120	
2-Fluorophenol (S)	%			72	40-120	
Nitrobenzene-d5 (S)	%			81	42-120	
Phenol-d6 (S)	%			74	41-120	
Terphenyl-d14 (S)	%			83	38-120	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(913)599-5665

QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

QC Batch: PMST/8517
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60143883001

METHOD BLANK: 1181614 Matrix: Solid
Associated Lab Samples: 60143883001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	05/06/13 00:00	

SAMPLE DUPLICATE: 1181689

Parameter	Units	60143866001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	ND	0.56		20	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143883

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60143883001	1A	EPA 3010	MPRP/22612	EPA 6010	ICP/17930
60143883001	1A	EPA 7470	MERP/7324	EPA 7470	MERC/7284
60143883001	1A	EPA 3510	OEXT/38312	EPA 8270	MSSV/12112
60143883001	1A	EPA 8260	MSV/53640		
60143883001	1A	ASTM D2974	PMST/8517		

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

May 17, 2013

Emily Webb
PASI-KS
9608 Loiret Blvd.
Lenexa, KS 66219

RE: Project 20153961
Project ID: 60143883/USGS

Dear Emily Webb:

Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2013. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerly,

Karen Brown
karen.brown@pacelabs.com

REPORT OF LABORATORY ANALYSIS

Laboratory Certifications

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Project: 20153961

Client: 60

Project ID: 60143883/USGS

Washington Department of Ecology C2078
Oregon Environmental Laboratory Accreditation - LA200001
U.S. Dept. of Agriculture Foreign Soil Import P330-10-00119
Pennsylvania Dept. of Env Protection (NELAC) 68-04202
Texas Commission on Env. Quality (NELAC) T104704405-09-TX
Kansas Department of Health and Environment (NELAC) E-10266
Florida Department of Health (NELAC) E87595
Oklahoma Department of Environmental Quality - 2010-139
Illinois Environmental Protection Agency - 0025721
California Env. Lab Accreditation Program Branch - 11277CA
Louisiana Dept. of Environmental Quality (NELAC/LELAP) 02006

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St. Rose, LA 70087
(504) 469-0333

Sample Cross Reference

Project: 20153961

Client: 60

Project ID: 60143883/USGS

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
1A	201088612	Other	30-Apr-13 13:00	03-May-13 00:00

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St. Rose, LA 70087
(504) 469-0333

Project: 20153961

Sample Receipt Condition:

All samples were received in accordance with EPA protocol.

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

LCS recoveries outside of QC limits are qualified in the Report of Quality Control section.

Matrix Spikes and Duplicates:

All MS/MSD recoveries or duplicate RPDs were within QC limits.

Surrogates:

Surrogate recoveries outside of QC limits are qualified in the surrogate results section.

Project: 20153961

Analytical Method	Batch	Sample used for QC
EPA 8151	208299	Project sample 1A
EPA 8081	208300	Project sample 1A

For the sample used as the original for the DUP or MS/MSD for the batch:

Project sample means a sample from this project was used.
Client sample means a sample from the same client but in a different project was used.
Batch sample means a sample from a different client was used.

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St. Rose, LA 70087
(504) 469-0333

Sample Results

Client: 60

Client ID: 1A
Project ID: 60143883/USGS
Lab ID: 201088612 (TCLP)
Description: None
Method: EPA 8081 (TCLP)
8081 Pests TCLP

Project: 20153961
Site: None
Matrix: Other
% Moisture: n/a
Prep Level: TCLP
Batch: 208300

Collected: 30-Apr-13
Received: 03-May-13
Prepared: 13-May-13

Units: mg/L

CAS No.	Analyte	Dilution	Result	Qu	Reporting Limit	Reg Limit	Analysis	
58-89-9	gamma-BHC (Lindane)	1	ND		0.000500	0.400	15-May-13 16:01	SLF
57-74-9	Chlordane	1	ND		0.00500	0.0300	15-May-13 16:01	SLF
72-20-8	Endrin	1	ND		0.00100	0.0200	15-May-13 16:01	SLF
76-44-8	Heptachlor	1	ND		0.000500	0.00800	15-May-13 16:01	SLF
1024-57-3	Heptachlor epoxide	1	ND		0.000500	0.00800	15-May-13 16:01	SLF
72-43-5	Methoxychlor	1	ND		0.00500	10.0	15-May-13 16:01	SLF
8001-35-2	Toxaphene	1	ND		0.0200	0.500	15-May-13 16:01	SLF

7 compound(s) reported

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Sample Results

Client: 60

Client ID: 1A
Project ID: 60143883/USGS
Lab ID: 201088612 (TCLP)
Description: None
Method: EPA 8151 (TCLP)
8151 Herbs TCLP

Project: 20153961
Site: None
Matrix: Other **% Moisture:** n/a
Prep Level: TCLP **Batch:** 208299

Collected: 30-Apr-13 **Received:** 03-May-13
Prepared: 13-May-13

Units: mg/L

CAS No.	Analyte	Dilution	Result	Qu	Reporting Limit	Reg Limit	Analysis	
94-75-7	2,4-D	1	ND		0.0200	10.0	14-May-13 12:54	SPP1
93-72-1	2,4,5-TP (Silvex)	1	ND		0.0200	1.00	14-May-13 12:54	SPP1

2 compound(s) reported

Protocol 5/17/2013 10:27:28

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Surrogate Recovery

Batch: 208299 **Project:** 20153961

Method: TCLP GC Semivolatile Organics

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
201088612	1A		90	76						
201088727	1A MS 1		97	82						
201088728	1A MSD 1		101	84						
201088725	208299 BLANK 1		80	81						
201088726	208299 LCS 1		99	98						
	QC limits:		10-166	10-166						

Sur 1: 2,4-DCPA (Conf)(S)
Sur 2: 2,4-DCPA (S)

*** denotes surrogate recovery outside of QC limits.**
D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Surrogate Recovery

Batch: 208300 **Project:** 20153961

Method: TCLP GC Semivolatile Organics

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
201088612	1A		91	98	72	66				
201088731	1A MS 1		81	87	84	70				
201088732	1A MSD 1		93	97	119	70				
201088729	208300 BLANK 1		83	89	61	57				
201088730	208300 LCS 1		159 *	156 *	121 *	122 *				
	QC limits:		10-137	10-137	18-119	18-119				

Sur 1: Decachlorobiphenyl (Conf)(S)
Sur 2: Decachlorobiphenyl (S)
Sur 3: Tetrachloro-m-xylene (Conf)(S)
Sur 4: Tetrachloro-m-xylene (S)

*** denotes surrogate recovery outside of QC limits.**
D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

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St. Rose, LA 70087
(504) 469-0333

Batch: 208300 **Project:** 20153961 **LCS:** 201088730 15-May-1 15:48

Method: TCLP GC Semivolatile Organics **MS:** 201088731 15-May-1 16:13

Units: mg/L **MSD:** 201088732 15-May-1 16:26

Original for MS: Client Sample 201088612

Parameter Name	LCS Spike	LCS Found	LCS %Rec	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
gamma-BHC (Lindane)	0.00500	0.00610	122	0.00500		0.00394	0.00443	79	89	12	28-128	17-149	20	
Endrin	0.00500	0.00582	116	0.00500		0.00356	0.00403	71	81	12	20-153	22-160	20	
Heptachlor	0.00500	0.00456	91	0.00500		0.00325	0.00340	65	68	5	10-115	10-134	20	
Heptachlor epoxide	0.00500	0.00536	107	0.00500		0.00384	0.00438	77	88	13	30-119	13-147	20	
Methoxychlor	0.00500	0.00551	110	0.00500		0.00423	0.00509	85	102	19	21-150	17-166	20	

5 compound(s) reported

*** denotes recovery outside of QC limits.**
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Batch: 208299 **Project:** 20153961 **LCS:** 201088726 14-May-1 12:37

Method: TCLP GC Semivolatile Organics **MS:** 201088727 14-May-1 13:10

Units: mg/L **MSD:** 201088728 14-May-1 13:26

Original for MS: Client Sample 201088612

Parameter Name	LCS Spike	LCS Found	LCS %Rec	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
2,4-D	0.0400	0.0461	115	0.0400		0.0420	0.0457	105	114	8	10-151	10-160	27	
2,4,5-TP (Silvex)	0.0400	0.0321	80	0.0400		0.0283	0.0276	71	69	2	22-158	16-164	20	

2 compound(s) reported

*** denotes recovery outside of QC limits.**
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Blank Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Blank ID: 208299 BLANK 1 **Project:** 20153961

Lab ID: 201088725

Prep Level: TCLP **Batch:** 208299

Method: TCLP GC Semivolatile Organics

Prepared: 13-May-13

Units: mg/L

CAS Numb	Analyte	Dilution	Result	Qu	Reporting Limit	Analysis
94-75-7	2,4-D	1	ND		0.0200	14-May-13 12:21 SPP1
93-72-1	2,4,5-TP (Silvex)	1	ND		0.0200	14-May-13 12:21 SPP1

2 compound(s) reported

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Blank Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Blank ID: 208300 BLANK 1 **Project:** 20153961

Lab ID: 201088729

Prep Level: TCLP **Batch:** 208300

Method: TCLP GC Semivolatile Organics

Prepared: 13-May-13

Units: mg/L

CAS Numb	Analyte	Dilution	Result	Qu	Reporting Limit	Analysis	
58-89-9	gamma-BHC (Lindane)	1	ND		0.000500	15-May-13 15:35	SLF
57-74-9	Chlordane	1	ND		0.00500	15-May-13 15:35	SLF
72-20-8	Endrin	1	ND		0.00100	15-May-13 15:35	SLF
76-44-8	Heptachlor	1	ND		0.000500	15-May-13 15:35	SLF
1024-57-3	Heptachlor epoxide	1	ND		0.000500	15-May-13 15:35	SLF
72-43-5	Methoxychlor	1	ND		0.00500	15-May-13 15:35	SLF
8001-35-2	Toxaphene	1	ND		0.0200	15-May-13 15:35	SLF

7 compound(s) reported

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Pace Analytical Services, Inc.
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St. Rose, LA 70087
(504) 469-0333

Project: 20153961

Value	Description
J	This estimated value for the analyte is below the adjusted reporting limit but above the instrument reporting limit.
U	The analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
B	This analyte was detected in the method blank.
E	The sample concentration is above the linear calibrated range of the analysis.
LCS	Laboratory Control Sample.
MS(D)	Matrix Spike (Duplicate).
DUP	Sample Duplicate.
RPD	Relative Percent Difference.

Pace Analytical Services, In
1000 Riverbend Blvd. Suite F
St. Rose, LA 7008
(504) 469-033

Chains of Custody

20153961 PASI-KANS

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 60143883 **Workorder Name:**JOHN REDMOND SEDIMENT **Owner Received Date:** 5/3/2013 **Results Requested By:** 5/17/2013

Report To	Subcontract To
Emily Webb Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759	Pace Analytical New Orleans 1000 Riverbend Blvd Suite F St. Rose, LA 70087 Phone (504)469-0333

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: AGIU	8081 PESTICIDES	8151 HERBICIDES	LAB USE ONLY
1	1A	PS	4/30/2013 13:00	60143883001	LEACHA	1	X	X	20108812
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	FedEx	5/9/13 1400		
2		5-10-13 0910	[signature]	5-10-13
3				

Comments: SAMPLE IS TCLP LEACHATE 0910

Cooler Temperature on Receipt 1.2 °C | Custody Seal (Y) or | Received on Ice (Y) or | Samples Intact (Y) or N

20153961 PASI-KANS

Pace Analytical

1000 Riverbend. Blvd., Suite F
St. Rose, LA 70087

Sample Cond

Courier: ☐ Pace Courier ☐ Hired Courier ☒ Fed X ☐ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC] **Custody Seals intact:** ☒Yes ☐No

Therometer Used: ☐ Therm Fisher IR 5 ☐ Therm Fisher IR 6 ☒ Therm Fisher IR 7

Type of Ice: (Wet) Blue None Samples on ice: [see COC]

Cooler Temperature: [see COC] Temp should be above freezing to 6°C

Date and Initials of person examining contents: 05-10-13 MP

Temp must be measured from Temperature blank when present

				Comments:
Temperature Blank Present"?	☒Yes	☐No	☐N/A	1
Chain of Custody Present:	☒Yes	☐No	☐N/A	2
Chain of Custody Complete:	☒Yes	☐No	☐N/A	3
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	4
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A	5
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	6
Sufficient Volume:	☒Yes	☐No	☐N/A	7
Correct Containers Used:	☒Yes	☐No	☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes	☐No	☒N/A	9
Sample Labels match COC:	☒Yes	☐No	☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☒Yes	☐No	☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☐Yes	☐No	☒N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	13 If No, was preservative added? ☐Yes ☐No If added record lot no.: HNO3 _____ H2SO4 _____
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	14
Trip Blank Present:	☐Yes	☒No		15

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

ALLC003rev.08, 15Feb2013 SCUR Form - mod

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60143883

60143883

Client Name: USGS

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☐ No ☑ Seals intact: Yes ☐ No ☑

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 5.2

Date and initials of person examining contents: 5/3/13 BD

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	run samples for total total
Includes date/time/ID/analyses Matrix: SL		13.
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes ☑No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☑N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☑No ☐N/A	17. List State: KS.

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / (N)

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 5/3/13

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	USGS
Address:	4821 Quail Crest Place
	Lawrence, KS 66049
Email To:	kjuracek@usgs.gov
Phone: 785-832-3527	Fax:
Requested Due Date/TAT:	standard

Section B Required Project Information:

Report To:	Kyle Juracek
Copy To:	
Purchase Order No.:	
Project Name:	John Redmond sediment
Project Number:	

Section C Invoice Information:

Attention:	Same as section A
Company Name:	USGS
Address:	
Pace Quote Reference:	130329_USGS_TCLP_7123
Pace Project Manager:	Emily Webb
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER ____

Site Location STATE: KS

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP VOC's	TCLP SVOC's	TCLP RCRA 8 Metals	TCLP Pesticides	TCLP Herbicides	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	1a			[redacted]	10:20	[redacted]	13:20		1	✓								x	x	x	x	x		10143883
2				4-30		4-30																				
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Pace Project No./ Lab I.D.: 10143883

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	pH	SAMPLE CONDITIONS			
	[redacted]	5-3-13	13:15	E Brockett	5/3	13:15	~~6.0~~ 5.2	Y	N	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Kyle Juracek

SIGNATURE of SAMPLER: [redacted] DATE Signed (MM/DD/YY): 5-3-13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Sediment Quality Sampling Results
Composite Sample Collected Near John Redmond Reservoir Dam and Outlet Structures - Proposed Initial Site for Dredging

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 21, 2013

Kyle Juracek
USGS

,

RE: Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Dear Kyle Juracek:
Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emily Webb

emily.webb@pacelabs.com
Project Manager

Enclosures

cc: Earl Lewis, Ks Water Office

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60143902001	1B	Solid	04/30/13 13:00	05/03/13 13:15

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SAMPLE ANALYTE COUNT

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60143902001	**1B**	EPA 6010	NDJ	9	PASI-K
		EPA 7471	TJT	1	PASI-K
		EPA 8270	JMT	72	PASI-K
		EPA 8260	RAB	69	PASI-K
		ASTM D2974	DWC	1	PASI-K

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ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Sample: 1B **Lab ID: 60143902001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**6.1**	mg/kg	1.8	1	05/13/13 14:20	05/14/13 12:27	7440-38-2	
Barium	**226**	mg/kg	1.8	1	05/13/13 14:20	05/14/13 12:27	7440-39-3	
Cadmium	ND	mg/kg	0.91	1	05/13/13 14:20	05/14/13 12:27	7440-43-9	
Chromium	**28.6**	mg/kg	0.91	1	05/13/13 14:20	05/14/13 12:27	7440-47-3	
Lead	**14.5**	mg/kg	0.91	1	05/13/13 14:20	05/14/13 12:27	7439-92-1	
Nickel	**20.6**	mg/kg	0.91	1	05/13/13 14:20	05/14/13 12:27	7440-02-0	
Selenium	ND	mg/kg	2.7	1	05/13/13 14:20	05/14/13 12:27	7782-49-2	
Silver	ND	mg/kg	1.3	1	05/13/13 14:20	05/14/13 12:27	7440-22-4	
Zinc	**62.2**	mg/kg	18.3	1	05/13/13 14:20	05/14/13 12:27	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.094	1	05/06/13 09:55	05/06/13 11:56	7439-97-6	
8270 MSSV Semivolatiles	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	83-32-9	
Acenaphthylene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	208-96-8	
Anthracene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	120-12-7	
Benzo(a)anthracene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	56-55-3	
Benzo(a)pyrene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	207-08-9	
Benzoic acid	ND	ug/kg	11200	1	05/04/13 00:00	05/08/13 01:37	65-85-0	
Benzyl alcohol	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	59-50-7	
4-Chloroaniline	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	39638-32-9	
2-Chloronaphthalene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	91-58-7	
2-Chlorophenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	7005-72-3	
Chrysene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	53-70-3	
Dibenzofuran	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	120-83-2	
Diethylphthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	105-67-9	
Dimethylphthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	131-11-3	

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ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Sample: 1B **Lab ID: 60143902001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatiles	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Di-n-butylphthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	11200	1	05/04/13 00:00	05/08/13 01:37	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	11200	1	05/04/13 00:00	05/08/13 01:37	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	117-81-7	
Fluoranthene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	206-44-0	
Fluorene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	87-68-3	
Hexachlorobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	77-47-4	
Hexachloroethane	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	193-39-5	
Isophorone	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	78-59-1	
2-Methylnaphthalene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37		
Naphthalene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	91-20-3	
2-Nitroaniline	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	88-74-4	
3-Nitroaniline	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	99-09-2	
4-Nitroaniline	ND	ug/kg	4420	1	05/04/13 00:00	05/08/13 01:37	100-01-6	
Nitrobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	98-95-3	
2-Nitrophenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	88-75-5	
4-Nitrophenol	ND	ug/kg	11200	1	05/04/13 00:00	05/08/13 01:37	100-02-7	
N-Nitroso-di-n-propylamine	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	86-30-6	
Pentachlorophenol	ND	ug/kg	11200	1	05/04/13 00:00	05/08/13 01:37	87-86-5	
Phenanthrene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	85-01-8	
Phenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	108-95-2	
Pyrene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	129-00-0	
Pyridine	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	110-86-1	
1,2,4-Trichlorobenzene	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2210	1	05/04/13 00:00	05/08/13 01:37	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	79	%	21-145	1	05/04/13 00:00	05/08/13 01:37	4165-60-0	
2-Fluorobiphenyl (S)	88	%	28-145	1	05/04/13 00:00	05/08/13 01:37	321-60-8	
Terphenyl-d14 (S)	99	%	29-158	1	05/04/13 00:00	05/08/13 01:37	1718-51-0	
Phenol-d6 (S)	92	%	43-120	1	05/04/13 00:00	05/08/13 01:37	13127-88-3	
2-Fluorophenol (S)	92	%	45-120	1	05/04/13 00:00	05/08/13 01:37	367-12-4	
2,4,6-Tribromophenol (S)	110	%	44-120	1	05/04/13 00:00	05/08/13 01:37	118-79-6	
8260 MSV 5035A VOA	Analytical Method: EPA 8260							
Acetone	**175**	ug/kg	46.9	1		05/06/13 20:02	67-64-1	
Benzene	ND	ug/kg	11.7	1		05/06/13 20:02	71-43-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Sample: 1B **Lab ID: 60143902001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035A VOA	Analytical Method: EPA 8260							
Bromobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	108-86-1	M1
Bromochloromethane	ND	ug/kg	11.7	1		05/06/13 20:02	74-97-5	
Bromodichloromethane	ND	ug/kg	11.7	1		05/06/13 20:02	75-27-4	M1
Bromoform	ND	ug/kg	11.7	1		05/06/13 20:02	75-25-2	M1
Bromomethane	ND	ug/kg	11.7	1		05/06/13 20:02	74-83-9	
2-Butanone (MEK)	**40.3**	ug/kg	23.4	1		05/06/13 20:02	78-93-3	
n-Butylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	104-51-8	M1
sec-Butylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	135-98-8	
tert-Butylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	98-06-6	
Carbon disulfide	ND	ug/kg	11.7	1		05/06/13 20:02	75-15-0	
Carbon tetrachloride	ND	ug/kg	11.7	1		05/06/13 20:02	56-23-5	
Chlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	108-90-7	M1
Chloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	75-00-3	
Chloroform	ND	ug/kg	11.7	1		05/06/13 20:02	67-66-3	
Chloromethane	ND	ug/kg	11.7	1		05/06/13 20:02	74-87-3	
2-Chlorotoluene	ND	ug/kg	11.7	1		05/06/13 20:02	95-49-8	M1
4-Chlorotoluene	ND	ug/kg	11.7	1		05/06/13 20:02	106-43-4	M1
1,2-Dibromo-3-chloropropane	ND	ug/kg	23.4	1		05/06/13 20:02	96-12-8	
Dibromochloromethane	ND	ug/kg	11.7	1		05/06/13 20:02	124-48-1	M1
1,2-Dibromoethane (EDB)	ND	ug/kg	11.7	1		05/06/13 20:02	106-93-4	M1
Dibromomethane	ND	ug/kg	11.7	1		05/06/13 20:02	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	95-50-1	M1
1,3-Dichlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	541-73-1	M1
1,4-Dichlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	106-46-7	M1
Dichlorodifluoromethane	ND	ug/kg	11.7	1		05/06/13 20:02	75-71-8	
1,1-Dichloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	75-34-3	
1,2-Dichloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	11.7	1		05/06/13 20:02	540-59-0	
1,1-Dichloroethene	ND	ug/kg	11.7	1		05/06/13 20:02	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	11.7	1		05/06/13 20:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	11.7	1		05/06/13 20:02	156-60-5	
1,2-Dichloropropane	ND	ug/kg	11.7	1		05/06/13 20:02	78-87-5	
1,3-Dichloropropane	ND	ug/kg	11.7	1		05/06/13 20:02	142-28-9	M1
2,2-Dichloropropane	ND	ug/kg	11.7	1		05/06/13 20:02	594-20-7	
1,1-Dichloropropene	ND	ug/kg	11.7	1		05/06/13 20:02	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	11.7	1		05/06/13 20:02	10061-01-5	M1
trans-1,3-Dichloropropene	ND	ug/kg	11.7	1		05/06/13 20:02	10061-02-6	M1
Ethylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	11.7	1		05/06/13 20:02	87-68-3	M1
2-Hexanone	ND	ug/kg	46.9	1		05/06/13 20:02	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	11.7	1		05/06/13 20:02	98-82-8	
p-Isopropyltoluene	ND	ug/kg	11.7	1		05/06/13 20:02	99-87-6	
Methylene chloride	**41.5**	ug/kg	11.7	1		05/06/13 20:02	75-09-2	C9
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	23.4	1		05/06/13 20:02	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	11.7	1		05/06/13 20:02	1634-04-4	
Naphthalene	ND	ug/kg	23.4	1		05/06/13 20:02	91-20-3	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Sample: 1B **Lab ID: 60143902001** Collected: 04/30/13 13:00 Received: 05/03/13 13:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035A VOA	Analytical Method: EPA 8260							
n-Propylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	103-65-1	
Styrene	ND	ug/kg	11.7	1		05/06/13 20:02	100-42-5	M1
1,1,1,2-Tetrachloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	630-20-6	M1
1,1,2,2-Tetrachloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	79-34-5	M1
Tetrachloroethene	ND	ug/kg	11.7	1		05/06/13 20:02	127-18-4	
Toluene	ND	ug/kg	11.7	1		05/06/13 20:02	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	87-61-6	M1
1,2,4-Trichlorobenzene	ND	ug/kg	11.7	1		05/06/13 20:02	120-82-1	M1
1,1,1-Trichloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	11.7	1		05/06/13 20:02	79-00-5	M1
Trichloroethene	ND	ug/kg	11.7	1		05/06/13 20:02	79-01-6	
Trichlorofluoromethane	ND	ug/kg	11.7	1		05/06/13 20:02	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	11.7	1		05/06/13 20:02	96-18-4	M1
1,2,4-Trimethylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	95-63-6	M1
1,3,5-Trimethylbenzene	ND	ug/kg	11.7	1		05/06/13 20:02	108-67-8	M1
Vinyl chloride	ND	ug/kg	11.7	1		05/06/13 20:02	75-01-4	
Xylene (Total)	ND	ug/kg	11.7	1		05/06/13 20:02	1330-20-7	
Surrogates								
Dibromofluoromethane (S)	101	%	76-125	1		05/06/13 20:02	1868-53-7	
Toluene-d8 (S)	100	%	80-120	1		05/06/13 20:02	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		05/06/13 20:02	460-00-4	
1,2-Dichloroethane-d4 (S)	112	%	76-132	1		05/06/13 20:02	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**58.2**	%	0.50	1		05/06/13 00:00		

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

QC Batch: MERP/7310 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 60143902001

METHOD BLANK: 1181610 Matrix: Solid
Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.050	05/06/13 11:29	

LABORATORY CONTROL SAMPLE: 1181611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.5	0.40	80	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181612 1181613

Parameter	Units	60143811001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.089	.44	.42	0.42	0.45	77	86	75-125	7	20	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

QC Batch: MPRP/22642 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 60143902001

METHOD BLANK: 1186247 Matrix: Solid
Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/14/13 12:01	
Barium	mg/kg	ND	1.0	05/14/13 12:01	
Cadmium	mg/kg	ND	0.50	05/14/13 12:01	
Chromium	mg/kg	ND	0.50	05/14/13 12:01	
Lead	mg/kg	ND	0.50	05/14/13 12:01	
Selenium	mg/kg	ND	1.5	05/14/13 12:01	
Silver	mg/kg	ND	0.70	05/14/13 12:01	

LABORATORY CONTROL SAMPLE: 1186248

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	44.3	89	80-120	
Barium	mg/kg	50	47.3	95	80-120	
Cadmium	mg/kg	50	43.9	88	80-120	
Chromium	mg/kg	50	46.0	92	80-120	
Lead	mg/kg	50	44.1	88	80-120	
Selenium	mg/kg	50	43.7	87	80-120	
Silver	mg/kg	25	21.0	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1186249 1186250

Parameter	Units	60143815001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.7	39.2	40.9	31.9	33.4	77	78	75-125	5	20	
Barium	mg/kg	50.9	39.2	40.9	85.9	83.4	89	79	75-125	3	20	
Cadmium	mg/kg	ND	39.2	40.9	30.4	31.8	77	78	75-125	4	20	
Chromium	mg/kg	4.0	39.2	40.9	35.5	36.1	80	79	75-125	2	20	
Lead	mg/kg	4.3	39.2	40.9	31.6	33.5	70	72	75-125	6	20	M1
Selenium	mg/kg	ND	39.2	40.9	28.7	30.2	73	74	75-125	5	20	M1
Silver	mg/kg	ND	19.6	20.4	14.6	15.2	74	74	75-125	4	20	M1

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

QC Batch: MSV/53421
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 60143902001

METHOD BLANK: 1181823
Matrix: Solid
Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,1,1-Trichloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,1,2-Trichloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,1-Dichloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,1-Dichloroethene	ug/kg	ND	5.0	05/06/13 19:00	
1,1-Dichloropropene	ug/kg	ND	5.0	05/06/13 19:00	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,2,3-Trichloropropane	ug/kg	ND	5.0	05/06/13 19:00	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dibromo-3-chloropropane	ug/kg	ND	10.0	05/06/13 19:00	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dichlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dichloroethane	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dichloroethene (Total)	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dichloropropane	ug/kg	ND	5.0	05/06/13 19:00	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,3-Dichlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
1,3-Dichloropropane	ug/kg	ND	5.0	05/06/13 19:00	
1,4-Dichlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
2,2-Dichloropropane	ug/kg	ND	5.0	05/06/13 19:00	
2-Butanone (MEK)	ug/kg	ND	10.0	05/06/13 19:00	
2-Chlorotoluene	ug/kg	ND	5.0	05/06/13 19:00	
2-Hexanone	ug/kg	ND	20.0	05/06/13 19:00	
4-Chlorotoluene	ug/kg	ND	5.0	05/06/13 19:00	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10.0	05/06/13 19:00	
Acetone	ug/kg	ND	20.0	05/06/13 19:00	
Benzene	ug/kg	ND	5.0	05/06/13 19:00	
Bromobenzene	ug/kg	ND	5.0	05/06/13 19:00	
Bromochloromethane	ug/kg	ND	5.0	05/06/13 19:00	
Bromodichloromethane	ug/kg	ND	5.0	05/06/13 19:00	
Bromoform	ug/kg	ND	5.0	05/06/13 19:00	
Bromomethane	ug/kg	ND	5.0	05/06/13 19:00	
Carbon disulfide	ug/kg	ND	5.0	05/06/13 19:00	
Carbon tetrachloride	ug/kg	ND	5.0	05/06/13 19:00	
Chlorobenzene	ug/kg	ND	5.0	05/06/13 19:00	
Chloroethane	ug/kg	ND	5.0	05/06/13 19:00	
Chloroform	ug/kg	ND	5.0	05/06/13 19:00	
Chloromethane	ug/kg	ND	5.0	05/06/13 19:00	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	05/06/13 19:00	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	05/06/13 19:00	
Dibromochloromethane	ug/kg	ND	5.0	05/06/13 19:00	

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

METHOD BLANK: 1181823 Matrix: Solid

Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/kg	ND	5.0	05/06/13 19:00	
Dichlorodifluoromethane	ug/kg	ND	5.0	05/06/13 19:00	
Ethylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	05/06/13 19:00	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	05/06/13 19:00	
Methyl-tert-butyl ether	ug/kg	ND	5.0	05/06/13 19:00	
Methylene chloride	ug/kg	ND	5.0	05/06/13 19:00	
n-Butylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
n-Propylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
Naphthalene	ug/kg	ND	10.0	05/06/13 19:00	
p-Isopropyltoluene	ug/kg	ND	5.0	05/06/13 19:00	
sec-Butylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
Styrene	ug/kg	ND	5.0	05/06/13 19:00	
tert-Butylbenzene	ug/kg	ND	5.0	05/06/13 19:00	
Tetrachloroethene	ug/kg	ND	5.0	05/06/13 19:00	
Toluene	ug/kg	ND	5.0	05/06/13 19:00	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	05/06/13 19:00	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	05/06/13 19:00	
Trichloroethene	ug/kg	ND	5.0	05/06/13 19:00	
Trichlorofluoromethane	ug/kg	ND	5.0	05/06/13 19:00	
Vinyl chloride	ug/kg	ND	5.0	05/06/13 19:00	
Xylene (Total)	ug/kg	ND	5.0	05/06/13 19:00	
1,2-Dichloroethane-d4 (S)	%	100	76-132	05/06/13 19:00	
4-Bromofluorobenzene (S)	%	98	80-120	05/06/13 19:00	
Dibromofluoromethane (S)	%	102	76-125	05/06/13 19:00	
Toluene-d8 (S)	%	100	80-120	05/06/13 19:00	

LABORATORY CONTROL SAMPLE: 1181824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	100	99.9	100	80-120	
1,1,1-Trichloroethane	ug/kg	100	95.3	95	75-128	
1,1,2,2-Tetrachloroethane	ug/kg	100	97.5	97	68-120	
1,1,2-Trichloroethane	ug/kg	100	93.4	93	73-120	
1,1-Dichloroethane	ug/kg	100	88.8	89	73-120	
1,1-Dichloroethene	ug/kg	100	94.6	95	75-128	
1,1-Dichloropropene	ug/kg	100	102	102	78-128	
1,2,3-Trichlorobenzene	ug/kg	100	99.6	100	77-120	
1,2,3-Trichloropropane	ug/kg	100	98.2	98	72-120	
1,2,4-Trichlorobenzene	ug/kg	100	97.0	97	76-120	
1,2,4-Trimethylbenzene	ug/kg	100	89.5	90	77-120	
1,2-Dibromo-3-chloropropane	ug/kg	100	108	108	66-125	
1,2-Dibromoethane (EDB)	ug/kg	100	105	105	78-120	
1,2-Dichlorobenzene	ug/kg	100	96.2	96	80-120	
1,2-Dichloroethane	ug/kg	100	95.9	96	76-120	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

LABORATORY CONTROL SAMPLE: 1181824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/kg	200	182	91	77-120	
1,2-Dichloropropane	ug/kg	100	101	101	80-120	
1,3,5-Trimethylbenzene	ug/kg	100	92.7	93	76-120	
1,3-Dichlorobenzene	ug/kg	100	93.0	93	79-120	
1,3-Dichloropropane	ug/kg	100	92.6	93	73-120	
1,4-Dichlorobenzene	ug/kg	100	94.1	94	80-120	
2,2-Dichloropropane	ug/kg	100	85.8	86	66-131	
2-Butanone (MEK)	ug/kg	500	512	102	61-120	
2-Chlorotoluene	ug/kg	100	89.6	90	77-120	
2-Hexanone	ug/kg	500	533	107	66-120	
4-Chlorotoluene	ug/kg	100	91.8	92	76-120	
4-Methyl-2-pentanone (MIBK)	ug/kg	500	550	110	68-120	
Acetone	ug/kg	500	430	86	55-124	
Benzene	ug/kg	100	93.5	94	77-120	
Bromobenzene	ug/kg	100	95.1	95	80-120	
Bromochloromethane	ug/kg	100	92.5	93	77-120	
Bromodichloromethane	ug/kg	100	97.7	98	78-120	
Bromoform	ug/kg	100	93.2	93	68-123	
Bromomethane	ug/kg	100	95.2	95	60-140	
Carbon disulfide	ug/kg	100	81.9	82	68-123	
Carbon tetrachloride	ug/kg	100	106	106	74-136	
Chlorobenzene	ug/kg	100	93.8	94	80-120	
Chloroethane	ug/kg	100	90.9	91	60-149	
Chloroform	ug/kg	100	90.8	91	67-120	
Chloromethane	ug/kg	100	74.2	74	42-138	
cis-1,2-Dichloroethene	ug/kg	100	91.9	92	71-120	
cis-1,3-Dichloropropene	ug/kg	100	96.5	96	80-120	
Dibromochloromethane	ug/kg	100	104	104	80-120	
Dibromomethane	ug/kg	100	101	101	76-120	
Dichlorodifluoromethane	ug/kg	100	67.4	67	40-150	
Ethylbenzene	ug/kg	100	92.7	93	76-120	
Hexachloro-1,3-butadiene	ug/kg	100	98.8	99	68-131	
Isopropylbenzene (Cumene)	ug/kg	100	100	100	80-128	
Methyl-tert-butyl ether	ug/kg	100	101	101	71-124	
Methylene chloride	ug/kg	100	100	100	70-123	
n-Butylbenzene	ug/kg	100	97.2	97	73-131	
n-Propylbenzene	ug/kg	100	91.5	92	74-120	
Naphthalene	ug/kg	100	105	105	70-120	
p-Isopropyltoluene	ug/kg	100	93.9	94	76-121	
sec-Butylbenzene	ug/kg	100	95.2	95	75-123	
Styrene	ug/kg	100	90.6	91	78-120	
tert-Butylbenzene	ug/kg	100	96.0	96	77-120	
Tetrachloroethene	ug/kg	100	94.6	95	72-125	
Toluene	ug/kg	100	92.8	93	74-120	
trans-1,2-Dichloroethene	ug/kg	100	89.9	90	77-128	
trans-1,3-Dichloropropene	ug/kg	100	99.9	100	80-120	
Trichloroethene	ug/kg	100	93.9	94	76-120	
Trichlorofluoromethane	ug/kg	100	84.8	85	72-140	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

LABORATORY CONTROL SAMPLE: 1181824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/kg	100	80.9	81	65-145	
Xylene (Total)	ug/kg	300	270	90	75-120	
1,2-Dichloroethane-d4 (S)	%			101	76-132	
4-Bromofluorobenzene (S)	%			100	80-120	
Dibromofluoromethane (S)	%			100	76-125	
Toluene-d8 (S)	%			100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181839 1181840

Parameter	Units	60143902001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/kg	ND	234	235	95.9	84.6	41	36	40-141	12	50	M1
1,1,1-Trichloroethane	ug/kg	ND	234	235	142	130	61	55	40-144	9	46	
1,1,2,2-Tetrachloroethane	ug/kg	ND	234	235	100	87.1	43	37	40-150	14	50	M1
1,1,2-Trichloroethane	ug/kg	ND	234	235	97.1	87.1	41	37	40-137	11	49	M1
1,1-Dichloroethane	ug/kg	ND	234	235	123	113	53	48	40-131	9	46	
1,1-Dichloroethene	ug/kg	ND	234	235	168	160	72	68	40-142	5	42	
1,1-Dichloropropene	ug/kg	ND	234	235	143	144	61	61	40-144	1	48	
1,2,3-Trichlorobenzene	ug/kg	ND	234	235	72.7	57.8	31	25	40-131	23	50	M1
1,2,3-Trichloropropane	ug/kg	ND	234	235	108	89.8	46	38	40-146	19	49	M1
1,2,4-Trichlorobenzene	ug/kg	ND	234	235	69.0	57.9	29	25	40-134	18	50	M1
1,2,4-Trimethylbenzene	ug/kg	ND	234	235	90.6	84.3	39	36	40-137	7	50	M1
1,2-Dibromo-3-chloropropane	ug/kg	ND	234	235	122	101	52	43	40-147	19	50	
1,2-Dibromoethane (EDB)	ug/kg	ND	234	235	103	92.5	44	39	40-146	11	50	M1
1,2-Dichlorobenzene	ug/kg	ND	234	235	80.8	74.8	34	32	40-136	8	50	M1
1,2-Dichloroethane	ug/kg	ND	234	235	106	94.1	45	40	40-143	12	46	
1,2-Dichloroethene (Total)	ug/kg	ND	469	471	249	232	53	49	40-136	7	47	
1,2-Dichloropropane	ug/kg	ND	234	235	120	110	51	47	40-136	8	47	
1,3,5-Trimethylbenzene	ug/kg	ND	234	235	99.3	91.8	42	39	40-137	8	50	M1
1,3-Dichlorobenzene	ug/kg	ND	234	235	80.2	73.5	34	31	40-131	9	50	M1
1,3-Dichloropropane	ug/kg	ND	234	235	97.3	85.6	41	36	40-131	13	49	M1
1,4-Dichlorobenzene	ug/kg	ND	234	235	77.4	71.7	33	30	40-134	8	50	M1
2,2-Dichloropropane	ug/kg	ND	234	235	130	120	55	51	40-140	8	47	
2-Butanone (MEK)	ug/kg	40.3	1170	1180	849	709	69	57	40-139	18	48	
2-Chlorotoluene	ug/kg	ND	234	235	95.8	86.3	41	37	40-139	10	50	M1
2-Hexanone	ug/kg	ND	1170	1180	653	546	56	46	40-135	18	50	
4-Chlorotoluene	ug/kg	ND	234	235	88.0	82.3	38	35	40-138	7	50	M1
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	1170	1180	649	547	55	47	40-138	17	50	
Acetone	ug/kg	175	1170	1180	1020	896	72	61	40-142	13	50	
Benzene	ug/kg	ND	234	235	122	114	52	48	40-145	7	47	
Bromobenzene	ug/kg	ND	234	235	85.4	79.5	36	34	40-137	7	50	M1
Bromochloromethane	ug/kg	ND	234	235	110	101	47	43	40-140	9	48	
Bromodichloromethane	ug/kg	ND	234	235	97.8	90.5	42	38	40-136	8	49	M1
Bromoform	ug/kg	ND	234	235	72.6	63.3	30	26	40-136	14	50	M1
Bromomethane	ug/kg	ND	234	235	130	123	56	52	40-141	6	49	
Carbon disulfide	ug/kg	ND	234	235	143	134	61	57	40-136	6	49	
Carbon tetrachloride	ug/kg	ND	234	235	113	109	48	46	40-149	3	50	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181839 1181840

Parameter	Units	60143902001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chlorobenzene	ug/kg	ND	234	235	98.1	90.3	42	38	40-135	8	50	M1
Chloroethane	ug/kg	ND	234	235	151	142	64	60	40-153	6	44	
Chloroform	ug/kg	ND	234	235	116	107	50	45	40-131	8	47	
Chloromethane	ug/kg	ND	234	235	133	126	57	54	40-133	5	46	
cis-1,2-Dichloroethene	ug/kg	ND	234	235	117	108	50	46	40-132	8	48	
cis-1,3-Dichloropropene	ug/kg	ND	234	235	85.8	78.2	37	33	40-135	9	50	M1
Dibromochloromethane	ug/kg	ND	234	235	86.4	79.1	37	34	40-144	9	48	M1
Dibromomethane	ug/kg	ND	234	235	107	100	46	43	40-135	7	46	
Dichlorodifluoromethane	ug/kg	ND	234	235	161	147	69	63	40-134	9	44	
Ethylbenzene	ug/kg	ND	234	235	107	103	46	44	40-151	4	48	
Hexachloro-1,3-butadiene	ug/kg	ND	234	235	91.0	79.3	39	34	40-133	14	50	M1
Isopropylbenzene (Cumene)	ug/kg	ND	234	235	118	110	50	47	40-149	7	50	
Methyl-tert-butyl ether	ug/kg	ND	234	235	113	100	48	43	40-144	12	48	
Methylene chloride	ug/kg	41.5	234	235	189	175	63	57	40-140	8	47	
n-Butylbenzene	ug/kg	ND	234	235	98.0	90.2	42	38	40-142	8	50	M1
n-Propylbenzene	ug/kg	ND	234	235	103	96.5	44	41	40-139	6	50	
Naphthalene	ug/kg	ND	234	235	80.5	66.5	34	28	40-158	19	48	M1
p-Isopropyltoluene	ug/kg	ND	234	235	99.3	94.3	42	40	40-138	5	50	
sec-Butylbenzene	ug/kg	ND	234	235	109	100	46	43	40-140	8	50	
Styrene	ug/kg	ND	234	235	76.1	69.5	32	30	40-133	9	50	M1
tert-Butylbenzene	ug/kg	ND	234	235	108	101	46	43	40-142	7	50	
Tetrachloroethene	ug/kg	ND	234	235	127	116	54	49	40-139	10	50	
Toluene	ug/kg	ND	234	235	115	109	49	46	40-150	5	46	
trans-1,2-Dichloroethene	ug/kg	ND	234	235	133	124	57	53	40-142	6	50	
trans-1,3-Dichloropropene	ug/kg	ND	234	235	84.8	76.3	36	32	40-146	11	50	M1
Trichloroethene	ug/kg	ND	234	235	125	119	53	51	40-151	5	49	
Trichlorofluoromethane	ug/kg	ND	234	235	158	150	68	64	40-145	5	45	
Vinyl chloride	ug/kg	ND	234	235	162	152	69	65	40-149	6	49	
Xylene (Total)	ug/kg	ND	703	705	304	288	43	41	40-153	5	47	
1,2-Dichloroethane-d4 (S)	%						111	112	76-132			
4-Bromofluorobenzene (S)	%						101	100	80-120			
Dibromofluoromethane (S)	%						101	101	76-125			
Toluene-d8 (S)	%						101	101	80-120			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

QC Batch: OEXT/38242
QC Batch Method: EPA 3546
Analysis Method: EPA 8270
Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 60143902001

METHOD BLANK: 1181480
Matrix: Solid
Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	329	05/07/13 23:53	
1,2-Dichlorobenzene	ug/kg	ND	329	05/07/13 23:53	
1,3-Dichlorobenzene	ug/kg	ND	329	05/07/13 23:53	
1,4-Dichlorobenzene	ug/kg	ND	329	05/07/13 23:53	
2,4,5-Trichlorophenol	ug/kg	ND	329	05/07/13 23:53	
2,4,6-Trichlorophenol	ug/kg	ND	329	05/07/13 23:53	
2,4-Dichlorophenol	ug/kg	ND	329	05/07/13 23:53	
2,4-Dimethylphenol	ug/kg	ND	329	05/07/13 23:53	
2,4-Dinitrophenol	ug/kg	ND	1660	05/07/13 23:53	
2,4-Dinitrotoluene	ug/kg	ND	329	05/07/13 23:53	
2,6-Dinitrotoluene	ug/kg	ND	329	05/07/13 23:53	
2-Chloronaphthalene	ug/kg	ND	329	05/07/13 23:53	
2-Chlorophenol	ug/kg	ND	329	05/07/13 23:53	
2-Methylnaphthalene	ug/kg	ND	329	05/07/13 23:53	
2-Methylphenol(o-Cresol)	ug/kg	ND	329	05/07/13 23:53	
2-Nitroaniline	ug/kg	ND	657	05/07/13 23:53	
2-Nitrophenol	ug/kg	ND	329	05/07/13 23:53	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	329	05/07/13 23:53	
3,3'-Dichlorobenzidine	ug/kg	ND	657	05/07/13 23:53	
3-Nitroaniline	ug/kg	ND	657	05/07/13 23:53	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1660	05/07/13 23:53	
4-Bromophenylphenyl ether	ug/kg	ND	329	05/07/13 23:53	
4-Chloro-3-methylphenol	ug/kg	ND	657	05/07/13 23:53	
4-Chloroaniline	ug/kg	ND	657	05/07/13 23:53	
4-Chlorophenylphenyl ether	ug/kg	ND	329	05/07/13 23:53	
4-Nitroaniline	ug/kg	ND	657	05/07/13 23:53	
4-Nitrophenol	ug/kg	ND	1660	05/07/13 23:53	
Acenaphthene	ug/kg	ND	329	05/07/13 23:53	
Acenaphthylene	ug/kg	ND	329	05/07/13 23:53	
Anthracene	ug/kg	ND	329	05/07/13 23:53	
Benzo(a)anthracene	ug/kg	ND	329	05/07/13 23:53	
Benzo(a)pyrene	ug/kg	ND	329	05/07/13 23:53	
Benzo(b)fluoranthene	ug/kg	ND	329	05/07/13 23:53	
Benzo(g,h,i)perylene	ug/kg	ND	329	05/07/13 23:53	
Benzo(k)fluoranthene	ug/kg	ND	329	05/07/13 23:53	
Benzoic acid	ug/kg	ND	1660	05/07/13 23:53	
Benzyl alcohol	ug/kg	ND	657	05/07/13 23:53	
bis(2-Chloroethoxy)methane	ug/kg	ND	329	05/07/13 23:53	
bis(2-Chloroethyl) ether	ug/kg	ND	329	05/07/13 23:53	
bis(2-Chloroisopropyl) ether	ug/kg	ND	329	05/07/13 23:53	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	329	05/07/13 23:53	
Butylbenzylphthalate	ug/kg	ND	329	05/07/13 23:53	
Chrysene	ug/kg	ND	329	05/07/13 23:53	

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

METHOD BLANK: 1181480 Matrix: Solid

Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Di-n-butylphthalate	ug/kg	ND	329	05/07/13 23:53	
Di-n-octylphthalate	ug/kg	ND	329	05/07/13 23:53	
Dibenz(a,h)anthracene	ug/kg	ND	329	05/07/13 23:53	
Dibenzofuran	ug/kg	ND	329	05/07/13 23:53	
Diethylphthalate	ug/kg	ND	329	05/07/13 23:53	
Dimethylphthalate	ug/kg	ND	329	05/07/13 23:53	
Fluoranthene	ug/kg	ND	329	05/07/13 23:53	
Fluorene	ug/kg	ND	329	05/07/13 23:53	
Hexachloro-1,3-butadiene	ug/kg	ND	329	05/07/13 23:53	
Hexachlorobenzene	ug/kg	ND	329	05/07/13 23:53	
Hexachlorocyclopentadiene	ug/kg	ND	329	05/07/13 23:53	
Hexachloroethane	ug/kg	ND	329	05/07/13 23:53	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	329	05/07/13 23:53	
Isophorone	ug/kg	ND	329	05/07/13 23:53	
N-Nitroso-di-n-propylamine	ug/kg	ND	329	05/07/13 23:53	
N-Nitrosodiphenylamine	ug/kg	ND	329	05/07/13 23:53	
Naphthalene	ug/kg	ND	329	05/07/13 23:53	
Nitrobenzene	ug/kg	ND	329	05/07/13 23:53	
Pentachlorophenol	ug/kg	ND	1660	05/07/13 23:53	
Phenanthrene	ug/kg	ND	329	05/07/13 23:53	
Phenol	ug/kg	ND	329	05/07/13 23:53	
Pyrene	ug/kg	ND	329	05/07/13 23:53	
Pyridine	ug/kg	ND	329	05/07/13 23:53	
2,4,6-Tribromophenol (S)	%	86	44-120	05/07/13 23:53	
2-Fluorobiphenyl (S)	%	84	28-145	05/07/13 23:53	
2-Fluorophenol (S)	%	81	45-120	05/07/13 23:53	
Nitrobenzene-d5 (S)	%	91	21-145	05/07/13 23:53	
Phenol-d6 (S)	%	82	43-120	05/07/13 23:53	
Terphenyl-d14 (S)	%	91	29-158	05/07/13 23:53	

LABORATORY CONTROL SAMPLE: 1181481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1650	1400	85	56-120	
1,2-Dichlorobenzene	ug/kg	1650	1350	82	56-120	
1,3-Dichlorobenzene	ug/kg	1650	1360	82	55-120	
1,4-Dichlorobenzene	ug/kg	1650	1340	81	55-120	
2,4,5-Trichlorophenol	ug/kg	1650	1550	94	61-120	
2,4,6-Trichlorophenol	ug/kg	1650	1530	93	59-120	
2,4-Dichlorophenol	ug/kg	1650	1480	90	59-120	
2,4-Dimethylphenol	ug/kg	1650	1030	62	48-120	
2,4-Dinitrophenol	ug/kg	1650	1830	111	10-136	
2,4-Dinitrotoluene	ug/kg	1650	1670	101	58-120	
2,6-Dinitrotoluene	ug/kg	1650	1650	100	60-120	
2-Chloronaphthalene	ug/kg	1650	1410	85	59-120	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

LABORATORY CONTROL SAMPLE: 1181481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Chlorophenol	ug/kg	1650	1420	86	57-120	
2-Methylnaphthalene	ug/kg	1650	1420	86	57-120	
2-Methylphenol(o-Cresol)	ug/kg	1650	1350	82	57-120	
2-Nitroaniline	ug/kg	1650	1550	94	61-120	
2-Nitrophenol	ug/kg	1650	1730	105	54-120	
3&4-Methylphenol(m&p Cresol)	ug/kg	1650	1400	85	58-120	
3,3'-Dichlorobenzidine	ug/kg	1650	2300	139	10-160	
3-Nitroaniline	ug/kg	1650	2150	130	11-140	
4,6-Dinitro-2-methylphenol	ug/kg	1650	1540J	93	27-121	
4-Bromophenylphenyl ether	ug/kg	1650	1490	90	60-120	
4-Chloro-3-methylphenol	ug/kg	1650	1490	90	61-120	
4-Chloroaniline	ug/kg	1650	1630	99	10-129	
4-Chlorophenylphenyl ether	ug/kg	1650	1460	88	58-120	
4-Nitroaniline	ug/kg	1650	1520	92	11-142	
4-Nitrophenol	ug/kg	1650	1590J	96	52-120	
Acenaphthene	ug/kg	1650	1430	87	58-120	
Acenaphthylene	ug/kg	1650	1460	89	58-120	
Anthracene	ug/kg	1650	1500	91	62-120	
Benzo(a)anthracene	ug/kg	1650	1570	95	63-120	
Benzo(a)pyrene	ug/kg	1650	1500	91	60-120	
Benzo(b)fluoranthene	ug/kg	1650	1570	95	61-120	
Benzo(g,h,i)perylene	ug/kg	1650	1540	94	59-120	
Benzo(k)fluoranthene	ug/kg	1650	1530	92	62-120	
Benzoic acid	ug/kg	1650	1480J	90	17-120	
Benzyl alcohol	ug/kg	1650	1380	83	49-120	
bis(2-Chloroethoxy)methane	ug/kg	1650	1390	84	56-120	
bis(2-Chloroethyl) ether	ug/kg	1650	1380	83	57-120	
bis(2-Chloroisopropyl) ether	ug/kg	1650	1370	83	49-120	
bis(2-Ethylhexyl)phthalate	ug/kg	1650	1710	104	62-120	
Butylbenzylphthalate	ug/kg	1650	1710	104	56-122	
Chrysene	ug/kg	1650	1520	92	62-120	
Di-n-butylphthalate	ug/kg	1650	1600	97	64-120	
Di-n-octylphthalate	ug/kg	1650	1630	99	55-127	
Dibenz(a,h)anthracene	ug/kg	1650	1500	91	60-127	
Dibenzofuran	ug/kg	1650	1450	88	57-120	
Diethylphthalate	ug/kg	1650	1500	91	61-120	
Dimethylphthalate	ug/kg	1650	1440	87	60-120	
Fluoranthene	ug/kg	1650	1590	96	62-120	
Fluorene	ug/kg	1650	1490	90	59-120	
Hexachloro-1,3-butadiene	ug/kg	1650	1390	85	53-120	
Hexachlorobenzene	ug/kg	1650	1440	87	59-120	
Hexachlorocyclopentadiene	ug/kg	3300	2590	78	40-120	
Hexachloroethane	ug/kg	1650	1370	83	54-120	
Indeno(1,2,3-cd)pyrene	ug/kg	1650	1480	90	60-120	
Isophorone	ug/kg	1650	1370	83	56-120	
N-Nitroso-di-n-propylamine	ug/kg	1650	1370	83	57-120	
N-Nitrosodiphenylamine	ug/kg	1650	1480	89	60-120	
Naphthalene	ug/kg	1650	1400	85	57-120	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

LABORATORY CONTROL SAMPLE: 1181481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrobenzene	ug/kg	1650	1510	92	58-120	
Pentachlorophenol	ug/kg	1650	1520J	92	54-120	
Phenanthrene	ug/kg	1650	1470	89	62-120	
Phenol	ug/kg	1650	1410	85	56-120	
Pyrene	ug/kg	1650	1590	96	64-120	
Pyridine	ug/kg	1650	919	56	16-120	
2,4,6-Tribromophenol (S)	%			107	44-120	
2-Fluorobiphenyl (S)	%			88	28-145	
2-Fluorophenol (S)	%			89	45-120	
Nitrobenzene-d5 (S)	%			97	21-145	
Phenol-d6 (S)	%			90	43-120	
Terphenyl-d14 (S)	%			98	29-158	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181482 1181483

Parameter	Units	60143866003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	5820	6060	4950	5050	85	83	42-120	2	24	
1,2-Dichlorobenzene	ug/kg	ND	5820	6060	4730	4760	81	78	41-120	1	24	
1,3-Dichlorobenzene	ug/kg	ND	5820	6060	4670	4630	80	76	39-120	1	24	
1,4-Dichlorobenzene	ug/kg	ND	5820	6060	4630	4650	80	77	40-120	0	24	
2,4,5-Trichlorophenol	ug/kg	ND	5820	6060	5360	5390	92	89	40-120	0	28	
2,4,6-Trichlorophenol	ug/kg	ND	5820	6060	5270	5470	90	90	36-120	4	27	
2,4-Dichlorophenol	ug/kg	ND	5820	6060	5130	5350	88	88	43-120	4	25	
2,4-Dimethylphenol	ug/kg	ND	5820	6060	5040	5220	86	86	24-124	4	28	
2,4-Dinitrophenol	ug/kg	ND	5820	6060	3470J	3560J	59	59	10-137		30	
2,4-Dinitrotoluene	ug/kg	ND	5820	6060	3410	3670	58	61	25-127	8	39	
2,6-Dinitrotoluene	ug/kg	ND	5820	6060	3590	3820	62	63	29-121	6	35	
2-Chloronaphthalene	ug/kg	ND	5820	6060	5050	5170	87	85	42-120	2	25	
2-Chlorophenol	ug/kg	ND	5820	6060	4850	4890	83	81	44-120	1	24	
2-Methylnaphthalene	ug/kg	ND	5820	6060	5040	5210	87	86	39-120	3	25	
2-Methylphenol(o-Cresol)	ug/kg	ND	5820	6060	5020	5000	86	82	36-120	0	28	
2-Nitroaniline	ug/kg	ND	5820	6060	4190	4590	72	76	41-129	9	26	
2-Nitrophenol	ug/kg	ND	5820	6060	3040	3100	52	51	21-127	2	33	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	5820	6060	5040	5030	86	83	40-120	0	30	
3,3'-Dichlorobenzidine	ug/kg	ND	5820	6060	9700	12000	167	198	10-160	21	50	M1
3-Nitroaniline	ug/kg	ND	5820	6060	6230	6860	107	113	10-155	10	30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	5820	6060	ND	ND	9	7	10-121		30	M1
4-Bromophenylphenyl ether	ug/kg	ND	5820	6060	5160	5290	89	87	42-121	3	28	
4-Chloro-3-methylphenol	ug/kg	ND	5820	6060	5290	5420	91	89	43-120	2	29	
4-Chloroaniline	ug/kg	ND	5820	6060	6080	7050	104	116	10-134	15	40	
4-Chlorophenylphenyl ether	ug/kg	ND	5820	6060	5120	5220	88	86	42-122	2	25	
4-Nitroaniline	ug/kg	ND	5820	6060	4710	5180	81	85	10-151	10	30	
4-Nitrophenol	ug/kg	ND	5820	6060	4090J	4300J	70	71	27-128		30	
Acenaphthene	ug/kg	ND	5820	6060	5330	5500	87	87	38-124	3	27	
Acenaphthylene	ug/kg	ND	5820	6060	5120	5250	88	87	38-120	2	24	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181482 1181483

Parameter	Units	60143866003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Anthracene	ug/kg	ND	5820	6060	5460	5640	94	93	37-123	3	27	
Benzo(a)anthracene	ug/kg	ND	5820	6060	5200	5650	89	93	29-137	8	31	
Benzo(a)pyrene	ug/kg	ND	5820	6060	5070	5420	87	89	35-135	7	36	
Benzo(b)fluoranthene	ug/kg	ND	5820	6060	5170	5630	89	93	29-132	9	37	
Benzo(g,h,i)perylene	ug/kg	ND	5820	6060	4980	5200	85	86	34-120	4	33	
Benzo(k)fluoranthene	ug/kg	ND	5820	6060	4890	5220	84	86	31-127	7	34	
Benzoic acid	ug/kg	ND	5820	6060	3360J	4150J	58	68	10-120		30	
Benzyl alcohol	ug/kg	ND	5820	6060	4610	4780	79	79	42-120	4	25	
bis(2-Chloroethoxy)methane	ug/kg	ND	5820	6060	4760	4900	82	81	43-120	3	26	
bis(2-Chloroethyl) ether	ug/kg	ND	5820	6060	4800	4850	82	80	43-120	1	31	
bis(2-Chloroisopropyl) ether	ug/kg	ND	5820	6060	4740	4810	81	79	41-120	2	29	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	5820	6060	6140	6650	105	110	36-140	8	30	
Butylbenzylphthalate	ug/kg	ND	5820	6060	6140	6550	105	108	40-137	6	29	
Chrysene	ug/kg	ND	5820	6060	5120	5520	88	91	29-132	7	34	
Di-n-butylphthalate	ug/kg	ND	5820	6060	5700	5900	98	97	41-126	3	30	
Di-n-octylphthalate	ug/kg	ND	5820	6060	5980	6440	103	106	40-139	7	35	
Dibenz(a,h)anthracene	ug/kg	ND	5820	6060	5020	5170	86	85	28-130	3	34	
Dibenzofuran	ug/kg	ND	5820	6060	5010	5210	86	86	39-125	4	26	
Diethylphthalate	ug/kg	ND	5820	6060	5170	5420	89	89	42-120	5	25	
Dimethylphthalate	ug/kg	ND	5820	6060	5010	5210	86	86	40-120	4	28	
Fluoranthene	ug/kg	ND	5820	6060	5680	5850	98	97	28-136	3	29	
Fluorene	ug/kg	ND	5820	6060	5120	5430	88	89	36-126	6	27	
Hexachloro-1,3-butadiene	ug/kg	ND	5820	6060	4900	4870	84	80	41-120	1	25	
Hexachlorobenzene	ug/kg	ND	5820	6060	4890	4970	84	82	42-120	2	28	
Hexachlorocyclopentadiene	ug/kg	ND	11700	12100	1130J	1670	10	14	10-120		49	
Hexachloroethane	ug/kg	ND	5820	6060	3090	3020	53	50	24-120	2	32	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	5820	6060	4790	5150	82	85	28-129	7	35	
Isophorone	ug/kg	ND	5820	6060	4850	5000	83	82	43-120	3	25	
N-Nitroso-di-n-propylamine	ug/kg	ND	5820	6060	4860	4870	83	80	39-120	0	26	
N-Nitrosodiphenylamine	ug/kg	ND	5820	6060	6580	6900	113	114	31-132	5	26	
Naphthalene	ug/kg	ND	5820	6060	4890	4960	84	82	42-120	2	25	
Nitrobenzene	ug/kg	ND	5820	6060	3360	3510	58	58	34-120	4	27	
Pentachlorophenol	ug/kg	ND	5820	6060	5570J	5720J	96	94	22-120		30	
Phenanthrene	ug/kg	ND	5820	6060	5160	5310	89	88	24-137	3	30	
Phenol	ug/kg	ND	5820	6060	4810	4910	83	81	42-120	2	25	
Pyrene	ug/kg	ND	5820	6060	5530	5950	93	96	24-145	7	34	
Pyridine	ug/kg	ND	5820	6060	3130	3180	54	52	15-120	2	31	
2,4,6-Tribromophenol (S)	%						96	96	44-120			
2-Fluorobiphenyl (S)	%						86	85	28-145			
2-Fluorophenol (S)	%						85	84	45-120			
Nitrobenzene-d5 (S)	%						54	61	21-145			
Phenol-d6 (S)	%						86	85	43-120			
Terphenyl-d14 (S)	%						93	97	29-158			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

QC Batch: PMST/8517
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60143902001

METHOD BLANK: 1181614
Matrix: Solid
Associated Lab Samples: 60143902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	05/06/13 00:00	

SAMPLE DUPLICATE: 1181689

Parameter	Units	60143866001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	ND	0.56		20	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

C9	Common Laboratory Contaminant.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JOHN REDMOND SEDIMENT
Pace Project No.: 60143902

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60143902001	1B	EPA 3050	MPRP/22642	EPA 6010	ICP/17954
60143902001	1B	EPA 7471	MERP/7310	EPA 7471	MERC/7269
60143902001	1B	EPA 3546	OEXT/38242	EPA 8270	MSSV/12090
60143902001	1B	EPA 8260	MSV/53421		
60143902001	1B	ASTM D2974	PMST/8517		

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

May 14, 2013

Emily Webb
PASI-KS
9608 Loiret Blvd.
Lenexa, KS 66219

RE: Project 20153855
Project ID: 60143902/USGS

Dear Emily Webb:

Enclosed are the analytical results for sample(s) received by the laboratory on May 08, 2013. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerly,

Karen Brown
karen.brown@pacelabs.com

REPORT OF LABORATORY ANALYSIS

Laboratory Certifications

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Project: 20153855

Client: 60

Project ID: 60143902/USGS

Washington Department of Ecology C2078
Oregon Environmental Laboratory Accreditation - LA200001
U.S. Dept. of Agriculture Foreign Soil Import P330-10-00119
Pennsylvania Dept. of Env Protection (NELAC) 68-04202
Texas Commission on Env. Quality (NELAC) T104704405-09-TX
Kansas Department of Health and Environment (NELAC) E-10266
Florida Department of Health (NELAC) E87595
Oklahoma Department of Environmental Quality - 2010-139
Illinois Environmental Protection Agency - 0025721
California Env. Lab Accreditation Program Branch - 11277CA
Louisiana Dept. of Environmental Quality (NELAC/LELAP) 02006

Pace Analytical™

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St. Rose, LA 70087
(504) 469-0333

Sample Cross Reference

Project: 20153855

Client: 60

Project ID: 60143902/USGS

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
1B	201087971	Soil	30-Apr-13 13:00	08-May-13 09:10

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St. Rose, LA 70087
(504) 469-0333

Project: 20153855

Sample Receipt Condition:

All samples were received in accordance with EPA protocol.

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

MS or MSD recoveries outside of QC limits are qualified in the Report of Quality Control section.

Surrogates:

Surrogate recoveries outside of QC limits are qualified in the surrogate results section.

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(504) 469-0333

QC Cross Reference

Project: 20153855

Analytical Method	Batch	Sample used for QC
EPA 8081	208143	Client sample SB-1 3-4' from project 20153869
EPA 8151	208146	Project sample 1B
Dry Weight Moisture	208350	Project sample 1B

Narrative1 5/14/2013 15:42:58

For the sample used as the original for the DUP or MS/MSD for the batch:

Project sample means a sample from this project was used.
Client sample means a sample from the same client but in a different project was used.
Batch sample means a sample from a different client was used.

Client: 60

Client ID: 1B
Project ID: 60143902/USGS
Lab ID: 201087971
Description: None
Method: EPA 8081
8081 Pests Low Soil

Project: 20153855
Site: None
Matrix: Soil
Prep Level: Soil

% Moisture: 56.7 Corrected
Batch: 208143

Collected: 30-Apr-13
Received: 08-May-13
Prepared: 09-May-13

Units: ug/kg

CAS No.	Analyte	Dilution	Result	Qu	Reporting Limit	Reg Limit	Analysis	
309-00-2	Aldrin	1	ND		3.83		13-May-13 14:20	SLF
319-84-6	alpha-BHC	1	ND		3.83		13-May-13 14:20	SLF
319-85-7	beta-BHC	1	ND		3.83		13-May-13 14:20	SLF
319-86-8	delta-BHC	1	ND		3.83		13-May-13 14:20	SLF
58-89-9	gamma-BHC (Lindane)	1	ND		3.83		13-May-13 14:20	SLF
5103-71-9	alpha-Chlordane	1	ND		3.83		13-May-13 14:20	SLF
5103-74-2	gamma-Chlordane	1	ND		3.83		13-May-13 14:20	SLF
72-54-8	4,4'-DDD	1	ND		7.51		13-May-13 14:20	SLF
72-55-9	4,4'-DDE	1	ND		7.51		13-May-13 14:20	SLF
50-29-3	4,4'-DDT	1	ND		7.51		13-May-13 14:20	SLF
60-57-1	Dieldrin	1	ND		7.51		13-May-13 14:20	SLF
959-98-8	Endosulfan I	1	ND		3.83		13-May-13 14:20	SLF
33213-65-9	Endosulfan II	1	ND		7.51		13-May-13 14:20	SLF
1031-07-8	Endosulfan sulfate	1	ND		7.51		13-May-13 14:20	SLF
72-20-8	Endrin	1	ND		7.51		13-May-13 14:20	SLF
7421-93-4	Endrin aldehyde	1	ND		7.51		13-May-13 14:20	SLF
53494-70-5	Endrin ketone	1	ND		7.51		13-May-13 14:20	SLF
76-44-8	Heptachlor	1	ND		3.83		13-May-13 14:20	SLF
1024-57-3	Heptachlor epoxide	1	ND		3.83		13-May-13 14:20	SLF
72-43-5	Methoxychlor	1	ND		37.6		13-May-13 14:20	SLF
8001-35-2	Toxaphene	1	ND		150.		13-May-13 14:20	SLF

21 compound(s) reported

Client: 60

Client ID: 1B
Project ID: 60143902/USGS
Lab ID: 201087971
Description: None
Method: EPA 8151
8151 Herbs Low Soil

Project: 20153855
Site: None
Matrix: Soil
Prep Level: Soil
% Moisture: 56.7 Corrected
Batch: 208146

Collected: 30-Apr-13
Received: 08-May-13
Prepared: 09-May-13

Units: ug/kg

CAS No.	Analyte	Dilution	Result	Qu	Reporting Limit	Reg Limit	Analysis	
94-75-7	2,4-D	1	ND		151.		10-May-13 21:32	SPP1
94-82-6	2,4-DB	1	ND		379.		10-May-13 21:32	SPP1
1918-00-9	Dicamba	1	ND		151.		10-May-13 21:32	SPP1
120-36-5	Dichloroprop	1	245.	C2	151.		10-May-13 21:32	SPP1
94-74-6	MCPA	1	ND		18900		10-May-13 21:32	SPP1
7085-19-0	MCPP	1	ND		18900		10-May-13 21:32	SPP1
93-76-5	2,4,5-T	1	ND		151.		10-May-13 21:32	SPP1
93-72-1	2,4,5-TP (Silvex)	1	ND		151.		10-May-13 21:32	SPP1

8 compound(s) reported

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(504) 469-0333

Surrogate Recovery

Batch: 208143 **Project:** 20153855

Method: Soil GC Semivolatile Organics

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
201087971	1B		26	29	62	70				
201088017	208143 BLANK 1		91	93	87	92				
201088018	208143 LCS 1		88	97	84	80				
201088166	SB-1 3-4' MS 1		53	61	56	55				
201088167	SB-1 3-4' MSD 1		79	92	81	85				
	QC limits:		15-179	15-177	10-144	10-178				

Sur 1: Decachlorobiphenyl (Conf)(S)
Sur 2: Decachlorobiphenyl (S)
Sur 3: Tetrachloro-m-xylene (Conf)(S)
Sur 4: Tetrachloro-m-xylene (S)

*** denotes surrogate recovery outside of QC limits.**
D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

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(504) 469-0333

Surrogate Recovery

Batch: 208146 **Project:** 20153855

Method: Soil GC Semivolatile Organics

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
201087971	1B	G1	678 *	72						
201088031	1B MS 1	G1	552 *	89						
201088032	1B MSD 1	G1	757 *	92						
201088029	208146 BLANK 1		102	100						
201088030	208146 LCS 1		103	100						
	QC limits:		10-169	10-161						

Sur 1: 2,4-DCPA (Conf)(S)
Sur 2: 2,4-DCPA (S)

*** denotes surrogate recovery outside of QC limits.**
D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

Surrogates 5/14/2013 15:43:02

Batch: 208143 **Project:** 20153855 **LCS:** 201088018 13-May-1 13:55

Method: Soil GC Semivolatile Organics **MS:** 201088166 13-May-1 14:46

Units: ug/kg **MSD:** 201088167 13-May-1 14:58

Original for MS: Batch Sample 201088087

Parameter Name	LCS Spike	LCS Found	LCS %Rec	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
Aldrin	16.7	14.2	85	18.1		10.1	15.5	56	86	42 *	33-126	10-157	20	
alpha-BHC	16.7	12.5	75	18.1		9.93	15.3	55	84	42 *	31-124	15-161	20	
beta-BHC	16.7	12.2	73	18.1		9.51	11.4	52	63	18	33-130	10-169	20	
delta-BHC	16.7	9.42	57	18.1		8.07	11.5	45	64	35 *	20-135	10-170	20	
gamma-BHC (Lindane)	16.7	12.6	76	18.1		9.76	14.7	54	81	40 *	32-127	12-164	20	
alpha-Chlordane	16.7	14.4	86	18.1		9.39	13.6	52	75	36 *	36-127	10-166	20	
gamma-Chlordane	16.7	14.3	86	18.1		9.42	13.2	52	73	33 *	36-128	10-168	20	
4,4'-DDD	16.7	15.0	90	18.1		9.07	10.6	50	59	16	33-132	10-174	20	
4,4'-DDE	16.7	15.9	96	18.1		9.97	15.4	55	85	43 *	36-131	10-171	20	
4,4'-DDT	16.7	14.5	87	18.1		8.35	8.70	46	48	4	33-125	10-172	20	
Dieldrin	16.7	15.3	92	18.1		9.07	12.1	50	67	29 *	35-126	10-166	20	
Endosulfan I	16.7	5.29	32	18.1		5.36	10.0	30	56	61 *	10-115	10-143	20	
Endosulfan II	16.7	5.48	33	18.1		5.75	10.1	32	56	55 *	10-115	10-160	20	
Endosulfan sulfate	16.7	13.8	83	18.1		10.0	12.2	55	67	19	30-133	10-172	20	
Endrin	16.7	13.0	78	18.1		7.37	9.17	41	51	22 *	20-151	10-186	20	
Endrin aldehyde	16.7	12.1	72	18.1		8.09	8.17	45	45	1	26-128	10-162	20	
Endrin ketone	16.7	14.0	84	18.1		8.99	10.7	50	59	18	33-133	10-177	20	
Heptachlor	16.7	14.6	88	18.1		10.2	14.1	56	78	32 *	34-127	10-159	20	
Heptachlor epoxide	16.7	14.3	86	18.1		8.88	12.5	49	69	34 *	32-126	10-161	20	
Methoxychlor	16.7	13.8	83	18.1		ND	ND	45	45	0	24-143	10-195	21	

20 compound(s) reported

* denotes recovery outside of QC limits.
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Batch: 208146 **Project:** 20153855 **LCS:** 201088030 10-May-1 21:16

Method: Soil GC Semivolatile Organics **MS:** 201088031 10-May-1 21:48

Units: ug/kg **MSD:** 201088032 10-May-1 22:04

Original for MS: Client Sample 201087971

Parameter Name	LCS Spike	LCS Found	LCS %Rec	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
2,4-D	667.	483.	73	1520		1080	1080	71	72	0	14-171	10-174	31	
2,4-DB	667.	574.	86	1520		1250	978.	79	62	25	12-173	10-193	27	
Dicamba	66.7	51.5	77	152.		147.	120.	97	80	20	10-166	10-184	41	
Dichloroprop	667.	550.	83	1520	245.	2210	1460	130	81	41 *	29-166	10-195	32	
MCPA	66700	59400	89	152000		277000	504000	182 *	336 *	58 *	12-169	10-170	29	Q1
MCPP	66700	51600	78	152000		137000	175000	90	117	25	10-176	10-164	30	
2,4,5-T	66.7	55.4	83	152.		160.	115.	106	77	33	13-174	10-210	33	
2,4,5-TP (Silvex)	66.7	49.7	75	152.		121.	119.	79	79	2	17-173	10-175	29	

8 compound(s) reported

*** denotes recovery outside of QC limits.**
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Blank Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Blank ID: 208143 BLANK 1 **Project:** 20153855

Lab ID: 201088017

Prep Level: Soil **Batch:** 208143

Method: Soil GC Semivolatile Organics

Prepared: 09-May-13

Units: ug/kg

CAS Numb	Analyte	Dilution	Result	Qu	Reporting Limit	Analysis	
309-00-2	Aldrin	1	ND		1.70	13-May-13 13:42	SLF
319-84-6	alpha-BHC	1	ND		1.70	13-May-13 13:42	SLF
319-85-7	beta-BHC	1	ND		1.70	13-May-13 13:42	SLF
319-86-8	delta-BHC	1	ND		1.70	13-May-13 13:42	SLF
58-89-9	gamma-BHC (Lindane)	1	ND		1.70	13-May-13 13:42	SLF
5103-71-9	alpha-Chlordane	1	ND		1.70	13-May-13 13:42	SLF
5103-74-2	gamma-Chlordane	1	ND		1.70	13-May-13 13:42	SLF
72-54-8	4,4'-DDD	1	ND		3.33	13-May-13 13:42	SLF
72-55-9	4,4'-DDE	1	ND		3.33	13-May-13 13:42	SLF
50-29-3	4,4'-DDT	1	ND		3.33	13-May-13 13:42	SLF
60-57-1	Dieldrin	1	ND		3.33	13-May-13 13:42	SLF
959-98-8	Endosulfan I	1	ND		1.70	13-May-13 13:42	SLF
33213-65-9	Endosulfan II	1	ND		3.33	13-May-13 13:42	SLF
1031-07-8	Endosulfan sulfate	1	ND		3.33	13-May-13 13:42	SLF
72-20-8	Endrin	1	ND		3.33	13-May-13 13:42	SLF
7421-93-4	Endrin aldehyde	1	ND		3.33	13-May-13 13:42	SLF
53494-70-5	Endrin ketone	1	ND		3.33	13-May-13 13:42	SLF
76-44-8	Heptachlor	1	ND		1.70	13-May-13 13:42	SLF
1024-57-3	Heptachlor epoxide	1	ND		1.70	13-May-13 13:42	SLF
72-43-5	Methoxychlor	1	ND		16.7	13-May-13 13:42	SLF
8001-35-2	Toxaphene	1	ND		66.7	13-May-13 13:42	SLF

21 compound(s) reported

Protocol Blank 5/14/2013 15:43:0

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Blank Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Blank ID: 208146 BLANK 1 **Project:** 20153855

Lab ID: 201088029

Prep Level: Soil **Batch:** 208146

Method: Soil GC Semivolatile Organics

Prepared: 09-May-13

Units: ug/kg

CAS Numb	Analyte	Dilution	Result	Qu	Reporting Limit	Analysis
94-75-7	2,4-D	1	ND		66.7	10-May-13 21:00 SPP1
94-82-6	2,4-DB	1	ND		167.	10-May-13 21:00 SPP1
1918-00-9	Dicamba	1	ND		66.7	10-May-13 21:00 SPP1
120-36-5	Dichloroprop	1	ND		66.7	10-May-13 21:00 SPP1
94-74-6	MCPA	1	ND		8330	10-May-13 21:00 SPP1
7085-19-0	MCPP	1	ND		8330	10-May-13 21:00 SPP1
93-76-5	2,4,5-T	1	ND		66.7	10-May-13 21:00 SPP1
93-72-1	2,4,5-TP (Silvex)	1	ND		66.7	10-May-13 21:00 SPP1

8 compound(s) reported

Protocol Blank 5/14/2013 15:43:0

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Project: 20153855

Value	Description
C2	The relative percent difference between the two detectors is greater than 40%, indicating interference on one of the detectors. The lower of the two values is reported.
G1	Interferences are present which caused poor surrogate recovery.
Q1	The matrix spike recoveries are poor. Acceptable method performance for this analyte has been demonstrated by the laboratory control sample recovery.
J	This estimated value for the analyte is below the adjusted reporting limit but above the instrument reporting limit.
U	The analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
B	This analyte was detected in the method blank.
E	The sample concentration is above the linear calibrated range of the analysis.
LCS	Laboratory Control Sample.
MS(D)	Matrix Spike (Duplicate).
DUP	Sample Duplicate.
RPD	Relative Percent Difference.

Pace Analytical Services, In
1000 Riverbend Blvd. Suite F
St. Rose, LA 7008
(504) 469-033

Chains of Custody

Chain of Custody

20153855 PASI-KANS

Pace Analytical®
www.pacelabs.com

Workorder: 60143902 **Workorder Name:** JOHN REDMOND SEDIMENT **Owner Received Date:** 5/3/2013 **Results Requested By:** 5/17/2013

Report To	Subcontract To
Emily Webb Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759	Pace Analytical New Orleans 1000 Riverbend Blvd Suite F St. Rose, LA 70087 Phone (504)469-0333

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: none	Requested Analysis: 8151 Herbicides	8081 Pesticides	LAB USE ONLY
1	1B	PS	4/30/2013 13:00	60143902001	Solid	2	X	X	26087971
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible] FedEx	5/1/13 1700			
2		5-8-13 0910	[illegible]	5-8-13 0910	
3					

Cooler Temperature on Receipt 2.0 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

Pace Analytical

1000 Riverbend. Blvd., Suite F
St. Rose, LA 70087

Sample Con

20153855 PASI-KANS

Courier: ☐ Pace Courier ☐ Hired Courier ☑ Fed X ☐ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC] **Custody Seals intact:** ☑Yes ☐No

Therometer Used:	☐ Therm Fisher IR 5 ☐ Therm Fisher IR 6 ☒ Therm Fisher IR 7

Type of Ice: (Wet) Blue None

Samples on ice: [see COC]

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 05-09-13 MD

Temp must be measured from Temperature blank when present

				Comments:
Temperature Blank Present"?	☑Yes	☐No	☐N/A	1
Chain of Custody Present:	☑Yes	☐No	☐N/A	2
Chain of Custody Complete:	☑Yes	☐No	☐N/A	3
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	4
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	5
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	6
Sufficient Volume:	☑Yes	☐No	☐N/A	7
Correct Containers Used:	☑Yes	☐No	☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes	☐No	☑N/A	9
Sample Labels match COC:	☑Yes	☐No	☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☑Yes	☐No	☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☐Yes	☐No	☑N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	13 If No, was preserative added? ☐Yes ☐No If added record lot no.: HNO3 _____ H2SO4 _____
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14
Trip Blank Present:	☐Yes	☑No		15

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: Only received 1 802 JAT, not 2 as was marked on the sub COC.

201087971
PASI-KANS
1B
20153855-001
Cont: OT 20FZ
Loc: OP
Col: 04/30/13
13:00
Not rec MAY 08

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60143902

60143902

Client Name: USGS

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☐ No ☑ Seals intact: Yes ☐ No ☑

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194 **Type of Ice:** Wet Blue None (circle one) ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 5.2

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 5/3/13 KP

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: SL		13.
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	14.
Exceptions: VOA, coliform, TOC, O&G, Wi-DRO (water), Phenolics	☐Yes ☑No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☑N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☑No ☐N/A	17. List State: KS.

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / (N)

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 5/6/13

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical
www.pacelabs.com

Page: of

Section A Required Client Information:

Company:	USGS
Address:	4821 Quail Crest Place
	Lawrence, KS 66049
Email To:	kjuracek@usgs.gov
Phone: 785-832-3527	Fax
Requested Due Date/TAT:	standard

Section B Required Project Information:

Report To:	Kyle Juracek
Copy To:	
Purchase Order No.:	
Project Name:	John Redmond sediment
Project Number:	

Section C Invoice Information:

Attention:	Earl Lewis- earl.lewis@kwo.ks.gov
Company Name:	KS Water Office 785-296-3185
Address:	901 S. Kansas Ave, Topeka, KS 66603
Pace Quote Reference:	130329_USGS_TCLP_7123
Pace Project Manager:	Emily Webb
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Total VOC's	Total SVOC's	Total RCRA 8 Metals	Total 8081 Pesticides	Total 8151 Herbicides	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	1b			[redacted]	10:00	[redacted]	12:00		1	X									x	x	x	x	x		60143982 other
2				4-30		4-30																			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

60143982

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature]	5-3-13	13:15	E Brackett / PASI	5/3	1315	5-2	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Kyle Juracek

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 5-3-13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

APPENDIX G

Agency Correspondence

DEPARTMENT OF ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
TULSA, OKLAHOMA 74128-4609

August 21, 2013

Planning and Environmental Division

Mr. Dan Mulhern
Acting Field Supervisor
U.S. Fish and Wildlife Service
Kansas Ecological Services Office
2609 Anderson Avenue
Manhattan, KS 66502

Dear Mr. Mulhern:

This letter is to request your concurrence pursuant to Section 7 of the Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1231 *et seq.*), with regard to effects on federally-listed species resulting from proposed dredging operations at John Redmond Dam and Reservoir, Kansas. The State of Kansas, acting through the Kansas Water Office (KWO), proposes to fully fund and perform removal of excessive accumulated sediment from John Redmond Reservoir for the purpose of at least partially restoring conservation pool storage capacity. The proposed action would restore water supply storage for water users as well as regain lost aquatic habitat to the benefit of recreational users and the lake ecosystem. Dredging activities are proposed by the State of Kansas in response to accumulation of excessive amounts of sediment at unanticipated in-lake settling locations and resulting adverse impacts to a critical water supply and important recreational and biological resource.

The proposed action entails dredging and disposal of sediments from the John Redmond Reservoir conservation pool at a rate and quantity to ensure 55,000 acre-feet of conservation storage is available for authorized project purposes. In the first five years of dredging, approximately 3 to 6 million cubic yards of sediment would be removed using a barge-mounted, portable hydraulic dredge with cutter head ranging from 16- to 20-inches. Dredged materials would be transported to upland confined disposal facilities. Such facilities would initially include two

sites on federal government fee lands at John Redmond Reservoir. Thereafter, disposal facilities would be located on private lands in the vicinity of the reservoir. It is estimated that approximately five 100-acre disposal sites may be needed for the first five years of dredging activities. A programmatic environmental impact statement (EIS) is being prepared for this action under the National Environmental Policy Act (NEPA) of 1969. The draft EIS will be provided to you for review when complete.

Based on coordination with your office, it is our understanding that current federally-listed species in or around the project area are limited to the endangered Neosho madtom (*Noturus placidus*) which inhabits portions of the Neosho River and the threatened western prairie fringed orchid (*Platanthera praeclara*), a plant species with a distribution generally north of John Redmond Reservoir and Coffey County, Kansas. It is also our understanding that two freshwater mussel species are currently proposed for listing, with a final listing determination to potentially be published as early as October 2013. These mussel species include the Neosho mucket (*Lampsilis rafinesqueana)*, proposed as endangered, and the rabbitsfoot mussel (*Quadrula cylindrica cylindrica)*, proposed as threatened. Finally, it is our understanding that no designated critical habitat for any currently-listed or proposed species occurs in the project area.

The proposed dredging and disposal activities would not alter current operations of John Redmond Dam and Reservoir with regard to the magnitude, duration, or timing of water releases. Sediment quality sampling in areas proposed for dredging indicate low or non-detectable levels of chemical constituents which could potentially be released to the reservoir water column or downstream through releases. Finally, substantial increases in suspended sediments in the Neosho River downstream of John Redmond Dam are not anticipated owing to reservoir sediment re-suspension which should be largely confined to the immediate area of dredging, as well as operational flexibility regarding gates from which to make low flow releases. Beginning in 2013, the KWO will cooperate with the U.S. Geological

Survey (USGS) to install and operate water quality monitors and collect suspended sediment samples on the Neosho River at Burlington, Iola, and Parsons, Kansas to quantify downstream conditions.

Based on our analyses of potential impacts of dredging activities and recent coordination of these analyses with your staff, it is our determination that the proposed dredging and associated activities at John Redmond Reservoir "may affect - not likely to adversely affect" the currently-listed Neosho madtom and proposed-for-listing Neosho mucket and rabbitsfoot mussels. It is also our determination that the proposed action will have "no effect" on the western prairie fringed orchid. By this letter, we are requesting your concurrence with these determinations as well as the absence of designated critical habitat in the project area for any federal currently-listed or proposed species. Should you concur with our determinations, it is our understanding that this concludes consultation under Section 7 of the ESA for this action.

Finally, we are requesting any additional comments you might have under the Fish and Wildlife Coordination Act regarding this proposal. Thank you for your efforts with regard to these issues and we look forward to working with you on this and other matters in the future. Questions can be directed to me at (918) 669-7660 or email Stephen.L.Nolen@usace.army.mil.

Sincerely,

Stephen L. Nolen
Chief, Planning and Environmental
Division

Copy Furnished

Ms. Susan Metzger
Kansas Water Office
901 S. Kansas Avenue
Topeka, KS 66612-1249

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kansas Ecological Services Field Office
2609 Anderson Avenue
Manhattan, Kansas 66502

September 16, 2013

FWS Tracking #13-CPA-0520

Mr. Stephen L. Nolen
Chief, Planning and Environmental Division
U.S. Army Corps of Engineers, Tulsa Division
1645 South 101st East Avenue
Tulsa, OK 74128-4609

RE: ESA Section 7 – John Redmond Dredging Project

Dear Mr. Nolen,

This correspondence is in regards to your August 21, 2013 letter requesting concurrence pursuant to Section 7 of the Endangered Species Act (ESA) regarding possible impacts to federally listed species resulting from the proposed dredging of John Redmond Reservoir in Coffey County, Kansas by the Kansas Water Office.

Federally listed or proposed species that occur occasionally or year-round near the proposed project site include: Neosho madtom (*Noturus placidus*); interior least tern (*Sternula antillarum*); western prairie fringed orchid (*Platanthera praeclara*); and two proposed mussel species (Final Rule scheduled for publication in the Federal Register on September 17, 2013), Neosho mucket (*Lampsilis rafinesqueana*) and rabbitsfoot mussel (*Quadrula cylindrical*). The Neosho madtom and Neosho mucket occur in flowing riverine habitat both upstream and downstream of the proposed project area, the rabbitsfoot mussel is known to occur downstream of the reservoir, the orchid is characteristic to moist prairies in this area, and the interior least tern is an occasional migrant to the area, using sand bar habitat.

At this time, we concur with your determination of "may affect, not likely to adversely affect" for the species listed above. However, we request that the Corps of Engineers annually supplies this office with the water quality data to be collected by the Kansas Water Office, as part of the project, downstream at Burlington, Iola, and Parsons, Kansas. This information will assist in recognizing the level of "affect" to the Neosho madtom and the two mussels, as well as their habitat. Also, as the proposed project proceeds, and additional sediment disposal sites are identified, we request continued coordination with this office in reviewing future disposal sites in regards to their location and potential impacts to listed species.

SEP 17 2013

Regarding federally designated critical habitat (DCH), at present, there is no DCH in or near the proposed project site. However, federally proposed critical habitat for the Neosho mucket and the rabbitsfoot mussel exists downstream of the proposed project site.

While we concur with your determination of "not likely to adversely affect" for this project, we wish to reiterate that we believe the Tulsa District should request initiation of section 7 consultation with the Service on current, ongoing operations of John Redmond Dam. Consultation could explore whether operations are affecting the Neosho madtom, Neosho mucket, and the rabbitsfoot mussel, and determine whether flexibility exists to improve dam operations concerning conservation of these species. Analysis of Neosho madtom population trends and John Redmond Dam operations indicates that current operations may be affecting the Neosho madtom (Wildhaber et al. 2000; Bryan et al. 2010), and similarly, operations may be affecting the freshwater mussel fauna of the Neosho River.

If you have any further question or comment concerning Section 7 consultation and the proposed project please feel free to contact me or Vernon Tabor of my staff.

Sincerely,

Heather Whitlaw
Field Supervisor

cc: KDWPT (Ecological Services), Pratt, KS
Flint Hills National Wildlife Refuge, Hartford, KS
Kansas Water Office (Susan Metzger), Topeka, KS

HW/vmt

Citations:

Bryan, J.L., M.L. Wildhaber, W.B. Leeds, and R. Dey. 2010. Neosho madtom and other ictalurid populations in relation to hydrologic characteristics of an impounded Midwestern warmwater stream—update. U.S. Geological Survey, Open-File Report 2010-1109, Columbia, Missouri.

Wildhaber, M.L., V.M. Tabor, J.E. Whitaker, A.L. Allert, D.W. Mulhern, P.J. Lambertson, and K.L. Powell. 2000. Ictalurid populations in relation to the presence of a mainstem reservoir in a Midwestern warmwater stream with emphasis on the threatened Neosho madtom. Transactions of the American Fisheries Society 129:1264-1280.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101ST EAST AVENUE
TULSA, OKLAHOMA 74128-4609

December 9, 2013

Regulatory Office

Ms. Susan Metzger
Chief of Planning and Policy
Kansas Water Office
901 S. Kansas Avenue
Topeka, KS 66612

Dear Ms. Metzger

This is in reference to the wetland delineation performed by Regulatory Personnel at John Redmond Lake on November 12 and 13, 2013, for the proposed Confined Disposal Facility Project. The proposed project is located in the South ½ of Section 9, Township 21 South, Range 15 East, near Burlington, Coffey County, Kansas. The area marked in red on the enclosed map denotes the limits of the property examined under this request. We have reviewed the submitted data relative to Section 404 of the Clean Water Act (CWA).

The Corps will assert jurisdiction over Pond 1 (29 acres), Pond 2 (8 acres), Pond 3 (1.6 acres), Wetland 1(28 acres), Wetland 2 (2 acres), Wetland 3 (0.5 acre), Stream A (3,000 linear feet), Stream B (1,300 linear feet), Stream C (480 linear feet), and the manmade channel (2,000 linear feet). The unnamed tributary and the manmade channels are shown in blue. The wetland areas are shown in pink, and the ponds are shown in light blue. The above defined features shown on the enclosed map are regulated waters of the United States. The total acreage of jurisdictional waters of the United States are 38.6 acres for Ponds, 30.5 acres for Wetlands, and 6,780 linear feet for stream channels. Drainage ditches 1, 2, and 3 are not regulated waters of the United States.

The placement of dredged or fill material in the jurisdictional waters or heavy mechanized land clearing within the wetland boundaries will require authorization from the Corps pursuant to Section 404 CWA.

The basis for this determination is the wetlands and/or waters have a nexus to the Neosho River, which is a tributary that ultimately flows in the Neosho (Grand) River, a navigable waterway.

We believe this determination to be an accurate assessment of the presence of jurisdictional wetlands and other waters on the site which are subject to Section 404 CWA. This is a final determination of federal jurisdiction on the property pursuant to Section 404 CWA. This determination is valid for 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date.

This delineation has been conducted to identify the limits of the Corps CWA jurisdiction for the particular sites identified in this request.

This final determination constitutes an approved JD subject to the optional Corps Administrative Appeal Process. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed is a copy of the Notification of Administrative Appeal Options and Process (NAP) and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Southwestern Division Office at the following address:

Mr. Elliott Carman
Appeals Review Officer
U.S. Army Corps of Engineers
1100 Commerce Street, Suite 831
Dallas, TX 75242-0216
Tel: 469-487-7037
Fax: 469-487-7199

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by February 9, 2013. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

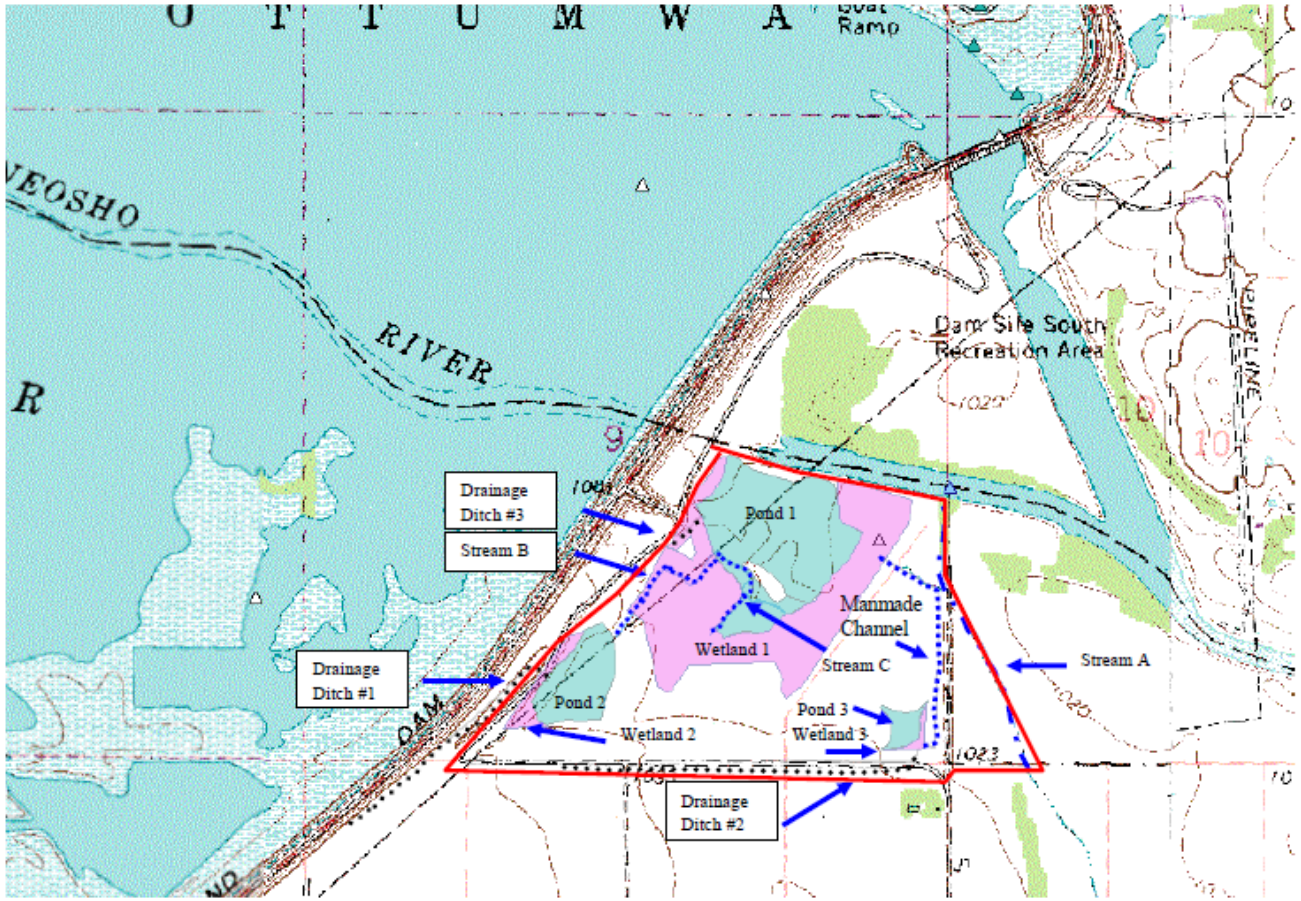
You need to be aware that wetlands merit special consideration in the Section 404 Regulatory Program regulations. Wetlands are recognized as a productive and valuable resource, the destruction of which is discouraged as contrary to the public interest. In developing plans for this site, ample consideration must be given to alternatives which avoid or minimize impacts to wetlands where practicable. The Corps is restricted from authorizing activities in wetlands where there is a practicable alternative with less adverse impact on the aquatic environment. Once the presumption of the availability of a less environmentally damaging practicable alternative is refuted, remaining wetland impacts which cannot be avoided or minimized will require compensatory wetland mitigation. Compensatory wetland mitigation may take the form of wetland restoration, enhancement, construction, or preservation.

This case has been assigned Identification No. SWT-2012-763. Please refer to this number during future correspondence. If you have any questions, contact Mr. Marcus Ware at 918-669-7403.

Sincerely,

Andrew R. Commer
Chief, Regulatory Office

Enclosures



SWT-2012-763

Jurisdictional streams are shown as the blue dotted line
Ponds are shown in blue
Wetlands are shown in pink
Drainage ditches are shown as a black broken dotted line.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Ms. Susan Metzger, KWO	File Number: SWT-2012-763	Date: Dec 9, 2013
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Marcus A. Ware 1645 South 101st E. Ave Tulsa, OK 74128-4629 Telephone 918-669-7403	If you only have questions regarding the appeal process you may also contact: Mr. Elliott Carman Appeals Review Officer (CESWD-PD-O) U.S. Army Corps of Engineers 1100 Commerce Street, Suite 831 Dallas, TX 75242-0216 Telephone 469-487-7061

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or authorized agent.	Date:	Telephone number: