

# **Draft Restoration Plan/Environmental Assessment for Eastern Kansas Smelter Sites**

## **Former Blue Tee and U.S. Steel Smelters – Neodesha, Caney, Dearing, East LaHarpe, and Girard Sites**

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Prepared for:

U.S. Department of the Interior, Fish and Wildlife Service; and Kansas  
Department of Health and Environment

Prepared by:

U.S. Department of the Interior, U.S. Fish and Wildlife Service  
Kansas Ecological Services Field Office  
2609 Anderson Avenue Manhattan, KS 66502



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## List of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
FQI	Floristic Quality Index
KBS	Kansas Biological Survey
NEPA	National Environmental Policy Act
NRD	Natural Resource Damages
NRDAR	Natural Resource Damage Assessment and Restoration
RP/EA	Restoration Plan/Environmental Assessment
TNC	The Nature Conservancy
U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service

## Executive Summary

Releases of hazardous substances, including heavy metals, from the former Blue Tee Smelters in Neodesha, Caney, and Dearing, Kansas; former American Zinc, Lead, and Smelting Company Site in Montgomery County, Kansas; East La Harpe Smelter Site in Allen County, Kansas; and the Girard Zinc Works Site and Cherokee Lanyon #2 Site near Girard, Kansas (collectively referred to as the “Sites”) were sufficient to cause injury to natural resources and associated services under the Trusteeship of the U.S. Department of the Interior and state of Kansas. Smelter operations contaminated soil at these Sites with heavy metals, especially cadmium and lead, and zinc. Metals contamination caused injury, destruction, or loss of natural resources at the Sites. Specifically, metals contamination reduced vegetation quality and quantity, accumulated in the tissues of soil invertebrates, and reduced survival and magnified metals concentrations in migratory birds and other terrestrial organisms that consume contaminated invertebrates and plant materials. Accordingly, the Trustees (identified below) determined that the natural resource injuries at the Sites include impairment and direct mortality of terrestrial organisms, including migratory birds, and the impairment of their terrestrial habitat.

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), through the Natural Resource Damage Assessment and Restoration (NRDAR) process, natural resource trustees are authorized to assess and recover damages resulting from injuries to natural resources attributable to hazardous substance releases. 40 U.S.C. § 9607 (f). The trustees then utilize these recovered damages to plan and implement actions to restore, replace, rehabilitate, and/or acquire the equivalent of injured natural resources and the services they provide pursuant to a restoration plan. 40 U.S.C. § 9611(i). The Trustees in this case, the U.S. Department of the Interior, represented by the U.S. Fish and Wildlife Service, and the state of Kansas, represented by the Kansas Department of Health and Environment, developed this Draft RP/EA in accordance with CERCLA Section 111(i) and its implementing regulations (43 C.F.R. § 11.93) to inform the public as to the types and amount of restoration that are expected to compensate for injuries to natural resources and the services they provide associated with the releases of heavy metals from the facilities at the Sites in southeastern Kansas. As explained more fully herein, the restoration action proposed in this Draft RP/EA will be implemented by the Trustees in coordination with their restoration partners, including Kansas Biological Survey and The Nature Conservancy.

Under the National Environmental Policy Act (NEPA; 42 U.S.C. § 4321 *et seq.*), federal agencies must identify and evaluate environmental impacts that may result from federal actions. This Draft RP/EA describes the purpose and need for action, identifies potential restoration alternatives, including a No Action alternative, summarizes the affected environment, and describes the potential environmental consequences of the preferred restoration activity. The alternatives described and evaluated in this Draft RP/EA include the Trustees’ preferred alternative, Parcel Acquisition, Preservation, and Restoration (Alternative B), and other restoration alternatives, including the No Action alternative and two non-preferred alternatives. The Preferred Alternative aims to acquire an approximately 77-acre parcel adjacent to the Anderson County Prairie Preserve and place it under ownership of The Nature Conservancy and management by the Kansas Biological Survey, providing for enhanced native tallgrass prairie natural resource services, including migratory bird nesting, foraging, and resting habitat. The

Trustees are soliciting comments on this Draft RP/EA and will address any public comments received in preparing a Final RP/EA wherein the Trustees will identify the Selected Restoration Alternative.

## **1.0 Introduction**

This Draft Restoration Plan (RP)/ Environmental Assessment (EA) (Draft RP/EA) has been prepared by the Trustees for the former Blue Tee Smelters in Neodesha, Caney, and Dearing, Kansas; former American Zinc, Lead, and Smelting Company Site in Montgomery County, Kansas; East La Harpe Smelter Site in Allen County, Kansas; and the Girard Zinc Works Site and Cherokee Lanyon #2 Site near Girard, Kansas (collectively referred to as the “Sites”; Table 1) to address natural resources injured and ecological services lost due to releases of hazardous substances, including heavy metals, from the Sites. Releases of hazardous substances from the Sites into nearby air, surface water, and soil have resulted in potential contaminant exposure of and adverse effects to terrestrial and aquatic biota. The Trustees for these natural resources, and who developed this document, are the U.S. Fish and Wildlife Service (USFWS) representing the U.S. Department of the Interior (DOI) and the Kansas Department of Health and Environment representing the State of Kansas (collectively, “Trustees”).

In keeping with its purpose, this Draft RP/EA:

- Describes the natural resource injuries and losses that are known or likely to have occurred as a result of the releases of hazardous substances at or from the Sites;
- Identifies and evaluates restoration alternatives considered for achieving the restoration goal of restoring, replacing, rehabilitating, or acquiring the equivalent of the injured natural resources, including a No Action alternative;
- Identifies the Preferred Alternative that the Trustees will implement to compensate for the natural resources injuries and losses that are known or likely to have occurred; and
- Includes an Environmental Assessment, discussing the affected environment and potential environmental consequences and cumulative effects associated with the Preferred Alternative.

This Draft RP/EA has been developed in accordance with 43 C.F.R. § 11.93 and the National Environmental Policy Act (NEPA, 42 U.S.C. § 4321 et seq.) (NEPA) to inform the public as to the types and scale of restoration to be undertaken to compensate for injuries to natural resources. The Trustees are soliciting comments on this Draft RP/EA and will address comments in preparing a final RP/EA wherein the Trustees will identify the Selected Restoration Alternative.

### **1.1 Purpose and Need for Restoration**

The purpose of the restoration proposed in this Draft RP/EA is to restore terrestrial habitat and its associated services lost due to the release of hazardous substances. The need for these actions arises from the statutory requirement to use recovered natural resource damage assessment (NRDA) damages to restore, replace, or acquire the equivalent of natural resources injured by releases of hazardous substances 42 U.S.C. § 9607(f)(1). The primary natural resource injuries are associated with the physical impairment and direct mortality of terrestrial organisms,



including migratory birds, and the physical impairment of their terrestrial habitat.

## **1.2 Restoration Goals**

Based on the nature of the natural resources injured, the restoration goals listed below were identified by the Trustees and guided development of this Draft RP/EA. The goals are also consistent with the management plan for Anderson County Prairie Preserve (“Preserve” from here forward; Kettle *et al.* 2007), which articulates a management philosophy, describes ecological management techniques, and specifies conservation actions that move toward the vision for the Preserve. Objectives for each goal have been developed by Kansas Biological Survey (Kettle *et al.* 2007) for each goal listed below but are not presented in this document.

Goal 1: Preserve, enhance, and restore desired plant community attributes and ecological processes through the use of prescribed fire, grazing, and other appropriate management regimes.

Goal 2: Provide and maintain native tallgrass prairie habitat for rare, threatened, and endangered species, and species in need of conservation.

Goal 3: Eradicate or greatly reduce existing populations of invasive species on the Preserve and prevent or minimize establishment of invasive species in the future.

## **1.3 Natural Resource Trustee Authority**

Under federal law, the Trustees are authorized to act on behalf of the public to assess injuries to natural resources and services resulting from the release of hazardous substances into the environment. The Natural Resource Damage Assessment and Restoration (NRDAR) process allows Trustees to pursue claims against potentially responsible parties for monetary damages based on these injuries in order to compensate the public. The goal of this process is to plan and implement actions to restore, replace, or rehabilitate the natural resources that were injured or lost as a result of the release of a hazardous substance, or to acquire the equivalent resources or the services they provide (Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq.; 43 C.F.R. Part 11).

A Trustee Memorandum of Agreement was executed in 2002, formalizing this collaborative process between DOI and the State of Kansas for NRDAR.

## **1.5 Summary of Consent Decrees**

The Trustees were awarded damages from three separate settlements to compensate for injuries to natural resources caused by releases of hazardous substances from the Sites. These settlements resolved claims under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; 42 USC 9601 et seq.), and authorize the Trustees to restore, rehabilitate, replace, or acquire the equivalent of those natural resources that were injured. Settlement funds awarded to the Trustees were deposited into site-specific accounts within the DOI NRDAR Fund and reside there until a restoration plan -- describing how monies will be used to address the services

that are lost to the public -- has gone through a public review process.

The terms of a settlement agreement between the Trustees and Blue Tee Corp. were documented in a consent decree, which was filed in March 2011, requiring Blue Tee Corp. to 1) pay Trustees for past costs associated with assessing natural resource damages arising from smelter releases and 2) take actions facilitating the transfer of a land parcel to be restored and preserved by the Trustees in coordination with The Nature Conservancy (TNC). In the second of three consent decrees, United States Steel Corporation was required to pay a total of \$133,400 to reimburse the Trustees for their past assessment costs and for Trustee costs associated with restoration planning, implementation, and monitoring. The third settlement, filed in October 2018, required the responsible parties to pay a total of \$75,725,000, reimbursing the NRD trustees<sup>1</sup> and response agencies from multiple states, including Kansas, and seven northeastern Oklahoma tribes for their past and future response costs, past NRD assessment costs, and trustee costs associated with restoration planning, implementation, and monitoring. However, of the roughly \$76 million settlement, the Kansas Trustees are proposing to spend only a small portion, approximately \$183,000 (~\$81,000 from the American Zinc, Lead, and Smelting Company Site in Caney, Kansas; ~\$102,000 from the East LaHarpe Smelter Site), for the proposed restoration project identified in this RP/EA. An additional approximately \$117,000 from the 2011 settlement with Blue Tee Corp. and the settlement with U.S. Steel would be used to make up the difference needed to fund the proposed restoration. In total, the Trustees are planning to spend approximately \$300,000 to support planning, implementation, and monitoring of restoration activities associated with the Preferred Alternative identified in this RP/EA.

## **1.6 Public Participation**

Public participation and review are an integral part of the restoration planning process and is specifically required in the CERCLA NRDAR regulations (e.g., 43 C.F.R. §11.81(d)(2)). In addition, NEPA and its implementing regulations require that federal agencies fully consider the environmental impacts of their proposed decisions and that such information is made available to the public.

The Draft RP/EA will be open for public comment for 30 days from the date of publication in the Topeka Capital Journal. After consideration of public comments, and if the RP/EA is approved, the Trustees may implement the preferred alternative described herein. The Trustees will address public comments and will document responses to those comments as part of the final RP/EA. Interested individuals, organizations, and agencies may submit comments by writing or emailing:

Gibran Suleiman  
2609 Anderson Manhattan, KS 66502  
Gibran\_Suleiman@fws.gov

Copies of this document are available online at:

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<sup>1</sup> The trustees awarded restoration planning, implementation, and monitoring funds included DOI, the states of Kansas, Oklahoma, Montana, Missouri, and Illinois, and seven Oklahoma tribes.

Physical copies of the document are also available for review by interested members of the public at the address listed above. Trustees have also maintained records documenting the information considered and actions taken during this NRDAR process. Arrangements must be made in advance to review or obtain copies of records by contacting the U.S. Fish and Wildlife Service representative listed above.

As restoration progresses, the Trustees may amend the RP/EA if significant changes are made to the types, scope, or impact of the proposed project. In the event of a significant modification to the RP/EA, the Trustees will provide the public with an opportunity to comment on that particular amendment.

## **1.7 Organization of the Draft RP/EA**

The chapters that follow describe the injury to natural resources at and in the vicinity of the Sites (Section 2), proposed restoration alternatives (Section 3); and the affected environment and the probable consequences on the human environment that may result from the implementation of the preferred alternative (Chapter 4); and the potential cumulative impacts from the proposed activities, including past, current, and foreseeable future projects (also Chapter 4).

## **2.0 Summary of Injury to Natural Resources**

Lead and zinc ores were discovered in Cherokee County, Kansas in 1870 near the present-day location of the town of Galena. Ore bodies were subsequently discovered in various locations throughout the southeastern half of Cherokee County. Mining activities in Cherokee County continued until closure of the Swalley Mine in Baxter Springs, Kansas in 1970. Total ore production during this time is estimated at more than 2.9 million tons of zinc and 650 thousand tons of lead. The total number of mines which operated within Cherokee County is estimated to be in the hundreds. Metal-bearing ores were initially processed in small smelters geographically associated with each mine. These smelters were either log-fired, or later, coal-fired. These early smelters could extract lead from the ores but were very inefficient at extracting the more valuable zinc.

The discovery of shallow natural gas fields in the 1890s north and west of Cherokee County, including Allen and Montgomery Counties, caused a profound change in how and where mined ore was processed (see Table 1 for list of Sites). Mining companies found it more economically feasible to build larger and more capable smelters at geographical locations where the natural gas fuel sources co-existed, rather than continuing to transport fuel to the smaller, less-capable, pre-existing smelters. So, as mining operations progressed, the number of small, site-located smelters combined into fewer, yet larger and more regional smelting operations, capable of processing several hundred tons of ore per week for both lead and zinc. More than 20 large smelters were constructed and operated from the mid-1890s until the mid-1970s. The locations of these larger, regional smelters share three common traits; the presence of shallow natural gas available for

fuel, the presence of a sufficiently large perennial stream, and the presence of, or ability to connect to, an existing rail line. These regional smelter sites occur in a NE-to-SW line approximately 60 miles long by 10 miles wide, crossing the Neosho and Verdigris River Watersheds.

Environmental impacts from these regional smelters are similar to other metal smelters of the era. Even at peak efficiency, the loss of 15% of the recoverable metals was unavoidable. As an example, the smelter at Galena processed approximately 72,000 pounds of ore per day (at 50% recoverable metal) during the year 1883, which would equate to a production loss of more than 5,400 pounds of metals per day. Metals were lost either through the smokestack to the atmosphere, remained in the processed ores, or remained in slag. Slag and other process by-products were commonly stored on-site with little prevention of the mobilization and migration of metals from the site. When the sites were closed, little if any action was taken to prevent the future release of hazardous materials from these sites. The smelters and affected watersheds are all within the Osage Cuestas geophysical province, thus providing similar ecological assemblages which exist and are all potentially affected at each site.

Smelter operations contaminated soil at the Sites with heavy metals, especially cadmium and lead, and zinc. Environmental effects associated with the smelter sites frequently include phytotoxicity of vegetation, causing de-vegetation of terrestrial, riparian, and aquatic habitat; food-chain contamination; reduction in aquatic and terrestrial population and community abundance and diversity; and direct mortality to biota. Accordingly, the Trustees determined that the natural resource injuries at the Sites include impairment and direct mortality of terrestrial organisms, including migratory birds, and the impairment of their terrestrial habitat.

Table 1. Operations period, size, and year of cleanup completion for Eastern Kansas Smelter Sites.

Site Name	Operations Period	Size (acres)	Cleanup Completion Year
<b>Neodesha</b>	1901 - 1917	7.5	2015
<b>Caney-American Zinc and Lead Smelting Co.</b>	1904 - 1920s	78	2015
<b>Caney-Owens</b>	1915 - 1931	8	2004
<b>Dearing</b>	1907 - 1919	20	2007
<b>E. LaHarpe</b>	1902 - 1918	22	On-Going
<b>Girard-CL#2</b>	1897 - 1925	7.8	2011
<b>Girard-Girard Zinc</b>	1880s - 1901	4.8	2011

### **3.0 Proposed Restoration Alternatives**

To compensate the public for injuries to natural resources resulting from releases of hazardous substances from the Sites, the Trustees are required to develop alternatives for the “restoration, rehabilitation, replacement, and/or acquisition of the equivalent of the natural resources and the services those resources provide” (43 C.F.R. §11.82 (a)). The Trustees identified the alternatives discussed in this draft RP/EA to compensate for the lost natural resources as a result of hazardous substances released by the operation of the former Site facilities. The Trustees focused restoration alternatives on acquiring the equivalent of natural resources by restoring degraded native tallgrass prairie habitat, acquiring and preserving existing native tallgrass prairie habitat, or a combination of those activities. Trustees evaluated the alternatives to determine if they provide sufficient type, quality, and quantity of ecological services to compensate for those lost due to contamination in the context of both site-specific and regulatory evaluation criteria (43 C.F.R. §11.82 (d)). The Trustees also evaluated whether significant effects may be associated with the proposed alternatives to restore the natural resources and services injured or lost due to the releases hazardous substances as required by NEPA (40 C.F.R. §1508.9(b)).

#### **3.1 Restoration Evaluation Criteria**

The CERCLA NRDAR Regulations at 43 C.F.R. Part 11 list ten factors for the Trustees to evaluate and consider when selecting a restoration alternative or project to pursue. Thus, these factors must be applied in restoration planning to identify a range of alternatives for consideration as well as to identify the restoration alternative(s) or project(s) that is/are best to pursue. When using settlement funds, compatibility with these factors does not necessarily mean an alternative or project will be funded; it only means that the Trustees may consider the alternative or project for possible funding. Further, the sums recovered and available for restoration are also a factor to be weighed by Trustees in choosing a restoration alternative or project for implementation.

The Trustees evaluated the alternatives to determine if they provide sufficient type, quality, and quantity of ecological services to compensate for those lost due to contamination in the context of the CERCLA NRDAR (43 C.F.R. §11.82 (d) (see following list of criteria)). Each of the ten factors listed in 43 C.F.R. §11.82 (d) are evaluated in Table 3. The Trustees also evaluated whether significant effects may be associated with the preferred alternatives to restore the natural resources and services injured or lost due to the releases hazardous substances as required by NEPA (40 C.F.R. §1508.9(b)).

##### Technical Feasibility (43 CFR § 11.82(d)(1)):

The selected restoration alternative must be technically sound. The Trustees considered the level of risk or uncertainty involved in implementing a project. A proven record of accomplishment demonstrating the success of projects utilizing similar or identical restoration techniques can be used to satisfy this evaluation criterion.

##### Cost Benefit (43 C.F.R. § 11.82(d)(2)):

The relationship of the expected costs of the proposed actions to the expected benefits from the

restoration, rehabilitation, replacement, and/or acquisition of equivalent resources. Projects with higher benefit to cost ratios are preferred.

Cost Effectiveness (43 C.F.R. § 11.82(d)(3)):

When two or more activities provide the same or similar level of benefits, the least costly activity providing that level of benefits will be selected.

Actual or Planned Response Actions (43 C.F.R. § 11.82(d)(4)):

The Trustees must consider the results of any actual or planned response actions when evaluating restoration alternatives.

Potential for Additional Injury Resulting from the Proposed Actions (43 C.F.R. § 11.82(d)(5)):

Trustees must identify the adverse impacts, both short and/or long term, from the project. Some short-term adverse impacts from implementation are expected, however, projects with large or long-term adverse impacts are not preferred.

Natural Recovery Period and the Ability of Resources to Recover without Restoration (43 C.F.R. § 11.82(d)(6-7)):

Trustees must consider the ability of injured natural resources to recover and the time required for that recovery if no restoration is undertaken to benefit injured natural resources. Trustees should also the time required to realize those benefits if the project is implemented.

Public Health and Safety (43 C.F.R. § 11.82(d)(8)):

The preferred alternative(s) should not pose a threat to the health and safety of the public.

Compliance with Laws, Regulations, and Policies (43 CFR § 11.82(d)(9-10)):

Development of this RP/EA requires consideration of a variety of legal authorities and their potentially applicability to the Preferred Alternative. As part of restoration planning process, the Trustees initiated steps to ensure compliance with applicable laws, regulations, and policies. Implementation of the Preferred Alternative remains subject to complying with all applicable all applicable laws and regulations.

Consistency with the Trustees Restoration Goals:

The preferred alternative should meet the Trustees' intent to directly restore the injured resources or the services those resources provide. Included in this criterion is the potential for success (meeting restoration goals) and the level of expected return of resources and resource services.

Additionally, actions undertaken to restore natural resources are anticipated to meet the Trustees' intent to directly restore the injured resources or services those resources provide. Along with being consistent with the Trustees' restoration goals, the potential for success (meeting restoration goals) and the level of expected return of resources and resource services should be considered by the Trustees. Proposed restoration actions are anticipated to have long-term beneficial and sometimes short-term adverse impacts to the physical, biological, socio-economic, and/or cultural environments. In the analysis in Section 4, the Trustees examine the likely beneficial and adverse impacts of three alternatives plus the No Action alternative on the quality

of the human environment.

### **3.2 Compliance with applicable/relevant laws, policies, and regulations**

All preferred alternatives must comply with all applicable federal, state, Tribal, and local laws, policies, and regulations. Federal natural resource and environmental laws, orders, and regulations considered during the development of this Draft RP/EA include, but are not limited to, the following acts and their implementing regulations: National Environmental Policy Act; Clean Water Act; Endangered Species Act of 1973; and National Historic Preservation Act of 1966. An explanation of how compliance will be met for the above-mentioned statutes is described below. Additional environmental compliance, including at the state, Tribal, or local level, may be required depending on the specific activities required for a restoration project.

#### **3.2.1 National Environmental Policy Act (NEPA)**

Actions undertaken by the Trustees to restore natural resources or services under CERCLA and other federal laws are subject to NEPA and its implementing regulations. These authorities outline the responsibilities of federal agencies in their decision-making process concerning proposed actions, including the federal agencies' responsibility to consider the relevant NEPA documentation. NEPA requires that an agency take a hard look at actions that have the potential to significantly affect the human environment. If an impact is considered significant, then an Environmental Impact Statement (EIS) is prepared. If the impact is considered in an Environmental Assessment (EA) and determined to be not significant then a Finding of No Significant Impact is issued. Certain types of agency actions are categorically excluded from preparation of an EA or EIS if the agency determines the action has no significant individual or cumulative effect on the quality of the human environment (40 C.F.R. § 1508.4) and the action does not meet any of the extraordinary circumstances in section 43 C.F.R. § 46.215. If the action does meet any of the extraordinary circumstances, further analysis and environmental documents must be prepared for the action.

Compliance: In accordance with NEPA and its implementing regulations, this Draft RP/EA summarizes the affected environment for the proposed restoration actions; describes the purpose and need for restoration actions; identifies a reasonable range of alternatives; assesses the environmental consequences of the proposed restoration actions, including cumulative impacts; and summarizes the opportunity the Trustees will provide for public participation in the decision-making process. After conducting the NEPA analysis, the Trustees may conclude that the impacts associated with the restoration actions identified herein do not meet the threshold requiring an EIS. Several activities described as part of Alternative B meet the criteria for categorical exclusions (Table 2), although some actions require analysis in an EA, which is provided herein.

Table 2. List of restoration actions and associated categorical exclusions.

<b>Restoration Action</b>	<b>Categorical Exclusion</b>	<b>Citation</b>
<b>Habitat surveys and restoration monitoring activities</b>	Nondestructive data collection, inventory (including field, aerial, and satellite surveying and mapping), study, research, and monitoring activities.	43 C.F.R. § 46.210(e)
<b>Fire management activities for the purpose of native habitat restoration and enhancement</b>	Fire management activities, including prevention and restoration measures, when conducted in accordance with Departmental and Service procedures	DM 516 8.5 B.5
<b>Prescribed burning for native habitat enhancement</b>	The use of prescribed burning for habitat improvement purposes, when conducted in accordance with local and State ordinances and laws.	DM 516 8.5 B.4
<b>Inventory and monitoring of plants and animals</b>	Research, inventory, and information collection activities directly related to the conservation of fish and wildlife resources which involve negligible animal mortality or habitat destruction, no introduction of contaminants, or no introduction of organisms not indigenous to the affected ecosystem.	DM 516 8.5 B.1
<b>Fencing, small water control structures, planting of seeds or seedlings, and other minor revegetation</b>	The construction of new, or the addition of, small structures or improvements, including structures and improvements for the restoration of wetland, riparian, instream, or native habitats, which result in no or only minor changes in the use of the affected local area.	DM 516 8.5 B.3



### **3.2.2 Clean Water Act**

The Clean Water Act (33 U.S.C. § 1251, et seq.) is the principal law governing pollution control and water quality of the Nation's waterways. Section 404 of the Clean Water Act authorizes a permit program to regulate the discharge of dredged or fill material in navigable waters. The U.S. Army Corps of Engineers (USACE) administers the program.

Compliance: There is a small wetland area within the boundaries of the proposed restoration project (Alternative B). The Trustees do not intend to allow for the filling of or impacts to wetland habitat on-site. Therefore, coordination with the USACE is not required prior to implementing the proposed restoration.

### **3.2.3 Endangered Species Act (and other regulations protecting fish, wildlife, and plants)**

The federal Endangered Species Act (ESA; 16 U.S.C. § 1531, et seq., 50 C.F.R. Parts 17, 222, 224) directs all federal agencies to conserve threatened and endangered (T&E) species and their habitats and encourages such agencies to utilize their authority to further these purposes. Under the ESA, the National Oceanic and Atmospheric Administration - National Marine Fisheries Service and FWS publish lists of endangered and threatened species. Section 7 of the ESA requires that federal agencies consult with these agencies to minimize the effects of federal actions on endangered and threatened species.

Compliance: The Preserve, inclusive of the parcel proposed for acquisition, preservation, restoration (Alternative B), contains one of the largest known populations of Mead's milkweed (*Asclepias meadii* Torr.), a federally-listed plant species. Acquisition of the Preserve by The Nature Conservancy was motivated in part by the need to protect the extant population of Mead's milkweed and its habitat. Conservation of Mead's milkweed is therefore a major driver in management decisions on the Preserve. Because of its ecological importance, management of the species has been and will continue to be undertaken with input from leading experts and follow guidelines in the U.S. Fish and Wildlife recovery plan (U.S. Fish and Wildlife Service 2003).

Because of the preservation and restoration nature of the proposed restoration project and the best management practices (BMPs) that will be used, the Trustees anticipate only minor and temporary adverse impacts to the biological environment. The Trustees will conduct necessary ESA Section 7 consultations with FWS prior to implementation of any future restoration activities proposed under this plan. Such consultations would begin before implementation of a specific project but may be completed and/or updated during a project's planning or design phase. The results of the consultation will be documented and appended to the administrative record for this NRDAR case.

### **3.2.4 National Historic Preservation Act (NHPA)**

The National Historic Preservation Act (NHPA) established a process to preserve historical and

archaeological sites affected by projects directed or funded by the federal government. Compliance with the NHPA will be undertaken through consultation with the Kansas State Historic Preservation Officer and Tribal Historic Preservation Officers from potentially affected tribes. If an eligible historic property or archeological resource is within the area of the Preferred Alternative, then an analysis would be made to determine whether the alternative would have an adverse effect on historic properties or archaeological resources. The Trustees are not aware of any historic properties or archaeological resources within or in proximity to the boundaries of the proposed restoration site, and thus, do not anticipate any adverse effects on historic properties or archaeological sites. However, as discussed above, FWS will complete a review of the project under section 106 of the NHPA prior to conducting any activities that have the potential to effect historic or cultural resources.

Cultural resources are those parts of the physical environment, natural and built, that have cultural value to some socio-cultural groups and human social institutions. Cultural resources include historic sites, archeological sites and associated artifacts, sacred sites, traditional cultural properties, cultural items, and buildings and structures. Most cultural resources concerns can be identified through the Section 106 process of the NHPA.

### **3.3 Alternative A: No Action Alternative (Natural Recovery)**

As required under CERCLA and NEPA, the Trustees considered a No Action alternative. Under this alternative, the Trustees would rely on natural recovery and would take no direct action to restore injured natural resources or compensate for interim losses of natural resource services. This alternative would include the continuance of any ongoing monitoring programs by federal, state, or tribal agencies and/or non-governmental organizations but would not include additional activities aimed at acquiring property and preserving and restoring the ecosystem through protection mechanisms and restoration actions. Under this alternative, no compensation would be provided for interim losses in resource services.

### **3.4 Alternative B: Parcel Acquisition, Preservation, and Restoration (Preferred)**

This alternative aims to acquire an approximately 77-acre parcel adjacent to the Anderson County Prairie Preserve and place it under ownership of The Nature Conservancy and management by the Kansas Biological Survey, providing for enhanced native tallgrass prairie natural resource services, including migratory bird habitat nesting, foraging, and resting habitat. The Trustees have identified a parcel of interest and verified that it is a high- quality native tallgrass prairie presently for sale by the property owner. Under the currently proposed approach, TNC would purchase the property and the state of Kansas would reimburse TNC using settlement funds described in Section 1.5 of this RP/EA. The Nature Conservancy would retain the entire property to acquired and restored for as long as it continues to own the Anderson County Prairie Preserve. There are no foreseen circumstances where TNC would sell or transfer the property. If, however, the property was ever to be transferred, the conservation values would be protected in perpetuity by transferring to another conservation organization or agency, or by placing an easement on it prior to a sale.

The Trustees anticipate restoration and management actions will include prescribed burning, invasive plant management through mechanical or chemical treatment, surface regrading o remove agricultural terraces and restore natural hydrology, reseeding using native seed mix, and monitoring. Restoration monitoring activities may include assessment of native plant diversity of the parcel to be acquired, ensuring that focal species presence and/or establishment of plant species is similar to other native tracts within the Anderson County Prairie Preserve. The Trustees foresee that very few and most likely no undesirable trees or other invasive woody vegetation would need to be removed by mechanical or chemical means. Management of high-quality native prairie would seek to maintain (and in the case of slightly lower quality native prairie) optimize the diversity of native prairie species primarily through a combination of prescribed burning and haying. Optimizing the quality of native prairie would in turn provide optimal habitat for terrestrial organisms, including migratory birds.

The Trustees plan to spend approximately \$300,00 for activities associated with Alternative B, including land acquisition, transaction fees, and stewardship costs.

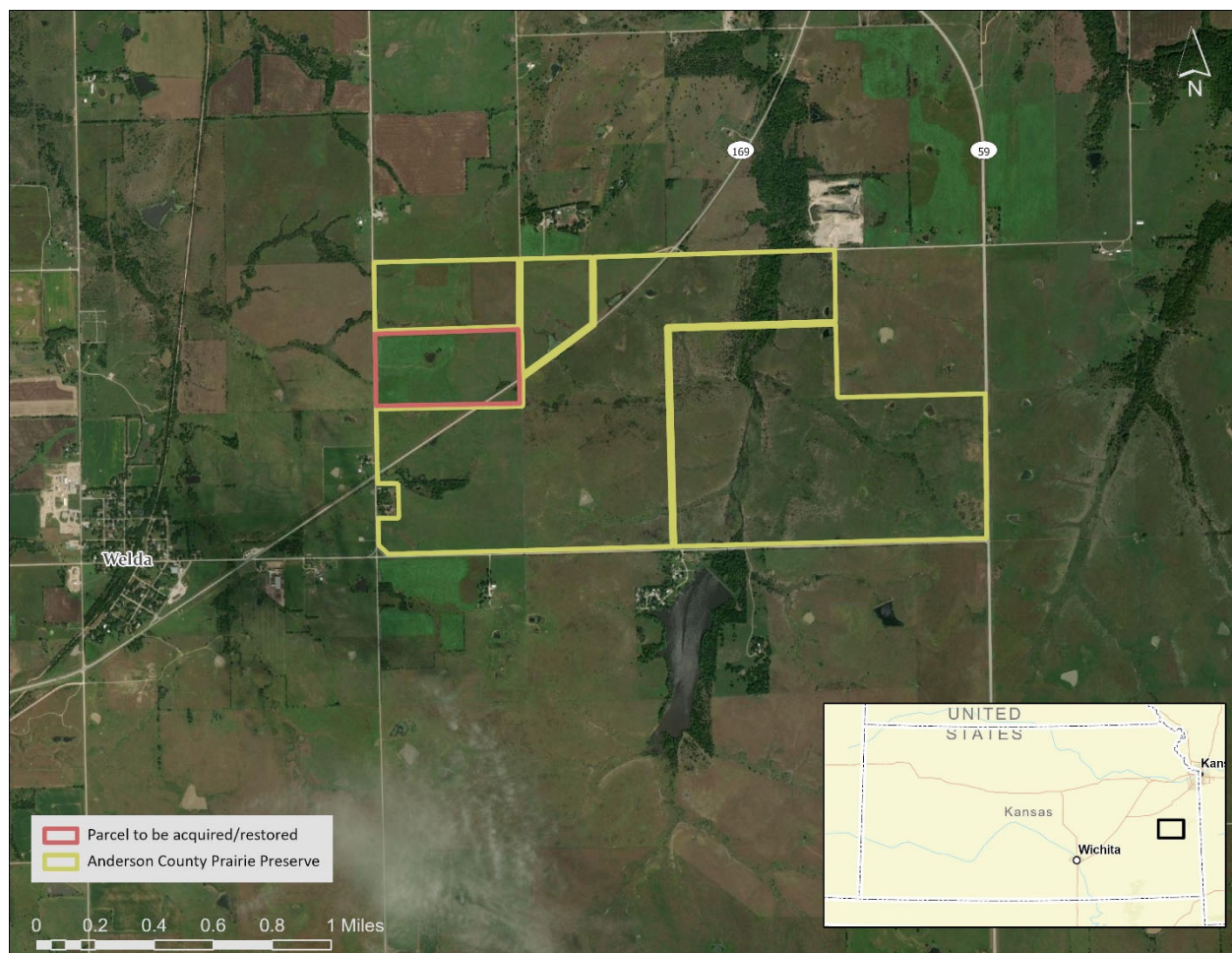


Figure 1. Proposed parcel to be acquired and restored (Alternative B) in relation to the Anderson County Prairie Preserve located in southeastern Kansas.

### **3.5 Alternative C: Restoration of Degraded Native Prairie**

This alternative is aimed at improving the quality of existing, moderate- to low-quality native tallgrass prairie such that it becomes similar to a high-quality native prairie. Degradation can occur from over-grazing, proliferation of non-native plant species, and the lack of fire or mowing. Habitat improvement would be accomplished by restoring native prairie pastures that are degraded in terms of the quality of their vegetative communities. Prairie quality can be determined using the floristic quality index (FQI), a measure developed by the Kansas Biological Survey (KBS) to evaluate the quality of vegetative communities in Kansas. Areas to be restored would ideally be purchased from willing landowners, although the feasibility of land purchase would vary by project.

Additional restoration actions may include removing undesirable trees and other invasive vegetation by appropriate means, including mechanical and chemical treatment. Management actions associated with restored degraded native prairie would seek to optimize the diversity of native prairie species, primarily through a combination of prescribed burning and haying. Optimizing the quality of native prairie would in turn provide favorable habitat for terrestrial organisms, including migratory birds.

### **3.6 Alternative D: Preservation of High-Quality Native Prairie**

This alternative aims to preserve remnants of native prairie that exist, usually as hay meadows, in southeastern Kansas counties. The Trustees have prioritized native prairie parcels, particularly those containing the highest vegetative quality and being the most biologically intact. This would be accomplished by direct purchase of property from willing landowners. For this alternative, the first task would be to identify those areas of native prairie that remain and to evaluate the ecological condition of each.

Similar to Alternative C, removal of undesirable trees and other invasive vegetation would be accomplished by appropriate means, including mechanical and chemical treatment. Management actions associated preserving high-quality native prairie would seek to optimize the diversity of native prairie species, primarily through a combination of prescribed burning and haying. Optimizing the quality of native prairie would in turn provide favorable habitat for terrestrial organisms, including migratory birds.

### 3.7 CERCLA NRDAR Factor Evaluations

Table 3. Evaluation of alternatives using restoration criteria.

Restoration Criteria	Alternative A: No Action	Alternative B: Parcel Acquisition, Preservation, and Restoration (Preferred)	Alternative C: Restoration of Degraded Native Prairie	Alternative D: Preservation of High-Quality Native Prairie
<b>Technical Feasibility</b>	The No Action alternative is technically feasible.	Activities included in this alternative are technically feasible and likely to result in conservation of similar resources injured.	Activities included in this alternative are technically feasible and likely to result in conservation of similar resources injured.	Activities included in this alternative are technically feasible and likely to result in conservation of similar resources injured.
<b>Cost Benefit</b>	The No Action alternative is assumed to be the least costly alternative. However, it also provides less benefits when compared to the Preferred Alternative over a similar period. Therefore, the No Action alternative does not have a favorable benefit-to-cost ratio.	The Trustees anticipate favorable benefit-to-cost ratios given the success of similar restoration in adjacent parcels and that the project is focused on multiple resources and services. Project has clear goals and objectives, both of which are measurable.	The Trustees anticipate favorable benefit-to-cost ratios given the success of similar restoration at the Preserve and that the project is focused on multiple resources and services.	The Trustees anticipate favorable benefit-to-cost ratios given the success of similar restoration at the Preserve and that the project is focused on multiple resources and services.

Table 3. Continued.

<b>Cost Effectiveness</b>	The No Action alternative is assumed to be less costly than if the Trustees were to pursue restoration under the Preferred Alternative; however, the No Action alternative does not address interim losses of natural resources and services, whereas the Preferred Alternative does, and therefore provides greater benefits.	Project has been developed to be cost-effective, as restoration elements, including prescribed burns and invasive plant management, are habitat enhancement actions that have been shown to be relatively inexpensive and supported by best available information.	This project type has been shown to be cost-effective, as restoration elements, including prescribed burns and invasive plant management, are habitat enhancement actions that have been shown to be relatively inexpensive and supported by best available information.	This project type has been shown to be cost-effective, as habitat preservation and long-term stewardship are actions that have been shown to be relatively inexpensive and supported by best available information.
<b>Actual or Planned Response Actions</b>	Any actual or planned response activities have no impact on the No Action alternative and vice versa.	There are no remedial response activities proposed that will affect implementation of Alternative B.	There are no remedial response activities proposed that will affect implementation of Alternative C.	There are no remedial response activities proposed that will affect implementation of Alternative D.
<b>Adverse Impacts from Project</b>	Does not cause further injury but provides no benefits to offset interim losses.	Majority of impacts are anticipated to be positive and long-term, although short-term adverse impacts are expected from habitat management activities, such as prescribed fire. Short-term impacts are expected to be far outweighed by the longer-term benefits of this Alternative.	Majority of impacts are anticipated to be positive and long-term, although short-term adverse impacts are expected from habitat management activities, such as prescribed fire. Short-term impacts are expected to be far outweighed by the longer-term benefits of this Alternative.	Majority of impacts are anticipated to be positive and long-term, although short-term adverse impacts are expected from habitat management activities, such as prescribed fire. Short-term impacts are expected to be far outweighed by the longer-term benefits of this Alternative.

Table 3. Continued

<b>Natural Recovery Period and the Ability of Resources to Recover without Restoration</b>	<p>The natural recovery period would likely take many decades, especially in areas where there is residual contamination. In areas of lesser contamination, the natural recovery period is variable and dependent on site-specific factors. Where contamination can be transported (e.g., by water) or immobilized by natural process, the recovery period would be less.</p>	<p>The recovery period to restore or enhance prairie habitat for migratory birds and associated ecological services would be less than recovery period for the No Action alternative.</p>	<p>The recovery period to restore or enhance prairie habitat for migratory birds and associated ecological services would be less than recovery period for the No Action alternative.</p>	<p>The recovery period to restore or enhance prairie habitat for migratory birds and associated ecological services would be less than recovery period for the No Action alternative.</p>
<b>Public Health and Safety</b>	<p>Any potential public health and safety issues or concerns that exist under current and future natural resource management activities would likely remain the same.</p>	<p>The Trustees will follow all applicable best management practices, including for prescribed fire activities, to minimize risk to public health and safety.</p>	<p>The Trustees will follow all applicable best management practices, including for prescribed fire activities, to minimize risk to public health and safety.</p>	<p>The Trustees will follow all applicable best management practices, including for prescribed fire activities, to minimize risk to public health and safety.</p>



Table 3. Continued.

<b>Compliance with Laws and Policies</b>	The No Action alternative does not meet the requirements and goals of CERCLA NRDAR process to provide for restoration that compensates the public for the injury and loss of the natural resources and services caused by releases of hazardous substances.	Compliant with applicable/relevant laws, policies, and regulations.	Compliant with applicable/relevant laws, policies, and regulations.	Compliant with applicable/relevant laws, policies, and regulations.
<b>Consistency with the Trustees Restoration Goals and Objectives</b>	The No Action alternative would not provide for restoration, replacement, enhancement or acquisition of injured natural resources, making this alternative inconsistent with Trustee restoration goals.	Consistent with restoration goals listed in Section 1.2 of this RP/EA.	Consistent with restoration goals listed in Section 1.2 of this RP/EA.	Consistent with restoration goals listed in Section 1.2 of this RP/EA.



## 4.0 Environmental Assessment

In accordance with CERCLA NRDAR regulations (43 C.F.R. § 11.93), the Trustees' primary goal in this section is to evaluate restoration alternatives that compensate the public for natural resource injuries and associated losses resulting from releases of hazardous substances from the Sites. In Sections 4.3 through 4.6, the environmental consequences of the No Action, Alternative B (Preferred Alternative), Alternative C and Alternative D are assessed to determine whether implementation of any of these alternatives may significantly affect the quality of the human environment, particularly with respect to physical, biological, socio-economic, or cultural environments. Lastly, the Trustees make a conclusion at the end of the evaluation for each of Sections 4.3 through 4.6 identifying whether it is a preferred alternative and should be implemented in the event the FWS issues a Finding of No Significant Impact. Cumulative impacts associated with the Preferred Alternative are evaluated in Section 4.7.

The following definitions will be used to characterize the nature of the various environmental consequences evaluated in this Draft RP/EA:

- *Short-term or long-term impacts.* In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period. Long-term impacts are those that are more likely to be persistent and chronic.
- *Direct or indirect impacts.* A direct impact is caused by a proposed action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- *Negligible, minor, moderate, or major impacts.* These relative terms are used to characterize the magnitude of an impact. Negligible impacts are generally not quantifiable and do not have perceptible impacts on the human environment. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively inconsequential effect. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification or measurement. Major impacts are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth under NEPA (40 C.F.R. § 1501.3) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the requirements of NEPA.
- *Adverse or beneficial impacts.* An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.
- *Cumulative impacts.* Cumulative impacts are defined as the "effects on the environment which result from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non- federal) or person undertakes such other actions" (40 C.F.R. § 1508.1(g)(3)). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time within a geographic area.

## 4.1 Affected Environment

The following text in this section provides summary information about the physical and biological setting, area demographics, and cultural and historical resources.

Potential areas for restoration, including all the alternatives considered in this RP/EA, are situated primarily within the Osage-Cuesta physiographic region and the Central Irregular Plains Ecoregion (Karstensen 2009). This region consists of gently undulating cuesta plains composed of several alternating layers of sandstone, limestone, and shale. The topography in this region is distinct from the more dramatic rolling hills of the Flint Hills to the west. Potential natural vegetation ranges from a mosaic of mostly tallgrass prairie in the west to a mixture of tallgrass prairie and oak-hickory forest in the east, with floodplain forests along streams. Soils consist primarily of moist, silty clay loams which are formed in material weathered from limestone and shale, and support a land use composite of cropland, woodland, and grassland/rangeland. Much of the area in this region is rural and consists of either pastureland or row crop agriculture, where the primary crops are wheat, corn, and sorghum.

The project area for Alternative B is bound north, east and south by the Anderson County Prairie Preserve, currently comprising approximately 1,300 acres (554 ha) in eastern Kansas between the towns of Garnett and Welda in Anderson County (Figure 1). The west side of the project area is adjacent to SW Missouri County Road, and U.S. Highway 169 splits the property near the southeast corner. The Nature Conservancy acquired the initial 80-acre (32-ha) Preserve in 1996 and an adjacent 50 acres (20 ha) in 1998. An additional 1,192 acres (482 ha) was purchased in 2003. Under a 2006 agreement with TNC, management of the Preserve became the responsibility of the KBS. Management actions by KBS and the University of Kansas Research Center are guided by an ecological management plan, which define management goals, summarizes background elements, articulates a management philosophy, describes ecological management techniques, and specifies conservation actions that move toward the vision for the Preserve. The Preserve contains a core area of about 1,050 acres (425 ha) and two, 160-acre (65-ha) satellite sites located within 3.5 miles of the core. Most of the acreage has been utilized as pasture/native rangeland. The remaining land includes native hay meadows, restored prairie, and former cropland.

The Preserve is located within the Osage Plains section of the Osage Plains/Flint Hills Prairie ecoregion. The Preserve lies within the 125,852-acre (50,930 ha) Anderson County Prairies Conservation Area, designated in the TNC Ecoregional Conservation Plan (TNC 2000) as a large functional site. The Anderson County Prairies Conservation Area, including the Preserve and project area for Alternative B, encompasses a mosaic of level to rolling prairies, gallery forests, and cropland. Its significance lies in containing a relatively large number of unplowed tallgrass prairie tracts supporting a diversity of rare plants and animals. The area supports the world's largest known population of the federally threatened Mead's milkweed (*Asclepias meadii* Torr.), and this species is abundant on parts of the Preserve. Likewise, the Anderson County Prairies Conservation Area supports a remnant population of the Greater Prairie-Chicken (*Tympanuchus cupido*), other declining grassland birds, populations of the globally rare prairie mole crickets (*Gryllotalpa major*) and Regal Fritillary butterfly (*Speyeria idalia*), and a dozen other species that are rare in Kansas — some of which are present on the Preserve.

The project area for Alternative B is currently all grassland in good condition and hayed annually. The east half of the area, approximately 36 acres, is warm season native prairie with good diversity, whereas the west half, approximately 41 acres, is primarily cool season fescue and brome non-native grasses. Historically, the west portion of the property had been farmed, tilled and terraced, but available imagery shows that it has been in grassland for at least 35 years. Located near the center of the property is a small 1-acre earthen-dam pond, otherwise there are no other permanent or improved water sources. A barbed-wire fence runs the perimeter of the parcel except along both sides of U.S. Highway 169. Approximately 10 acres in the northwest portion of the property is fenced separately and accessed through three gates. There are no building structures or utility lines on the property. According to National Wetlands Inventory data, there is a small wetland area in the southeast corner of the property adjacent to U.S. Highway 169.

Staff with KBS has confirmed the presence of three sensitive species on the property. Of these, only one species is federally protected under the Endangered Species Act, the threatened Mead's milkweed (*Asclepias meadii* Torr; USFWS 1988). Kansas Biological Survey staff has also recognized the presence of the prairie mole cricket (*Gryllotalpa major*) and crawfish frog (*Lithobates areolate*), which are species listed by the state as species in need of conservation (KDWP 2022). Mead's milkweed is a long-lived, perennial, self-incompatible, prairie forb that occurs mainly on sites that have never been plowed or grazed heavily. Mead's milkweed usually begins its seasonal growth in mid- to late April. Flowering occurs in late May and early June. Fruits appear by late June, and seeds mature by September. Plants also perpetuate themselves through an underground rootstock. Kansas Biological Survey staff have been evaluating general responses of Mead's milkweed to management activities, including grazing, fire, resting (i.e., absence of management), and restoration. Although additional research is still warranted, implementation of management practices known to be compatible with the species (e.g., burning and haying) and a cautious approach to practices that are of concern (e.g., grazing) is required to manage the landscape to protect the species and provide the conditions for its survival and long-term persistence on the Preserve.

Based on U.S. Census Bureau data for Anderson County, Kansas, the population in 2020 was approximately 7,800. Population density was approximately 14 persons per square mile. Welda, with an estimated population of approximately 100 persons in 2020, is the closest town to the proposed restoration project area. Garnett is the largest city by population in Anderson County. U.S. Census Bureau data for Garnett show a population of approximately 3,200 persons in 2020. The most common industries in Anderson County include health care and social assistance, educational services, retail trade, agriculture, and construction.

The area now known as Anderson County was part of the territory occupied by the Kanza Indians when Euro-Americans began moving into the region. In 1837 the Pottawatomie Indians were moved from their homelands in Indiana to a reservation in the Kansas Territory, which included present day Anderson County. The first Euro-American settlement in the county commenced in 1854. When the Government Land Office survey was completed in the middle part of the nineteenth century, the county was estimated to be 94% prairie and 6% forest. The town of Welda, within one mile of the Preserve, was surveyed and platted in 1873 near the

railway station of the same name that was established in 1870. The main industry of the area in the early 1880s was the baling and shipping of prairie hay, estimated to be several thousand tons annually (Cutler 1883).

#### **4.2 Components Not Affected or Not Analyzed in this Document**

The following components have been identified as not being present, affected, or analyzed. These components are not brought forward for additional analysis in this Draft RP/EA:

- Social/Economic/Environmental Justice – No social or economic impacts are expected from the proposed restoration project because low-income populations will not be adversely affected due to the nature of Preferred Alternative and the intended beneficial environmental outcomes.
- Cultural and Historic Resource Concerns – The Trustees will consult with the Kansas State Historic Preservation Office prior to implementing any restoration activities.
- Health and Safety – The Trustees do not foresee any health and safety issues with land management activities implemented to preserve or enhance ecological resources. A Phase I environmental site assessment has been completed, confirming there is no existing contamination or other health and safety issues on the proposed restoration parcel.

#### **4.3 Evaluation of and Conclusion on Alternative A: No Action/Natural Recovery Alternative**

The Trustees found that the No Action Alternative would not meet the purpose and need for restoration under either this Draft RP/EA or the responsibilities of the Trustees under CERCLA, including as defined by NRDAR procedures under CERCLA and guided by the Restoration Evaluation Criteria. Therefore, the No Action Alternative is not a preferred restoration alternative when evaluated against the NRDAR evaluation criteria.

#### **4.4 Evaluation of and Conclusion on Alternative B: Parcel Acquisition, Preservation, and Restoration (Preferred)**

Overall, the long-term beneficial impacts associated with implementing Alternative B are anticipated to outweigh any short- or long-term adverse impacts described below. The acquired parcel will be managed to ensure long- term protection of wildlife habitat, particularly those beneficial to migratory birds. In addition to management actions described in this RP/EA, the property owner and manager will be able to implement monitoring and long-term stewardship activities meant to ensure existing natural resource services and aesthetic values are conserved into the future.

The Trustees considered potential adverse effects associated with prescribed burns and pesticide

use on the parcel to be acquired and restored. Burning and/or pesticide may be used to affect habitat structure and control invasive species, which may have short-term negative consequences for some species occurring on the parcel. However, the long-term benefits to wildlife species that depend on habitats having a high percentage of native plant species would far outweigh the short-term impacts. The Trustees would ensure that the implementing entity, whether it be a governmental, private, or non-governmental organization, would follow BMPs when implementing habitat management, including proper use of pesticides; and burning would meet health and safety guidelines and habitat enhancement recommendations recommended or approved by the Trustees.

Regarding herbicide usage to control invasive species, such actions could cause direct, short-term, moderate adverse impacts to soils, water, air, biological resources, and land use. These impacts would result from the potential for lethal effects on soil biota and the short-term loss of shading and habitat for prey species provided by the invasive plant. The potential impacts to birds, other terrestrial organisms, and aquatic organisms will be mitigated by the use of the least toxic herbicides, surfactants, and spray pattern indicators available, but sub-lethal impacts are possible. Potential impacts to non-target plant species are reduced when proper application methods are prescribed and followed, but rainfall and wind may cause herbicides to leach into the surrounding soil or to be transported to non-invasive plants, causing unintentional damage. BMPs, including use of a certified applicator, using herbicides approved for application within wetlands, and placement of straw wattles or similarly functioning materials to trap sediment, would be employed when herbicides are used. A project area may be treated several times per year, often for multiple years, to control regrowth of invasive plants. Where feasible, the area will be regularly monitored for regrowth of the target or new invasive species. Generally, use of herbicides in project areas would be conducted according to established protocols for the locality, as determined by a licensed herbicide applicator. Such protocols would include information and guidelines regarding the appropriate chemical to be used, as well as the timing, amounts, application methods, and safety procedures relevant to the herbicide application.

The Trustees found this alternative to meet all the Restoration Evaluation Criteria (see Table 3), including alignment of the proposed project and the Trustees' restoration goals identified in Section 1.2. The Trustees anticipate this alternative to have primarily beneficial direct and indirect long-term impacts in the form of natural resource preservation and improved land management activities enhancing wildlife populations. Alternative B includes a combination of actions – acquisition, restoration, and preservation – which increase the likelihood of accomplishing the Trustees' restoration goals. For these reasons, Alternative B is the Preferred Alternative.

#### **4.5 Evaluation of and Conclusion on Alternative C: Restoration of Degraded Native Prairie**

Overall, the beneficial and potential adverse impacts of Alternative C are anticipated to be similar to those of Alternatives B and D. However, whereas Alternative B provides for the long-term preservation of native prairie natural resources and associated services, Alternative C may only provide desired services for a defined period, where long-term preservation is uncertain.

The Trustees found this alternative to meet all the Restoration Evaluation Criteria (see Table 3), including alignment of the proposed project and the Trustees' restoration goals identified in Section 1.2. This alternative also meets the purpose and need statement in Section 1.1. The Trustees anticipate this alternative to have primarily beneficial direct and indirect long-term impacts in the form of enhanced land management activities, including benefits to local wildlife populations. Although Alternative C meets all the Restoration Evaluation Criteria and purpose and need statement in this RP/EA, it does not provide the same suite of benefits as Alternative B. For this reason, Alternative C is not currently a preferred alternative.

#### **4.6 Evaluation of and Conclusion on Alternative D: Preservation of High-Quality Native Prairie**

Overall, the beneficial and potential adverse impacts of Alternative D are anticipated to be similar to those of Alternatives B and C. The Trustees found this alternative to meet all the Restoration Evaluation Criteria (see Table 3), including alignment of the proposed project and the Trustees' restoration goals identified in Section 1.2. This alternative also meets the purpose and need statement in Section 1.1. The Trustees anticipate this alternative to have primarily beneficial direct and indirect long-term impacts in the form of preservation of native prairie natural resources and associated services. Although Alternative D meets all the Restoration Evaluation Criteria and purpose and need statement in this RP/EA, it does not provide the same suite of benefits as Alternative B. For this reason, Alternative D is not currently a preferred alternative.

#### **4.7 Cumulative Impacts**

The Preferred Alternative in this draft RP/EA is anticipated to have a cumulative impact that is long-term and beneficial. Terrestrial habitat and natural resource services provided, such as reducing soil runoff, increasing soil carbon storage, and provision of habitat for migratory birds, will be protected by the property owner and long-term management. The acquired habitat will add to the conservation values being provided for by the Anderson County Prairie Preserve. The Trustees do not anticipate the Preferred Alternative to result in significant cumulative impacts on the human environment since it alone, or in combination with other current and future activities in the vicinity, will not result in a substantial change to current land management or use in the nearby area.

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