

**U.S. Department of the Interior
Bureau of Land Management**

**Decision Record
Finding of No Significant Impact
Environmental Assessment
DOI-BLM-NM-0060-2015-2-EA
January 6, 2015**

Prescribed Burning on the Cross Bar Management Area

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Bureau of Land Management
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**DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
AMARILLO FIELD OFFICE**

Project: Prescribed Burning on the Cross Bar Management Area

EA Log Number: DOI-BLM-NM-0060-2015-02-EA

Location: Potter County, Texas (~ 15 miles north of the city of Amarillo, TX)

Decision Record

DECISION: It is my decision to implement the prescribed burning procedures, which involves all necessary planning, surveying, and fire lane/break and road maintenance. Based upon the analysis provided, Alternative A—Proposed Action is approved as described in the attached Environmental Assessment (EA). Short-term impacts would occur on the Cross Bar Management Area and they have been analyzed.

- Alternative A—Proposed Action is the environmentally-preferred alternative.
- Alternative A is a natural component of the surrounding ecosystem therefore does not cause unnecessary damage
- Complying with Best Management Practices and Mitigation Measures will alleviate or minimize environmental impacts.

RATIONALE: The Bureau of Land Management staff have reviewed the environmental assessment and identified site-specific mitigation measures to avoid or minimize surface impacts resulting from implementation of the project. The cumulative impacts to the environment from procedural prescribed burning have been identified. The proposed action is in conformance with the Texas Resource Management Plan and Environmental Impact Statement (August 1995), as amended and its Record of Decision (May 1996) and conforms to the land-use planning terms and conditions required under 43 CFR 1610.5.

ADMINISTRATIVE REVIEW AND APPEAL: Under BLM regulations, this decision record is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision record must include information required under 43 CFR 3166.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, New Mexico State office, 301 Dinosaur Trail, Santa Fe, NM 87508, no later than 20 business days after this Decision Record is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3166.4.

Approved by:

Robert Jolley (Field Manager AmFO)

Date

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Finding of No Significant Impact

Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that Alternative B—Proposed Action is not expected to have significant impacts on the environment and that preparation of an Environmental Impact Statement is not required.

Prepared by:

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Natural Resource Specialist, AmFO

Date: _____

Reviewed by:

Cindy Sundblad
Planning & Environmental Coordinator, AmFO

Date: _____

Approved by:

Robert Jolley
Field Manager, AmFO

Date: _____

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1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze the environmental impacts of prescribed burning on the Cross Bar Management Area (CMA) and adjacent private landowners. The project would include procedures for the following: cultural surveying of any identified units or sections of the CMA, creating a fire break system (e.g. existing roads or creating new fire breaks) in areas that are proposed for burning, contacting all the necessary entities before burning, coordinating with local and state fire crews for assistance with planning and fire suppression, and gathering vegetation data (e.g. density, canopy coverage, diversity) pre and post fire treatment. This EA is an assessment of potential impacts that could result with the implementation of either the Proposed Action or the No Action Alternative and complies with the National Environmental Policy Act (NEPA). An EA also provides evidence for determining whether the Bureau of Land Management (BLM) will make a “Finding of No Significant Impact” (FONSI).

A FONSI is a document that briefly presents the reasons why implementation of the preferred alternative would not result in significant environmental impacts beyond those already addressed in the Texas Resource Management Plan (Texas RMP) (BLM 1996). As defined by the Council on Environmental Quality (CEQ), the significance of a Federal action is determined by the context of the action in relation to the overall project setting, as well as the intensity of direct, indirect and cumulative effects resulting from the project. If the BLM determines that the preferred alternative would not result in significant impacts, a Decision Record (DR) and FONSI would be prepared approving the selected alternative. If the project is found to result in significant impacts, an Environmental Impact Statement (EIS) would be prepared.

1.1 Background

The BLM manages approximately 12,000 acres of BLM lands known as the Cross Bar Management Area (aka Cross Bar Ranch). The lands were acquired from Humble Oil and Refining Company, March 6, 1931, under the Acts of February 15, 1928 and January 25, 1929, which gave the Department of the Interior (DOI) approval to acquire land to produce and transport helium gas. In 1997, due to the elimination of the Bureau of Mines, the Helium Operations portion was transferred to the BLM. As part of the BLM, those acquired lands and minerals then came under the jurisdiction of the Federal Land Policy and Management Act (FLPMA). The CMA is now the only BLM managed land throughout the entire state of Texas. With the exception of 1920 acres, the CMA is in a contiguous block of 9913 acres. The CMA overlies an active gas field and helium storage dome and is totally surrounded by private lands. The CMA was completely closed to all public use from its acquisition in 1931 until 1997 when the Bureau of Mines office in Amarillo became part of the BLM. The property has no legal physical public access; however, it is open to visitors for archery hunting, hiking, and general naturizing. Visitors can reach the property via the Canadian River which borders the CMA on the north.

The CMA was grazed heavily by livestock from 1932 until 1993. The Bureau of Mines received as much as \$7.00/acre for their grazing leases. Unfortunately, a specific carrying capacity for cattle grazers was never determined or implemented. Consequently, successful bidders ran as many as 2,000 head of

cattle on land that should have not carried more than 300 at any given moment. After 1993 and until present, 8,078 acres ceased to be grazed while from 1993 until 1999, 3,755 acres continued to be grazed. Since 1999 through the present cattle grazing on the entire CMA property has been absent.

The CMA is located within the Texas High Plains ecological sub-region in the transition between the high plains and the rolling plains. The CMA is mostly short-grass prairie dominated by blue grama (*Bouteloua gracilis*) and, secondarily by buffalo grass (*Buchloe dactyloides*). Sand dropseed (*Sporobolus cryptandrus*), occurs in high densities as well. Honey mesquite (*Prosopis glandulosa*) and tree cholla cactus (*Cylindropuntia imbricata*) occur in high densities throughout most of the property. The encroachment of woody vegetation and non-native species on the CMA is a direct result of historical heavy grazing by livestock and the suppression of fire (pers comm., Richard Wauer). Additional species common to the CMA include, vine mesquite (*Panicum obtusum*), sideoats grama (*Bouteloua curtipendula*), snow-on-the-mountain (*Euphorbia marginata*), silver leaf nightshade (*Solanum elaeagnifolium*), and buffalo burr (*Solanum rostratum*).

1.2 Purpose and Need

The purpose of prescribed burning on the CMA is to reduce densities of honey mesquite and cholla cactus. The CMA is in a region where grass and forb species are abundant and diverse. Unfortunately, as a result of mismanagement throughout the years, the CMA has become dense with honey mesquite, cholla cactus and sand dropseed. This type of vegetation structure is common on adjacent private lands and throughout much of the Texas Panhandle. The project objectives are designed to assist in maintaining, improving, and increasing native grassland habitat for the various species that utilize the CMA.

Past research using prescribed fire for reduction of mesquite and cholla cactus has shown that fire as an only method will do nothing more than increase mesquite and cholla production. Therefore it is important to note that fire is one of several tools being used to reduce the invasive plant species on the CFMA. Among those tools are aerial herbicide applications, mastication, and ground herbicide applications.

The project is needed to restore native grasslands and to reduce and maintain the shrub component on the CMA's 11,883.8 acres. The project is also being used to enhance native wildlife habitat, improve watershed functions, and to enhance to overall naturalness of the CMA.

BLM fire personnel have prescribed fire to the CMA in years past on several different research plots. However, landscape burning has been absent from the CMA for many decades as fire has always been suppressed for reasons of saving anthropogenic structures within the vicinity and for the purposes of maintaining grass for cattle grazing, a philosophy that is steadily losing momentum as cattle ranchers are beginning to realize the benefits of prescribed fire on their land. Removing fire as a management tool for maintaining ecosystem integrity allowed certain types of invasive species to dominate the CMA which could have contributed to loss of habitat for various types of game and non – game species.

Without fire, there is a cascade of ecological imbalances. The intentional addition of fire would be a key contribution towards pushing the CMA back into ecological balance.

Prescribed fire would benefit all of the CMA's 11,883.8 acres. The goal is to implement a fire regime throughout the CMA where prescribed burns would occur on acreages on 5 year fire return intervals. While this EA serves as an overall analysis of the efficacy of fire implementation, it still remains necessary to adhere to NEPA policy and to evaluate environmental conditions before each burn. Thus, future burns will require a Determine of NEPA Adequacy (DNA), a cultural clearance where cultural surveys have not been conducted, and public notices with the opportunity for the public to submit their comments regarding prescribed burns on the CMA.

The decision to be made is whether or not to approve prescribed burning on the CMA and adjacent private lands.

The current plan is to prescribe fire on 3,824 acres whenever funds become available in 2015 and when ecological conditions are suitable for a prescribed burn. The first burn is anticipated to occur between the months of February 2015 and April 2015. Should funding become available, Unit 1, Horse Creek, Unit 2, Ranch Creek and 234 acres in Unit 3 will be burned which account for approximately 3,629 acres. Approximately 194 acres on private property will be included in this burn (see Cross Bar Ranch Management Units map).

1.3 Land Use Plan Conformance

The Proposed Action is subject to and has been reviewed for conformance with (43 CFR 1610.5, BLM 1617.3) the Texas Resource Management Plan (RMP) (May 1996), as amended. The Texas RMP and Record of Decision describe management decisions based on resource and surface management ownership areas. At the time of preparation and development of the RMP the Amarillo Helium Operations Office was a part of the Department of Interior, Bureau of Mines (BM). At the dissolution of the Bureau of Mines, the Amarillo Helium Operations Office was transferred to the BLM. Transfer of the Helium Operations Office in Amarillo from the jurisdiction of the Bureau of Mines to the BLM resulted in the need to amend the Texas RMP. The Texas RMP was amended in 2000 to include the AmFO.

The proposed action is in conformance with the applicable RMP. The RMP was completed by the BLM in 1996. That plan did not address the lands and minerals managed in Potter County, Texas, by the, then, Bureau of Mines office in Amarillo, TX. The BLM has amended that plan to include the 11,833.8 acres of Federal surface estate and 38,256.18 acres of split estate in Potter County. The plan considered prescribed burns for wildlife habitat enhancement.

1.4 Identification of Issues

Internal scoping was conducted by reviewing the proposed project and locations to identify potentially affected resources and land uses. The Interdisciplinary Team (IDT) identified resources and land uses present and affected by the proposed project and focused the analysis on those issues. The following questions were raised as issues to consider further:

- What effect *will* the proposed action have on air quality?
- What effect *will* the proposed action have on soil loss and contamination?
- What effect *will* the proposed action have on water quality and quantity?
- What effect *will* the proposed action have on the watershed condition?
- What effect *will* the proposed action have on known and newly discovered artifacts or areas of cultural, paleontological, and archeological significance?
- What effect *will* the proposed action have on the spread of non-native species?
- What effect *will* the proposed action have on federally listed species that have the potential to be located in the proposed project area?
- What effect *will* the proposed action have on Migratory Bird species?
- What effect *will* the proposed action have on wildlife and their habitat in general?
- What effect *will* the proposed action have on visual quality?
- What effect *will* the proposed action have on minority and low income populations?
- What effect *will* the proposed action have on floodplains?
- What effect *will* the proposed action have on recreation

Several issues were considered during project scoping but dismissed from detailed analysis because there would be no potentially significant effects related to the issues resulting from any of the alternatives presented below. The following elements are determined by the IDT, following onsite visits, review of the Texas RMP (1996), as amended and other data sources, to not be present:

- | | |
|----------------------------------|--------------------------|
| • Socioeconomics | • Wild and Scenic Rivers |
| • Areas of Environmental Concern | • Wilderness |
| • Livestock Grazing | • Cave and Karst |
| • Wild Horse and Burros | • Hazardous Wastes |
| • Mineral Resources | |

2.0 PROPOSED ACTION AND ALTERNATIVES

This EA analyzes the impacts of the No Action and Proposed Action Alternatives relating to prescribed burning on the CMA and the surrounding private lands.

2.1 Alternative A—Proposed Action

The BLM AmFO proposes to use prescribed burning as one of several treatment tools to restore 11,883.8 acres of vegetation on the CMA of which 3,824 acres will be burned between the months of February 2015 and April 2015. Prescribed burning would be implemented in phases on an annual basis, as necessary and will incorporate the required NEPA policies and procedures including: public notices and cultural and biological clearances. . An ecological history of fire suppression, along with other anthropogenic and environmental factors, has caused imbalances in the environment of the CMA. This project is designed to restore historic vegetation regimes to the landscape.

In the past, fire played a significant role in maintaining native grasslands and ecosystems. The most natural way in which land managers can manipulate a landscape is with fire. Fire is nature's way to restore the balance to a wild ecosystem via destruction of old imbalances, in this case, dense mesquite and cholla cactus encroachment and evolving monocultures of less desirable wildlife forage.

Fire and other disturbance regimes are instrumental in keeping honey mesquite and cholla cactus in balance with other species in the CMA ecosystem. The proposed action makes use of prescribed fire as a natural phenomenon that would assist in solving the imbalances that have occurred over hundreds of years on the CMA. Fire is a natural and important element to the CMA and the short – grass prairie in general.

These prescribed burns would help restore the ecosystem function in areas where invasive plant species have encroached and taken over the natural ecology and land cover. The BLM is mandated to protect and enhance wilderness characteristics in the CMA, and this goal can be met by implementing fire as one of the vegetation treatments. Reintroducing and encouraging fire in this landscape is a natural means of influencing the plant populations in the area and would have positive affects in both the short and long term ecological regrowth of desirable plant populations. Further, reducing dangerous fuel loads lessen the severity of potential wildfires that are becoming more common in the Texas Panhandle.

Treatment areas would be selected based on one or more of the following site characteristics:

- The sites ability to recover with native vegetation
- Soil is not prone to erosion due to land use treatments such as prescribed fire
- A seed source is present and available for desired vegetation
- The area is favorable for follow up vegetation applications
- The treatment would have no significant adverse impact on non-target plant or animal components of the community

2.1 Alternative B—No Action

CEQ regulations require the consideration of the No Action alternative (40 CFR 1502.14). The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the no action alternative generally means that the action would not take place. Under this alternative, the BLM would not authorize prescribed burning on the CMA.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant resources and issues. Certain critical environmental components require analysis under BLM policy. Only those elements of the affected environment that have potential to be impacted are described in detail.

3.1 Air Resources

Air quality and climate are components of air resources which may be affected by BLM applications, activities, and resource management. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

3.1.1 Air Quality

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality nationwide, including six “criteria” air pollutants. These criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ & PM_{2.5}), sulfur dioxide (SO₂) and lead (Pb). Ozone is produced when volatile organic compounds (VOC) and nitrogen oxides (NO_x) undergo photochemical reactions in the presence of sunlight. EPA has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The NAAQS are protective of human health and the environment. Air quality concerns are of specific concern in Potter County where most air emissions occur. EPA has approved Texas’ State Implementation Plan and the state enforces state and federal air quality regulations on all public and private lands within the state, except for tribal lands. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain.

The proposed area of this analysis is considered a Class II air quality area by the EPA. There are three classifications of areas that attain national ambient air quality standards, Class I, Class II and Class III. Congress established certain national parks and wilderness areas as mandatory Class I areas where only a small amount of air quality degradation is allowed. All other areas of the U.S. are designated as Class II, which allow a moderate amount of air quality degradation. No areas of the U.S. have been designated Class III, which would allow more air quality degradation. “Non-attainment” areas are areas that are not meeting one or more of the EPA NAAQS. There are no Class I or “non-attainment” areas within 250 miles of the project area.

Air quality in a given region can be measured by its Air Quality Index value. The air quality index (AQI) is reported according to a 500-point scale for each of the major criteria air pollutants, with the worst denominator determining the ranking. For example, if an area has a CO value of 132 on a given day and all other pollutants are below 50, the AQI for that day would be 132. The AQI scale breaks down into six categories: good (AQI<50), moderate (50-100), unhealthy for sensitive groups (100-150), unhealthy (>150), very unhealthy and hazardous. The AQI is a national index, the air quality rating and the associated level of health concern is the same everywhere in the country. The AQI is an important indicator for populations sensitive to air quality changes.

Current Pollution concentrations

There is no data available for SO₂, lead and CO. Lead and CO concentrations would not be elevated in rural areas, so there is no monitoring conducted for these pollutants. “Design Concentrations” are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2011 design concentrations of criteria pollutants (Table 1).

Table 1. 2011 Design Concentrations of Criteria pollutants (EPA 2012a)

Pollutant	Design Value	Averaging period	NAAQS
O ₃	0.074 ppm	8-hour	0.075 ppm ¹
PM _{2.5}	12.4 µg/m ³	Annual	12.0 µg/m ^{3,2}
PM _{2.5}	24 µg/m ³	24-hour	35 µg/m ^{3,3}
NO ₂	5 ppb	Annual	53 ppb
NO ₂	58 ppb	1-hour	100 ppb ³

¹Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years

²Annual mean, averaged over 3 years

³98th percentile, averaged over 3 years

AQI is measured in Amarillo, TX (Potter County), <15 miles from the project area. Mean AQI values for the area were generally in the good range (AQI<50) in 2011. Of the days in 2011, 9421/ percent were classified as “good” and 6 percent were classified as “moderate.” The median AQI was 26.5 or “good” and the maximum AQI was 70. The air quality index in the area has not reached “unhealthy for sensitive groups,” “unhealthy,” or “very unhealthy” in over a decade.

3.1.2 Climate

The proposed area lies within both “cool” and “warm” parts of the Temperate Zone of the northern hemisphere. There are three major climatic types which are classified as Continental, Mountain, and Modified Marine. There are no distinct boundaries which divide these climate types. The proposed area lies within a region frequently referred to as “Tornado Alley.”

Texas Panhandle

Texas is a large state that has various climate types. The climate type of Potter County is typical of interiors of continents and is characterized by large variations in the magnitude of ranges in daily temperature extremes, low relative humidity, and irregularly-spaced rainfall of moderate amounts. The

main feature of this climate in Texas is semi-arid with mild winters. New information about greenhouse gases (GHGs) and their effects on national and global climate conditions have emerged since the RMP was prepared. Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring and modeling systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

GHGs that are included in the US GHG Inventory are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). CO₂ and CH₄ are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of GHG emissions (including CO₂, CH₄, N₂O; and several trace gases) on global climate. Through complex interactions on regional and global scales, these GHG emissions cause a net warming effect of the atmosphere (which make surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall climatic changes. Increasing CO₂ concentrations may also lead to preferential fertilization and growth of specific plant species.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4°C to 5.8°C (2.5°F to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increase in daily minimum temperatures are more likely than increases in daily maximum temperatures. It is not, however, possible at this time to predict with any certainty the causal connection of site specific emissions from sources to impacts on the global/regional climate relative to the proposed lease parcel and subsequent actions of oil and gas development.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, “federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses.”

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and CH₄) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It

is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and life span of the atmosphere.

3.2 Major Land Resource Areas

The Natural Resources Conservation Service (NRCS) utilizes Major Land Resource Areas (MLRA) as a spatial framework in the planning, design, implementation, and evaluation of natural resource management activities. MLRA boundaries reflect nearly homogenous areas of land use, elevation, topography, climate, water resources, potential vegetation, and soils.

MLRA's contain ecological sites. An ecological site is distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation, and in its ability to respond similarly to management actions and natural disturbances. Unlike vegetation classification, ecological site classification uses climate, soil, geomorphology, hydrology, and vegetation information to describe the ecological potential of land areas. A particular ecological site may feature several plant communities (described by vegetation classification) that occur over time and/or in response to management actions.

Ecological sites descriptions are used to stratify the landscape and organize ecological information for purposes of monitoring, assessment, and management. Ecological site descriptions are reports that describe the: a) biophysical properties of ecological sites, b) vegetation and surface soil properties of reference conditions that represent either; i) pre-European vegetation and historical range of variation (in the United States) or ii) proper functioning condition or potential natural vegetation, c) state-and-transition model graphics and text, and d) a description of ecosystem services provided by the ecological site and other interpretations (NRCS).

3.3 Water Resources

3.3.1 Surface Water

Texas' abundant surface water resources include rivers, streams and both natural and man-made reservoirs. There are 23 surface water basins in Texas, including 15 major river basins and eight coastal basins, each with varying hydrological regimes and abilities to provide water supplies. The state's water availability models estimate that available surface water during drought was 13.3 million acre-feet in 2010. Of this amount, only 9.0 million acre-feet can be used as existing supply due to physical and legal constraints. Existing surface water supply is projected to decrease to 8.4 million acre-feet by 2060, primarily from sedimentation of existing reservoirs.

The proposed project area is in Potter County is within the Canadian River Basin. The Canadian River Basin is the northernmost river basin in Texas. Due to low precipitation and high evaporation rates that predominate in the region, the basin has a low average watershed yield. From headwaters in the Sangre de Cristo Mountains of New Mexico, the Canadian River flows across the northern Panhandle of Texas to its confluence with the Arkansas River in Oklahoma. Smaller streams in the Basin include Punta de Agua, Palo Duro, and Wolf Creeks. There are three lakes in the basin including: Lake Meredith, Palo Duro

Reservoir, and Rita Blanca Lake. The Canadian River Compact between New Mexico, Oklahoma, and Texas places limits on conservation pool storage in reservoirs in the Texas and New Mexico portions of the basin. Limited surface water supplies, often further depleted by drought, are an issue in the basin especially since the ground-water supplies are experiencing long-term declines (TWDB 2013).

The proposed project area is within the Lake Meredith watershed (USGS 1109015). The nearest listed impaired water is over 20 miles to the northeast of the project area.

3.3.2 Groundwater

Groundwater deposits underlie about 76 percent of Texas and are considered to be one of the state's most valuable resources. Sixty percent of the freshwater used in Texas is supplied from 23 major aquifers. Groundwater supplies are produced from numerous saturated geologic formations comprised of various mineralogical types such as sand and gravel alluviums, limestone and dolomite deposits.

The Ogallala Aquifer is the major water-bearing formation of the Panhandle Region. Although many communities use water from the aquifer as their primary source of drinking water, approximately 90 percent of the water obtained from the Ogallala is used for irrigation. The Ogallala supports the major irrigated agricultural production and processing base, as well as the region's municipal and industrial water needs. Water-table elevations approximately parallel the land surface and dip from the northwest to the southeast. The aquifer is recharged by precipitation and runoff that drains to lakes, rivers, playas, and streams (TWDB 2006).

The Ogallala is comprised primarily of sand, gravel, clay, and silt deposited during the Tertiary period. Groundwater, under water-table conditions, moves slowly through the formation in a southeasterly direction toward the caprock edge or eastern escarpment of the High Plains. Saturated thickness of the aquifer is variable across the region but is greatest where sediments have filled previously eroded drainage channels. Well yields range from as little as 10 gallons per minute (gpm) to more than 1,000 gpm (TWDB 2006).

In 2010, the Ogallala was estimated to have a storage capacity of about 2.52 million acre-feet in Potter County, with a depletion rate of about 6.64 percent in a 10 year period. Recharge to the Ogallala occurs primarily by infiltration of precipitation from the surface and, to a lesser extent, by upward leakage from underlying formations. It is estimated that the long term average annual recharge is less than 3 inches per year (TWDB 2006).

The Dockum is a minor aquifer which underlies the Ogallala Aquifer and extends laterally into parts of western Texas and New Mexico. The Dockum formation crops out in the project area where the Ogallala has been eroded off due to the Amarillo uplift. The primary water-bearing zone in the Dockum Group, commonly called the "Santa Rosa," consists of up to 700 feet of sand and conglomerate interbedded with layers of silt and shale. Aquifer permeability is typically low, and well yields normally do not exceed 300 gpm. The Dockum has an estimated 3,051,500 acre-foot storage capacity in Potter County, with an annual recharge of about 300 acre-feet. Springs and seeps are found in the watershed drainages where

the water table intersects ground surface and may originate from either the Dockum or Ogallala groundwater formations (Bradley, et al., 2003).

3.4 Heritage Resources

3.4.1 Cultural Resources

The survey areas have not been previously formally inventoried. According to the Texas Historical Sites Atlas (accessed 12/12/13) and records on file at the BLM-Oklahoma Field Office. Previous archeological reports in the general survey areas are sparse despite several sites having been recorded. Multiple historic and prehistoric sites are located within the project area. A thorough summary of area research and cultural resources for the region is included in Lintz et al. (2001). More recently, two excellent master's theses, Meier (2007) and Weinstein (2005), have researched the Antelope Creek Phase structure (41PT109) on the Cross Bar.

Cultural resources in the general area of probable historical significance include portions of the a route to California, which follows the Canadian River just north of the study area, and several military expeditions/campaigns trails that crossed the general area during the nineteenth century. A number of Cold War Era helium wells, including some in underground bombproof bunkers, are also located near the project area.

To comply with Section 106 of the National Historic Preservation Act, as amended, an on-the-ground cultural resources survey was conducted. To allow the project to move forward in a timely manner, the BLM Oklahoma Field Office has developed a predictive model based on the 70 known archaeological sites on the Cross Bar. According the predictive model over 80 percent of all sites will occur within 300 meters of a water source or a previously known archaeological site. This proposal was submitted to the Texas Historical Commission on October 2, 2012 and the Commission concurred that survey based on predictive modeling would satisfy the requirements of Section 106 in a letter dated November 12, 2012 (BLM; Track #201301373).

The current survey for the project covered an area of over 1000 acres within the predictive model framework. Several new archaeological sites were recorded and evaluated for inclusion in the NRHP or listing as a Texas State Archaeological Landmark (BLM CRR# NM-040-2014-48).

3.4.2 American Indian Religious Concerns

Traditional Cultural Properties (TCPs) are places that have cultural values that transcend the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites. Native American communities are most likely to identify TCPs, although TCPs are not restricted to those associations. Some TCPs are well known, while others may only be known to a small group of traditional practitioners, or otherwise only vaguely known.

There are several pieces of legislation or Executive Orders that should be considered when evaluating Native American religious concerns. These govern the protection, access and use of sacred sites,

possession of sacred items, protection and treatment of human remains, and the protection of archaeological resources ascribed with religious or historic importance. These include the following:

- The American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996, P.L. 95-431 Stat. 469).
- Executive Order 13007 (24 May 1996).
- The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001, P.L. 101-601).
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470, Public Law 96-95).
- Memorandum of Understanding Among the U.S. Department of Defense, U.S. Department of the Interior, U.S. Department of Agriculture, U.S. Department of Energy, and the Advisory Council on Historic Preservation Regarding Interagency Coordination and Collaboration for the Protection of Indian Sacred Sites.

The proposed action would result in short-term and long-term change and altered utilization of the site and immediate surrounding area.

For the Proposed Action, identification of TCPs were limited to reviewing existing published and unpublished literature, and BLM tribal consultation efforts specific to this proposed action with the Comanche Nation, the Osage Nation, and the Tonkawa Tribe of Oklahoma. No TCPs are known to exist within the APE.

3.4.3 Paleontology

Over 1000 acres have been inventoried for cultural and paleontological resources for the proposed access road, drill pad, and pipeline construction. No paleontological resources have been identified within the proposed project area. Paleontological Resources are of scientific interest and may require protection. The management of paleontological resources is directed under FLPMA, NEPA, and Paleontological Resources Preservation Act (PRPA), formally known as Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act of 2009 (16 USC 470aaa et seq.). In accordance with the PRPA, paleontological resources on Federal land must be managed and protected using scientific principles and expertise.

3.5 Vegetation - Invasive, Non-native Species

Noxious weeds can have a disastrous impact on biodiversity and natural ecosystems. Noxious weeds affect native plant species by out-competing native vegetation for light, water and soil nutrients. Noxious weeds cause \$2 to \$3 million in estimated losses to producers annually. These losses are attributed to: (1) decreased quality of agricultural products due to high levels of competition from noxious weeds; (2) decreased quantity of agricultural products due to noxious weed infestations; and (3) costs to control and/or prevent the spread of noxious weeds.

The Early Detection & Distribution Mapping System (2013) at the University of Georgia has identified plant species in each state as occurring in the county and being exotic to the US and listed as a problem somewhere in the US.

3.6 Wildlife

3.6.1 Threatened and Endangered Species

Approximately 1300 endangered or threatened species occur in the United States today. Endangered species are plants and animals that have become so rare that they are in danger of becoming extinct or are considered extinct in the wild. Threatened species are plants and animals that are likely to become endangered within the foreseeable future throughout its range. The Endangered Species Act of 1973 is designed to protect critically imperiled species from the consequences of anthropogenic activities. The Act is administered by the United States Fish and Wildlife Service and the National Oceanic and Atmospheric Administration.

3.6.2 Special Status Species

Special status species is a universal term used in the scientific community for species that are considered sufficiently rare that they require special consideration and/or protection and should be, or have been, listed as rare, threatened, or endangered by the Federal and/or State governments. The authority for this policy and guidance regarding the evaluation of SSS comes from the Endangered Species Act of 1973, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and Department of Interior, Bureau of Land Management, Special Status Species Management (Manual 6840). There are no Wilderness Study Areas (WSA's) or Special Management Areas (SMA's) within the proposed area.

3.6.3 Migratory Birds

The central flyway is a bird migration route that begins in the north in Canada and generally meanders along the Great Plains and goes through the Gulf of Mexico. Migrating birds use this flyway between breeding and wintering seasons and often use the region as a stop-resting and foraging ground. Common migratory bird species that occur near the proposed project area are too numerous to list in this document, however, migrating birds observed at the specific site are protected under the Migratory Bird Treaty Act of 1918. The Migratory Bird Treaty Act makes it unlawful, without a waiver, to pursue, hunt, take, capture, kill, or sell birds that are considered migratory. The statute does not discriminate between live or dead birds and also grants full protection to any bird parts including feathers, eggs, and nests. There are currently over 800 species on this list, several species of which have been observed in the proposed project area.

3.7 Visual Resources

BLM Manual H-8410-1 lays out the visual resource inventory process for determining visual values. The inventory consists of scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. The purpose of the analysis is to determine the area's Visual Resource Management Class (VRM),

which defines the degree of acceptable visual change within a characteristic landscape on BLM lands. A portion of this action is occurring on private land, therefore a VRM class has not been established for the included private lands.

Land uses surrounding the CMA are predominantly ranching, cattle grazing, and farming. Residential areas within 10 miles of the CMA include the northern city limits of Amarillo and the Valley de Oro community to the west.

3.8 Environmental Justice

Executive Order 12989, issued on 11 February 1994, addresses concerns over disproportionate environmental and human health impacts on minority and low-income populations. The impetus behind environmental justice is to ensure that all communities, including minority, low-income or federally recognized tribes, live in a safe and healthful environment.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Effects of Alternative A – Proposed Action

4.1.1 Air Resources

4.1.2 Air Quality

Treatment with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke. Impacts from smoke would be temporary and quickly dispersed throughout the area. These factors, combined with standard operating procedures (SOPs), would minimize potential impacts. Federal and State air quality standards would not be violated.

Visual Quality Related Resources

Visibility impairment as a result of smoke caused by the prescribed burns can be anticipated closer to Highway 287 and the Canadian River, however Standard Operating Procedures (SOPs) for public notification will be implemented to ensure motorists and river recreationists are notified of the prescribed burn.

Overall, implementation of the proposed project is expected to have minor impacts on air quality but is not expected to impact or contribute to any areas not meeting NAAQS standards. The individual burn project circumstances is anticipated to be short in duration and limited to a relatively small disturbance area on a landscape scale.

Mitigation

Highway posting markers will be strategically placed on HWY 287 and local state maintained roads when necessary. Media notifications will be posted in advance of any planned prescribed burn. Fire trucks on standby and assistance in traffic control by Potter County Sheriff will be utilized in situations where smoke has the potential to overflow onto utilized public roads.

4.1.3 Climate

During prescribed burns, there would be a temporary increase in smoke emissions. As a result, conventional pollutants such as ozone, carbon monoxide, and particulates may be released during project implementation.

The assessment of GHG emissions, their relationship to global climatic patterns, and the resulting impact is an ongoing scientific process. It is currently not feasible to know with certainty the net impact from the proposed action on climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative, given the current state of the science. The BLM does not have the ability to assess a specific project-related BLM action and associated contribution to climate change with or to impacts in any particular area. The scientific process capable of such multi-parameter complex modeling is not yet available. The inconsistency in results of scientific models used to predict climate change at the global scale, coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

There is an assumption, however that certain related activities in the proposed action would contribute to short-term emissions only for the duration of the project. Examples of some of these short term activities or sources, which may contribute to GHS, include small particulates from smoke from the prescribed burns, dust and from vehicle emissions.

Mitigation

No mitigation measures have been identified.

4.2 Major Land Resource Areas

Direct impacts resulting from prescribed burns on the CMA include exposure of the soil. An increase in surface runoff can be expected where fire occurs, potentially causing increased sheet, rill, and gully erosion although the degree and extent of each is anticipated to be negligible because of the topography and inconsistent precipitation on the area. Further, prescribed burning only removes the above ground biomass of plants while leaving the underground root system intact. This will naturally minimize the effects of fire on the surface.

Secondary impacts, including the loss of soils to wind, rain, and other erosive forces following surface disturbance, can occur because of exposed soils. Because disturbance would be located on soils with moderate risk of erosion and very gentle slopes, the loss and subsequent movement of soil is anticipated to be negligible and can be minimized.

Mitigation

The project area occurs in rangeland with gentle slopes and moderately erodible soils. In areas where runoff and soil loss is anticipated or is discovered, all proper measures and best management practices for sediment-control will be implemented to reduce erosion. Erosion prevention could be implemented by reseeding and watering the reseeded site to promote quick plant growth, creating check dams with native rocks and stones, or avoiding sensitive areas.

4.3 Water Resources (Riparian/Aquatic)

Short-term direct impacts would be similar to those described in section 4.2.5 below. Long-term and indirect impacts would be beneficial to habitat within riparian/wetland areas due to the removal or control of unwanted vegetation infestations.

Mechanical treatments are often necessary to protect desirable plant species in riparian areas. Mechanical treatments consist of trimming and clearing the understory of large plants and weed eating to reduce the fine fuel load under trees. On the CMA, desirable plant species like cottonwoods, soap berry, hackberry, and plum thickets occur throughout creek bottoms and along the river boundaries. Due to the scope and scale of the Proposed Action, mechanical treatments are unlikely to have an adverse effect on riparian and aquatic areas. In most cases, unwanted vegetation near a riparian area could be removed without disturbing more desirable species. Fuel and lubricant spills that could result from using chainsaws and trimmers would be contained or cleaned up (using plastic tarps to cover the ground during refueling) before contamination spreads to surrounding areas. With mechanical treatments, erosion can be a problem on slopes greater than 20%, due to the decreased number of roots holding the soil down. Thus, mechanical methods would be avoided on slopes greater than 10% within 300 yards of riparian areas.

The effect of prescribed fire as a treatment method in riparian areas would be dependent on the natural fire regime of the area, the time of year that burning occurred, and the extent of the prescribed fire. In riparian areas where vegetation density is usually high, the potential for hotter, more extensive burns is elevated (Thompson and Shay, 1984). However, most prescribed burns in riparian areas would consist of pile burns and mid-scale broadcast burns, and therefore the effect to riparian systems would be minimal.

An increase in soil erosion and surface water runoff would result from vegetation reduction near riparian and wetland areas, which could lead to streambank erosion and sedimentation (Ott 2000). The amount and likelihood of streambank erosion and sedimentation would be directly proportional to the size of the treatment area.

Mitigation for Water Resources and Riparian/Aquatic Areas

Horse Creek, Ranch Creek, and West Amarillo Creek are ephemeral creeks that are typically fed by runoff water from the City of Amarillo. Functioning as riparian areas, these creeks serve as nesting areas for various types of avian species, mammalian species, and aquatic species. Cliff swallows and red-tailed hawks have been known to use these creeks for nesting and for cover. Mule deer and white-tailed deer have been observed using these drainages. Riparian areas maintain a high utilization by all the types of

wildlife species that occur throughout the CMA, therefore all SOPs for burning riparian areas will be followed and all desirable, non-target species will be preserved and protected from any prescribed burn.

4.4 Heritage Resources

4.4.1 Cultural Resources

The proposed action would result in short-term and long-term change and altered utilization of the site and immediate surrounding area. After the literature review and on-the-ground survey, it was determined that no additional research is needed. With mitigation proposed below, a finding of no historic properties affected has been determined for all resources identified in the project area, as staked, at the time of survey. The Texas State Historic Preservation Office has been consulted and Section 106 of the NHPA, as amended, compliance has been completed.

Many cultural resource issues exist beyond the National Historic Preservation Act, such as state and municipal registers of historic sites, National Heritage Areas, National Trails, or other heritage designations. This action does not affect any of these other types of cultural resources.

4.4.2 American Indian Religious Concerns

The Comanche Nation, the Osage Nation, and the Tonkawa Tribe of Oklahoma were notified of the proposed project. Comanche Nation and the Tonkawa responded that they have no current listings in the project area.

The proposed action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies and rituals pursuant to AIRFA or EO 13007. There are currently no known remains that fall within the purview of NAGPRA or ARPA that are threatened by leasing. It is anticipated that implementation of either alternative would have no impact on the resource.

4.4.3 Paleontology

No concentrations of vertebrate fossils or bone beds are known to occur within the APE, and there is a very low probability of any occurring within the APE, thus there would be no impact from implementation of either alternative.

Mitigation Common to ALL Heritage Resources

Fire officers will work closely with BLM Oklahoma Field Office archaeologist to determine Minimal Impact Suppression Tactics as part of the burn plan for each archaeological site well in advance of the prescribed fire. Tactics will vary on a case-by-case, site-by-site basis but will work to insure minimal impact to eligible cultural resource properties, traditional cultural properties, and paleontological sites if present.

In the event that development practices are found in the future to have an adverse effect on significant heritage resources, including cultural, TCPs, or paleontological, the operator and the BLM, in

consultation with the affected tribe(s), the Texas State Historic Preservation Office, will take action to mitigate or negate those effects. Measures include, but are not limited to physical barriers to protect resources, relocation of practices responsible for the adverse effects, or other treatments as appropriate.

If additional ground disturbance is required outside of the currently proposed APE, a BLM archaeologist must be notified prior to any additional work. If archeological or paleontological material such as chipped stone tools, pottery, bone, historic ceramics, glass, metal, or building structures are exposed; stop work at that spot immediately and contact the BLM archeologist at (918) 621-4153 or (918) 621-4100.

If human remains are discovered the procedures of the Texas Health & Safety Code (Section 711.010 Unknown or Abandoned Cemetery) or the NAGPRA shall apply, as appropriate.

4.5 Vegetation - Invasive, Non-native Species

Under the Proposed Action, target species in treated areas would be directly affected. The overall effect of treatments would be to achieve the desired successional stage, and to create a more stratified age structure for wildlife habitat improvement and ungulate grazing.

Plants may vary greatly in their sensitivity to different burn methods. Effectiveness may vary with different climatic and soil conditions.

Prescribed fire typically does not kill southwestern grass species (Warren et al 1999). This is because fires are usually fast moving and do not burn into the root crown, as these grass species have evolved with fire. This allows the grass plants to re-sprout. Depending on the type of vegetation being treated, impacts from fire treatments would be minimal and used to achieve the desired condition. Grass species recovery is dependent upon post-treatment precipitation, plant vigor prior to burning, relative humidity at time of burning, and post-treatment grazing pressure. Depending upon the amount of post-treatment precipitation, grasses can recover as quickly as the first growing season. Without sufficient post-treatment moisture, recovery could take several years to reach pre-treatment levels and support less desirable species during the interim.

Mitigation

Regularly monitoring the location for non-native species and desertification will be implemented. If noxious or invasive species are found, an appropriate method to remove the weed before it has time to establish and spread will also be implemented.

4.6 Wildlife

4.6.1 Wildlife

The proposed action would affect the following habitats which support local wildlife populations: mesquite shrublands, sand sagebrush lowlands, rocky canyons, and short-grass prairie. The restoration

of this habitat to historic conditions would provide long-term benefits to the native wildlife populations that are dependent upon them.

Prescribed fire would accomplish the following habitat management goals: an increased understory production of native grasses and forbs, establishment of a higher amount of “edge,” or transition zone, between different habitat types, and the creation of a mosaic, which would increase plant diversity. An increased understory production of native grasses and forbs would also provide increased forage opportunities for deer and pronghorn and small mammals, as well as nesting habitat for ground nesting birds, and would support insect population’s essential to bird forage.

The creation of a mosaic in the burn areas would provide habitat for ground nesting birds and support insect populations which many bird species would use for food.

Short term effects of the proposed management activities on wildlife populations include disturbance from machinery and administrative motor vehicle use associated with the prescribed fire. These disturbances may include temporary surface disturbance from vehicle travel, noise, and smoke. There also may be short-term impacts to individual birds due to disturbance during the implementation phase of the project; there would be long-term benefits from an increase in diversity of vegetation, however; a short term impact by decreasing the amount of forage available for birds and grazing mammals dependent on those resources.

Browse for big-game could decrease with the elimination of brushy communities and conversion to grassland species, while warm season forage could increase over the long-term. Winter range, therefore, may be decreased for deer, while summer range would increase with the restoration of grass and forb vegetation.

Converting the CMA back to a short grass prairie creates the potential for high mule deer numbers and fewer white-tailed deer numbers. Feral swine are also associated with cover, therefore it is anticipated that feral swine numbers on the CMA will eventually be reduced as a direct result of less cover.

4.6.2 Special Status Species

The Arkansas River Shiner has been known to occur in the Canadian River and in West Amarillo Creek, however; spawning and migration patterns are cyclical as both the Canadian River and West Amarillo Creek have experienced lower than average water levels. The Canadian River is highly used by motorized recreational vehicles on daily basis. While conducting a prescribed burn from the CMA to the water’s edge will have a short term impact from foot and small vehicular traffic, it is minimal compared to the heavy usage and disturbance created by motorized recreationists on the river.

Mitigation

No mitigation measures have been identified, however; minimal impact procedures are always implemented.

4.6.3 Migratory Birds

Migratory birds occur throughout the CMA as it is located in the central flyway. The list of migratory birds is too numerous to list in this document; however, birds common to the area have been observed and documented through state and federal wildlife departments.

Mitigation

The proposed site will be monitored for migratory bird movement and nesting before and during their nesting periods. Encounters of migratory bird nests on the proposed project area are not expected, however, if a raptor nest is encountered an evaluation for disturbance and avoidance will be conducted.

4.7 Visual Resources

Wildland fire has been suppressed in the project area in the past, allowing for an imbalance in vegetation cover and subsequent disparities in the rest of this environment. The reintroduction of fire to the area would be a natural way in which to manipulate the vegetation in order to return it to its historic ecological conditions. Slash piles and cleared areas would result in short term adverse but weak impacts to the line, color, and texture of vegetation in riparian areas. Edges of the treatment area may be visible, as well as greener, brighter, and finer vegetation of grasses. Overall areas burned as part of the treatment plan would be restored to their historic vegetation regimes, plus the use of wildland fire in the area would maintain or restore habitat needed for special status and sensitive species.

The level of change to the landscape itself would be minimal, and, in fact, the use of fire in this landscape would restore its original surface conditions, with mosaics of native vegetative cover.

An element of the Proposed Action that may impact scenic resources is prescribed fire. A natural ignition or wildfire could have short term contrasts to the existing line, color, and texture of vegetation. However, fire plays a natural role in ecology. The results of a fire are expected to look natural and be consistent with the ecological community. Any necessary suppression activities are anticipated to be of low disturbance to soil and vegetation as well as mitigated after a potential fire. This would meet VRM Class I objectives over the long term.

Mitigation

No mitigation measures have been identified.

4.8 Environmental Justice

No minority or low income populations would be affected as a result of implementing the proposed action. Implementation of the project would temporarily, positively impact the local economy of Potter County through the renting of hotels and the dining at local restaurants.

Mitigation

No mitigation measures specific to socio-economics and environmental justice would be required.

4.9 Alternative B: No Action

4.9.1 Air Resources

4.9.1.2 Air Quality

The No Action alternative would have no impact on air quality.

4.9.1.3 Climate

The No Action alternative would have no impact on climate.

4.9.2 Major Land Resource Areas

The No Action alternative would have no impact on Major Land Resource Areas.

4.9.3 Water Resources (Riparian/Aquatic)

The No Action alternative would have no impact on water resources.

4.9.4 Heritage Resources

4.9.4.2 Cultural Resources

The No Action alternative would have no short-term effects on noncombustible cultural resources. Combustible cultural resources could be at risk under the no action alternative due to the higher risk for wildfire associated with monocultures of non-native invasive plants and vegetation. Cultural resources would also be at greater risk from erosion in the long term where inadequate understory leaves soils more vulnerable. In addition, long-term effects on cultural resources could include less opportunity for accurate surveys due to dense understory foliage.

4.9.5 Vegetation

4.9.5.2 Invasive Plants

The No Action alternative would result in the likely succession of undesirable/invasive vegetation types towards plant communities where herbaceous species are generally absent or severely under-represented. Plants such as mesquite and cholla cactus present within the project area would continue to exist and would likely expand their dominance even further. This would result in the vegetation moving toward a monoculture instead of a mosaic of natural vegetation and higher biodiversity. Any spread of invasive species and noxious weeds and threat of their dominance could cause the ecological integrity of the area to fall further out of balance.

4.9.6 Wildlife

4.9.6.2 Wildlife

The No Action alternative would leave wildlife habitat in the management area in their current conditions, allowing them to further degrade over time. Relative to the conditions that the Proposed Action is likely to create, current habitat conditions would exhibit a decreased production of native understory grasses and forbs, and would produce larger unbroken blocks of mesquite and cholla cactus.

4.9.6.3 Threatened and Endangered Species

The No Action alternative would have no impacts on threatened or endangered species.

4.9.6.4 Special Status Species

The No Action alternative would have no impact on special status species.

4.9.6.5 Migratory Birds

The No Action alternative could benefit some species, specifically resident birds that have acclimated to the mesquite and cholla cactus encroachment. Generally, migratory birds would find fewer habitat niches within existing conditions and, therefore, the No Action alternative would have a negative impact on these species.

The No Action alternative could have either a beneficial or detrimental effect on individual migratory bird species of concern, depending on the response of individual species requirements, but affects at the population or species level would not be adverse.

4.9.7 Visual Resources

Under the No Action alternative there would be no direct effects to visual resources. A gradual transition in vegetation on the landscape to more of an overpopulated vegetation community would continue to occur overtime, but is unlikely to have an adverse effect on the existing character of the landscape.

4.9.8 Environmental Justice

Under the No Action alternative there would be no direct impact to environmental justice.

5.0 Cumulative Effects

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other action.

5.1 Cumulative Actions

5.1.1 Past, Present, and Reasonably Foreseeable Actions

The CMA has been managed by the BLM for 16 years. In that time, cattle grazing has been disallowed, prescribed burns have been implemented on over 9,000 acres, and herbicide treatments and mechanical treatments have been applied on approximately 3,000 acres. While implementing those treatments, the goals of the CMA were to stop the encroachment of mesquite and cholla cactus and to allow the native grasses to rest from decades of heavy overgrazing. The current goals for the CMA are to eventually reduce mesquite and cholla cactus by 90% and increase forb and grass coverage and increase diversity. The BLM AmFO is currently working on applying herbicidal treatments on various sections of the property, implementing mastication as a method to increase ground spraying efficacy, and implementing more landscape style burning. This proposed action will utilize existing roads, fire lanes, and fire plots to achieve the ultimate goal of habitat restoration. Regarding prescribed burning, surface disturbance will be kept at minimum while maintaining all safety precautions (e.g. fire lanes for fire containment and access).

5.1.2 Cumulative Effects

5.1.2.1 Air Resources

Treatments with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke. Thinning treatments would have an immediate short-term impact on air quality due to chainsaw particulates and exhaust. Other impacts to air quality might come from nearby pollutants such as oil and gas developments, road maintenance, and regular traffic.

5.1.2.2 Climate

The incremental contributions to global GHG gases as a result of the proposed alternatives cannot be translated into effects on climate change globally or in the area of this site-specific action. As stated in the direct/indirect effects section under climate change, the assessment of GHG emissions and the resulting impacts on climate is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on global or regional climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. Therefore, the BLM does not have the ability to associate an action's contribution in a localized area to impacts on global climate change.

5.1.2.3 Water Resources

Cumulative impacts to riparian and aquatic ecosystems from the actual implementation of operations would be minimal. Treatments in the short-term would disturb and remove vegetation. In the long-term, these management actions would assist with improving and restoring the overall conditions of the riparian and aquatic ecosystems.

5.1.2.4 Cultural Resources

BLM staff archaeologists have been integrated into the assessment process to promote proactive, long-term management of cultural resources. Proposed activity areas, which have not been intensively inventoried, and at-risk resources would be delineated for minimizing activity impacts within their

perimeters. No cumulative impacts to cultural resources within the Project area would occur under either alternative.

5.1.2.5 Vegetation

Prescribed fire and other vegetation restoration projects would result in surface and vegetation disturbance. These treatments would, in the short term, disturb and remove vegetation. In the long term, these management actions would assist with maintaining and improving the overall vegetation conditions, thus meeting a variety of resource objectives. Objectives met include increasing vegetation diversity and abundance, increasing vegetation structural diversity, improving resiliency to wildfire impacts, increasing water infiltration, and decreasing erosion, among others.

5.1.2.6 Wildlife

Cumulative impacts of the proposed management actions on wildlife populations include disturbance from machinery, administrative motor vehicle use, and prescribed fire. There would be short-term impacts to individual species due to disturbance during the implementation phase of the project, however; there would be long-term benefits from an increase in diversity of vegetation composition and structure.

In general, the cumulative impacts of this restoration project on wildlife would be positive; this project would reduce fuel loadings and decrease threats of catastrophic wildfires that bring temporary loss of wildlife habitat until, or if, recovery is accomplished. The Proposed Action in combination with other federal actions would lead to more diverse grassland ecosystems that are healthy and sustainable.

5.1.2.6.1 Special Status Species

The effects from the proposed action alternative would have no direct effect on the Arkansas River Shiner. However, prescribed fire has the ability to change the landscape in a way that could potentially encourage special status species into treated areas which were otherwise not available.

5.1.2.6.2 Migratory Birds

While there would be short-term impacts to individual birds due to disturbance during the implementation phase of the project, there would be long-term benefits from an increase in diversity of vegetation. Cumulative actions might also result in a slight drop-off in the quantities of seeds and berries produced in the project area due to temporary reduction of shrubs and grasses. This reduction decreases the amount of forage available for birds dependent on those resources, as well as reduces obligate and semi-obligate species habitat.

5.1.2.7 Visual Resources

An element of the Proposed Action that may impact scenic resources is prescribed fire. A natural ignition or wildfire could have short term contrasts to the existing line, color, and texture of vegetation. However, fire plays a natural role ecologically. The results of a fire are expected to look natural and be consistent with the ecological community. Any necessary suppression activities are anticipated to be of

low disturbance to soil and vegetation as well as mitigated after a potential fire. This should meet Visual Resource Management Class I objectives over the long term.

5.1.2.8 Environmental Justice

Prescribed burning comes with risks and dangers. While most prescribed burns are controlled and contained in their specific target areas, there is the potential for extreme wind shift and or temperature change. Therefore the potential for a prescribed burn to turn into a wildland fire exists. However, all SOPs will be adhered to and all the necessary local officials will be contacted before and after burning occurs.

6.0 CONSULTATION/COORDINATION

This section includes the resource specialists located within the AmFO and the OFO that specifically participated and provided input in review of the proposed project and development of this EA document (Table 3).

Table 2. Specialists participating in the review of the proposed project.

Resources	Not Present on Site	No Impacts	May Be Impacts	Mitigation Included	BLM Reviewer	Date
Air Quality		x			Sharay Dixon Air Quality Specialist Amarillo Field Office	01/06/2015
Soil		x				
Watershed Hydrology		x				
Floodplains		x			Adrian Escobar Natural Resource Specialist Amarillo Field Office	01/05/2015
Water Quality - Surface		x				
Water Quality - Ground		x				
Cultural Resources				x	Ryan Howell Zone Archaeologist Oklahoma Field Office	12/19/2014
Native American Religious Concerns	x					
Paleontology	x					
Areas of Critical Environmental Concern	x				Adrian Escobar Natural Resource Specialist Amarillo Field Office	01/05/2015
Farmlands, Prime or Unique	x					
Invasive, Non-native Species		x				
Vegetation		x				
Livestock Grazing	x					
Threatened or Endangered Species		x			George Thomas Zone Wildlife Biologist Oklahoma Field Office	12/19/2014
Special Status Species		x				
Wildlife/Migratory Birds			x			
Wetlands/Riparian Zones			x			
Wild and Scenic Rivers		x			Adrian Escobar Natural Resource Specialist Amarillo Field Office	01/05/2015
Wilderness	x					
Recreation		x				
Visual Resources		x				
Cave/Karst	x					
Wastes, Hazardous or Solid	x					
Environmental Justice			x			
Public Health and Safety			x			
Fluid Mineral Resources	x					
Rights-of-Way	x					

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