Lea County Industrial Park

Lea County - New Mexico

Biological Resources Reconnaissance Survey Report

May 2014

Prepared for

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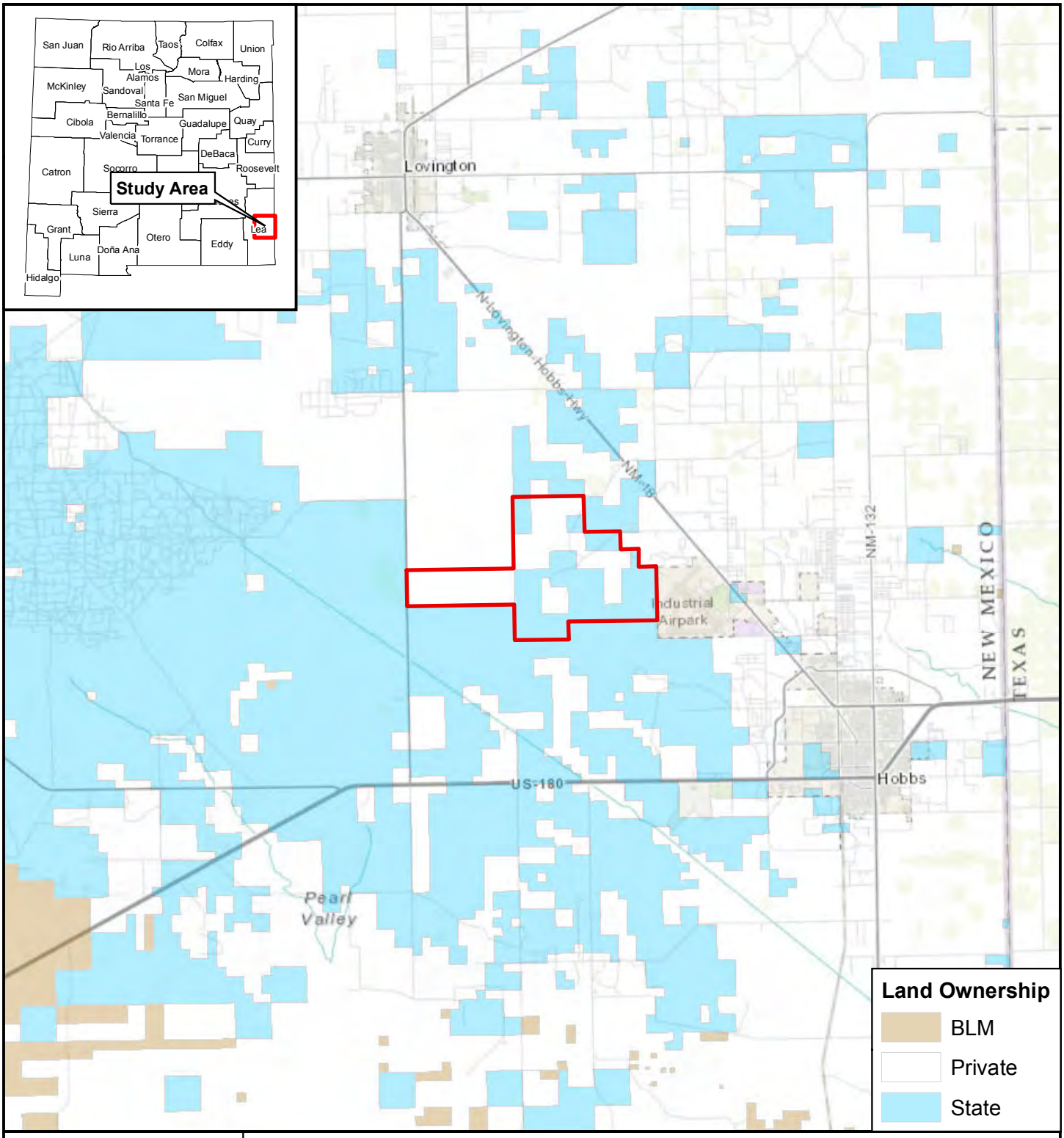
INTRODUCTION

In April and May of 2014, Marron and Associates (Marron) completed a biological reconnaissance survey of the 9,491-acre land parcel northwest of Hobbs, NM (Figure 1). This land is the site of Lea County Industrial Park. The purpose of this survey was to provide an overview and summary of the biological resources (plants, animals, wetlands as well as protected, threatened, or endangered species), to be used in a fatal flaw analysis that would identify any significant resources within the study area. This reconnaissance survey concentrated on documenting the types and extents of plant communities and the subsequent habitats they provide for general wildlife, as well as species with agency status (i.e., threatened or endangered). During the course of this survey six vegetation types, including nearly 90 species of vascular plants were identified. Additionally, 36 vertebrate animals species were found at the site, including several bird-of prey species. The most significant of these was the western burrowing owl. This species was locally abundant within a very limited habitat type of the study area. The following is a discussion of each resource type identified in the study area, accompanied by a discussion of potential impacts to these resources and measures to minimize, mitigate, or avoid these impacts.



Study Area

Lovington SE and Humble City, NM USGS 7.5' Quadrangles

0 2.5 5 10 Miles

0 5 10 20 Kilometers

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Figure 1
Study Area
Location Map

1 ENVIRONMENTAL SETTING

The proposed Lea County Industrial Park site occurs along the western edge of the Great Plains region in a physiographic region called the High Plains. The study area appears flat but actually, it tilts topographically from west to east reaching an elevation of nearly 3850 feet above mean sea level (AMSL) along the western edge and declining to nearly 3700 feet in elevation AMSL along its eastern edge. There are no clear-cut waterways or drainages. However, there are some shallow draws or swales that are generally aligned on an northwest to southeast axis.

Hobbs has a semiarid climate with cold winters and hot summers. Global summaries on weather data for the Hobbs area report that June and July are generally the warmest months in the area with an average high temperature of 93 °F during June, but temperatures can climb much higher with a record of 120.0 °F recorded in August of 1986. During January, the temperature drops to an average of 29.9 °F at night. Lows close to -10 °F have been recorded in the area. On average Hobbs receives 15 to 16 inches of precipitation. August is usually the wettest month of the year and averages about 3.7 inches of precipitation. The driest month is January, which averages about 1.4 inches of precipitation (Weatherspy 2014). The proposed Lea County Industrial Park sits atop a large geological feature called the Permian Basin, which underlies portions of west Texas and southeastern New Mexico (Hawley, 1993). The Permian Basin covers a region roughly 250 miles wide and 300 miles long, representing an area covered by the Permian Sea some 250-300 million years ago. The Permian Basin has been a major oil producing area for nearly a century. The surficial geology of the study area is composed of the Ogallala formation, a tertiary deposit of alluvium, eolian, and carbonate deposition. Portions of this formation have substantial carbonate depositions forming a caprock calcrete zone. The study area occurs within a caprock area. The presence of this shallow caliche deposits influences the distribution and composition of both plants and animals in the study area. Within this carbonate formation, solution-subsidence depressions formed leaving the landscape dotted with numerous shallow closed depressions ranging from a few yards to more than a half mile in diameter.

2 VEGETATION

The 9491-acre proposed Lea County Industrial Park is dominated by grasslands intermixed with some shrubland components. The principal vegetation influence is from the Great Plains and most vegetation within the area has been categorized as Plains/Mesa Grassland by Dick-Peddie (1993). Although Plains/Mesa Grassland is the primary vegetation in the general area, the Lea County Industrial Park area is definitely influenced by Desert Grassland from the south. A large portion of the site has substantial numbers of mesquite shrubs intermixed with the grasses, but nowhere does the site sustain pure stands of mesquite shrub. In most areas, the mesquite constitutes less than 10% cover. Eighty-six (86) species representing 29 families of vascular plants were identified in the study area during the early April survey (See Appendix A). It is anticipated that at least twice this number of plant species occurs in the project area during the remainder of the spring, summer, and early fall growing season. Although there are several different types of habitats present in the study area, there was no suitable habitat for any state or federal protected plant species.

The proposed industrial park is mostly flat to gently undulating. This flat terrain generally lacks the topographic features that support dramatic changes in vegetation. However, many small variations in the topography result from the underlying caprock (caliche) geology. The caprock surface is dotted with numerous closed depressions ranging from a few yards to more than a

half mile in diameter, and varying in depth from a few inches to tens of feet (Nolan, 1961). These depressions collect storm-water runoff from adjacent uplands and can have standing water present after large storm events. This capacity to collect and hold water provides a wetter environment than the surrounding arid uplands. Consequently, this area supports substantially different vegetation than the uplands.

In addition to subsidence depressions, the study area also contains large draw or swale areas that are aligned diagonally across the site in a northwest to southeast direction. These swales range from few hundred feet to a ¼-mile wide. At their upper ends, the swales are barely distinguishable from the surrounding uplands, but further down they may be as much as 30 feet lower than the surrounding uplands. Overtime, these swales have collected soil in their bottoms probably from a combination of aeolian depositions and fluvial transportation. Consequently, the swales appear to have much deeper soils than the surrounding uplands where caliche is not far below the surface. Like the collapse depressions, these swales can collect surface water runoff after storm events and this water may pool within low spots in the swale bottom. The deeper soils and the capability to collect stormwater result in a slightly different composition than the surrounding uplands.

The remainder of the study area often has shallow caliche. The depth and structure of the soil within these areas probably accounts for the some variation noted between grasslands and mixed shrub grassland communities. Soil maps of the study area depict a variable mosaic pattern of soil distribution. The patchy nature of the soil may in part be the result of the collapse depressions that are scattered across the landscape. These collapse depressions collect storm runoff and usually support much lusher grass cover then the surround uplands. Although these depressions are wetter than the surrounding uplands, during the survey none of them had sufficient wetland indicators to qualify them as wetlands.

There were no wetlands within natural depressions, but one small wetland was discovered in the west-central portion of the study area located at UTM Zone 13 E657851/N3627971. This wetland (dominated by cattails) formed at the outflow of a windmill. Since it was formed by pumped groundwater and does not occur in any drainage or waterway, it should not be considered jurisdictional by the US Army Corps of Engineers (USACE).

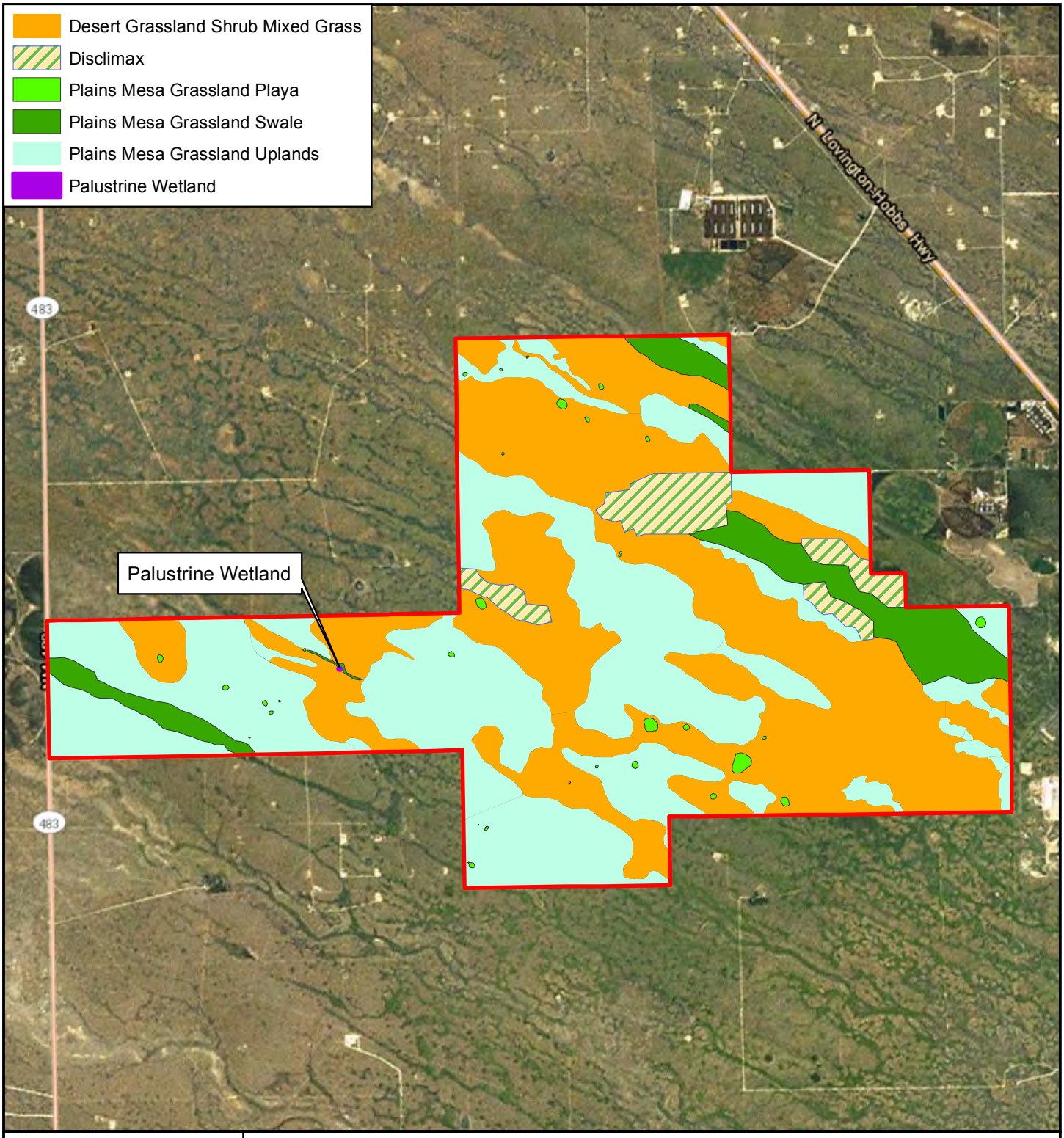
Scattered within the natural habitats described above, there are also areas that have been subject to past surface disturbance. For example, there is a large caliche mining facility near the center of the study area. This location has almost been denuded of vegetation. The area also appears to have been subject to agricultural use in the recent past. Although these areas are no longer under cultivation, they have not yet fully returned to native vegetation. Since the native climax vegetation has been removed and has not yet recovered, all areas that have been subject to such disturbance are characterized merely as disclimax.

Based on the physiography and soil structure six vegetative community types have been defined within the study area: Plains/Mesa Grassland-Uplands, Plains/Mesa Grassland Swales, Plains/Mesa Grasslands Playa's, Desert Grassland Shrub-Mixed Grass Series, Palustrine Wetland, and Disclimax Vegetation. Table 1 summarizes their abundance in the study area followed by a discussion of each community and Figure 2 presents their distribution in the study area. The dominant species within these communities are as follows:

- Plains/Mesa Grassland-Uplands
  - *Erioneuron pilosum* (Hairy wooly grass)
  - *Tridens muticus* (Slim tridens)
  - *Sporobolus cryptandrus* (Sand dropseed)
  - *Bouteloua gracilis* (Blue grama)
  - *Pleuraphis mutica* (Tobosa grass)
  - *Aristida purpurea* (Purple three-awn)
- Plains/Mesa Grassland Swales
  - *Pleuarphis mutica (*Tobosa grass)
  - *Panicum obtusum* (Vine mesquite)
  - *Sporobolus airoides* (Sand dropseed)
- Plains/Mesa Grasslands Playa's
  - *Panicum obtusum* (Vine mesquite)
  - *Bouteloua dactyloides* (Buffalo grass)
- Desert Grassland Shrub-Mixed Grass Series
  - *Prosopis glandulosa* (Honey mesquite)
  - *Sporobolus cryptandrus* (Sand dropseed)
  - *Pleuraphis mutica* (Tobosa grass)
  - *Gutierrezia sarothrae* (Snake weed)
- Palustrine Wetland
  - *Typha latifolia* (Cattails)
  - *Carex sp.*
- Disclimax Vegetation—Variable composition, but often weedy species

Table 1: Approximate Area in Acres of Plant Communities in the Study Area

Plant Community Type	Area in Acres
Plains/Mesa Grassland-Upland Habitat	4204 Acres
Plains/Mesa Grassland-Swale Habitat	657 Acres
Plains/Mesa Grassland-Playa Habitat	37 Acres
Desert Grassland Shrub-Mixed Grass Series	4147 Acres
Previous Disturbed-Disclimax Vegetation	444 Acres
Palustrine Wetland	<1 Acre
	Total: 9491 Acres



MARRON and ASSOCIATES

Figure 2
Vegetation Map of the Study Area

Study Area

Lovington SE and Humble City, NM USGS 7.5' Quadrangles

0 0.5 1 2 Miles

0 1.25 2.5 5 Kilometers

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Lea County Industrial Park Reconnaissance Survey Report, Lea County, New Mexico

Plains/Mesa Grassland-Uplands

The Plains/Mesa Grassland Uplands covers 4204 acres or approximately 44.3% of the study area. It is the most common plant community within the study area. It is normally found on flat ground usually with shallow caliche. Some areas are wholly dominated by patches of tobosa grass, while others have an admixture of blue grama, hairy wooly grass, slim tridens, and sand dropseed. Still other areas are nearly dominated by sand dropseed with only components of hairy wooly grass or slim tridens present. Although there are large expanses with no mesquite present, there are some areas where the Plains/Mesa grasses intermixes with mesquite, but within these areas the total vegetative cover of the mesquite does not exceed 5%. The Plains/Mesa grasslands in the western third of the study area had only a scattered presence of mesquite (estimated less than 1% cover). However, moving eastward across the study area the overall vegetative cover of mesquite increases. Due to the abundance of mesquite and other associated species, these areas of high mesquite cover are treated as the shrub/mixed grass phase of Desert Grassland (See Figure 2 and Figure 3).

Plains/Mesa Grassland-Swales

The swales or draws noted within the study area all appear to drain in a northwest to southeast direction. They are uncommon and comprise only about 657 acres or 6.9% of the study area. These swales appear to have accumulated deeper soils than the surrounding uplands and harvest stormwater runoff from these uplands. The amount of water that can collect in these lowlands is exhibited by prairie dog holes that occur on the bottom of the swales. The rims of the mounds around some prairie dog holes was composed of dried mud that the prairie dogs had to excavate from their burrows after heavy rains (See Figure 2 and Figure 4). These swales were mostly dominated by tobosa grass with scattered dropseed and intermixed with small-localized patches of vine mesquite. These swales also can support scattered mesquite shrubs, but they are rarely a dominant species.

Plains/Mesa Grassland-Playa's

This is the least common grassland community. It covers 37 acres and comprises less than 0.3% of the study area. This plant association is restricted to the shallow (usually circular) collapse depressions that are scattered across the study area. These depressions have more abrupt banks and are much smaller than the swales. Those deep enough to produce unique vegetation generally ranged from 40 to 300 feet in diameter. These areas appear to collect and pool water frequently enough to support stands of vine mesquite, which is a facultative (FAC) wetland plant. Most small depressions support dense stands of vine mesquite often intermixed with patches of buffalo grass (See Figure 2 and Figure 5).

Figure 3. (Above) Typical Plains Mesa Grassland only moderately grazed. (Below) Plains Mesa Grassland more heavily grazed.

Figure 4. (Above) Lush Plains Mesa Grassland swale vegetation located in the northern portion of the study area. (Below) Plains Mesa Grassland swale vegetation reduced in cover by prairie dogs and grazing.

Figure 5. (Above) Small playa edged with tobosa grass and dominated by vine mesquite grass. (Below) Larger playa dominated by vine mesquite, buffalo grass and edged with tobosa grass.

Desert Grassland Shrub-Mixed Grass Series

A large portion of the study area is comprised of a mixture of grassland species usually affiliated with the Plains/Mesa Grassland community type intermixed with shrubs, grasses, and herbaceous species more typically aligned with Desert Grassland community types. These areas appear to be an ecotone between the major plant communities. They are treated in this report as the Desert Grassland Shrub-Mixed Grass Series. This community covers approximately 4147 acres or 43.7% of the study area. This is the second most common plant community in the study area. There were large portions of the area where mesquite was codominant with the grasses, and other areas where mesquite was outright dominant. The largest stands of mesquite were in the southeastern corner and northwest central corner of the study area. These mesquite stands usually occur in flat to slightly rolling upland habitats with slightly deeper soils than the pure grassland communities (See Figure 2 and Figure 6).

Disclimax Vegetation

There are several areas located within the central and east-central portion of the study area that have been subject to recent surface disturbance. These areas totaled about 444 acres or approximately 4.7% of the study area (See Figure 2 and Figure 7). These include a large caliche mining operation located in the northern half of Section 32, T17S, R37E, as well as areas that used for agriculture within sections 31 and 33 of T17S, R37E, and Section 4 of T 18S, R 37E. These areas supported diverse and disparate, often weedy, assemblages of species such as snakeweed (*Gutierrezia sarothrae*). Some locations (such as the past agricultural sites) are being reoccupied by native species, but this process is incomplete.

Palustrine Emergent Wetland

This is the least common community type covering less than 1 acre, which is less than 0.01% of the study area. This small wetland has formed in a man-made pond adjacent to a windmill. The pond has enough persistent water and is deep enough to sustain a small but dense stand of cattails (*Typha latifolia*). Since the hydrology from this wetland is derived from pump water, it would not quality as jurisdictional by the US Army Corps of Engineers (USACE). However, it does provide important habitat for local wildlife.

Noxious Weeds

There were no Class A or B noxious weed species present in the areas covered by the survey, but there are certainly suitable habitats for such species within the disclimax communities in the study area.

Figure 6. (Above and Below) Photographs of the Desert Grassland ecotone. This community type is most abundant in the northwest and southeast corners of the study area.

Figure 7. (Above) Old agricultural field area where the vegetation is still recovering. (Below) Inactive caliche mine located in the center of the study area.

2.1 Potential Impacts to Vegetation

Most of the proposed Lea County Industrial Park study area supports extensive stands or native vegetation impacted only by varying degrees of livestock grazing. There currently are no specific details of the proposed future development of the area. However, it is assumed that structures as well as associated roads, parking lots, and utility infrastructure would need to be installed in the area. These activities would result in both temporary vegetation disturbances and some permanent vegetation loss. The anticipated temporary habitat disturbances will occur during construction and include clearing, grubbing, removal of vegetation, and potential ground leveling for buildings, parking lots, and roads. The permanent vegetation loss would occur in the areas of the footprint of the buildings, parking lots, roads, and other constructed features. It is recommended that areas subjected to disturbance during construction, but do no house permanent structures, be seeded with grasses and herbs native to the project area to reduce the likelihood of erosion, and that these seed mixtures be certified weed free. Several species of grass appear to thrive in the project area without any supplemental irrigation. The most common of these that should be investigated for seeding include: *Erioneuron pilosum* (Hairy wooly grass), *Pleuraphis mutica* (tobosa grass) *Bouteloua gracilis* (Blue grama), and *Bouteloua gracilis* (Blue grama). *Sporobolus cryptandrus* (Sand dropseed) also does well in the area, but this is a rather tall, bunch grass and is not low growing like the blue grama or hairy wooly grass. *Bouteloua dactyloides* (Buffalo grass) is also scattered across the site often occurring with *Panicum obtusum* (vine mesquite), but both of these species were mostly confined to lowland areas where water collected and without supplemental irrigation would probably not prosper. Other showy, flowering species that do well in the area without irrigation and should be considered for seed mixes include: *Stenadrium barbatum* (early shaggytuft), *Baileya multiradiata* (desert marigold), *Berlandiera lyrata* (lyrate greeneyes), and *Penstemon buckleyi* (Buckley beardstongue). The use of native species for revegetation is recommended, as it would dramatically reduce water use during these times of drought.

3 WILDLIFE

Thirty-six species of wildlife were identified in the study area during the reconnaissance survey. This included 26 species of birds, 8 species of mammals, and 2 species of reptiles (See Appendix B). Among the birds, there were 6 birds of prey species. These included Swainson's hawk, Cooper's hawk, red-tailed hawk, northern harrier, barn owl, and western burrowing owl. The surveys were conducted in early spring and it is likely that more birds and reptiles would be noted later in the spring and early summer. It is anticipated that at least 50 species of vertebrate wildlife would occur in the study area over the course of the year. Some of the most common small birds observed in the study area were horned larks, lark buntings, mourning dove, western meadowlark, and savanna sparrow. Many of these species likely nest within the study area. An active horned lark nest was discovered during the survey.

There were 25 large stick nests observed and mapped within the study area, 20 were recorded using GPS technology. The locations of the remaining 5 were estimated that were calculated from known points (Figure 8). No nests were in active use at the time of the survey. However, these stick nests could be used by the Swainson's hawk, Cooper's hawk, red-tailed hawk, and northern harrier. Based on observations of paired Swainson's hawks (Figure 9) and northern harriers, it is likely that at least some nests will be used in the 2014 breeding season. Most stick nests occur either within or immediately adjacent to the Desert Grassland mixed shrub and grass communities. Aside from man-made structures such as transmission line poles or

windmills, the open grassland communities lack the structure required by these large raptors for nesting.

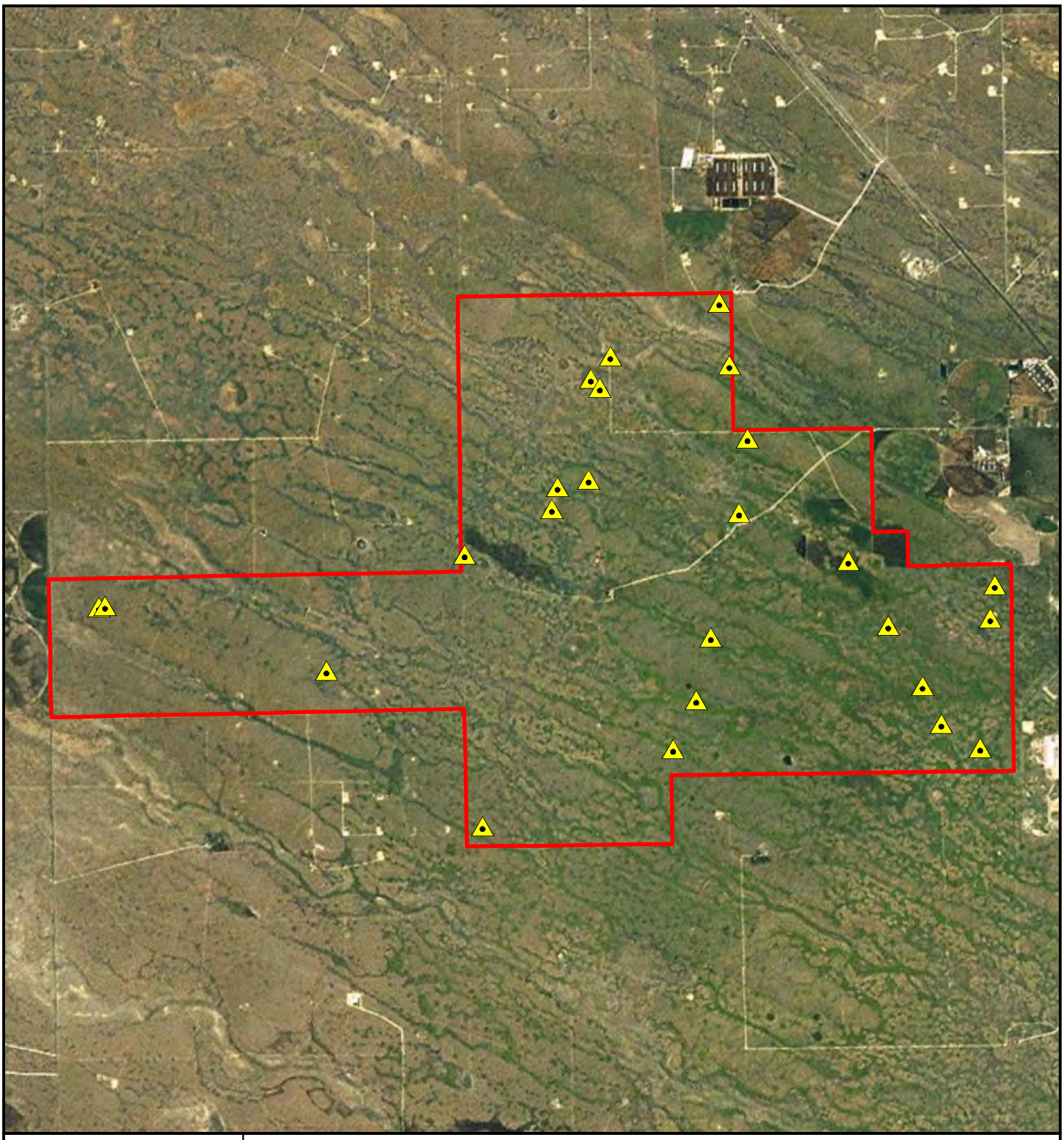
A female barn owl had constructed a nest within an abandoned trailer. Since Barn owls breed in late winter, by early spring the females are on the nest. The particular barn owl that we observed was nesting on some shelves in the kitchen area of an abandoned trailer (Figure 10). This trailer was located in the east-central portion of the study area next to a large steel shelter. Specifically, this nest occurred within UTM Zone 13 at E663787/N3628749 (Figure 8). Additionally, western burrowing owls appeared to be nesting in numerous locations within the prairie dog colonies in the study area and will be discussed in more detail later in this report. Although great horned owls were not observed, they also could be present in the study area.

In addition to the large stick nests, there were small songbird nests evident throughout the brushy portions of the study area. There were also ground-nesting species such as horned larks present throughout the study area.

Six colonies of black-tailed prairie dogs were identified during the reconnaissance survey. Most colonies occurred in the deeper soils that are found in the draws and swales (Figure 8). In total, these colonies covered about 305 acres, or approximately 3.2% of the project area. Prairie dogs are important keystone species and their burrows provide habitat for other species, in particular the western burrowing owl. All western burrowing owls found within the study area occurred within these prairie dog towns. Although some prairie dog towns were large, the holes were mostly abandoned. There were very few burrows per acre and even fewer burrows were active. The concentration of burrows was far below the threshold required to maintain species such as the black-footed ferret. With the understanding that prairie dogs can be destructive, they are also a key species in local ecosystems creating habitat for a wide range of wildlife species. It is recommended that whenever possible prairie dog colonies within the study area should be avoided and allowed to follow their normal course of development.

In addition to prairie dogs, there were several species of small mammals, which were common in the study area. Coyote tracks and droppings were scattered throughout the study area. A solitary coyote was noted in the eastern portions of the study area. Both desert cottontail and black-tailed jackrabbit were scattered throughout the study area. Also common were Ord's kangaroo rat and banner-tailed kangaroo rat. Southern plains woodrats were less common and normally occurred in areas where mesquite was present.

Reptiles were not abundant at the time of the survey, but the survey was conducted in early spring and temperatures probably had not risen sufficiently for reptiles to be active. Only two lizards (side-blotched lizard and prairie lizard) were visible during the survey. Based on other surveys conducted in the past in areas around Hobbs, we would expect many more reptiles than were observed during the survey, in particular snakes and possibly species such as the Great Plains skink. The study area is mostly too dry for amphibians. However, frogs could occur at the previously described wetland area, and species such as tiger salamanders could be present particularly around the playa areas, but would not be visible unless water was also present.



Study Area

Stick Nests

Lovington SE and Humble City, NM USGS 7.5' Quadrangles

N

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0 0.5 1 2 Miles

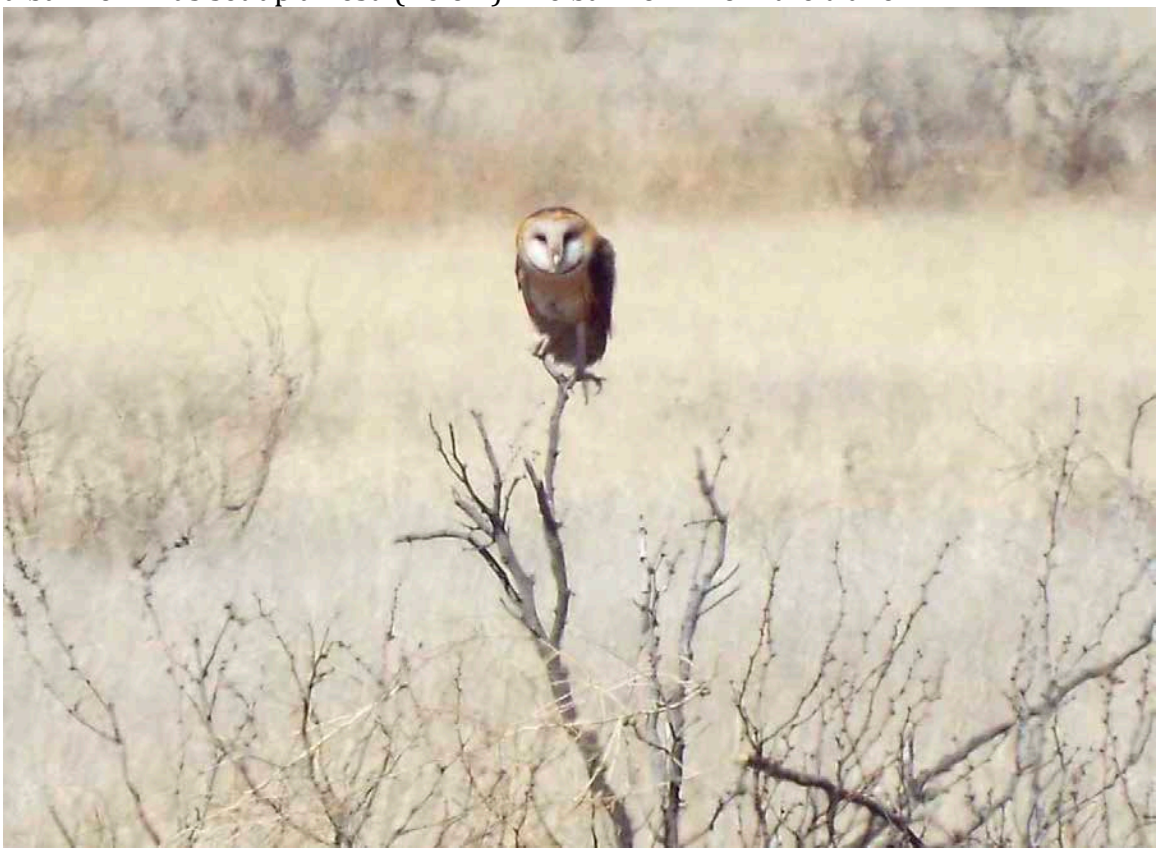
0 1.25 2.5 5 Kilometers

Figure 8
Map of
Nest Locations
in the Study Area

Lea County Industrial Park Fatal Flaw, Lea County, New Mexico

Figure 9: Hawks (Swainson's hawks [top] and Cooper's hawk [bottom])

Figure 10. (Above)An old trailer in the east central portion of the study area where a barn owl has set up a nest. (Below) The barn owl from the trailer.



3.1 Potential Impacts to Wildlife

Construction projects have the potential for both long- and short-term effects on wildlife. The short-term effects could include temporary habitat loss during construction and disruption of habitat use from the noise and activity associated with construction. During construction, larger mammals and birds may choose to leave the area and individual small mammals and reptiles may be displaced or taken during the construction activities. Long-term impacts may include permanent habitat loss or alteration. There are currently very few structures in the study area. As development progresses within the industrial park, more areas will be converted from natural communities, replaced by buildings, parking lots, or roadways. Still other areas may be temporarily impacted by utility-line installation.

It is recommended that wherever possible the principal new roadways follow existing dirt or two track facilities. Depending on the time of year, the Migratory Bird Treaty Act regulations may come into play. If maintenance and construction activities are scheduled during the avian nesting season, these activities could directly and indirectly impact nesting birds. These potential impacts can be partially mitigated by clearing, grubbing vegetation, and grading and leveling sites prior to nesting season so that construction activities are already in place when the birds select nest sites and nesting begins. It is recommended that if construction activities occur during the general nesting season (March through August) then a migratory bird nest survey be conducted within the portions of the study area that are likely to be impacted by construction. If construction occurs outside of the breeding season, consideration should be given to removing empty, non-stick, migratory bird nests identified within the proposed construction zone. This removal would occur outside the avian breeding season. This removal should occur in consultation with the USFWS prior to onset of nesting activities.

The installation of utilities often involves trenching. In locations where trenches are dug for drainage and utility lines, the NM Department of Game and Fish (NMDGF) has specific recommendations for trenching methods. Open trenches act as pitfall traps often leaving reptiles and small mammals trapped at the bottom of the trench where they can die from exposure or eventually be buried when the trench is closed. NMDGF recommends minimizing the amount of open trenches. Where trenches cannot be backfilled immediately, they recommend escape ramps should be provided. These escape ramps are simply cutting a slope along portions of the trench sidewall to allow small animals to escape. The NMDGF also recommends that trenches be inspected prior to backfilling to remove any animals caught in a trench prior to backfilling.

After completion of construction activities, the upland portions of the study area should be seeded with native plant species that reflect the dominant vegetation types in the area as recommended under the vegetation section of this document.

4 THREATENED, ENDANGERED AND PROTECTED SPECIES

This section discusses enabling legislation for the protection of plant and animal species in New Mexico that apply to the proposed Lea County Industrial Park. There are several state and federal laws that provide protection to plant and animal species within New Mexico that apply to the Lea County Proposed Industrial Park. These laws concentrate on threatened and endangered species. Although some, such as the Migratory Bird Treaty Act, also protect common species. The following is a listing and discussion of the principal legislation affording protection to threatened and endangered species of plants and animals, as well as migratory birds and birds of prey.

- Endangered Species Act 1973 (USFWS)
- Bald Eagle and Golden Eagle Protection Act (USFWS)
- Migratory Bird Treaty Act
- New Mexico Wildlife Conservation Act (N.M. Stat. Ann. §§17-2-37 et seq.) and other Chapter 17 Regulations
- New Mexico Endangered Plant Protection Act (N.M. Stat. Ann. §75-6-1)

Federal Endangered Species Act

The Endangered Species Act (ESA) of 1973 (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.) was designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation". The ESA protects species that are officially listed as "endangered" or "threatened." Endangered species are described as plants or animals that are in imminent danger of becoming extinct. Threatened species are described as plants or animals that could become endangered in the foreseeable future.

There are different degrees of violation within the law. The most punishable offense is enforced on those who knowingly break the law through acts of importing or exporting, taking, possessing, selling, delivering, carrying, transporting, or shipping endangered species without permission from the Secretary of the Interior. The act of knowingly "taking" includes harming, wounding, or killing an endangered species. This could include any person or organization that knowingly injures or kills a federal threatened or species in the course of a construction project. The penalties for these violations can be a maximum fine of up to $50,000 or imprisonment for one year, or both, and civil penalties of up to $25,000 per violation may be assessed.

An important provision of this law is that no penalty may be imposed if it can be shown by a preponderance of the evidence that the defendant committed an act based on good faith and was acting to protect himself or herself or any other individual from bodily harm from any endangered or threatened species. The law also eliminates criminal penalties for accidentally killing listed species during farming and ranching activities. Private landowners, corporations, state or local governments, tribes, or other non-federal landowners who conduct activities that might incidentally harm (or “take") endangered or threatened wildlife on their land are required to obtain an incidental take permit from the USFWS to provide protection from violating the ESA. To obtain a permit the applicant needs to develop a Habitat Conservation Plan (HCP) designed to offset any harmful effects the proposed activity might have on the species. The HCP process allows development to proceed consistent with conserving listed species. The “no surprises” regulation provides assurances to landowners participating in HCP efforts.

Within the proposed Lea County Industrial Park, the only federal threatened, endangered, or candidate species likely to be present are the lesser prairie chicken (threatened), northern aplomado falcon (endangered, but experimental population, non-essential) and Spraque's pipit (candidate). Most habitat within the study area is not typical habitat for the lesser prairie chicken, but there are reports of prairie chicken being observed within the grassland caprock habitat found in the study area. Within the last century, northern aplomado falcon have been mostly extirpated from New Mexico, but as part of a recovery effort the USFWS has been reintroducing them in Texas, and beginning in 2007 started reintroducing them on BLM lands in New Mexico. Many stick nests within the study area provide at least potential habitat for northern aplomado falcon. Spraque's pipit is a small migratory bird that nests in the northern United States and Canada and winters in southern New Mexico, Texas, and Mexico. The wintering habitat within New Mexico is poorly known. However, based on habitat description it could winter within the better vegetated upland grass habitats in the study area.

Bald and Golden Eagle Protection Act

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

For purposes of these guidelines, "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available 1) injury to an eagle, 2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

A violation of the Act can result in a fine of $100,000 ($200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses and a second violation of this Act is a felony.

There is no likely suitable habitat for bald eagle anywhere near the study area. Golden eagles are known to nest along the rim of the caprock west of the study area, but the nearest likely nesting habitat for them is probably 20 miles west-northwest of the study area.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 is the United States legislation implementing the convention between the United States and Great Britain (for Canada). The United States subsequently entered into similar agreements with four other nations (Canada, Mexico, Japan, and Russia) to protect migratory birds. The statute makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed therein (and referred to as migratory birds). The statute does not

discriminate between live or dead birds. It also grants full protection to any bird parts including feathers, eggs, and nests. Over 800 species are currently on the list. The USFWS manages the implementation of the Migratory Bird Treaty Act. This law can have direct impacts on private property owners.

Migratory birds may nest within trees or on buildings considered private property. Based on current guidance from the USFWS, occupied migratory bird nests cannot be moved or destroyed without a federal permit issued by the USFWS, however; unoccupied nests can be removed or destroyed without a federal permit. The optimum time for removal of unoccupied nests occurs from late September through mid-February.

If proposed project activities occur during the nesting season (and are likely to affect occupied nests), then it is recommended that applicant, developer, or their representative submit a permit application to the USFWS for nest removal. Approximately four to eight weeks should be allocated prior to construction begins to allow time for processing the permit. The application generally includes the following information: (1) a letter stating the location of the nests, (2) a statement as to why the nests must be destroyed, (3) a site plan or diagram of the property that shows the nest location relative to proposed construction, and (4) proposed mitigation measures to offset the loss of nesting habitat for this species. These measures could include the potential of moving the nest rather than its destruction.

Violations of the Migratory Bird Treaty Act can result in substantial fines. The Migratory Bird Treaty Reform Act of 1998 amended the law to allow the fine for misdemeanor convictions under the Migratory Bird Treaty Act to be up to $15,000 rather than $5,000.

This sweeping law has the potential to affect any project on private, city, state, or federal land that is constructed during the migratory-bird nesting season. The provisions are clear that any activities that take or destroy a nesting bird site, or even harass nesting birds, are violations of the Migratory Bird Treaty Act. Any construction activity that clears trees or other bird nest sites also has the potential to be in violation of the Migratory Bird Treaty Act. Most state and federal agencies that are involved in disturbance activities implement migratory bird nest surveys prior to construction and also clear trees and shrubs during the winter months to avoid potentially impacting nest sites. During the reconnaissance survey, a large number of stick nests were noted in the study area. Although none were occupied at the time of the survey, the breeding season extends into the summer and they may be occupied later into the breeding season. All western burrowing owl locations would also qualify a migratory bird sites, as well as nests of the smaller songbirds in the study area

New Mexico Wildlife Conservation Act and other Chapter 17 Regulations

The New Mexico Wildlife Conservation Act covers all animal species and distinct populations (except for insects) whose protection would present an overwhelming and overriding risk to humans (N.M. Stat. Ann. 17-2-37 et seq.). Protected animals have listings of either state threatened or state endangered. Endangered species is defined as any species of fish or wildlife whose prospects of survival or recruitment within the state are in jeopardy due to any of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat; (2) over utilization for scientific, commercial, or sporting purposes; (3) the effect of disease or predation; (4) other natural or man-made factors affecting its prospects of survival or recruitment within the state; or (5) any combination of the foregoing factors. The term may also include any species of fish or wildlife appearing on the United States list of endangered native and foreign fish and wildlife as set forth in Section 4 of the ESA of 1973.

Endangered species may be removed, captured, or destroyed where necessary to alleviate or prevent damage to property or to protect human health. Such removal, capture, or destruction may be carried out only with prior authorization by permit from the director, unless otherwise provided by law if endangered species may be removed, captured, or destroyed without permit by any person in emergency situations involving an immediate threat to human life or private property.

Violations of the Wildlife Conservation Act are misdemeanors and upon conviction, depending on the violation, the offender can be fined upwards of $1000 and be imprisoned up to 90 days, or both.

In addition to the Wildlife Conservation Act, another part of the State Chapter 17 Regulations (17-2-14) provides protections to owls and other birds of prey. These regulations state that it is unlawful to take, attempt to take, possess, trap or ensnare, or injure, maim, or destroy any species of vultures, hawks, and owls, and it is unlawful to purchase, sell or trade, or possess parts of these birds (17-2-14). These same protections apply to these species via the Migratory Bird Treaty Act.

The NM state endangered species list for Lea County includes eight species. Most of these species would not have suitable or potential habitat in the study area. Aside from the aplomado falcon, only the Baird's sparrow (a NM threatened species) is likely to occur within the study area.

New Mexico Endangered Plant Protection Act

Under New Mexico's Endangered Plant Protection Act (EPPA), 93 the Department of Natural Resources (DNR) is directed by statute to establish a list of endangered plant species within the state. The DNR has the authority to prohibit the taking, possession, transportation, exportation, processing, and sale of listed plants, except as authorized by permit. Permits may be available for scientific or propagation purposes. Authorized penalties include criminal fines up to $1000 and imprisonment up to 120 days.

This law is specifically prohibits illegal taking or possession of state endangered plants and was enacted to eliminate the illegal trade in plants such as cacti. It does not include any restrictions on ground conversion activities that might affect listed plants.

Although this law applies statewide, there are currently no state endangered species listed for Lea County.

In combination, the USFWS (Endangered Species Act) and the NM Department of Game and Fish (Wildlife Conservation Act) list 12 species or varieties with agency status for Lea County (Table 2). Most do not have suitable habitat within the proposed Lea County Industrial Park. The following is a brief discussion of each species. The discussion is organized by those with no habitat in the study area, followed by those with at least marginal habitat in the study area.

Table 2: Species Identified by the USFWS or the NMDGF as Potentially Occurring in Lea County

SPECIES	USFWS/FEDERAL STATUS*	NM DEPARTMENT OF GAME AND FISH STATUS*
Sagebrush lizard (*Sceloporus arenicolus*)	--------	E
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	T	--------
Bald eagle (*Haliaeetus leucocephalus*)	EPA	T
Aplomado falcon (*Falco femoralis*)	Experimental Population Non-essential	E
Artic peregrine falcon (*Falco peregrinus tundrius*)	--------	T
Peregrine falcon (*Falco peregrinus anatum*)	--------	T
Broad-billed hummingbird (*Cyanthus latirostris*)	--------	T
Baird's sparrow (*Ammodramus bairdii*)	--------	T
Least Tern (*Sternula antillarum*)	E	E
Bell's vireo (*Vireo bellii*)	--------	E
Spraque's pipit (*Anthus spragueii*)	--------	--------
Golden Eagle (*Aquila chrysaetos*)	EPA	--------

* **T**-Threatened**, E**-Endangered**, C**-Candidate**, EPA**-Eagle Protection Act

4.1 Species with Agency Status that Lack Suitable Habitat

Sagebrush Lizard (*Sceloporus arenicolus*)

Sand dune lizard is found primarily in dune habitats dominated by shinnery oak. This species is a habitat specialist that occurs exclusively within blowouts in shinnery dune habitat and prefers large, deep blowouts. Within New Mexico, this species is known only from southern Roosevelt County, southeastern Chaves County, northeastern Eddy County, and central and northern Lea County. Although there are a number of areas within Lea County where the suitable dune habitat for this species occurs, the proposed Lea County Industrial Park occurs on caprock and does not have any sandy areas, sand dunes, or shinnery oak present. The proposed development of the Lea County Industrial Park should have no impact on this species.

Bald eagle (*Haliaeetus leucocephalus*)

Bald eagles principally occur in New Mexico as winter visitors although there are some known nesting pairs in the state. Bald eagles are more likely to be found near rivers and reservoirs, but some winter in uplands where they feed on carrion. The species occurs casually to occasionally in summer and occurs almost statewide during winter migration. The main wintering areas in New Mexico include the San Juan River, upper Rio Grande, upper and middle Pecos River, Canadian River, San Francisco River, Gila River, and Estancia valleys. The NMDGF lists this species as rare in Lea County. There are no suitable lakes or bodies of water near the study area. Although bald eagles could migrate through the area, there is no suitable nesting or roosting habitat for this species. The proposed development of the Lea County Industrial Park should have no impact upon this species.

Golden eagle (*Aquila chrysaetos*)

Golden eagle is a large, dark brown bird of prey with a 71-inch wingspan. Their breeding range extends throughout Canada and through much of the western United States. They occur in open areas at lower to middle elevations throughout New Mexico. Preferred nesting sites are cavities within ledges and cliffs of mountainsides, mesa escarpments, and canyon walls. The cliffs, which golden eagles typically use, are greater than 30 meters (m) in height, but they can infrequently use cliffs of only 10 m in height. The nesting cliffs are normally directly adjacent to suitable foraging habitats. Golden eagles are known to occur within Lea County where they nest along the cliffs on the western edge of the caprock. However, the nearest probable nesting habitat is located about 20 miles away. Although they may fly over the study area, there were no indications of golden eagles in the project area and the project activities should not affect them.

Peregrine falcon (*Falco peregrinus anatum*) and Artic peregrine falcon (*Falco peregrinus tundrius*)

The peregrine falcon has a pronounced dark cap and distinctive facial pattern. This falcon breeds throughout most of North America. It occurs in the upper and lower montane, desert scrub, and grassland areas. Primarily preying on birds in flight, the falcon normally centers its territories on cliffs but also nests on building ledges in large cities. This species has been documented throughout most of New Mexico, with specific sightings in the Middle Rio Grande Valley. It breeds in mountainous areas and resides primarily in the eastern plains during migration and during winter. It summers and nests on tall, steep, rocky cliffs associated with forest or woodland close to water. It is found in all New Mexican mountain ranges.

There are records of peregrine falcon observations throughout eastern New Mexico where they are known to occur as an uncommon spring and fall migrant in the area. There is no potential nesting or even any good roosting habitat for peregrine falcon within the study area. Although peregrine falcons may visit the area, the project is not anticipated to affect this species.

Broad-billed hummingbird (*Cyanthus latirostris*)

The NMDGF reports the broad-billed hummingbird as occurring in Lea County. The habitats that it can use are quire variable. However, they are usually found in riparian woodlands at low to moderate elevations. The array of habitats used by this hummingbird in Mexico is quite varied, but the species is found primarily in riparian woodlands in the United States at low to moderate elevations, or in Desert Riparian Deciduous Woodland especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins. There are no such habitats within of near the Lea County Industrial Park. The records of this species in Lea County are probably birds that are transient in residential or developed areas that are considered Urban-vegetated. Many hummingbirds use feeders in urban or rural-residential areas, particularly during migration. There is no suitable habitat for this species in the study area and the development of the proposed Lea County Industrial Park should have no impact upon this species.

Least Tern (*Sternula antillarum*)

The interior least tern breeds from California, South Dakota, and Maine southward locally to Chiapas and the Caribbean with the major inland population in the Mississippi Basin; the species winters from the Pacific Coast to Mexico and southward from the U.S. Gulf Coast. *S. a. athalassos* is the subspecies of the Mississippi Basin and presumably breeds in New Mexico in

the Roswell vicinity—regularly at Bitter Lake NWR (the key habitat area in the state) and perhaps rarely at Bottomless Lake State Park and Wade's Bog. The species is a migrant in Eddy County, and a vagrant elsewhere, including Sumner Lake (DeBaca County), Bosque del Apache NWR (Socorro County), near Glenwood, Las Cruces, and Alamogordo. The interior least tern nests on the ground, typically on sandy sites relatively free of vegetation. Areas such as sandbars are used in rivers as well as beaches and spits in coastal areas. In New Mexico and other parts of the southern Great Plains, alkali flats are selected as nesting areas. The interior least tern can use large playas where water collects as nesting sites. Although there are small, scattered playa areas throughout the proposed industrial park, none has ponded water for protracted periods, and all are heavily vegetated. None provides the habitat that the interior least tern requires. There is no suitable habitat for this species in the study area and the development of the proposed Lea County Industrial Park should have no impact upon this species.

Bell's vireo (*Vireo bellii*)

Bell's vireo is rare in New Mexico, with some populations summering in the lower Rio Grande. This species also summers locally in southern New Mexico northward to the lower Gila, lower and middle Rio Grande and lower Pecos valleys, and occasionally north in the lower San Francisco River Valley. Bell's vireo is found in dense riparian shrublands and riparian woodlands near streams, although they occasionally can be found in non-forested habitats. This species prefers lowland riparian habitats with willows (*Salix spp*), mesquite (*Prosopis spp*.), and seepwillows (*Baccharis glutinosa*) as the characteristic plant species. Occasionally, this species is found in grasslands dominated by wild oat (*Avena spp*.), ripgut brome (*Bromus rigidus*), soft chess (*Bromus mollis*), bur clover (*Medicago hispida*), and filaree (*Erodium spp*.) with less than 5 percent woody cover. There are no such grassland habitats in the study area. The NMDGF lists this species as rare in Lea County, New Mexico. There was no suitable habitat for it within the proposed Lea County Industrial Park and any future development should have no impact upon this species.

4.2 Species with Agency Status that Have Potential Habitat

Aplomado falcon (*Falco Femoralis*)

The Aplomado falcon is slim with a long and strongly banded tail. It is found in savanna or in grasslands adjacent to shrublands. Its range extends from the American southwest southward all of the way to Tierra del Fuego. The name *aplomado* is from Spanish meaning "lead colored" which refers to the distinctive dark blue-gray color on the back of this species. Historically, the aplomado falcon may have extended as far north central New Mexico, but by 1986 this species was considered extirpated from the United States and was listed as endangered. Although the aplomado falcon is listed as endangered, the USFWS has an ongoing program to establish an experimental population in New Mexico. The USFWS have been reintroducing the falcon from Texas to New Mexico for 20 years as a "Nonessential, Experimental" population pursuant to the Endangered Species Act. By proceeding in this fashion, the bird is protected as a threatened species when within federal lands, but only as "Proposed for Listing" on private or state-owned lands. This approach allows for current land practices and cooperative efforts with landowners to both continue. This species also falls under the protection of the Migratory Bird Treaty Act as well as the State Chapter 17 Regulations (17-2-14) provides protections to owls and other birds of prey.

The historic range of this species in New Mexico included Dona Ana, Grant, Hidalgo, Luna, Sierra, Socorro, Eddy, and Lea Counties. The nonessential, experimental population also extends into Lea County. Suitable habitat for this species does occur within the study area, particularly in those areas where grasslands interface with the mesquite shrubland communities, and many stick nests noted within the study area would provide a suitable nest site for aplomado falcon. There were no aplomado falcons in the study area during the early spring survey. In recent years, there have been documented nests of aplomado falcons in Luna County, but based on the existing literature it does not appear that there are any known aplomado falcon nest sites in Lea County. However, there is nothing to preclude their future presence in Lea County, especially if the reintroduction program proves successful. Aplomado falcons usually lay a clutch of two or three eggs from mid-March to mid-April. If future construction sites are not cleared of vegetation during the winter months, then surveys for aplomado falcon would be conducted prior to construction specifically within the Desert Grassland habitats or within the Plains/Mesa Grassland habitats that have tall shrub cover present.

Sprague's pipit (*Anthus spragueii*)

Sprague's pipit is a small bird (five to six inches long) with brown wings and tail with two pale white wing-bars. The breast is whitish with blackish streaking. Sprague's pipit is a short to medium distance migrant. They breed in southern Canada and the northern United States and winter in the southern United States and Mexico. Sprague's pipit occurs within native grasslands but can occur in areas of introduced grasses. Generally, they prefer well-drained grasslands with high plant species diversity. They breed mostly in Alberta and Saskatchewan Canada as well as in Montana, North Dakota, and South Dakota in the United States. Their spring migration up through the Great Plains occurs in April and May. Their fall migration down through the Great Plains occurs from late September to early November. They winter in southern Arizona, southern New Mexico, and most of Texas, as well as throughout two thirds of length of Mexico. The proposed Lea County Industrial Park occurs just within the northern edge of their known winter habitat.

Winter habitat for Sprague's pipits in the United States is composed of grasslands composed of grasses and forbs, they are rarely found in shrub grasslands. In Arizona and New Mexico they are found in extensive areas of well-developed desert grasslands, but they also have been found in overgrazed areas where grass is very short. The study area may provide suitable habitat for this species. The areas of poor habitat would probably be those locations with heavy mesquite concentration in the southeast corner and northwest corner of the study area. The Sprague's pipit is currently only a candidate species for the USFWS. Candidate species are plants and animals for which the USFWS has sufficient information to propose them as endangered or threatened, but for which development of a proposed listing regulation is precluded. Candidate species receive no statutory protection under the Endangered Species Act, but the USFWS encourages cooperative conservation efforts as the species may warrant future protection under the Endangered Species Act. This species was only recently added to the candidate species status and the USFWS does not have clear guidelines on even its preferred habitat structure in its winter range. Sprague's pipit does not nest in New Mexico, but is only a winter resident or migrant through the state. Consequently, development activities will not impact active nest sites, but may remove suitable winter habitat for this species.

Lesser prairie-chicken (*Tympanuchus pallidicinctus*)

The lesser prairie chicken is a member of the grouse family. This species has recently been elevated to the threatened level by the USFWS. It occurs in western Kansa, the sand hills and prairies of western Oklahoma, the Texas panhandle, and both eastern New Mexico and southeastern Colorado. It usually inhabits open rangeland dominated by shinnery oak or sand sagebrush. This type of habitat does not occur within the study area. However, the lesser prairie chicken can occur in mixed-grass habitats without sand dunes or shinnery oak. There was no indication of lesser prairie chicken in the study area during the reconnaissance survey. The USFWS has reports of the lesser prairie chicken in caprock grassland habitats within eastern New Mexico. Unless there is further clarification of the structure of suitable lesser prairie chicken habitats on caprock habitats, much of the study area could be considered at least marginal habitat for this species. Therefore, before the onset of construction activities, protocol surveys may be required. Since travel is a large portion of the cost of surveys for the lesser-prairie chicken, the simplest solution for completing such surveys would be for the client to determine whether any of their personnel has suitable biological training to be permitted to complete such surveys, or to use qualified individuals from the local college.

Baird's sparrow (*Ammodramus bairdii*)

Baird's sparrow is a brown and black streaked sparrow with a broad orange-brown median stripe through the crown. This retiring sparrow is normally found in shrubby short-grass and prairie habitats where it conceals its nest in the grass. Within New Mexico, it has been identified in a variety of habitats ranging from Desert Grassland in the south, to prairies in the northeast, and mountain meadows in the northern portions of the state where it occurs principally as a migrant. This species nests principally north of New Mexico and there is no likely nesting habitat in the study area. Baird's sparrows have been reported as spring migrants in the eastern plains of New Mexico and could be present anywhere in the study area as migrants during the spring. This species winters in northern Mexico and its winter range extends into extreme southern Arizona, south Texas, and southwestern New Mexico. Winter habitat requirements of Baird's Sparrow are not well understood. Generally, this species winters in dense and expansive grasslands with only a minor shrub component. Baird's sparrows typically arrive in the Southwest from September to mid-October, and remain through early April. Baird's sparrow populations have been declining due to loss or alteration of native grassland habitat in breeding and wintering areas. Baird's sparrow has no federal status, but is currently listed as state threatened. Based on current data, the Lea County Industrial Park area probably falls into migration habitat for this species. Since this species, like the Sprague's pipit, does not nest in New Mexico, there are no issues directly associated with nesting behavior and it may only be present during the spring migration north and the fall migration south. It is not likely to be present in the areas with abundant mesquite cover, but is more likely to be present in the open Plains/Mesa habitats with well-developed grasses.

4.3 Migratory Bird Status and Species that Fall within the NM State Chapter 17 Regulations (17-2-14)

The NM State Chapter 17 regulations protect all owls and birds of prey, but they do not protect the other avian species. However, the migratory bird treaty act protects over 800 species of birds within the United States. All birds that are protected under the Chapter 17 regulations are also protected by the Migratory Bird Treaty Act. The list of migratory birds protected by the

MBTA is too long to include in this document, but most birds within the study area are included under the protections of the act. Twenty-five of the 26 birds that were observed on the site and appear in Apprendix B are all listed under the MBTA. The only bird on the Appendix B list that was not listed was the scaled quail.

Both the owls and the hawks found at the site have both state (Chapter 17 Regulations) and federal protection (MBTA). Twenty-four stick nests were observed in the study area (see Figure 8). There are more in areas that were not reached during the reconnaissance survey. We believe that the vast majority are used by Corvids such as American crow or common raven. However, as previously discussed, there were pairs of Swainson's hawks present, as well as northern harriers, and red-tailed hawks that could use these nests. Additionally, both barn owl and western burrowing owl nest within the study area. Although all these birds of birds of prey are protected, the most significant and abundant of them within the study area is the western burrowing owl.

Athene cunicularia hypugaea (Western Burrowing Owl)

Western burrowing owl is a brown, medium-sized owl that is often seen perched on the ground or on fence posts. Unlike many other owls, it is not found in forested areas. Its preferred habitats include plains, treeless valleys, and mesas. It is also found in sagebrush, saltbush, greasewood, and creosote shrublands in New Mexico. As the name implies, western burrowing owl nests underground. Although it generally relies on deserted burrows of small mammals such as prairie dog, ground squirrel, badger, and even kangaroo rat for its nests, it is capable of digging its own burrow (Ligon, 1961; NMDGF, 2014). Burrowing owls modify such burrows by digging and scraping with their beaks, wings, and feet. In addition to natural settings, this species may also be found at urban airports and on vacant lots, baseball fields, highway right-of-ways, or any other open space that resemble its natural habitat.

Western burrowing owls spend much time outside their burrows and can often be seen sitting on a small mound of dirt beside the burrow or on a nearby post or low shrub. They especially like the edges of ditches along roads in agricultural areas. They nest in either solitary pairs or colonies. When burrows are numerous and close together, as in the case of abandoned prairie dog or ground squirrel burrows, the owls settle in colonies, as was the case within the study area. All of the prairie dog towns in the study area are very sparsely populated by black-tailed prairie dogs leaving many unoccupied burrows. Western burrowing owls are normally diurnal, but during the nesting season, the male hunts day and night to provide food for its young. The nests are frequently lined with dried horse and cattle manure, feathers, and other debris. The female lays an average of five to eight eggs that are incubated for approximately 28 days by both parents. Once hatched, both parents feed the young. Preferred food includes large insects, small mammals (mostly rodents), reptiles, and occasionally small birds.

Fifty-four western burrowing owls were noted in the study area. However, since we are in the nesting season, there may be more owls underground sitting on eggs. All western burrowing owl within the study area were confined to prairie dog towns. In total, nine western burrowing owl colonies were identified (Table 3). Five of these were distinct. The remaining four are actually part of one large diffuse prairie dog colony located in the east end of the study area (Figure 11). In total, these colonies covered about 145 acres. The presence of 54 western burrowing owls is significant. In recent years the populations of burrowing owls in northern and central New Mexico have been collapsing. In many areas the overall numbers of burrowing owls are down over 90%. The burrowing owls winter in northern Mexico and move north in the spring. One

theory regarding the decline is that the owls moving north in the spring encounter the draught stricken areas of southern New Mexico and do not move north of that point. The other theory is that the populations of owls are actually declining. The abundance of burrowing owls found at the proposed industrial park suggests that at least in that area they are not declining.

Table 3: Location of Western Burrowing Owl Colonies

Site Number	UTM Zone 13 NAD 83	Number of Owls	Description
1	E655879/W3627416	6	West End of Study Area
2	E662184/N3631437	3	NE Corner of Study Area
3	E661945/N3630291	2	Just North of Quarry
4	E661918/N3630286	4	Just SE of the Quarry Between Power lines
5	E660932/N3628611	10	Just North of Abandoned Homestead
6	E664620/N3628089	6	Eastern End of Study Area
7	E665323/N3628197	6	Extreme East Edge of Study Area
8	E664904/N3628396	8	Eastern End of Study Area
9	E664790/N3628814	9	Eastern End of Study Area

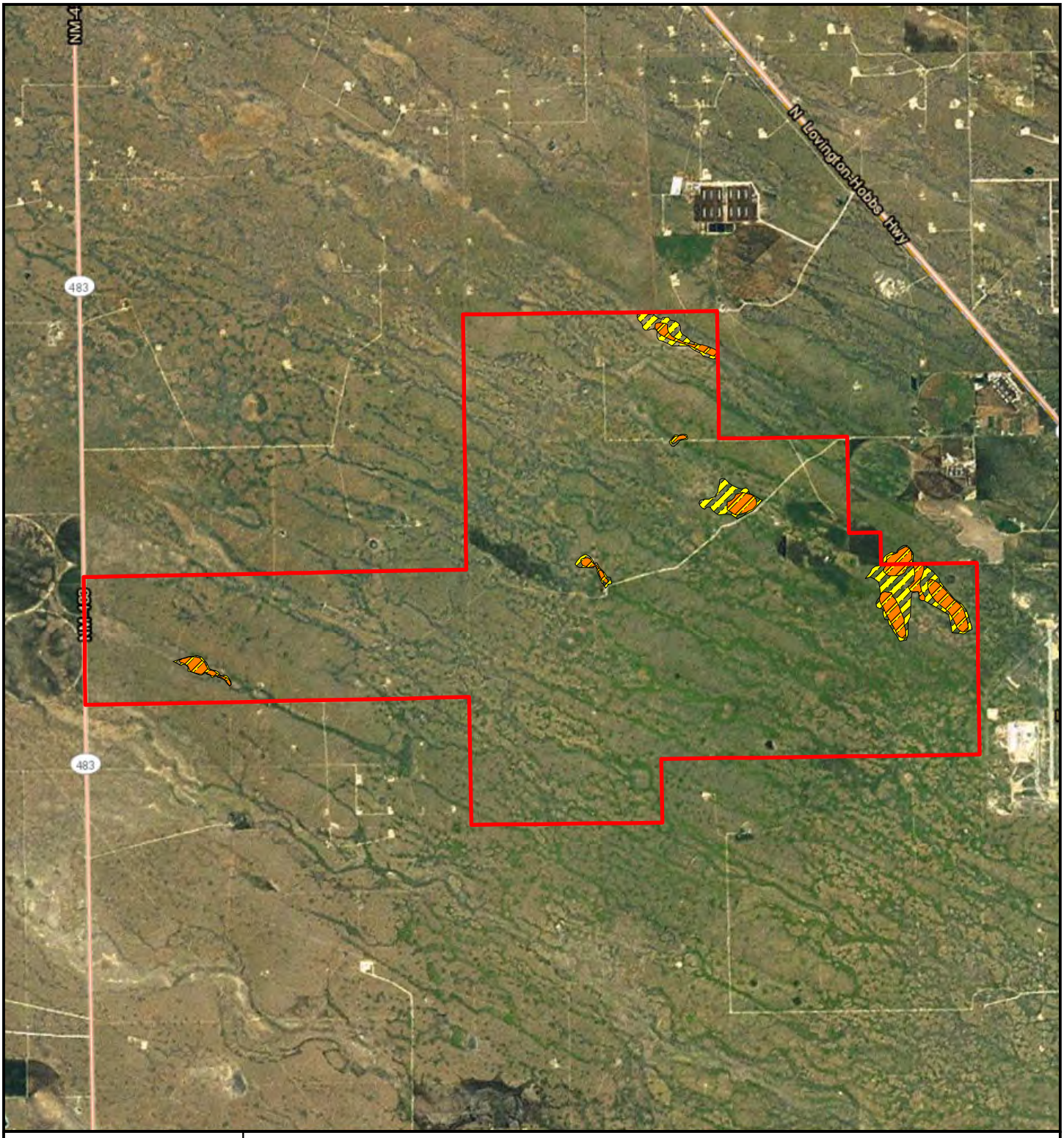
Burrowing owls are a gregarious species and are often tolerant of human activity. They typically nest along roadways or within developed areas. However, they are vulnerable to land conversion activities that remove their habitat.

Although the large birds such as hawks, owls, crows and ravens have the most obvious nesting areas, the most common migratory birds likely to be found within the study area are the smaller birds, such as the songbirds. The most common species observed at the site were horned larks and lark buntings. The nests of these and other songbirds are often difficult to see. Even more difficult to see are those small birds that can nest on the ground, such as horned larks and mourning doves. During the reconnaissance survey, we encountered a horned lark nest in the western portion of the study area. Figure 15 shows how small and difficult such nests are to find.

Potential Impacts to Migratory Birds

Migratory bird nest sites are probably the issue most likely to be encountered at the proposed Lea County Industrial Park. Unlike many rare species that have very specific and limited habitats, migratory bird nests can occur everywhere from below ground to trees and even in abandoned trailers. The easiest way to deal with them is to conduct clearing and grubbing for a project outside the migratory bird nest season (i.e., during the winter) when most these birds would be absent. If it is not possible to complete clearing and grubbing outside the nesting season, then migratory nest surveys should be completed prior to construction. In most cases, preconstruction surveys work very well. The only problem with these surveys is if active nests are found and construction contracts are let with a short schedule for completion. Active migratory bird nests can be removed under the authority of a federal permit issued by the USFWS. The issuance of such a permit generally takes time. This removal must be completed by a qualified biologist and the chicks subsequently are hand raised until they fledge, which can be a costly process. In most cases, unoccupied migratory bird nests can be removed outside the nesting season without a permit.

Western burrowing owls present a unique problem. First, they do not have above ground nests, and second there is no certainty that all western burrowing owls leave their nest sites in the fall. Often a small percentage overwinter in their burrows. Before clearing and grubbing occurs within western burrowing owl colonies, the areas should be surveyed (even in the winter) to ensure that there are no owls present. We often recommend inspecting the burrows with an endoscopic type camera that can be pushed into the burrow to ensure they are not occupied. If western burrowing owl colonies must be removed, it is possible to create new owl habitat at a modest cost. Artificial burrows can be constructed by mounding dirt in suitable habitat and installing large PVC or ABS piping into the sides of the mounds. This piping acts as artificial burrows and has been successfully used in other parts of New Mexico.



MARRON and ASSOCIATES

Figure 11
Location of Western Burrowing Owl Colony

Study Area
Burrowing Owl Colony
Prairie Dog Town

Lovington SE and Humble City, NM USGS 7.5' Quadrangles

N

1:70,000

0 0.5 1 2 Miles

0 1.25 2.5 5 Kilometers

Figure 12. (Above)Occupied western burrowing owl habitat located within Colony 4. (Below) Occupied western burrowing owl habitat located within colony 8.

Figure 13. (Above)Occupied western burrowing owl burrow located within Colony 6. (Below) Photograph of western burrowing owl located in Colony 2.

Figure 14. (Above)Western burrowing owl located within Colony 5. (Below) Photograph of western burrowing owl located in Colony 3.

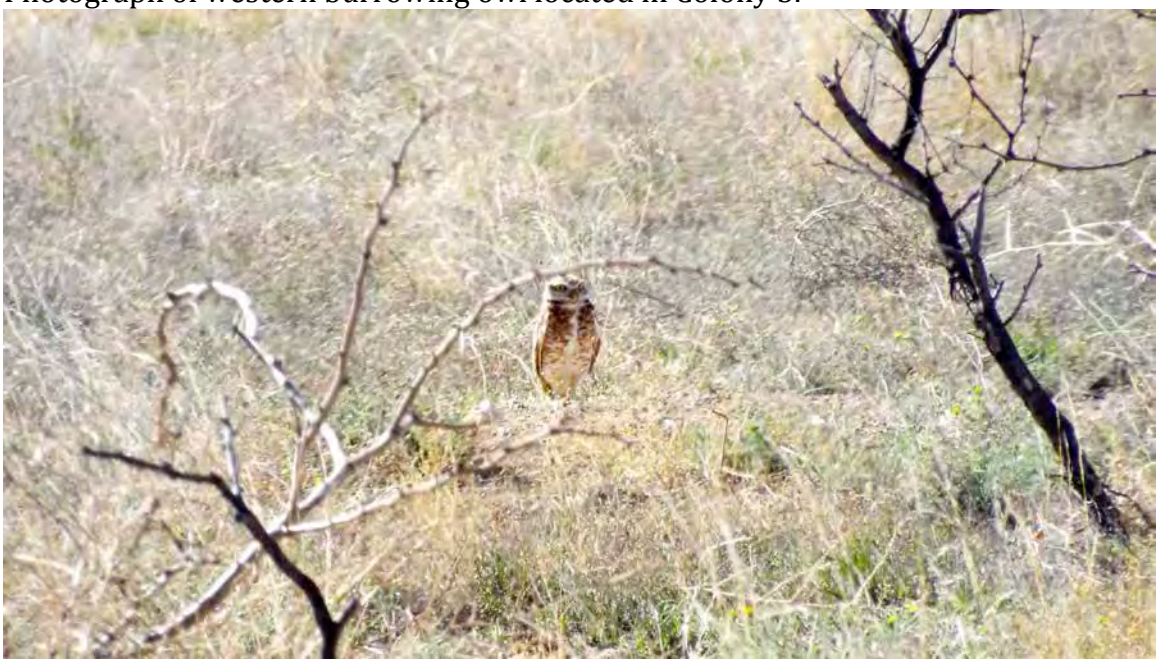


Figure 15. (Above)This photo shows a horned lark nest excavated down into the ground and hidden by grass. If the chicks did not have their mouths open they would be nearly invisible. (Below) Close up of horned lark chicks in the nest.

5 SUMMARY

Six vegetative community types have been defined within the study area: Plains/Mesa Grassland-Uplands, Plains/Mesa Grassland Swales, Plains/Mesa Grasslands Playa's, Desert Grassland Shrub-Mixed Grass Series, Palustrine Wetland, and Disclimax Vegetation. None of these communities are rare or unusual, nor were there are rare or protected plant species, or Class A or B noxious weeds present. It is recommended that any reseeding in the area use native plants currently found at the site. Such species are easier to establish and maintain, particularly when water is scarce during drought conditions.

Thirty-six species of wildlife were found in the area during an early spring survey. This included 26 species of birds, 8 species of mammals and 2 species of reptiles. Among the birds were 2 species of owl (barn owl and western burrowing owl), and 4 other bird-of-prey species (Swainson's hawk, Cooper's hawk, red-tailed hawk and northern harrier). During the course of the reconnaissance survey 25 stick nests (suitable for use by birds-of-prey or large corvids such as crows and ravens) were found scattered across the study area. A 100% survey of the study area would likely document many more. These stick nests were not occupied at the time of the survey, but based on the observation of pairs of raptors in the area, it is likely that at least some nests will be used by birds-of-prey in the 2014 breeding season. There were large numbers of western burrowing owls (54 observed) present within 9 colonies that are scattered throughout the black-tailed prairie dog towns in the study area. It is likely that at least some will produce young during the 2014 breeding season. All birds-of-prey fall under the protection of the Chapter 17 regulations of the NM State Wildlife Conservation Act. Additionally, these larger birds, as well as nearly all other birds at the site also fall under the protection of the Migratory Bird Treaty Act.

Recommendations for migratory birds include trying to schedule clearing and grubbing of proposed construction sites outside the breeding season. This works with the exception of western burrowing owls that can be present in the burrows year-round and require special methods to identify their presence. If construction must take place during the breeding season, then preconstruction migratory bird surveys are recommended with the understanding that if active nests are found they cannot be removed until the chicks fledge unless they are removed under the authority of a federal permit from USFWS, which allows for removal and subsequent rearing of the chicks.

In combination the USFWS and the NMDGF identify 12 species within Lea County that have status with their agencies. Most lacked suitable habitat within the study area. However, 3 of the USFWS species (lesser prairie chicken, Sprague's pipit, and aplomado falcon), and one additional NMDGF species (Baird's sparrow), could occur within the study area at least seasonally. Both the aplomado falcon and lesser prairie chicken could potentially nest in the general study area, but there was no indication of either of these species during the reconnaissance survey. As development within the industrial park come on line, surveys for these species will need to be conducted. The other two species (Sprague's pipit and Baird's sparrow) are both winter migrants into the area. Baird's sparrow is likely only to be a migrant and present only during the fall and early spring. Sprague's pipit may be a winter resident of the area. Currently it is a candidate species on the USFWS service list and has no statutory protection. Nor currently has the USFWS provided provisions for habitat suitability or survey protocols for this species.

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APPENDIX A

PLANT SPECIES FOUND WITHIN THE STUDY AREA

Acanthaceae
Stenandrium barbatum Torr.& A. Gray - (Early shaggytuft)

Agavaceae

Yucca glauca Nutt. –(Soaptree yucca)

Amaranthaceae

Amaranthus hybridus L.- (Green amaranth)

Apiaceae

Cympoterus bulbosus A. Nelson (Spring parsley)

Asteraceae

Acourtia nana (Lag. Ex D.Don) B.L. Turner - (Desert holly)
Baileya multiradiata harv.&Gray - (Desert marigold)
Berlandieria lyrata Benth. - (Lyrate greeneyes)
Chaetopappa ericoides (Torr.) G.L. Nelson (Rose heath)
Cirsium sp. - (Thistle)
Dyssodia papposa (Vent.) A.S. Hitch - (Dogweed)
Erigeron bellidiastrum Nutt. - (Western fleabane)
Gutierrezia microcephala (DC.) Gray - (Small-headed snakeweed)
Gutierrezia sarothrae (Pursh) Britt.&Rusby - (Snakeweed)
Helianthus annuus L. (Common sunflower)
Hymenopappus sp.- (Bitterweed)
Machaeranthera pinnatifida (Hook) Shiners - (Golden tansy aster)
Machaeranthera tanacetifolia (H.B.K.) Ness - (Cutleaf aster)
Palafoxia sphacelata (Torr.) Cory - (Palafoxia)
Ratibida columnifera (Nutt) Woot.&Standl. – (Prairie cone flower)
Ratibida tagetes (James) Barnhart (Green prairie coneflower)
Senecio flaccidus Less - (Longlobed groundsel)
Thelesperma megapotamicum (Sprent.)). Ktze - (Navajo tea) -

Boraginaceae

Cryptantha sp.(Torr.) Payson - (hiddenflower)

Brassicaceae

Descurainia sophia – (Tansy mustard)
Dimorphocarpa wislizeni(Engelm) Rollins - (Spectacle pod)
Lesquerella gordonii (Gray) Wats. - (Gordon's bladderpod)

Cactaceae

Coryphantha vivipara (Nutt.) Breitt.&Rose. (Pincushion cactus)
Echinocactus texensis Hopff. - (Horse crippler cactus)
Echinocereus reichenbachii - (Lace cactus)
Echinocereus viridiflora Engelm. (Green flower hedgehog cactus)
Opuntia macrocentra Engelm. - (Prickly pear cactus)
Opuntia phaeacantha (Engelm. &Britt) L. Benson - (Prickly pear cactus)

Chenopodiaceae

Atriplex canescens Ipursh) Walt. - (Four-winged saltbush)
Chenopodium sp. - (Goosefoot)
Kochia scoparia (L.) Schrand. - (Summer cypress)
Salsola tragus L.. - (Russian thistle)

Cucurbitaceae

Cucurbita foetidissima H.B.K. - (Buffalogourd)

Ephedraceae

Ephedra torreyana Wats. - (Torrey joint-fir)

Euphorbiaceae

Chamaesyce lata (Engelm.) Small – (Hoary sandmat)
Croton dioicus Cav. - (Doveweed)
Croton texensis (KL.) Muell. (Texas croton)

Fabaceae

Astragalus mollissimus Torr. – (Wolly locoweed)
Pomaria jamesii (Torr.&Gray) Walp. (James holdback)
Prosopis glandulosa Torr. - (Mesquite)
*Senna bauhinoides (*Gray) Irwin&Barneby –(Twin senna)

Fumariaceae

Corydalis aurea Willd. – (Scrambled eggs)

Hydrophyllaceae

Phacelia sp. - (Scorpionweed)

Linaceae

Linum sp. – (Flax)

Losaceae
Mentzelia sp. (Stickleaf)

Malvaceae

Sphaeralcea coccinea (Nutt.) Rydb. - (Tufted globemallow)

Onagraceae

Calylophus hartwegii (Benth.) Raven - (Hartweg primrose)
Gaura parviflora Doug. ex Lehm - (Small-flowered primrose)
Oenothera sp. (Evening primrose)

Orobranchaceae

Castilleja miniata Doug ex. Hook (Indian paintbrush)

Poaceae

Aristida havardii Vasey - (Havard three-awn)
Aristida purpurea Nutt. var. Longiseta (Steud.) Vasey - (Red threeawn)
Bothriochloa barbinodis (Lag.) Herter - (Cane bluestem)
Bouteloua breviseta Vasey - (Gypsum grama)
Bouteloua curtipendula (Michx.) Torr. - (Side-oats grama)
Bouteloua dactyloides (Nutt.) Columbus (Buffalo grass)
Bouteloua eriopoda (Torr.) Torr. - (Black grama)
Bouteloua gracilis Willd. ex Kunth) Lag. ex Griffiths (Blue grama)
Chloris verticillata Nutt. - (Fingergrass)
Chloris virgata Sw. - (Fingergrass) - C
Enneapogon desvauxii Beauv. - (Spike pappusgrass)
Erioneuron pilosum (Buckley) Nash (Hairy wooly grass)
Erioneuron pulchellum (Kunth) Tateoka - (Erioneuron)
Panicum obtusum H.B.K. - (Cotton witchgrass)
Pleuarphis mutica (Buckl.) Benth - (Tobosa grass)
Sporobolus airoides (Torr.) Torr. - (Alkali sacaton)
Sporobolus contractus –(Sand dropseed)
Sporobolus flexuosus (Thurb.) Rydb. - (Mesa dropseed)
Tridens mutics (Torr.) Nash –(Slim grass)

Polemoniaceae

Galia rigidula – (Blue gilia)

Polygonaceae

Eriogonum sp.- (Buckwheat)
Rumex hymenosepalus- (Curlydock)

Ranunculaceae
Ranunculus cymbalaria Pursh – (Buttercup)

Scrophulariaceae

Penstemon buckleyi Penn. - (Buckley beardtongue)
Castilleja miniata Doug ex. Hook – Indian paintbrush

Solanaceae

Chamaesaracha sp. - (False nightshade)
Solanum elaeagnifoliumCav. - (Horsenettle)
Solanum rostratum Dun. - (Spiny nightshade)

Typhaceae

Typha latifolia Linn. – (Broad-leafed cattail)

Ulmaceae

Ulmus pumila L. (Siberian elm)

Verbenaceae

*Glandularia bipinnatifida (*Nutt.) Nutt –(False vervain)
Verbena bracteata L.&R. - (Prostrate vervain)

APPENDIX B

WILDLIFE SPECIES FOUND WITHIN THE STUDY AREA

Common Name	Scientific Name
Birds	
Killdeer	*Charadrius mongolus*
Turkey vulture	*Cathartes aura*
American crow	*Corvus brachyrhynchos*
American kestral	*Falco sparverius*
Ash throated flycatcher	*Myiarchus cinerascens*
Barn owl	*Tyto alba*
Burrowing owl	*Athene cunicularia*
Chihuahuan raven	*Corvus cryptoleucus*
Cooper's hawk	*Accipter cooperii*
Horned lark	*Eremophila alpestris*
House wren	*Troglodytes aeron*
Lark bunting	*Calamospiza melanocorys*
Loggerhead shrike	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus cyaneus*
Northern mockingbird	*Mimus polyglottos*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius pheonicius*
Say's phoebe	*Sayornis saya*
Savanna sparrow	*Passerculus sandwichensis*
Scaled quail	*Callipepla squamata*
Scissortail flycatcher	*Tyrannus forficatus*
Swainson's hawk	*Buteo swainsoni*
Vesper sparrow	*Pooecetes gramineus*
Western burrowing owl	*Athene cunucularia*
Western meadowlark	*Sturnella neglecta*
White-crowned sparrow	*Zonotrichia leucophrys*

Mammals

Coyote	*Canis latrans*
Ord's kangaroo rat	*Dipodomys ordii*
Southern plains woodrat	*Neotoma micropus*
Plains pocket gopher	*Geomys bursarius*
Banner-tailed kangaroo rat	*Dipodomys spectabilis*
Desert cottontail	*Sylvilagus auduboni*
Black-tailed jackrabbit	*Lepus californicus*
Black-tailed prairie dog	*Cynomys ludovicianus*

Common Name	Scientific Name
Reptiles	
Side-blotched lizard	*Uta stansburiana*
Prairie lizard	*Sceloporus undulatus*

Total

APPENDIX C

PHOTOGRAPHS OF THE STUDY AREA AND PROTECTED WILDLIFE SPECIES THAT MAY BE PRESENT

Horse crippler cacti are relatively common in the study area

Lark buntings are one of the more common birds on the site

Prairie dog holes in the swale/draw areas where storm water collects leaving mud behind. The prairie dogs excavate mud out of their burrows forming pronounced cone-like collars.