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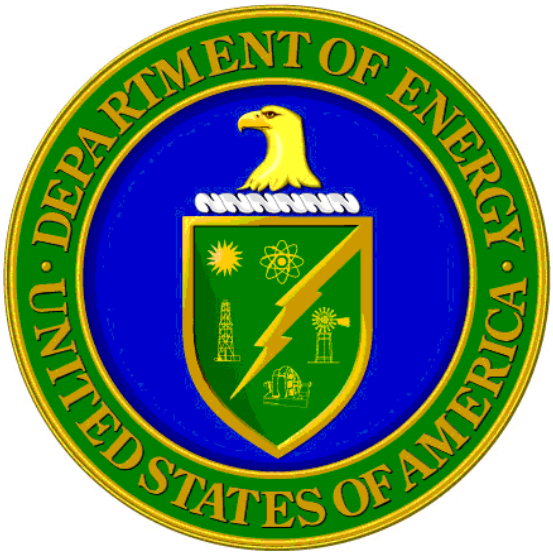

Adoption of Environmental Assessment
DOI-BLM-NM-P020-11-1414
Double Eagle Water System

(DOE/EA-1905)

October 2011

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-NM- P020-11-1414

Double Eagle Water System

U.S. Department of the Interior
Bureau of Land Management
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220
Phone: (575) 887-6544
FAX: (575) 885-9264

BLM

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

The City of Carlsbad currently owns and operates two separate ground water well fields. The Sheeps Draw Well Field is the primary source of water for the City and the Double Eagle Water System was purchased in the early 1970s as an industrial water system and future source of water for the community. The Double Eagle Water System has been in operation since the 1950s. Over time, the City has expanded both water systems to meet the demands of the greater Carlsbad and surrounding area. The City of Carlsbad is facing ongoing growth in its population and water system customer base, and the Sheeps Draw well field is being depleted. Accordingly, the City is proposing to expand and upgrade its water delivery system to make greater use of its water rights associated with the Double Eagle well field near Maljamar, New Mexico. Many of the components of the existing water delivery system are aging and in disrepair, resulting in high maintenance costs and high levels of water losses. These factors substantially compound the need for the proposed project.

The proposed project is needed to reliably deliver water from the Double Eagle water system to the City of Carlsbad. Without water from Double Eagle, the City would be forced to rely on only the Sheeps Draw wells for water supply. Information from the Eddy County 40 year water plan indicates the Sheeps Draw Well Field is susceptible to drought and would result in water shortages for the City of Carlsbad.

Prior to the City increasing its dependency on water from the Double Eagle system, it will need to have the infrastructure in place to sustainably deliver water to the City. It is the goal of this project to lower the risk of using Double Eagle water supplies by reducing the probability and consequence of Double Eagle infrastructure failure by the replacement of piping that is beyond its useful life and "looping" of the Double Eagle water delivery system.

The Double Eagle water system operates with a very high rate of water loss as a result of leakage, theft, and/or unmetered use (unaccounted for water [UAFW] value of 52%). City water system staff report that leaks in existing water lines are frequent and require a significant and sustained effort to maintain and repair. The contribution of leaks in existing water lines to the overall UAFW value is unknown, but is believed by City staff to be significant.

The existing water lines presently in service in the Double Eagle transmission and distribution system are aging, with some water lines dating to the original construction of the system in the 1950s. The oldest water lines in the system were typically fabricated of steel or ductile iron. These water lines currently evidence moderate to severe corrosion and joint failure resulting in chronic leakage.

1.2. Purpose and Need for Action

The purpose of the action is to provide access across BLM-managed lands for installation and replacement of a water pipeline to deliver water from the Double Eagle well field to the City of Carlsbad. The need for the action is established under BLM's responsibility under FLPMA to respond to a request for a right-of-way (ROW) grant for legal access.

1.3. Decision to be Made

BLM will decide whether to approve the ROW grant, and if so, under what conditions.

1.4. Conformance with Applicable Land Use Plan(s)

The Proposed Action is in conformance with the 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment and the 2008 Special Status Species Approved Resource Management Plan Amendment.

1.5. Scoping, Public Involvement, and Issues

The City of Carlsbad hosted a public meeting on January 20, 2009. A progress meeting, advertised and open to the public, was conducted on September 16, 2010 with the Water and Sewer Board.

The Carlsbad Field Office (CFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located in the lobby of the CFO as well as on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). No public comments were received for this proposed action.

The proposed action was discussed during several CFO interdisciplinary meetings. The following issues were raised during those meetings:

- How will the project impact Sand Dune Lizard (SDL) habitat?
- How will the project impact upland vegetation?
- How will the project impact air quality?
- How will the project impact cultural resources?
- How will the project impact livestock grazing?
- How will the project impact recreation in the Hackberry Lake Special Recreation Management Area (SRMA)?

2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Alternative A: No Action

Under this alternative, water lines in the Double Eagle Water System would not be added or replaced. The City of Carlsbad would rely on existing water lines to satisfy future demand for municipal water.

2.2. Alternative B: Build Alternative B100

Under Alternative C, the City of Carlsbad would conduct the following:

- Replacement of 6.55 miles of the existing County Line water line with a new 16-inch water line from the 3 MG tank to the South County Line pressure reducing valve (PRV).
- Replacement of 5.26 miles of existing water line between the future 2 MG tank and the South County Line PRV with a new 18-inch water line.
- Replacement of 2.76 miles of existing pipeline between the South County Line PRV and the Waste Improvement Pilot Project (WIPP) water line with a new 24-inch water line.
- Construction of 18.6 miles of a new 24-inch water line from the WIPP water line westward along US 62/180 to the eastern City limits.

BLM would authorize a ROW for all part of the project that are on BLM-managed lands.

This alternative would allow the City's system to deliver 100% of the City's available groundwater rights from the Double Eagle Water System to City users by way of water lines in the Eastern Service Area only (Figure 1).

2.3. Alternative C: Build Alternative C (Proposed Action)

Under Alternative C, the City of Carlsbad would conduct the following:

- Construction of 7.15 miles of new water line between the 3 MG and 2 MG tanks.
- Construction of 8.54 miles of new water line from the 2 MG tank to the WIPP PRV via existing Road ROW.
- Construction of 18.6 miles of a new water line from the WIPP water line westward along US62/180 to the eastern City limits.

Of this, the BLM would authorize a ROW for the 22.63 miles that are on BLM-managed lands.

The Bureau of Land Management would authorize a ROW on Federal lands in Eddy and Lea Counties, New Mexico, described as follows:

T. 17 S., R. 32 E., NMPM
sec. 23: E½SE¼;
sec. 26: N½SW¼;
sec. 27: E½SW¼, SW¼SW¼, N½SE¼;
sec. 33: S½NE¼, NW¼SE¼, E½SW¼, SW¼SW¼;
sec. 34: W½NW¼.

T. 18 S., R. 32 E., NMPM
sec. 04: Lot 4, SW¼NW¼;
sec. 05: SE¼NE¼, NE¼SW¼, S½SW¼, N½SE¼;
sec. 08: NW¼NW¼.

T. 20 S., R. 29 E., NMPM
sec. 35: S½SW¼, N½SE¼, SW¼SE¼;
sec. 36: S½N½, NW¼SW¼.

T. 20 S., R. 30 E., NMPM
sec. 33: S½S½;

sec. 31: lot 2 and 3, NE¼SW¼, N½SE¼.

T. 20 S., R. 31 E., NMPM

sec. 33: S½SW¼, N½SE¼, SW¼SE¼;
sec. 34: N½S½;
sec. 35: N½S½;
sec. 31: SE¼SW¼, S½SE¼.

T. 20 S., R. 32 E., NMPM

sec. 30: lot 4, NE¼NE¼, S½NE¼, NW¼SE¼, E½SW¼;
sec. 31: lot 1 and 2.

T. 21 S., R. 27 E., NMPM

sec. 23: S½SE¼;
sec. 24: SW¼SW¼.

T. 21 S., R. 28 E., NMPM

sec. 03: lot 9, 14, 15, and 16, N½SW¼, SW¼SW¼;
sec. 04: SE¼SE¼;
sec. 08: E½SE¼;
sec. 09: N½NE¼, SW¼NE¼, SE¼NW¼, N½SW¼;
sec. 17: NW¼NE¼, NE¼NW¼, S½NW¼, NW¼SW¼;
sec. 18: NE¼SE¼, S½SE¼;
sec. 19: lot 1 and 2, NW¼NE¼, E½NW¼.

T. 21 S., R. 29 E., NMPM

sec. 01: lot 1, 2, 5, 6 and 7;
sec. 03: lot 1, 17, 18, 19, and 22.

T. 21 S., R. 30 E., NMPM

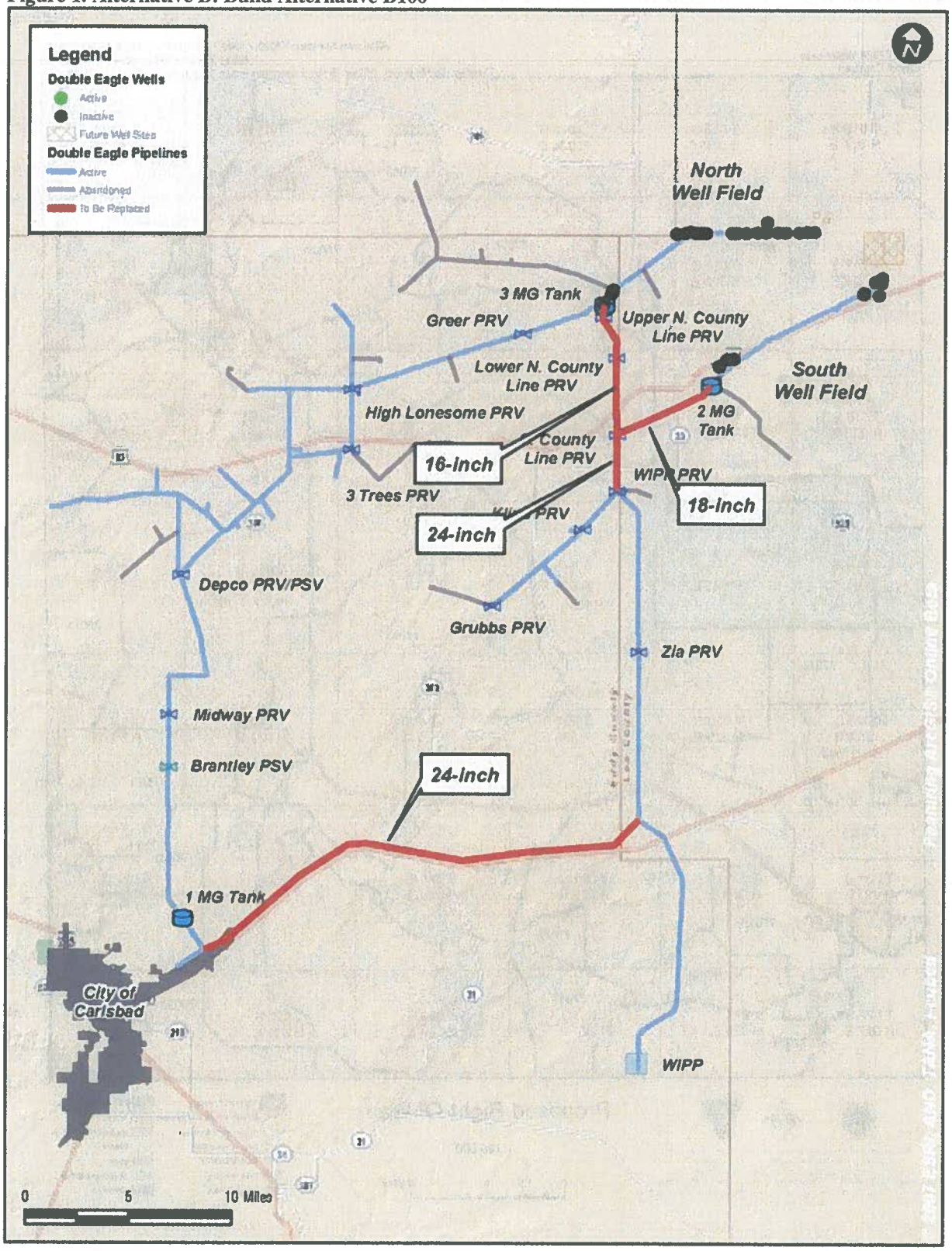
sec. 05: lot 4;
sec. 06: lots 1 thru 5 inclusive.

The pipeline right-of-way is 50 feet wide (additional 20 feet temporary during construction), 119,500.0 feet long and contains 137.17 acres, more or less.

Variations of this alternative alignment depicted in Figure 2 are currently being developed which will determine the proposed water line sizes as a function of providing capacity comparable to an average day demand or a peak day demand of water usage. It is anticipated that the resulting pipe sizes will vary between 24- and 48-inches. The maximum size of 48-inches is used for analysis.

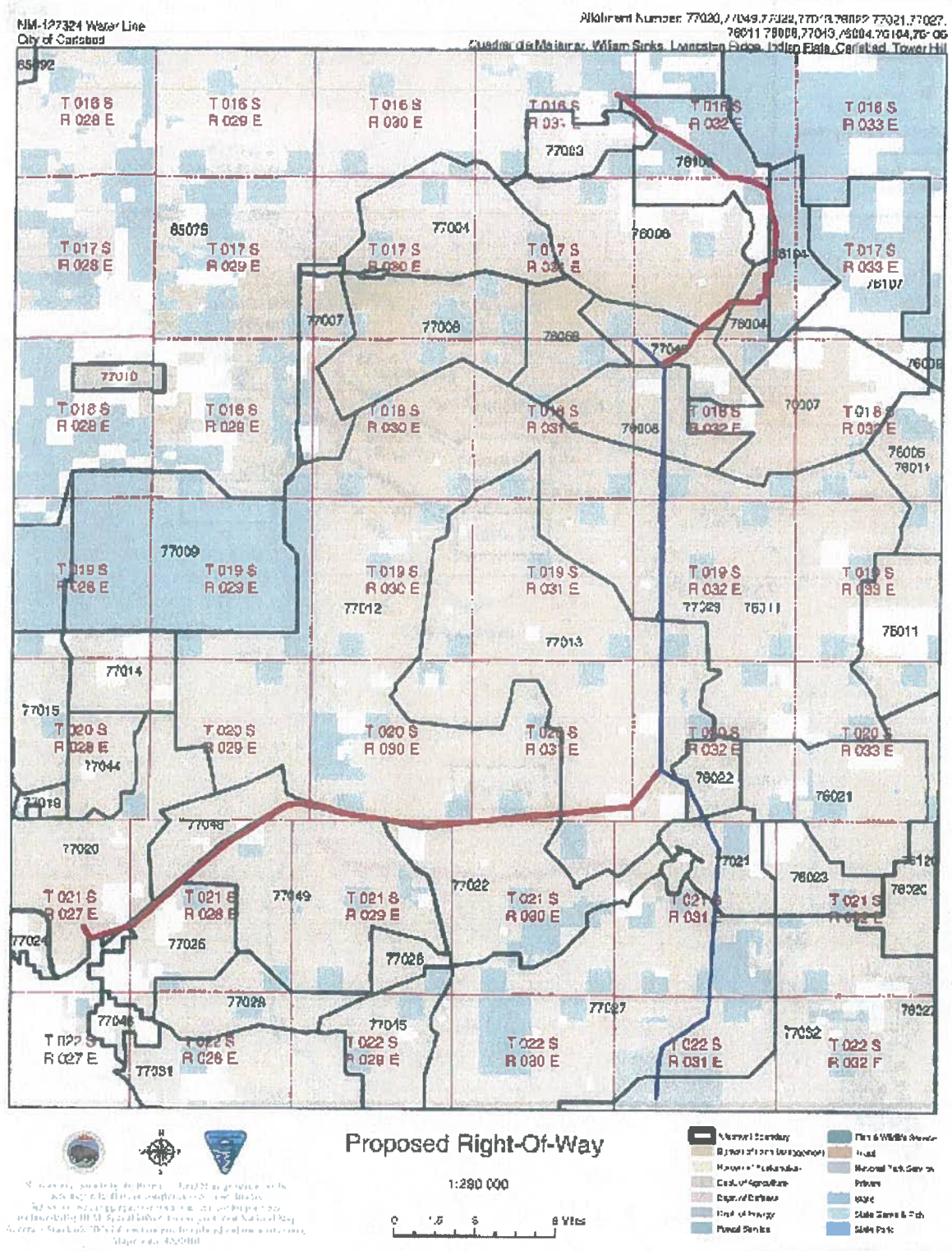
This alternative would allow the City's system to deliver 100% of the City's available groundwater rights from the Double Eagle Water System to City users by way of water lines in the Eastern Service Area only (Figure 2).

Figure 1. Alternative B: Build Alternative B100[1]



[1] Map provided by URS Corporation.

Figure 2. Alternative C: Build Alternative C (Proposed Action)



2.4. Design Features Common to All Alternatives

Activities that will occur during replacement and construction of the pipeline include surveying, clearing and grading, trenching, hauling and stringing pipe, backfilling, and clean-up and restoration activities. Hydrostatic testing will occur following completion of the project. Water used during the hydrostatic testing will not be contaminated during the process. Additionally, no hazardous waste will be generated from the project.

In order to accomplish the activities listed above, the following best management practices would be used under both action alternatives:

- Initial construction of the water lines will likely be by an independent contractor to be determined in accordance with the New Mexico Procurement Code through bidding of the project. As a result, identification of the contractor will not be known until the bids are opened and reviewed.
- Construction of the water lines is anticipated to comply with the New Mexico Standard Specifications for Public Works Construction published by the New Mexico Chapter of the American Public Works Association modified and supplemented with project-specific requirements. With this baseline, alternative pipe materials may be allowed to include ductile iron, concrete cylinder, plastic and/or steel.
- It is anticipated that the water lines will be constructed at a depth that provides a minimum of four feet of cover. For the purposes of evaluation of the alternatives, it is assumed that the top opening width at the trench will approximate two times the trench depth plus the diameter of the pipe. In addition to the actual trench, an area adjacent to the trench will be utilized for stockpiling excavated materials (to be used subsequently for backfill) plus space dedicated for vehicular and personnel access. It is anticipated that the maximum width of disturbance to accommodate construction activities will be 75-feet. Following construction, the ROW grant would be for 50 feet.
- Replacement of pipes identified in the alternatives will consist of installation of a new water line adjacent to the existing, and the existing will be abandoned in-place.
- The City of Carlsbad intends to begin construction on the water lines once design and procurement are complete. It is anticipated that the portion currently funded (approximately $20M), will begin construction in 2012, and be completed within two years. The City of Carlsbad is aggressively pursuing additional funding for the balance which could result in all of the improvements being constructed within this two year time period.
- Existing roads will be utilized for construction equipment and staging areas where possible.
- Disturbed areas will be reseeded with native seed mixes.
- In the sand dune areas, top-sand will be piled in a mogul structure when construction is finished to simulate dune structures and aid in the recovery of disturbed areas.
- The project will include any necessary mitigation measures and will follow BLM procedures as outlined in the 1997 Carlsbad Approved Resource Management Plan Amendment "Practices for Oil and Gas Drilling and Operations in Cave and Karst Areas".
- Reseeding with native species following construction activities will be implemented, and the width of construction corridors will be minimized, particularly within the sand dune areas.
- Mesquite shrubs will be removed within the construction corridor and reused to create drift fences. This measure is anticipated to capture blowing sand in order to aid in the natural dune-building process.
- Destruction of shinnery oak shrub and other vegetation associated with shinnery sands will be avoided as much as possible during construction.
- Adherence to the New Mexico Department of Game and Fish (NMDGF) trenching guidelines in order to mitigate for wildlife trapped in construction trenches. See Appendix C of the Double Eagle Water System Environmental Information Document, which is incorporated by reference.
- The service road for the water line will be a two-track road of minimum width sufficient to accommodate only service trucks.
- In order to lessen wildlife disturbance, unauthorized traffic will be kept off service roads by installing signage and where feasible, locked gates.
- Construction staging areas will be kept to a minimum size and existing roads and other existing disturbed areas will be utilized as much as possible in order to minimize habitat disturbance.

- Construction activities within SDL habitat will be limited to the hours of 9 a.m. through 3 a.m. in the period between March 1 and June 15.
- Routes will be aligned to minimize impacts to dune complexes
- When working in potential or occupied habitat (this area contains occupied habitat), work would occur between August 1 to October 1 in the dunes. The timing would allow the completion of the nesting season and would occur prior to the lizards becoming inactive/dormant underground.
- Escape ramps would be placed at a 30 degree angle or less, and no less than 50 feet in length. Ramps should be placed no more than 100 feet apart on both sides in open trenches. The trenches should be constructed perpendicular to the trench. Otherwise, silt fencing would be placed around the trench to prevent animals from getting in the trench.
- If the water line has been laid in the trench and more than 20 feet of trench is to be left open longer than four hours, then silt fence should be constructed entirely around any trench left open. Care should be taken to ensure that the silt fence is covered by sand on the bottom to preclude SDL from moving below the fence.
- Trenches would not be open overnight.
- A biological monitor will be on site. The monitor should be a herpetologist trained in the recognition of SDL. The monitor should 1) conduct a pre- and post-construction population assessment in the water line construction right-of-way, 2) conduct photo monitoring of construction activities, and 3) immediately remove any wildlife trapped in the trench.
- No erosion control matting should be used to stabilize dunes, as matting has been documented to trap and kill wildlife, and could preclude access by SDL to escape habitat.
- No new dunal areas should be impacted along the proposed corridor. Dune morphology modification would be minimized. Dunes that must be impacted should have sand stockpiled directly adjacent to removal location and replaced to recreate original dune morphology.
- The width of construction in dune areas would be minimized by only utilizing the existing corridor.
- New roads would not be created in existing corridors.
- The existing water line should be left in place and not removed.
- The Best Management Practices (BMPs) listed in the 2008 Special Status Species Approved Resource Management Plan Amendment would be followed as applicable to the project.

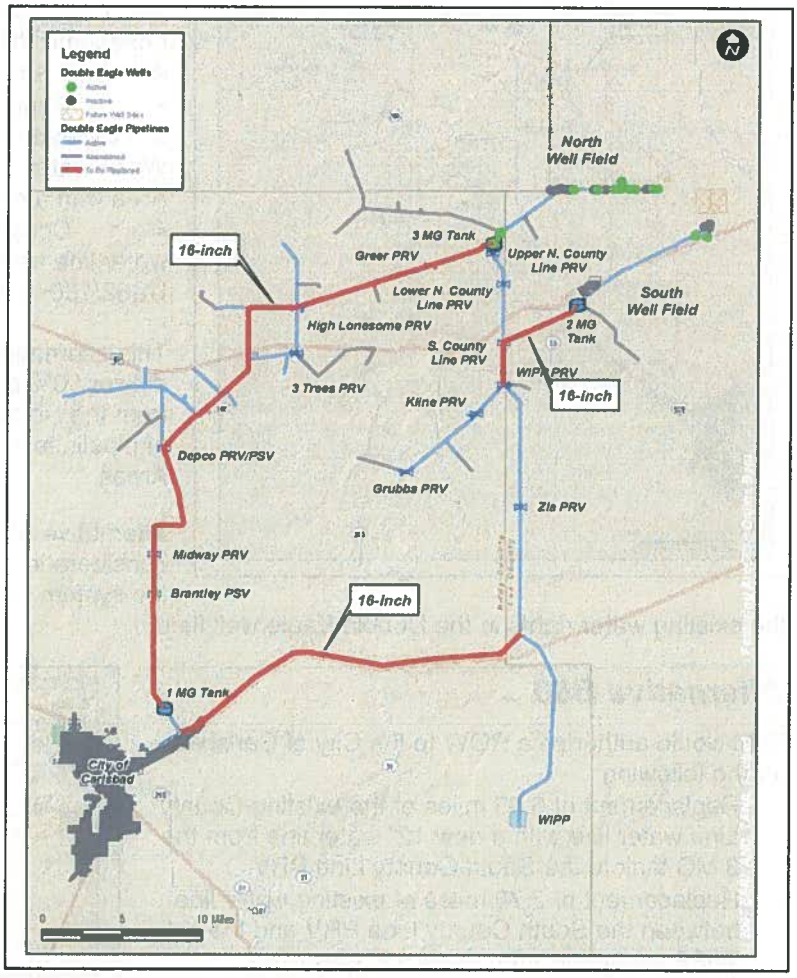
2.5. Alternatives Considered but Eliminated from Detailed Study

Several additional alternatives were identified during development of the preliminary engineering and environmental reviews. These alternatives are detailed below, including an explanation of why it was eliminated from further consideration.

Alternative A100

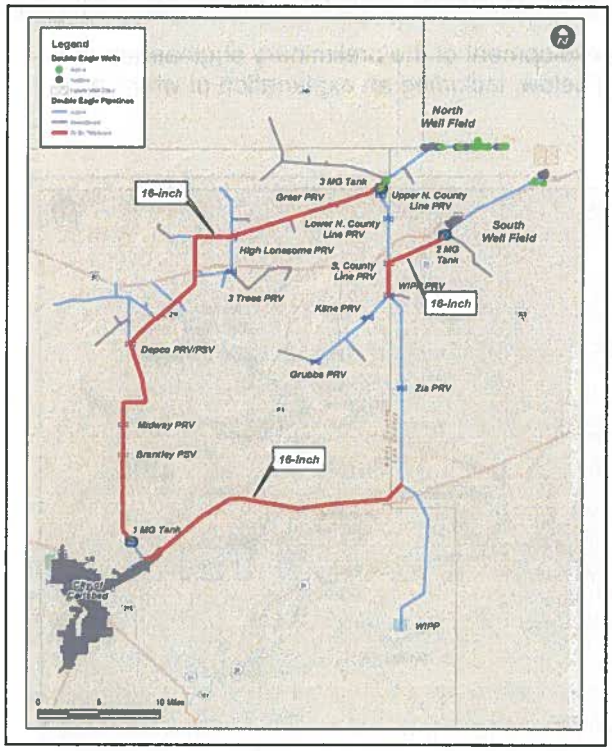
The BLM would authorized a ROW to the City of Carlsbad for the following:

- Replacement of 46.5 miles of existing water line in the system's Western Service Area with a new 16" water line.
- Replacement of 8.0 miles of existing water line between the future 2 MG tank and the WIPP water line in the system's Eastern Service Area with a new 16" water line.
- Construction of 24.0 miles of a new 16" water line from the WIPP water line westward along US62/180 to the eastern City limits.



This alternative would allow the City's system to deliver 100% of the City's available groundwater rights from the Double Eagle system to City users by way of water lines in the Western and Eastern Service Areas.

Alternative A100 was eliminated from further consideration due to the significantly higher cost resulting from the inability to effectively maximize use of the existing 24-inch line between the WIPP PRV and US62/180.



Alternative A50

The BLM would authorize a ROW to the City of Carlsbad for the following:

- Replacement of 12.98 miles of existing water line between the 3 MG tank and the High Lonesome PRV in the system's Western Service Area with a new 16" water line.
- Replacement of 2.76 miles of existing water line between the South County Line PRV and the WIPP water line in the system's Eastern Service Area with a new 12" water line.
- Construction of 24.0 miles of a new 12" water line from the WIPP water line westward along US62/180 to the eastern City limits.

This alternative would allow the City's system to deliver 50% of the City's available groundwater rights from the Double Eagle system to City users by way of pipelines in the Western and Eastern Service Areas.

Alternative A50 was eliminated from further consideration, because the transmission capacity of the system is only a fraction of that available through the existing water rights in the Double Eagle well field.

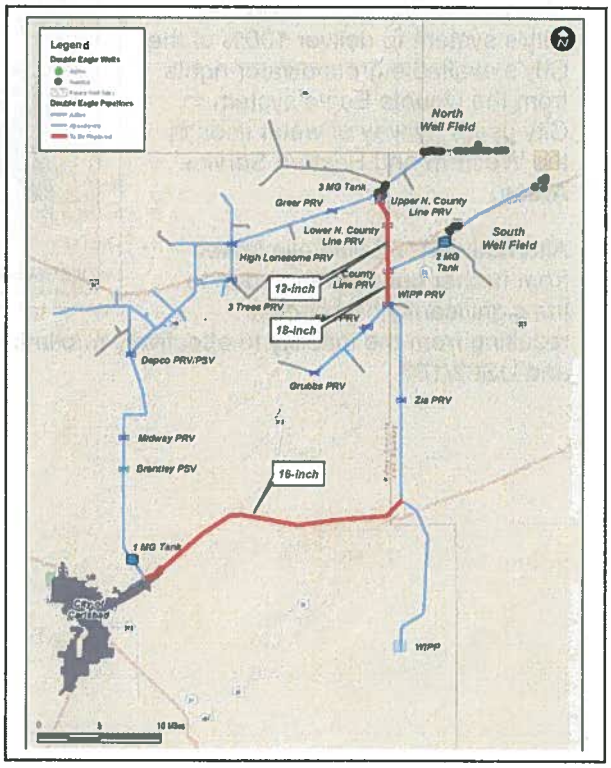
Alternative B50

BLM would authorize a ROW to the City of Carlsbad for the following:

- Replacement of 6.55 miles of the existing County Line water line with a new 12" water line from the 3 MG tank to the South County Line PRV.
- Replacement of 2.76 miles of existing water line between the South County Line PRV and the WIPP water line with a new 18" water line.
- Construction of 24.0 miles of a new 16" water line from the WIPP water line westward along US62/180 to the eastern City limits.

This alternative would allow the City's system to deliver 50% of the City's available groundwater rights from the Double Eagle system to City users by way of water lines in the Eastern Service Area only.

Alternative B50 was eliminated from further consideration, because the transmission capacity of the system is only a fraction of that available through the existing water rights in the Double Eagle well field.



Alternative D

This alternative was identified by the New Mexico Department of Game & Fish (NMDGF) in June 24, 2010 correspondence to URS Corporation, as a result of agency consultation activities. The stated desire of NMDGF is to avoid critical sand dune lizard (SDL) habitat. Accordingly, the alignment for Alternative D was developed to follow existing developed roadway corridors.

BLM would authorize a ROW to the City of Carlsbad for the following:

- Abandonment of 6.55 miles of the existing County Line water line and construction of 9.25 miles of new 16" water line from below the Greer PRV to a point south of the South County Line PRV. The new water line would follow a new alignment along existing oil field service roadways, US82/180, and NM529.
- Abandonment of 5.26 miles of existing water line between the future 2MG tank and the South County Line PRV and construction of 9.25 miles of new 18" water line. The new water line would follow a new alignment along existing Lea County Roadway L126 and NM529.
- Replace 1.05 miles of existing water line between a point south of the existing South County Line PRV and the WIPP water line with a new 24" water line.
- Construction of 24.0 miles of a new 24" water line from the WIPP water line westward along US62/180 to the eastern City limits (not shown in Figure 5.5; refer to Figure 5.2 for a depiction of this proposed element of work).

Detailed modeling of Alternative D was not performed, largely because this alternative is a permutation of Alternative B which did undergo detailed modeling and technical evaluation by HDR. This report assumes that the same pipe sizes required for Alternative B would suffice for Alternative D.

Alternative D was eliminated from further consideration, because it does not provide the interconnection of mid-diameter, reliable piping between the 3 MG Tank, the 2 MG Tank and the WIPP PRV (the pipe between the 3MG Tank and the suggested water line to the east would remain as the existing 3-inch water line which does not have the capacity, or reliability, to convey the increased flows).

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would be affected by the proposed action.

The No Action Alternative reflects the current situation within the project area and will serve as the baseline for comparing the environmental effects of the analyzed alternatives.

3.1. Soils

Sandy

Typically, these soils are deep, well-drained to excessively drained, non-calcareous to weakly calcareous sands. They are found on undulating plains and low hills in the "sand country" east of the Pecos River. Permeability is moderate to very rapid, water-holding capacity is low to moderate, and little runoff occurs. These soils are susceptible to wind erosion and careful management is needed to maintain a cover of desirable forage plants and to control erosion. Reestablishing native plant cover could take 3-5 years due to unpredictable rainfall and high temperatures.

Low stability soils, such as the sandy and deep sands found on this area, typically contain only large filamentous cyanobacteria. Cyanobacteria, while present in some locations, are not significant. While they occur in the top 4 mm of the soil, this type of soil crust is important in binding loose soil particles together to stabilize the soil surface and reduce erosion. The cyanobacteria also function in the nutrient cycle by fixing atmospheric nitrogen, contributing to soil organic matter, and maintaining soil moisture. Cyanobacteria are mobile, and can often move up through disturbed sediments to reach light levels necessary for photosynthesis. Horizontally, they occur in nutrient-poor areas between plant clumps. Because they lack a waxy epidermis, they tend to leak nutrients into the surrounding soil. Vascular plants such as grasses and forbs can then utilize these nutrients.

Loamy

Generally these soils are deep, well-drained, moderately dark colored, calcareous, and loamy. These soils typically occur on gently undulating plains and in the broader valleys of the hills and mountains. Permeability is moderate, water-holding capacity is moderate to high, and runoff is likely after prolonged or heavy rains. Careful management is needed to maintain a cover of desirable forage plants and to control erosion. Reestablishing native plant cover could take 3-5 years due to unpredictable rainfall and high temperatures.

These soils generally have cyanobacteria throughout the area, while squamulose, crustose, and gelatinous lichens are occasionally present. These soil crusts are important in binding loose soil particles together to stabilize the soil surface and reduce erosion. Biological soil crusts can contribute positively to soil stability, fixing atmospheric nitrogen, nutrient contributions to plants, water infiltration, and plant growth. They function in the nutrient cycle by fixing atmospheric nitrogen, contributing to soil organic matter, and maintaining soil moisture. In addition, they can act as living mulch which discourages the establishment of annual/invasive weeds. Structurally they form an uneven, rough carpet that reduces rain drop impact and slows surface runoff. Below the surface, lichen and moss rhizines, fungal hyphae, and cyanobacterial filaments all act to bind the soil surface particles just below and at the surface. Horizontally, they occur in nutrient-poor areas between plant clumps. Because they lack a waxy epidermis, they tend to leak nutrients into the surrounding soil. Vascular plants such as grasses and forbs can then utilize these nutrients.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to soil resources.

Alternative B: Build Alternative B100

Direct and Indirect Effects

There is a potential for wind and water erosion due to the erosive nature of these soils once the cover is lost. There is always the potential for soil contamination due to spills or leaks from equipment during construction activities. Soil contamination from spills or leaks can result in decreased soil fertility, less vegetative cover, and increased soil erosion.

Mitigation Measures

Impacts to soil resources will be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on the disturbed areas.

To further reduce impacts the following COAs will apply:

- Minimizing the ROW width
- No blading along the proposed route
- Minimizing vehicular use
- Placing parking and staging areas on caliche surfaced areas
- Temporary soil erosion mitigation includes installing silt fences, diversion berms, or other soil erosion controls to slow water migration across disturbed areas during construction and reclamation

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

Impact to soils would be the same as under Alternative B.

Mitigation Measures

Mitigation measures would be the same as under Alternative B.

3.2. Air Quality

Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility. The area of the proposed action is within the Pecos River airshed and is classified as a Class II Air Quality Area. A Class II area allows moderate amounts of air quality degradation. The primary causes of air pollution in the project area are from motorized equipment and dust storms caused by strong winds during the spring. Particulates from nearby oil and gas production, agricultural burning, recreational and industrial vehicular traffic and ambient dust can also affect air quality. Air quality in the area near the proposed action is generally considered good, and the proposed action is not located in any of the areas designated by the Environmental Protection Agency (EPA) as "non-attainment areas" for any listed pollutants regulated by the Clean Air Act.

Greenhouse gases (GHG), including carbon dioxide (CO2) and methane (CH4), are not regulated by the EPA under the Clean Air Act. The EPA's Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006, found that in 2006, total U.S. GHG emissions were over 6 billion metric tons and that total U.S. GHG emissions have increased by 14.1% from 1990 to 2006. The report also noted that GHG emissions

fell by 1.5% from 2005 to 2006. This decrease was, in part, attributed to the increased use of natural gas and other alternatives to burning coal in electric power generation.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to air quality.

Alternative B: Build Alternative B100

Direct and Indirect Effects

The winds that frequent the southeastern part of New Mexico generally disperse odors and emissions, however, air quality would be impacted temporarily from exhaust emissions, chemical odors, dust caused by vehicles traveling to and from the project area and from motorized equipment used during construction. Impacts to air quality will diminish upon completion of the construction of the proposed action.

The EPA has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. The EPA has delegated regulation of air quality to some states of which New Mexico is one. The New Mexico Air Quality Bureau's (NMAQB) mission is to protect the inhabitants and natural beauty of New Mexico by preventing the deterioration of air quality. The NMAQB is responsible for: ensuring air quality standards are met and maintained; issuing air quality Construction and Operating Permits; enforcing air quality regulations and permit conditions. Any emission source must comply with the NMAQB regulations.

Mitigation Measures

Impacts to air quality on lands managed by BLM in southeastern New Mexico are reduced by the following standard practices which include: utilizing existing disturbance; minimizing surface disturbance; reclaiming and quickly establishing vegetation on areas not necessary for production; periodic watering of access roads during dry periods; removal and reuse of caliche for building other projects.

Alternative C: Build Alternative C

Direct and Indirect Effects

Impacts to air quality would be the same as under Alternative B.

Mitigation Measures

Mitigation measures would be the same as under Alternative B.

3.3. Climate

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) GHG-emissions, changes in biological carbon sequestration, and other changes due to land management activities on the global climate. Through complex interactions on a regional and global scale, these changes cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although natural GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent (CO2(e)) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations (Intergovernmental Panel on Climate Change (IPCC) 2007).

Global mean surface temperatures have increased nearly 1.33°F from 1906-2005. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase between 2.5°F and 10.4°F above 1990 levels, (IPCC Third Assessment Report: Climate Change 2001) depending on the assumptions made in the predictive model. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. More recently, the 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 increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor retention in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildland fires and 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. For example, recent emissions of carbon dioxide can influence climate for 100 years.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to climate.

Alternative B: Build Alternative B100

Direct and Indirect Effects

Climate change analyses are comprised of several factors, including GHGs, land use management practices, and the albedo effect. The tools necessary to quantify incremental climatic impacts of specific activities associated with those factors are presently unavailable. As a consequence, impact assessment of effects of specific anthropogenic activities cannot be performed. Additionally, specific levels of significance have not yet been established. Qualitative and/or quantitative evaluation of potential contributing factors within the project area are included where appropriate and practicable. When further information on the impacts to climate change in southeastern New Mexico is known, such information will be incorporated into the BLM's NEPA documents as appropriate.

Environmental and economic climate change impacts from commodity consumption are not effects of the proposed planning decisions and thus are not required to be analyzed under the NEPA. They are not direct effects, as defined by the Council on Environmental Quality (CEQ), because they do not occur at the same time and place as the action. Neither are they indirect effects because the proposed plan actions and resulting greenhouse gas emissions production are not a proximate cause of the emissions or other factors resulting from consumption. The BLM does not determine the destination of the resources produced from Federal lands. The effects from consumption are not only speculative, but beyond the scope of agency authority or control. Therefore, this document does not include analysis of the consumption of resources produced as a result of planning decisions.

Mitigation Measures

None

Alternative C: Build Alternative C

Direct and Indirect Effects

Impacts to climate would be the same as under Alternative B.

Mitigation Measures

None

3.4 Upland Vegetation

Sandy Soil Type Plant Communities

Vegetation within this project area is dominated by warm season, short and midgrasses such as black grama, bush muhly, various dropseeds, and three-awns. Bluestems, bristlegrass, lovegrasses, and hooded windmillgrass make up some of the less common grasses. Shrubs include mesquite, shinnery oak, sand sagebrush, broom snakeweed, and yucca. A large variety of forbs occur and production fluctuates greatly from year to year, and season to season. Common forbs include bladderpod, dove weed, globemallow, annual buckwheat, and sunflower.

Loamy Soil Type Plant Communities

This is a grassland site with warm season mid and short grass aspect. There is a fair scattering of shrubs and half-shrubs throughout the landscape. Forb production fluctuates greatly from season to season and year to year. Gramas, tridens, three-awns, muhlys, dropseeds, tobosa, and burrograss are the dominant grasses. The most common shrubs in the area are tarbush, creosote, mesquite, cactus, and yucca. Forbs include filaree, croton, bladderpod, and globemallow.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to upland vegetation.

Alternative B: Build Alternative B100

Direct and Indirect Effects

281.4 acres of vegetation will be removed when the ROW is constructed. By using the proper seed mix (Seed Mixture 2 for Sandy Sites), good seed bed preparation, and proper seeding techniques, this impact will be short term, two or three growing seasons.

Mitigation Measures

Impacts to vegetation will be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on the disturbed areas.

To further reduce impacts the following COAs will apply:

- Minimizing the right-of-way width
- No blading along the proposed route
- Minimizing vehicular use
- Placing parking and staging areas on caliche surfaced areas

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

290.9 acres of vegetation will be removed when the right-of-way is constructed. By using the proper seed mix (give seed mix number), good seed bed preparation, and proper seeding techniques, this impact will be short term, two or three growing seasons.

Mitigation Measures

Mitigation measures would be the same as under Alternative B.

3.4. Special Status Species

Lesser Prairie-Chicken

In New Mexico, the lesser prairie-chicken (LPC) formerly occupied a range that encompassed the easternmost one-third of the state, extending to the Pecos River, and 48 km west of the Pecos near Fort Sumner. This covered about 38,000 km^2. By the beginning of the 20th Century, populations still existed in nine eastern counties (Union, Harding, Chaves, De Baca, Quay, Curry, Roosevelt, Lea, and Eddy). The last reliable records from Union County are from 1993. Currently, populations exist only in parts of Lea, Eddy, Curry, Chaves, and Roosevelt counties, comprising about 23% of the historical range.

LPC are found throughout dry grasslands that contained shinnery oak or sand sage. Currently, they most commonly are found in sandy-soiled, mixed-grass vegetation, sometimes with short-grass habitats with clayey or loamy soils interspersed. They occasionally are found in farmland and smaller fields, especially in winter. Shinnery oak shoots are used as cover and produce acorns, which are important food for LPC and many other species of birds, such as the scaled quail, northern bobwhite, and mourning dove. Current geographic range of shinnery oak is nearly congruent with that of the lesser prairie-chicken, and these species sometimes are considered ecological partners. Population densities of LPC are greater in shinnery oak habitat than in sand sage habitat.

LPC use a breeding system in which males form display groups. These groups perform mating displays on arenas called leks. During mating displays male vocalizations called booming, attract females to the lek. Leks are often on knolls, ridges, or other raised areas, but in New Mexico leks are just as likely to be on flat areas such as roads, abandoned oil drill pads, dry playa lakes or at the center of wide, shallow depressions. Leks may be completely bare, covered with short grass, or have scattered clumps of grass or short tufts of plants. An important physical requirement for location of leks is visibility of surroundings, but the most important consideration is proximity of suitable nesting habitat, breeding females and the ability to hear male vocalizations.

In the late 1980s, there were 35 documented active booming grounds known to exist within the CFO. Due to population decreases and unpredictable weather cycles the LPC is currently a candidate for federal listing, and potentially may become extirpated from Eddy and southern Lea counties.

In June 1998, the US Fish and Wildlife Service (USFWS) issued a statement regarding their status review of the lesser prairie-chicken. It stated, "Protection of the lesser prairie-chicken under the Federal Endangered Species Act (ESA) is warranted but precluded which means that other species in greater need of protection must take priority in the listing process." Given the current Federal Candidate status of this species, the Bureau of Land Management is mandated to carry out management consistent with the principles of multiple use, for the conservation of candidate species and their habitats, and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as Threatened or Endangered (Bureau Manual 6840.06).

During the 2008 LPC survey season, the Carlsbad Field Office (CFO) wildlife staff located 9 active booming grounds and 12 other sightings not associated with an active lek.

Sand Dune Lizard

The sand dune lizard (SDL) is a species with a limited geographic range including parts of Chaves, Eddy, Lea and Roosevelt Counties of southeastern New Mexico and 4 counties in Texas. The SDL is a habitat specialist, found exclusively in association with shinnery oak dune complexes. These complexes are patchworks of shinnery oak and scattered sandsage interspersed with areas of open sand and wind-created sandy blowouts. These complexes create ideal habitat for the SDL.

The SDL may also require specific sand particle size. Research has shown that there are significant differences in the composition of sand between sites that are occupied and unoccupied by SDL. Occupied sites have slightly coarser sand than unoccupied sites. This suggests that SDL may not occur in areas with high percentages of sand particles smaller than 250 micrometers (Fitzgerald et al, 1997).

The USFWS was petitioned on May 28, 2002 by The Center for Biological Diversity and Chihuahuan Desert Conservation Alliance to list the SDL as an endangered species under the Endangered Species Act. In May 2005 the USFWS issued a statement regarding their status review of the SDL. It stated, "Protection of the sand dune lizard under the ESA is warranted but precluded, which means that other species in greater need of protection must take priority in the listing process." Given the current Federal Candidate status of this species, the Bureau of Land Management is mandated to carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as Threatened or Endangered (Bureau Manual 6840.06).

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle water system, resulting in no direct, indirect, or cumulative impacts to threatened or endangered species.

Alternative B: Build Alternative B100

Direct and Indirect Effects

Lesser Prairie Chicken

Impacts of Alternative B to LPC in the localized area may include but are not limited to: disruptions in breeding cycles, habitat degradation and fragmentation, avoidance of habitat during construction activities and potentially loss of nests. Noise and human activity generated from construction activity could impact the LPC by reducing the establishment of seasonal "booming grounds" or leks, thus possibly reducing reproductive success in the species. It is believed that the noise generated by construction activity and human presence could mask or disrupt the booming of the male prairie-chicken and thus, the females cannot hear the booming. In turn, female LPC would not arrive at the booming ground, and subsequently, there would be decreased courtship interaction and possibly decreased reproduction. Decreased reproduction and the loss of recruitment into the local population would result in an absence of younger male LPC to replace mature male LPC once they expire, eventually causing the lek to disband and become inactive. Additionally, habitat fragmentation caused by development could possibly decrease the habitat available for nesting, brooding and feeding activities.

The CFO takes every precaution to ensure that active booming grounds and nesting habitats are protected by applying a timing and noise condition of approval within portions of suitable and occupied habitat for the LPC. It is not known at this time whether active booming grounds or nest locations are associated with this specific location. Only after survey efforts during the booming season are conducted, will it be known whether an active lek is in close proximity (within 1.5 miles) of the proposed location or not.

Exceptions to timing and noise requirements will be considered in emergency situations such as mechanical failures, however, these exceptions will not be granted if BLM determines, on the basis of

biological data or other relevant facts or circumstances, that the grant of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered, but these exceptions will not be granted if BLM determines that there are prairie-chicken sightings, historic leks and or active leks within 1.5 miles of the proposed location, or any combination of the above mentioned criteria combined with suitable habitat.

In light of the circumstances under which exceptions may be granted, minimal impacts to the LPC are anticipated as a result of the grant of exceptions to the timing limitation for LPC Condition of Approval. In light of these requirements and mitigation measures as below, minimal impacts to the LPC are anticipated as a result of construction activity.

Sand Dune Lizard

The sand dune lizard (SDL) is threatened by activities that remove shinnery oak, disrupt the morphology of the sand dunes, or otherwise degrade suitable habitat. Construction of the proposal in sand dune complexes between the 3MG tank and the WIPP PRV and the 2MG tank and the County line PRV that provide suitable habitat or occupied habitat could impact local populations of SDL by reducing the size of habitat available to the species and possibly extirpating SDL from the location.

Approving this alternative could prove to have a greater impact on the Sand Dune Lizard when compared to alternative C as listed below, because it is located in suitable as well as occupied Sand Dune Lizard habitat.

Mitigation Measures

Lesser Prairie Chicken

In May 2008, the Pecos District Special Status Species Resource Management Plan Amendment (RMPA) was approved and is being implemented. In addition to the standard practices that minimize impacts, as listed above, the following COA will apply:

- Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken, to minimize noise associated impacts which could disrupt breeding and nesting activities

Sand Dune Lizard

Mitigation Measures: None

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

Lesser Prairie Chicken

Impacts to Lesser Prairie Chickens would be the same as under Alternative B.

Sand Dune Lizard

Under this alternative the project is located away from dune complexes which minimize impact to habitat. In addition, the road has been contoured to maintain the integrity of the dune complex and all construction is situated within previously disturbed areas whenever possible to allow for immigration and emigration corridors. Through these negotiated modifications, impacts to SDL localized populations and habitats are minimized as compared to Alternative B.

Mitigation Measures

Lesser Prairie Chicken

Mitigation measures would be the same as under alternative B.

Sand Dune Lizard

None

3.5. Wildlife

This project occurs in the sand shinnery habitat type. Sand shinnery communities extend across the southern Great Plains occupying sandy soils in portions of north and west Texas, west Oklahoma, and southeast New Mexico. Portions of Eddy, Lea and Chaves counties consist largely of sand shinnery habitat and are intermixed with areas of mesquite to a lesser degree. The characteristic feature of these communities is co-dominance by shinnery oak and various species of grasses. In New Mexico, shinnery oak occurs in sandy soil areas, often including sand dunes.

Numerous wildlife water sources have been installed within the boundaries of the CFO. These wildlife waters are important to all wildlife in the desert ecosystem. These water sources provide free water and areas of sanctuary for wildlife species in the area. This project is located within 0.4 miles from an artificial source of water for wildlife.

Various bird, mammal, reptile and invertebrate species inhabit the sand shinnery ecosystem in New Mexico. Herbivorous mammals include mule deer, pronghorn, and numerous rodent species. Carnivores include coyote, bobcat, badger, striped skunk, and swift fox. Two upland game bird species, scaled quail and mourning dove, are prevalent throughout the sand shinnery in New Mexico. Many species of songbirds nest commonly, with a much larger number that use the habitat during migration or for non-nesting activities. Common avian predators include northern harrier, Swainson's hawk, red-tailed hawk, kestrel, burrowing owl, and Chihuahuan raven. Numerous snake and lizard species have been recorded, including the sand dune lizard, the only vertebrate species restricted entirely to sand shinnery habitat.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to cultural resources.

Alternative B: Build Alternative B100

Direct and Indirect Effects

Impacts of Alternative B to wildlife in the localized area may include but are not limited to: possible mortality, habitat degradation and fragmentation, avoidance of habitat during construction and drilling activities and the potential loss of burrows and nests.

Impacts of the proposed action to wildlife in the area of the wildlife water may include but are not limited to: avoidance of habitat and a reliable water source during construction activities. The BLM requires that activities within 200 meters from an artificial wildlife water source be limited and short term in nature, therefore the project will not disrupt wildlife use or activities.

Mitigation Measures

Standard practices and elements of the proposed action minimize these impacts to wildlife. These include:

- Minimizing cut and fill
- Careful road placement
- Avoidance of wildlife waters, stick nests, drainages, playas and dunal features

These practices reduce mortality to wildlife and allow habitat to be available in the immediate surrounding area thus reducing stressors on wildlife populations at a localized level. Impacts to local wildlife populations are therefore expected to be minimal.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect

Impacts to wildlife would be the same as under Alternative B.

Mitigation Measures

Mitigation measures would be the same as under Alternative C.

3.6. Cultural Resources

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 12,000 – 6,200 B.C.), Archaic (ca. 6,200 B.C. – A.D. 500), Ceramic (ca. A.D. 500 – 1540), Protohistoric and Spanish Colonial (ca. A.D. 1400 – 1821), and Mexican and American Historical (ca. A.D. 1822 to early 20th century). Sites representing any or all of these periods are known to occur within the region. A more complete discussion can be found in *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico; An Overview of Cultural Resources in the Roswell District, Bureau of Land Management* published in 1989 by the U.S. Department of Interior, Bureau of Land Management.

The BLM conducts Native American consultation regarding Traditional Cultural Places (TCP) and Sacred Sites during land-use planning and its associated environmental impact review. In addition, during the oil & gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with oil and gas or other land-use authorizations. With regard to Traditional Cultural Properties, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of construction projects. However, to date no TCPs or sacred sites have been identified in the vicinity of the current project area.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to cultural resources.

Alternative B: Build Alternative B100

Direct and Indirect Effects

The primary impact from pipeline construction is trenching for the water line. This digging can destroy buried archeological features, such as hearths or storage pits, and disturb the spatial relationships between buried archeological artifacts, thus preventing or hampering their analysis and diminishing or destroying their research potential.

A Class I records search was conducted of the existing pipelines that are proposed to be replaced, four Historic Properties, all prehistoric archeological sites, were identified. Two of these are eligible for listing in the National Register of Historic Places, while two are not determined for listing at this time. The proposed new line east of Carlsbad along US 62/180 was surveyed for Historic Properties and three prehistoric archeological sites were found.

Mitigation Measures

Cultural resources on public lands, including archaeological sites and historic properties, are protected by federal law and regulations (Section 106 of the National Historic Preservation Act and the National Environmental Policy Act). Class III cultural surveys will be conducted of the area of effect for realty projects proposed on these lands prior to the approval of any ground disturbing activities to identify any

resources eligible for listing on the National Register of Historic Places. Cultural resource inventories minimize impacts to cultural sites and artifacts by avoiding these resources prior to construction of the proposed project. If unanticipated or previously unknown cultural resources are discovered at any time during construction, all construction activities shall halt and the BLM authorized officer will be immediately notified. Work shall not resume until a Notice to Proceed is issued by the BLM.

Implementing this alternative will require archeological field work to identify any potential impacts to the previously recorded sites within the existing lines that are to be replaced and to complete an archeological survey for segments of the existing lines that have not be examined. The new line east of Carlsbad will require alternate routes to avoid the three prehistoric archeological sites. Routing the line into previously disturbed portions of the US 62/180 highway right-of-way in the vicinity of each of the three sites is a recommended alternative.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

A Class III archeological survey was completed for the proposed new construction. Twelve Historic Properties, all of them archeological sites, were identified within the project area of potential effect. Three of them are historic, eight are prehistoric, and one is a multicomponent historic/prehistoric site. The three historic sites are not eligible for listing on the National Register of Historic Places. Five of the prehistoric sites and the one multicomponent site are eligible for listing, while two are undetermined for listing at this time.

Mitigation Measures

Alternate routes for the pipeline as identified in the Class III survey report will be followed in order to avoid any impact from surface disturbance or trenching on the eight prehistoric sites. As long as the designated reroutes are followed there will be no effect on any property listed in or eligible for listing on the National Register of Historic Places.

3.7. Livestock Grazing

The proposed action is within the Pump Jack South II # 76106, Sand Trap II # 76104, Sand Trap # 76004, Little Lake # 77043, Clayton Basin # 77013, Twin Wells North # 77012, Fenton Draw # 77048, Alkali Lake # 77020, and Alacran Hills # 77024. These allotments are all a yearlong cow-calf deferred rotation operation. Range improvement projects such as windmills, water delivery systems (pipelines, storage tanks, and water troughs), earthen reservoirs, fences, and brush control projects may be located within these allotments. In general, an average rating of the range land within the project area is six acres/AUM (Animal Unit Months). In order to support one cow, for one year, about 72 acres is needed. This equals about nine cows per section.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to livestock grazing.

Alternative B: Build Alternative B100

Direct and Indirect Effects

The loss of 281.4 acres of vegetation will not affect the animal unit months (AUMs) which are authorized for livestock use in this area. There are occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into mud pits or other excavations and ingesting plastic or other materials present at the work site. Range improvement projects could be damaged if they are located in the

proposed project area. If further development occurs, the resulting loss of vegetation could reduce the AUMs authorized for livestock use in this area.

Mitigation Measures

Impacts to the ranching operation will be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on disturbed areas.

To further reduce impacts the following COAs will apply:

- Minimize the ROW width
- No blading along the proposed route
- Minimize vehicular use
- Place parking and staging areas on caliche surfaced areas
- An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.
- Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).
- Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action. OR
- Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be moved a minimum of 200 meters away from the proposed action.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

The loss of 290.9 acres of vegetation will not affect the Animal Unit Months (AUMs) which are authorized for livestock use in this area. There are occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into mud pits or other excavations and ingesting plastic or other materials present at the work site. Range improvement projects could be damaged if they are located in the proposed project area. If further development occurs, the resulting loss of vegetation could reduce the AUMs authorized for livestock use in this area.

Mitigation Measures

Mitigation measures would be the same as under Alternative B.

3.8. Recreation

This project falls within the Hackberry Lake Special Recreation Management Area (SRMA). This SRMA consists of 55,800 acres of stabilized dune lands and cliffs. The area features intensively used OHV trails and campgrounds. The area is used annually for competitive endure events and other OHV use. Trails for OHV use intersect with existing roads in some areas within the SRMA. The location of this project is not within any designated trails within the SRMA.

Alternative A: No Action

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to recreation in the Hackberry Lake SRMA.

Alternative B: Build Alternative B100

Direct and Indirect Effects

Increased vehicle and heavy equipment travel in the immediate area of the Hackberry Lake OHV Area can pose a risk to OHV operators. Pipelines can interrupt existing recreation trails. They can also be a hazardous obstacle to OHV users traveling along trails. Unfilled ditches from pipelines also pose a significant danger to OHV riders.

Mitigation Measures

To mitigate impacts associated with pipelines in the SRMA, the guidelines in Appendix 4 as approved in the Carlsbad Resource Management Plan Amendment of 1997, page AP4-131 will be followed. This includes the standard mitigation for protecting OHV trails and camping areas.

The pipeline shall be buried a minimum of 24 inches under all roads, two-tracks and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. During all phases of construction, open ditches shall have proper signage notifying trail users of potential hazards. Upon completion of construction, the road shall be returned to pre-construction condition with no bumps or dips. All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect Effects

Impacts to recreation would be the same as under Alternative B.

Mitigation Measures

Mitigation measures would be the same as under Alternative B.

3.9. Cave and Karst

The proposed project is located in gypsum karst terrain, a landform that is characterized by underground drainage through solutionally enlarged conduits. Gypsum karst terrain may contain sinkholes, sinking streams, caves, and springs. Sinkholes leading to underground drainages and voids are common. These karst features, as well as occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region.

The BLM categorizes all areas within the CFO as having either low, medium, high or critical cave potential based on geology, occurrence of known caves, density of karst features, and potential impacts to fresh water aquifers. This project occurs within a [High and Medium] karst zone and is located within 1600 feet of known cave(s) or karst feature(s). A [High or Medium] karst zone is defined as an area

High Karst Zone – "in known soluble rock types and contain a high frequency of significant caves and karst features such as sinkholes, bedrock fractures that provide rapid recharge of karst aquifers, and springs that provide riparian habitat."

Medium Karst Zone – "in known soluble rock types but may have a shallow insoluble overburden. These areas may contain isolates karst features such as caves and sinkholes. Groundwater recharge may not be wholly dependent on karst features but the karst features still provide the most rapid aquifer recharge in response to surface runoff."

Field notes from the on-site inspection indicate that this project should avoid the cave or karst feature by a significant amount as not to impact the cave. Unknown features may also exist. Due to these factors, this action is subject to mitigation measures designed to adequately protect known and potential cave/karst resources.

Sinkholes and cave entrances collect water and can accumulate rich organic materials and soils. This, in conjunction with the stable microclimate near cave entrances, support a greater diversity and density of plant life which provides habitat for a greater diversity and density of wildlife such as raptors, rodents, mammals, and reptiles.

The interior of the caves support a large variety of troglobitic, or cave environment-dependent species. The troglobitic species have adapted specifically to the cave environment due to constant temperatures, constant high humidity, and total darkness. Some of the caves in the area contain bat colonies. Many of the caves in this area contain fragile cave formations known as speleothems.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to cave and karst resources.

Alternative B: Build Alternative B100

Direct and Indirect Effects

A possibility exists for slow subsidence or sudden collapse of a sinkhole, cave passage, or void during trenching operations, with associated safety hazards to the operator and potential for increased environmental impact. Slow subsidence or sudden collapse of sinkholes may also leave pipelines hanging and increase their possibility of leaking or failure. These subsidence processes can be triggered or enhanced by intense vibrations from construction or rerouting or focusing of surface drainages.

Contaminates, such as salt water, oil, or other petroleum products, from spills can be transported directly into cave and karst systems causing a negative effect to the cave environment and ecosystem. Because cave ecosystems are extremely fragile and easily disturbed, the negative effects to the cave's biological components may include disruption of some of its species. Because karst terrains and cave systems are directly and integrally linked to groundwater recharge leaking or ruptured pipelines in karst areas may lead directly to groundwater contamination.

Mitigation Measures

To avoid or lessen the potential of subsidence or collapse of karst features, or other possible impacts to cave and karst resources from pipelines, alignments may be rerouted to avoid karst features. The CFO will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer. Special restoration stipulations or realignment may be required at such intersections, if any.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect

Impacts to cave and karst resources would be the same as under Alternative B.

Mitigation Measures

Mitigation impacts would be the same as under Alternative B.

3.10. Visual Resources

The Visual Resource Management (VRM) program identifies visual values, establishes objectives in the RMP for managing those values, and provides a means to evaluate proposed projects to ensure that visual management objectives are met.

This project occurs within a Visual Resource Management Class IV zone. The objective of VRM Class IV is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic landscape elements of color, form, line and texture.

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

Under Alternative A, no changes would be made to the Double Eagle Water System, resulting in no direct, indirect, or cumulative impacts to visual resources.

Alternative B: Build Alternative B100

Direct and Indirect Effects

This project will cause some short-term and long-term visual impacts to the natural landscape. Short-term impacts occur during construction operations and prior to interim reclamation. These include the presence of construction equipment and vehicle traffic.

Long-term impacts are visible to the casual observer through the life of the pipeline and associated road. These include the visual evidence of a pipeline or roads which cause visible contrast to form, line, color, and texture. Removal of vegetation due to construction of the proposed project exposes bare soil lighter in color and smoother in texture than the surrounding vegetation. The surfacing of these areas with caliche materials causes further contrasts. Those contrasts will be visible to visitors in the area.

Mitigation Measures

Short- and long-term impacts are minimized by best management practices such as interim reclamation. Interim reclamation, conducted within six months after construction of the proposed project will reduce the affected area by about 1/3 through recontouring and revegetation.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect

Impacts to visual resources would be the same as under Alternative B.

Mitigation Measures

Mitigation impacts would be the same as under Alternative B.

3.11. Social and Economic Conditions

The present socioeconomic conditions of the City of Carlsbad and Eddy County were compared to the State of New Mexico data in order to determine any defining trends such as poverty rate or demographic trends. The City of Carlsbad and Eddy County have a lower rate of persons living below poverty than the State and a slightly lower rate of Hispanic or Latino populations, a higher rate of white only, and marginal differences in other ethnicities. The median household income for Carlsbad is similar to the State median household income. Median household income and per capita income for Eddy County was slightly higher than the State. Existing socioeconomic data for the City of Carlsbad, Eddy County, New Mexico are shown in the Table 1.

Table 1. Area Population Data, 2006-2008

	City of Carlsbad		Eddy County	New Mexico
	Number	% Total	Number or % Total	Number or % Total
Population	25,289	100%	50,986	1,962,226
White	13,691	54.1%	53.7%	41.9%
Hispanic or Latino (of any race)	10,296	40.7%	42.1%	44.5%
American Indian and Alaska Native	37	0.1%	0.3%	8.7%
Black or African American	630	2.5%	1.6%	2.0%
Two or more races	446	1.8%	1.7%	1.3%
Economic Data				
Median Household Income	$43,138		$45,858	$43,202
Per Capita Income	$22,963		$25,151	$22.781
Persons Below Poverty Level		11.2%	14.4%	17.9%
Families Below Poverty Level		7.1%	10.2%	13.7%

Between 2006 and 2008, the labor unemployment for all civilian workers aged 16 and over for Carlsbad was approximately 4.3%. The unemployment rate for Eddy County was 5.3% and New Mexico, by comparison, had a rate of 3.7%. The unemployment rate for Carlsbad was higher than New Mexico, but was lower than the national average of 6.4% (U.S. Census Bureau).

Basic employment for Eddy County includes, but is not limited to, management, professional, retail, agricultural, construction, industrial and government. Retail employment includes retail sales and food service establishments. The breakout of employment within Eddy County and the City of Carlsbad is similar to the breakout of the State of New Mexico except for the category of agriculture, forestry, fishing and hunting, and mining. A higher percentage is employed in this category within Eddy County and the City of Carlsbad (18.8%) than in New Mexico as a whole (4.1%). The employment population in the City of Carlsbad, Eddy County and New Mexico are broken down in Table 2.

Table 2. Employment

Employment*	Carlsbad-Artesia (Micro Area)		Eddy County		New Mexico	
	Number	% Total	Number	% Total	Number	% Total
Management, Professional, and Related Occupations	6,800	29.2	6,800	29.2	301,037	33.9
Sales and Office Occupations	5,408	23.2	5,408	23.2	216,051	24.4
Retail Trade	1,167	9.9	2,332	10.0	103,156	11.6
Agriculture, Forestry, Fishing and Hunting, and Mining	4,376	18.8	4,376	18.8	36.265	4.1
Construction and Manufacturing	2,940	12.7	2,940	12.7	108,647	12.2
* Civilian employed population 16 years and over						

Alternative A: No Action

Direct, Indirect, and Cumulative Impacts

The current water supply source for Carlsbad (the Sheep's Draw well field) is not anticipated to support future growth. A potential benefit of the proposed project is the assurance of a clean water source and protection of the current water supply. A stable water source provided by either Alternative B or C will add to community cohesion, social values, quality of life, the local economy, and the tax base; thereby, providing beneficial impacts to the affected area.

Alternative B: Build Alternative B100

Direct and Indirect Effects

Alternative B is not expected to have disproportionate adverse effects on any population group. The poverty rate of Carlsbad and Eddy County are lower than the State of New Mexico, therefore any costs of the project would not be anticipated to place a disproportionate burden on the local population. Impacts as a result of Alternative B are not anticipated to be significant.

Alternative C: Build Alternative C (Proposed Action)

Direct and Indirect

Impacts to social and economic features would be the same as under Alternative B.

3.12. Cumulative Impacts

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions within the project area to which may add incremental impacts. This includes all actions that may occur in the area including foreseeable non-federal actions.

The combination of all land use practices across a landscape has the potential to change disturb cultural sites, cause minor increases in greenhouse gas emissions, and fragment wildlife habitat. However, the likelihood of these impacts occurring is minimized through standard mitigation measures, special Conditions of Approval for oil and gas activities, and ongoing monitoring studies.

All resources are expected to sustain some level of cumulative impacts over time; however these impacts fluctuate with the gradual abandonment and reclamation of oil and gas wells. As new wells are being drilled, there are others being abandoned and reclaimed. As the oil field plays out, the cumulative impacts will lessen as more areas are reclaimed and less are developed.

4. SUPPORTING INFORMATION

4.1. Tribes, Individuals, Organizations, or Agencies Consulted

Consultation on this action was initiated with the following Tribes and public agencies:

- Apache Tribe of Oklahoma
- Comanche Indian Tribe
- Kiowa Tribe of Oklahoma
- Mescalero Apache Tribe
- Ysleta del Sur Pueblo
- US Department of Agriculture, Natural Resources Conservation Service
- US Department of Defense, Army Corps of Engineers
- US Department of Energy
- US Department of Homeland Security, Federal Emergency Management Agencies, Region VI
- US Department of the Interior, Fish and Wildlife Service
- US Department of the Interior, National Park Service
- US Environmental Protection Agency
- New Mexico Department of Game and Fish
- New Mexico Department of Transportation
- New Mexico Energy, Minerals, and Natural Resources Department
- New Mexico Environmental Department
- New Mexico Office of Cultural Affairs
- New Mexico Office of the State Engineer
- New Mexico State Land Office

4.2. List of Preparers

The following CFO staff participated in the preparation of this document:

- Salomon Arreola – Realty Specialist
- Cody Layton – Natural Resource Specialist
- Amanda Nisula – Planning and Environmental Coordinator
- Martin Stein – Archaeologist

4.3. References

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DECISION RECORD (DR)
AND
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
BLM Office: Carlsbad Field Office
DOI-BLM-NM- P020-11-1414
City of Carlsbad
Right of Way #: NM-127324
Double Eagle Water System

Purpose and Need for Action:
The purpose of the action is to provide access across BLM-managed lands for installation and replacement of a water pipeline to deliver water from the Double Eagle well field to the City of Carlsbad. The need for the action is established under BLM's responsibility under FLPMA to respond to a request for a right-of-way (ROW) grant for legal access.

The Bureau of Land Management would grant a ROW to the City of Carlsbad for the following Federal lands described below:

T. 17 S., R. 32 E., NMPM
sec. 23: E½SE¼;
sec. 26: N½SW¼;
sec. 27: E½SW¼, SW¼SW¼, N½SE¼;
sec. 33: S½NE¼, NW¼SE¼, E½SW¼, SW¼SW¼;
sec. 34: W½NW¼.
T. 18 S., R. 32 E., NMPM
sec. 04: Lot 4, SW¼NW¼;
sec. 05: SE¼NE¼, NE¼SW¼, S½SW¼, N½SE¼;
sec. 08: NW¼NW¼.
T. 20 S., R. 29 E., NMPM
sec. 35: S½SW¼, N½SE¼, SW¼SE¼;
sec. 36: S½N½, NW¼SW¼.
T. 20 S., R. 30 E., NMPM
sec. 33: S½S½;
sec. 31: lot 2 and 3, NE¼SW¼, N½SE¼.
T. 20 S., R. 31 E., NMPM
sec. 33: S½SW¼, N½SE¼, SW¼SE¼;
sec. 34: N½S½;
sec. 35: N½S½;
sec. 31: SE¼SW¼, S½SE¼.
T. 20 S., R. 32 E., NMPM
sec. 30: lot 4, NE¼NE¼, S½NE¼, NW¼SE¼, E½SW¼;
sec. 31: lot 1 and 2.
T. 21 S., R. 27 E., NMPM
sec. 23: S½SE¼;
sec. 24: SW¼SW¼.

T. 21 S., R. 28 E., NMPM
sec. 03: lot 9, 14, 15, and 16, N½SW¼, SW¼SW¼;
sec. 04: SE¼SE¼;
sec. 08: E½SE¼;
sec. 09: N½NE¼, SW¼NE¼, SE¼NW¼, N½SW¼;
sec. 17: NW¼NE¼, NE¼NW¼, S½NW¼, NW¼SW¼;
sec. 18: NE¼SE¼, S½SE¼;
sec. 19: lot 1 and 2, NW¼NE¼, E½NW¼.
T. 21 S., R. 29 E., NMPM
sec. 01: lot 1, 2, 5, 6 and 7;
sec. 03: lot 1, 17, 18, 19, and 22.
T. 21 S., R. 30 E., NMPM
sec. 05: lot 4;
sec. 06: lots 1 thru 5 inclusive.

The lands described above contain a total length of 22.63 miles.

The pipeline right-of-way is 50 feet wide (additional 20 feet temporary during construction), 119,500.0 feet long and contains 137.17 acres, more or less.

Mitigation Measures: The project would require the lesser prairie chicken timing restrictions, cave and karst mitigation, the standard and special ROW stipulations as depicted in Exhibit A, as well as the required seeding application.

Recommendation and Rationale:
Our analysis has shown with proper mitigation alternative C- Proposed action would have minimal environmental impacts. The proposed action is consistent with the Carlsbad 1988 Resource Area Management Plan (RMP), 1997 Carlsbad RMP Amendment (RMPA) and the 2008 Pecos District Special Status Species RMPA. Therefore, it is recommended that this application be approved.

Prepared by:
Cody R. Layton, Natural Resource Specialist — 9/30/11 Date

Approved by:
James Stovall, Field Manager Acting — 9/30/11 Date
Carlsbad Field Office, BLM

Finding of No Significant Impact/Decision Record:

I have reviewed this environmental assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action with the mitigation measures described above will not have any significant impacts on the human environment, no significant impacts to minority or low-income populations or communities have been identified for the proposed action and that an EIS is not required. I have determined that the proposed project is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures as described above.

James Stovall, Field Manager
Carlsbad Field Office, BLM

9/30/11
Date