PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	R360 Permian Basin LLC
LEASE NO.:	NM22809
WELL NAME & NO.:	1-Okerlund SWD
SURFACE HOLE FOOTAGE:	1470'/S & 1555'/W
BOTTOM HOLE FOOTAGE	'/ & '/
LOCATION:	Section 7, T. 21 S., R. 32 E., NMPM
COUNTY:	Lea County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

The operator shall supply the BLM with a copy of a mudlog over the permitted disposal interval and estimated insitu water salinity based on open-hole logs. If hydrocarbon shows occur while drilling, the operator shall notify the BLM.

The operator shall run and provide a CBL on the 7-inch casing from TD to surface.

The operator shall provide to the BLM a summary of formation depth picks based on mudlog and geophysical logs along with a copy of the mudlog and open hole logs from TD to top of wolfcamp

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

1. **Properly evaluate the injection zone utilizing open hole logs, swab testing along any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.**
2. **Restrict the injection fluid to the approved formation.**
3. **If a step rate test will be run an NOI sundry shall be submitted to the BLM for approval**

If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

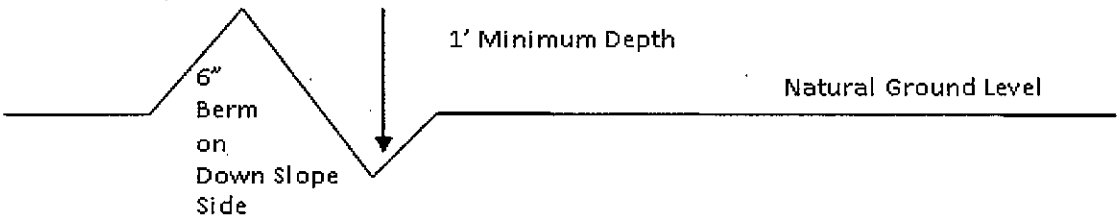
Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattleguards
An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route 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 cattleguards that are in place and are utilized during lease operations.

Fence Requirement
Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

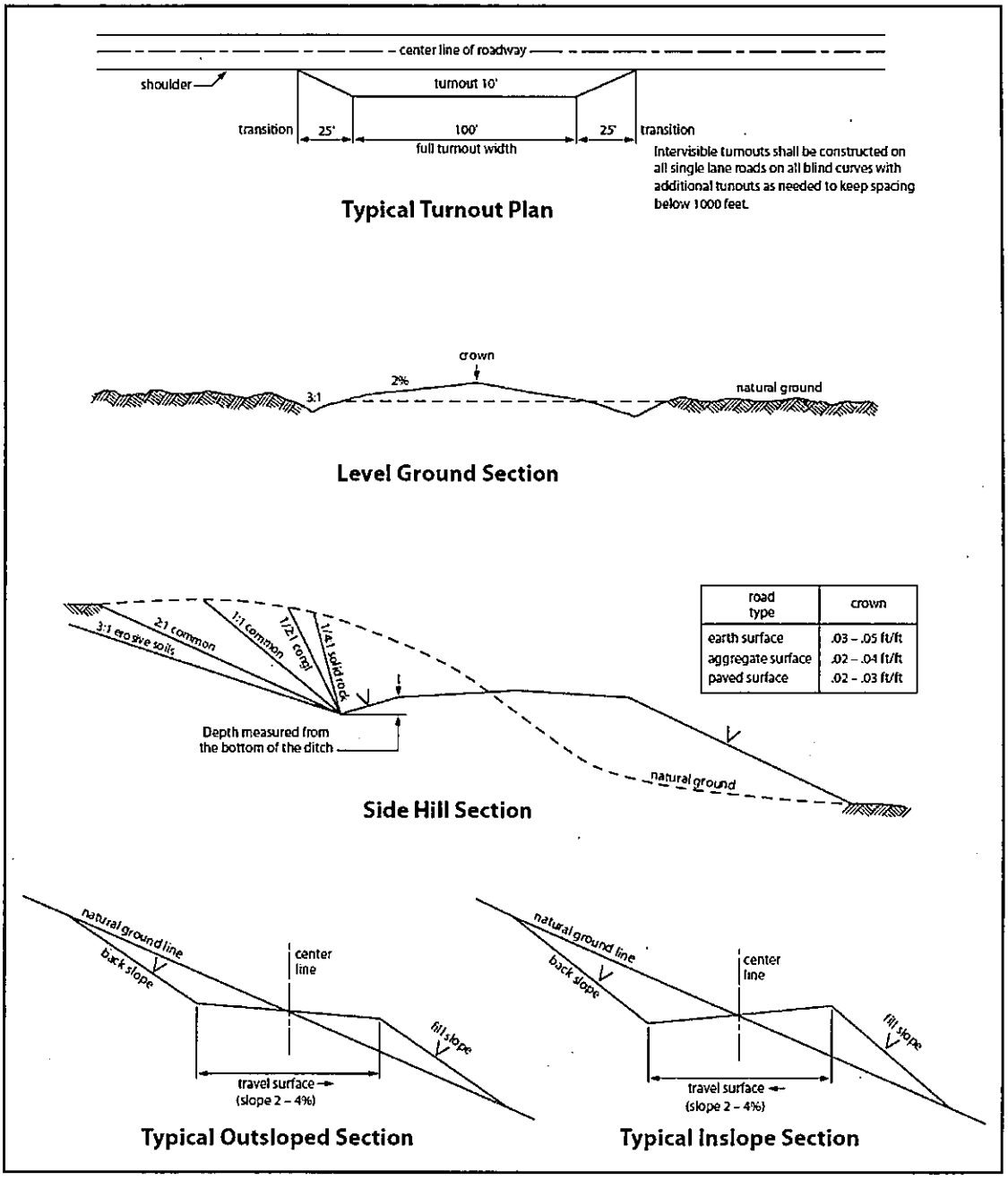


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is encountered in quantities greater than 10 PPM the well shall be shut in and H2S equipment shall be installed and flare line must be extended pursuant to Onshore Oil and Gas Order #6. Report measured values and formation to the BLM. After detection, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. Note, H2S has been recurring in wells north of the proposed project in the base of the Salado Formation from 100 ppm to as high as 14,000 ppm.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Potash Areas:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible lost circulation in the Rustler, Capitan Reef, Red Beds and Delaware.
Possible Water Flows in the Rustler and Salado
Abnormal pressures may be encountered below the 3rd Bone Spring Sandstone.

1. The **20** inch surface casing shall be set at approximately **1135** feet (**in a competent bed; an anhydrite cap is located here and is below known lost circulation zones and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **13-3/8** inch 1st intermediate casing, which shall be set at approximately **3350** feet, (basal anhydrite of the Castile Formation) is:

Operator has proposed DV tool at depth of 1800', but will adjust cement proportionately if moved. DV tool/ECP shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:
☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Potash.**

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

3. The minimum required fill of cement behind the **9-5/8** inch 2nd intermediate casing which shall be set at approximately **5100** feet is:

Operator has proposed DV tool at depth of 3400', but will adjust cement proportionately if moved. DV tool/ECP shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:
☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Potash.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

4. The minimum required fill of cement behind the 7 inch production is:

Operator has proposed DV tool at depth of 10500, and at 5175, but will adjust cement proportionately if moved. DV tool/ECP shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.
c. Third stage above DV tool:
☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Potash.**

Formation below the 7" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

Open Hole completion from 14300' to TD of 16000'

Special Requirements:

The operator shall supply the BLM with a copy of a mudlog over the permitted disposal interval and estimated insitu water salinity based on open-hole logs. If hydrocarbon shows occur while drilling, the operator shall notify the BLM.

The operator shall run and provide a CBL on the 7-inch casing from TD to surface.

The operator shall provide to the BLM a summary of formation depth picks based on mudlog and geophysical logs along with a copy of the mudlog and open hole logs from TD to top of wolfcamp

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 20" surface casing shoe shall be **10,000 (10M)** psi. **10M system requires an HCR valve, remote kill line and annular to match.**

The remote kill line is to be installed prior to testing the system and tested to stack pressure.

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
    b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
    c. The results of the test shall be reported to the appropriate BLM office.
    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. WELL COMPLETION

Special Requirements:

The operator shall supply the BLM with a copy of a mudlog over the permitted disposal interval and estimated insitu water salinity based on open-hole logs. If hydrocarbon shows occur while drilling, the operator shall notify the BLM.

The operator shall run and provide a CBL on the 7-inch casing from TD to surface.

The operator shall provide to the BLM a summary of formation depth picks based on mudlog and geophysical logs along with a copy of the mudlog and open hole logs from TD to top of wolfcamp

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

4. **Properly evaluate the injection zone utilizing open hole logs, swab testing along any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.**

5. **Restrict the injection fluid to the approved formation.**
6. **If a step rate test will be run an NOI sundry shall be submitted to the BLM for approval**

If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CLN 04252016

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S.

Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

VRM Facility Requirement
Low-profile tanks not greater than eight-feet-high shall be used.

B. PIPELINES

C. ELECTRIC LINES

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road

repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

United States Department of the Interior
Bureau of Land Management
Carlsbad Field Office

Refer to: 3160-3

ORIGINAL

To: AFM, Lands & Minerals, CFO
From: Geologist, CFO
Subject: Geologic Review of Application for Permit to Drill

Operator: R360 Permian Basin, LLC

Well Name and Number: Okerlund SWD-1

Potash: SEC

Location: SHL:1470'/S.& 1555'/W. SEC007 T021S, R032E.(NESW)

County Lea **Lease Number:** NMNM22809 **APD Received:** 9-9-2015

Ground Level Elevation: 3644 **Surface Geology:** Qe/Qp-Eolian deposits/Piedmont alluvial deposits

TVD: 16000 **MD:** 16000 **BH Mud Weight:** 8.9

BHP: 7405 **MASP:** 3885

1. Geologic Marker Tops (from reports on surrounding wells):

	HAT MESA COM #002 3002524925 T21S R32E Sec 11 660FSL 1980FWL	3002525931 TS RE Sec 9	NORTH BILBREY 7 FEDERAL #001 3002527603 T21S R32E Sec 7 2180FSL 1980FEL	MESA VERDE 15 FEDERAL #001 3002536836 T21S R32E Sec 15 990FNL 990FEL	**Proposed Well** Okerlund SWD-1 T021S, R032E.(NESWSEC007 1470'/S.& 1555'/W
	Elevation	Elevation	Elevation	Elevation	Unit Elevation
Geologic Marker	Depth	Depth	Depth	Depth	Estimated Depth
Rustler	1513	1337	1045	-	1045
Top of Salt	-	-	-	-	1490
Tansill	-	-	-	-	3260
Yates	3375	3300	-	-	3365
Capitan Reef	3730	3605	-	-	3620
Cherry Canyon	5662	5604	5340	5740	5170
Brushy Canyon	6970	-	6633	7130	6645
Bone Spring Lime	8810	8650	8360	8850	8370
1st BS Sand	9815	9725	9393	9880	9405
2nd BS Sand	10325	10325	9984	10510	10000
3rd BS Lime	-	-	-	-	10680
3rd BS Sand	11376	11370	11072	11505	11065
Wolfcamp	11627	11627	11420	11820	11475
Strawn	12917	12960	12677	13100	12690
Atoka	13103	13185	12910	13327	12920
Morrow	13666	13836	13475	13970	13490
Woodford	-	-	-	-	14965
Silurian	-	-	-	-	15205

NEPA Log No: DOI-BLM-NM-P020-2015-1123-EA

Project Type:

Reference Number: NM-134819

Project Title: Okerlund SWD 1

Project Lead: Brooke Wilson

Applicant: R360 Environmental Solutions

Recd Date: 02-12-2016

Routing Started: 02-12-2016

NEPA Checklist

Resource/Activity	Not Present	Not Impacted	**May be Impacted	Reviewer	COAs/Stips Req	Sign Off Date
Wastes, Hazardous or Solid	◉	○	○	Vanessa Saenz	☐	07-20-2015
Public Health and Safety	◉	○	○			
Enivronmental Justice	○	◉	○			
General Topography/Surface Geology	○	◉	○	Vanessa Saenz	☐	07-20-2015
Socio Economics	○	◉	○			
Lands/Realty, ROW	○	◉	○	Vanessa Saenz	☐	07-20-2015
Access/Transportation	○	◉	○			
Vegetation/Forestry	○	◉	○			
Livestock Grazing	○	◉	○	Vanessa Saenz	☑	07-20-2015
Invasive, Non-Native Species	○	◉	○			
Soils	○	◉	○	Vanessa Saenz	☐	07-20-2015
Air Quality	○	◉	○			
Floodplains	○	◉	○			
Water Quality Surface/Ground	○	◉	○	Vanessa Saenz	☐	07-20-2015
Watershed	○	◉	○			
Mineral Materials	◉	○	○	Vanessa Saenz	☐	07-20-2015
Potash	○	○	◉	James Rutley	☐	08-19-2015
Endangered Species	○	○	◉			
Wetlands/Riparian Zones	◉	○	○	Cassandra Brooks	☑	09-24-2015
Special Status Species	○	○	◉			
Wildlife Habitat	○	○	◉			
Karst Resources	◉	○	○	Vanessa Saenz	☐	07-20-2015
ACECs	◉	○	○	Vanessa Saenz	☐	07-20-2015
Wild/Scenic Rivers	◉	○	○			
Wilderness	◉	○	○	Vanessa Saenz	☑	07-20-2015
Outdoor Recreation	○	◉	○			
Visual Resources	○	◉	○			
Native American Religious Concerns	◉ Unknown					
Cultural Resources	◉	○	○	Hila Nelson	☐	08-24-2015
Paleontology	◉ Unknown					

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-NM-2015-1123-EA

R360 Permian Basin, LLC
Okerlund Salt Water Disposal Well #1
And Off-load Facility

Department of the Interior
Bureau of Land Management
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220
Phone: (575) 234-5972
FAX: (575) 885-9264

Confidentiality Policy
Any comments, including names and street addresses of respondents, you submit may be made available for public review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

BLM

Carlsbad Field Office

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TABLE OF CONTENTS

1. PURPOSE AND NEED FOR ACTION

1.1 Background

R360 Permian Basin, LLC (R360) has applied for a permit to drill a salt-water disposal (SWD) well from a new well pad to be constructed on federal surface. The proposed SWD well would be on the Okerlund Drill Island located approximately 27 miles northeast of Loving, NM. In the application, R360 is also applying to construct an off-load facility for the proposed well on an adjoining pad.

Preparing Office:
Pecos District, Carlsbad Field Office
620 East Greene Street
Carlsbad, NM 88220

1.2 Purpose and Need for Action

The purpose for the proposed action is to provide R360 with reasonable access to develop a well and off-load facility. The action is designed to assist oil and gas leasees with disposal of produced water on and around the drill island, while minimizing impacts to potash resources.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reasonable access to develop a federal oil and gas lease.

1.3 Decision to be Made

The BLM will decide whether or not to approve the application for permit to drill and associated right-of-way for the SWD well and off-load facility, and if so, under what terms and conditions.

1.4 Conformance with Applicable Land Use Plan(s)

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 have been reviewed, and it has been determined that the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Name of Plan: 1988 Carlsbad Resource Management Plan

Date Approved: September 1988

Decision: [Page 10] "In general, public lands are available for utility and transportation facility development..." [Page 13] "BLM will encourage and facilitate the development by private industry of public land mineral resources so that national and local needs are met, and environmentally sound exploration, extraction, and reclamation practices are used."

Name of Plan: 1997 Carlsbad Approved Resource Management Plan Amendment

Date Approved: October 1997

Goal: [Page 4] "Provide for leasing, exploration and development of oil and gas resources within the Carlsbad Resources Area." The proposed action aids in the development of oil and gas resources and complies with the Surface Use and Occupancy Requirements.

Name of Plan: 2008 Special Status Species Approved Resource Management Plan Amendment

Date Approved: April 2008

Decision: [Page 7] "The BLM will continue to require oil and gas lessees to conduct operations in a manner that will minimize adverse impacts to resources, land uses, and other uses. To that end, the BLM will continue to apply reasonable mitigation measures to all oil and gas activities." The proposed action will utilize best management practices when developing leases in Lesser Prairie-Chicken and Sand Dune Lizard Habitat. Special mitigation measures will be included into the Pecos District Conditions of Approval.

1.5 Relationship to Statutes, Regulations or Other Plans

The following is a list of statutes that may apply to a proposed action:

- **Archaeological and Historic Preservation Act of 1974 (16 USC 469)** - Provides for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.
- **Archaeological Resources Protection Act of 1979, as amended (16 USC 470 et seq.)** - Secures, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals.
- **Clean Air Act of 1970, as amended (42 USC 7401 et seq.)** - Defines EPA's responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer.
- **Clean Water Act of 1977, as amended (30 USC 1251)** - Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
- **Endangered Species Act of 1973 (16 USC 1531 et seq.)** - Protects critically imperiled species from extinction as a consequence of economic growth and development untempered by adequate concern and conservation.
- **Federal Cave Resources Protection Act of 1988 (16 USC 4301 et seq.)** - Protects significant caves on federal lands by identifying their location, regulating their use, requiring permits for removal of their resources, and prohibiting destructive acts.
- **Lechuguilla Cave Protection Act of 1993** - Protects Lechuguilla Cave and other resources and values in and adjacent to Carlsbad Caverns National Park.
- **Migratory Bird Treaty Act of 1918 (16 USC 703-712)** - Implements the convention for the protection of migratory birds.
- **Mining and Mineral Policy Act of 1970, as amended (30 USC 21)** - Fosters and encourages private enterprise in the development of economically sound and stable industries, and in the orderly and economic development of domestic resources to help assure satisfaction of industrial, security, and environmental needs.
- **National American Graves Protection and Repatriation Act of 1990 (25 USC 301)** - Provides a process for museums and Federal agencies to return certain Native American cultural items such as human remains, funerary objects, sacred objects, or objects of cultural patrimony to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations and includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking.
- **National Historic Preservation Act of 1966, as amended (16 USC 470)** - Preserves historical and archaeological sites.
- **Wild and Scenic Rivers Act of 1968, as amended (16 USC 1271 et seq.)** - Preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.
- **Wilderness Act of 1964 (16 USC 1131 et seq.)** - Secures for the American people of present and future generations the benefits of an enduring resource of wilderness.

1.6 Scoping, Public Involvement, and Issues

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).

The CFO uses Geographic Information Systems (GIS) in order to identify resources that may be affected by the proposed action. A map of the project area is prepared to display the resources in the area and to identify potential issues.

The proposed action was circulated among CFO resource specialists in order to identify any issues associated with the project. The issues that were raised include:

- How would air quality be impacted by the proposed action?
- How would climate change be impacted by the proposed action?
- How would range management be impacted by the proposed action?
- How would soils be impacted by the proposed action?
- How would vegetation be impacted by the proposed action?
- How would wildlife habitat be impacted by the proposed action?
- How would watershed resources be impacted by the proposed action?
- How would Lesser Prairie-Chicken habitat be impacted by the proposed action?
- How would visual resources be impacted by the proposed action?
- Could noxious weeds be impacted by the proposed action?
- How would cultural resources be impacted by the proposed action?
- How would paleontological resources be impacted by the proposed action?
- How would potash resources be impacted by the proposed action?

2. ACTION AND ALTERNATIVE(S)

2.1 Proposed Action

The BLM Carlsbad Field Office is proposing to allow R360 to drill a salt-water disposal well (SWD) completed to the Devonian formation. In order to drill the proposed well, a surfaced well pad (400 feet by 400 feet) would be needed. The well pad would be leveled and then surfaced with mineral material (typically caliche). See Figures 1 and 2. R360 would take about 60-80 days to drill the well. After the proposed well is drilled and completed, the proposed well pad would be downsized on the north and west sides. It is likely the proposed well would be drilled within four years.

In addition, R360 plans to construct, operate and maintain an off-load facility (400 feet by 400 feet). This pad would be located adjacent to the south edge of the proposed well pad, which would place it off the Okerlund Drill Island. R360 would strip the available topsoil from the pad and stockpile it adjacent to the pad on a 30 foot wide area along the south and west edges of the off-load facility location. The off-load facility would dispose of produced water from wells on the Okerlund Drill Island. In addition, it would also accommodate water trucked to the facility from nearby wells. The produced water would then be injected into the proposed Okerlund SWD. See Figure 3 for a typical Off-load facility used by R360.

No new road would be constructed (see Figure 1). Both the proposed well pad and Off-load facility adjoin an existing lease road that accesses the Conoco Philips North Bilbrey 7 Fed #1 well (located on the drill Island).

The location of the proposed well and off-load facility is:

Okerlund SWD well:
T. 21 S., R. 32 E., NMPM
sec. 07: NW¼SE¼.
(1470' FSL & 1555' FEL)

Okerlund Off-load facility:
T. 24 S., R. 32 E., NMPM
sec. 07: SW¼SE¼.

Action	Length (ft.)	Width (ft.)	Acres
Well Pad	400	400	3.67
Off-load Facility	400	400	3.67
Topsoil Stockpile (south)	430	30	0.30
Topsoil Stockpile (west)	400	30	0.28
Total	-	-	7.92

Mitigation Measures: The Pecos District Conditions of Approval including special requirements for

1. Drilling in Lesser Prairie-Chicken habitat.
2. Drilling in the Secretary's Potash Area.
3. Interim reclamation will be conducted on all disturbed areas not needed for active support of operations, and if caliche is used as a surfacing material it will be removed at time of reclamation to mitigate impacts to soil resources.
4. Topsoil will be stockpiled adjacent to the off-load facility pad (30 foot wide on the west and south sides) to enhance reclamation.
5. Low profile plugged and abandoned well markers will be installed upon abandonment of the SWD well.

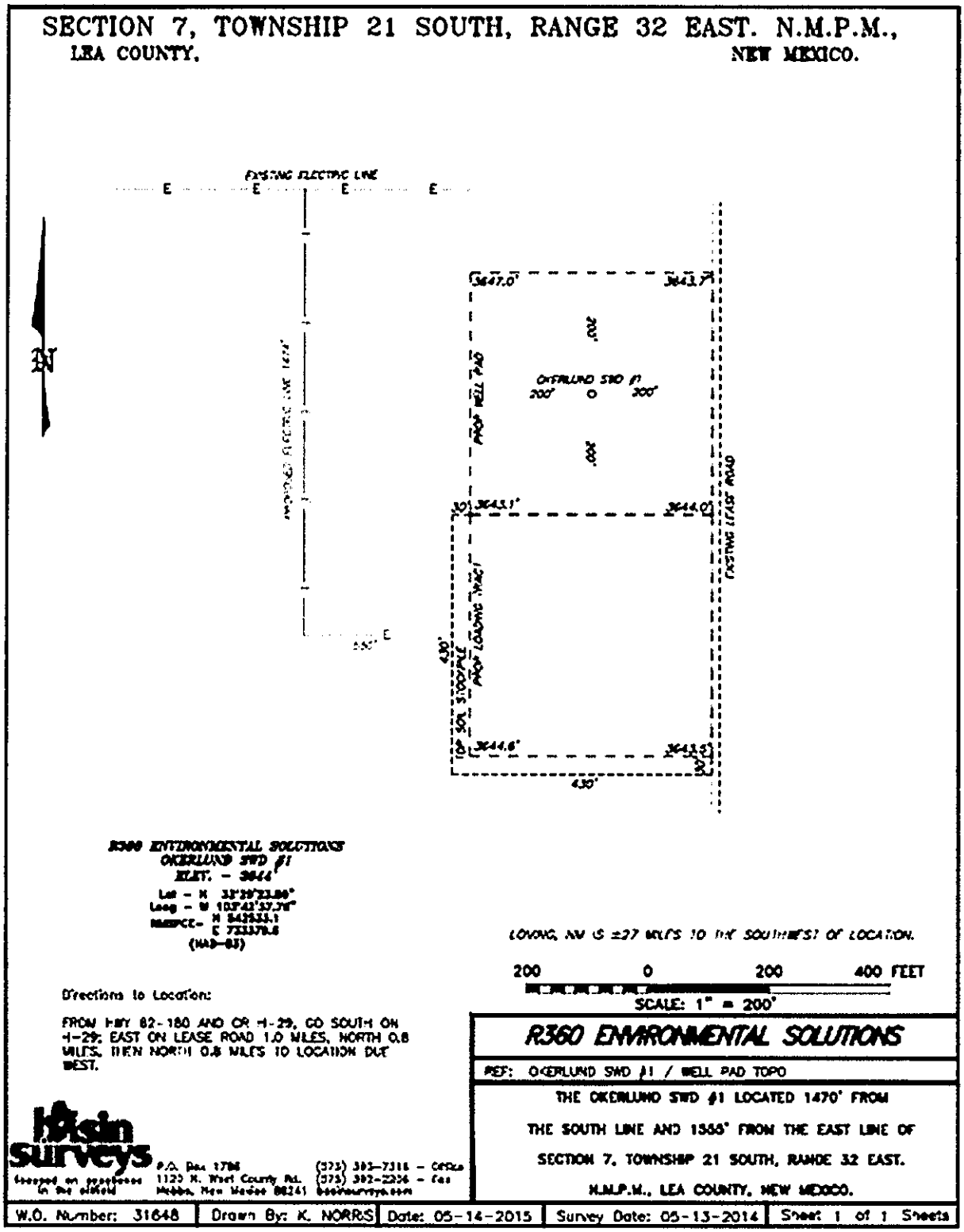


Figure 1: Project Map for R360 Okerlund SWD & Off-load facility.

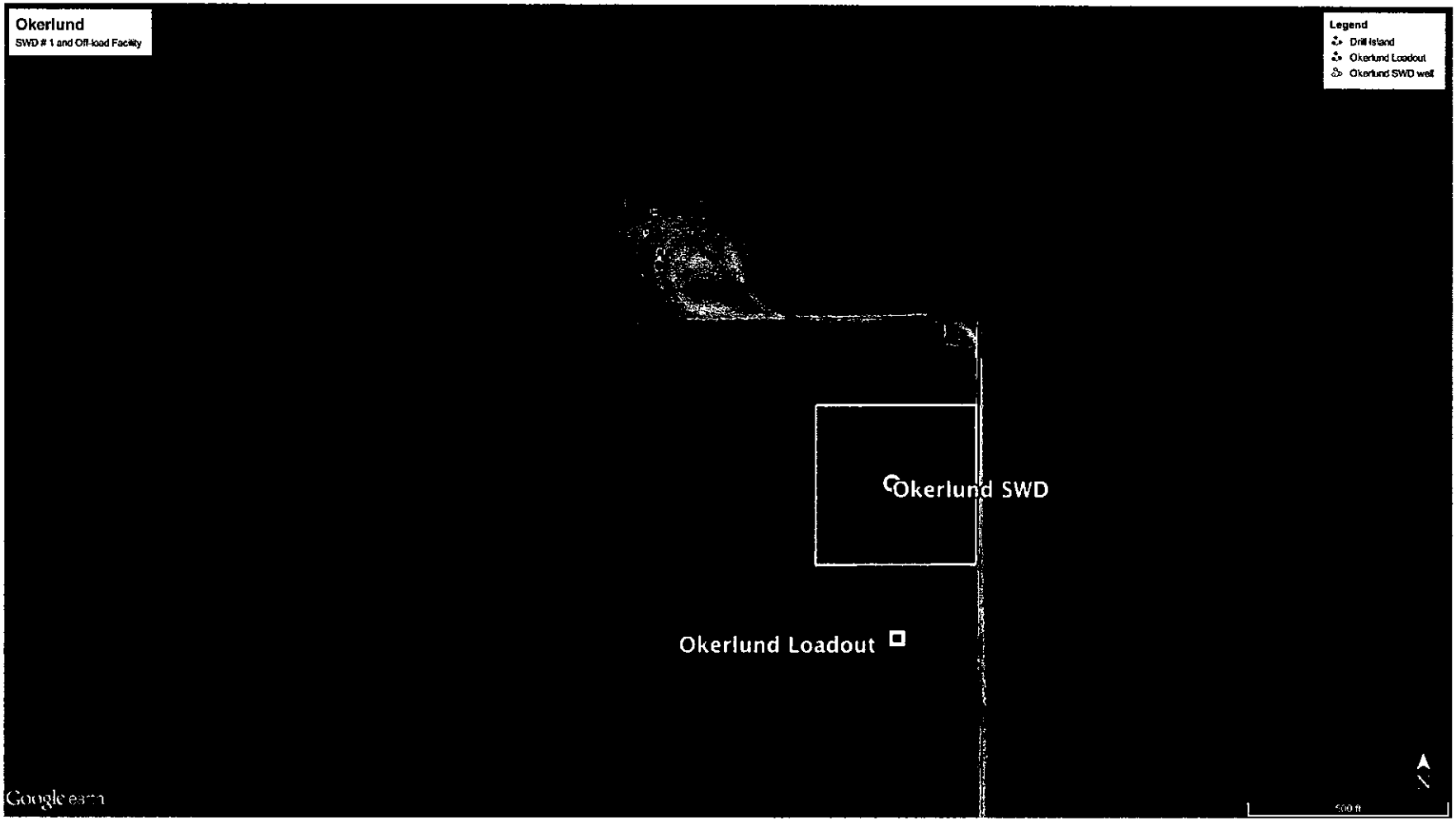


Figure 2: Okerlund SWD & Off-load Facility

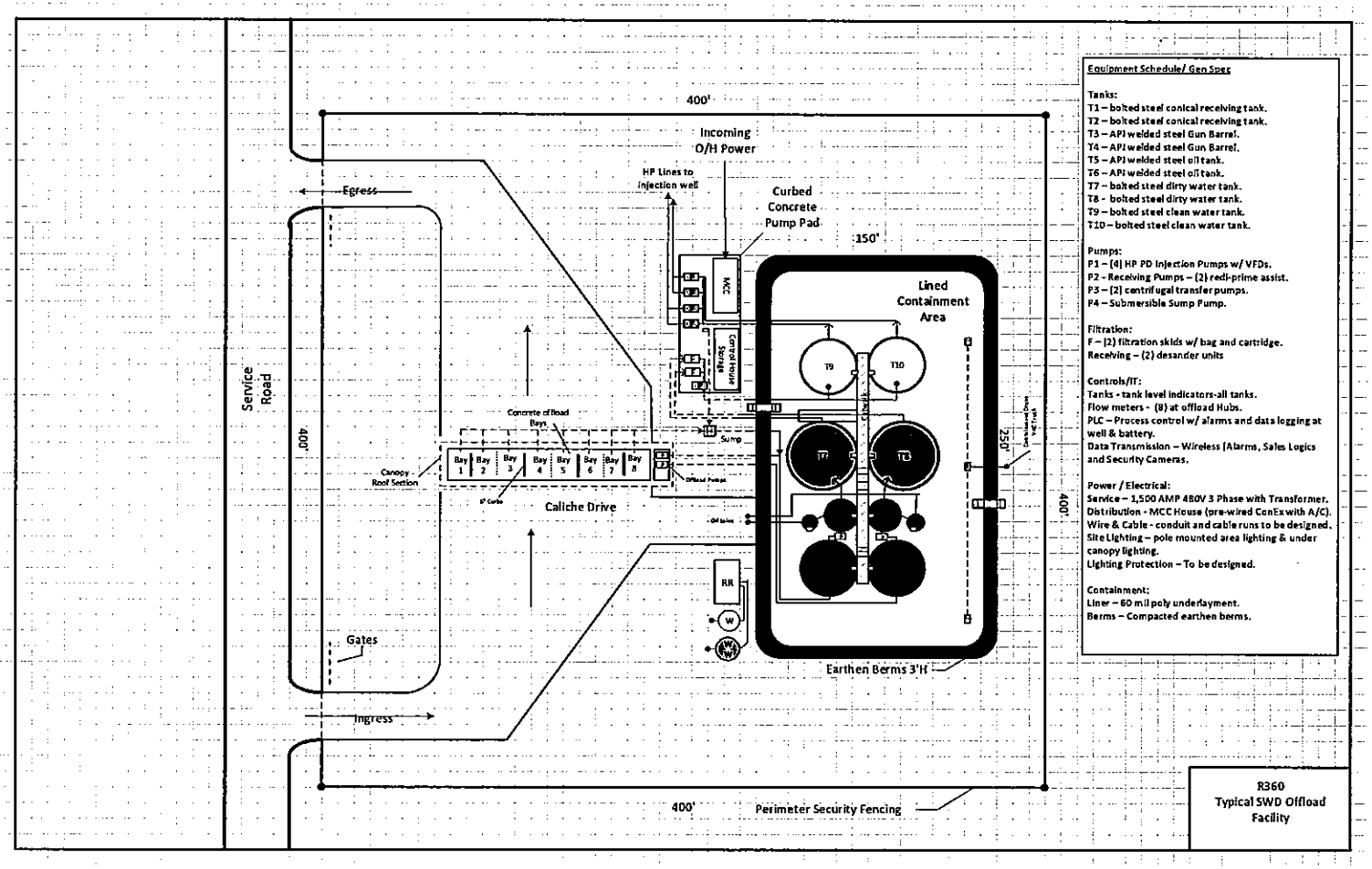


Figure 3: Typical Off-load Facility used by R360

2.2 No Action

Under this alternative, The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.3 Alternatives Considered but Eliminated from Detailed Study

The well location originally had three (3) possible staking locations: 1675' FSL & 2250' FEL (Site A), 1700' FWL & 1535' FEL (Site B) and 2140' FSL & 1590' FEL (Site C). During the onsite examination, Site A was eliminated because of conflicts with an archaeological site and dunal features in the area. Site B was eliminated because of a conflict with another staked well. Site C was the preferred site with adjustments to the current footage calls to 1470' FSL & 1555' FEL. This would allow the Off-load facility pad to be built adjacent to the well pad, thereby eliminating the need for pipelines between the two pads. This configuration would also allow both pads to utilize the same existing access road, thereby eliminating the need to build any additional road.

Field investigation of all areas to be impacted by the Proposed Action were inspected on May 12, 2015 to ensure that potential impacts to natural and cultural resources would be minimized through the implementation of mitigation measures. These measures are described for all resources potentially impacted in Chapter 3 of this EA. Therefore, no additional alternatives other than those listed above have been considered for this project.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Projects requiring approval from the BLM such as Applications for Permit to Drill can be denied when the BLM determines that adverse effects to resources (direct or indirect) cannot be mitigated to reach a Finding of No Significant Impact (FONSI). Under the No Action Alternative, the proposed project would not be drilled, built or constructed and there would be no new impacts to natural or cultural resources from oil and gas production. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of environmental effects of the analyzed alternatives.

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.

3.1 Air Resources

3.1.1 Affected Environment

The two components of air resources are air quality and climate. Much of the information referenced in this section is incorporated from the Air Resources Technical Report for Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report). This document summarizes the technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

Air Quality

The Air Resources Technical Report lists the National Ambient Air Quality Standards (USDI, BLM 2013, pp.4-5), describes the types of data used for description of the existing conditions (USDI BLM, 2011, p. 5-6) and how the pollutants are related to the activities involved in oil and gas development (USDI BLM, 2011, pp.6-14). Monitored values of criteria pollutants in the Carlsbad Field Office (CFO) are described below.

Criteria Pollutants

EPA's Green Book web page (EPA, 2012) reports that the Permian Basin is in attainment for all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The CFO recently contracted with Applied Enviro Solutions (AES) to provide an emissions inventory for the field office area, including Chaves, Eddy and Lea Counties (AES, 2011). This information is more recent than that available from EPA's most recent emissions inventory and is specific to the field office area.

Table 1 shows monitored design values for ozone for the recent past in the CFO. Design values are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. Monitored design values for the other criteria pollutants are shown in Table 2. There is no monitoring conducted for lead and carbon monoxide (CO) in southeastern New Mexico; however, concentrations of these pollutants are expected to be low in rural areas and are therefore not monitored. The New Mexico Environment Department discontinued monitoring for SO_2 in Eddy County due to very low monitored concentrations. Monitoring data for PM_{10} and $PM_{2.5}$ in southeastern New Mexico are not available due to incomplete data collection.

Table 1. Ozone Monitored Design Values for the Carlsbad Field Office Area (ppm)

Site	2006-2008	2007-2009	2008-2010	2009-2011	NAAQS
Hobbs (Lea County)	0.068	0.063	0.059	0.061	0.075
Carlsbad-Artesia (Eddy County)	0.069	0.066	0.067	0.069	0.075
Source: AES, 2011 EPA, 2013					

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI BLM 2013, pp. 11-13). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP impacts by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2005 NATA shows that cancer, neurological, and respiratory risks in Chaves, Eddy and Lea Counties are generally lower than statewide and national levels (EPA, 2013).

Table 2. 2011 Design Concentrations of Criteria pollutants in Lea and Eddy counties (EPA, 2012)

Pollutant	Design Value	Averaging period	NAAQS	NMAAQS
O_3	0.069 ppm (Lea County)	8-hour	0.075 ppm[1]	
	0.061 ppm (Eddy County)			
NO_2	6 ppb (Lea County)	Annual	53 ppb	50 ppb
	3 ppb (Eddy County)			
NO_2	42 ppb	1-hour	100 ppb[2]	
[1] Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years [2] 98th percentile, averaged over 3 years				

Climate

The planning area is located in a semiarid climate regime typified by dry windy conditions, limited rainfall, hot summers and mild winters. Summertime maximum temperatures are generally in the 90s (all temperatures are in Fahrenheit degrees) with occasional temperatures over 110. Winter minimum

temperatures are generally in between 20s and 30s with extremes remaining above zero degrees. Precipitation is mainly in the form of summer thunderstorms associated with the Southwest Monsoon though occasional Pacific storms drop south into New Mexico during the winter. Table 2 shows climate normal 1981-2010 for Carlsbad.

Table 2. Climate Normals for Carlsbad, 1981-2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	42.6	47.2	54.0	62.4	71.5	79.3	81.2	79.9	73.2	62.9	51.5	42.8
Average Maximum Temperature (°F)	57.5	62.7	70.2	78.5	86.9	94.4	94.6	93.1	87.0	78.1	67.1	57.5
Average Minimum Temperature (°F)	27.6	31.7	37.9	46.2	56.0	64.3	67.7	66.6	59.4	47.7	35.8	28.0
Average Precipitation (inches)	0.47	0.54	0.51	0.64	1.17	1.53	2.01	1.83	2.11	1.16	0.81	0.63
Source: NOAA, 2011												

The Air Resources Technical Report summarizes information about greenhouse gas emissions from oil and gas development and their effects on national and global climate conditions. While it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.1.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Methodology and assumptions for calculating air pollutant and greenhouse gas (GHG) emissions are described in the Air Resources Technical Document (USDI BLM, 2013). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one well. If more than one well is being proposed, the emissions and percentage of area emissions listed below need to be multiplied by the number of wells. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national levels (USDI BLM, 2013). Also incorporated into this document are the sections describing the assumptions that the CFO used in developing the inputs for the calculator (USDI BLM, 2013, pp.27-29).

Air Quality

Criteria Pollutants

Table 3 shows estimated emissions for criteria pollutants for a variety of activities including construction, maintenance and operations. Because the calculators are not able to estimate ozone emissions, volatile organic compounds (VOCs), a precursor to ozone, are estimated instead. Based on past development, emissions have been calculated for a maximum, minimum, and average development scenario. With the exception of operations, these emissions would be temporary and short lived.

Table 3. Criteria Pollutant Emissions Estimated for the Proposed Action Activities (tons)

		Construction	Well (Re) Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
PM_{10}	Max	2.64	0.27	0.03	1.45	0.00	0.02
	Min	0.10	0.00	0.00	0.02	0.00	0.01
	Avg	0.49	0.04	0.01	0.03	0.00	0.01
$PM_{2.5}$	Max	0.74	0.00	0.01	0.21	0.00	0.00
	Min	0.14	0.00	0.00	0.02	0.00	0.00
	Avg	0.30	0.00	0.01	0.02	0.00	0.00
NO_X[a]	Max	9.46	11.67	0.22	1.14	0.00	0.00
	Min	1.96	0.00	0.04	0.46	0.00	0.00
	Avg	3.77	0.16	0.13	0.47	0.00	0.00
SO_2	Max	0.20	3.05	0.00	0.00	0.00	0.00
	Min	0.04	0.00	0.00	0.00	0.00	0.00
	Avg	0.08	0.04	0.00	0.00	0.00	0.00
CO	Max	2.61	0.08	0.08	1.35	0.00	0.00
	Min	0.50	0.00	0.01	0.92	0.00	0.00
	Avg	1.05	0.04	0.05	0.92	0.00	0.00
VOC	Max	0.74	0.04	0.02	50.02	0.00	0.00
	Min	0.14	0.00	0.00	3.50	0.00	0.00
	Avg	0.30	0.01	0.01	4.13	0.00	0.00

[a] Nitrogen oxides

Table 5 compares emissions from annual operations with total human-caused emissions for Chaves, Eddy and Lea Counties in 2007.

Table 4. Emissions from Annual Operations Compared with Area Emissions for 2007 (tons)

		Annual Operations	Area Emissions[a]	Project Emissions as a % of Area Emissions
PM_{10}	Max	1.45	78,855	0.00184
	Min	0.02	78,855	0.00003
	Avg	0.03	78,855	0.00004
$PM_{2.5}$	Max	0.21	10,673	0.00197
	Min	0.02	10,673	0.00019
	Avg	0.02	10,673	0.00019
NO_X	Max	1.14	44,749	0.00255
	Min	0.46	44,749	0.00103
	Avg	0.47	44,749	0.00105
SO_2	Max	0.00	61,956	0.00000
	Min	0.00	61,956	0.00000
	Avg	0.00	61,956	0.00000
CO	Max	1.35	60,898	0.00222
	Min	0.92	60,898	0.00151
	Avg	0.92	60,898	0.00151
VOC	Max	50.02	15,898	0.31463
	Min	3.50	15,898	0.02202
	Avg	4.13	15,898	0.02598

[a] AES, 2011

Hazardous Air Pollutants (HAPs)

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10% of VOC emissions. Therefore the HAP emissions reported here should be considered a very gross estimate and likely an overestimate. The calculator estimates that a minimum of 0.22 tons/year, an average of 0.31 tons/year, and a maximum of 5.63 tons/year of HAPs would be emitted during the construction, and first year of operation of a typical gas well in the Permian Basin. The emissions are a combination of HAP constituents existing in natural gas and released during the completion and operation process. Most gas vented during the completion process is flared, which substantially reduces the quantity of HAPs released.

Climate

Greenhouse Gases (GHGs)

Information about GHGs and their effects on national and global climate is presented in the Air Resources Technical Report (USDI BLM, 2013, pp. 22-23). Analysis of the impacts of the proposed action on GHG emissions are reported below. Only the GHG emissions associated with exploration and production of oil and gas will be evaluated because the environmental impacts of GHG emissions from oil and gas consumption, such as refining and emissions from consumer-vehicles, are not effects of the proposed action as defined by the Council on Environmental Quality because they do not occur at the same time and place as the action. Thus, GHG emissions from consumption of oil and gas do not constitute a direct effect that is analyzed under NEPA. Nor is consumption an indirect effect of oil and gas production because production is not a proximate cause of GHG emissions resulting from consumption. However, emissions from consumption and other activities are accounted for in the cumulative effects analysis.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO_2) and methane (CH_4). Because CH_4 has a global warming potential 23 times greater than the warming potential of CO_2, the EPA's Office of Transportation and Air Quality (OTAQ) uses the CO_2 equivalent (CO_{2e}) which takes the difference in warming potential into account for reporting the national inventory for GHG emissions. The EPA is also moving towards using the CO_{2e} metric to characterize the benefits of its voluntary programs to be consistent with international practice and to allow for ease in comparison of emissions from different GHGs. Emissions will generally be expressed in metric tons of CO_{2e} in this document.

Estimated emissions from the calculator based on a maximum, minimum, and average development scenario are presented in Table 5.

Table 1. Estimated GHG Emissions

		Construction	Well (Re) Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
CO_2	Max	1052.10	411.0	17.8	278.2	0.09	0.54
	Min	213.20	0.2	3.5	62.1	0.09	0.40
	Avg	421.30	10.1	10.6	65.0	0.09	0.42
CH_4	Max	0.01	0.0	0.0	37.6	0.00	0.00
	Min	0.00	0.0	0.0	0.4	0.00	0.00
	Avg	0.00	0.0	0.0	1.0	0.00	0.00
N_2O[a]	Max	0.01	0.0	0.0	0.0	0.00	0.00
	Min	0.00	0.0	0.0	0.0	0.00	0.00
	Avg	0.00	0.0	0.0	0.0	0.00	0.00
CO_{2e}	Max	1055.90	411.1	17.9	1068.7	0.09	0.55
	Min	214.00	0.2	3.5	70.6	0.09	0.40
	Avg	422.80	10.1	10.7	86.0	0.09	0.43
CO_{2e} metric tons	Max	958.10	373.0	16.2	969.8	0.08	0.5
	Min	194.20	0.2	3.2	64.1	0.08	0.36
	Avg	383.70	9.2	9.7	78.0	0.08	0.39

[a] Nitrous oxide

Cumulative Impacts

The CFO manages federal hydrocarbon resources in Eddy, Lea, and part of Chavez County. There are approximately 23,500 wells in these counties. About 16,060 of the wells in these counties are federal wells. Data from 2000 to 2010 indicate on average approximately 418 wells are drilled in these counties on federal mineral lands annually in the CFO.

The following analysis of cumulative impacts of the proposed action on air quality will be limited to the Permian Basin area of New Mexico. The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Resource Technical Report (USDI BLM, 2013).

Activities that contribute to levels of air pollutant and GHG emissions in the Permian Basin include fossil fuel industries, vehicle travel, industrial construction, potash mining, and others. A complete inventory of criteria pollutant emissions can be found in a report titled "Southeast New Mexico Inventory of Air Pollutant Emissions and Cumulative Air Impact Analysis 2007" (AES 2011). The Air Resources Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present and reasonably foreseeable impacts to air resources (USDI BLM, 2013). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct increases in several criteria pollutants, HAPs, and GHGs as a result of the proposed action. Altogether, the emissions resulting from the proposed action could result in a 0.003% increase of criteria and HAP emissions in Eddy, Lea, and Chavez Counties and a 0.001% increase in GHG emissions in New Mexico (Eddy, Lea, and Chaves County GHG emissions are not currently available).

Air Quality

The very small increase in emissions that could result from approval of the proposed action would not result in Eddy, Lea, or Chavez County exceeding the NAAQS for any criteria pollutants. The applicable regulatory threshold for HAPs is the oil and gas industry National Emissions Standards for Hazardous Air Pollutants, which are currently under review by the EPA. The emissions from the proposed well are not expected to impact the 8-hour average ozone concentrations, or any other criteria pollutants in the Permian Basin.

Climate Change

The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands. However, the small incremental increase in GHGs from this project will not have a measurable impact on climate.

Mitigation Measures and Residual Impacts

Because the proposed project would be constructed adjacent to an exiting road, and both pads would be surfaced, no additional mitigation measures are required.

3.2 Range

3.2.1 Affected Environment

The proposed action would be located within the Bilbry Basin Allotment, #76023. This allotment is 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 are located within the allotment, but not located near the project vicinity. In general, an average rating of the rangeland within this area is 6 acres per Animal Unit Month (AUM). In order to support one cow, for one year, about 72 acres are needed. This equals about nine cows per section.

3.2.2 Impacts from the Proposed Action

Direct and Indirect Impacts

The loss of 7.92 acres of vegetation would not affect the AUMs authorized for livestock use in this area. There could be occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into excavations, and ingesting plastic or other materials present at the work site. If further development occurs, the resulting loss of vegetation could reduce the AUMs authorized for livestock use in this area.

Mitigation Measures and Residual Impacts

Impacts to the ranching operation are reduced by standard practices such as utilizing existing surface disturbance like the access road, utilizing steel tanks instead of reserve pits, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production on the well pad, and seeding these reclaimed areas to reestablishing vegetation on the reclaimed areas.

By applying standard stipulations in the right-of-way grant and best management practices described above, impacts to rangeland resources are minimized. No additional mitigation measures are necessary.

3.3 Soils

3.3.1 Affected Environment

The area of the proposed action is mapped as KD – Kermit Palomas fine sands, 0 to 12 percent slopes and PU – Pyote and Maljamar fine sands, 0 to 3 percent slopes. These are sandy soils and are described below:

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.

3.3.2. Impacts from the Proposed Action

Direct and Indirect Effects

There is a potential for wind and water erosion due to the erosive nature of these soils once the vegetative cover is lost. There is always the potential for soil contamination due to spills or leaks of oil, produced water or other substances. Soil contamination from spills or leaks can result in decreased soil fertility, less vegetative cover, and increased soil erosion. Impacts to soil resources are reduced by standard practices such as utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

Interim reclamation will be conducted on all disturbed areas not needed for active support of water disposal operations, and if caliche is used as a surfacing material it will be removed at time of reclamation to mitigate impacts to soil resources.

Topsoil from the off-load facility will be stockpiled on an area adjacent to the pad (400 ft. by 30 ft.) on both the west and south sides of the pad to enhance future reclamation.

3.4 Vegetation

3.4.1 Affected Environment

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 windmill grass 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 (Figure 4).

3.4.2. Impacts from the Proposed Action

Direct and Indirect Effects

Construction of the well pad and off-load facility would remove about 7.92 acres of vegetation. These impacts would last as long as the well is productive. However, interim reclamation, conducted within 6 months after a well is completed would reduce this area. When the well is plugged and abandoned, the rest of the pad would be reclaimed and potentially re-vegetate in 3-5 years, depending on timely rainfall. The off-load facility may continue to be used for a few years after the well is abandoned, but could also be abandoned at the same time as the saltwater disposal well.

By using the proper seed mix (seed mixture #2/sandy sites), good seedbed preparation, and proper seeding techniques, this impact would be short term (potentially two or three growing seasons).

Impacts to vegetation would be reduced by standard practices such as utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

Interim reclamation will be conducted on all disturbed areas not needed for active support of production operations, and if caliche is used as a surfacing material it will be removed at time of reclamation to enhance re-establishment of vegetation.

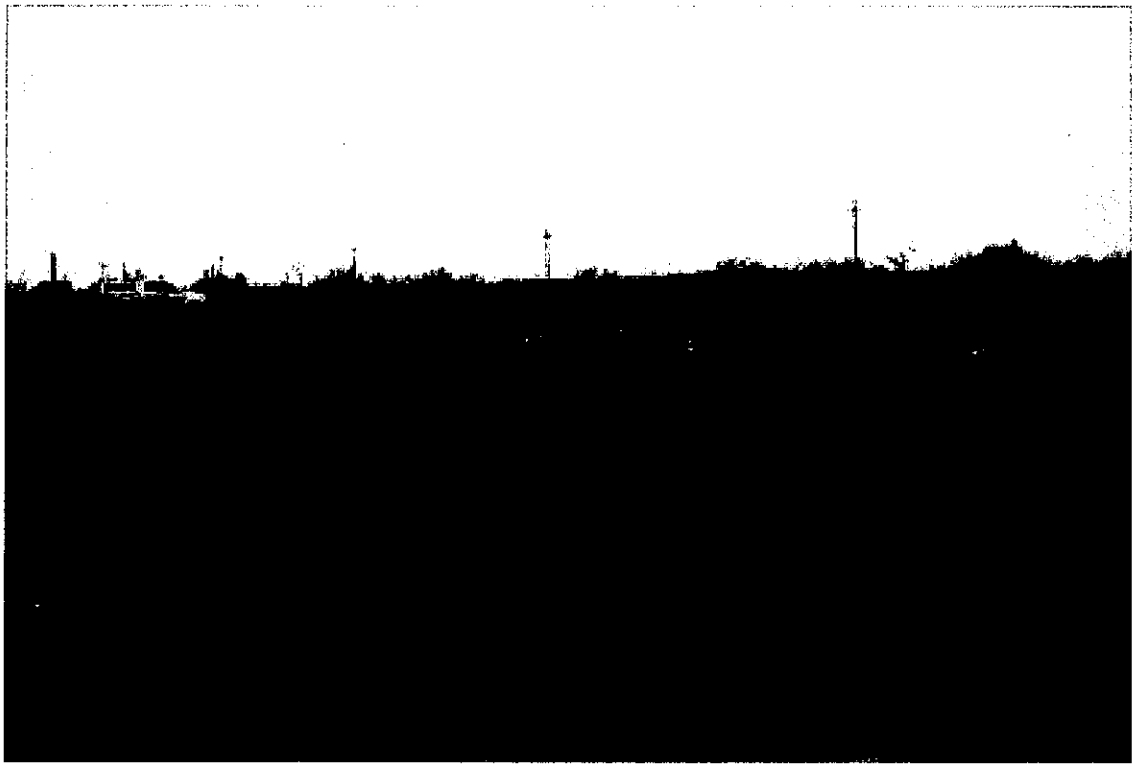


Figure 4: Okerlund SWD Well Landscape

3.5. Watershed

3.5.1. Affected Environment

The area of the proposed action drains in a northwesterly direction towards Laguna Toston, about 5.06 miles away. Stream flow occurs into Laguna Toston during times of heavy rain, and it is likely a source of groundwater recharge. The ground water recharge is from local precipitation entering through playas, sinkholes and swallets. Water quality and quantity is influenced by physical, chemical, and biological reactions that occur as water moves over and through the land surface toward streams and into aquifers. The rate at which water moves through the watershed strongly affects these reactions.

3.5.2. Impacts from the Proposed Action

Direct and Indirect Effects

Ephemeral surface water from local rain events will wash down-slope through the area of the proposed action. Localized decreases in vegetative cover combined with caliche covering the pad and road could result in decreased infiltration rates and increased runoff volume and velocity. This causes increased erosion, topsoil loss, and sedimentation. Water quality can be adversely affected following the occurrence of an undesirable event such as a leak or spill.

Standard practices or design features of the proposed project that minimize impacts to the watershed and water quality include: utilizing existing surface disturbances such as the existing access road, parking and staging on areas surfaced with caliche, and reclaiming any disturbed areas to quickly reestablish vegetation.

Mitigation Measures

By surfacing the two pads with caliche, and utilizing the drilling, cementing and casing programs approved by BLM (to protect ground water), no additional mitigation measures are required above those in the Application for Permit to Drill and the Right-of-Way grant.

3.6 Wildlife

3.6.1 Affected Environment

This project occurs in a transition zone from Chihuahuan Desert habitat type to the west and to a sand shinnery habitat type to the east and is primarily dominated by mesquite scrublands intermixed with various grasses. This mesquite scrubland community extends across the southern Great Plains, occupying portions of north and west Texas, western Oklahoma, and southeast New Mexico. Portions of Eddy and Lea counties consist of mesquite scrublands to a lesser degree. The characteristic feature of the mesquite scrubland community is co-dominance by various species of grasses and cacti.

Various bird, mammal, reptile and invertebrate species inhabit this ecosystem in southeast 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 southeast 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 also inhabit this ecosystem.

Lesser Prairie-Chicken (Tympanuchus pallidicinctus) Federally Listed Species-Threatened

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 federally listed as threatened, and potentially may become extirpated from Eddy and southern Lea counties. The last documented sighting within the Carlsbad field office boundaries was on March 15th 2011.

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). On December 11, 2012 the USFWS proposed to list the lesser prairie-chicken as a threatened species under the ESA of 1973, as amended. On March 27, 2014 the USFWS in response to the rapid and severe decline of the lesser prairie-chicken announced the final listing of the species as threatened under the ESA, as well as a final special rule under section 4(d) of the ESA that will limit regulatory impacts on landowners and business from the listing. Currently, the USFWS has not determined or designated critical habitat regarding the lesser prairie-chicken. The final rule to list the lesser prairie-chicken as threatened was published in the Federal Register on April 10, 2014, and became effective on May 12, 2014.

3.6.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Impacts of the proposed action to wildlife in the localized area may include but are not limited to: possible mortality, habitat degradation and fragmentation, avoidance of habitat during construction activities. While these acitivities can cause the abandonment of burrows and nests, none were found at the well pad or off-load facility pad during the on-site investigation. Avian electrocutions may also occur when power lines are built to facilities. They pose an electrocution hazard for raptor species attempting to perch on the structures. To minimize this potential impact, using Avian Power Line Interaction Committee (APLIC) raptor-deterring design measures which may include, but would not be limited to, a 60-inch separation between conductors and/or grounded hardware in eagle use areas as well as the use of insulating or cover up materials for perch management.

Standard mitigation measures and elements of the proposed action minimize these impacts to wildlife. These include: the NTL-RDO 93-1 (modification of open-vent exhaust stacks to prevent perching and entry from birds and bats), nets on open top production tanks, interim reclamation, utilizing a closed loop system during drilling operations, installing exhaust mufflers, berming collection facilities, minimizing cut and fill, utilizing existing access roads to the pads, and avoidance of wildlife waters, stick nests, drainages, playas and dunal features (as done in Alternative location A). 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.

Special Status Species

Lesser Prairie-Chicken (Tympanuchus pallidicinctus) Federally Listed Species-Threatened

Impacts of the proposed action 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 and drilling activities and potential 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 inhibiting the females from hearing 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. On account of these requirements and mitigation measures as below, minimal impacts to the LPC are anticipated as a result of oil and gas related activity.

In some areas, sparsely vegetated abandoned wells pads are used as leks by LPC. Raptors have been observed using plugged and abandoned well markers as perches. These artificial perches may increase raptor presences in a given area. Furthermore, artificial perches may provide strategically-located vantage points and may improve the hunting efficiency of raptors. In order to improve the probability of maintaining a stable lesser prairie-chicken population, low profile plugged and abandoned well markers will be installed when wells are abandoned in LPC habitat. The well marker will be approximately two (2) inches above ground level and contain the following information: operator name, lease name, and well number and location, including unit letter, section, township, and range. The previous listed information will be welded, stamped, or otherwise permanently engraved into the metal of the marker.

The LPC is currently listed by the USFWS as a threatened species with a Special 4(d) rule, as well as a BLM sensitive species. Preliminary data over 2 years show that inactive lek sites are exposed to higher ambient sound levels than active sites (Hunt and Best 2002). The same study also reports a significantly higher number of operating wells within 1 mile of inactive than active lek sites (New Mexico Partners in Flight [NMPIF] 2014a). A growing body of evidence suggests that LPCs actively avoid areas of human activity, noise, and proximity to vertical elements (such as trees or power poles), particularly during nesting (Robel et al. 2004; NMPIF 2014a). Predation on nests, chicks, and adult birds is by far the largest source of mortality for this species (NMPIF 2014a). The introduction of trees, power lines, or other vertical structures into prairie habitats provides hunting perches for raptors and may indirectly increase raptor predation on LPCs (Bidwell et al. 2002). Fences and power lines may also be a significant cause of direct mortality by collision (Bidwell et al. 2002).

No LPCs or indicators of this species (e.g., tracks, scat, feathers) were detected during biological surveys performed in 2014. Suitable habitat is present in the form of small, patchy stands of shinnery oak within the project area. The proposed project overlaps with the BLM RMPA Isolated Population Area (BLM 2008a) and approximately 2.4 miles of the pipeline is within the expected occupied range and 10-mile buffer for this species (Southern Great Plains Crucial Habitat Assessment Tool 2014). The nearest known active LPC lek is approximately 72 miles north-northwest of the project area in southeastern Chaves County (Southern Great Plains Crucial Habitat Assessment Tool 2014).

The proposed project includes design features specifically for LPCs (see Section **Error! Reference source not found.**). Impacts to LPCs potentially present in the project vicinity are possible in the form of construction-related noise disturbance. Any LPCs present locally during construction activities would likely move to adjacent suitable habitat. Long-term impacts to LPCs would result from the long-term operation of the proposed project, which includes fencing around a total of 0.1 acre of the aboveground facility. If LPCs move into the area, the fenced facility would have the potential to adversely impact individuals if they collided with the infrastructure.

On September 1, 2015 a federal district court judge ruled the listing of the lesser prairie-chicken as a threatened species to be vacated. The species currently remains on the endangered species list as threatened; however, there is currently no penalty for take of the species. No section 7 interagency consultation is required with US Fish and Wildlife Service in light of this ruling. The species remains a special status species for BLM, and will continue to be managed as such per the 2008 RMPA.

Candidate Conservation Agreement (CCA)

The goal of the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), Center of Excellence for Hazardous Materials Management (CEHMM) is to reduce and/or eliminate threats to the LPC and/ or DSL. In certain instance where habitat is enrolled in the CCA, the Participating Cooperator contributes funding or provides in-kind services for conservation.

The Certificate of Participation (CP) associated with the CCA is voluntary between CEHMM, BLM, USFWS and the Participating Cooperator. Through the CP, the Participating Cooperator voluntarily commits to implement or fund specific conservation actions that will reduce and/or eliminate threats to the DSL and /or the LPC. Funds contributed as part of the CP will be used to implement conservation measures and associated activities. The funds will be directed to the highest priority projects to restore or reclaim habitat at the sole discretion of BLM and USFWS.

The following Conservation Measures are to be accomplished in addition to those described in the CCA and Pecos District Special Status Species Resource Management Plan Amendment (RMPA):

1. To the extent determined by the BLM representative at the Plan of Development stage, all infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.

2. On enrolled parcels that contain inactive wells, roads and/or facilities that are not reclaimed to current standards, the Participating Cooperator shall remediate and reclaim their facilities within three years of executing this CP, unless the Cooperator can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Cooperator, they shall submit a detailed plan (including dates) and receive BLM approval prior to the three year deadline. All remediation and reclamation shall be performed in accordance with BLM requirements and be approved in advance by the Authorized Officer.

3. Utilize alternative techniques to minimize new surface disturbance when required and as determined by the BLM representative at the Plan of Development stage.

4. Install fence markings along fences owned, controlled, or constructed by the Participating Cooperator that cross through occupied habitat within two miles of an active LPC lek.

5. Bury new powerlines that are within two (2) miles of LPC lek sites active at least once within the past five years (measured from the lek). The avoidance distance is subject to change based on new information received from peer-reviewed science.

6. Bury new powerlines that are within one (1) mile of historic LPC lek sites where at least one LPC has been observed within the past three years (measured from the historic lek). The avoidance distance is subject to change based on new information received from peer reviewed science.

7. Management recommendations may be developed based on new information received from peer reviewed science to mitigate impacts from H2S and/or the accumulation of sulfates in the soil related to production of gas containing H2S on the LPC. Such management recommendations will be applied by the Participating Cooperator as Conservation Measures under this CI/CP in suitable and occupied DSL/LPC habitat where peer-reviewed science has shown that H2S levels threaten the LPC.

Mitigation Measures and Residual Impacts

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.
- Upon abandonment, a low profile abandoned well marker will be installed to prevent raptor perching.

BLM Natural Resource Specialists and Wildlife Biologists have worked with the applicant to locate the project and associated infrastructure away from these habitat features in order to minimize impacts to localized wildlife populations.

3.7 Noxious Weeds and Invasive Plants

3.7.1 Affected Environment

There are four plant species within the CFO that are identified in the New Mexico Noxious Weed List Noxious Weed Management Act of 1998. These species are African rue, Malta starthistle, Russian olive, and salt cedar. African rue and Malta starthistle populations have been identified throughout the Carlsbad Field Office and mainly occur along the shoulders of highway, state and county roads, lease roads and well pads (especially abandoned well pads). The CFO has an active noxious weed monitoring and treatment programs, and partners with county, state and federal agencies and industry to treat infested areas with chemical and monitor the counties for new infestations. Currently there are no known populations of invasive, non-native species within the immediate proposed project vicinity.

3.7.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. The construction of the proposed action may contribute to the establishment and spread of African rue and Malta starthistle. The main mechanism for seed dispersion would be by equipment and vehicles that were previously used and/or driven across noxious weed infested areas. Noxious weed seed could be carried to and from the project area by construction equipment and transport vehicles.

Mitigation Measures and Residual Impacts

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

3.8 Cultural and Historical Resources

3.8.1 Affected Environment

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 11,500 – 7,000 B.C.), Archaic (ca. 6,000 B.C. – A.D.

500), Ceramic (ca. A.D. 500 – 1400), Post Formative Native American (ca. A.D. 1400 – present), and Historic Euro-American (ca. A.D. 1865 to present). Sites representing any or all of these periods are known to occur within the region. A more complete discussion can be found in *The Human Landscape in Southeastern New Mexico: A Class I Overview of Cultural Resources Within the Bureau of Land Management's Carlsbad Field Office Region,* published in 2012 by SWCA Environmental Consultants.

Native American Religious Concerns

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 drilling.

3.8.2 Impacts from the Proposed Action

Direct and Indirect Effects

The project falls within the area covered by the Permian Basin Programmatic Agreement (PA). The Permian Basin PA is an optional method of compliance with Section 106 of the National Historic Preservation Act for energy related projects in a 28-quadrangle area of the Carlsbad Field Office. The PA is a form of off-site mitigation that allows industry to design projects to avoid known NRHP eligible cultural resources and to contribute to a mitigation fund in lieu of paying for additional archaeological inventory in this area that has received adequate previous survey. Funds received from the Permian Basin PA will be utilized to conduct archaeological research and outreach in Southeastern New Mexico. Research will include archaeological excavation of significant sites, predictive modeling, targeted research activities, as well as professional and public presentations on the results of the investigations.

The proponent chose to participate in the Permian Basin PA by planning to avoid all known NRHP eligible and potentially eligible cultural resources. Due to the proximity of site LA 30766, the proponent contracted with an archaeological firm to conduct a site investigation and update on July 25, 2015. The update of LA 30766 found no indications that this site was within the proposed impact area of the current project and it would not adversely impact LA 30766. The update did locate the site datum and established the site boundary from the previous recorders site sketch map utilizing a hand held GPS unit. The site boundary was found to be 62'/19 meters from the staked project area. After a consultation with Hila Nelson (BLM archaeologist) it was determined that a cultural monitor should be present for ground disturbing activities during construction.

In addition, the proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any skeletal remains that might be human or funerary objects are discovered by any activities, the project proponent will cease activities in the area of discovery and notify the BLM within 24 hours as required by the Permian Basin PA.

Mitigation Measures

To endure avoidance of site LA 30766, the proponent will be required to have a cultural monitor on site during construction of the SWD pad (but not the Off-load facility pad).

3.9 Paleontology

3.9.1 Affected Environment

Paleontological resources are any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Fossil remains may include bones, teeth, tracks, shells, leaves, imprints, and wood. Paleontological

resources include not only the actual fossils but also the geological deposits that contain them and are recognized as nonrenewable scientific resources protected by federal statutes and policies.

The primary federal legislation for the protection and conservation of paleontological resources occurring on federally administered lands are the Paleontological Resources Preservation Act of 2009 (PRPA), the Federal Land Policy and Management Act of 1976 (FLPMA), and the National Environmental Policy Act of 1970 (NEPA). BLM has also developed policy guidelines for addressing potential impacts to paleontological resources (BLM, 1998a,b; 2008, 2009). In addition, paleontological resources on state trust lands are protected by state policy from unauthorized appropriation, damage, removal, or use.

The Potential Fossil Yield Classification (PFYC) is a tool that allows the BLM to predict the likelihood of a geologic unit to contain paleontological resources. The PFYC is based on a numeric system of 1-5, with PFYC 1 having little likelihood of containing paleontological resources, whereas a PFYC 5 value is a geologic unit that is known to contain abundant scientifically significant paleontological resources. The fossil resources of concern in this area are the remains of vertebrates, which include species of fish, amphibians, and mammals.

3.9.2 Impacts from the Proposed Action

Direct and Indirect Effects

Direct impacts would result in the immediate physical loss of scientifically significant fossils and their contextual data. Impacts indirectly associated with ground disturbance could subject fossils to damage or destruction from erosion, as well as creating improved access to the public and increased visibility, potentially resulting in unauthorized collection or vandalism. However, not all impacts of construction are detrimental to paleontology. Ground disturbance can reveal significant fossils that would otherwise remain buried and unavailable for scientific study. In this manner, ground disturbance can result in beneficial impacts. Such fossils can be collected properly and curated into the museum collection of a qualified repository making them available for scientific study and education.

The location of the proposed project is within a PFYC Class 2, where there is little management concern for paleontological resources. A pedestrian survey for paleontological resources was not necessary and there should be no impacts to paleontological resources.

Mitigation Measures

Because the proposed pads are in PFYC Class 2, and the likelihood of discovering paleontological resources is extremely small. If any fossil objects are discovered by any activities, the project proponent will cease activities in the area of discovery and notify the BLM within 24 hours. Therefore, no additional mitigation measures are necessary for this project as currently proposed.

3.10 Visual Resource Management

3.10.1 Affected Environment

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 management for activities that 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.

3.10.2 Impacts from the Proposed Action

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 removal and reclamation activities. These include the presence of construction equipment traffic. Bare soil and caliche is lighter in color and smoother in texture than surrounding vegetation, so the disturbed pads and existing access road would contrast with the surrounding area.

Mitigation Measures

Once the facilities are no longer needed, they will be removed and reclaimed according to stipulations contained in the right-of-way grant. These will included removing surfacing material (caliche), discing the area and reseeding it. Consequently, no additional mitigation measures are necessary other than those that would be contained in a standard right-of-way grant and Application for Permit to Drill approval.

3.11 Potash Minerals

3.11.1 Affected Environment

Potash resources in SE New Mexico are located in an area governed by the rules of the Secretary of the Interior's 2012 Order dated December 4, 2012. This area is commonly called the Secretary's Potash Area. The Secretary's 2012 Order was written to establish rules for concurrent operations in prospecting for, development and production of oil and gas and potash deposits owned by the United States within the designated Potash Area. The Potash Area completely encompasses the Known Potash Leasing Area which was established for the administration of potassium leasing.

The Secretary's Potash Area is comprised of four classifications respective to the density of core holes or geophysical inference. These classifications are: Measured Ore (Potash Enclave), Indicated Ore, Inferred Ore, and Barren of Potash Ore.

The proposed location is located in an area composed of Inferred Ore Reserves. Inferred Potash resources are identified as potash resources that are probable, but tonnage and grade cannot be computed due to the absence of specific data. Lithologic descriptions and Gamma logs indicate probable mineralization, and the data can be reasonably correlated.

3.11.2 Impacts from the Proposed Action

Direct and Indirect Effects

Potential impacts of drilling operations to potash resources could include migration of hydrocarbons through impermeable formations or fractures within the formations that might provide a conduit to mine workings from improperly cased wells. Any potential impacts created by drilling these oil wells will be evaluated prior to future mining operations in this area being approved by BLM.

Reserves are lost because a support pillar of sufficient size must be left or extraction of the reserves around the well bore must be held to an amount where subsidence does not occur as to harm the well bore.

Proposed projects can be expected to be relocated to minimize impacts to potash resources while allowing drainage of remote areas within the potash enclave.

Due to the proposed well being located in an area that is inferred potash reserves, it may affect economical potash reserves or resources. The proximity of the Okerlund SWD wellbore is located approximately **6.3 miles southeast** of the active mine works of the **Mosaic Mine.** Refer to Potash Area – memo contained in the above identified well files regarding specific Approval Criteria concerning potash resources.

Mitigation Measures

1. Drilling within the Designated Potash Area. It is the intent of the Department of the Interior to administer oil and gas operations throughout the Designated Potash Area in a manner which promotes safe, orderly co-development of oil, gas, and potash resources. It is the policy of the Department of the Interior to deny approval of most applications for permits to drill oil and gas wells from surface locations within the Designated Potash Area. Three exceptions to this policy will be permitted if the drilling will occur under the following conditions from:

    a. A Drilling Island associated with a Development Area established under this Order or a Drilling Island established under a prior Order;

    b. A Barren Area and the Authorized Officer determines that such operations will not adversely affect active or planned potash mining operations in the immediate vicinity of the proposed drill-site; or

    c. A Drilling Island, not covered by (a) above or single well site established under this Order by the approval and in the sole discretion of the Authorized Officer, provided that such site was jointly recommended to the Authorized Officer by the oil and gas lessee(s) and the nearest potash lessee(s).

2. Development Areas

    a. When processing an application for permit to drill (APD) an oil or gas well in the Designated Potash Area that complies with regulatory requirements, the Authorized Officer will determine whether to establish a Development Area in connection with the application, and if so, will determine the boundaries of the Development Area and the location within the Development Area of one or more Drilling Islands from which drilling will be permitted. The BLM may also designate a Development Area outside of the APD process based on information in its possession, and may modify the boundaries of a Development Area. Existing wells may be included within the boundaries of a Development Area. A Development Area may include Federal oil and gas leases and other Federal and non-Federal lands.

    b. After designating or modifying a Development Area, the BLM will issue a Notice to Lessees, consistent with its authorities under 43 CFR Subpart 3105 and part 3180, information lessees that future drilling on lands under an oil and gas lease within that Development Area will:

        i. occur, under most circumstances, from a Barren Area or A Drilling Island within the Development Area; and

        ii. be managed under a unit or communitization agreement, generally by a single operator, consistent with BLM regulations and this Order. Unit and communitization agreements will be negotiated among lessees. The BLM will consider whether a specific plan of development is necessary or advisable for a particular Drilling Island.

    c. The Authorized Officer reserves the right to approve an operator or successor operator of a Development Area and/or a Drilling Island, if applicable, to ensure that the operator has the resources to operate and extract the oil and gas resources consistent with the requirements of this Order and all applicable laws and regulations, and has provided financial assurance in the amount required by the Authorized Officer.

d. The Authorized Officer will determine the appropriate designation of a Development Area in terms of location, shape and size. In most cases, a single Drilling Island will be established for each Development Area. In establishing the location, shape and size of a Development Area and an associated Drilling Island, the Authorized Officer will consider:

   i. the appropriate location, shape, and size of a Development Area and associated Drillings Island to allow effective extraction of oil and gas resources while managing the impact on potash resources;

   ii. the application of available oil and gas drilling and production technology in the Permian Basin;

   iii. the applicable geology of the Designated Potash Area and optimal locations to minimize loss of potash ore while considering co-development of both resources;

   iv. any long term exploration and/or mining plans provided by the potash industry;

   v. whether a Barren Area may be the most appropriate area for a Drilling Island;

   vi. the requirements of this Order; and

   vii. any other relevant factors

e. As the Authorized Officer establishes a Development Area, the Authorized Officer will more strictly apply the factors listed in Section 6.e.(2)(d), especially the appropriate application of the available oil and gas drilling and production technology in the Permian Basin, when closer to current traditional (non-solution) potash mining operations. Greater flexibility in the application of the factors listed in Section 6.e(2)(d) will be applied further from current and near-term traditional (non-solution)potash mining operations. No Drilling Islands will be established within one mile of any area where approved potash mining operations will be conducted within 3 years consistent with the 3-year mine plan referenced above (Section 6.d.(8)) without the consent of the affected potash lessee(s).

f. The Authorized Officer may establish a Development Area associated with a well or wells drilled from a Barren Area as appropriate and necessary.

g. As part of the consideration for establishing Development Areas and Drilling Islands, the BLM will consider input from the potash lessees and the oil and gas lessees or mineral right owner who would be potentially subject to a unitization agreement supporting the Development Are, provided that the input is given timely.

3. Buffer Zones. Buffer Zones of ¼ mile for oil wells and ½ mile for gas wells are hereby established. These Buffer Zones will stay in effect until such time as revised distances are adopted by the BLM Director or other BLM official, as delegated. However, the Authorized Officer may adjust the Buffer Zones in an individual case, when the facts and circumstances demonstrate that such adjustment would enhance conservation and would not compromise safety. The Director will base revised Buffer Zones on science, engineering, and new technology and will consider comments and reports from the Joint Industry Technical Committee and other interested parties in adopting any revisions.

4. Unitization and Communitization. To more properly conserve the potash, oil and gas resources in the Designated Potash Area and to adequately protect the rights of all parties in interest, including the United States, it is the policy of the Department of the Interior that all Federal oil and gas leases within a Development Area should be unitized or subject to an approved communitization agreement unless there is a compelling reason for another operating system. The Authorized Officer will make full use of his/her authorities wherever necessary or advisable to require unitization and/or communitization pursuant to the regulations in 43 CFR Subparts 3105 and 3180.

The Authorized Officer will use his/her discretion to the fullest extent possible to assure that any communitization agreement and any unit plan of operations hereafter approved or prescribed within the Designated Potash Area will adhere to the provisions of this Order. The Authorized Officer will work with Federal lessees, and with the State Of New Mexico as provided below, to include non-Federal mineral rights owners in unit or communitization agreements to the extent possible.

5. Coordination with the State of New Mexico.

    a. If the effective operation of any Development Area requires that the New Mexico Oil Conservation Division (NMOCD) revise the State's mandatory well spacing requirements, the BLM will participate as needed in such a process. The BLM may adopt the NMOCD spacing requirements and require lessees to enter into communitization agreements based on those requirements.

    b. The BLM will cooperate with the NMOCD in the implementation of that agency's rules and regulations.

    c. In taking any action under Section 6.e. of this Order, the Authorized Officer will take into consideration the applicable rules and regulations of the NMOCD.

To minimize impacts to potash resources, the proposed well is confined within the boundaries of the established Okerlund Island (See Potash Memo and Map in attached file for Drill Island description).

3.12 Environmental Justice Analysis

3.12.1 Affected Environment

Executive Order 12898, issued on 11 February 1994, addresses concerns over disproportionate environmental and human health impacts on minority and low-income populations. The impetus behind environmental justice is to ensure that all communities, including minority, low-income, or federally recognized tribes, live in a safe and healthful environment.

Portions of the cities of Carlsbad and Hobbs consist of minorities with some low-income populations. However, these drilling operations will take place in rural areas where high levels of minority and low-income populations do not exist.

3.12.2 Impacts from the Proposed Action

Direct and Indirect Effects

The site of the proposed drilling project is located in an uninhabited, remote portion of public lands. Accordingly, this program does not have potential to disproportionately affect minority or low-income populations. The project has no potential consequences for population, schools, or emergency services in Eddy or Lea Counties.

No displacements are anticipated as a result of this project. In accordance with Executive Order 12898 on Environmental Justice, no disproportionately high or adverse human health or environmental impacts upon minority populations is anticipated as a result of the project. The proposed project will not permanently disrupt any existing or proposed neighborhood, or adversely affect community cohesion.

Mitigation Measures

Because of the rural demographics of the project area, there are no additional mitigation measures needed to mitigate impacts to minority populations.

3.13 Socio Economic

3.13.1 Affected Environment

This drilling program would be taking place in rural portions of Eddy County. In 2009, New Mexico was the second largest producer of natural gas and crude oil in the nation. Eddy County ranked second only to Lea County in oil production and ranked third in natural gas production. Billions of dollars in taxes, royalties, and other earnings are collected from oil and gas production in New Mexico.

The proposed drilling programs would involve approximately 10-20 personnel. A slight positive economic effect may result from short-term employment in service activities directly supporting the drilling programs and from the presence of additional personnel in the local area providing goods and services.

The drilling program area lies within the "Secretary's Potash Area" as defined by the 2012 Secretary's Order.

3.13.2 Impacts from the Proposed Action

Direct and Indirect Effects

The only potential effects would be to the ranching, potash or oil and gas industries.

Social and economic impacts may result if the proposed project:

- Produces change in neighborhood or community cohesion; or
- Especially benefits or harms social groups (e.g., elderly); or
- Causes economic effects on the regional and/or local economy (e.g., tax revenues); or
- Effects the economic viability of existing business; or
- Disrupts or substantially changes existing economic patterns.

There would be few effects on the ranching or farming industries of Eddy or Lea Counties due to the proposed action. This drilling program, as proposed, would employ crews to support a drilling rig and necessary maintenance and disposal operations.

If a major oil or gas discovery is made in the area, some hiring is possible within the local area. A slight positive economic effect may result from short-term employment in service activities directly supporting drilling programs and from the presence of additional personnel in the local area providing goods and services.

Should wells not be drilled, potential Socio Economic effects could occur to the Oil and Gas industry and the communities as potential deposits of hydrocarbons would not be developed.

The effects to ranching could include the risk of livestock being struck by vehicles, long-term loss of vegetation for grazing purposes, or ingesting of noxious weeds.

Mitigation Measures and Residual Impacts

No change in neighborhoods or community cohesion are anticipated. The proposed project could have a positive impact (economically) on local and regional businesses. Since changes to existing economic patterns are not anticipated from the proposal, no additional mitigation measure would be required.

3.14 Impacts from the No Action Alternative

The No Action Alternative is used as the baseline for comparison of environmental effects of the analyzed alternatives. Under the No Action Alternative, the proposed project would not be constructed and there would be no new direct or indirect impacts to natural or cultural resources from oil and gas production. The natural and cultural resources in the project area would continue to be managed under the current land and resource uses.

3.15 Cumulative Impacts

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions within the project study area to which oil and gas exploration and development may add incremental impacts. This includes all actions, not just oil and gas actions that may occur in the area including foreseeable non-federal actions.

While constructing the two pads would have some environmental impact, the ability to dispose of produced water near oil and gas operations is less impacting than using semi-tractor trailers to haul produced water to distant disposal facilities. The proposed well and off-load facility would reduced traffic on highways and caliched surfaced roads in the area. This in turn would reduce traffic related injuries to humans, livestock and wildlife. It would also reduce dust emissions from heavy truck traffic.

The combination of all land use practices across a landscape has the potential to change the visual character, disrupt natural water flow and infiltration, disturb cultural sites, cause minor increases in greenhouse gas emissions, fragment wildlife habitat and contaminate groundwater. However, the degree to which these impacts would occur is minimized through standard mitigation measures, special Conditions of Approval 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 wells. As new wells are being drilled, there are others being abandoned and reclaimed. As the oilfield plays out, the cumulative impacts will lessen as more areas are reclaimed and less are developed.

4. SUPPORTING INFORMATION

4.1 List of Preparers

Prepared by: Douglas J. Burger
Legacy Land and Environmental Solutions, LLC
3102 N. Diamond A Dr.
Roswell, NM 88220

Date: 7/30/2015

The following individuals assisted in the preparation of this document:

- Vanessa Bussell, Realty Specialist, BLM-CFO
- Robert Gomez, Realty Specialist, BLM-CFO
- Jim Rutley, Geologist, BLM-CFO
- Indra Dahal, Natural Resource Specialist, BLM-CFO
- Cassandra Brooks, Wildlife Biologist, BLM-CFO
- Lu Burger, Natural Resource Specialist, Legacy Land and Environmental Solutions, LLC
- Hila Nelson, Archaeologist Specialist, BLM-CFO

4.2 References

Applied Enviro Solutions (AES). 2011. Southeast New Mexico Inventory of Air Pollutant Emissions and Cumulative Air Impact Analysis 2007. BLM. Carlsbad Field Office.

Environmental Protection Agency. 2013. The Green Book Non Attainment Areas for Criteria Pollutants. http://www.epa.gov/airquality/greenbk/ (Accessed 3/15/2013).

Environmental Protection Agency. 2013. 2005 National-Scale Air Toxics Assessment. Summary of Results. http://www.epa.gov/ttn/atw/nata2005.

Environmental Protection Agency. 2013. Air Trends: Design Values. http://www.epa.gov/airtrends/values.html.

NOAA. 2011. NOAA's 1981-2010 Climate Normals. National Climatic Center. http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html. (Accessed July 1, 2011).

Railey, J. A. 2012. *The Human Landscape in Southeastern New Mexico: A Class I Overview of Cultural Resources Within the Bureau of Land Management's Carlsbad Field Office Region*. SWCA Environmental Consultants, Albuquerque, New Mexico.

USDI. BLM. 2013. Air Resources Technical Report for Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas. New Mexico State Office.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

Finding of No Significant Impact
R360 Permian Basin, LLC
Okerlund Salt Water Disposal Well #1
And Off-load Facility
NEPA No. DOI-BLM-NM-2015-1123-EA

FINDING OF NO SIGNIFICANT IMPACT:

I have determined that the proposed action, as described in the EA will not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an environmental impact statement is not required.

In making this determination, I considered the following factors:

1. The activities described in the proposed action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b)(1)). The EA includes a description of the expected environmental consequences of construction, operation and maintenance of a salt-water disposal well, and off-load facility.

2. The activities included in the proposed action would not significantly affect public health or safety (40 CFR 1508.27(b)(2)).

3. The proposed activities would not significantly affect any unique characteristics (40 CFR 1508.27(b)(3)) of the geographic area such as prime and unique farmlands, caves, wild and scenic rivers, designated wilderness areas, wilderness study areas, or areas of critical concern.

4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b)(4)).

5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)).

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)).

7. The effects of a salt-water disposal well and off-load facility would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). The EA discloses that there are no other connected or cumulative actions that would cause significant cumulative impacts.

8. I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). Cultural resource surveys

a) The project falls within the area covered by the Permian Basin Programmatic Agreement (PA).

b) Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any skeletal remains that might be human or funerary objects are discovered by any activities, the project proponent will cease activities in the area of discovery and notify the BLM within 24 hours as required by the Permian Basin PA.
c) See pages 23-24 in the EA for a description of effects to cultural resources.

9. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)).
a) The project area does not contain any known populations or designated critical habitat.
b) See pages 19-22 in the EA for a description of any effects to T&E species.

10. The proposed activities will not knowingly threaten any violation of Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). See page 3 in the EA for a description of Plan conformance and conformance with relevant laws, regulations, and policies.

APPROVED:

George MacDonell
Field Manager
Carlsbad Field Office

9/15/16
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

DECISION RECORD

for the

R360 Permian Basin, LLC
Okerlund Salt Water Disposal Well #1
And Off-load Facility

NEPA No. DOI-BLM-NM-2015-1123-EA

I. Decision

I have decided to select the proposed action for implementation as described in the 8/5/2015 R360 Permian Basin, LLC Okerlund Salt-Water Disposal Well #1 and Off-load Facility Environmental Assessment. Based on my review of the Environmental Assessment (EA) and project record, I have concluded that the proposed action was analyzed in sufficient detail to allow me to make an informed decision. I have selected this alternative because the proposed action will provide reasonable access across BLM-managed lands for a salt-water disposal well and off-load facility to assist oil and gas leasees with the orderly development of their Federal mineral leases.

II. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the EA for the R360 Permian Basin, LLC Okerlund #1 Salt-Water Disposal Well and Off-load Facility. I have also reviewed the project record for this analysis. The effects of the proposed action are disclosed in the Environmental Consequences sections of the EA. I have determined that the proposed action as described in the EA will not significantly affect the quality of the human environment. Accordingly, I have determined that the preparation of an Environmental Impact Statement is not necessary.

III. Other Alternatives Considered

No reasonable action alternative was substantially different in design or effects from the proposed action for this project. Therefore no other alternative was considered or analyzed.

Other action alternatives were substantially similar in design and had sustainably similar effects to the proposed action alternative analyzed in the EA. Therefore no other alternative was considered or analyzed.

IV. Public Involvement

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).

V. Appeals

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with George MacDonell, Carlsbad Field Manager, at 620 E. Greene St., Carlsbad, NM 88220. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U. S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the IBLA, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300 Arlington, VA 22203 within 30 days after the notice of appeal is filed with George MacDonell, Carlsbad Field Manger.

Notwithstanding the provisions of 43 CFR 4.21(a)(1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;
(2) The likelihood of the appellant's success on the merits;
(3) The likelihood of immediate and irreparable harm if the stay is not granted; and
(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor, 1100 Old Santa Fe Trail, Santa Fe, NM 87505.

George MacDonell
Field Manager
Carlsbad Field Office

8/15/16
Date