

ENVIRONMENTAL ASSESSMENT

USDA Forest Service

Gregory Federal A #1A Well

And

Associated Access Road and Pipeline Tie

XTO Energy Inc.

Township 28 North, Range 4 East, NMPM

Section 27: 1585 from North Line and 1965 feet from East Line

Jicarilla Ranger District, Carson National Forest

Rio Arriba County, New Mexico

June 2002

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 1 – PURPOSE & NEED.....	1
Introduction.....	1
Proposed Action and Purpose & Need.....	3
Decision to be Made.....	9
Public Involvement & Scoping.....	10
Issues.....	11
CHAPTER 2 – ALTERNATIVES.....	12
CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES.....	16
Soil & Water.....	16
Roads.....	21
Vegetation.....	23
Wildlife.....	26
Range.....	32
Cultural Resources.....	34
Recreation.....	37
Visual Quality.....	39
Public Health & Safety.....	40
Air Quality.....	41
Economics.....	43
Conclusion.....	43
CHAPTER 4 – AGENCIES & PERSONS CONSULTED.....	44
APPENDICES.....	46
Appendix A – Project Record Index & Common Acronyms.....	47
Appendix B – Maps.....	49
Appendix C – Proposed Surface Use Plans of Operations for the Proposed Action and Alternative C.....	50
Appendix D – Conditions of Approval for Well, Road and Pipeline.....	57

CHAPTER 1 – PURPOSE AND NEED

This environmental assessment (EA) complies with the requirements of the National Environmental Policy Act (NEPA) of 1969. It summarizes the environmental effects of the Gregory Federal A #1A Well, and associated access road and pipeline, proposed on National Forest System lands within the Jicarilla Ranger District of the Carson National Forest. This EA also provides information needed by the responsible official to determine whether the decision may have significant effects requiring an Environmental Impact Statement (EIS). A project record has been developed to support the findings in this document. A number [#] corresponding to the Project Record Index (PR) (Appendix A) is used to reference a specific document in the Project Record Index.

INTRODUCTION

The Mineral Leasing Act of 1920, as amended (30 United States Code 181 et seq.) authorizes the Bureau of Land Management (BLM), US Department of the Interior (USDI), to issue mineral leases for federal oil and gas. A federal lease is a binding legal contract that allows development of the federal mineral estate (oil and gas) by the leaseholder. An oil and gas lease authorizes development of oil and gas resources, subject to terms and stipulations of the lease instrument, and current laws and regulations. The proposed well access road and pipeline for this analysis would be located on land currently leased to XTO Energy, Inc. (XTO, Inc.) [PR #1].

The BLM is also one of the agencies designated to manage the federal mineral program and is responsible for the management of federal and Indian oil and gas. Bureau of Land Management regulations (43 CFR 3160) establish procedures for obtaining approval of an Application for Permit to Drill (APD) on existing onshore federal and Indian oil and gas leases. These regulations require a specific Surface Use Plan of Operations (Surface Use Plan) to be included in each APD submitted for approval. The Surface Plan must address 13 specific points concerning surface use. The Forest Service (FS) is the surface managing agency for this proposed action and has authority over the Surface Use Plan, in accordance with the Federal Onshore Oil and Gas

Leasing Reform Act of 1987. When an APD is submitted to the BLM and the proposed well location is on National Forest System lands, it is forwarded to the Forest Service for surface analysis, NEPA analysis, comment and a decision on the Surface Use Plan of Operations. Also required with each APD is an eight point Drilling Plan of Operations, addressing down-hole operations. The Drilling Plan is approved by the BLM as part of the submitted APD.

If a well produces natural gas in economic quantities, construction of a gas pipeline tie from the wellhead to a transportation pipeline would be required. XTO Inc. is proposing to surface commingle the gas production from the proposed well with that of XTO's existing Picture Cliff, Valencia Canyon Unit (VCU) #2 Well. A Special Use Permit (SUP) from the Forest Service would not be required for XTO, Inc., to construct and operate a gas pipeline tie from the proposed well to XTO's existing VCU #2 Well. This is because XTO, Inc. is the lessee of record and the pipeline would be within the leasehold, constructed and operated under XTO, Inc.'s lease rights. Conditions of Approval for the pipeline tie would be included in the Surface Use Plan and an approved APD. The environmental impacts of the pipeline must also be analyzed under NEPA and are included in this document.

An APD authorizes activities on specific federal leasehold, and/or within participating areas of a recognized federal unit. This includes the use of existing access roads and pipeline(s) required for the drilling, production and abandonment phases of the oil and gas mineral estate. Construction of a new access road is also a part of this APD proposal.

An approved APD issued by the BLM, with approval of the FS, authorizes the leaseholder to construct, drill, produce, transport, maintain, abandon and finally reclaim the proposed well pad, access road, and construct, operate and abandon the gas pipeline tie. When an APD is approved by the BLM, with approval of the FS, it is subject to all attached Conditions of Approval (COAs). COAs are both standard and site-specific mitigation measures developed to protect the rights and uses of others, and

to avoid and/or reduce the impacts to the natural, cultural and social resources on federal lands and minerals.

This EA is not a decision document. It discloses the environmental consequences of implementing the proposed action and alternatives to the proposed action. By utilizing the analyses contained within this document, a decision will be made by the responsible official concerning what shall be included in the Surface Use Plan.

PROPOSED ACTION PURPOSE AND NEED

The Forest Service is proposing to approve the Surface Use Plan of Operations and therefore, concur with the Bureau of Land Management, to approve the Application for Permit to Drill as submitted by XTO Inc. for the Gregory Federal A #1A Well (see Appendix B for general and site-specific maps). In addition to the gas well, the APD includes an associated pipeline tie and access road. See Appendix C for detailed information on the proposal [PR #11].

The well, access road, pipeline and associated facilities are proposed to be developed in the San Juan Basin of northern New Mexico, approximately 14 miles southeast of the Gobernador and approximately 54 miles east, southeast of Blanco, New Mexico, in Rio Arriba County (see Appendix B, Map 1). The proposed well would be have a surface and bottom hole location at 1585 feet from the north line (FNL), 1965 feet from the east line (FEL), of Section 27, T28N, R4W, Rio Arriba County, New Mexico, NMPM. The associated access road and pipeline would tie to this location (see Appendix B, Map 2) from the existing Valencia Canyon Unit #2 Well.

The proposed well would be drilled to the Blanco Mesaverde formation on National Forest System lands, under the surface jurisdiction of the USDA Forest Service and under the federal mineral jurisdiction of the BLM. In accordance with XTO Inc.'s lease rights and in accordance with the latest New Mexico Oil Conservation Division

(NMOCD) spacing rules, XTO Inc. can drill and produce eight Blanco Mesaverde wells per section (a section is a square mile or 640 acres).

As authorized by the Mineral Leasing Act of 1920, as amended, federal lease (NMNM-014921) was issued to XTO Energy Inc. in 1972 [PR#1]. With the issuance of this federal lease, came the right to utilize, in an environmentally responsible manner, that portion of the surface necessary to efficiently develop the leased federal minerals. The purpose and need for the proposed action is to allow for development of the existing lease rights while protecting the surface resources to the maximum extent possible. This is consistent with Forest Plan [PR # 2] direction to administer the mineral leasing laws, regulations, direction and policies, and to support sound energy development of existing lease rights, while minimizing surface resource impacts.

Site-specific surface Conditions of Approval for the proposed Gregory Federal A #1A Well, access road and pipeline are taken from the Jicarilla Ranger District Staff's experience with mineral development and from site-specific concerns identified during on-site inspections [PR #5 & #13]. Standard Conditions of Approval (COAs) address comprehensive mitigation measures, whereas site-specific COAs consider site-specific mitigation needs. All COAs would be included in the approved APD, to protect surface and subsurface resources. These mitigation measures are an integral part of the proposed action and the analysis of environmental effects are made with these mitigation measures in place. Standard surface COAs for the gas well, access road and pipeline are in Appendix D.

Construction & Drilling Phase

Construction of the proposed well pad, access road and pipeline is proposed for the summer of 2002. The Jicarilla Ranger District operates under standard winter closure on all construction and drilling activities from November 1st – March 31st, for the protection of wintering big game and eagles, and because of muddy winter road and construction conditions.

The proposed action would:

- Develop a 240 feet (north to south) by 215 feet (east to west) level well pad (see Appendix C: Surface Use Plan of Operations). Clearing for the well pad is needed to provide space and a flat surface for a drilling rig and other heavy equipment to access the site and drill the well. An addition of 50 feet around the staked pad would be added for cut and fill slopes, the construction zone. The well location and construction zone would require approximately 2.46 acres of surface disturbance. The proposed well pad would be constructed by using a D-8 bulldozer to level the location, with a maximum cut of 6.1 feet on the south side (center, stake #1) of the pad, and a maximum fill of 10.5 feet on the northeast corner of the pad. The northeast corner would be rounded-off to avoid the 10.5-foot fill, resulting in a maximum fill of approximately 6.0 feet. The northwest corner and the southwest corners would also be rounded off to minimize cuts and fill and also to facilitate drainage into the existing dirt pond located approximately 200 feet to the southwest of the pad. A diversion ditch would be cut on the west side of the pad, draining to the south, into the dirt pond. The natural drainage for the proposed well pad would be to the south-southeast, with the slope of the well pad bearing to the southeast.
- Approximately 75 piñon and juniper trees of various heights and diameters would be removed from the proposed site. For the well pad, access road and pipeline, all trees of firewood size would be cut and hauled (free of dirt) to the VCU #2 Well pad for public firewood. Slash and unusable wood would be chipped and used in reclamation. Excavated materials from the cuts would be used on the fill portion of the location, to level the pad. Cut material from the reserve and burn pits would be stockpiled on the location or used to construct the back-walls of the burn pit, which is where a gas flare is burned during drilling and completion to relieve well-bore pressure. The reserve pit would be lined. This requirement may be waved if, after well pad construction, it is determined by a USFS representative that drainage from the reserve pit is not in the direction of the existing dirt pond. The top four to six inches of topsoil would be stockpiled and redistributed for reclamation.

- As agreed to mitigation, XTO, Inc. would line two existing dirt ponds (one west of the access road and one directly south of the well location) with bentonite clay. Bentonite clay would be applied at the rate of two-pounds/square foot. Each dirt pond is approximately 5,000 square feet; for a total of 10,000 pounds of bentonite clay to be applied. The USFS would provide to XTO, Inc. additional specifications for the clay and installation procedures.

- Construct 600-feet of dirt road access road 20 feet wide, leaving the well pad on the north end and connecting with an existing well pad (Valencia Canyon Unit #2 Well). The road would be crowned and ditched, and have a 14-foot driving surface. The construction of the new access road is needed for the drill rig, trucks and other heavy equipment to reach the site, and for use by XTO Inc. to transport equipment to and from the site, maintain the well, site and monitor well production. The existing Ponderosa pine tree at access road station 9+05¹² would be avoided. The proposed road would have one 18 to 24 inch culvert, where overflow drainage from the existing dirt pond crosses the road. The total new disturbed area for the road would be 0.28 of an acre. Approximately 15 piñon and juniper trees would be removed to construct the 600-foot road. Excavated materials from the cuts would be used on fill portions to level the road. The top four to six inches of topsoil would be stockpiled and redistributed for reclamation.

- The proposed new access road would be closed to motorized use by the public by the installation of a gate directly south of VCU #2 Well pad, approximately 150 feet. The gate would be constructed of pipe, with reflective signs and a USFS sign. On either side of the gate would be "wings" designed to contain motorized travel. The "wings" would be constructed of pipe posts and cable. The "wings" would be from cliff edge to the sandstone drop-off, approximately 150 feet either side of the pipe gate. The gate would be closed and locked at all times.

- The existing access roads, 314 and 314O would be re-crowned and re-ditched, to provide proper drainage, at the direction of the U. S. Forest Service Representative. Also at the direction of the U. S. Forest Service, road surfacing and repair of deteriorated sections in the existing access roads may be required.

- Approximately 855 feet of gas pipeline tie would be laid below the ground. Approximately 600 feet of this gas pipeline tie would be new disturbance, but contained within the middle of the proposed access road. The proposed pipeline would require no additional new disturbance, outside of the proposed access road. This gas pipeline tie would connect to the existing VCU #2 Well. A pipeline tie is needed in order to transport the gas from the proposed well into El Paso's pipeline system, and then into the central 121/4-inch Trunk "L" Pipeline, which would take it to a processing plant near Bloomfield, New Mexico.

Once the pad is constructed, a drilling rig would be moved onto the location and assembled. Drilling to the Blanco Mesaverde would take approximately 14 days. Following drilling, estimated well completion would take two weeks. Completion of the well would include a foam frac procedure that would take approximately one day to complete. This subsurface procedure for the stimulation of the producing formation would require about 10 frac tanks to temporarily be on the well location. The total construction, drilling, completion time is expected to take approximately six to eight weeks. During the construction, drilling and completion phase, both heavy equipment and light vehicle traffic would use Forest Service Roads 314 and 314O to access the site. Traffic would include drilling rigs, large tractor-trailers, construction equipment, water trucks, drilling and production equipment and supplies, tanks and numerous light pick-ups.

Production Phase

After the new well is completed, that portion of the location not needed for production would be recontoured. Most of the disturbed areas would be revegetated, although approximately 0.50 of an acre would remain in use for the wellhead and a vehicle

access road. If successful vegetation cannot be reestablished due to heavy grazing, the U. S. Forest Service may required the well pad may be fenced, with a cattleguard at the entrance, until successful revegetation is achieved. Alternatively, the operator may choose to fence the location (with a cattleguard at the entrance) following the initial reseeding. This would avoid potentially having to seed the location for a second time. The proposed well will be surface commingled with XTO's existing VCU #2 Well. Therefore, the proposed well would utilize mainly the existing VCU #2 Well production equipment, including the meter house, a small condensate tank, a methanol drip tank, and separation equipment. An additional low-profile tank may be placed on the VCU #2 Well location. The existing tank on the VCU #2 Well would be repainted juniper green. Only a wellhead would be situated on the proposed well location. Depending upon well production, operating pressures and line pressure, a pumping unit and/or a compressor may be required on the VCU #2 Well pad. If installed, a compressor would have to meet BLM Noise Policy guidelines [PR # 4]. Any additional tanks would be low profile.

After production of the well begins, normal maintenance of the well would be required. Initially, a pick-up truck would visit the well site every day to check on production and resolve other problems that may occur. Once the well production has stabilized, remote telemetry would be used and a pick-up would visit the proposed wellhead only if problems arise. A pick-up would visit the VCU #2 Well approximately five times per week to check production. Water hauling trucks may be required to come to the VCU #2 Well site, to remove produced water stored in tank(s) on the site. Frequency of water hauling would be minimal, as Blanco Mesaverde wells generally do not produce large amounts of produced water, once gas production is stabilized. Occasionally, the well bore may require maintenance to retain economic production. A work-over drilling rig would then be moved to the proposed well site, for down-hole repairs. Surface impacts of a workover rig could be similar to those described for drilling. The estimated economic production phase of the well is 20 to 30 years.

Abandonment

When the well is no longer commercially viable, it would be abandoned. Abandonment would be completed under current BLM regulations for plugging the borehole, with FS concurrence for surface requirements. Surface equipment on the VCU #2 Well location and the wellhead on the proposed location would be removed, except for an aboveground well bore marker, indicating the well location and containing identification information of the plugged hole. Usually, underground pipelines are plugged and left in place. The pad and access road, if not needed for other purposes, would be recontoured and revegetated as specified in the COA's (see Appendix D).

DECISION TO BE MADE

In compliance with the Federal Onshore Oil and Gas Leasing Reform Act of 1987, the Forest Service is to review and make a decision on the Surface Use Plan of Operations, portion of the submitted Application for Permit to Drill (see Appendix C). The Forest Service must determine whether the specific well location and ancillary facilities applied for, as well as the specific well location and ancillary facilities under Alternative C, can be drilled, operated and abandoned in an environmentally responsible manner. The Forest Service must determine if the proposed action and/or Alternative C can be accomplished such that surface resources are protected, and environmental impacts mitigated and not be significant; thus not requiring an environmental impact statement. The Forest Service must also make a decision between the proposed action and any reasonable alternatives to the proposed action, in this case Alternative C. The decision to be made is in what manner drilling should occur, not whether drilling can occur.

The Jicarilla District Ranger is the Responsible Official who will decide either:

- To approve the Surface Use Plan of Operations as submitted in the APD or;
- To approve the Surface Use Plan of Operations with additional Conditions of Approval or;
- To approve the Surface Use Plan of Operations for Alternative C or;

- To approve the Surface Use Plan of Operations for Alternative C with additional Conditions of Approval or;
- To not approve the either Surface Use Plan of Operations, and go forward to analyze the effects of the proposal in an environmental impact statement.

The District Ranger must also determine whether his/her decision is consistent with the 1986 Carson Forest Plan, as amended. A decision will be submitted to the BLM for inclusion in the APD permit.

PUBLIC INVOLVEMENT AND SCOPING

The Council on Environmental Quality (CEQ) defines scoping as "...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment at various stages of the environmental analysis process. Although scoping begins early, it is an iterative process, that continues until a decision is made. In addition to the following specific activities, the Gregory Federal A #1A Well proposal has been listed on the Carson National Forest Schedule of Proposed Actions (SOPA) since January, 2002, including the April 2002 list [PR #10 and #12]. Specific mailing list for each SOPA are available at the Carson National Forest Service Office [PR #10 and PR #12]. The SOPA and mailing list are also on the Carson National Forest's website – www.fs.fed.us/r3/carson/ (select "NEPA Calendar"). To date, the public has been invited to participate in the project in the following ways:

Public Mailing

A November 5, 2001 letter providing information and seeking public comment was mailed to approximately 26 individuals and groups. This included federal and state agencies, Native American Tribes, municipal offices, businesses, interest groups and individuals [PR #6 and #7]. Three responses to this initial mailing were received. One letter was concerned with the federally endangered, threatened, candidate species and species of concern that may be found in Rio Arriba County [PR #8]. Two other letters

from Native American Tribes, indicated no known impacts to areas of Native American cultural sites, and therefore had no objection to the proposed action [PR #9].

30-Day Comment Period on EA

The 36 CFR 215 appeal regulations require a 30-day notice and comment period for Environment Assessments before a decision can be made. Responses to comments will be an Appendix to the EA after the comment period is over and a decision is made.

ISSUES

Scoping and public involvement activities are used to identify significant issues related to the proposed action. An issue is a point of discussion, debate or dispute about the environmental effects of the proposed action. The National Environmental Policy Act identifies two types of issues – significant and non-significant. A “significant” issue is an unresolved issue about the effects of the proposed action. An issue is “non-significant” if an alternative to the proposed action can be developed to address or resolve the issue. The terminology “significant issue” should not be confused with the NEPA definition of “significance” as defined in regulations, 40 CFR 1508.27, relating to the significance of effect(s).

During the scoping process, no issues were determined to be “significant” and within the scope of the project decision as prescribed in 40 CFR 1502.2. However, several non-significant issues were identified. An issue is non-significant if it is:

- Outside the scope of the proposed action;
- Already decided by law, regulation, the Forest Plan [PR #2] or a higher level of decision;
- Irrelevant to the decision to be made; or
- Conjectural and not supported by scientific evidence.

Many issues have already been resolved in the proposed action and associated mitigation measures. The non-significant issues identified during scoping and the reasons why they are considered non-significant are detailed below.

Non-significant issue: The proposed action would violate the Migratory Bird Treaty Act.

There is concern that the proposed action may violate the Migratory Bird Treaty Act by taking of migratory birds, nests, or eggs. To "take" migratory birds is illegal, as determine by the MBTA; therefore, the Forest Service would not knowingly do so. The Forest Service, or their agent, will look for nests of migratory birds in the project area prior to construction and minimize adverse impacts to them to the extent possible. Chapter 3, Environmental Consequences describes the effects of the proposed action on the migratory birds that may use the project area.

CHAPTER 2 – ALTERNATIVES

Alternatives to the proposed action are developed to explore different ways to accomplish the purpose and need in response to the controversy or argument presented in the significant issues. A reasonable alternative is one that responds to an argument presented in a significant issue, substantially accomplishes the purpose, and need.

There would be no effect on species protected under the MBTA from the proposed action, the directional drill alternative, or the no action alternative. Therefore, this issue is considered a non-significant issue for all alternatives.

Alternatives Considered in Detail

Alternative A – No Action

Analysis of the No Action alternative provides a benchmark (point of reference), enabling decision makers to compare the magnitude of environmental effects of the action alternatives.

This alternative consists of not approving the Surface Use Plan of Operation (Surface Use Plan) portion of the APD for the Gregory Federal A #1A Well, access road and

pipeline. The Gregory Federal A #1A Well, access road, pipeline and associated facilities, as proposed at the surface location at 1585 feet from the north line (FNL), 1965 feet from the east line (FEL), of Section 27, T28N, R4W, Rio Arriba County, New Mexico, NMPM would not be developed. Federal mineral resources from the Blanco Mesaverde formation at this targeted bottom hole location would not be developed. The proposed 240 feet (north to south) by 215 feet (east to west), level well pad (see Appendix C: Surface Use Plan of Operations) would not be constructed or cleared. The well location and construction zone of 2.46 acres would remain undisturbed. No well production or production equipment would be hauled to the proposed site or to VCU #2 Well location. No abandonment of the well pad or well production equipment would be necessary.

The proposed 855-foot gas pipeline would not be laid. The 600 feet of dirt road access road, 20 feet wide, would not be constructed. The 0.28 of an acre needed for the access road and pipeline would not be disturbed. No additional drill trucks and other heavy equipment would be realized on existing access Forest Roads 314 or 314O. No new site-specific conditions of approval would be required.

Alternative B – Proposed Action

Refer to the Chapter 1, Proposed Action & Purpose and Need, page 3.

Alternative C – Directional Drill Alternative #1

This alternative would be drilling from an existing well location, the VCU #2 Well, at the surface location of 1050 feet from the north line (FNL), 1160 feet from the east line (FEL), of Section 27, T28N, R4W, Rio Arriba County, New Mexico, NMPM. No new disturbance for an access road or pipeline tie would be associated with this location. The targeted bottom hole location would be 1585 feet from the north line (FNL), 1965 feet from the east line (FEL), of Section 27, T28N, R4W, Rio Arriba County, New Mexico, NMPM, the proposed action location (see Appendix B, Map 2). This alternative has a surface location approximately 650 feet northeast of the proposed action location.

This alternative would:

- Utilize an existing 254 feet (northeast to southwest) by 163.6 feet (northwest to southeast) level well pad. Existing surface equipment would be cleared to the extent possible, to provide space and a flat surface for a drilling rig and other heavy equipment to access the site and drill the well. All of the proposed Alternative C well location has been previously disturbed by the VCU #2 Well. The well location and construction zone would occupy approximately 2.12 acres of previously disturbed surface. No heavy equipment would be needed. No new cuts or fills would be required. An existing diversion ditch would be re-cut below the cut slope on the northwest side of the pad, draining to the west, then south.
- Excavated materials from the reserve and burn pits would be stockpiled on the location or used to construct the back-walls of the burn pit, which is where a gas flare is burned during drilling and completion to relieve well-bore pressure. Any topsoil would be stockpiled and redistributed for reclamation. The natural drainage for the well pad would be to the south, with the slope of the well pad bearing to the south.
- No access road would be required. No new disturbance for the pipeline tie would be required. A pipeline from the Alternative C to the existing VCU #2 Well, of approximately 120 feet would be required. A pipeline tie is needed in order to transport the gas from the proposed well to El Paso's 4-inch lateral, and then into the central 12 1/4-inch Trunk "L" Pipeline, which would take it to a processing plant near Bloomfield, New Mexico. Upon completion of drilling and pipeline construction, most of the disturbed well pad areas would be recontoured and reseeded. Approximately one acre of the well location would remain for existing and proposed equipment and vehicle access.
- The existing FS access roads, 314 and 314O would be re-crowned and re-ditched, to provide proper drainage, at the direction of the U. S. Forest Service

Representative. At the direction of the U. S. Forest Service, road surfacing and repair of deteriorated sections in the existing access roads may be required.

Comparison of Alternatives

The following matrix details the differences between the two alternatives: the No Action, (Alternative A), the Proposed Action (Alternative B) and the Directional Drill #1 Alternative (Alternative C).

Measures	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C (Directional Drill #1)
Surface acres disturbed for well pad	0	2.46	New –None 2.12 previous
Surface acres disturbed for access road	0	0.28	0
Surface acres disturbed for pipeline	0	0	0
Total surface acres disturbed	0	2.74	New - None 2.12 previous
Total acres reclaimed after construction phase	0	2.24	1.12
Total acres disturbed in TES* units with high erosion potential	0	2.74	New – None 2.12 previous
Total disturbed acres w/in 1 mile radius		31.51	31.51
Feet (or miles) of new road	0	600 feet	0
Maximum cut and fill (feet)	0	6.1' cut and 6.0' fill	No new cuts or fills
Estimated number of trees removed	0	90	0
Estimated cords of fuelwood	0	30	0
Dates of winter construction closure for protection of wintering wildlife	Nov. 1 – March 31	Nov.1 - March 31	Nov. 1- March 31
Effects on Mexican spotted owl	None	No Effect	No Effect
Effects on bald eagle	None	No Effect	No Effect
Effects on American Peregrine falcon	None	No Effect	No Effect
Archeology mitigation required	None	None	Yes

* Terrestrial Ecosystem Survey of the Carson National Forest, 1987 [PR #3].

CHAPTER 3 -- ENVIRONMENTAL CONSEQUENCES

Soil and Water:

The Carson National Forest was the subject of an intense ecosystem survey in 1986, under the US Department of Agriculture (USDA), Comprehensive Soil Survey System, with findings published in Terrestrial Ecosystems Survey of the Carson National Forest,

1987 [PR #3]. The purpose of the Terrestrial Ecosystem Survey is to map and evaluate the ecosystems for land uses, limitations and potentials of the natural resources. Survey information is presented as an ecological unit, recognizing the interaction of three major components, soil, climate and vegetation. "Information...of the report presents important properties pertaining to the nature and behavioral characteristics of terrestrial ecosystems" (Terrestrial Ecosystems Survey of the Carson National Forest, 1987).

The proposed action well location, access road and pipeline as well as Alternative C, are located in the Haplustalfs, Ustochrepts and Ustorthents Map Unit, #769. These soils are very stony sandy loams, with rock outcrops. This map unit occurs on hills and scarps with complex slopes, usually ranging from 15 to 80 percent. Ephemeral streams are present in the area, with a dendritic drainage pattern. Residual parent material is derived from sandstone. The controlling factor for this ecosystem is an edaphic (plant) factor. Haplustalfs, Ustochrepts and Ustorthents soils are classified as mesic, shallow, very stony, sandy loam. Most activities are precluded due to steep, rocky slopes, with many over 40 percent. The unit is not considered suitable for construction of trails, campgrounds or off-road vehicles. Soil creep on steep slopes is identified. Topsoil is fair to poor. The potential for herbaceous re-vegetation is moderate to low, with no indication for re-forestation potential.

Both the proposed action location and the Directional Drill-Alternative C are located on a north-south trending ridge on Vigas Mesa, overlooking Valencia Canyon to the east. Geffen Canyon is located approximately $\frac{1}{2}$ mile to the west. A spring in Valencia Canyon is located approximately $\frac{1}{3}$ of a mile south of the proposed action and about $\frac{1}{2}$ mile south of Alternative C. Geffen Spring is approximately $\frac{3}{4}$ of a mile west of both the proposed action and Alternative C. Horse Spring is located approximately one mile north of the proposed action and approximately 5,000 feet north of Alternative C. Geffen Canyon joins Valencia Canyon approximately $\frac{3}{4}$ of a mile south of both proposed locations. An earthen stock pond is located approximately 400 feet south of the proposed well location. Another earthen stock pond is located along the west side

Cumulatively, within a one-mile radius of both the proposed action and Alternative C, approximately 31.51 acres of disturbance presently exists. Within this one-mile radius, it is estimated that eight additional well locations could be constructed. With an estimated access road length of 300 feet each and an estimated pipeline tie length of 400 feet each, the total potential disturbance area could be 16.51 acres. With the addition of the existing disturbance and proposed action, the total disturbance within a one-mile radius could reach approximately 50.76 acres. This represents approximately 2.4 percent of the acreage present within the one-mile area. Adding the existing disturbance, potential future disturbance and Alternative C disturbance would result in a total disturbance within a one-mile radius of approximately 48.02 acres. This represents approximately 2.3 percent of the acreage present within the one-mile area. Proposals are neither related nor dependent upon other actions proposed within a one-mile radius. Respectively, the proposals are related to the existing pipeline near the Alternative C well pad. Both actions propose to tie into the El Paso Pipeline adjacent to VCU #2 Well location. All existing and potential oil and gas proposals would have very similar impacts to soil, water and grazing as described for the proposed action and Alternative C. Because of the distance to water sources and lack of livestock forage, livestock grazing is light within the one-mile radius of the proposed action and Alternative C. Wildlife foraging in the one-mile area is moderate to heavy and may contribute to soil, water and sedimentation impacts. Taken in the context of a one-mile radius, all of these land uses have impacts on soil and water resources, but they may not be cumulatively significant. However, all soil and water impacts, based on the entire Jicarilla Ranger District, may be significant.

Neither the proposed action nor Alternative C would violate any Federal, State or local law nor other requirements imposed for the protection of the environment. Both actions would comply for water quality, quantity and ground water protection under the Clean Water Act of 1977, and the Safe Drinking Water Act of 1974 as amended. The proposed action and Alternative C are both less than five acres therefore a Notice of Intent or Storm Water Pollution Prevention Plan for the Environmental Protection

Agency under the Clean Water Act would not be required. Neither action would cross any ephemeral wash crossings, therefore a Nationwide 404 Permit from the U.S. Army Corps of Engineers; Albuquerque District Office would not be required.

Roads:

Both the proposed action and Alternative C vicinity contains existing roads (see Appendix B). Forest Road 314 is a crowned and ditched dirt road, surfaced with native sandstone. Forest Road 314O is also crowned and ditched but not surfaced, dirt road. Both actions are within a restricted Travel Management Area. Within this vicinity, off-road vehicle travel is restricted to within 300 feet of open roads. However, at times hunters and other forest users have been known to drive off designated roads, which may cause temporary damage to soil and vegetation.

Both the proposed action and Alternative C would increase traffic to the area on a short-term basis, during construction, drilling and abandonment phases of the well. There would be a minor long-term increase in road traffic during the production phase of the well. The proposed action would cause an increase in traffic impacts due to the additional new road length of 600 feet. These additional traffic impacts would be realized during all phases of the proposed action, over that of Alternative C. The proposed action access road of 600 feet would increase human activity in the immediate area.

Alternative C would have an increase in traffic as compared to the proposed action, due to the increase in trucks needed (2-3 additional 18-wheelers) to haul additional equipment to and from the location, additional employees that will be needed for the additional well services required for directional drilling; drilling, completion, and routine maintenance. Due to the complexity of these actions, these services typically take 2-3 days longer than routine services for vertical drilling.

For both actions, New Mexico State Highway 64, Forest Road 314 and 314O would notice these traffic increases. Forest Roads 314 and 314O would need increased maintenance during these phases of the proposed action and Alternative C. A Road Analysis Process Report [PR # 15] for the proposed action and Alternative C was completed, to identify important road-related issues in terms of benefits, problems and risks. The following direct and indirect effects may result, as determined by the Road Report:

- Potential vector for introduction of exotic species including noxious weeds,
- Potential noise impacts on wildlife species,
- Impacts to surface hydrology including, increased sedimentation or erosion,
- Potential for chemical and/or petroleum product spills,
- Positive benefits of regional oil and gas related jobs and associated revenues to continue,
- Some short-term airborne dust emissions during road construction, and
- Some impacts to hunting and other recreation activities.

For the proposed action or Alternative C, a number of these impacts would be lessened by the standard mitigation measures (see Appendix D) including, the seasonal closure for construction and drilling (November 1st, to April 1st), maintenance of Forest Roads 314, 314O and the proposed access road. The site-specific mitigation of a closed and locked gate directly southwest of the VCU #2 Well pad would also lessen the above anticipated impacts, for the proposed action. However, it is anticipated that road related impacts from the proposed action would be greater in magnitude than similar impacts associated with Alternative C.

Approximately seven miles of existing roads are within a one-mile radius of the proposed action and Alternative C. Of these seven miles of road approximately 2.8 miles are currently open to public motorized travel while approximately 4 miles are

currently closed to public motorized travel. Cumulatively, calculation of existing, proposed, alternative and potential future oil and gas development impacts concerning roads would be similar to the cumulative discussion for soil and water; approximating 50.76 acres of total disturbance for the proposed action and 48.02 acres of total disturbance for Alternative C. All existing, proposed, alternative and potential energy proposals would have very similar road related impacts and mitigation measures, as described above. Other uses of the roads, including public use of Forest Road 314 and 3140 would contribute to road related impacts. Road maintenance, including re-crowning, re-ditching and re-surfacing would also result in impacts to other resources including soil, water, vegetation, wildlife and public use. In the context of a one-mile radius, these surface uses resulting in road related impacts may not be cumulatively significant. However, these impacts based on the entire Jicarilla Ranger District, may be significant.

Vegetation:

The proposed action and associated access road and pipeline are in an upland mix of piñon/juniper with sparse Ponderosa pines scattered throughout the vicinity. The piñon/juniper offer an understory of brush, consisting of antelope bitterbrush (Purshia tridentata), gamble's oakbrush (Quercus gambelii), serviceberry (Amelanchier spp.), Cliff fendlerbush (Fendlera rupicola), snowberry (Symphoricarpos oreophilus), skunkbush (Rhus trilobata), and mountain mahogany (Cercocarpus spp.). The grass understory consists of junegrass (Koeleria cristata), mutton bluegrass (Poa fendleriana), and pinion ricegrass (Piptochaetium fimbriatum). The proposed location currently supports limited grass understory, probably due to the shallow soils and treed overstory. Vegetative ground cover (including litter) within the staked area of the proposed action area ranges from approximately 10% to 20%. No unique vegetation such as cottonwood, willow or Douglas fir is found within the area of the proposed action or Alternative C. A few mature Ponderosa pines are scattered throughout the area. Alternative C is totally contained within the previously disturbance of the VCU #2 Well pad, with no vegetation on the well pad.

The 1998 Farm Bill included an amended Section 15 of the Federal Noxious Weed Act (1974), states that Federal agencies will work at managing noxious weeds in an integrated systems approach. The Department of the Interior, Secretarial Order No. 91-266 also directs Interior agencies to control the growth and migration of noxious weeds. No federally or state listed noxious/invasive weeds were observed or recorded during on-site inspections of the proposed action or Alternative C.

The No Action alternative would not alter any of the above resources from their existing condition.

Approximately 90 piñon and juniper trees would have to be removed for the proposed action. No trees would be removed for Alternative C. For the proposed action, the trees of firewood size and above would be hauled to the VCU #2 Well pad for the public to pick-up. These trees would be kept free of dirt and debris. Unusable wood and slash would be chipped and used in well pad reclamation. One mature Ponderosa pine along the proposed action access road would be flagged prior to any construction and avoided. No Ponderosa pine trees over 18" dbh (diameter breast height) would be removed for either proposal. Following the removal of the piñon/juniper over-story, the proposed action would cause a change in species composition. No vegetation would have to be removed for the Alternative C proposal. Following well drilling and completion, most of the 2.74 acres for the proposed action would be reseeded, except around the wellhead and the driving portion of the access road, approximately 0.78 of an acre. For Alternative C, all of the existing VCU #2 Well pad disturbance would be reclaimed, except those portions needed for production equipment, approximately one acre. The proposed action would remove more vegetation than Alternative C, and more disturbances would remain during the production phase of the well. Under either the proposed action or Alternative C, reclamation of the unused portions of VCU #2 Well pad would take place. Re-establishment of vegetative cover is expected to take one to two growing seasons, depending on precipitation. Reestablishment of vegetation is considered successful when the disturbed soil has been stabilized, and vegetative ground cover reaches 70 percent, relative to the adjacent undisturbed vegetative cover.

If vegetation cannot be re-established due to heavy grazing, the U. S. Forest Service may required the well pad may be fenced, with a cattleguard at the access road entrance to the well pad, until successful revegetation is achieved. Alternatively, the operator may choose to fence the location (with a cattleguard at the access road entrance) following the initial reseeding. This would avoid potentially having to seed the location for a second time. The remaining long-term disturbance of either 0.78 of an acre for the proposed action or one acre for Alternative C, used for production equipment and vehicle driving surfaces, is projected to have minimal impact to the general vegetation. This acreage would be reclaimed as directed by the COAs and the Forest Service, after final abandonment of the proposed well and the VCU #2 Well.

An impact from the increased traffic, especially any interstate traffic, is the disbursement of noxious weeds. To assist in controlling noxious and invasive weeds, all disturbed areas would be seeded with certified seed. Following final abandonment, all disturbed areas would again be reseeded. It would be the responsibility of XTO Inc. to control and eradicate all noxious/invasive weeds within the permitted area during the life of the project.

Cumulatively, calculation of existing, proposed, alternative and potential future oil and gas development impacts on vegetation would be the same as discussed under soil and water, approximately 50.48 for the proposed action or approximately 48.02 acres for Alternative C. Each of these existing, proposed, alternative and potential energy proposals would have very similar impacts to vegetation as described for the proposed action and Alternative C. Public use of the proposed action and Alternative C areas includes woodcutting, livestock grazing, hunting, and generalized recreation. These consumptive activities also impact vegetation and usable fuel wood, and may contribute to noxious weed distribution. Taken in the context of a one-mile radius, these uses and resulting impacts to vegetation may not be cumulatively significant. However, these vegetation impacts based on the entire Jicarilla Ranger District may be significant.

Wildlife:

Threatened, Endangered or Sensitive Species

Three federally listed species could possibly occur within the region of the proposed action and Alternative C. They are the bald eagle, the Mexican Spotted Owl (MSO) and the southwestern willow flycatcher. None of these species is known to occur within the vicinity of the proposed action or Alternative C. The Jicarilla Ranger District conducted a Biological Assessment and Evaluation (BAE) and Wildlife Specialist Report, on April 29, 2002 [PR #14] for the proposed action and Alternative C.

The bald eagle, a federally listed threatened species, is found within the region during the winter from approximately November through March. The bald eagle probably forages on winterkill big game in the Jicarilla Ranger District. There are no nest sites within the surrounding vicinity. The closest known roost site is greater than seven miles from either the proposed action or Alternative C.

The Mexican Spotted Owl, a federally listed threatened species, is known to have nested on the Jicarilla Ranger District, but not within the proposed action or Alternative C vicinity. The closest Mexican Spotted Owl Protected Activity Center (PAC) is approximately two miles from the proposed project and Alternative C.

The southwestern willow flycatcher, a federally listed endangered species, is not known or suspected to reside within the area of the proposed project or Alternative C. There is no suitable habitat in the project area or the area of Alternative C. The nearest confirmed occurrence of the species is on BLM land along the San Juan River below Navajo Dam, approximately 50 miles away. These occurrences were of migrating birds only. It is highly unlikely that the flycatcher would be found within the project area or the area of Alternative C.

Forest Service Region 3 Sensitive Species of primary concern for this region are the northern goshawk and the American peregrine falcon. The nearest goshawk territory is over 20 miles from the proposed project. No known northern goshawk nests are within the vicinity. The American peregrine falcon is also federally listed species of concern. It is a possible migrant or forager within the region. However, no peregrines are known or suspected to use the marginal habitat of the vicinity. There is no suitable habitat for these birds in the proposed action or Alternative C area.

A threatened, endangered and sensitive species plant survey was conducted in 1995. No threatened, endangered, Category 2 or FS Sensitive plants were found. No sensitive species plants of concern were identified during on-site inspections.

The No Action alternative would not alter any of the above resources from their existing condition.

Based on the Biological Assessment and Evaluation (BAE) [PR #14] no impacts to Threatened and Endangered or Sensitive Species or their habitats, under the Endangered Species Act of 1973, are anticipated from the proposed action or from Alternative C. Additionally, neither the proposed action nor Alternative C would impact any known raptor nests. Other uses in the area of the proposed action and Alternative C, including the public uses listed under other resources, would have minimal impacts on Threatened, Endangered, Sensitive, Category 2 Species or on Species of Concern. Since there are no effects by the proposed action, Alternative C or other activities, there would be no cumulative effects to these species.

Management Indicator Species and Migratory Birds

The Carson Forest Plan [PR #2] identifies nine management indicator species (MIS) with suitable habitat on the Jicarilla Ranger District. MIS are those species selected during the planning process to monitor the effects of planned management activities on viable populations of all wildlife and fish species, including those that are economically important. The proposed action and Alternative C contain habitat for the following

seven of the nine listed MIS; hairy woodpecker, Brewer's sparrow, plain titmouse, turkey, Abert's squirrel, elk and the spotted bat. Other key wildlife species such as black bear and mountain lion inhabit the vicinity of the proposed action and Alternative C. A wide variety of migratory songbirds and neo-tropical migratory birds also use the proposed action and Alternative C vicinity. No MIS, migratory birds or nesting birds were observed during the field inspections of the proposed action and Alternative C locals.

The No Action alternative would not alter any of the above resources from their existing condition.

Although habitat for the MIS and migratory birds would be destroyed by either the proposed action or Alternative C, all species are very mobile, and could easily move from the altered habitat. The percentage of habitat to be altered by the proposed action is less than 0.13 percent of the total acreage within a one-mile radius. The Alternative C would not destroy any additional acreage. Because of the small acreage to be disturbed by the proposed action in comparison to their total habitat, no overall population impacts to the MIS or their habitat, or migratory bird species are anticipated. Alternative C should not impact MIS species or their habitat. All pits must be fenced to exclude wildlife and livestock. Those pits containing petroleum must be netted to exclude birds, especially those regulated under the MBTA. If any impacts to MIS or migratory birds, their nests or eggs is observed at any time during the proposed action or Alternative C, mitigation appropriate to that species would be immediately implemented.

The Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA) required the preparation of the Carson Forest Plan [PR #2]. All subsequent activities on the Carson National Forest, Jicarilla Ranger District, are to be based and consistent with the NFMA and the Carson Forest Plan. This consistency includes the protection of species viability, MIS and their habitat. Based on the BAE, the on-site investigations of the proposals and any appropriate future mitigation, the

proposed action and Alternative C have been determined to be consistent with the current Forest Plan and the NFMA. Also based on the BAE, on-site examinations and appropriate mitigation, neither the proposed action nor Alternative C would violate any federal, state or local law or other requirements imposed for the protection of the environment, including the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA).

Cumulatively, the calculation of existing, proposed action or the Alternative C action, and potential future disturbance from oil and gas developments would be the same for MIS, federally listed species, Forest Service Region 3 Sensitive Species, plants of concern, or other species of concern, as discussed above for other resources. This would be approximately 50.48 acres for the proposed action and approximately 48.02 acres for Alternative C. Other human activities within a one-mile radius include hunting, general public recreation, firewood gathering and livestock grazing operations. These activities are not anticipated to effect or impact any Management Indicator Species or migratory bird species. Because the potential disturbance of the proposed action or Alternative C, within a one-mile radius is a very small percentage (0.13 percent) of the acreage within a one-mile radius, the BAE did not identify any impacts to MIS, federally listed species, Forest Service Region 3 Sensitive Species, plants of concern, other species of concern, or migratory birds. No impacts to migratory birds, nests or eggs are expected, again because the disturbance is a very low proportion to that of the entire one-mile acreage. Taken in the setting of a one-mile radius, and based on the BAE and all land uses, impacts to MIS, federally listed species, Forest Service Region 3 Sensitive Species, plants of concern, other species of concern or migratory birds may not reach a significant impact threshold. However, impacts to MIS, federally listed species, Forest Service Region 3 Sensitive Species, plants of concern, or other species of concern, based on all land uses for the entire Jicarilla Ranger District may reach a significant impact threshold.

Grazing Wildlife

The vicinity of the proposed action and Alternative C provides habitat for deer and elk, both migratory and resident. The entire Jicarilla Ranger District as well as the proposed action and Alternative C area is within a designated big game winter range. Both the proposed action and Alternative C area is also within primary elk winter range. During winter, there is a large influx of big game, depending on the weather conditions. The majority of big game move onto the District in late October and November, and leave in April or May. The elk population has been steadily increasing over the last ten years, and recently stabilized. The deer herd has declined or has been steady over the last ten years.

The No Action alternative would not alter any of the above resources from their existing condition.

The proposed action would remove 2.74 acres of available wildlife habitat and forage. Alternative C would not remove any additional wildlife habitat or forage. The proposed action and Alternative C are both within $\frac{1}{2}$ to $\frac{3}{4}$ of a mile from two springs that serve as wildlife water sources. The proposed action access road is directly east of a dirt tank (approximately 150 feet) and the well location is approximately 400 feet north of a dirt tank. Because of this setting, wildlife heavily utilizes both the proposed action and Alternative C areas. To offset wildlife forage loss, most of the disturbed areas would be revegetated. Establishment of this vegetation would take one to two growing seasons, regaining some of the wildlife forage loss. If the initial reseeding were not successful, reseeding would continue until the seeded vegetation is established. During well production, approximately 0.78 of an acre of long-term loss would be realized for the proposed action, and approximately 1.00 acre of long-term loss would be realized on the existing VCU #2 Well pad, for Alternative C. These areas would be used for production equipment and vehicle travel. Upon final well abandonment, this acreage would be revegetated as directed by the COAs and the Forest Service, retrieving this forage loss.

The impacts of either the proposed action or Alternative C on grazing wildlife would be mitigated through a number of measures incorporated into the proposal. A winter range restriction (closure) from November 1st through April 1st, would apply to either the proposed action or Alternative C, greatly decreasing stress and therefore impacts to all wintering wildlife. The winter closure of the area for wintering big game has been determined to be the most critical season for the restriction of human activity. There are no designated areas or seasonal restrictions for big game fawning, calving or breeding within the Jicarilla Ranger District. To mitigate impacts to wildlife, the proposed action access road would be gated, with a pipe gate and "wings" constructed of pipe and cable, approximately 150 feet south of the existing VCU #2 Well pad. This gate would remain closed and locked to assure wildlife security, and reduce human and vehicle disturbances. Additional mitigation for the proposed action would include the lining of the two dirt tanks near the proposed action with betonite clay, at the direction of the USFS. Relative to Alternative C, the proposed action would result in greater stress to grazing wildlife because of the new well pad and access road, increasing the area human disturbance. Alternative C would increase impacts to wildlife as opposed to the Alternative C due to the increased workers needed for the directional drilling during all phases; drilling, completion, and long-term maintenance.

Standard mitigation measures such as pit fencing, assuring all production fluids and other hazards are inaccessible to wildlife, revegetation of most disturbed areas with seed mixtures that include wildlife preferred species, leaving as many trees as possible and the use of well telemetry to minimizing vehicle trips to the well location, all minimize impacts to wildlife. Any hazards to wildlife associated with construction, drilling or production of the proposed well would be fenced, netted, or are contained in storage tanks.

Existing roads would realize a large increase in heavy equipment, water truck and light pick-up truck traffic during the construction, drilling, completion and final well abandonment phases of the proposed action, under either alternative. Light truck traffic

would moderately increase during the well production phase. This traffic increase would have a negative impact to big game and other wildlife species. Alternative C would realize more traffic (for additional equipment) related impacts than Alternative A.

The calculation of cumulative existing, proposed action/Alternative C and potential future oil and gas development impacts would be the same for grazing wildlife as discussed above for other resources, approximately 50.48 acres for the proposed action and approximately 48.02 acres for Alternative C. Because the either potential disturbance within a one-mile radius is a very small percentage (0.13 percent for the proposed action and zero for Alternative C) of the acreage within a one-mile radius, no impacts to grazing wildlife would be realized from energy development. Impacts from other activities would include hunting, firewood gathering, livestock grazing and generalized public recreation in the proposed action and Alternative C areas. These activities would also impact wildlife by decreasing forage and habitat availability, and causing disturbance to the wildlife. Taken in the setting of a one-mile radius, impacts to grazing wildlife from these land uses may not reach a threshold of significant impact. However, impacts to grazing wildlife from all land uses, based on the entire Jicarilla Ranger District may reach a significant threshold.

Range:

Both the proposed action and Alternative C are within the Forest Service, Laguna Seca Allotment. The current allotment permit is for a cow/calf operation of 237 pairs, from May 16th to October 15th. The entire allotment is grazed heavily by wintering big game. The proposed action is located approximately ½ to ¾ of a mile from numerous springs within Valencia Canyon, Gettem Canyon and Horse Canyon. The two dirt tanks near the proposed action also periodically supply livestock with water. Because of this key setting, livestock moderately graze the proposed action and Alternative C areas. Livestock forage within the proposed well pad location is sparse, with minimal grass understory. Alternative C has essentially no vegetation. The proposed action would remove 2.74 acres of available vegetation, and Alternative C would not remove any additional vegetation. It is estimated that the proposed action area supports 15 acres

per Animal Unit Month (AUM). Therefore, disturbance from the proposed action would remove approximately 0.18 of an AUM, before revegetation. Alternative C currently supports no livestock forage. Following reestablishment of vegetation, lost AUMs would be regained.

The No Action alternative would not alter any of the above resources from their existing condition.

To offset any loss of forage, most of the disturbed areas would be revegetated. Establishment of this vegetation would take one to two growing seasons, regaining some of the livestock forage loss. If the initial reseeding were not successful, reseeding would continue until the seeded vegetation is established. Reestablishment of vegetation is considered successful when the disturbed soil has been stabilized, and vegetative ground cover reaches 70 percent, relative to the adjacent undisturbed vegetative cover. If vegetation cannot be re-established due to heavy grazing, the U. S. Forest Service may require the well pad to be fenced, with a cattleguard at the well pad entrance, until successful revegetation is achieved. Alternatively, the operator may choose to fence the location (with a cattleguard at the well pad entrance) following the initial reseeding. This would avoid potentially having to seed the location for a second time. During well production, approximately 0.78 of an acre for the proposed action and one acre for Alternative C, of long-term loss would be realized on the well pad and access road, for equipment and vehicle traffic areas. Upon final well abandonment, this acreage would be revegetated as directed by the Forest Service, retrieving this forage loss. Any hazards to livestock or wildlife associated with construction, drilling or production of the proposed well would be fenced, or are contained in storage tanks. All pits must be fenced to exclude livestock.

The calculation of cumulative existing, proposed action/Alternative C and potential future oil and gas development impacts would be the same for livestock grazing as discussed above for other resources, approximately 50.48 for the proposed action and approximately 48.02 acres for Alternative C. At approximately 15 acres per AUM for the

vicinity, the cumulative disturbance would result in the loss of 3.36 AUMs for the proposed action and 3.20 AUMs for Alternative C. Successful reestablishment of vegetative cover on most of the disturbed areas (during production phases of oil and gas disturbances) would certainly result in more than 3.36 AUMs being restored. Successful revegetation may result in an overall AUM increase and therefore a benefit to livestock. Additionally, the potential disturbance within a one-mile radius is a very small percentage (2.42 and 2.31 percent respectively for the proposed action and Alternative C) of the total one-mile radius acreage. Therefore, no cumulative impacts to livestock grazing should be realized from energy development. Impacts from other activities would include hunting, firewood gathering and generalized public recreation in the proposed action and Alternative C areas. These activities may also impact livestock by decreasing forage availability, and causing disturbance to the livestock. However, taken in the setting of a one-mile radius, grazing livestock impacts from all land uses may not reach a significant impact threshold. However, impacts to grazing livestock from all land uses and based on the entire Jicarilla Ranger District may reach a significant threshold.

Cultural Resources:

Cultural history of the region spans time from the Paleo-Indian Period to the present. There are few prehistoric sites in the vicinity. The sites of the Archaic Period, the Ancestral Puebloan Period (formally known as the Anasazi Period) and the Navajo Period are found in the vicinity. Ute raiders occasionally made forays into this vicinity, and a few sites associated with these visitations have been documented in the vicinity. In the 1870's, the region was settled by Euro-Americans. Euro-American sites primarily represent farming and ranching as well as the towns that evolved to supply service needs of the settlers. Several sites in the vicinity contain evidence of multi-component, multi-cultural occupation.

Division of Conservation Archaeology (DCA) conducted a Class III Cultural Resources Survey for the proposed action and buffer zones from May 15th, through the 22nd, 2001. Alternative C and buffer zones were inventoried on September 20, 2001. An additional

Class III Cultural Resources Survey of the proposed action, access road, pipeline and proposed access road gate with "wings" was conducted on April 25, 2002. Prior to any fieldwork, a literature review at the Carson National Forest, Jicarilla Ranger District Office and of the Archaeological Records Management System of the New Mexico State Historic Preservation Office was conducted. These file searches indicated 10 archaeological sites had previously been identified and recorded within a one-mile radius of the proposed action and Alternative C. One site was located within 500 feet of Alternative C.

During the original Class III survey, one isolated find was recorded and a previously recorded archaeological site was updated. The isolated find is located in the southeast corner of the proposed action well pad. This isolated find is not considered potentially eligible for inclusion on the National Register of Historic Places (NRHP). The archaeological site is located on the northern edge of the Alternative C, VCU #2 Well pad. This site is considered potentially eligible for inclusion on the NRHP. If Alternative C is selected for implementation, management recommendations for the site protection include restricting the northwest corner from use, construction of a protective barrier fence along the northern side of the well pad and an archaeological monitor be present during all ground disturbing activities associated with the northern edge of the well pad. A complete cultural resources inventory report has been submitted to the Forest Service for review, concurrence and final management mitigating measures. Neither the proposed action nor Alternative C would impact any known cultural sites or traditional cultural properties. All final decisions on the management of cultural resources would come from the Forest Service, with concurrence of the NM SHPO, as outlined in the existing Memorandum of Understanding.

There are no known traditional cultural properties within the proposed action or Alternative C areas. Consultation was conducted with 14 Native American Tribes and Pueblos [PR #7]. Two Native American Tribes responded, with no objections to the proposed action in regards to Native American cultural sites or traditional cultural properties [PR #9].

The No Action alternative would not alter any of the above resources from their existing condition.

If any site were encountered during construction, the contractor would immediately stop all construction activities and notify the Forest Service. The FS would then evaluate the site in consultation with the NM SHPO. Should a site be evaluated as eligible for inclusion on the National Register of Historic Places it would be treated in the proper manner to mitigate any effects of construction, according to the guidelines set by the Forest Service. Varieties of mitigation strategies have been and would continue to be required to protect sites adjacent to the proposed action area. These strategies are outlined in the Memorandum of Agreement between the Forest Service and the New Mexico State Historic Preservation Officer (NM SHPO).

A potential secondary impact from the proposed action or Alternative C is the increased use of the vicinity and consequently the likelihood of removal or damage to cultural artifacts. Although the proposed gate on the access road to the proposed action would deter motorized public use of the proposed action area, construction, drilling and development of the well would result in increased human access and activity in the area. The increased use of the locale thereby increases the possibility of irretrievable loss of information pertaining to the cultural past of the project region. Conversely, the benefits to cultural resources derived from the proposed action/Alternative C are the cultural and historic survey that adds to literature, information and knowledge of these irreplaceable resources.

Cumulatively, calculation of existing, proposed, alternative and potential future oil and gas development impacts on cultural resources would be the same as discussed above, approximately 50.48 acres for the proposed action and approximately 48.02 acres for Alternative C. Each of these existing, proposed action/Alternative C, and potential energy proposals would have very similar impacts to cultural resources as described for the proposed action. Other public uses of the land including livestock grazing,

recreation, firewood gathering and hunting can have negative impacts to cultural resources. Taken in the context of a one-mile radius, these impacts to cultural resources from land use activities may not be cumulatively significant. However, these impacts on cultural resources based on the entire Jicarilla Ranger District, may be significant.

Recreation:

The surrounding region of the proposed action and Alternative C are nationally known for the hunting of big game species. The proposed action and Alternative C are within a restricted Travel Management Area. Within this vicinity, off-road vehicle travel is restricted to within 300 feet of open roads. However, at times hunters and other forest users have been known to drive off designated roads, which may cause temporary damage to soil and vegetation. Some hunters object to oil and gas activity while others appreciate convenience of the road access into secluded locales. Although no developed recreation sites are within the vicinity, the public utilizes the region to enjoy picnics, various scenic travels, viewing wildlife and other various recreation activities. The No Action alternative would not alter any of the above resources from their existing condition.

Either the proposed action or Alternative C would increase traffic on a short-term basis, during construction, drilling and abandonment phases of the well. There would be a minor long-term increase in road traffic during the production phase of the well. New Mexico State Highway 64, Forest Service Road 314 and 314O would notice these traffic increases. The FS Roads 314 and 314O would need increased maintenance during these phases of the proposed action or Alternative C. Alternative C would have an increase in traffic as compared to the proposed action, due to the increase in trucks needed (2-3 additional 18-wheelers) to haul additional equipment to and from the location, additional employees that will be needed for the additional well services required for directional drilling; drilling, completion, and routine maintenance. Due to the complexity of these actions, these services typically take 2-3 days longer than routine services for vertical drilling. With the increase in human intrusion, the area will be at higher risk for accidents and potential fires.

Traffic increases on existing roads, would result in increased soil erosion, sedimentation, dust, disbursement of noxious weeds and noise. These impacts are expected to be mainly short-term during construction, drilling and abandonment. Similar, but a lesser amount of these long-term road impacts can be expected for the life of the well. Alternative C would sustain greater traffic related impacts, to those items listed above, than the proposed action during all phases of well construction due to the well bore complexity and the need for additional vehicles and personnel. Gating the proposed action access road would help to mitigate traffic related impacts during the production phase of the well. If necessary, dust from road traffic would be controlled by spraying fresh water onto the road surface. This would be done only under the specific supervision of a USFS Representative.

Increased traffic during the construction, drilling and abandonment phases of the proposed action or Alternative C would have similar but negative impacts to recreation activities of hunting, picnics, scenic travels, viewing wildlife, collecting firewood, and other various activities. Increased traffic on the roads listed above, would include large vehicles hauling heavy equipment and would result in a public safety issue during these periods of proposed activity. However, these impacts to recreation would be short-term. Following initial reclamation, and during the well production phase, impacts to recreation, increased road usage and the total aesthetic value of the region would be minimal, but long-term.

The 600-foot access road of the proposed action would add incrementally to regional access, on a cumulative basis. Alternative C would not increase regional access on a cumulative basis. Cumulatively, calculation of existing, proposed action or Alternative C, and potential future oil and gas development impacts on recreation would be the same as discussed above, approximately 50.48 acres for the proposed action and approximately 48.02 acres for Alternative C. Each of these existing, proposed action/Alternative C, and potential energy proposals would have very similar impacts to recreation as described for the proposed action and Alternative C. Although closed to motorized use by the public, the length of the proposed action access road (600-feet)

would detract from some public recreational experiences. Livestock grazing is considered by some recreationists to negatively impact their recreation experience of hunting, hiking or wildlife watching. Taken in the context of a one-mile radius, these energy and livestock grazing impacts to recreation may not be cumulatively significant. However, these impacts on recreation, based on the entire Jicarilla Ranger District, may be significant.

Visual Quality:

Neither the proposed action nor Alternative C would be visible from any highway, county road, or recreation area. The Jicarilla Ranger District does not have visual quality objectives defined for the vicinity of the proposed action or Alternative C. Vistas from the proposed action and Alternative C include views of existing roads, pipelines, livestock ponds and existing gas wells.

The No Action alternative would not alter any of the above resources from their existing condition.

During well pad construction activities heavy equipment, machinery emissions and disturbed ground would result in moderate, short-term visual impacts in the proposed action or Alternative C area. During drilling and completion of the well, the drilling rig and rig tower would result in moderate, short-term visual impacts within the immediate vicinity.

Visual impacts would be minimized by rapid construction and drilling of the well, site restoration, re-contouring, reseeding and revegetation. Surface facilities would be painted to blend into the surrounding ecosystem (Federal Standard 595a-34127), except equipment required to be painted specifically for safety purposes. After drilling and completion, the above ground well and pipeline facilities, including low profile storage tanks, meter-run, and separator, would result in a low, long-term visual impacts.

Cumulatively, calculation of existing, proposed action or Alternative C, and potential future oil and gas development impacts on visual resources would be the same as discussed above, approximately 50.48 acres for the proposed action or approximately 48.02 acres for Alternative C. Each of these existing, proposed action or Alternative C, and potential energy proposals would have very similar impacts to visual resources as described for the proposed action or Alternative C. This development would not change the overall visual character and quality of the area, as this area is already characterized by oil and gas wells, pipelines and roads. Taken in the context of a one-mile radius, these development impacts to visual resources may not be cumulatively significant. However, these impacts on visual resources, based on the entire Jicarilla Ranger District, may be significant.

Public Health and Safety:

Public health and safety pertaining to the proposed action or Alternative C, of oil and gas development includes the issues of: worker-related safety; public health and safety associated with the construction, drilling and operating the well; generation, handling, storage and disposal of hazardous and non-hazardous materials and wastes; spills of wastes, chemicals, or condensate; and potential well or pipeline failures. Because the proposed action or Alternative C would take place in a remote area, with restricted public access, risks the public health and safety would be limited to company employees and subcontractors.

The No Action alternative would not alter any of the resources from their existing condition, nor cause any public or worker health or safety issues.

All worker safety is governed by Occupational Safety and Health Administration (OSHA) safety laws and regulations. Worker safety incidents must also be reported to the BLM under the procedures of Notice to Lessees 3A (NTL-3A). Pipeline safety regulations are administered by OSHA as well as Department of Transportation (DOT) regulations. Pipeline safety regulations (49 CFR Parts 190 and 192) govern design, construction and

operation of gas transmission lines. Any incidents involving DOT-regulated pipelines must be reported under these regulations.

Most substances and wastes generated at oil and gas facilities are exempt from regulation under the Resource Conservation and Recovery Act (RCRA). Several materials associated with well construction and production activities are classified as hazardous and regulated by the Environmental Protection Agency (EPA) and DOT. When significant amounts of chemicals are stored on-site, notification of governmental agencies is required under the Emergency Planning and Community Right to Know Act. The notification of releases such as natural gas, natural gas liquids and petroleum, outside the facility site is required under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and under BLM NTL-3A. Additionally, Spill Control Prevention and Countermeasures (SPCC) may be required and enforced by the EPA, for sites that could impact navigable waters of the United States. The well location must have an informational sign, as directed under 43 CFR 3160.

Air Quality:

The air quality of any region is controlled primarily by the magnitude and distribution of pollutant emissions and the regional climate. The transport of pollutants from specific source areas is strongly affected by local topography. In the mountainous western United States, topography is particularly important in channeling pollutants along valleys, creating upslope and downslope circulations which entrain airborne pollutants, and blocking the flow of pollutants toward certain areas. In general, local effects are superimposed on the general synoptic weather regime and are most important when the large-scale wind flow is weak.

Even though specific air quality monitoring is not conducted throughout the area, air quality conditions are likely to be very good, as characterized by limited air pollution emission sources (few industrial facilities and oil and gas activity in the area) and good atmospheric dispersion conditions, resulting in relatively low air pollutant concentrations. Known contributors to pollutant levels within the Forest include the following: exhaust

emissions primarily carbon monoxide [CO], and oxides of nitrogen [NO_x] from existing compressor engines used in production of natural gas; vehicle tailpipe emissions of combustion pollutants (CO, NO_x, particulate matter less than ten microns in effective diameter [PM₁₀], and sulfur dioxide [SO₂]); and dust (particulate matter) generated by vehicle travel on unpaved roads and windblown dust from neighboring areas. Typical emissions from compressors used in the production of natural gas (per the manufacturers specifications) are: 1.6 g/bhp-hr or 201 ppm of carbon monoxide [CO], 2.4 g/bhp-hr or 520 ppm of total hydrocarbons [THC], 0.36 g/bhp-hr or 78 ppm of non-mothano hydrocarbons [NMHC], and 15.8 g/bhp-hr or 1174 ppm nitrogen oxide [NO_x as NO₂].

The proposed action and Alternative C are within all legal standards for air quality, as designated by Region VIII of the Environmental Protection Agency (EPA). Air shed pollution sources are a complex combination of vehicles, electrical power generation in the San Juan Basin, oil and gas refineries and compressor stations. Air quality standards in New Mexico are under the jurisdiction of the New Mexico Environment Department/ Air Quality Bureau (NMED/AQB). It is not anticipated that the proposed action or Alternative C would require any air quality permits. Vehicle traffic, construction, drilling procedures and reclamation activities would increase the levels of dust and air pollution during these phases of the proposed action or Alternative C. Alternative C would require additional pick-ups, trucks, and additional time for construction and drilling procedures due to the complexity of the well bore, which in turn would increase the dust levels and air pollution as compared to the proposed action during all phases of well construction. If necessary, dust levels would be mitigated by spraying fresh water, only under the direct supervision of a USFS Representative. Any decrease in air quality is expected to be low and short-term. During production, air quality permits, if required, would be administered by the NMED/AQB. It is anticipated that the proposed action or Alternative C should have a low impact to local air quality for the long-term production phase.

Economics:

The San Juan Basin is a world class gas producing basin due to its annual gas production and its importance to the U.S. economy. By Federal law, the government must abide by the terms, conditions, and provisions agreed to when the mineral leases were issued. In the Council of Environmental Quality (CEQ) regulations (40 CFR 1500.3), it states in parts 1500 – 1508 of this title providing regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of the National Environmental Policy Act of 1969... "except where compliance would be inconsistent with other statutory requirements."

The economics of the proposed action as compared to Alternative C are better for the consumer and the company mainly from costs involved in vertical drilling as compared to directional drilling. Alternative C would cost the company approximately 150,000 additional dollars for the directional drilling (special equipment, extra personnel, trucks, computers for monitoring downhole location, etc.). Due to wellbore complexity, all well services including routine maintenance require more services and personnel to be on location longer. Alternative C, as compared to the proposed action, would increase the money to the local economy by creating more jobs for additional equipment and services needed for the directional drilling.

Conclusion:

Given the strict and numerous regulations and precautionary measures governing all operations of the proposed action and Alternative C, no worker, public health or safety risks are anticipated. The San Juan Basin geologic structures are well known, with oil and gas development since the 1950's. Drilling and completion activities in the Basin pose no unanticipated risks or uncertainties. Similarly, no highly controversial, uncertain or unknown risks to the human environment are anticipated, given the regulations to be followed by the proposed action or Alternative C.

Given the regulations listed above and numerous other regulations governing all oil and gas activities, the cumulative impacts of the proposed action or Alternative C, coupled

with the one-mile radius anticipated actions, are not anticipated to pose any significant issues to public health and safety.

CHAPTER 4 -- AGENCIES AND PERSONS CONSULTED

The following agencies, tribes and individuals contributed to the preparation of this document:

National Resource Conservation Service
New Mexico Environment Division
Pueblo of Zuni
Southern Ute Indian Tribe
US Fish and Wildlife Service
XTO Inc.

The environmental document was prepared by Nelson Consulting, Inc. to the US Forest Service standards and under the direction of the US Forest Service. A scoping letter and a request for comments were sent to the following agencies, tribes and individuals:

Burlington Resources	Pueblo of Picuris
Candelaria Grazing Assoc.	Pueblo of Pojoaque
Energen Energy	Pueblo of San Ildefonso
Espinosa Ranch	Pueblo of San Juan
Forest Conservation Council	Pueblo of Santa Clara
Forest Guardians	Pueblo of Taos
Four Corners Bowhunters Assoc.	Pueblo of Tesuque
Jicarilla Apache Tribe	Pueblo of Zuni
The Navajo Nation	San Juan Citizens Alliance
New Mexico Department of Game and Fish	Southern Ute Indian Tribe
National Resource Conservation Service	Southwest Forest Alliance
New Mexico Environment Division	US Fish and Wildlife Service
Phillips Petroleum Co.	Ute Mountain Ute Tribe
Pueblo of Jemez	Wild Horse & Burro Freedom Alliance
Pueblo of Nambe	Williams Field Service

SW Center for Biological Diversity

APPENDICES

APPENDIX A
PROJECT RECORD INDEX

Doc. #	DATE	DOCUMENT	AUTHOR	RECEIVED BY
1	1972	Lease NMNM 014923	BLM	Found at Jicarilla RD office
2	10/31/86	Carson Forest Plan	FS, Carson NF	Found at any Carson NF office
3	08/87	Terrestrial Ecosystems Survey of the Carson NF	FS, Carson NF	Found at any Carson NF office
4	1999	Draft Notice to Lessees (Noise Policy)	BLM, Farmington Field Office	www.nm.blm.gov See "Additional News"
5	08/30/01	On-site Field Notes	FS, District Minerals Staff	Project File
6	11/05/01	Scoping Letter and mailing list	FS, District Ranger	Project File & Mailing List
7	11/05/01	Tribal Scoping Letter and Mailing List	FS, District Ranger	Project File & Mailing List
8	11/26/01	Scoping Comments	Various	FS District Ranger
9	12/13/01	Tribal Scoping Comments	Various	FS District Ranger
10	01/02	Quarterly SOPA & Mailing List	FS, Carson NF	Project File & Mailing List
11	01/29/02	Surface Use Plan of Operations	Company	FS District Minerals Staff
12	04/01/02	Quarterly SOPA & Mailing List	FS, Carson NF	Project File & Mailing List
13	04/25/02	On-site Field Notes	FS, District Minerals Staff	Project File
14	04/29/02	Biological Assessment & Evaluation	FS, District Minerals Staff	Project File
15	05/02	Roads Analysis Process Report	Consulting Firm	Project File
16	11/01	IS&A form showing clearance	Consulting Firm	Project File

COMMON ACRONYMS

APD – Application for Permit to Drill

FS – Forest Service

BAE – Biological Assessment and Evaluation
Significant Impact

FONSI – Finding of No

BLM – Bureau of Land Management
Species

MIS – Management Indicator

CEQ – Council of Environmental Quality (regulations) NEPA – National Environmental
Policy Act

COA – Conditions of Approval
Actions

SOPA – Schedule of Proposed

CFR – Code of Federal Regulations

SUP – Special Use Permit

DN – Decision Notice

EA – Environmental Assessment

EIS – Environmental Impact Statement

APPENDIX B

MAPS

MAP 1 General Location Map

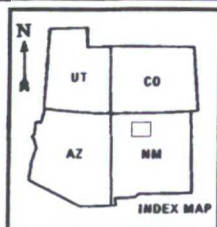
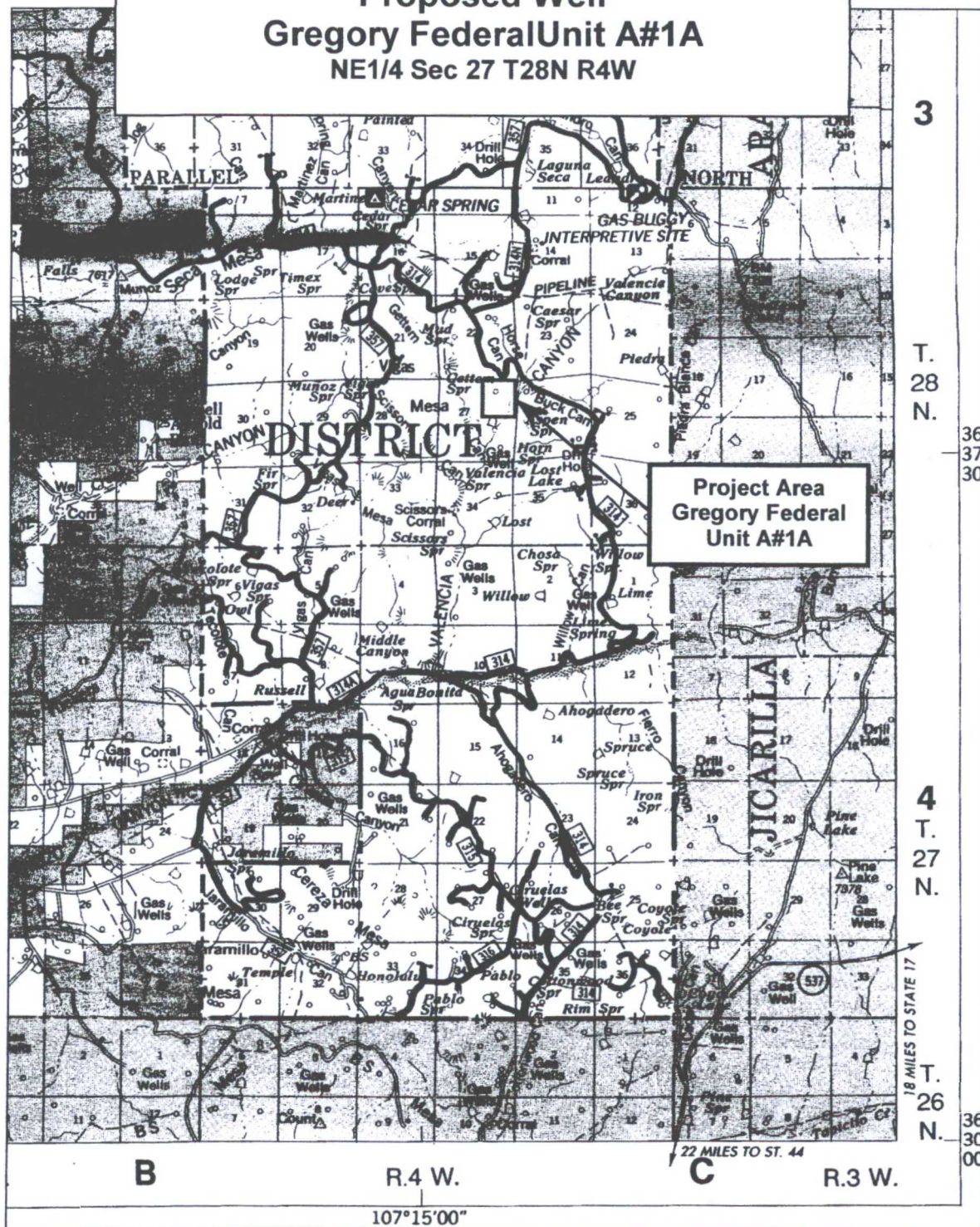
MAP 2 Site-Specific Map

MAP 3 Cumulative One-Mile Radius Map – Proposed Action

MAP 4 Cumulative One-Mile Radius Map – Alternative C

52

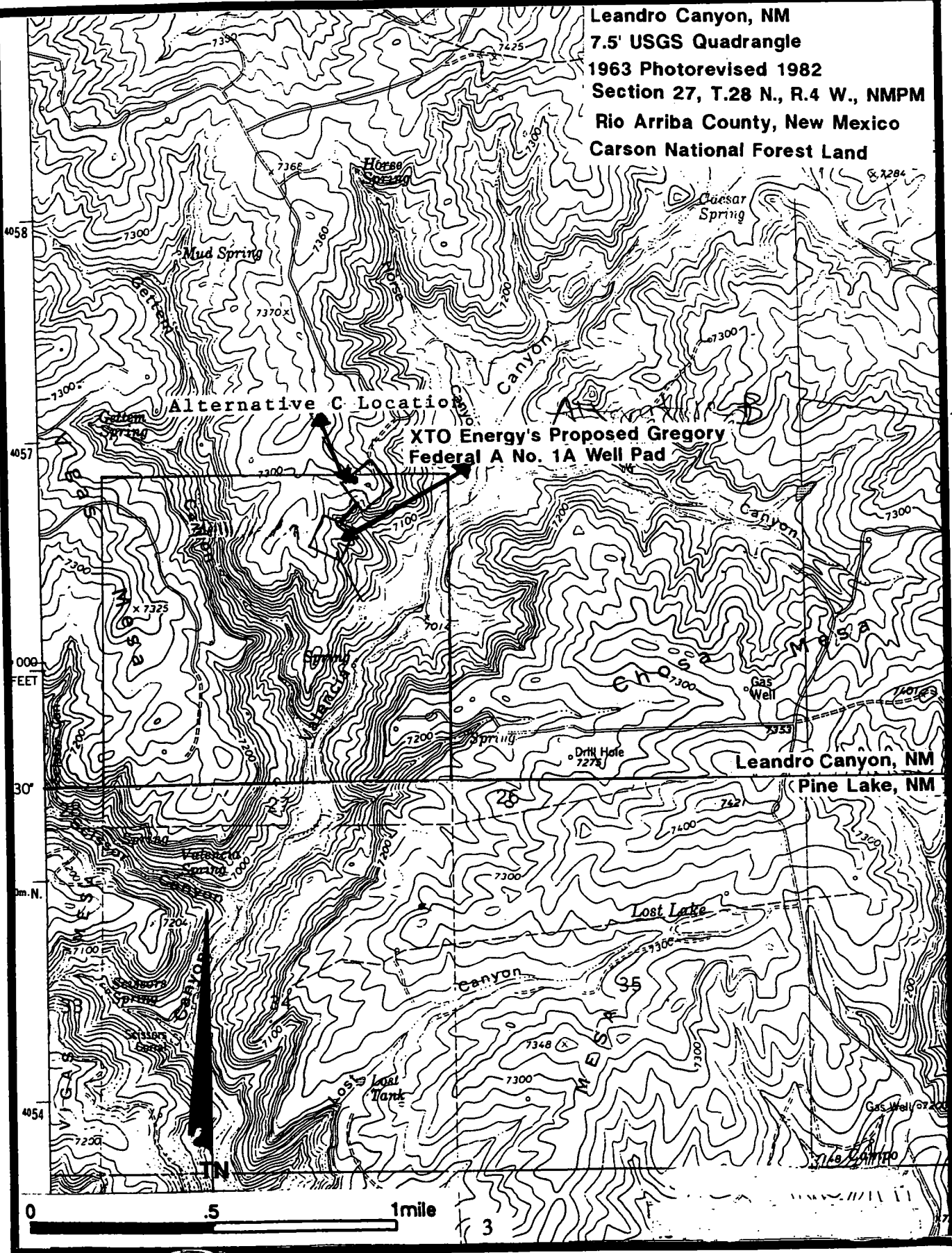
PROJECT AREA
XTO Energy Inc.
Proposed Well
Gregory Federal Unit A#1A
NE1/4 Sec 27 T28N R4W



Map Source:
USDA Carson National Forest, NM
1991, Rev. 1995
1:100,000

VICINITY MAP

Leandro Canyon, NM
 7.5' USGS Quadrangle
 1963 Photorevised 1982
 Section 27, T.28 N., R.4 W., NMPM
 Rio Arriba County, New Mexico
 Carson National Forest Land



**Location
And
Existing Wells Within One Mile Radius
XTO Energy Inc.
Proposed Gregory Federal Unit A#1A
NE1/4 Sec 27 T28N R4W**

One Mile
Radius

Proposed
XTO Energy Inc.
Gregory Federal
Unit A#1A

Alternative
Location
C

Gobernador, NM 7.5'

Vigas Canyon, NM 7.5'

Leandro Canyon, NM 7.5'

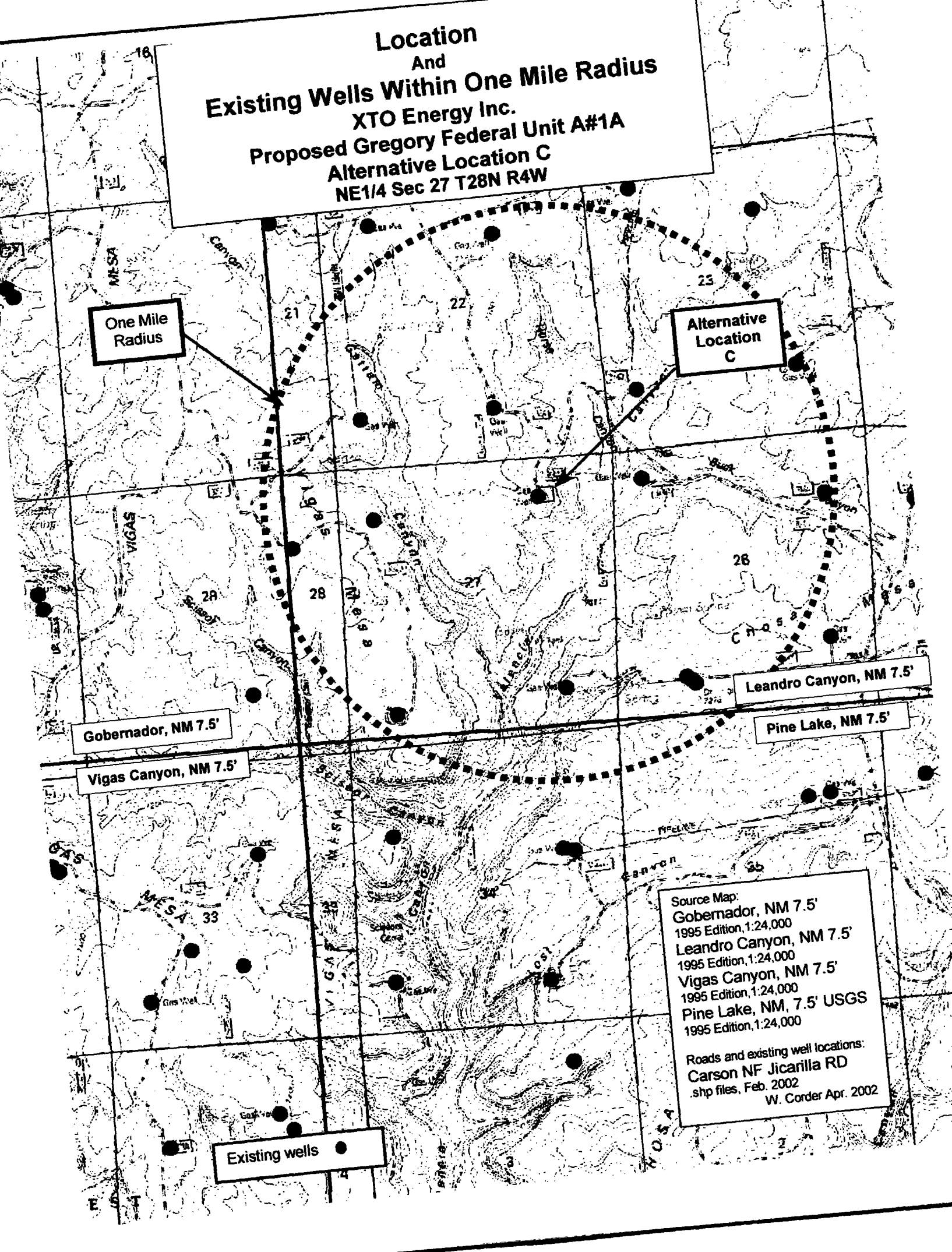
Pine Lake, NM 7.5'

Existing wells

Source Map:
Gobernador, NM 7.5'
1995 Edition, 1:24,000
Leandro Canyon, NM 7.5'
1995 Edition, 1:24,000
Vigas Canyon, NM 7.5'
1995 Edition, 1:24,000
Pine Lake, NM, 7.5' USGS
1995 Edition, 1:24,000

Roads and existing well locations:
Carson NF Jicarilla RD
shp files, Feb. 2002
W. Corder Apr. 2002

**Location
And
Existing Wells Within One Mile Radius
XTO Energy Inc.
Proposed Gregory Federal Unit A#1A
Alternative Location C
NE1/4 Sec 27 T28N R4W**



One Mile
Radius

Alternative
Location
C

Gobernador, NM 7.5'

Vigas Canyon, NM 7.5'

Leandro Canyon, NM 7.5'

Pine Lake, NM 7.5'

Source Map:
Gobernador, NM 7.5'
1995 Edition, 1:24,000
Leandro Canyon, NM 7.5'
1995 Edition, 1:24,000
Vigas Canyon, NM 7.5'
1995 Edition, 1:24,000
Pine Lake, NM, 7.5' USGS
1995 Edition, 1:24,000

Roads and existing well locations:
Carson NF Jicarilla RD
.shp files, Feb. 2002
W. Corder Apr. 2002

Existing wells

APPENDIX C

PROPOSED SURFACE USE PLAN OF OPERATIONS For the Proposed Action and Alternative C

XTO ENERGY INC.
SURFACE USE PROGRAM
For
Proposed Action - Alternative B

RIO ARriba COUNTY, NM

Blanco Mesaverde

SURFACE and BOTTOMHOLE LOCATION: 1585' FNL – 1965' FEL
Section 27, Township 28 North, Range 04 East

1. EXISTING ROADS:

Starting in Blanco, NM, go east on Highway 64 for 31 miles to Carson Forest Road #314. Turn right and go uphill and to the southeast for 8 miles. Forest Road #314 will cross Forest Road #357. From this point, continue on road #314, east for four miles. Look for Carson Forest Road #314O on right (south). Continue south on # 314O for 0.25 miles to XTO Valencia Canyon Unit Well #2. Follow the proposed access road south for approximately 600 feet. See attached Exhibit 1.

2. ACCESS ROADS TO BE CONSTRUCTED:

This well location will require 600' of access road, south from XTO Valencia Canyon unit #2 Well pad. Pipeline to be constructed and operated by XTO Energy, Inc. The pipeline is to be laid in the center of the access road, approximately 3 to 4 feet deep, from the proposed well to the VCU #2 Well.

3. LOCATION OF EXISTING WELLS:

See Attached Exhibit 2.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES IF WELL IS PRODUCTIVE:

If the well is productive it will be surface comingled with the existing VCU #2 Well. All surface equipment, except the wellhead would be located on the existing VCU #2 Well pad. Equipment will initially be a separator, automation and gas measurement equipment, a buried, double wall, steel water tank and necessary lines. If necessary, a wellhead compressor and pumping unit may be installed. All equipment will be installed in an appropriate manner within the boundaries of the VCU #2 Well pad. Location of equipment on the pad will be determined after the well is drilled. XTO Energy Inc. will install the required pipeline in the center of the access road. This well will require 600' of pipeline to connect this well to the existing El Paso pipeline system at the VCU #2 Well. This will be permitted with the approved APD.

5. LOCATION AND TYPE OF WATER SUPPLY:

Water to be used for drilling purposes will be purchased from an approved, non-federal source and will be transported by an approved commercial contractor such as Triple S Trucking Company or Three Rivers Trucking Company. Existing roads will be used to haul the water to the new drill location.

6. CONSTRUCTION MATERIALS:

All construction materials needed for the drilling of this proposed location will be purchased by the subcontractor(s). If materials are needed from the BLM, the subcontractor(s) will be responsible for obtaining the proper permits.

7. METHODS OF HANDLING WASTE DISPOSAL:

A trash trailer will be provided on location. All drilling line, oil filters, etc. will be hauled away by the drilling contractor. At conclusion of drilling operations, the trash trailer will be hauled and disposed of at a commercial sanitary landfill. Any produced water or oil will be hauled to a proper approved disposal site.

8. ANCILLARY FACILITIES:

Airstrips and camps for workers are not needed for completion of this well. The operator will notify the appropriate parties involved if there is a change in plans.

9. WELL SITE LAYOUT:

See attached Exhibit 3.

10. PLANS FOR RECLAMATION OF THE SURFACE:

Reclamation of the proposed location after completion of operation will be per the standard BLM guidelines for such projects. This will include, but not limited to, restoring original contours, drainage pathways, revegetation and soil treatments for all disturbed areas including access roads and portions of well pads no longer needed.

11. SURFACE OWNERSHIP:

Surface ownership is the Carson National Forest and is administered by the Farmington District Bureau of Land Management Office located at 1235 La Plata Highway, Farmington, NM.

12. OTHER INFORMATION:

The drilling program as proposed by XTO Energy Inc. is attached. The Archaeological Report was completed by DCA and will be forwarded to the appropriate department. Nelson Consulting of Farmington, NM has completed and will submit the EA to the appropriate department.

13. LEESEE'S OR OPERATOR'S REPRESENTATIVE AND CERTIFICATION:

I hereby certify, I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by **XTO ENERGY INC.** and its subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date: January 29, 2002

Name and Title: Jeffrey W. Patton, Drilling Engineer

Signature: _____

XTO ENERGY INC.
SURFACE USE PROGRAM
For
Directional Drill #2 - Alternative C

RIO ARRIBA COUNTY, NM

Blanco Mesaverde

SURFACE LOCATION: 1050' FNL – 1160' FEL
BOTTOM HOLE LOCATION: 1581' FNL – 1965' FEL
Section 35, Township 28 North, Range 04 East

1. EXISTING ROADS:

Starting in Blanco, NM, go east on Highway 64 for 31 miles to Carson Forest Road #314. Turn right and go uphill and to the southeast for 8 miles. Forest Road #314 will cross Forest Road #357. From this point, continue on road #314, east for four miles. Look for Carson Forest Road #314O on right (south). Continue south on # 314O for 0.25 miles to XTO Valencia Canyon Unit (VCU) Well #2. Alternative C well location is contained within the VCU #2 Well pad. Follow the proposed access road south for approximately 600 feet. See attached Exhibit 1.

2. ACCESS ROADS TO BE CONSTRUCTED:

No new road would be constructed for this proposal.

2. LOCATION OF EXISTING WELLS:

See Attached Exhibit 2.

3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES IF WELL IS PRODUCTIVE:

If the well is productive it will initially be equipped with a separator, automation and gas measurement equipment, a buried, double wall, steel water tank and necessary lines. If necessary, a wellhead compressor and pumping unit may be installed. All equipment will be installed in an appropriate manner within the boundaries of the

well pad. Location of equipment on the pad will be determined after the well is drilled. XTO Energy, Inc. will install the required pipeline. This well will require less than 100 feet of pipeline to connect this well to the existing El Paso pipeline system. The proposed pipeline will be included in the Application for Permit to Drill, requiring not right-of-way or special use permit.

4. LOCATION AND TYPE OF WATER SUPPLY:

Water to be used for drilling purposes will be purchased from an approved, non-federal source and will be transported by an approved commercial contractor such as Triple S Trucking Company or Three Rivers Trucking Company. Existing roads will be used to haul the water to the new drill location.

5. CONSTRUCTION MATERIALS:

All construction materials needed for the drilling of this proposed location will be purchased by the subcontractor(s). If materials are needed from the BLM, the subcontractor(s) will be responsible for obtaining the proper permits.

6. METHODS OF HANDLING WASTE DISPOSAL:

A trash trailer will be provided on location. All drilling line, oil filters, etc. will be hauled away by the drilling contractor. At conclusion of drilling operations, the trash trailer will be hauled and disposed of at a commercial sanitary landfill. Any produced water or oil will be hauled to a proper approved disposal site.

7. ANCILLARY FACILITIES:

Airstrips and camps for workers are not needed for completion of this well. The operator will notify the appropriate parties involved if there is a change in plans.

8. WELL SITE LAYOUT:

See attached Exhibit 3.

9. PLANS FOR RECLAMATION OF THE SURFACE:

Reclamation of the proposed location after completion of operation will be per the standard BLM guidelines for such projects. This will include, but not limited to, restoring original contours, drainage pathways, revegetation and soil treatments for all disturbed areas including access roads and portions of well pads no longer needed.

10. SURFACE OWNERSHIP:

Surface ownership is the Carson National Forest and is administered by the Farmington District Bureau of Land Management Office located at 1235 La Plata Highway, Farmington, NM.

11. OTHER INFORMATION:

The drilling program as proposed by XTO Energy Inc. is attached. The Archaeological Report was completed by DCA and will be forwarded to the appropriate department. Nelson Consulting of Farmington, NM has completed and will submit the EA to the appropriate department.

12. LEESEE'S OR OPERATOR'S REPRESENTATIVE AND CERTIFICATION:

I hereby certify, I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by **XTO ENERGY INC.** and its subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date: January 29, 2002

Name and Title: Jeffrey W. Patton, Drilling Engineer

Signature: _____

DISTRICT I
P.O. Box 1980, Hobbs, N.M. 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, N.M. 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

Revised February 21, 1994

Instructions on back

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, NM 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number		² Pool Code	³ Pool Name
⁴ Property Code	⁵ Property Name GREGORY FEDERAL A		⁶ Well Number 1A
⁷ OGRID No.	⁸ Operator Name XTO ENERGY INC.		⁹ Elevation 7255'

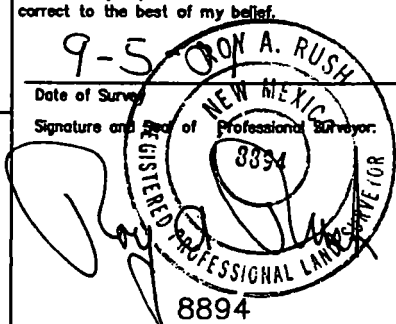
¹⁰ Surface Location

UL or lot no. A	Section 27	Township 28-N	Range 4-W	Lot Idn	Feet from the 1050'	North/South line NORTH	Feet from the 1160'	East/West line EAST	County RIO ARRIBA
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¹¹ Bottom Hole Location If Different From Surface

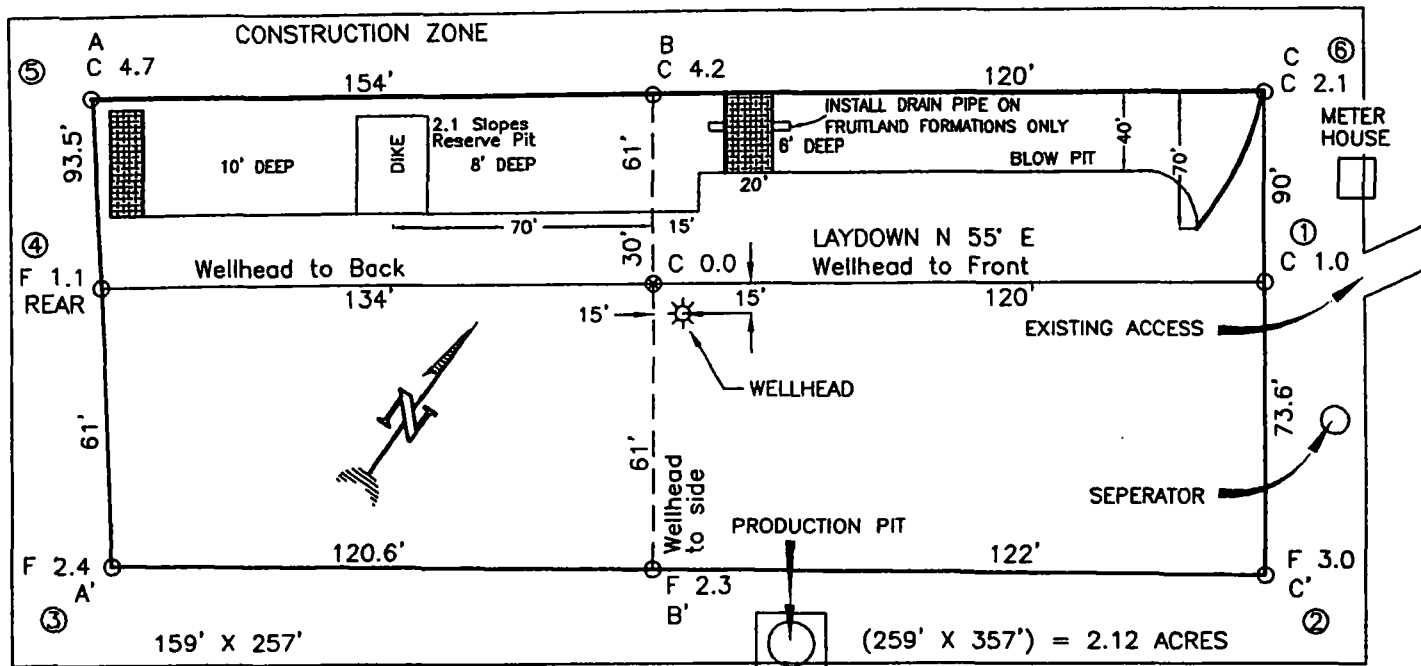
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
¹² Dedicated Acres		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

¹⁶				1050' 1160'	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief Signature _____ Printed Name _____ Title _____ Date _____
					¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 9-5-94 Date of Survey Signature and Seal of Professional Surveyor:  8894 Certificate Number
LOCATION IS STAKED RELATIVE TO EXISTING WELLS AND DRY HOLES ON RECORD WITH N.M. OIL & GAS CONSERVATION COMMISSION. SECTION AND QUARTER CORNERS ARE NON-EXISTANT IN THE AREA. DEPENDENT RESURVEY OF THE TOWNSHIP IS REQUIRED TO OBTAIN EXACT DIMENSIONS FROM THE SECTION LINES.					

XIO ENERGY INC.
 GREGORY FEDERAL A #1A, 1050 FNL 1160 FEL
 SECTION 27, T28N, R4W, N.M.P.M., RIO ARRIBA COUNTY, N. M.
 GROUND ELEVATION: 7255', DATE: MAY 15, 2001

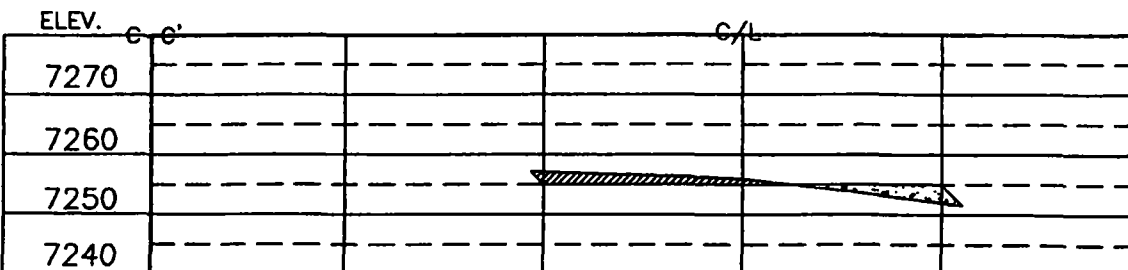
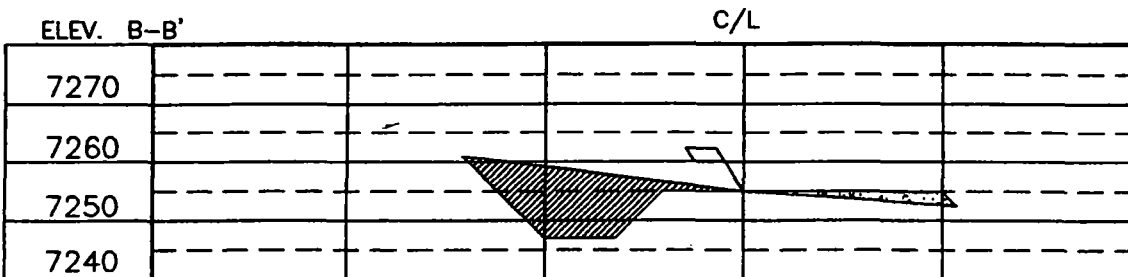
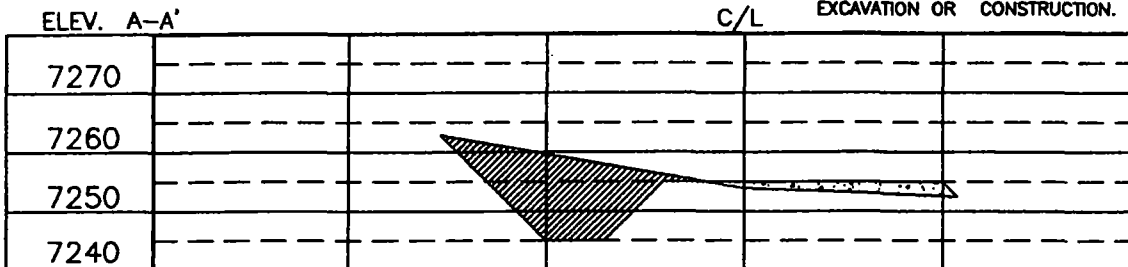
LAT. = 36°38'14" N
 LONG. = 107°14'02" W



RESERVE PIT DIKE: TO BE 8' ABOVE DEEP SIDE (OVERFLOW - 3' WIDE AND 1' ABOVE SHALLOW SIDE).
 BLOW PIT: OVERFLOW PIPE HALFWAY BETWEEN TOP AND BOTTOM AND TO EXTEND OVER PLASTIC LINER AND INTO BLOW PIT.

NOTE:

DAGGETT ENTERPRISES, INC. IS NOT LIABLE FOR
 UNDERGROUND UTILITIES OR PIPELINES. NEW MEXICO
 ONE CALL TO BE NOTIFIED 48 HOURS PRIOR TO
 EXCAVATION OR CONSTRUCTION.



REVISION: RESTAKE BY: BS DATE: 9/12/01

NOTE: CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED BURIED PIPELINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.

DRAWN BY: A.G. ROW#: CR013 CADFILE: CR013CF8 DATE: 06/5/01

Daggett Enterprises, Inc.
 Surveying and Oil Field Services
 P. O. Box 15068 Farmington, NM 87401
 Phone (505) 328-1772 Fax (505) 328-6019

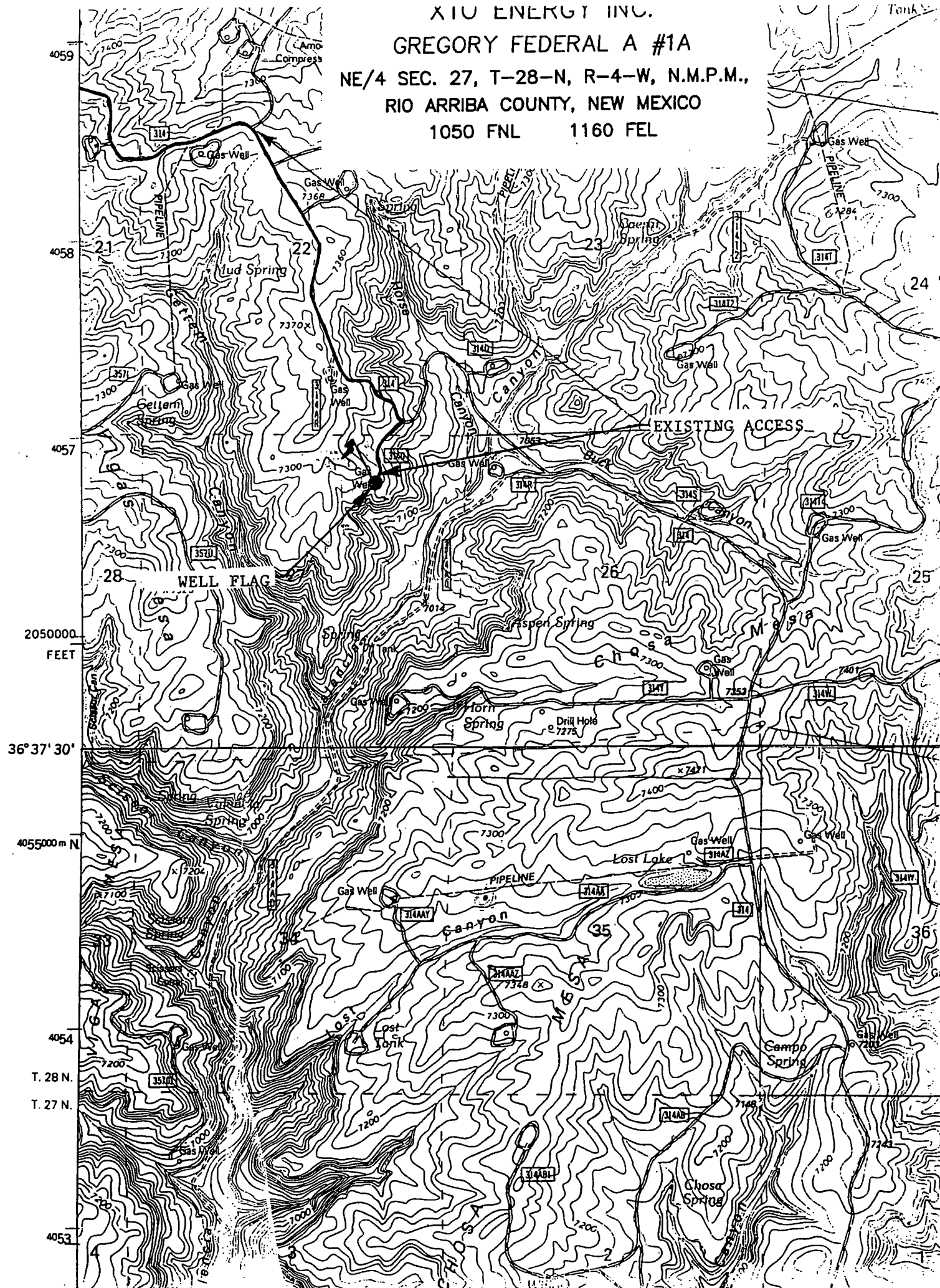
တပ်မတော်

GREGORY FEDERAL A #1A

NE/4 SEC. 27, T-28-N, R-4-W, N.M.P.M.,

RIO ARRIBA COUNTY, NEW MEXICO

1050 FNL 1160 FEL



APPENDIX D
CONDITIONS OF APPROVAL FOR PROPOSED WELL AND ACCESS ROAD

USFS RECOMMENDED SEED MIXTURE
NEW USFS AND FFO/BLM SEED MIXTURE
FOR MORE THAN 10 INCHES OF PRECIPITATION

Species to be planted in pounds, pure-live-seed per acre (PLS). Pure Live Seed = Germination X Purity.

<u>TYPE</u>	<u>VARIETY or CULTIVAR</u>	<u>PLS/acre</u>
Western wheatgrass	(Arriba)	2.0
Indian ricegrass	(Paloma)	1.0
Blue grama	(Hatcheta or Alma)	0.25
Antelope bitterbrush	(unknown)	0.10
Four-wing saltbush	(unknown)	0.25
Pubescent wheatgrass	(Luna)	2.0
Intermediate wheatgrass	(Oahe)	2.0
Small burnet	(Delar)	1.0

To maintain purity and quality, certified seed is required.

All other seeding recommendations are the same as stated in the conditions of approval and/or the pipeline stipulations.



*****Company Name*****

Well Name

Legal Location

JICARILLA RANGER DISTRICT
CARSON NATIONAL FOREST

**CONDITIONS OF APPROVAL
FOR
APPLICATIONS FOR PERMIT TO DRILL**

****date****

The following conditions of approval will apply to all wells on the Jicarilla Ranger District of the Carson National Forest.

A. Construction and Drilling Operation

1. Snow Removal

A. If there is snow on the ground when construction begins, the operator will remove it before the soil is disturbed, and pile it downhill from the topsoil stockpiles.

2. Topsoil Stockpile

A. Topsoil shall be stripped from the permitted area (4"-6" deep) and be deposited in storage piles apart from other excavated material. After the desired amount of material has been removed, and the resulting pit has been trimmed and smoothed as required, the stored topsoil shall be evenly spread over exposed subsoil to the extent that may be practicable and shall be revegetated. Gravel will be utilized to stabilize the pad area.

3. Reserve Pit

- A. Large vegetation such as sagebrush, pinon, juniper, oak, and browse species will not be incorporated in the pit walls. Sagebrush, stumps and other slash must be disposed of. They may be buried in the reserve pit when it is filled in.
- B. The reserve pit will have a minimum of one-half the total depth below the original ground surface at the lowest point within the pit and will be designed to prevent the collection of surface runoff.
- C. All drilling and production pits will be constructed so as not to leak, break, or allow discharge of liquids. The bottom of the reserve pit shall not be in fill material. Pits are not to be located in natural drainages. All pits will be lined with an impervious material at least 12 mil thick and/or 200 psi resistance. Plastic material used to line pits must be removed to below-ground level before pits are covered. Pit walls are to be "walked down" by a crawler-type tractor and stabilized prior to usage.
- D. The fluid level, within the pit, is to be maintained at least two (2) feet below the lowest point of the pit wall. The reserve pit will be backfilled and reclaimed when dry. In addition, stockpiled material will be evenly distributed and landscaped to the surrounding topography over all areas on the pad which are not needed for production.

4. Fencing

- A. All pits will be fenced with woven wire. Fence the reserve pit with four strand fencing on three sides during the drilling phase and the fourth side immediately after the rig is removed. Corner "H" bracing must be constructed at all corners.

5. Equipment and Vehicles

- A. Road building, pad construction and drilling activities are permitted from April 1 through October 31 of each year. Approval of activities between November 1 and March 31 may be granted on a case by case basis by permission from the Jicarilla District Ranger.
- B. All equipment and vehicles must be confined to the access road and pad. The Jicarilla Ranger District does not allow off-road vehicle use unless specifically authorized.
- C. Driving on Forest Roads will be done in a responsible and safe manner, or be in violation of 36CFR 261.54f, which carries a maximum penalty of \$5000.00 and/or six months in jail.

6. Sanitation

A. The operator and maintenance of all sanitation, food service, and water-supply methods, systems, and facilities shall comply with the standards of the local and state authorities and the Federal Water Pollution Control Administration of the United States. The operator shall dispose of all garbage and refuse in a place and manner specified by the Forest Officer in charge. Sewage will be confined to a chemically-treated portable unit on location. Burying of sewage will not be allowed.

7. Refuse Disposal

A. The operator shall dispose of refuse resulting from this use, including waste materials, garbage, and rubbish of all kinds in an approved sanitary landfill or appropriate recycling center. A trash cage must be on location throughout all drilling, testing and completion activities. Burying trash or trash in the reserve pit will not be allowed. Burning of trash will not be allowed.

8. Rat and Mouse Hole

A. For safety purposes, the rat/mouse hole must be filled and compacted immediately after the rig is removed.

9. Hydrocarbons and Produced Water

A. Produced hydrocarbons shall be put in tanks on location during completion work, and not allowed into the reserve pit. If produced hydrocarbons, or machinery oil, find their way into the reserve pit, they shall be removed immediately. Produced water will be put in the reserve pit during completion work. Under no circumstances will pits be cut and drained. No produced water is to be released from the storage tanks but is to be physically removed from the site, for proper disposal.

10. Ground Water

A. All state permits are required prior to hauling water. State procedures concerning disposal of saltwater will be followed. Fiberglass tanks or metal tank battery will be used to store saltwater prior to disposal.

11. Spills

A. The operator shall inform the Forest Service immediately of the nature, time, date, location, and action taken for any oil or hazardous substance spill (including salt water). The operator shall list all hazardous substances to be used by the drilling operator, and provide this list to the Forest Service.

12. Explosives

A. Should the use of explosives be required during construction the operator shall comply with all applicable local, State, and Federal laws, regulations and requirements involving the storage, handling, preparation and use thereof. Prior to any blasting, the District Ranger will be notified and an approved blasting plan will be prepared.

13. Company Signs

A. Drilling company signs will be allowed on National Forest System lands during the construction and drilling phase. These signs are not to be attached to any trees by any means.

14. Archaeological-Paleontological Discoveries

A. The operator will employ an archaeologist permitted by the Forest Service to conduct an archaeological clearance on any lands which may be disturbed.

B. The operator will not commence construction until an approved heritage resource clearance has been received by the Forest Service office in Bloomfield, and the operator will abide by all of the stipulations contained in the clearance.

C. If, prior to or during excavation work, items of archaeological, paleontological, or historic value are reported or discovered, or an unknown deposit of such items is disturbed, the operator will immediately cease excavation in the area so affected. The operator will then notify the Forest Service and will not resume excavation until written approval is given by the authorized officer.

D. If it is deemed necessary or desirable, the Forest Service may require the operator to perform recovery, excavation, and preservation of the site and its artifacts at the operators expense. At the option of the Forest Service, this authorization (permit to drill) may be terminated with no liability by the United States when such termination is deemed necessary or desirable to preserve or protect archaeological, paleontological, or historic sites and artifacts.

15. Threatened, Endangered or Sensitive Species

A. A survey for threatened, endangered or sensitive species shall be conducted by the Forest Service or by an approved surveyor, prior to any construction activities. The Forest Service will indicate which species require surveys.

16. Slope Ratios

A. The final cut slope shall not exceed a 4:1 ratio. The final fill slope shall not exceed a 4:1 ratio. To obtain this ratio, pits and slopes shall be backsloped into the pad upon completion of drilling and prior to setting production equipment. Construction slopes can be much steeper during drilling, but will be contoured to the above final slopes upon pit reclamation.

17. Pipelines

A. All areas disturbed, due to the burial of any gas/oil pipelines, will need to be seeded and silt fencing installed. The seed mixture is identified in C.2 of this document, and will be done prior to silt fencing installation. Silt fencing will be installed in areas where active erosion is occurring or is likely to occur.

18. Vegetation Removal

A. The Forest Service will indicate the methods of disposal for timber and fuelwood removed during construction. The operator may be required to purchase the wood at commercial rates.

B. Willow, cottonwood, aspen, and Douglas fir tree species will not be destroyed whenever possible.

C. Large diameter ponderosa pine (18" + DBH) will not be destroyed whenever possible.

D. Tree stumps, branches, and tops, uprooted sagebrush, and other slash must be disposed of. It may be buried in the reserve pit when the pit is filled in. It may be chipped and broadcast or otherwise broken down and spread out. Burning of slash will not be allowed.

19. Notification

A. The operator or his contractor will contact the Forest Service (632-2956) approximately 48 hours prior to beginning of pad construction activities and prior to rig movement across Forest lands. The operator will contact the Forest Service and the BLM (599-8900) prior to drilling activity and prior to fluid pumping from the reserve pit.

B. Producing Well

1. Production Facilities

- A. Production facilities (including dikes) will be placed on cut and located a minimum of 10 feet from the toe of the backcut.
- B. All pits, tanks, and exhaust vents will have to devices to prevent bird mortalities to comply with the Migratory Bird Protection Regulations.
- C. Due to the cumulative nature of gas extraction activities, a "residential style" muffler is required on production engines to reduce noise levels.

2. Spacing of Facilities

- A. Maintain a minimum distance of seventy five (75) feet between individual production facilities (treater/separator, storage tanks, well head/pumpjack, etc.).

3. Diking

- A. All storage facilities (including salt water tanks) must be diked. The dikes must be constructed of compacted subsoil, be impervious, be sufficient in size to contain the storage capacity of the facility being diked and be independent of the backcut. The dike must be covered with a layer of gravel to alleviate wind erosion. The loadout line must remain inside the dike. A "walkover" stairstep must be provided to allow access without causing deterioration of the dike.

4. Wind Erosion

- A. Gravel will be placed around the bases of well/meter buildings and on dikes to alleviate wind erosion.

5. Roads & Surfacing

- A. Unless otherwise approved, the driving surface on all access roads must be limited to 14 feet in width, and total disturbance will be limited to 35 feet, including turnouts. Pipelines will be constructed within the area cleared for the access road when possible. Right-of-way will not exceed 35 feet in width. During drilling and completion operations, the operator will be responsible for all road maintenance from pavement to well location. All roads on Forest Service lands must be maintained in a good, passable condition except controlled access roads. Controlled access roads will be constructed to minimum Forest Service

standards, will have adequate culverts for drainage, will be drill seeded and revegetated, and will require minimum maintenance.

B. No gravel or other related minerals from new or existing pits on Federal land will be used in construction of roads, well sites, etc., without prior approval from the Forest Service.

C. Water bars will be constructed on the access road to the well location and conform to surface management specifications. The maximum slope distance between water bars will be:

<u>% Slope</u>	<u>Slope Distance</u>
Less than 1%	400 feet
1% - 5%	300 feet
5% - 15%	200 feet
15% - 25%	100 feet
Greater than 25%	50 feet

D. When the access road is graded, water bars will be left in the road or replaced immediately upon completion of grading. The access road must be crowned and ditched and surfaced as required. No new unauthorized road(s) (short cut roads) are authorized.

E. Prior to crossing any fence located on federal land, or any fence between Federal land and private land, the operator shall contact the Minerals Staff at the Jicarilla Ranger Station. All cut fences are to be tied to braces prior to cutting.

F. The cut fence opening will be protected as necessary during construction to prevent the escape of livestock. A temporary closure will be installed on all cut fences the same day the fence is cut. A permanent cattleguard will be installed and maintained in any cut fence unless otherwise stipulated in writing. A twelve-foot gate will be installed adjacent to all new cattleguards.

G. A 12 foot gate must be installed between the cattleguard and brace assemblies on whichever side of the cattleguard is most convenient. If the gate is made of wire, it must have at least four horizontal strands of barbed wire, with at least four 3 inch diameter vertical wood stays evenly spaced. When the gate is closed the wires must be taut.

H. All cattleguards must have wings installed on both ends to prevent livestock from stepping around the ends. Cattleguards must be at least 8 feet wide, the length is left to the discretion of the operator. They must be set on concrete or pressure treated wood bases to prevent them from sinking.

I. Produced water will either be piped or trucked. If trucked, operator will be responsible for road maintenance and/or surfacing from the well location to pavement. Maintenance will consist of maintenance of cattleguards, fences, culverts and the actual road surface. The time-of-day of water hauling may be limited.

J. A proposed use of pesticide, herbicide or other possible hazardous chemical on Forest Service lands and roads shall be cleared for use prior to application.

K. Controlled access roads are to be used by the operators and his contractors for the sole purpose of servicing wells and equipment. Activities not associated with oil and gas production are not allowed. Unauthorized use is in violation of 36 CFR 261.10k, which carries a maximum penalty of \$5000.00 and/or six months in jail.

6. Production Pits

A. Precipitation/production pits and tanks will be constructed of fiberglass or metal. They will be fenced and covered to prevent wildlife access. They will be diked in the manner described under B.3 above.

B. Fluids in the production pit will be hauled away in a timely manner to prevent overflow of the pit. Any overflow will be treated as a spill as described in A.11 above.

7. Reclamation Requirements

A. Refer to C.2 and C.3 for reclamation requirements.

8. Painting

A. All above ground permanent surface structures and equipment will be painted a non-glare color that simulates the natural color of the site as follows: Green, Federal Standard 595a-34127. The exception being that Occupation Health and Safety Act Rules and Regulations are to be complied with where special safety colors are required. All facilities must be painted within six months of installation.

9. Spark Arrester and Engine Mufflers

A. A muffler or spark arrester satisfactory to the authorized officer shall be maintained on the exhausts of all trucks, tractors or other internal combustion engines used in connection with this permit.

10. Fencing

A. Fencing of individual facilities, such as the pump jack (including well head), treater, and tank battery with cattle tight fencing may be required. The fence around any fluid storage facilities must be constructed on the outside perimeter of the dikes to protect them from deterioration due to animals walking over them.

B. A gate for access must be provided at each facility.

11. Noxious Weed/Plant Control

A. Control of noxious weeds that invade the well pad and access road is required. Pesticides may be used to control undesirable woody and herbaceous vegetation, insects, rodents, etc., with prior written notification to the Forest Service. A listing of all pesticides being used or are planning on being used, will be submitted annually by the operator. The report will cover a 12-month period of planned use and will be due on the last day of the calendar year. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests require control measures which were not anticipated at the time an annual report was submitted.

B. Only those materials registered by the U.S. Environmental Protection Agency for the specific purposes planned will be considered for use on National Forest System lands. Label instructions will be strictly followed in the application of pesticides and disposal of excess materials and containers. Any barrels of chemicals or fluids needed to maintain well operations will NOT be stored on site.

12. Facility Identification

A. Individual well facilities (oil, gas, injection, saltwater, etc.) shall have a sign in legible condition until final abandonment. The sign will show the operator's name, lease name and unit number, well name and number and location (quarter section, township, range and footages from section lines).

13. Notification

A. The operator will contact the Forest Service (632-2956) and the BLM (599-8900) approximately 48 hours prior to conducting workover activities.

C. Abandoned Well

1. Abandonment Marker

A. A Forest Service approved permanent abandonment marker inscribed with operator, well number, and location (quarter section, township, range) is required. This marker will extend 24" underground in concrete, and extend 48" above ground level. The inscription will be made with arc welding directly onto the pipe marker.

2. Reclamation Requirements

A. All gravel will be removed from the location and all disturbed areas will be scarified (the gravel can be placed on roads designated by the Forest Service). The cut and fill slopes will be recontoured to original contours. The entire disturbed area will then be backfilled with topsoil, landscaped, seeded, and mulched. On slopes greater than 4% waterbars (contour ditches) will be constructed on the contour at seventy-five (75) foot intervals beginning at the top of the disturbed slope. They should be at least one (1) foot deep, with approximately two (2) feet of drop per one hundred (100) feet and with the berm on the downhill side.

B. Compacted areas of the well pad will be plowed or ripped to a depth of twelve (12) inches before reseeding. Recommended seeding is between July 1 and September 15. Seeding will be done with a disc-type drill with two boxes for various seed sizes. The drill rows will be eight (8) to ten (10) inches apart. The seed will be planted between one-half (1/2) and three-fourths (3/4) of an inch deep. The seeder will be followed with a drag, packer or roller to insure uniform coverage of the seed, and adequate compaction. Drilling of the seed will be done on the contour where possible. Where slopes are too steep for contour drilling a "cyclone" hand-seeder or similar broadcast seeder will be used, using twice the recommended seed per acre. Seed will then be covered to a depth described above by whatever means is practical.

C. Recommended Seed Mixtures.

Species to be planted in pounds pure-live-seed per acre: $\text{Pure Live Seed} = \text{Germination} \times \text{Purity}$

<u>FOREST SERVICE SEED MIX NO. 1</u>	<u>POUNDS/ACRE</u>
ORCHARD GRASS	3
PUBESCENT WHEATGRASS	5
BURNET	1
LADAK ALFALFA	1
PERENNIAL RYE	2
YELLOW SWEET CLOVER	1
INDIAN RICEGRASS	1

D. To maintain purity and quality, certified seed is required.

E. All disturbed areas will be mulched at the rate of 2 tons/acre of native grass hay/straw. The mulch must be crimped into the surface.

F. The operator shall be responsible for prevention and control of soil erosion and gullying on lands covered by this permit and adjacent thereto, resulting from construction, operation, maintenance, and termination of the permitted use. The operator shall so construct permitted improvements to avoid the accumulation of excessive heads of water and to avoid encroachment on streams. The operator shall revegetate or otherwise stabilize all ground where the soil has been exposed and shall construct and maintain necessary preventive measures to supplement the vegetation.

G. In order for revegetation to be accepted, it must meet current Forest Service standards. Reclamation will be approved (minimum timeframe of two growing seasons) when the established vegetative cover is equal to 70% of the adjacent areas. The operator's bond will not be released until the area has been successfully reclaimed.

3. Roads

A. If, upon abandonment of a well, the retention of the access road is not considered necessary for the management and multiple use of the natural resources, it will be ripped a minimum of 12 inches in depth. After ripping, water bars will be installed as stated in B.5.C. The access road and well location will be closed to vehicular travel. Construction of a barricade at the entrance to these areas may be required. If deemed necessary by the Forest Service, the location and access road will be recontoured to as near natural as possible. Reseeding of the affected area will be required.

B. If, upon abandonment of the well, the retention of the access road is considered necessary for the management and multiple use of the natural resources, then the gate will remain in place, and it is to be converted to a single Forest Service locking system.

4. Notification

A. The operator will contact the Forest Service (632-2956) and the BLM (599-8900) approximately 48 hours prior to conducting any abandonment activities.

D. Miscellaneous

1. Health, Safety, and Environmental Protection

A. The operator shall take all measures necessary to protect the health and safety of all persons affected by its activities performed in connection with the construction, operation, maintenance, or termination of the right-of-way, and shall promptly abate as completely as possible any physical or mechanical procedure, activity, event, or condition, existing or occurring at any time: (1) that is susceptible to abatement by the operator, (2) which arises out of, or could adversely affect the construction, operation, maintenance, or termination of all or any part of the oil and gas drilling and extraction operations, and (3) that causes or threatens to cause: (a) a hazard to the safety of workers or the public health or safety, or (b) serious and irreparable harm or damage to the environment (including but not limited to areas of vegetative or timber, fish or other wildlife populations, or their habitats, or any other natural resource). The operator shall immediately notify the authorized officer of all serious accidents which occur in connection with such activities.

2. Area Maintenance

A. The permitted area will be maintained to present a clean, neat, and orderly appearance. Trash, debris, unusable machinery, improvements, etc., will be disposed of currently.

3. Environmental Standards

A. The operator shall conduct all activities associated with this oil and gas drilling and extraction operation in a manner that will avoid or minimize degradation of air, land, and water quality. In the construction, operation, maintenance, and termination of this oil and gas drilling and extraction operations, the operator shall perform its activities in accordance with applicable air and water quality standards, related facility siting standards, and related plans of implementation, including but not limited to standards adopted pursuant to the Clean Air Act, as amended (42 USC 1857) and the Federal Water Pollution Control Act, as amended (33 USC 1321).

4. Water Pollution

A. No waste or byproduct shall be discharged into water if it contains any substance in concentrations which will result in harm to fish and wildlife, or to human water supplies.

B. Storage facilities for materials capable of causing water pollution, if accidentally discharged, shall be located so as to prevent any spillage into waters or channels leading into water, that would result in harm to fish and wildlife or to human water supplies.

5. Esthetics

A. The operator shall protect the scenic esthetic values of the area under this permit, and the adjacent land, as far as possible with the authorized use, during construction, operation, and maintenance of the improvements.

6. Surveys, Land Corners

A. The operator shall protect, in place, all public land survey monuments, private property corners, and Forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the operator shall see that they are reestablished or referenced in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specification of the county surveyor, or (3) the specification of the Forest Service.

B. Further, the operator shall cause such official survey records as are affected to be amended as provided by law. Nothing in this clause shall relieve the operator's liability for the willful destruction or modification of any Government survey marker as provided at 18 U.S.C. 1858.

7. Vandalism

A. The operator will take reasonable measures to prevent and discourage vandalism or disorderly conduct, and when necessary, will call in the appropriate law enforcement officer.

8. Butane and Propane Installations

A. All butane, propane, or other liquefied petroleum gas equipment shall be installed and operated in accordance with the laws and regulations of the State.

9. Pollution

A. The operator shall take reasonable precautions to prevent pollution of or deterioration of lands or waters which may result from the exercise of the privileges extended by this permit. In particular, the operator shall at all times comply with applicable local, State, and Federal requirements for pollution abatement. Failure of the operator to so comply may result in termination or suspension of this authorization.

10. Area Access

A. The operator agrees to permit the free and unrestricted access to and upon the premises at all times for all lawful and proper purposes not inconsistent with the intent of the permit or with the reasonable exercise and enjoyment by the operator of the privileges thereof.

11. Subleasing, Requirements

A. The operator, in the exercise of the privileges granted by this permit, shall require that employees, sub-lessees, contractors, subcontractors, or renters and their employees comply with all applicable conditions of this permit and that the conditions of this permit be made a part of all subleases, contracts, subcontracts, or rental agreements. This clause shall not be construed as authorizing such subleases, contracts, subcontracts, or rental agreements unless specifically authorized elsewhere in the permit.

12. Improvements

A. Prior to crossing, using, or paralleling any improvement on public lands, the operator shall contact the owner of the improvement to obtain mitigation measures to prevent damage to the improvements.

E. ADDITIONAL FOREST SERVICE CONDITIONS OF APPROVAL

APPLICABLE WHEN MARKED

- ___ 1. A ___ foot tree screen will be left on the ___ side(s) of the location.
- ___ 2. Earthen berm(s) will be placed on the _____ side(s) of the location between the reserve pit and the drainage.
- ___ 3. The _____ corner(s) of the well pad will be rounded off.
- ___ 4. The drainage shall be diverted around the _____ side of the location above/below (circle one) the cut slope, draining to the _____.
- ___ 5. Ponderosa pine timber will be charged at the current rates for pine timber.
- ___ 6. Ponderosa pine logs will be dragged off location and left lying for wildlife habitat.
- ___ 7. Pinon and juniper trees will be cut from road rights-of-way and well pad locations and distributed beside rights-of-way and well pad locations for fuelwood salvage. Care will be taken to keep trees undamaged and as dirt free as possible. Operator is responsible for disposal of all slash produced. Stump burying may be approved upon request. No burning of trees or branches is authorized.
- ___ 8. Pinon and juniper trees on controlled access roads and well pad locations will be sold to the operator for commercial fuelwood prices. Operator is responsible for the removal of all fuelwood purchased and disposal of all slash produced. Stump burying may be approved upon request. No burning of trees or branches is authorized.
- ___ 9. Due to special wildlife concerns, there will be no construction/development activity from _____ to _____.
- ___ 10. As a mitigation measure, a pond will be constructed. The pond will be constructed in a location determined by the Forest Service. The pond will be constructed to Forest Service specifications (see attached). The Forest Service will be notified prior to construction. Routine maintenance, as determined by the Forest Service, will be the operator's responsibility for the life of the well.
- ___ 11. As a mitigation measure, a wildlife guzzler will be purchased and delivered to the location. The guzzler will meet specifications provided by the Forest Service.
- ___ 12. A locked gate will be required in a location determined by the Forest Service. The gate will be constructed of 2" pipe in a design that will prohibit ATV's from driving under or around it. The gate will be painted federal standard green, and incorporate a lock box containing

enough holes for all necessary company locks plus one hole for a FS lock. Maintenance of this structure will be the operator's responsibility for the life of the well.

- ___13. The existing gate on Forest Road ___ will be in functioning condition when drilling and completion are done. The gate may remain unlocked during drilling and completion operations when necessary to accommodate heavy traffic. During periods when the gate is unlocked, a sign will be installed at the gate stating that the road is not open to motorized public travel. If unauthorized travel behind the gate becomes a problem, the gate will remain locked or an individual will be posted at the gate to regulate traffic. If there are periods of inactivity and after completion, the gate will remain locked at all times.
- ___14. The location must be resurveyed for Mexican spotted owl by a Forest Service approved person before construction may begin.
- ___15. The location must be surveyed for northern goshawk by a Forest Service approved person before construction may begin.
- ___16. Spread sandstone 4-6" thick after compaction on the portion of Forest Road ___ from _____ to _____ using the sandstone pit located at _____.
- ___17. Construction will be monitored by a qualified archeologist and a report submitted. Avoid sites as noted on the IS&A form.
- ___18. Low Profile: production equipment will be no more than 8' tall.
- ___19. _____