

DATE IN 6/5/06	SUSPENSE 6/26/06	ENGINEER MIKE STOGNER	LOGGED IN 6/5/06	TYPE NSL	APP NO. PTDSDG 1565 4421
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ABOVE THIS LINE FOR DIVISION USE ONLY

## NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



Jicarilla 151 #1F

### ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

#### Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]  
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]  
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]  
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]  
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]  
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

#### [1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication  
 X NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

#### [2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] X Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
 U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

#### [3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Richard Corcoran

Print or Type Name

*Richard Corcoran*

Signature

Land Manager

Title

5-31-06

Date

Rich.Corcoran@cdxgas.com  
 Email Address

Oil Conservation Division  
 1220 S. St. Francis Drive  
 Santa Fe, NM 87505

JUN 05 2006

RECEIVED

# ***CDX RIO, LLC***

2010 Afton Place  
Farmington, New Mexico 87401  
(505) 326-3003 – Fax (505) 325-4007

May 31, 2006

New Mexico Oil Conservation Division  
Attn: Michael E. Stogner  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

CERTIFIED MAIL

RE: ADMINISTRATIVE APPROVAL OF UNORTHODOX LOCATIONS  
JICARILLA A #4M, Section 19, T26N-R5W  
JICARILLA B #4M, Section 21, T26N-R5W  
JICARILLA APACHE 102 #13M, Section 10, T26N-R4W  
JICARILLA APACHE TRIBAL 151 #1F, Section 10, T26N-R5W  
JICARILLA APACHE TRIBAL 151 #2F, Section 10, T26N-R5W  
JICARILLA APACHE TRIBAL 151 #3G, Section 4, T26N-R5W  
JICARILLA CONTRACT 155 #19M, Section 29, T26N-R5W  
RIO ARriba COUNTY, NEW MEXICO

Dear Mr. Stogner:

CDX Rio, LLC hereby requests Administrative Approval for the following Unorthodox Locations proposed as Blanco Mesaverde/Basin Dakota commingled wells or as stand alone Dakota wells under the provisions of New Mexico Oil Conservation Division (NMOCD) Order R-10987-A, Basin Dakota pool and Order R-10987-B, Blanco Mesaverde pool.

Each of the proposed locations is a standard 320 acre gas spacing unit except for the Jicarilla Apache Tribal 151 #3G which contains 319.79 acres, and is to be located at the spot set out in the table below. The location of each proposed test was selected to optimize recovery from the Blanco Mesaverde and Basin Dakota formations. Drainage areas are elliptical in shape and have been determined from a study done on Township 26 North Ranges 4 and 5 West and are more specifically set out in the attached Geological/Engineering report. In every case the proposed locations encroach upon CDX Rio, LLC operated wells, and all except the Jicarilla A#4M have exactly the same ownership as the offending well.

Well Name & Number	Bottom Hole / (Surface) Location	Sec-Twn-Rng	Formations / Spacing
1) Jicarilla A #4M	1,780' FSL, 580' FWL	19-T26N-R5W	MVRD - W/2 DKOT - W/2
2) Jicarilla B #4M	2,260' FNL, 2,575' FEL	21-T26N-R5W	MVRD- E/2 DKOT- E/2
3) Jicarilla 102 #13M	1,970' FSL, 2,100' FEL	10-T26N-R4W	DKOT- E/2
4) Jicarilla 151 #1F	2,155' FSL, 2,490' FEL	10-T26N-R5W	DKOT- S/2
5) Jicarilla 151 #2F	445' FNL, 2,200' FWL	10-T26N-R5W	DKOT - N/2
6) Jicarilla 151 #3G	1,355' FNL, 500' FEL	4-T26N-R5W	DKOT - E/2
7) Jicarilla 155 #19M	2,380' FNL, 2,440' FEL	29-T26N-R5W	MVRD - N/2 DKOT - E/2

#### **Jicarilla A #4M**

The proposed well would be the third Basin Dakota and the first Blanco Mesaverde well in the W/2 of Section 19-T26N-R5W. The Jicarilla A #4 (API # 30-039-08062) located 1,850' FSL and 1,850' FWL of Section 19-T26N-R5W, was drilled to a total depth of 7,582', completed in the Basin Dakota formation on November 23, 1965, and has cumulatively produced 3,297,915 MCFG through February of 2006. The Jicarilla A #4E (API # 30-039-22582) located 1,550' FSL and 1,590' FEL of Section 19-T26N-R5W, was drilled to a total depth of 7,515', completed in the Basin Dakota formation on December 5, 1980, and has produced 1,206,564 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the E/2 of Section 24-T26N-R6W being the direction of encroachment. Although CDX Rio, LLC operates the Reams A#1, located 790' FNL & 1,850' FEL and the Reams A#1E, located 1,665' FSL & 1,830' FEL of Section 24, T26N-6W, and both produce from the Dakota formation, the ownership differs from the offending well. Further the Mesaverde is not producing in the E/2 of Section 24; consequently the working interest owners will be notified of this proposal.

#### **Jicarilla B #4M**

The proposed well(s) would be the third Basin Dakota and first Blanco Mesaverde well in the E/2 of Section 21-T26N-R5W. The Jicarilla B# 4 (API #30-039-82260) located 1,650' FNL and 990' FEL of Section 21-T26N-R5W, was drilled to a total depth of 7,535', completed in the Basin Dakota and Tapacito Gallup formations on June 24, 1966, and recompleted in the Tapacito Gallup formation on August 1, 1977, and has

cumulatively produced 5,865,132 MCFG through February of 2006. The Jicarilla B #4E (API #30-039-22293) located 940' FSL and 880' FEL of Section 21-T26N-R5W, was drilled to a total depth of 7,495', completed in the Basin Dakota formation on December 5, 1980, and has produced 452,155 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the W/2 of Section 21-T26N-R5W, being the direction of encroachment.

#### **Jicarilla Apache 102 #13M**

The proposed well would be the third Basin Dakota well in the E/2 of Section 10-T26N-R4W. The Jicarilla 102 #13 (API # 30-039-06611) located at 1,190' FNL and 1,450' FEL of Section 10-T26N-R5W, was drilled to a total depth of 8,035', completed in the Mesa Gallup formations on April 22, 1980, and was plugged and abandoned in November 10, 1982. The Jicarilla 102 #13E (API # 30-039-22499) located at 1,520' FSL and 1,120' FEL of Section 10-T26N-R4W, was drilled to a total depth of 7,931', completed in the Basin Dakota formation on November 9, 1980, and has cumulatively produced 1,284,602 MCFG through February of 2006. The Jicarilla 102 #13R (API # 30-039-23067) located at 1,520' FNL and 800' FEL of Section 10-T26N-R4W, was drilled to a total depth of 8,029', and produced 818,033 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the W/2 of Section 10-T26N-R4W being the directions of encroachment.

#### **Jicarilla Apache Tribal 151 #1F**

The proposed well would be the third Basin Dakota well in the S/2 of Section 10-T26N-R5W. The Jicarilla Apache Tribal 151 #1 (API #30-039-08166) located 1,180' FSL and 1,480' FWL of Section 10-T26N-R5W, was drilled to a total depth of 7,976', completed in the Basin Dakota formation on May 8, 1967, and has produced 1,193,261 MCFG through February of 2006. The Jicarilla Apache Tribal 151 #1E (API #30-039-23171) located 830' FSL and 1,120' FEL of Section 10-T26N-R5W, was drilled to a total depth of 7,940', completed in the Basin Dakota formation on August 3, 1983, and has produced 655,169 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the N/2 of Section 10-T26N-R5W, being the direction of encroachment.

#### **Jicarilla Apache Tribal 151 #2F**

The proposed well would be the third Basin Dakota in the N/2 of Section 10-T26N-R5W. The Jicarilla Apache Tribal 151 #2 (API #30-039-20087) located 1,150' FNL and 1,150' FEL of Section 10-T26N-R5W, was drilled to a total depth of 8,250', completed in the Basin Dakota formation on July 5, 1968, and has produced 1,345,477 MCFG through February of 2006. The Jicarilla Apache Tribal 151 #2E (API #30-039-23324) located 1,120' FNL and 875' FWL of Section 10-T26N-R5W, was drilled to a total depth of 8,054', completed in the Basin Dakota formation on November 26, 1983, and has produced 508,648 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the W/2 and E/2 of Section 3-T26N-R5W, being the direction of encroachment.

**Jicarilla Apache Tribal 151 #3G**

The proposed well would be the third Basin Dakota well in the E/2 of Section 4-T26N-R5W. The Jicarilla Apache Tribal 151 #3 (API # 30-039-20597) located at 1,060' FNL and 1,650' FEL of Section 4-T26N-R5W, was drilled to a total depth of 7,658', completed in the Basin Dakota formation on August 31, 1973, and has produced 934,116 MCFG through February of 2006. The Jicarilla Apache Tribal 151 #3E (API # 30-039-23323) located at 1,520' FSL and 1,850' FEL of Section 4-T26N-R5W, was drilled to a total depth of 7,993', completed in the Basin Dakota formation on December 22, 1983 and has produced 539,852 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the W/2 of Section 3-T26N-R5W being the direction of encroachment.

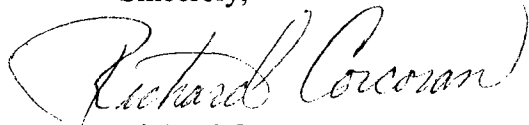
**Jicarilla Contract 155 #19M**

The proposed well would be the second Basin Dakota in the E/2 of Section 29, T26N-R5W and third Blanco Mesaverde well in the N/2 of Section 29-T26N-R5W. The Jicarilla Contract 155 #19E (API # 30-039-22345) located at 1,775' FSL and 1,840' FEL of Section 29-T26N-R5W, was drilled to a total depth of 7,345', completed in the Basin Dakota (with an E/2 spacing dedication), and Otero Chacra (with a SE/4 spacing dedication), formations on December 1, 1980, and has cumulatively produced 1,236,163 MCFG through February of 2006. The Jicarilla Contract 155 #33 (API # 30-039-23227) located at 790' FNL and 1,275' FEL of Section 29-T26N-R5W, was drilled to a total depth of 5,422', completed in the Blanco Meserve de formation on August 29, 1984, and has produced 260,529 MCFG through February of 2006. The Jicarilla Contract 155 #33A (API # 30-039-23808) located at 1,050' FNL and 1,610' FWL of Section 29-T26N-R5W, was drilled to a total depth of 5,380', completed in the Blanco Meserve de formation on October 17, 1985, and has produced 288,669 MCFG through February of 2006. CDX Rio, LLC is the operator of the wells located in the W/2 and the S/2 of Section 29-T26N-R5W being the directions of encroachment.

Attached are well location plats showing dedicated acreage (C-102), topographic plats of the area, a map showing all offsetting owners, and our Geologic/Engineering explanation of the reservoir considerations establishing the increased recovery that we expect to gain by moving the proposed wells to a non-standard location. A copy of this application is being submitted to all offset operator/owner by certified mail with a request that they furnish your office in Santa Fe a Waiver of Objection.

Your favorable consideration of this request would be appreciated.

Sincerely,



Richard Corcoran  
Land Manager

Enclosures



**To:** Mike Stogner  
**From:** Peter Kondrat, Senior Geologist and Rod Seale, Senior Petroleum Engineer  
**Subject:** Approval Request of Dakota Formation Unorthodox Infill Locations due to Reservoir Considerations  
**Location:** CDX Rio, LLC Leasehold, Jicarilla Apache Nation, San Juan Basin  
**Date:** May 31, 2006

**Application:**

CDX Rio, LLC respectfully requests the approval of the following listed unorthodox Dakota/Mesaverde Formation infill locations due to reservoir considerations.

Well Name & Number	Spot of Bottom Hole Location	Sec-Twn-Rng	Formations
1) Jicarilla A #4M	1,780' FSL, 580' FWL	19-T26N-R5W	MVRD /DKOT
2) Jicarilla B #4M	2,260' FNL, 2,575' FEL	21-T26N-R5W	MVRD/DKOT
3) Jicarilla 102 #13M	1,970' FSL, 2,100' FEL	10-T26N-R4W	DKOT
4) Jicarilla 151 #1F	2,155' FSL, 2,490' FEL	10-T26N-R5W	DKOT
5) Jicarilla 151 #2F	445' FNL, 2,200' FWL	10-T26N-R5W	DKOT
6) Jicarilla 151 #3G	1,355' FNL, 500' FEL	4-T26N-R5W	DKOT
7) Jicarilla 155 #19M	2,380' FNL, 2,440' FEL	29-T26N-R5W	MVRD /DKOT

**Summary:**

CDX Rio, LLC is continuing its Mesaverde-Dakota 80-acre increased density infill development program of its San Juan Basin Tapicito Project located in the Jicarilla Apache Nation, Rio Arriba County, New Mexico. CDX is currently permitting both standard and non-standard locations to fulfill the development program. The proposed unorthodox gas well locations are necessitated by a combination of topographic, engineering and geologic factors.

Utilizing geologic and engineering data, CDX has completed a detailed study identifying the most optimal locations for Mesaverde and Dakota Formation infill wells. These locations are defined as optimal because they ensure maximum recovery of reserves and minimize waste.

CDX has constructed various maps for the Mesaverde and Dakota Formations that depict:

- 1) Bulk volume hydrocarbon feet
- 2) Original GIP (OGIP)
- 3) Estimated Ultimate Recovery (EUR)
- 4) Remaining GIP (RGIP)
- 5) EUR Drainage Volume Ellipses that depict Producing Characteristics
- 6) Optimal Infill Development Locations



### **Exhibits**

Attached are two sets of maps for each proposed unorthodox infill location.

- 1) Land plats that show CDX's leasehold and the proposed new drill bottom-hole locations.
- 2) Dakota Formation EUR drainage volume ellipses that depict the producing characteristics of the existing wells and also the proposed unorthodox infill locations. The volume ellipses acreage was computed using bulk volume hydrocarbon feet and EUR.
  - a. Both Mesaverde and Dakota Formations have fracture-permeability anisotropy resulting in elliptical drainages. Following the area's best practices the elliptical drainages were drawn at a 3.7:1 aspect ratio and with a maximum horizontal permeability direction of N10°.
  - b. The location of the Dakota Formation drainage ellipses is the primary reason for permitting non-standard locations. Dakota Formation infill locations were selected to optimize recovery for the rock unit.

### **References**

NMOCD Case Number 12508; Order Number R-11503

NMOCD Case Number 12745; Order Number R-10987-B; 2002; To Amend the Special Rules and Regulations for the Basin-Dakota Pool to Increase Well Density and Amend the Well Location Requirements; Burlington Resources Oil and Gas Company and Conoco Incorporated; 15 pages

SPE Paper #60288; 2000; Producing Characteristics and Drainage Volume of Dakota Reservoirs, San Juan Basin; Arild Sunde, Her-Yuan Chen, Lawrence W. Teufel; 10 pages

SPE Paper #77742; 2002; An Effective Technique of Estimating Drainage Shape, Magnitude and Orientation in a Low-Permeability Gas Sand; Ryan L. Robinson and Thomas W. Engler; 8 pages

SPE Paper #39974; 1998; Drainage Efficiency in Naturally Fracture Tight Gas Sandstone Reservoirs; H. Harstad, L.W. Teufel and J.C. Lorenz; 11 pages

SPE Paper #39911; 1998; Potential for Infill Drilling in a Naturally Fractured Tight Gas Sandstone Reservoir; H. Harstad, L.W. Teufel and J.C. Lorenz; 11 pages

SPE Paper #38580; 1997; Methodology to Optimize Completions in the Mesaverde Formation, San Juan Basin, New Mexico; Brian P. Ault, Earuch F. Broacha and David L. Holcomb; 20 pages

SPE Paper #60295; 2000; Influence of Permeability Anisotropy and Reservoir Heterogeneity on Optimization of Infill Drilling in Naturally Fractured Tight-Gas Mesaverde Sandstone Reservoirs, San Juan Basin; H.K. Al-Hadrami and L.W. Teufel; 12 pages

SPE Paper #68598; 2001; Practical Methods to High-Grade Infill Opportunities Applied to the Mesaverde, Morrow and Cotton Valley Formations; J.W. Hudson, J.E. Jochen, J.P. Spivey; 11 pages

SPE Paper #21484; 1991; The Impact of Improved Technology on Potential Tight Gas Reserves in the San Juan Basin; M.R. Haas and T.E. Crist; 14 pages

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240

DISTRICT II  
1301 W. Grand Ave., Artesia, N.M. 88210

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

DISTRICT IV  
1220 South St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised June 10, 2003

Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

☐ AMENDED REPORT

### WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-039-		<sup>2</sup> Pool Code 71599	<sup>3</sup> Pool Name Basin Dakota
<sup>4</sup> Property Code 33458	<sup>5</sup> Property Name JICARILLA 151		<sup>6</sup> Well Number 1F
<sup>7</sup> OGRID No. 222374	<sup>8</sup> Operator Name CDX RIO, LLC		<sup>9</sup> Elevation 6919

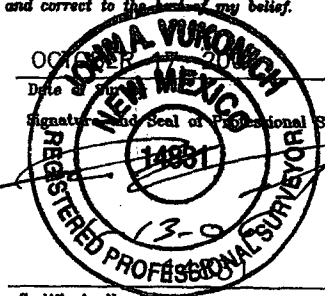
#### <sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	10	26-N	5-W		2155	SOUTH	2490	EAST	RIO ARRIBA

#### <sup>11</sup> Bottom Hole Location If Different From Surface

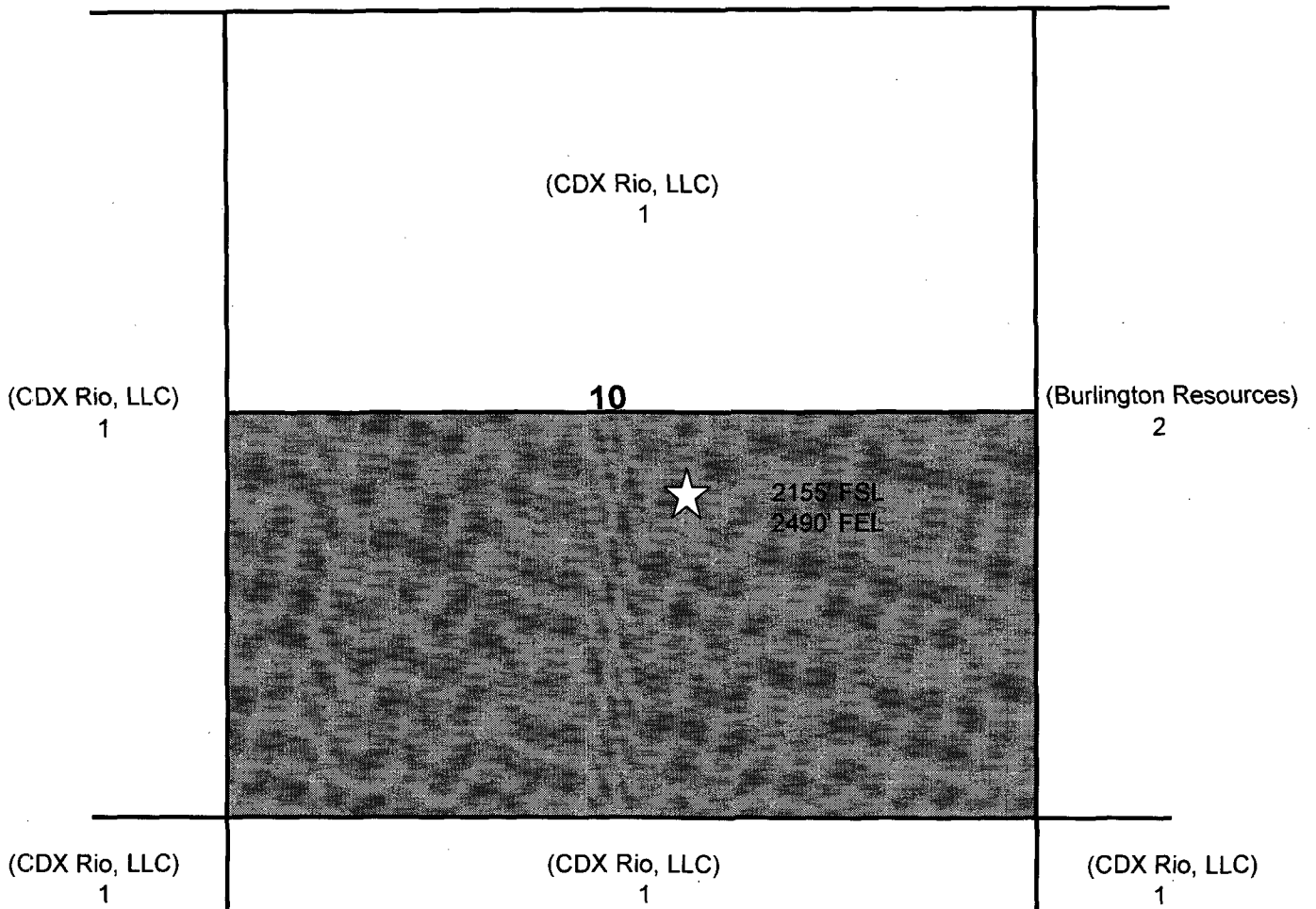
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<sup>12</sup> Dedicated Acres DK-S/320					<sup>13</sup> Joint or Infill Y		<sup>14</sup> Consolidation Code		<sup>15</sup> Order No.

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	<i>N 1/2 and S 1/2 of Sec. 10 as to the Basin Dakota are within the Jicarilla Apache Tribal 151 Lease w/ Property Code 23458; therefore, Mineral Interest is common.</i>		17	<b>OPERATOR CERTIFICATION</b> I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.  Signature Richard Corcoran  Printed Name Land Manager rich.corcoran@cdxgas.com Title and E-mail address  Date	
	<i>Standard 640-acre Section</i>		18		<b>SURVEYOR CERTIFICATION</b> 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.  Date of Survey Signature and Seal of Professional Surveyor:  Certificate Number
LAT. 36°30'00.9" N. (NAD 83) LONG. 107°20'45.2" W. (NAD 83)		2490'			
CALC'D COR. BY DBL. PORP.		N 89-32-45 W 5330.12' (C)		CALC'D COR. BY DBL. PORP.	



**CDX Rio, LLC**  
**Jicarilla 151 #1F**  
**OFFSET OPERATOR \ OWNER PLAT**  
**Dakota Formation**  
**S/2 Section 10 Township 26 North - Range 5 West**  
**Rio Arriba County, NM**



Tract	1 CDX Rio, LLC
Tract	2 Burlington Resources

# VICINITY MAP

CDX RIO, LLC

Jicarilla 151 1F

2155' FSL & 2490' FEL

Sec 10, T26N, R5W, NMPM

Rio Arriba County, New Mexico

Elevation: 6920' UGL

Scale: 1" ~ 2000'

R 5 W

Neeley Consulting Service, LLC

APACHE

INDIAN

1 Mile Radius

Existing Access Roads

J-64

Access Is Right off of  
Existing Access Road

Jicarilla 151 1F

Pipeline ROW  
Along Existing  
Enterprise Pipeline

T 26 N

J-64 To Hwy 537



# CDX RIO, LLC

2010 Afton Place  
Farmington, New Mexico 87401  
(505) 326-3003 - Fax (505) 325-4007

May 30, 2006

Certified Mail

Burlington Resources Oil & Gas Company LP  
Attn: Ben Malone  
PO Box 4289  
Farmington, NM 87499

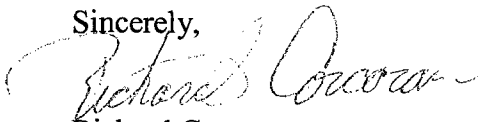
RE: ADMINISTRATIVE APPROVAL OF UNORTHODOX LOCATION  
JICARILLA APACHE TRIBAL 151 #1F-2,155' FSL & 2,490' FEL  
JICARILLA APACHE TRIBAL 151 #2F-445' FNL & 2,200' FWL  
SECTION 10-T26N-R5W  
JICARILLA A #4M-1,780' FSL & 580' FWL  
SECTION 19-T26N-R5W  
RIO ARRIBA COUNTY, NEW MEXICO

Dear Mr. Malone,

CDX Rio, LLC has filed with the New Mexico Oil Conservation Division (NMOCD), an application for the Administrative Approval of an Unorthodox location of the Jicarilla Apache Tribal 151 #1F, Jicarilla Apache Tribal 151 #2F, and Jicarilla A #4M wells. A copy of the application has been attached for your review.

Objections to this application must be sent to the NMOCD at 1220 South St. Frances Dr. in Santa Fe, New Mexico 87505, within 20 days of receipt of this application. Your cooperation in this matter is appreciated.

Sincerely,



Richard Corcoran  
Land Manager