

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION  
 - Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



Jicarilla C #4F (33461)

24-26N-5W

**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		Land Manager	8-23-05
Print or Type Name	Signature	Title	Date
		Rich.corcoran@cdxgas.com	
		e-mail Address	



CDX Gas, LLC  
2010 Afton Place  
Farmington, NM 87401  
Main: 505-326-3003  
Fax: 505-325-4007

RECEIVED

AUG 29 2005

OIL CONSERVATION  
DIVISION

August 23, 2005

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

RE: ADMINISTRATIVE APPROVAL OF UNORTHODOX LOCATIONS  
JICARILLA C #4F, Section 24, T26N-R5W  
JICARILLA A #7F, Section 17, T26N-R5W  
JICARILLA 151 #7G, Section 4, T26N-R5W  
JICARILLA 102 #14F, Section 9, T26N-R4W  
JICARILLA 102 #9F, Section 4, T26N-R4W  
JICARILLA 102 #8F, Section 3, T26N-R4W  
RIO ARRIBA COUNTY, NEW MEXICO

Dear Mr. Stogner:

CDX Rio, LLC hereby requests Administrative Approval for the following Unorthodox Locations all proposed as Blanco Mesaverde/Basin Dakota commingled wells except the Jicarilla 151 #7G which will be completed in the Dakota formation only; 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.

Well Name & Number	Bottom Hole / (Surface) Location	Sec-Twn-Rng	Formations / Spacing
1) Jicarilla C #4F	660 FSL, 2100 FWL	24-T26N-R5W	MVRD - W/2 DKOT - W/2
2) Jicarilla A #7F	660 FNL, 2055 FWL	17-T26N-R5W	MVRD- W/2 DKOT- W/2
3) Jicarilla 151 #7G	1470 FNL, 2305 FWL	4-T26N-R5W	DKOT - W/2
4) Jicarilla 102 #14F	120 FNL, 660 FWL	9-T26N-R4W	MVRD - N/2 DKOT - W/2
5) Jicarilla 102 #9F	585 FNL, 760 FEL	4-T26N-R4W	MVRD- E/2 DKOT - E/2
6) Jicarilla 102 #8F	660 FSL, 2100 FEL (430 FSL, 965 FEL)	3-T26N-R4W	MVRD- E/2 DKOT - S/2

Each of the proposed locations is a standard 320 acre gas spacing unit and each well is to be located at the spot set out above. The location of each proposed test was selected to optimize recovery from the Dakota formation. 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, except the Jicarilla 102 #9F, the proposed location encroaches on CDX Rio, LLC operated wells with the same ownership as the offending well. In addition to reservoir considerations the topography at Honolulu Mesa is very rough and the abundance of Cultural Resources made locating wells where there would not be significant overlap of existing drainage patterns unattainable.

#### **Jicarilla C #4F**

The proposed well would be the third Dakota and second Mesaverde well(s) in the W/2 of Section 24-T26N-R5W. The Jicarilla C #4 (API #30-039-08139) located 1,650' FNL and 1,650' FWL of Section 24-T26N-R5W, was drilled to a total depth of 7,680', completed in the Mesaverde and Dakota formations in August of 1966, and has cumulatively produced 2,611,071 MCFG through June of 2005. The Jicarilla C #4E (API #30-039-22298) located 790' FSL and 990' FWL of Section 24-T26N-R5W, was drilled to a total depth of 7,525', completed in the Dakota formation on March 9, 1981 and has produced 1,022,372 MCFG through June of 2005. CDX Rio, LLC is the operator of the E/2 of Section 24-T26N-R5W, being the direction of encroachment; which has the same ownership as the W/2 of said Section 24, consequently no other offsetting operators are affected.

#### **Jicarilla A #7F**

The proposed well would be the third Dakota and second Mesaverde well(s) in the W/2 of Section 17-T26N-R5W. The Jicarilla A #7 (API #30-039-08097) located 1,595' FSL and 900' FWL of Section 17-T26N-R5W, was drilled to a total depth of 7,670', completed in the Dakota formation on October 6, 1966, and has cumulatively produced 563,205 MCFG through June of 2005. The Jicarilla A #7E (API #30-039-22896) located 940' FNL and 1,000' FWL of Section 17-T26N-R5W, was drilled to a total depth of 7,650', completed in the Dakota formation on September 13, 1982 and in the Mesaverde on July 8 2002, and has produced 571,490 MCFG through June of 2005.

CDX Rio, LLC is the operator of the E/2 of Section 17-T26N-R5W, being the direction of encroachment; which has the same ownership as the W/2 of said Section 17; consequently no other offsetting operators are affected.

#### **Jicarilla 151 #7G**

The proposed well would be the third Dakota well in the W/2 of Section 4 -T26N-R5W. The Jicarilla 151 #7 (API #30-039-21675) located 790' FNL and 790' FWL of Section 4 -T26N-R5W, was drilled to a total depth of 7,610', completed in the Dakota formation on October 25, 1978, and has cumulatively produced 657,208 MCFG through June of 2005. The Jicarilla 151 #7E (API #30-039-23163) located 1,030' FNL and 1,050' FWL of Section 4 -T26N-R5W, was drilled to a total depth of 7,723', completed in the Dakota formation on August 12, 1983, and has produced 710,899 MCFG through June of 2005.

CDX Rio, LLC is the operator of the E/2 of Section 4 -T26N-R5W, being the direction of encroachment; which has the same ownership as the W/2 of said Section 4, consequently no other offsetting operators are affected.

*Note to file:*  


*Division records show that both the Jicarilla C #4 and 4E are both drilled and completed in the Basin Dk and Blanco Mv. intervals.*

**Jicarilla 102 #14F**

The proposed well would be the third Dakota and Mesaverde well(s) in its respective proration unit; consisting of the W/2 of Section 9-T26N-R4W for the Basin Dakota formation and the N/2 of Section 9 for the Blanco Mesaverde formation. The Jicarilla 102 #14 (API #30-039-06594) located 1,620' FNL and 1,730' FWL of Section 9 -T26N-R4W, was drilled to a total depth of 8,320', completed in the Dakota formation on October 4, 1963, and has cumulatively produced 1,480,920 MCFG through June of 2005. The Jicarilla 102 #14E (API #30-039-22457) located 1,110' FSL and, 800' FWL of Section 9-T26N-R4W, was drilled to a total depth of 8,254', completed in the Dakota formation on October 9, 1980, and has cumulatively produced 585,547 MCFG through June of 2005. The Jicarilla 102 #29 (API #30-039- 21581) located 1,560' FNL and 1,790' FEL of Section 9 -T26N-R4W, was drilled to a total depth of 6,250', completed in the Mesaverde formation on April 3, 1978, and has cumulatively produced 527,294 MCFG through December of 2003. The Jicarilla 102 #29A (API #30-039-22931) located 910' FNL and 1,740' FWL of Section 9 -T26N-R4W, was drilled to a total depth of 7,649', completed in the Mesaverde formation on August 2, 1982, and has cumulatively produced 692,919 MCFG through June of 2005.

CDX Rio, LLC is the operator of All of Section 4 -T26N-R4W, being the direction of encroachment; which has the same ownership as the W/2 and N/2 of Section 9, T26N-R4W, consequently no other offsetting operators are affected.

**Jicarilla 102 #9F**

The proposed well would be the third Dakota and Mesaverde well(s) in the E/2 of Section 4 -T26N-R4W. The Jicarilla 102 #9 (API #30-039-06715) located 1,600' FNL and 1,800' FEL of Section 4 -T26N-R4W, was drilled to a total depth of 8,416', completed in the Dakota formation on June 30, 1963, and has cumulatively produced 2,221,652 MCFG through June of 2005. The Jicarilla 102 #9E (API #30-039-22456) located 970' FSL and 920' FEL of Section 4 -T26N-R4W, was drilled to a total depth of 8,150', completed in the Dakota formation on October 17, 1980, and has cumulatively produced 1,817,603 MCFG through June of 2005. The Jicarilla 102 #5 (API #30-039-06718) located 1,450' FNL and 1,450' FEL of Section 4 -T26N-R4W, was drilled to a total depth of 6,448', completed in the Mesaverde formation on September 19 1957, and has cumulatively produced 744,680 MCFG through June of 2005. The Jicarilla 102 #5A (API #30-039- 23197) located 1,120' FSL and 790' FEL of Section 4 -T26N-R4W, was drilled to a total depth of 6,088', completed in the Mesaverde formation on October 5, 1983, and has cumulatively produced 444,000 MCFG through June of 2005.

Burlington Resources is the operator of All of Section 33-T27N-R4W, being the direction of encroachment.

Moving this location 75' north of the window was necessary due to Archeological consideration in addition to the reservoir conditions depicted on the attached plats.

**Jicarilla 102 #8F**

The proposed well would be the third Dakota and fourth Mesaverde well(s) in its respective proration unit; consisting of the S/2 of Section 3-T26N-R4W for the Basin Dakota formation and the E/2 of Section 3 for the Blanco Mesaverde formation. This well is at a standard location for the Dakota formation being the S/2 of section 3 but non-standard for the E/2 of Section 3 Mesaverde spacing unit. The Jicarilla 102 #8 (API #30-039-06679) located 1,790' FSL and 1,480' FWL of Section 3 -T26N-R4W, was drilled to a total depth of 8,120', completed in the Dakota formation on June 12, 1963, and has cumulatively produced 3,934,418 MCFG through June of 2005. The Jicarilla 102 #8E (API #30-039-22454) located 1,700' FSL and 940' FEL of Section 3 -T26N-R4W, was drilled to a total depth of 8,096', completed in the Mesaverde and Dakota formations on October 31, 1980, and has cumulatively produced 2,202,424 MCFG through June of 2005. The Jicarilla 102 #8A (API #30-039- 23195) located 1,120' FNL and 1,080' FEL of Section 3 -T26N-R4W, was drilled to a total depth of 6,089', completed in the

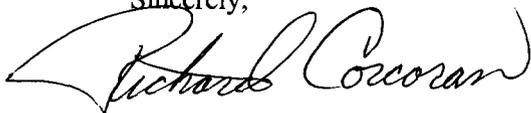
formation on September 19 1983, and has cumulatively produced 278,679 MCFG through June of 2005. The Jicarilla 102 #7 (API #30-039-06709) located 1,850' FNL and 2,390' FEL of Section 3 -T26N-R4W, was drilled to a total depth of 8,192', completed in the Mesaverde formation on December 16, 2002, and has cumulatively produced 163,675 MCFG through June of 2005.

CDX Rio, LLC is the operator of All of Section 10-T26N-R4W, being the direction of encroachment; which has the same ownership as the E/2 and S/2 of Section 3, T26N-R4W; consequently no other offsetting operators are affected.

Attached is a well location plat showing dedicated acreage (C-102), a topographic plat 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 non-standard locations.

Your favorable consideration of this request would be appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Richard Corcoran". The signature is written in black ink and is positioned above the printed name and title.

Richard Corcoran  
Land Manager



**To:** Mike Stogner  
**From:** Rod Seale, Senior Petroleum Engineer and Peter Kondrat, Senior Geologist  
**Subject:** Approval Request of Mesaverde-Dakota Formations Unorthodox Infill Locations due to Reservoir Considerations  
**Location:** CDX Rio, LLC Leasehold, Jicarilla Apache Nation, San Juan Basin  
**Date:** August 22, 2005

**Application:**

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

Well Name & Number	Spot of Bottom Hole Location	Sec-Twn-Rng	Formations
1) Jicarilla C #4F	660 FSL, 2100 FWL	24-T26N-R5W	MVRD-DKOT
2) Jicarilla A #7F	660 FNL, 2055 FWL	17-T26N-R5W	MVRD-DKOT
3) Jicarilla 151 #7G	1470 FNL, 2305 FWL	4-T26N-R5W	DKOT
4) Jicarilla 102 #14F	120 FNL, 660 FWL	9-T26N-R4W	MVRD-DKOT
5) Jicarilla 102 #9F	585 FNL, 760 FEL	4-T26N-R4W	MVRD-DKOT
6) Jicarilla 102 #8F (Directional Well)	660 FSL, 2100 FEL	3-T26N-R4W	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



CDX Gas, LLC  
2010 Afton Place  
Farmington, NM 87401  
Main: 505-326-3003  
Fax: 505-325-4007

August 23, 2005

Ms. Linda Dean  
Burlington Resources  
3401 E. 30<sup>th</sup>  
Farmington, New Mexico 87402

Re: ADMINISTRATIVE APPROVAL OF UNORTHODOX LOCATION  
JICARILLA 102 #9F  
585' FNL & 760' FWL  
SECTION 4-T26N-T4W  
RIO ARRIBA COUNTY, NEW MEXICO

Dear Ms. Dean:

CDX RIO, LLC has filed with the New Mexico Oil Conservation Division (NMOCD), an application for the Administrative Approval of an unorthodox location for its Jicarilla Apache 102 #9F. A copy of the application has been attached for your review.

If you have no objection to this unorthodox location, please sign three copies of the attached waiver, return one executed copy to the NMOCD at 1220 South Saint Frances Drive in Santa Fe, New Mexico 87505, one copy to our office and retain one copy for your files.

Your cooperation in this matter is appreciated.

Sincerely,

Richard P. Corcoran  
Land Manager

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WAIVER

Burlington Resources hereby waives objection to the above referenced Application for Unorthodox location for CDX RIO, LLC's Jicarilla 102 #9F well.

Date: \_\_\_\_\_ By: \_\_\_\_\_

New Mexico Oil Conversation Division  
Attention: Michael E. Stogner  
1220 South St. Francis Drive  
Santa Fe, New Mexico 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**

*API Number 30-039		*Pool Code 72319/71599	*Pool Name Blanco Mesaverde/Basin Dakota	
*Property Code 33461	*Property Name JICARILLA C		*Well Number 4F	
*OGRM No. 222374	*Operator Name CDX GAS, LLC		*Elevation 6588'	

<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
N	24	26-N	5-W		660	SOUTH	2100	WEST	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 MV - W/320 DK - W/320	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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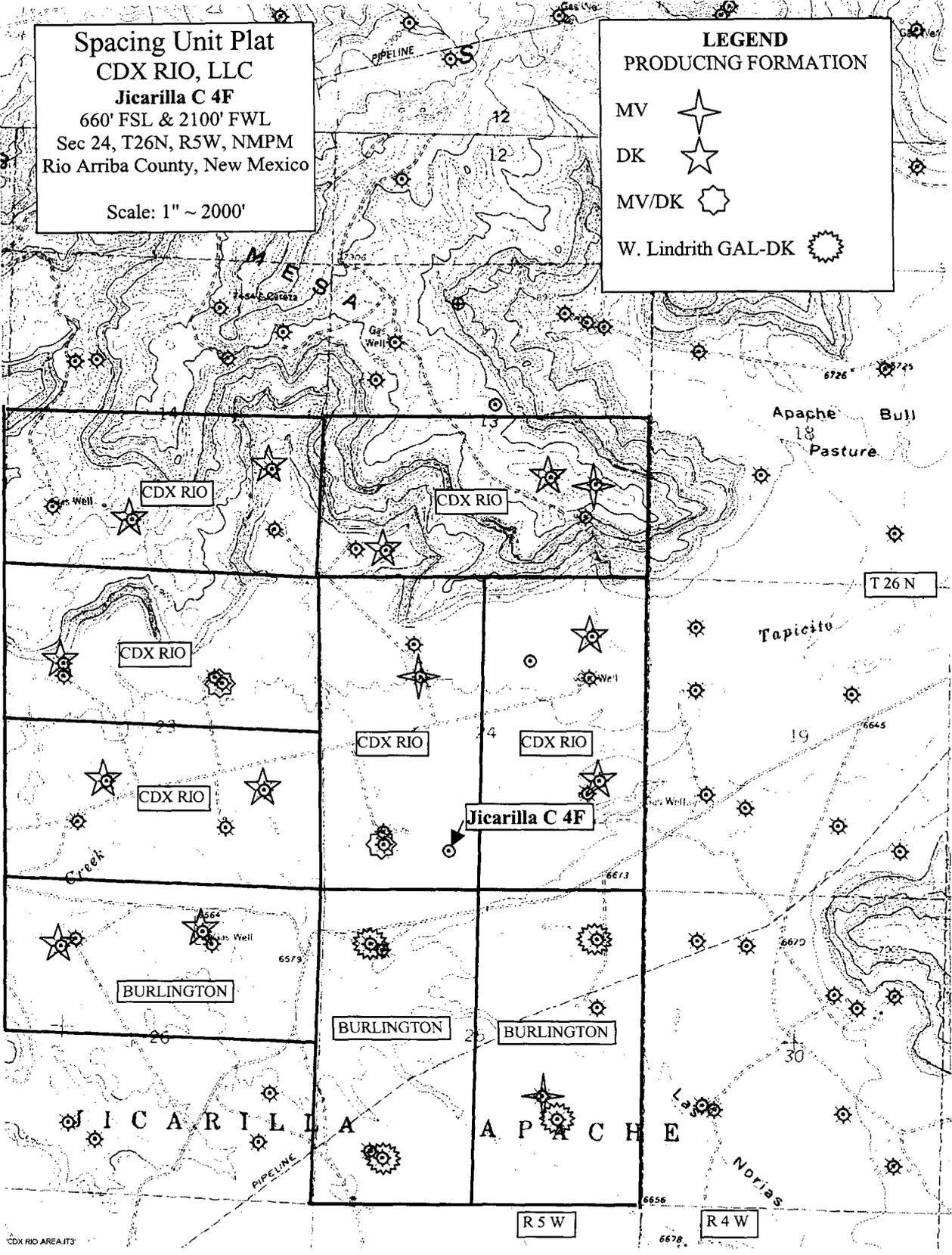
**NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION**

<p>16 CALC'D CORNER BY DBL. PROP.</p> <p>5299.73' (C)</p>	<p>24</p>	<p>Standard 640-acre Section</p>	<p>17 OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Richard Corcoran</i></p> <p>Signature Richard Corcoran Printed Name Land Manager Title 5/10/05 Date</p>
<p>N 00-22-31 W</p>	<p>S 88-51-57 E</p>	<p>5338.43' (C)</p>	<p>18 SURVEYOR CERTIFICATION</p> <p>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.</p> <p>JOHN A. VIKONICH NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR 14831 2005</p> <p>Signature and Seal of Registered Surveyor</p> <p>Certificate Number</p>

Spacing Unit Plat  
 CDX RIO, LLC  
 Jicarilla C 4F  
 660' FSL & 2100' FWL  
 Sec 24, T26N, R5W, NMPM  
 Rio Arriba County, New Mexico  
 Scale: 1" ~ 2000'

**LEGEND**  
 PRODUCING FORMATION

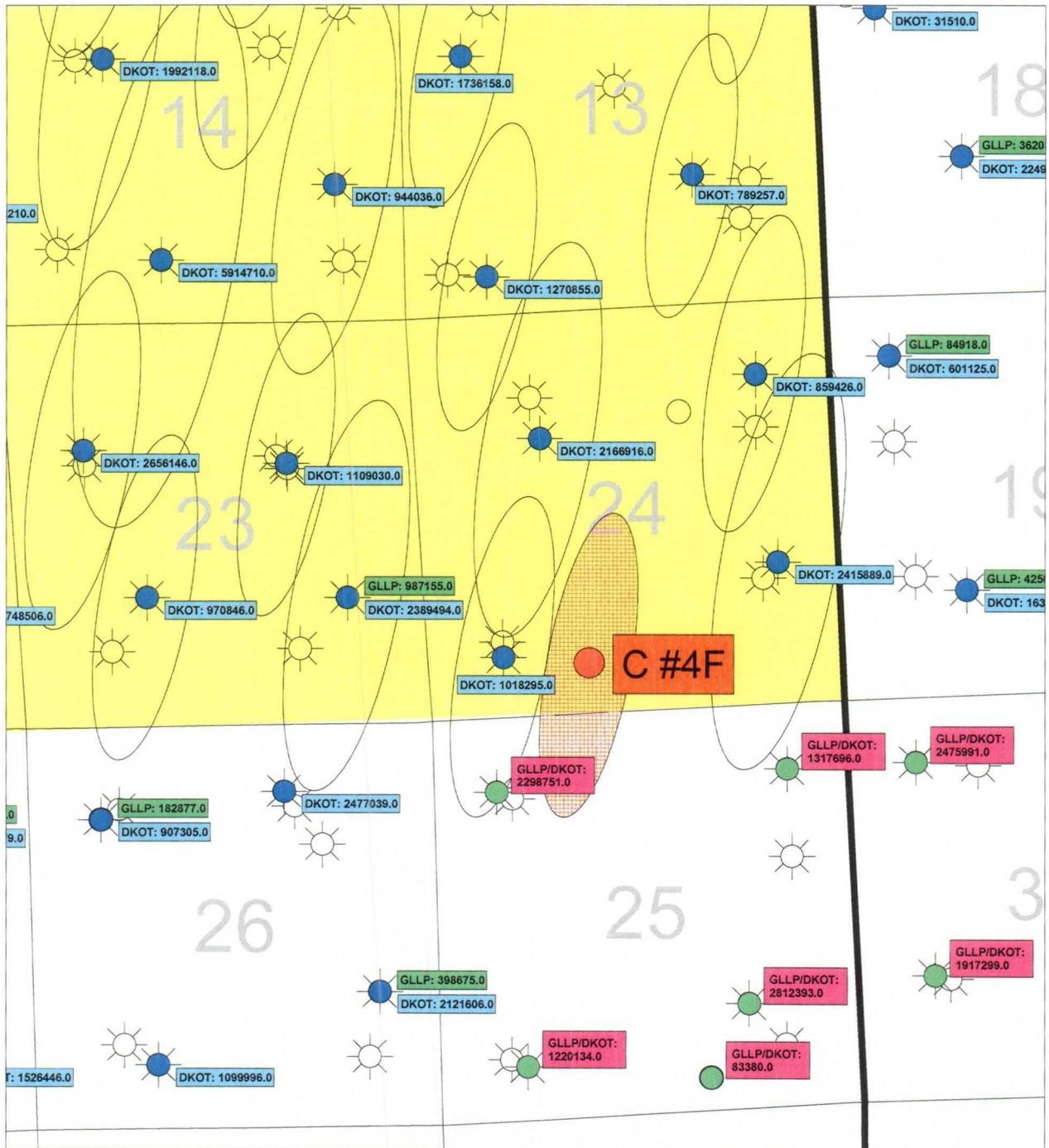
- MV 
- DK 
- MV/DK 
- W. Lindrith GAL-DK 



CDX RIO AREA.IT3



**PROPOSED JICARILLA C#4 DAKOTA FORMATION EUR DRAINAGES  
CDX GAS LLC, JICARILLA APACHE NATION**



1 inch = 2000 feet



-  DAKOTA FORMATION EXPECTED ULTIMATE RECOVERY (EUR) DRAINAGE ELLIPSE
-  PROPOSED C#4F DAKOTA FORMATION EXPECTED ULTIMATE RECOVERY (EUR) DRAINAGE ELLIPSE (80 ACRES)
-  C #4F MVRD/DKOT COMPLETION
-  GLLP/DKOT CUM GAS AS OF 1/2005
-  DKOT CUM GAS AS OF 1/2005
-  GLLP CUM GAS AS OF 1/2005
-  CDX RIO, LLC DAKOTA FORMATION LEASEHOLD