

4/10/2014 DATE IN	SUSPENSE	MAM ENGINEER	4/10/2014 LOGGED IN	DHC TYPE	PMAM1409835642 APP NO.
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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



**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:**

*Record Clean up*

[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  
☐ 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] ☐ 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.

KRISTEN D. BABCOCK  
Print or Type Name

*Kristen D. Babcock*  
Signature

REGULATORY ANALYST  
Title

4/2/2014  
Date

Kristen.Babcock@xtoenergy.com  
e-mail Address

- DHC  
- X TO ENERGY  
5380

RECEIVED COD  
2014 APR - 7 P 2:09

Well  
- WF Federal  
25  
30-045-30681  
Pool  
- Basin Fruitland  
Coal  
71629  
- Harper Hill  
Fruitland  
Sand Pictured  
CLIPPS  
78160



382 CR 3100 Aztec, NM 87410  
(505) 333-3100 FAX: (505) 333-3280

April 2, 2014

NMOCD  
Phillip Goetze  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

RE: Record Clean Up for Downhole Commingle  
Harper Hill Fruitland Sand- Pictured Cliffs (78160) & Basin Fruitland Coal (71629) Pools  
Area of T30N, R14W  
San Juan County, NM

Dear Mr. Goetze,

XTO Energy Inc. and the NMOCD Aztec District Office reviewed all of the XTO operated wells within the Harper Hill Fruitland Sand / PC Pool – located predominately within T30N, R14W, San Juan County NM – that had downhole comingling permits filed and approved through the NMOCD Aztec District Office by previous operators. These wells should have been filed and approved through the Santa Fe NMOCD, due to the fact that they are not pre-approved pools. XTO Energy Inc will be submitting these 12 wells to the Santa Fe NMOCD office for the appropriate approval. Allocations will remain as they were before.

	WELL NAME	API	DHC #	Year Approved	Operator that Submitted
1.	WF Federal 11 #1	30-045-32268	DHC-1923AZ	"2005"	Lance Oil and Gas
2.	WF Federal 25 #1	30-045-30681	DHC-2416AZ	"2007"	Lance Oil and Gas
3.	WF Federal 25 #2	30-045-30713	DHC-1209AZ	"2003"	Richardson Operating
4.	WF Federal 27 #3	30-045-30393	DHC-2138AZ	"2006"	Lance Oil and Gas
5.	WF Federal 03 #1	30-045-30202	DHC-3214AZ	"2009"	XTO Energy
6.	WF State 2 #3	30-045-30759	DHC-1896AZ	"2005"	Lance Oil and Gas
7.	Coolidge #2	30-045-31221	DHC-1076AZ	"2003"	Calpine Operating
8.	Coolidge Com #1	30-045-26184	DHC-1005AZ	"2002"	Calpine Operating
9.	Morton #2	30-045-25766	DHC-1003AZ	"2002"	Calpine Operating
10.	Morton #3	30-045-31215	DHC-1075AZ	"2003"	Calpine Operating
11.	Mr Nona 15 #1	30-045-30318	DHC-2573AZ	"2007"	Lance Oil and Gas
12.	Roosevelt #2	30-045-31222	DHC-1028AZ	"2003"	Calpine Operating

Sincerely,

Kristen D. Babcock  
Regulatory Analyst  
xc: Jackson Dean, Ft. Worth Land

District I  
1625 N. French Drive, Hobbs, NM 88240

District II  
811 S. First St., Artesia, NM 88210

District III  
1000 Rio Brazos Road, Aztec, NM 87410

District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-107A  
Revised August 1, 2011

APPLICATION TYPE  
☒ Single Well  
☐ Establish Pre-Approved Pools  
EXISTING WELLBORE  
☐ Yes ☐ No

APPLICATION FOR DOWNHOLE COMMINGLING

XTO Energy, Inc.

382 CR 3100, Aztec, NM 87410

Operator Address  
WF Federal 25 #1 UNIT LETTER H, Sec 25, T30N, R14W SAN JUAN

Lease Well No. Unit Letter-Section-Township-Range County

OGRID No. 5380 Property Code 303676 API No. 30-045-30681 Lease Type: ☒ Federal ☐ State ☐ Fee

DATA ELEMENT	UPPER ZONE	INTERMEDIATE ZONE	LOWER ZONE
Pool Name	BASIN FRUITLAND COAL		HARPER HILL FRUITLAND SAND PICTURED CLIFFS
Pool Code	(71629)		(78160)
Top and Bottom of Pay Section (Perforated or Open-Hole Interval)	1076'-1173'		1184'-1194'
Method of Production (Flowing or Artificial Lift)	ROD/PUMP		ROD/PUMP
Bottomhole Pressure (Note: Pressure data will not be required if the bottom perforation in the lower zone is within 150% of the depth of the top perforation in the upper zone)			
Oil Gravity or Gas BTU (Degree API or Gas BTU)			
Producing, Shut-In or New Zone	PRODUCING		PRODUCING
Date and Oil/Gas/Water Rates of Last Production. (Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data.)	Date: 1/1/14 Rates: O:0/ G:4125 MCF/ W:0	Date: Rates:	Date:1/1/14 Rates: O: 0/G: 510 MCF/W:0
Fixed Allocation Percentage (Note: If allocation is based upon something other than current or past production, supporting data or explanation will be required.)	Oil Gas 89 % 89 %	Oil Gas % %	Oil Gas 11 % 11 %

ADDITIONAL DATA

Are all working, royalty and overriding royalty interests identical in all commingled zones? Yes ☒ No ☐  
If not, have all working, royalty and overriding royalty interest owners been notified by certified mail? Yes ☐ No ☐

Are all produced fluids from all commingled zones compatible with each other? Yes ☒ No ☐

Will commingling decrease the value of production? Yes ☐ No ☒

If this well is on, or communitized with, state or federal lands, has either the Commissioner of Public Lands or the United States Bureau of Land Management been notified in writing of this application? Yes ☒ No ☐

NMOCD Reference Case No. applicable to this well: \_\_\_\_\_

Attachments:

- C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- Production curve for each zone for at least one year. (If not available, attach explanation.)
- For zones with no production history, estimated production rates and supporting data.
- Data to support allocation method or formula.
- Notification list of working, royalty and overriding royalty interests for uncommon interest cases.
- Any additional statements, data or documents required to support commingling.

PRE-APPROVED POOLS

If application is to establish Pre-Approved Pools, the following additional information will be required:

- List of other orders approving downhole commingling within the proposed Pre-Approved Pools
- List of all operators within the proposed Pre-Approved Pools
- Proof that all operators within the proposed Pre-Approved Pools were provided notice of this application.
- Bottomhole pressure data.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Kristen D. Babcock TITLE REGULATORY ANALYST DATE 4/2/14

TYPE OR PRINT NAME KRISTEN D. BABCOCK TELEPHONE NO. ( 505 ) 333-3206

E-MAIL ADDRESS kristen\_babcock@xtoenergy.com

Submit 3 Copies To Appropriate District  
Office  
District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Ave., Artesia, NM 88210  
District III  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM  
87505

State of New Mexico  
Energy, Minerals and Natural Resources

Form C-103  
May 27, 2004

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

WELL API NO. 30-045-30681
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. RCVD MAR8'07
7. Lease Name or Unit Agreement Name WF Federal 25 OIL CONS. DIV.
8. Well Number 1 DIST. 3
9. OGRID Number
10. Pool name or Wildcat B Fruitland Coal / Harper Hill FS PC

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

2. Name of Operator  
Lance Oil & Gas Company

3. Address of Operator  
P.O. Box 70, Kirtland, NM 87417

4. Well Location  
Unit Letter H : 2130 feet from the North line and 575 feet from the East line  
Section 25 Township 30N Range 14W NMPM County San Juan

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type \_\_\_\_\_ Depth to Groundwater \_\_\_\_\_ Distance from nearest fresh water well \_\_\_\_\_ Distance from nearest surface water \_\_\_\_\_

Pit Liner Thickness: \_\_\_\_\_ mil Below-Grade Tank: Volume \_\_\_\_\_ bbls; Construction Material \_\_\_\_\_

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ P AND A ☐  
CASING/CEMENT JOB ☐

OTHER: downhole commingle ☒

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Pursuant to approved Sundry Notice dated 09/27/06, Lance Oil & Gas Company, Inc. (Lance) pulled the bridge plug on January 2, 2007.

Current production is commingled from the Basin Fruitland Coal and the Harper Hill FS PC as follows:

Basin Fruitland Coal: 1,076' - 83' KB, 1,104' - 07' KB and 1,161' - 73' KB  
Harper Hill FS PC: 1,184' - 94' KB

*06C2416A2*

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Thomas M. Erwin TITLE Production Superintendent DATE 3/6/07

Type or print name \_\_\_\_\_ E-mail address: \_\_\_\_\_ Telephone No. \_\_\_\_\_  
**For State Use Only**

APPROVED BY: [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. 3 DATE MAR 08 2007  
Conditions of Approval (if any): \_\_\_\_\_

*3/21*

**LANCE OIL & GAS COMPANY, INC.**

**WF Federal 25 #1  
SENE Section 25, T30N - R14W  
San Juan County, New Mexico**

**Supplement to Downhole Commingling Application  
Fruitland Coal - Pictured Cliffs Sandstone Allocation Methodology**

The WF Federal 25 #1 is capable of producing from both the Basin Fruitland Coal and the Harper Hill FS PC intervals. Currently, open perforations exist in both intervals; however, a plug is in-place over the Pictured Cliffs perforations keeping production from this interval behind pipe until downhole commingling is approved. Pursuant to Order R-11363, Lance Oil and Gas seeks approval to downhole commingle the "Pre-approved pools and areas": Basin Fruitland Coal (71629) and Harper Hill FS PC (78160) in this well.

The Basin Fruitland Coal is perforated from 1,076' - 83' KB, 1,104' - 07' KB, 1,161' - 73' KB. The Harper Hill FS PC is perforated from 1,184' to 1,194' KB. Lance Oil & Gas Company, Inc. (Lance) requests downhole commingling of production from the two zones with an allocation of future production to each zone that is not evenly split. Further, Lance intends to allocate production to the Basin Fruitland Coal and the Pictured Cliffs sandstone reservoir in proportion to the recoverable reserves in-place calculated for each reservoir, rather than by a production-based method.

In requesting this approach, Lance is acknowledging the fact that coal reservoirs and sandstone reservoirs are very different in their gas storage capacity and productive performance. The reserves extracted from each reservoir horizon, therefore, will be substantially disproportionate over the expected life of the well. Lance recommends this reserve-based allocation method because production-based methods suffer from the fact that once the juxtaposed coal and sand reservoirs are frac'd, they communicate with each other and the production attributable to each is very difficult to determine accurately. In addition, because sandstone and coal reservoirs perform so differently, the proportion of production attributable to each change very significantly over the life of the well as drawdown occurs. This adds yet another level of uncertainty and complexity to production-based allocation methods.

Calculations of reserves, on the other hand, can be done with accuracy in either reservoir type, and in accord with legally-accepted standard reservoir engineering practices. Lance advocates using this approach to allocating the total recoverable resource because it is a more fair way of assessing the resource volume that will be eventually produced from either zone. The reserves method acknowledges that all of the recoverable reserves in each zone will be extracted over the life of the well, and assures that respective parties will be properly credited for those reserves. The approach also avoids problematic issues with determining relative rates of production from each reservoir - particularly after frac'ing - and the change in those rates that occurs over time. Instead it leaves in-place a fixed proportion of production from each reservoir until all reserves are recovered. This further simplifies accounting for companies and interest owners by keeping the allocation constant over time until the end of the well's productive life.

On July 13<sup>th</sup>, 2006, Lance Oil & Gas Company, Inc. presented the results of a reservoir study to the BLM and NMOCD that demonstrated how reserves for each reservoir can be determined with accuracy using this method for our wells and how an allocation by this method would work. The reserve calculation is accomplished using industry-accepted and legally-accepted engineering and geological methods for calculating gas-in-place for CBM reservoirs and for gas sand reservoirs.

For CBM reservoirs the volume of recoverable reserves is given by

$$RGIP = Rf/[1359.7*A*h*RhoB*Gc]$$

Where:

- $A$  = The drainage area of the well, which is taken as the spacing unit for the reservoir and is in this area being developed at 160 Acres.
- $h$  = Thickness of the coal using a density cutoff of 2.0 g/cc.
- $RhoB$  = Average bulk density of the coal seam.
- $Gc$  = In-situ average gas content of the coal seam(s).

For Gas Sand reservoirs, this is given by:

$$RGIP = Rf*[(43,560*A*h*(1-Sw)*PHIe)/Bg]$$

Where:

- $Rf$  = Recovery Factor, determined by the ratio of final gas formation volume factor to initial gas formation volume factor in the reservoir.
- $A$  = The drainage area of the well, which is taken as the spacing unit for the reservoir and is in this area being developed at 160 Acres.
- $h$  = Thickness of the reservoir interval over which there is sufficient gas saturation (1-Sw) for significant productivity.
- $Sw$  = The average total water saturation in the reservoir over the interval having sufficient gas saturation for significant productivity.
- $PHIe$  = Average "effective" porosity in the reservoir over the interval having sufficient gas saturation for significant productivity.

By using this method, the proposed allocation we propose for the WF Federal 25 #1 is:

Fruitland Coal	-	89.109%
Pictured Cliffs	-	10.891%

If you have any questions about the proposal, please contact Mr. Bill Lyons with Lance Oil and Gas Company, Inc, San Juan Basin Business Unit, 1099 18<sup>th</sup> Street, Suite 1200, Denver, CO 80202

Submit 3 Copies To Appropriate District Office  
District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Ave., Artesia, NM 88210  
District III  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources

Form C-103  
May 27, 2004

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

WELL API NO. 30 - 045 - 30681
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. NMNM - 0207001
7. Lease Name or Unit Agreement Name WF Federal 25
8. Well Number #1
9. OGRID Number 229938
10. Pool name or Wildcat Basin Fruitland Coal / Harper Hill FS PC

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other <input type="checkbox"/>	
2. Name of Operator Lance Oil & Gas Company, Inc.	
3. Address of Operator P. O. Box 70, Kirtland, NM 87417	
4. Well Location Unit Letter <u>H</u> : <u>2130</u> ft from the <u>North</u> line and <u>575</u> feet from the <u>East</u> line Section <u>25</u> Township <u>30N</u> Range <u>14W</u> NMPM San Juan County	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 5450'	
Pit or Below-grade Tank Application <input type="checkbox"/> or Closure <input type="checkbox"/>	
Pit type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____	
Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: Application for Downhole Commingle <input checked="" type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Lance requests approval to allocate production from the WF Federal 25 #1 well to Basin Fruitland Coal and Harper Hill Fruitland Sand Pictured Cliffs sandstone reservoirs in proportion to the recoverable reserves in-place calculated for each reservoir in accordance with legally-accepted reservoir engineering practices. Pursuant to NMOCD Rule 303C(3)(b)(iii), a copy of the application to downhole commingle has been provided to the BLM. The methodology was thoroughly reviewed with the BLM and NMOCD on Thursday afternoon, July 13, 2006. An attachment is enclosed entitled "Supplement to Downhole Commingling Application - Fruitland Coal & Pictured Cliffs Sandstone Allocation Methodology". The WF Federal 25 #1 well is perforated as follows:

Basin Fruitland Coal: 1,076' - 83' KB, 1,104' - 07' KB, 1,161' - 73' KB  
Harper Hill FS PC: 1,184' - 1,194' KB

All working, royalty and overriding royalty interests are identical in all commingled zones. The produced fluids from all commingled zones are compatible with each other and commingling will not decrease the value of production. A C102 for each zone to be commingled showing its spacing unit and acreage dedication is attached. Lance is requesting approval to allocate production based upon a split of Basin Fruitland Coal - 89.109% and Harper Hill Fruitland Sand Pictured Cliffs - 10.891%. Your timely approval would be appreciated as Lance has a rig in the area to commence pulling the bridge plug as soon as possible.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Thomas M. Erwin TITLE Production Superintendent DATE 9/27/06  
Type or print name Thomas M. Erwin, P.E. E-mail address: tom.erwin@anadarko.com Telephone No. (505) 598-5601  
For State Use Only  
APPROVED BY: [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. 8 DATE OCT 02 2006  
Conditions of Approval (if any):

$$RGIP = Rf/[1359.7*A*h*RhoB*Gc]$$

Where:

- $A$  = The drainage area of the well, which is taken as the spacing unit for the reservoir and is in this area being developed at 160 Acres.
- $h$  = Thickness of the coal using a density cutoff of 2.0 g/cc.
- $RhoB$  = Average bulk density of the coal seam.
- $Gc$  = In-situ average gas content of the coal seam(s).

For Gas Sand reservoirs, this is given by:

$$RGIP = Rf/[(43,560*A*h*(1-Sw)*PHIe)/Bg]$$

Where:

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- $h$  = Thickness of the reservoir interval over which there is sufficient gas saturation (1-Sw) for significant productivity.
- $Sw$  = The average total water saturation in the reservoir over the interval having sufficient gas saturation for significant productivity.
- $PHIe$  = Average "effective" porosity in the reservoir over the interval having sufficient gas saturation for significant productivity.

By using this method, the proposed allocation we propose for the WF Federal 25 #1 is:

<b>Fruitland Coal</b>	<b>-</b>	<b>89.109%</b>
<b>Pictured Cliffs</b>	<b>-</b>	<b>10.891%</b>

If you have any questions about the proposal, please contact Mr. Bill Lyons with Lance Oil and Gas Company, Inc, San Juan Basin Business Unit, 1099 18<sup>th</sup> Street, Suite 1200, Denver, CO 80202