

Received



## WELL COMPLETION OR RECOMPLETION REPORT FORM 62018

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 2468 (04-2010)

ND Oil & Gas  
Division

Well File No.
<b>28978</b>

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Designate Type of Completion							
<input checked="" type="checkbox"/> Oil Well		<input type="checkbox"/> EOR Well		<input type="checkbox"/> Recompletion		<input type="checkbox"/> Deepened Well	
<input type="checkbox"/> Gas Well		<input type="checkbox"/> SWD Well		<input type="checkbox"/> Water Supply Well		<input type="checkbox"/> Added Horizontal Leg	
<input type="checkbox"/> Other:						<input type="checkbox"/> Extended Horizontal Leg	
Well Name and Number <b>Wade Federal 5300 21-30 13B</b>				Spacing Unit Description <b>Sec. 29/30 T153N R100W</b>			
Operator <b>Oasis Petroleum North America</b>		Telephone Number <b>(281) 404-9591</b>		Field <b>Baker</b>			
Address <b>1001 Fannin, Suite 1500</b>				Pool <b>Bakken</b>			
City <b>Houston</b>		State <b>TX</b>	Zip Code <b>77002</b>	Permit Type <input type="checkbox"/> Wildcat <input checked="" type="checkbox"/> Development <input type="checkbox"/> Extension			

### LOCATION OF WELL

At Surface <b>1574 F N L</b>		Qtr-Qtr <b>270 F WL</b>	Section <b>LOT2</b>	Section <b>30</b>	Township <b>153 N</b>	Range <b>100 W</b>	County <b>McKenzie</b>
Spud Date <b>September 25, 2014</b>	Date TD Reached <b>November 11, 2014</b>	Drilling Contractor and Rig Number <b>Nabors B25</b>			KB Elevation (Ft) <b>1999</b>	Graded Elevation (Ft) <b>2024</b>	
Type of Electric and Other Logs Run (See Instructions) <b>MWD/GR from KOP to TD; CBL from Int. td to surface</b>							

### CASING & TUBULARS RECORD (Report all strings set in well)

Well Bore	Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	<b>9 5/8</b>	<b>0</b>	<b>6030</b>	<b>13 1/2</b>	<b>36</b>			<b>953</b>	<b>0</b>
Vertical Hole	Intermediate	<b>7</b>	<b>0</b>	<b>11000</b>	<b>8 3/4</b>	<b>29/32</b>			<b>852</b>	<b>6114</b>
Lateral1	Liner	<b>4 1/2</b>	<b>10059</b>	<b>20535</b>	<b>6</b>	<b>11.6</b>			<b>515</b>	

### PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD, Ft)		Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
			Top	Bottom						
Lateral1	<b>20560</b>	Perforations	<b>11000</b>	<b>20535</b>	<b>10118</b>		<b>03/16/2015</b>			

### PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) <b>Lateral 1- 11000' to 20535'</b>				Name of Zone (If Different from Pool Name)				
Date Well Completed (SEE INSTRUCTIONS) <b>April 22, 2015</b>		Producing Method <b>Flowing</b>		Pumping-Size & Type of Pump			Well Status (Producing or Shut-In) <b>Producing</b>	
Date of Test <b>05/01/2015</b>	Hours Tested <b>24</b>	Choke Size <b>22 /64</b>	Production for Test	Oil (Bbls) <b>874</b>	Gas (MCF) <b>787</b>	Water (Bbls) <b>1412</b>	Oil Gravity-API (Corr.) <b>42.0 °</b>	Disposition of Gas <b>Sold</b>
Flowing Tubing Pressure (PSI) <b>1100</b>	Flowing Casing Pressure (PSI) <b>2350</b>		Calculated 24-Hour Rate	Oil (Bbls) <b>874</b>	Gas (MCF) <b>787</b>	Water (Bbls) <b>1412</b>	Gas-Oil Ratio <b>900</b>	

## GEOLOGICAL MARKERS

## **PLUG BACK INFORMATION**

CORES CUT

Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

## **Drill Stem Test**

### Well Specific Stimulations

Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units				
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)					
Details 40/70 White: 999510 lbs 20/40 White: 4600820 lbs 20/40 CRC: 982740 lbs											
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units				
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)					
Details											
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units				
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)					
Details											
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units				
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)					
Details											

### ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

This supplemental report provides frac data.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address <a href="mailto:dbusch@oasispetroleum.com">dbusch@oasispetroleum.com</a>	Date 07/05/2018
Signature 	Printed Name Daniel Busch	Title Regulatory Specialist



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Received

Well File No.  
**28978**

JUL 06 2016

## ND Oil & Gas Division

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input type="checkbox"/> Notice of Intent	Approximate Start Date
<input checked="" type="checkbox"/> Report of Work Done	Date Work Completed <b>June 20, 2016</b>
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input checked="" type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input type="checkbox"/> Other	<b>Well is now on pump</b>

Well Name and Number <b>Wade Federal 5300 21-30 13B</b>				
Footages <b>1574 F N L</b>	Qtr-Qtr <b>270 F W L</b>	Section <b>LOT 2</b>	Township <b>30</b>	Range <b>153 N 100 W</b>
Field <b>Baker</b>	Pool <b>Bakken</b>	County <b>McKenzie</b>		

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address		City	State
			Zip Code

## DETAILS OF WORK

Effective 06/20/2016 the above referenced well was converted to rod pump.

End of Tubing: 2-7/8" L-80 tubing @ 9533.19'

Pump @ 9717.86'

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9436</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Jennifer Swenson</b>	
Title <b>Regulatory Specialist</b>	Date <b>July 5, 2016</b>	
Email Address <b>jswenson@oasispetroleum.com</b>		

FOR STATE USE ONLY	
<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date <b>7-28-2016</b>	
By 	
Title <b>JARED THUNE</b>	
Engineering Technician	



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
**28978**



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input type="checkbox"/> Notice of Intent	Approximate Start Date	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input checked="" type="checkbox"/> Report of Work Done	Date Work Completed <b>August 10, 2015</b>	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input checked="" type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	<b>Well is now on pump</b>

Well Name and Number  
**Wade Federal 5300 21-30 13B**

Footages	Qtr-Qtr	Section	Township	Range
1574 F N L	270 F W L	LOT 2	30	153 N 100 W
Field	Pool	County		
<b>Baker</b>	<b>Bakken</b>	<b>McKenzie</b>		

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

## DETAILS OF WORK

Effective 08/10/2015 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 10015.78'

Pump: ESP @ 9891.55'

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9436</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Jennifer Swenson</b>	
Title <b>Regulatory Specialist</b>	Date <b>October 14, 2015</b>	
Email Address <b>jswenson@oasispetroleum.com</b>		

<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date <b>10/26/2015</b>	
By 	
Title <b>TAYLOR ROTH</b>	
Engineering Technician	



## AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - Form 8

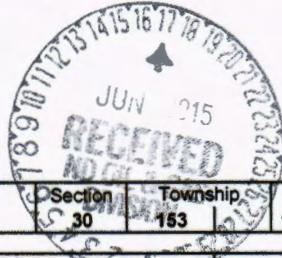
INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5698 (03-2000)

Well File No.
28978
NDIC CTB No.
To be assigned

228303

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

Well Name and Number <b>WADE FEDERAL 5300 21-30 13B</b>	Qt-Qtr <b>LOT2</b>	Section <b>30</b>	Township <b>153</b>	Range <b>100</b>	County <b>Williams</b>
--	-----------------------	----------------------	------------------------	---------------------	---------------------------



Operator <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>(281) 404-9573</b>	Field <b>BAKER</b>
--	---	-----------------------

Address <b>1001 Fannin, Suite 1500</b>	City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
---	------------------------	--------------------	--------------------------

Name of First Purchaser <b>Oasis Petroleum Marketing LLC</b>	Telephone Number <b>(281) 404-9627</b>	% Purchased <b>100%</b>	Date Effective <b>April 1, 2015</b>
Principal Place of Business <b>1001 Fannin, Suite 1500</b>	City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Field Address	City	State	Zip Code
Transporter <b>Hiland Crude, LLC</b>	Telephone Number <b>(580) 616-2058</b>	% Transported <b>75%</b>	Date Effective <b>April 1, 2015</b> <b>April 15, 2015</b>
Address <b>P.O. Box 3886</b>	City <b>Enid</b>	State <b>OK</b>	Zip Code <b>73702</b>

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
<b>Hofmann Trucking</b>	<b>28%</b>	<b>April 15, 2015</b>
Other Transporters Transporting From This Lease	% Transported	Date Effective
Comments		

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Date <b>April 1, 2015</b>
Signature 	Printed Name <b>Dina Barron</b>
	Title <b>Mktg. Contracts Administrator</b>

Above Signature Witnessed By:	Printed Name	Title
Signature 	Alexa Cardona	Marketing Assistant



FOR STATE USE ONLY	
Date Approved <b>JUL 13 2015</b>	
By 	
Title <b>Eric Roberson</b>	
Oil & Gas Production Analyst	

Industrial Commission of North Dakota  
Oil and Gas Division

Well or Facility No

**28978**

Verbal Approval To Purchase and Transport Oil

Tight Hole Yes

**OPERATOR**

Operator <b>OASIS PETROLEUM NORTH AMERICA LL</b>	Representative <b>Todd Hanson</b>	Rep Phone <b>(701) 577-1632</b>
---	--------------------------------------	------------------------------------

**WELL INFORMATION**

Well Name <b>WADE FEDERAL 5300 21-30 13B</b>	Inspector <b>Richard Dunn</b>
Well Location QQ Sec Twp Rng <b>LOT2 30 153 N 100 W</b>	County <b>MCKENZIE</b>
Footages 1574 Feet From the N Line	Field <b>BAKER</b>
270 Feet From the W Line	Pool <b>BAKKEN</b>
Date of First Production Through Permanent Wellhead	<b>4/22/2015 This Is The First Sales</b>

**PURCHASER / TRANSPORTER**

Purchaser <b>OASIS PETROLEUM MARKETING LLC</b>	Transporter <b>HOFMANN TRUCKING, LLC</b>
---	---

**TANK BATTERY**

Single Well Tank Battery Number :

**SALES INFORMATION This Is The First Sales**

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
15000 BBLS	237 BBLS	4/22/2015
BBLS	BBLS	

**DETAILS**

Must also forward Forms 6 & 8 to State prior to reaching 15000 Bbl estimate or no later than required time frame for submitting those forms.

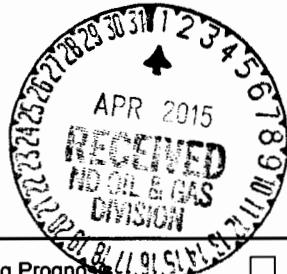
Start Date **4/22/2015**  
Date Approved **5/18/2015**  
Approved By **Richard Dunn**



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
**28978**



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>March 31, 2015</b>
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

- |   |   |
|---|---|
| <input type="checkbox"/> Drilling Prognostic  | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                |
| <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment       |
| <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon  | <input type="checkbox"/> Reclamation              |
| <input checked="" type="checkbox"/> Other     | <b>Change well status to CONFIDENTIAL</b>         |

Well Name and Number  
**Wade Federal 5300 21-30 13B**

Footages <b>1574 F N L</b>	Qtr-Qtr <b>270 F W L</b>	Section <b>LOT2</b>	Township <b>30</b>	Range <b>153 N</b>	<b>100 W</b>
Field <b>Baker</b>	Pool <b>BAKKEN</b>	County <b>McKenzie</b>			

## 24-HOUR PRODUCTION RATE

Before	After
Oil	Bbls
Water	Bbls
Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

## DETAILS OF WORK

Effective immediately, we request CONFIDENTIAL STATUS for the above referenced well.

This well has not been completed.

*OFF CONFIDENTIAL 10/01/15.*

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9436</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Jennifer Swenson</b>	
Title <b>Regulatory Specialist</b>	Date <b>March 31, 2015</b>	
Email Address <b>jswenson@oasispetroleum.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>4/08/15</b>	
By 	
Title <b>Engineering Technician</b>	



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
**28976**

**28978**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Notice of Intent

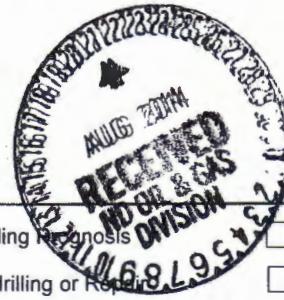
Approximate Start Date  
**September 14, 2014**

Report of Work Done

Date Work Completed

Notice of Intent to Begin a Workover Project that may Qualify  
for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.

Approximate Start Date



Drilling Program

Spill Report

Redrilling or Reopen

Shooting

Casing or Liner

Acidizing

Plug Well

Fracture Treatment

Supplemental History

Change Production Method

Temporarily Abandon

Reclamation

Other

**offsite pit**

## Well Name and Number

**Wade Federal 5300 21-30 12T**

Footages	Qtr-Qtr	Section	Township	Range	
<b>1640 F N L</b>	<b>270 F W L</b>	<b>SWNW</b>	<b>30</b>	<b>153 N</b>	<b>100 W</b>
Field	Pool	County			
<b>Baker</b>	<b>Bakken</b>	<b>McKenzie</b>			

## 24-HOUR PRODUCTION RATE

Before	After	Oil	Oil
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

## Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

## DETAILS OF WORK

Oasis Petroleum North America LLC respectfully requests to use an offsite pit for this well. The following wells will also use this pit:

Wade Federal 5300 31-30 2B - 28554  
 Wade Federal 5300 41-30 3T2 - 28555  
 Wade Federal 5300 41-30 4T - 28394  
 Wade Federal 5300 41-30 5T2 - 28556  
 Wade Federal 5300 41-30 6B - 28425 - TH  
 Wade Federal 5300 41-30 7T - 28557  
 Wade Federal 5300 41-30 8T2 - 28558 - TH  
 Wade Federal 5300 41-30 9B - 28744  
 Wade Federal 5300 21-30 13B - 28978  
 Wade Federal 5300 21-30 14T2 - 28977

Attached are the plats for the offsite pit location.

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9589</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature <i>Sonja Rolfs</i>	Printed Name <b>Sonja Rolfs</b>	
Title <b>Regulatory Analyst</b>	Date <b>August 20, 2014</b>	
Email Address <b>srolfs@oasispetroleum.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>2-9-15</b>	
By <i>WPSL</i>	
Title <i>WPSL</i>	

# OFFSITE PIT LOCATION PLAT

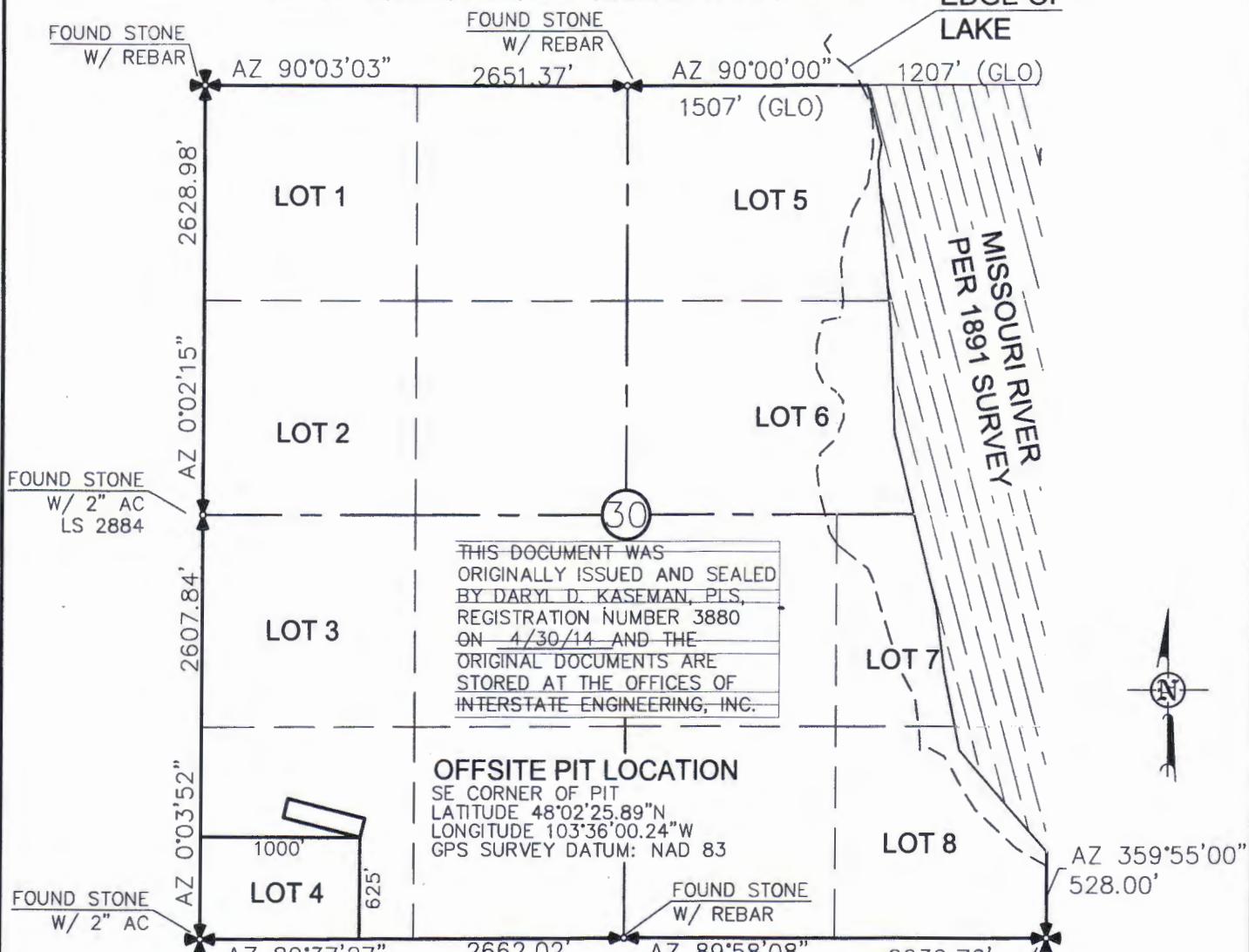
OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

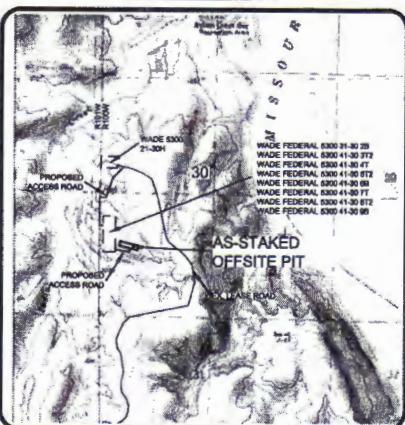
"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 41-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"  
625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE

SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

EDGE OF  
LAKE



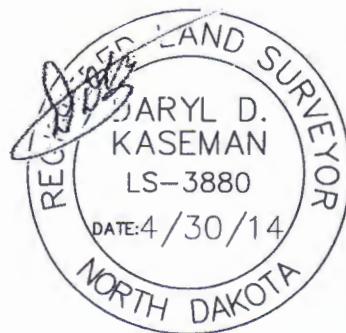
## VICINITY MAP



MONUMENT - RECOVERED  
MONUMENT - NOT RECOVERED  
STAKED ON 4/30/14  
VERTICAL CONTROL DATUM WAS BASED UPON  
CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DARYL D. KASEMAN LS-3880



© 2014, INTERSTATE ENGINEERING, INC.

1/3



SHEET NO.

Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
OFFSITE PIT LOCATION PLAT  
SECTION 30, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By:	B.H.H.	Project No.:	S13-09-381.09
Checked By:	D.D.K.	Date:	APRIL 2014

Revision No.	Date	By	Description

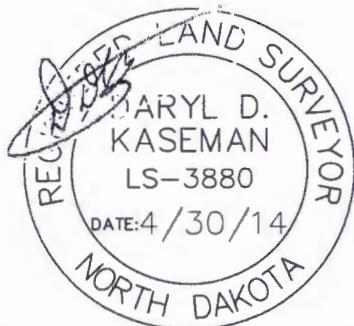
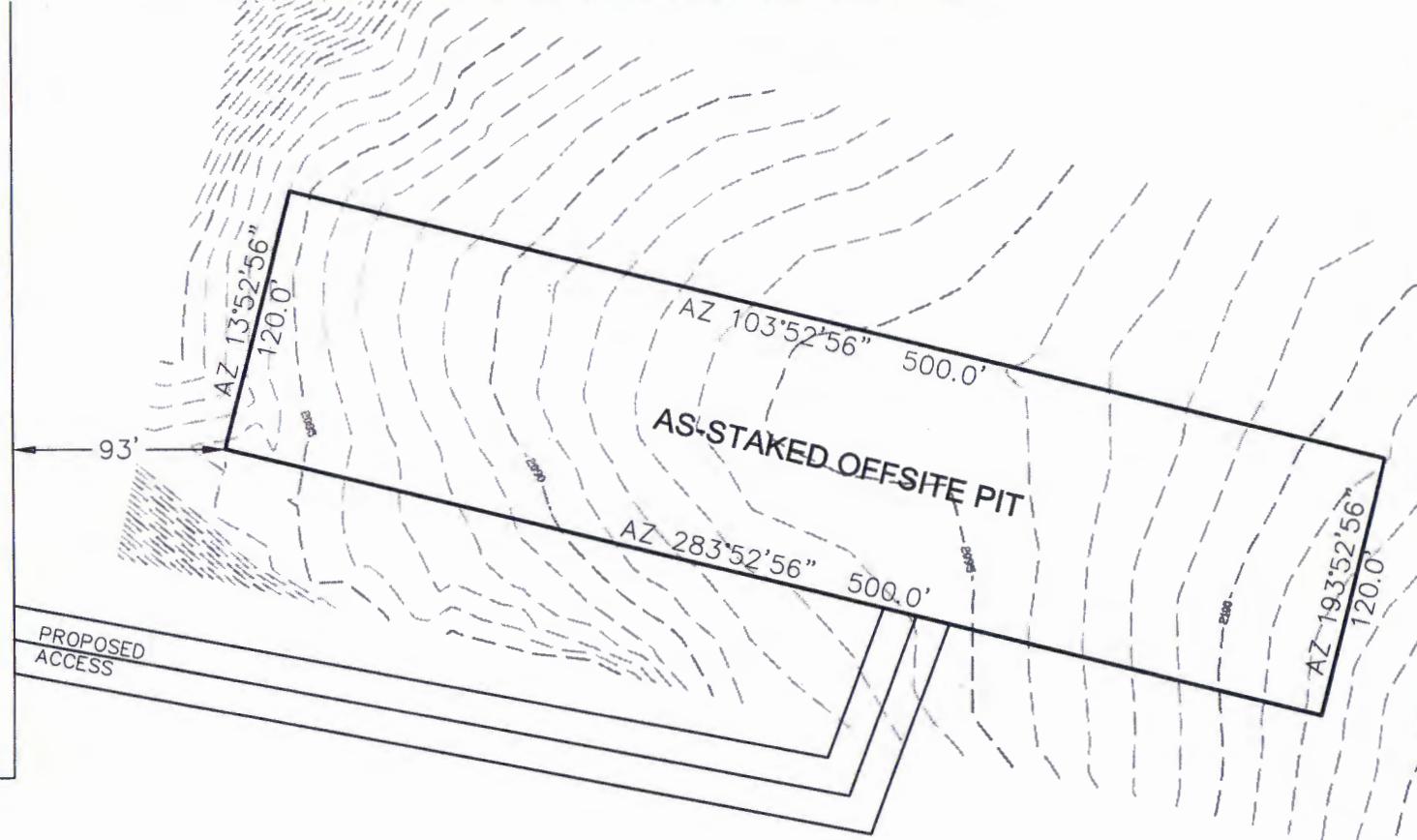
## PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 31-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"

625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WADE FEDERAL  
5300 31-30 2B  
WADE FEDERAL  
5300 41-30 3T2  
WADE FEDERAL  
5300 41-30 4T  
WADE FEDERAL  
5300 41-30 5T2  
WADE FEDERAL  
5300 41-30 6B  
WADE FEDERAL  
5300 41-30 7T  
WADE FEDERAL  
5300 41-30 8T2  
WADE FEDERAL  
5300 41-30 9B



THIS DOCUMENT WAS ORIGINALLY ISSUED  
AND SEALED BY DARYL D. KASEMAN,  
PLS, REGISTRATION NUMBER 3880 ON  
4/30/14 AND THE ORIGINAL  
DOCUMENTS ARE STORED AT THE  
OFFICES OF INTERSTATE ENGINEERING,  
INC.

NOTE: All utilities shown are preliminary only, a complete  
utilities location is recommended before construction.

0  
80  
1" = 80'

© 2014, INTERSTATE ENGINEERING, INC.



Professional Land Surveyors for You

2/3

SHEET NO.

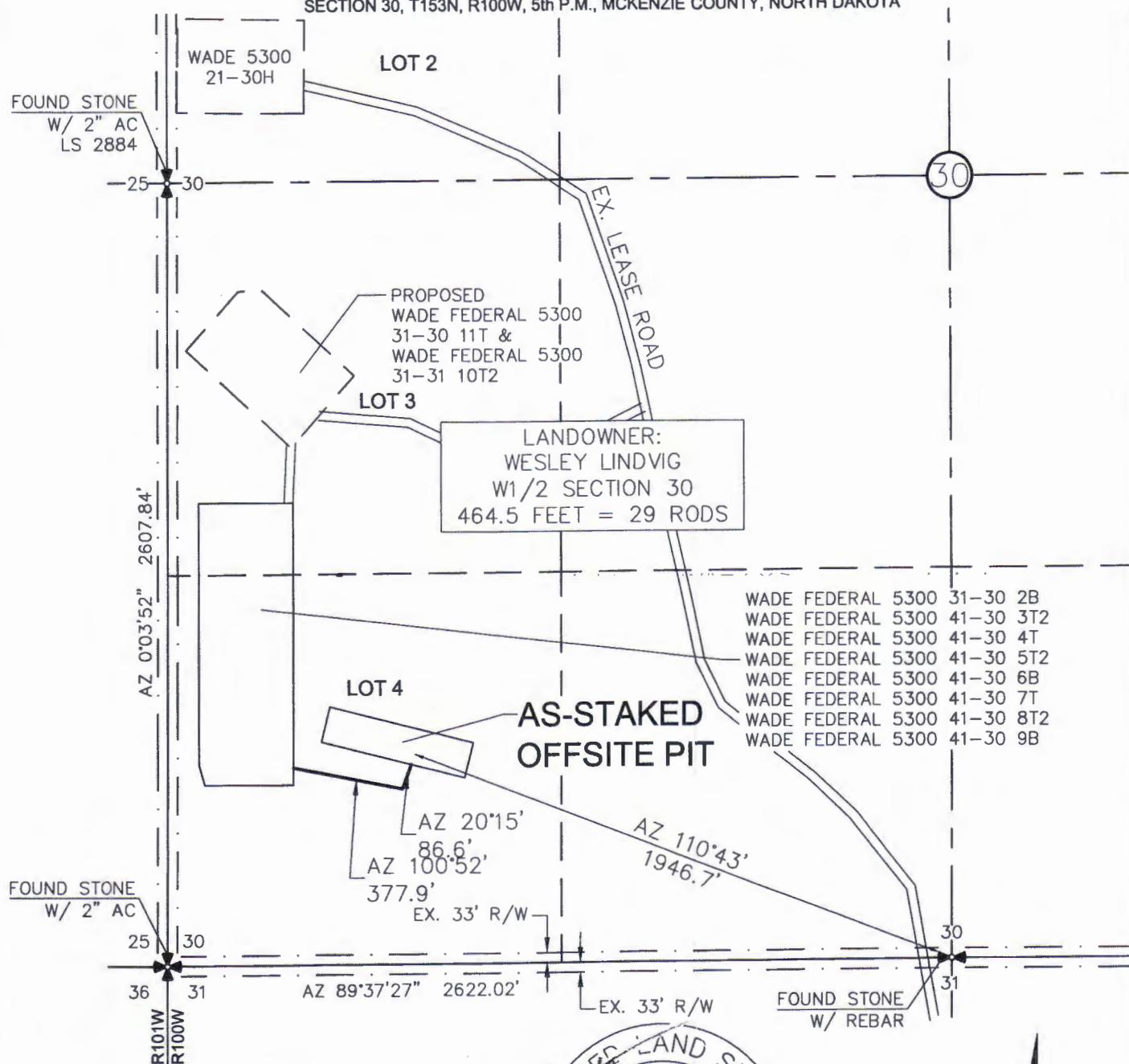
INTERSTATE ENGINEERING, Inc.	P.O. Box 648
4025 East Main Street	
Sidney, Montana 59270	
Ph. (406) 433-5617	
Fax (406) 433-5618	
www.interstateeng.com	
Other offices in Billings, North Dakota and South Dakota	

OASIS PETROLEUM NORTH AMERICA, LLC	PAD LAYOUT
SECTION 30, T153N, R100W	
MCKENZIE COUNTY, NORTH DAKOTA	
Project No.: 51309-381.09	APRIL 2014
Drawn By: B.L.H.	
Checked By: D.D.S.	

# ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 31-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"  
625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS, REGISTRATION NUMBER  
3880 ON 4/30/14 AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
THE OFFICES OF INTERSTATE  
ENGINEERING, INC.

NOTE: All utilities shown are preliminary only, a complete  
utilities location is recommended before construction.

© 2014, INTERSTATE ENGINEERING, INC.

3/3



SHEET NO.

Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph. (406) 433-5617  
Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC

ACCESS APPROACH

SECTION 30, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H.	Project No.: S13-09-381.09
Checked By: D.D.K.	Date: APRIL 2014

Revision No.	Date	By	Description

## OFF-SITE PIT AGREEMENT

In consideration of the sum of [REDACTED] paid by Oasis Petroleum North America LLC ("Oasis") the undersigned surface owners, Wesley Lindvig and Barbara Lindvig, for themselves and their heirs, successors, administrators and assigns, hereby acknowledge the receipt and sufficiency of said payment in full and complete settlement for and as a release of all claim for loss, damage or injury to the hereafter described surface property arising out of the off-site cuttings pit, in which the cuttings from the Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2 wells will be buried, located on the approximately two (2.0) acre tract of land identified on the plat attached hereto as Exhibit "A" and which is situated on the following described real property located in McKenzie County, State of North Dakota, towit:

Township 153 North, Range 100 West, 5<sup>th</sup> P.M.  
Section 30: Lots 3 & 4 a/k/a W½SW½

The undersigned knows that Oasis Petroleum North America LLC is the operator and will be drilling the Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2 wells. The undersigned further states that they are fully aware that the cuttings generated from the drilling of the Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2 wells will be buried in the pit on the above described location.

Dated this 19 day of May, 2014.

### SURFACE OWNER(S)

Wesley Lindvig  
Wesley Lindvig  
Barbara J. Lindvig  
Barbara Lindvig

for W.G.L.  
*[Signature]*

*[Signature]* Location will be fenced after construction.  
*[Signature]* Pit will be reclaimed to owners satisfaction  
by W.G.L.

ACKNOWLEDGMENT INDIVIDUAL

State of North Dakota )

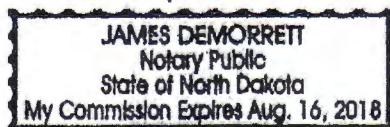
)

County of McKenzie )

BE IT REMEMBERED, That on this 19 day of May, 2014 before me, a Notary Public, in and for said County and State, personally appeared Wesley Lindvig and Barbara Lindvig, to me known to be the identical persons described in and who executed the within and foregoing instrument and acknowledged to me to that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my official signature and affixed my notarial seal, the day and year last above written.

My Commission expires:



Notary Public



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
**28978**



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>December 12, 2014</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	<b>Waiver from tubing/packer requirement</b>

Well Name and Number  
**Wade Federal 5300 21-30 13B**

Footages <b>1574 F N L</b>	Qtr-Qtr <b>270 F W L</b>	Section <b>LOT2</b>	Township <b>30</b>	Range <b>153 N</b>	<b>100 W</b>
Field <b>BAKKEN</b>	Pool <b>Bakken</b>	County <b>MCKENZIE</b>			

## 24-HOUR PRODUCTION RATE

Before	After	Oil	Oil
Water	Water	Bbls	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

## DETAILS OF WORK

Oasis Petroleum North America LLC requests a variance to NDAC 43-02-03-21 for the tubing/packer requirement: Casing, tubing, and cementing requirements during the completion period immediately following the upcoming fracture stimulation.

The following assurances apply:

1. the well is equipped with new 29# and 32# casing at surface with an API burst rating of 11,220 psi;
2. The Frac design will use a safety factor of 0.85 API burst rating to determine the maximum pressure;
3. Damage to the casing during the frac would be detected immediately by monitoring equipment;
4. The casing is exposed to significantly lower rates and pressures during flowback than during the frac job;
5. The frac fluid and formation fluids have very low corrosion and erosion rates;
6. Production equipment will be installed as soon as possible after the well ceases flowing;
7. A 300# gauge will be installed on the surface casing during the flowback period

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9436</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Jennifer Swenson</b>	
Title <b>Regulatory Assistant</b>	Date <b>December 12, 2014</b>	
Email Address <b>jswenson@oasispetroleum.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>December 22, 2014</i>	
By 	
Title <b>PETROLEUM ENGINEER</b>	



19510 Oil Center Blvd  
Houston, TX 77073  
Bus 281.443.1414  
Fax 281.443.1676

Monday, December 15, 2014

State of North Dakota

Subject: **Surveys**

Re: **Oasis**

**Wade Federal 5300 21-30 13B**  
**McKenzie, ND**

Enclosed, please find the original and one copy of the survey performed on the above-referenced well by Ryan Directional Services, Inc.. Other information required by your office is as follows:

<b>Surveyor Name</b>	<b>Surveyor Title</b>	<b>Borehole Number</b>	<b>Start Depth</b>	<b>End Depth</b>	<b>Start Date</b>	<b>End Date</b>	<b>Type of</b>	<b>TD Straight Line Projection</b>
Daniel Ogden	MWD Operator	O.H.	0'	2018'	09/24/14	09/26/14	MWD	2018'
Kyle Gilliam	MWD Operator	O.H.	2018'	20498'	10/27/14	11/11/14	MWD	20560'

If any other information is required please contact the undersigned at the letterhead address or phone number.

A handwritten signature in black ink that reads "Douglas Hudson".

**Douglas Hudson**  
Well Planner

**RYAN DIRECTIONAL SERVICES, INC.**

A NABORS COMPANY

Ryan Directional Services, Inc.  
19510 Oil Center Blvd.  
Houston, Texas 77073  
Bus: 281.443.1414  
Fax: 281.443.1676

Friday, September 26, 2014

State of North Dakota  
County of McKenzie

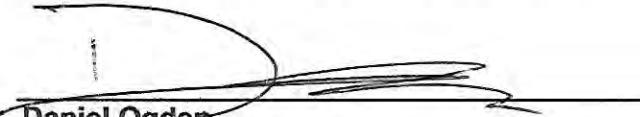
Subject: **Survey Certification Letter**

Survey Company: **Ryan Directional Services, Inc.**  
Job Number: **8112**  
Survey Job Type: **Ryan MWD**  
Customer: **Oasis Petroleum N.A. LLC**  
Well Name: **Wade Federal 5300 21-30 13B**  
Rig Name: **Nabors B-25**

Surface: **48° 2' 55.790N, 103° 36' 10.970W**  
A.P.I. No: **33-053-06131**  
Location: **McKenzie, ND**  
RKB Height: **25'**  
Distance to Bit: **52'**

<i>Surveyor Name</i>	<i>Surveyor Title</i>	<i>Borehole Number</i>	<i>Start Depth</i>	<i>End Depth</i>	<i>Start Date</i>	<i>End Date</i>	<i>Type of</i>	<i>TD Straight Line Projection</i>
Daniel Ogden	MWD Supervisor	OH	0'	2018'	09/24/14	09/26/14	MWD	2070'

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Ryan Directional Services, Inc. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to True North and obtained at the well site.



**Daniel Ogden**  
MWD Supervisor  
Ryan Directional Services, Inc.



**RYAN DIRECTIONAL SERVICES, INC.**  
A NABORS COMPANY

Ryan Directional Services, Inc.  
19510 Oil Center Blvd.  
Houston, Texas 77073  
Bus: 281.443.1414  
Fax: 281.443.1676

Tuesday, November 11, 2014

State of North Dakota  
County of McKenzie

Subject: **Survey Certification Letter**

Survey Company: Ryan Directional Services, Inc.  
Job Number: 8138  
Survey Job Type: Ryan MWD  
Customer: Oasis Petroleum N.A. LLC  
Well Name: Wade Federal 5300 21-30 13B  
Rig Name: Nabors B-25

Surface: 48 02' 55.79"N 103 36' 10.97" W  
A.P.I. No: 33-053-06130  
Location: McKenzie, ND  
RKB Height: 25'  
Distance to Bit: 62'

<i>Surveyor Name</i>	<i>Surveyor Title</i>	<i>Borehole Number</i>	<i>Start Depth</i>	<i>End Depth</i>	<i>Start Date</i>	<i>End Date</i>	<i>Type of</i>	<i>TD Straight Line Projection</i>
Kyle Gilliam	MWD Supervisor	OH	2018'	20498'	10/27/14	11/11/14	MWD	20560'

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Ryan Directional Services, Inc. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to True North and obtained at the well site.



**Kyle Gilliam**  
MWD Supervisor  
Ryan Directional Services, Inc.



## SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC  
Well Name: Wade Federal 5300 21-30 13B  
Rig #: Nabors B-25  
API #: 33-053-06131  
Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden  
Directional Drillers: RPM  
Survey Corrected To: True North  
Vertical Section Direction: 85.39  
Total Correction: 8.15  
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
<b>Tie in to Zero Depth</b>									
Tie In	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	149	0.80	334.90	60.00	149.00	-0.36	0.94	-0.44	0.54
2	244	0.90	333.80	64.00	243.98	-0.87	2.21	-1.05	0.11
3	337	1.20	346.40	64.00	336.97	-1.29	3.81	-1.60	0.41
4	399	1.20	344.80	71.00	398.96	-1.51	5.07	-1.93	0.05
5	461	1.30	346.30	73.00	460.94	-1.74	6.38	-2.26	0.17
6	524	1.20	356.60	75.00	523.93	-1.84	7.73	-2.47	0.39
7	615	1.10	342.80	77.00	614.91	-2.01	9.52	-2.79	0.32
8	707	1.10	354.90	77.00	706.89	-2.21	11.24	-3.13	0.25
9	799	0.80	29.20	77.00	798.88	-1.86	12.68	-2.89	0.68
10	891	1.30	32.80	80.00	890.86	-0.87	14.12	-2.01	0.55
11	983	1.10	27.60	84.00	982.84	0.23	15.78	-1.04	0.25
12	1075	0.90	36.30	86.00	1074.83	1.18	17.15	-0.20	0.27
13	1167	1.10	2.00	87.00	1166.82	1.75	18.61	0.26	0.67
14	1260	1.10	341.20	87.00	1259.80	1.64	20.35	0.00	0.43
15	1352	1.10	334.10	89.00	1351.78	1.10	21.98	-0.67	0.15
16	1444	1.10	322.40	89.00	1443.77	0.30	23.47	-1.59	0.24
17	1537	0.90	330.40	91.00	1536.75	-0.50	24.81	-2.50	0.26
18	1630	0.80	308.40	91.00	1629.74	-1.28	25.85	-3.37	0.36
19	1723	0.80	302.10	93.00	1722.73	-2.28	26.60	-4.43	0.09
20	1816	1.10	320.30	95.00	1815.72	-3.31	27.63	-5.55	0.45
21	1909	0.90	334.80	95.00	1908.71	-4.08	28.98	-6.43	0.35
22	2002	0.70	333.30	96.00	2001.70	-4.55	30.15	-7.00	0.22
23	2018	1.20	335.30	100.00	2017.69	-4.64	30.39	-7.11	3.13
24	2118	1.10	341.30	73.00	2117.67	-5.24	32.25	-7.85	0.16
25	2183	1.30	334.60	75.00	2182.66	-5.65	33.51	-8.37	0.38
26	2276	1.30	324.20	82.00	2275.64	-6.57	35.31	-9.44	0.25
27	2369	1.40	325.60	86.00	2368.61	-7.68	37.11	-10.70	0.11
28	2462	1.10	3.70	89.00	2461.59	-8.12	38.94	-11.28	0.93
29	2556	1.10	3.60	91.00	2555.57	-7.86	40.74	-11.17	0.00
30	2649	1.10	327.00	95.00	2648.56	-8.16	42.38	-11.60	0.74
31	2742	0.90	339.90	96.00	2741.54	-8.78	43.81	-12.34	0.32
32	2835	0.60	125.30	100.00	2834.54	-8.60	44.22	-12.19	1.54
33	2929	1.10	150.60	104.00	2928.53	-7.84	43.15	-11.35	0.65
34	3022	0.90	154.80	105.00	3021.51	-7.21	41.71	-10.60	0.23
35	3115	0.90	170.80	107.00	3114.50	-6.89	40.32	-10.17	0.27
36	3208	1.10	154.70	111.00	3207.49	-6.52	38.80	-9.67	0.37
37	3302	1.50	168.10	113.00	3301.46	-6.05	36.78	-9.03	0.53
38	3395	0.50	72.60	116.00	3394.45	-5.50	35.71	-8.39	1.75
39	3488	0.80	43.70	118.00	3487.45	-4.61	36.30	-7.56	0.47
40	3581	0.80	45.30	120.00	3580.44	-3.63	37.22	-6.65	0.02
41	3674	0.70	37.30	122.00	3673.43	-2.76	38.13	-5.84	0.16
42	3768	0.80	28.60	123.00	3767.42	-2.01	39.17	-5.18	0.16
43	3861	0.70	31.90	125.00	3860.41	-1.32	40.22	-4.57	0.12
44	3954	0.50	23.40	127.00	3953.41	-0.79	41.07	-4.11	0.23
45	4048	0.70	11.50	129.00	4047.40	-0.44	42.01	-3.83	0.25
46	4141	0.70	25.30	131.00	4140.40	0.00	43.08	-3.47	0.18
47	4234	0.20	64.80	131.00	4233.39	0.44	43.66	-3.08	0.60
48	4327	0.10	61.10	132.00	4326.39	0.66	43.77	-2.87	0.11
49	4420	0.10	313.70	134.00	4419.39	0.68	43.87	-2.85	0.17
50	4513	0.40	250.20	136.00	4512.39	0.31	43.81	-3.22	0.39
51	4607	0.40	239.10	140.00	4606.39	-0.30	43.53	-3.81	0.08
52	4700	0.60	219.40	140.00	4699.39	-0.93	42.99	-4.40	0.28
53	4793	0.70	224.40	141.00	4792.38	-1.69	42.21	-5.10	0.12
54	4886	0.50	217.10	141.00	4885.38	-2.39	41.48	-5.74	0.23
55	4979	0.70	218.40	143.00	4978.37	-3.05	40.71	-6.34	0.22
56	5072	1.20	193.80	145.00	5071.36	-3.74	39.32	-6.93	0.68
57	5165	1.40	192.90	147.00	5164.33	-4.39	37.27	-7.41	0.22
58	5258	0.60	182.40	147.00	5257.32	-4.79	35.67	-7.69	0.88
59	5351	0.50	158.90	150.00	5350.31	-4.74	34.81	-7.56	0.26
60	5444	0.70	160.60	152.00	5443.31	-4.48	33.89	-7.23	0.22



### SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC  
Well Name: Wade Federal 5300 21-30 13B  
Rig #: Nabors B-25  
API #: 33-053-06131  
Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden  
Directional Drillers: RPM  
Survey Corrected To: True North  
Vertical Section Direction: 85.39  
Total Correction: 8.15  
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
61	5537	1.10	161.20	154.00	5536.30	-4.11	32.51	-6.75	0.43
62	5630	1.80	161.80	158.00	5629.27	-3.55	30.28	-6.01	0.75
63	5723	1.20	154.00	154.00	5722.24	-2.85	28.02	-5.12	0.68
64	5815	1.20	150.40	158.00	5814.22	-2.10	26.31	-4.22	0.08
65	5909	1.20	144.80	159.00	5908.19	-1.18	24.65	-3.17	0.12
66	6002	1.50	162.80	161.00	6001.17	-0.42	22.70	-2.25	0.55
67	6090	0.70	216.90	122.00	6089.15	-0.52	21.16	-2.23	1.40
68	6181	0.60	241.20	123.00	6180.15	-1.33	20.49	-2.98	0.32
69	6274	0.90	60.40	134.00	6273.15	-1.11	20.62	-2.77	1.61
70	6368	1.00	53.90	140.00	6367.13	0.26	21.47	-1.47	0.16
71	6461	0.80	46.10	143.00	6460.12	1.45	22.39	-0.35	0.25
72	6554	0.70	49.60	149.00	6553.11	2.42	23.21	0.55	0.12
73	6647	0.50	32.90	152.00	6646.11	3.13	23.92	1.21	0.28
74	6740	0.60	37.90	156.00	6739.10	3.70	24.65	1.73	0.12
75	6833	0.20	4.80	159.00	6832.10	4.06	25.19	2.04	0.48
76	6926	0.00	288.30	163.00	6925.10	4.08	25.35	2.05	0.22
77	7019	1.40	3.50	165.00	7018.09	4.24	26.49	2.12	1.51
78	7112	1.80	12.50	170.00	7111.06	4.83	29.05	2.51	0.51
79	7205	1.70	7.40	172.00	7204.01	5.55	31.84	3.00	0.20
80	7298	1.60	3.30	172.00	7296.97	6.02	34.51	3.25	0.17
81	7391	1.10	11.60	174.00	7389.95	6.44	36.68	3.51	0.58
82	7484	1.00	12.30	176.00	7482.93	6.93	38.34	3.86	0.11
83	7578	0.80	10.30	177.00	7576.92	7.34	39.79	4.15	0.22
84	7671	0.50	357.10	179.00	7669.91	7.52	40.83	4.25	0.36
85	7764	0.40	32.50	181.00	7762.91	7.72	41.51	4.40	0.31
86	7857	0.30	284.10	183.00	7855.91	7.69	41.85	4.34	0.61
87	7951	0.30	243.80	185.00	7949.91	7.23	41.80	3.88	0.22
88	8044	0.50	221.90	185.00	8042.91	6.71	41.39	3.39	0.27
89	8137	0.40	172.20	188.00	8135.90	6.43	40.76	3.16	0.42
90	8230	0.20	225.20	188.00	8228.90	6.32	40.33	3.09	0.35
91	8324	0.30	217.40	192.00	8322.90	6.03	40.02	2.83	0.11
92	8417	0.20	223.30	195.00	8415.90	5.75	39.71	2.57	0.11
93	8510	0.10	290.00	197.00	8508.90	5.56	39.62	2.38	0.20
94	8603	0.10	343.50	199.00	8601.90	5.47	39.72	2.28	0.10
95	8696	0.40	217.90	201.00	8694.90	5.23	39.54	2.06	0.50
96	8790	0.30	257.80	203.00	8788.90	4.76	39.23	1.62	0.27
97	8883	0.50	260.70	203.00	8881.90	4.12	39.12	0.98	0.22
98	8976	0.30	280.40	203.00	8974.89	3.48	39.09	0.34	0.26
99	9069	0.40	280.90	201.00	9067.89	2.93	39.20	-0.22	0.11
100	9163	0.20	302.20	204.00	9161.89	2.48	39.35	-0.68	0.24
101	9256	0.50	305.30	203.00	9254.89	2.04	39.67	-1.15	0.32
102	9349	0.40	290.50	203.00	9347.89	1.44	40.02	-1.78	0.16
103	9442	0.40	278.40	204.00	9440.88	0.83	40.18	-2.41	0.09
104	9535	0.40	267.30	204.00	9533.88	0.19	40.21	-3.06	0.08
105	9629	0.40	312.90	203.00	9627.88	-0.36	40.42	-3.62	0.33
106	9722	0.50	278.70	203.00	9720.88	-0.98	40.70	-4.26	0.30
107	9815	0.40	263.50	204.00	9813.87	-1.70	40.73	-4.99	0.17
108	9908	0.40	265.70	204.00	9906.87	-2.35	40.66	-5.63	0.02
109	10001	0.40	272.00	206.00	9999.87	-2.99	40.65	-6.28	0.05
110	10063	0.40	301.50	208.00	10061.87	-3.38	40.77	-6.68	0.33
111	10095	0.40	312.70	188.00	10093.87	-3.55	40.91	-6.86	0.24
112	10126	2.20	44.40	192.00	10124.86	-3.17	41.40	-6.52	7.25
113	10157	6.10	53.60	195.00	10155.77	-1.32	42.81	-4.78	12.72
114	10188	10.20	56.10	197.00	10186.45	2.47	45.32	-1.17	13.27
115	10220	13.90	56.30	199.00	10217.74	8.30	49.03	4.38	11.56
116	10250	14.90	55.30	201.00	10246.80	14.79	53.23	10.55	3.43
117	10281	16.20	54.60	201.00	10276.66	21.95	58.00	17.35	4.24
118	10312	19.90	54.60	204.00	10306.13	30.20	63.56	25.18	11.94
119	10343	23.50	55.60	203.00	10334.93	40.10	70.11	34.58	11.67
120	10374	27.60	56.40	203.00	10362.89	51.75	77.58	45.67	13.27



### SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC  
Well Name: Wade Federal 5300 21-30 13B  
Rig #: Nabors B-25  
API #: 33-053-06131  
Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden  
Directional Drillers: RPM  
Survey Corrected To: True North  
Vertical Section Direction: 85.39  
Total Correction: 8.15  
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
121	10405	31.70	57.70	203.00	10389.83	65.25	85.91	58.54	13.39
122	10436	35.30	58.20	203.00	10415.68	80.44	94.99	73.04	11.65
123	10468	39.00	56.80	206.00	10441.18	97.51	105.38	89.33	11.86
124	10499	43.00	57.20	206.00	10464.57	115.40	116.45	106.38	12.93
125	10530	46.50	56.40	206.00	10486.58	134.56	128.40	124.64	11.44
126	10561	47.80	52.40	204.00	10507.67	154.03	141.63	143.11	10.35
127	10592	51.00	51.60	204.00	10527.84	173.67	156.13	161.65	10.51
128	10623	54.70	52.50	204.00	10546.56	194.32	171.31	181.13	12.16
129	10654	58.10	55.30	204.00	10563.71	216.33	186.51	202.00	13.30
130	10685	62.20	57.50	204.00	10579.14	239.85	201.38	224.39	14.59
131	10716	66.50	58.20	206.00	10592.56	264.62	216.24	248.05	14.02
132	10747	69.10	58.20	206.00	10604.27	290.15	231.37	272.44	8.39
133	10778	69.20	58.60	206.00	10615.30	315.97	246.55	297.11	1.25
134	10809	70.10	58.50	206.00	10626.08	341.90	261.71	321.91	2.92
135	10840	73.50	57.90	206.00	10635.76	368.09	277.23	346.93	11.12
136	10871	76.00	57.10	208.00	10643.92	394.52	293.30	372.15	8.44
137	10903	78.20	56.90	208.00	10651.06	421.96	310.29	398.31	6.90
138	10934	82.30	57.00	208.00	10656.31	448.82	326.94	423.91	13.23
139	10965	86.90	57.40	210.00	10659.23	476.01	343.66	449.85	14.89
140	10990	89.50	57.20	212.00	10660.01	498.06	357.16	470.87	10.43
141	11051	89.90	56.00	221.00	10660.33	551.52	390.73	521.80	2.07
142	11082	90.30	56.00	217.00	10660.28	578.53	408.07	547.50	1.29
143	11112	90.20	56.30	219.00	10660.15	604.70	424.78	572.41	1.05
144	11143	89.70	57.50	221.00	10660.17	631.95	441.71	598.38	4.19
145	11174	89.50	57.30	217.00	10660.39	659.32	458.41	624.50	0.91
146	11205	89.40	57.90	221.00	10660.69	686.74	475.02	650.67	1.96
147	11236	88.50	59.60	221.00	10661.26	714.45	491.10	677.17	6.20
148	11267	88.70	59.70	219.00	10662.01	742.36	506.76	703.91	0.72
149	11298	89.30	60.50	221.00	10662.55	770.39	522.21	730.78	3.23
150	11329	90.00	62.40	222.00	10662.74	798.72	537.02	758.01	6.53
151	11360	90.00	63.10	219.00	10662.74	827.33	551.22	785.57	2.26
152	11391	90.20	63.60	222.00	10662.69	856.06	565.12	813.27	1.74
153	11421	89.60	65.30	224.00	10662.74	884.08	578.06	840.34	6.01
154	11452	89.80	65.80	221.00	10662.90	913.24	590.89	868.56	1.74
155	11483	89.80	65.90	224.00	10663.01	942.45	603.57	896.85	0.32
156	11514	88.60	68.00	226.00	10663.44	971.86	615.71	925.37	7.80
157	11545	88.70	67.90	222.00	10664.18	1001.42	627.34	954.09	0.46
158	11576	88.80	68.50	224.00	10664.85	1031.03	638.85	982.87	1.96
159	11607	88.60	70.60	226.00	10665.55	1060.85	649.68	1011.90	6.80
160	11638	88.70	70.60	224.00	10666.29	1090.81	659.97	1041.14	0.32
161	11669	88.40	71.00	226.00	10667.07	1120.80	670.17	1070.40	1.61
162	11701	87.80	72.90	230.00	10668.13	1151.91	680.07	1100.81	6.22
163	11732	88.00	72.70	226.00	10669.27	1182.14	689.24	1130.40	0.91
164	11762	88.40	73.50	228.00	10670.21	1211.44	697.95	1159.09	2.98
165	11793	88.70	75.10	230.00	10670.99	1241.85	706.34	1188.92	5.25
166	11824	88.80	75.70	226.00	10671.67	1272.37	714.15	1218.92	1.96
167	11855	89.30	76.40	230.00	10672.18	1302.96	721.62	1249.00	2.77
168	11886	89.20	78.00	231.00	10672.59	1333.64	728.49	1279.22	5.17
169	11916	89.10	77.90	230.00	10673.03	1363.38	734.75	1308.56	0.47
170	11947	89.00	78.80	231.00	10673.55	1394.14	741.01	1338.92	2.92
171	11978	88.80	79.60	233.00	10674.14	1424.96	746.82	1369.36	2.66
172	12009	89.10	79.90	235.00	10674.71	1455.80	752.33	1399.86	1.37
173	12040	89.50	79.90	235.00	10675.09	1486.66	757.77	1430.38	1.29
174	12071	89.70	79.50	237.00	10675.31	1517.50	763.31	1460.88	1.44
175	12101	89.60	79.60	233.00	10675.49	1547.35	768.75	1490.38	0.47
176	12133	89.30	80.20	235.00	10675.80	1579.20	774.37	1521.88	2.10
177	12164	88.40	81.10	237.00	10676.42	1610.08	779.40	1552.46	4.11
178	12194	88.90	80.50	233.00	10677.13	1639.98	784.20	1582.07	2.60
179	12225	89.10	81.60	235.00	10677.67	1670.89	789.02	1612.69	3.61
180	12256	87.90	82.90	237.00	10678.48	1701.83	793.20	1643.39	5.71



### SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC  
Well Name: Wade Federal 5300 21-30 13B  
Rig #: Nabors B-25  
API #: 33-053-06131  
Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden  
Directional Drillers: RPM  
Survey Corrected To: True North  
Vertical Section Direction: 85.39  
Total Correction: 8.15  
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
181	12286	87.80	82.80	233.00	10679.60	1731.78	796.93	1673.14	0.47
182	12318	87.90	83.50	235.00	10680.80	1763.73	800.74	1704.89	2.21
183	12349	87.40	85.70	237.00	10682.08	1794.70	803.66	1735.72	7.27
184	12380	87.10	86.10	235.00	10683.56	1825.66	805.87	1766.61	1.61
185	12411	87.40	86.40	237.00	10685.05	1856.62	807.90	1797.50	1.37
186	12441	88.80	87.30	239.00	10686.05	1886.59	809.54	1827.44	5.55
187	12473	88.80	86.90	237.00	10686.72	1918.57	811.16	1859.39	1.25
188	12504	88.70	88.10	237.00	10687.39	1949.54	812.51	1890.36	3.88
189	12536	89.00	89.70	239.00	10688.03	1981.48	813.13	1922.34	5.09
190	12631	88.80	89.40	242.00	10689.86	2076.21	813.87	2017.32	0.38
191	12725	90.90	89.90	244.00	10690.10	2169.94	814.45	2111.31	2.30
192	12819	89.70	89.10	244.00	10689.61	2263.70	815.27	2205.31	1.53
193	12913	90.10	89.40	244.00	10689.78	2357.48	816.50	2299.30	0.53
194	13007	90.80	90.50	242.00	10689.04	2451.18	816.58	2393.29	1.39
195	13101	89.70	90.10	248.00	10688.63	2544.83	816.09	2487.29	1.25
196	13195	87.20	91.30	249.00	10691.17	2638.39	814.94	2581.24	2.95
197	13288	87.20	91.90	249.00	10695.71	2730.73	812.35	2674.09	0.64
198	13382	86.80	92.00	248.00	10700.63	2823.99	809.15	2767.91	0.44
199	13476	88.30	91.00	251.00	10704.65	2917.36	806.70	2861.79	1.92
200	13570	88.40	90.50	251.00	10707.36	3010.91	805.47	2955.74	0.54
201	13663	89.00	89.90	255.00	10709.47	3103.56	805.14	3048.71	0.91
202	13757	89.80	89.10	255.00	10710.45	3197.31	805.96	3142.70	1.20
203	13851	90.30	88.50	257.00	10710.37	3291.15	807.93	3236.68	0.83
204	13945	90.10	90.00	255.00	10710.04	3384.93	809.16	3330.67	1.61
205	14039	90.20	90.00	255.00	10709.80	3478.63	809.16	3424.67	0.11
206	14134	89.30	89.30	257.00	10710.21	3573.36	809.74	3519.67	1.20
207	14229	89.50	89.30	258.00	10711.20	3668.13	810.90	3614.65	0.21
208	14323	90.60	89.00	258.00	10711.12	3761.93	812.30	3708.64	1.21
209	14418	90.20	88.90	260.00	10710.46	3856.74	814.04	3803.62	0.43
210	14513	86.20	88.80	257.00	10713.44	3951.51	815.94	3898.54	4.21
211	14608	88.00	89.70	258.00	10718.25	4046.16	817.18	3993.40	2.12
212	14703	89.00	90.90	258.00	10720.74	4140.78	816.69	4088.37	1.64
213	14797	89.70	90.00	260.00	10721.80	4234.41	815.95	4182.36	1.21
214	14892	91.40	90.20	258.00	10720.89	4329.08	815.78	4277.35	1.80
215	14986	89.60	89.90	262.00	10720.07	4422.76	815.70	4371.34	1.94
216	15081	86.50	89.40	258.00	10723.30	4517.43	816.28	4466.27	3.31
217	15176	88.60	89.90	262.00	10727.36	4612.07	816.86	4561.18	2.27
218	15271	88.50	89.30	260.00	10729.77	4706.79	817.52	4656.14	0.64
219	15365	91.00	89.60	260.00	10730.18	4800.54	818.42	4750.13	2.68
220	15460	90.50	90.00	264.00	10728.93	4895.25	818.76	4845.12	0.67
221	15555	89.50	90.00	262.00	10728.93	4989.94	818.76	4940.12	1.05
222	15649	89.30	90.80	264.00	10729.92	5083.58	818.10	5034.11	0.88
223	15744	90.70	90.40	266.00	10729.92	5178.18	817.10	5129.11	1.53
224	15839	91.30	89.70	264.00	10728.26	5272.86	817.02	5224.09	0.97
225	15934	90.80	90.90	266.00	10726.52	5367.49	816.52	5319.07	1.37
226	16028	91.00	90.00	264.00	10725.04	5461.11	815.79	5413.05	0.98
227	16123	88.40	89.30	266.00	10725.54	5555.84	816.37	5508.04	2.83
228	16218	89.50	89.60	264.00	10727.28	5650.58	817.28	5603.02	1.20
229	16313	89.10	90.00	267.00	10728.44	5745.29	817.61	5698.01	0.60
230	16407	90.20	90.10	266.00	10729.02	5838.98	817.53	5792.01	1.18
231	16502	89.60	90.90	266.00	10729.18	5933.60	816.70	5887.00	1.05
232	16596	88.40	90.70	269.00	10730.82	6027.17	815.39	5980.98	1.29
233	16690	88.40	90.70	269.00	10733.45	6120.73	814.24	6074.94	0.00
234	16785	88.70	89.40	271.00	10735.85	6215.38	814.16	6169.90	1.40
235	16880	88.90	89.10	271.00	10737.84	6310.14	815.40	6264.87	0.38
236	16975	89.10	90.10	269.00	10739.50	6404.87	816.06	6359.86	1.07
237	17069	89.30	89.70	267.00	10740.81	6498.57	816.23	6453.85	0.48
238	17164	89.20	91.30	271.00	10742.05	6593.18	815.40	6548.83	1.69
239	17258	89.60	90.70	271.00	10743.04	6686.73	813.76	6642.81	0.77
240	17353	90.20	89.60	267.00	10743.20	6781.40	813.51	6737.81	1.32



### SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC  
 Well Name: Wade Federal 5300 21-30 13B  
 Rig #: Nabors B-25  
 API #: 33-053-06131  
 Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden  
 Directional Drillers: RPM  
 Survey Corrected To: True North  
 Vertical Section Direction: 85.39  
 Total Correction: 8.15  
 Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
241	17448	89.60	89.40	271.00	10743.37	6876.15	814.34	6832.80	0.67
242	17543	90.10	88.80	271.00	10743.62	6970.95	815.83	6927.79	0.82
243	17637	89.60	89.40	271.00	10743.87	7064.75	817.31	7021.78	0.83
244	17732	90.00	89.40	271.00	10744.20	7159.52	818.30	7116.77	0.42
245	17826	90.70	90.20	271.00	10743.62	7253.24	818.63	7210.77	1.13
246	17921	90.60	90.90	273.00	10742.55	7347.85	817.72	7305.76	0.74
247	18015	91.00	90.40	271.00	10741.23	7441.44	816.65	7399.74	0.68
248	18110	90.30	91.00	273.00	10740.15	7536.03	815.49	7494.73	0.97
249	18205	91.20	90.50	271.00	10738.91	7630.60	814.25	7589.71	1.08
250	18300	89.60	90.70	275.00	10738.25	7725.20	813.25	7684.70	1.70
251	18394	90.50	89.40	275.00	10738.17	7818.89	813.17	7778.70	1.68
252	18489	89.10	89.90	273.00	10738.50	7913.62	813.75	7873.69	1.56
253	18584	89.10	90.20	273.00	10739.99	8008.30	813.67	7968.68	0.32
254	18679	90.10	91.50	275.00	10740.65	8102.86	812.26	8063.66	1.73
255	18773	90.20	91.50	273.00	10740.41	8196.33	809.80	8157.63	0.11
256	18868	90.20	91.10	275.00	10740.08	8290.82	807.64	8252.61	0.42
257	18963	89.50	91.40	273.00	10740.32	8385.32	805.57	8347.58	0.80
258	19058	90.30	91.20	275.00	10740.49	8479.82	803.41	8442.56	0.87
259	19152	90.00	90.70	273.00	10740.24	8573.37	801.86	8536.54	0.62
260	19247	89.00	91.30	273.00	10741.07	8667.91	800.20	8631.52	1.23
261	19342	89.60	90.50	273.00	10742.23	8762.47	798.71	8726.50	1.05
262	19437	90.50	90.00	275.00	10742.15	8857.12	798.29	8821.50	1.08
263	19532	88.30	88.00	275.00	10743.15	8951.92	799.95	8916.47	3.13
264	19626	88.50	87.40	275.00	10745.77	9045.81	803.72	9010.36	0.67
265	19721	89.10	87.70	276.00	10747.76	9140.72	807.78	9105.25	0.71
266	19816	89.80	87.00	276.00	10748.67	9235.66	812.17	9200.14	1.04
267	19911	90.40	87.50	273.00	10748.51	9330.61	816.73	9295.03	0.82
268	20005	87.60	90.00	275.00	10750.15	9424.41	818.78	9388.98	3.99
269	20100	88.20	89.80	276.00	10753.63	9519.05	818.95	9483.92	0.67
270	20195	89.60	89.40	276.00	10755.45	9613.78	819.61	9578.89	1.53
271	20290	90.50	89.50	278.00	10755.37	9708.54	820.52	9673.89	0.95
272	20384	89.30	87.40	278.00	10755.53	9802.40	823.06	9767.85	2.57
273	20479	89.00	85.90	276.00	10756.94	9897.36	828.61	9862.67	1.61
274	20498	88.70	85.50	276.00	10757.32	9916.36	830.04	9881.61	2.63
275	20650	88.70	85.50	276.00	10760.77	10068.32	841.96	10033.11	0.00



**Oasis Petroleum N. A., LLC**

**Wade Federal 5300 21-30 13B**

**1,574' FNL & 270' FWL**

**Lot 2 Section 30, T153N, R100W**

**Baker Field / Middle Bakken**

**McKenzie County, North Dakota**

**BOTTOM HOLE LOCATION:**

**818.22' north & 9,943.24' east of surface location or approx.**

**755.75' FSL & 300.13' FEL, NE NE Section 29, T153N, R100W**

**Prepared for:**

Kellie Rassmussen

Oasis Petroleum N. A., LLC

1001 Fannin Street, Suite 1500

Houston, Texas 77002

**Prepared by:**

Hannah Thatcher, Daniel Haynes

Derry Callender, David Mueller

PO Box 80507; Billings, MT 59108

(406) 259-4124

[geology@sunburstconsulting.com](mailto:geology@sunburstconsulting.com)

[www.sunburstconsulting.com](http://www.sunburstconsulting.com)

# WELL EVALUATION

## Wade Federal 5300 21-30 13B



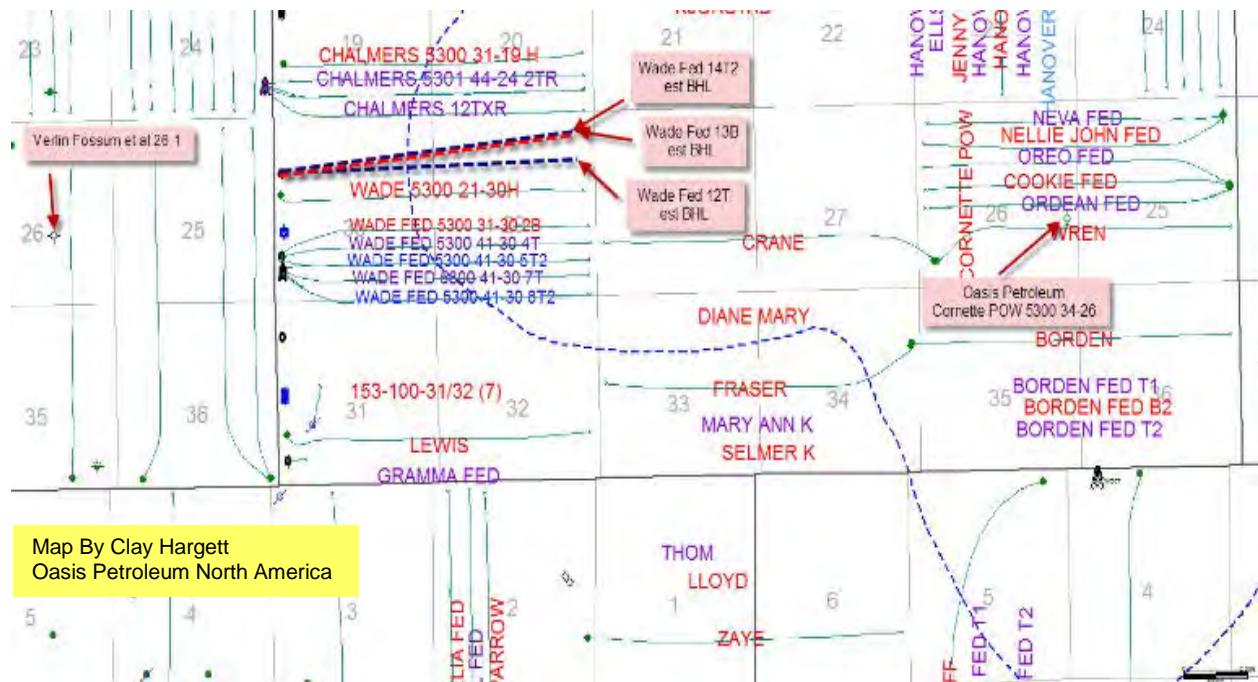
**Figure 1:** Nabors B25 drilling the Oasis Petroleum, Wade Federal 5300 21-30 13B well during November of 2014, south of Williston in McKenzie County, North Dakota. (Photos by Hannah Thatcher, well-site geologist)

## INTRODUCTION

The Oasis Petroleum North America, LLC - Wade Federal 5300 21-30 13B well [Lot 2 Section 30, T153N, R100W] is located approximately 31 miles south of Williston, North Dakota (**Figure 1**). The well was spud on October 26, 2014 by Nabors rig B25, and represents a continuation of Oasis Petroleum's development of the Middle Bakken and Three Forks within Baker Field. The well was planned to drill an approximately 9,623' long lateral, along a proposed azimuth of 85.39°. Upon completion of drilling operations, the well will be enhanced for production by a multistage fracture stimulation.

## OFFSET CONTROL INFORMATION

Three offsets were used to establish a prognosis of formation tops and thicknesses to be used as a control for the Wade Federal 5300 21-30 13B (**Figure 2**). Offset formation thicknesses were compared and an appropriate curve landing target was selected based on the average of these thicknesses. Structural data was also used during the lateral. The three offsets include the Wade Federal 5300 21-30 12T which was spud on September 30<sup>th</sup>, 2014, is located on the same pad as the subject well and was considered the primary offset. The Chalmers 5301 44-24 2TR was spud on the June 11<sup>th</sup>, 2014 and is located 0.50 miles north of the subject well. The Wade Federal 5300 21-30 14T2 was spud on September 28<sup>th</sup>, 2014 and is located on the same pad as the subject well.



**Figure 2:** Offsetting control wells in relation to the Wade Federal 5300 21-30 13B well.

## GEOLOGIC EVALUATION

### Methods:

Geologic supervision was provided by Sunburst Consulting, Inc. with two pairs of well-site geologists. A digital gas detector and chromatograph were interfaced with a Pason electronic data recorder system (EDR). The unit of measure for gas on this well was units, which was defined as 100 units equaling 1% methane equivalent in air. The EDR provided drill rate, on-off bottom and pump strokes to the gas detection computer and received total gas information from Sunburst for viewing around location. Lagged samples were caught by the rig crew in 30' intervals from 8,200' to 10,810' MD, 10' intervals from 10,810' to 11,050' MD, and 30' intervals from 11,050' to 20,560' MD. Wet and dry cuttings were examined under a bi-ocular microscope and complete lithologic descriptions and sampling intervals are provided in the lithology document within this evaluation. The set of dry cuttings collected during the duration of the well were sent to the State of North Dakota.

### Zones of Interest:

The **Mission Canyon Formation** was drilled at 9,331' TVD (-7,307') and is comprised largely of light gray, *lime* mudstone followed by gray to tan, earthy textured, argillaceous *lime* mudstone. Gas shows within the Mission Canyon ranged from 30 to 80 units against 10.9 pound/gallon mud weight.

The top of the **Lodgepole Formation** was logged at 9,887' TVD (-7,863'). In general the Lodgepole can be described as a medium to dark gray-brown, argillaceous *lime* mudstone with crystalline texture and trace amounts of disseminated pyrite (**Figure 3**). The False Bakken, drilled at 10,613' TVD (-8,589'), is comprised of very dark brown to black, calcareous, slightly pyritic shale (**Figure 4**). Strong hydrocarbon shows in the lower 100' Lodgepole were as high as 297 units, which suggest that some of the oil and gas from the Bakken shale may be exploiting fractures.



Figures 3 & 4: Wet cutting of the Lodgepole Formation (left) and False Bakken sub-interval (right) at 10x.

The **Bakken Formation** has four formal members, an upper and lower black, fissile, organic-rich pyritic shale, and a clastic and carbonate middle and lower member. The Upper Bakken Shale Member was drilled at 10,624' TVD (-8,600') with sample returns typically described as black, carbonaceous, *petroliferous* shale with trace amounts of disseminated pyrite (**Figure 5**). The Middle Bakken Member, penetrated at 10,642' TVD (-8,618'), consists of a varying thickness and sequence of siltstone, limestone and silty sandstone (**Figure 6**). *Trace, spotty light brown oil staining* was present along with gas shows as high as 1,545 units.



Figures 5 & 6: Wet cuttings of the upper Bakken (left) & Middle Bakken silty sandstone (right) at 10x.

### Geo-steering:

Kick-off point was established from the isopach of the “base last salt” marker to the Three Forks “target” from the offset wells. While drilling the curve, measured gamma signatures were compared to those of the three offsets and aided in the landing of the curve. The landing target was confirmed by the depth of the False Bakken, which was consistent with the offset wells. The curve successfully landed within the Middle Bakken Member at a depth of 11,050' MD (10,660' TVD). Directional tools were then pulled out of the hole and a string of 7" casing was set to 11,006' MD and then cemented by Schlumberger.

Samples from the target zone varied in porosity, oil staining, color, cementation, and pyrite content. Stratigraphic location in the target zone was based on these sample observations along with gas shows, drill rates and gamma ray values.

The Oasis Petroleum North America, LLC prospect geologist defined the target zone as a 10' zone that began 15' below the upper shale and ended 15 feet above the lower shale. The target zone consisted of an upper silty sandstone interval, reading gamma from 115-120 counts (A marker). The center of the target interval was comprised of a lighter colored silty sandstone, with a higher gamma signature ranging between 120 and 130 counts (B marker). The base of the target zone was characterized as a clean, silty sandstone with gamma ranging from 70 to 110 counts (C marker). A-C gamma markers were used for determining depth within the target interval (**Figure 7**).

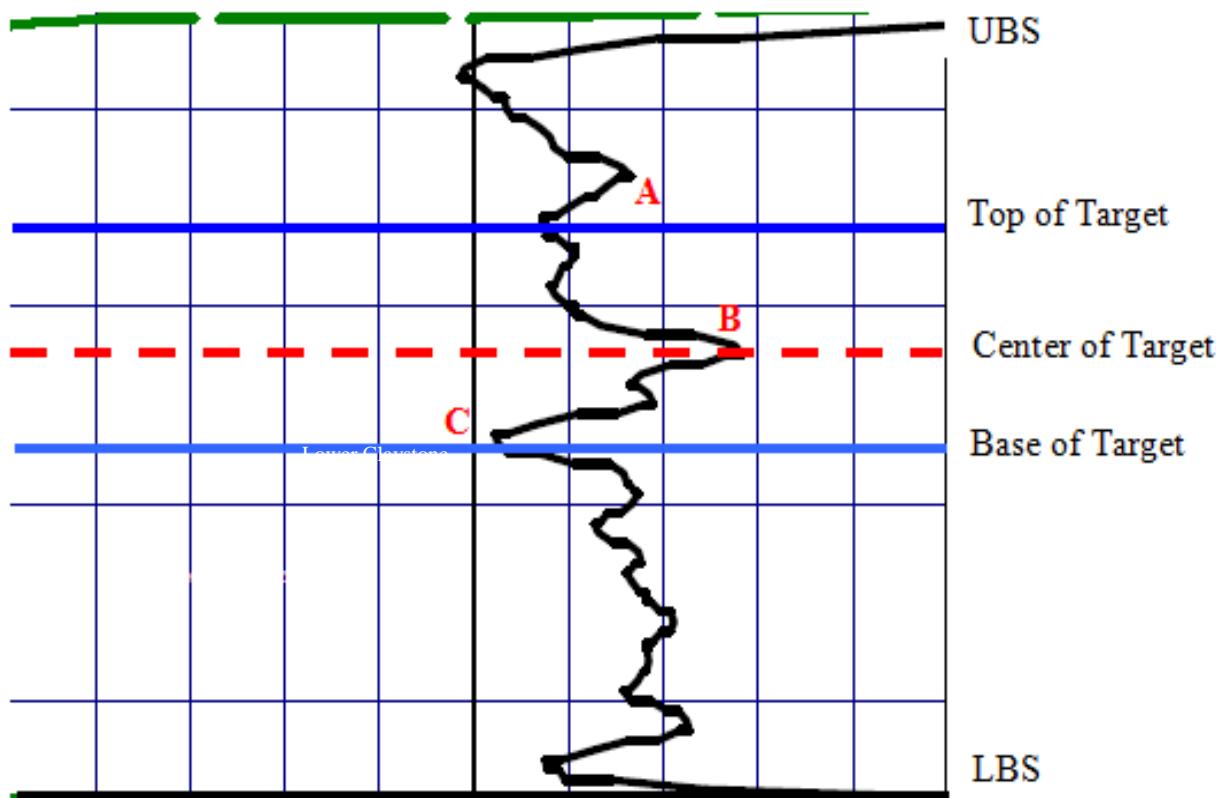
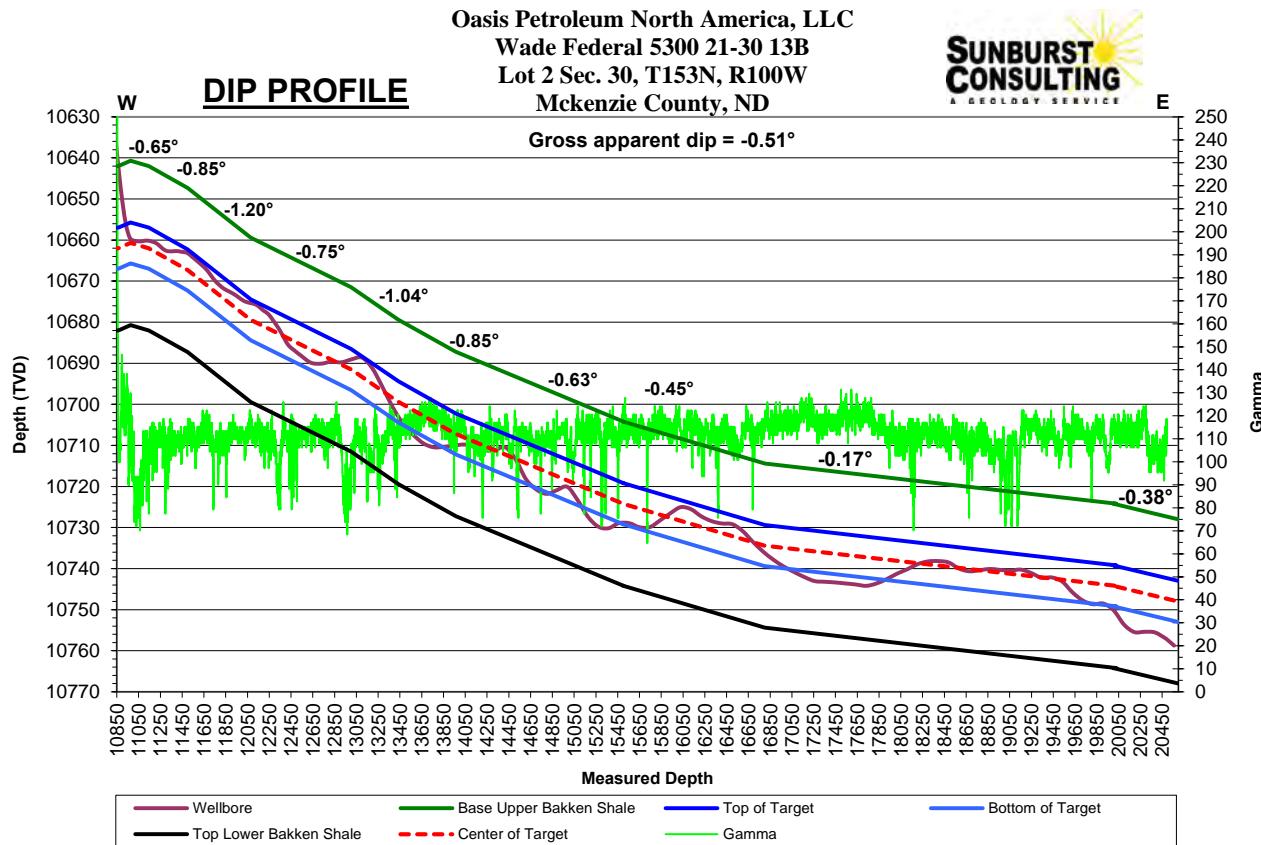


Figure 7: Offset, TVD gamma profile of the Middle Bakken Member (0-200 api. scale).

Using the aforementioned information gathered during drilling, offset log information and the structural data provided from Oasis Petroleum North America, LLC., well-site geologists were able to anticipate, and interpret the local, apparent dip during drilling of the Wade Federal 5300 21-30 13B well. A total depth of 20,560' MD was reached on November 10<sup>th</sup>, 2014 at 18:15 CT. The target resultant was 100% within the Middle Bakken Member. The resulting structure of the Middle Bakken was a drop in TVD of 85.70' over 9,699', resulting in an overall down-dip of -0.51° as portrayed on the dip profile (**Figure 8**).



**Figure 8:** Well profile representing estimated dip value & gamma for the Wade Federal 5300 21-30 13B.

### Hydrocarbons:

Gas monitoring and fluid gains were monitored to evaluate the viability of this reservoir during the drilling of the well. In the invert mud system, hydrostatic conditions were maintained near balance. This allowed for gas and fluid gains from the well to be monitored.

Background gas observed during the lateral ranged from 50 to 450 units. The lateral was drilled with saltwater drilling fluid, with a mud weight of 9.5-10.50 pounds/gallon. Gas shows typically ranged from 200 to 300 units. In the latter half of the lateral, gas shows ranged up to 1,618 units and connection gases were observed up to 1,850 units (**Figure 9**). C1-C4 gas components were observed throughout the course of the lateral. Trip gases were observed as high as 200 units. Oil shows were very light throughout the lateral ranging from 0-3% in sample. When present it presented as a *light brown spotty oil stain that yielded a slow to moderate streaming to diffuse light green cut fluorescence*.

Oasis Petroleum North America, LLC  
 Wade Federal 5300 21-30 13B  
 Lot 2 Sec. 30, T153N, R100W  
 McKenzie County, ND

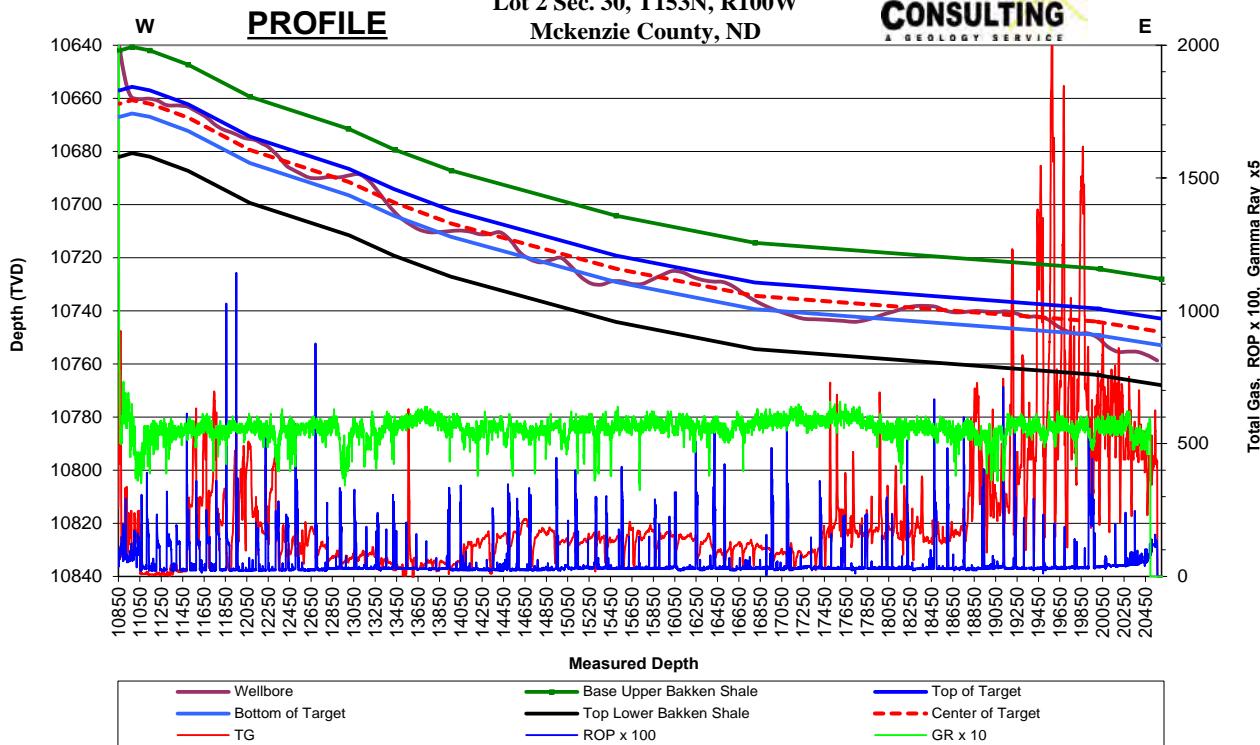


Figure 9: Well profile illustrating total gas values for the Wade Federal 5300 21-30 13B.

## SUMMARY

Nabors rig B25 successfully drilled a two-section, horizontal well within the Middle Bakken Member at the Wade Federal 5300 21-30 13B. A net of 9,699' was drilled within the Middle Bakken. A mud program consisting of diesel invert (9.6–10.5 ppg), during the vertical and curve build sections, and saline based mud (9.5-10.5 ppg), during the lateral maintained stable hole conditions and permitted adequate analysis of gas concentrations.

Projections of dip were successfully used to maintain the well-bore in the Middle Bakken target for 77% of the lateral. Samples from the target consisted of a light to medium gray, silty sandstone with trace to occasional amounts of disseminated pyrite. Intergranular porosity was generally seen throughout the entire lateral. Hydrocarbon shows in the target zone were low to moderate. Samples from the ideal zone contained spotty light brown oil staining.

The Wade Federal 5300 21-30 13B will be fitted with a 4 ½" production liner and swell packers in preparation for a fracture stimulation that will determine the true commercial value of the well. The well currently awaits fracture stimulation.

Respectfully submitted,  
 Hannah Thatcher  
 Daniel Haynes  
 Sunburst Consulting, Inc.  
 November 11, 2014

# **WELL DATA SUMMARY**

**OPERATOR:** Oasis Petroleum N. A., LLC

**ADDRESS:** 1001 Fannin Street, Suite 1500  
Houston, Texas 77002

**WELL NAME:** Wade Federal 5300 21-30 13B

**API #:** 33-053-06131-00-00

**WELL FILE #:** 28978

**SURFACE LOCATION:** 1,574' FNL & 270' FWL  
Lot 2 Section 30, T153N, R100W

**FIELD/ OBJECTIVE:** Baker Field / Middle Bakken

**COUNTY, STATE** McKenzie County, North Dakota

**BASIN:** Williston

**WELL TYPE:** Bakken Horizontal

**ELEVATION:** GL: 1,999'  
KB: 2,024'

**SPUD/ RE-ENTRY DATE:** October 26, 2014

**BOTTOM HOLE LOCATION:** 818.22' north & 9,943.24' east of surface location or approx.  
755.75' FSL & 300.13' FEL, NE NE Section 29, T153N, R100W

**CLOSURE COORDINATES:** Closure Azimuth: 85.30°  
Closure Distance: 9,976.85'

**TOTAL DEPTH / DATE:** 20,560' on November 10, 2014  
77% within target interval

**TOTAL DRILLING DAYS:** 15.5 days

**CONTRACTOR:** Nabors B25

**PUMPS:** H & H Triplex (stroke length - 12")

<u>TOOLPUSHERS:</u>	Casey Pippenger, Bruce Walter
<u>FIELD SUPERVISORS:</u>	Mike Crow, Travis Handran
<u>CHEMICAL COMPANY:</u>	Fluid Control
<u>MUD ENGINEER:</u>	Keith McCarty, Warren Carlson
<u>MUD TYPE:</u>	Fresh water in surface hole Diesel invert in curve; Salt water in lateral
<u>MUD LOSSES:</u>	Invert Mud: 864 bbls., Salt Water: Not tracked
<u>PROSPECT GEOLOGIST:</u>	Kellie Rassmussen
<u>WELLSITE GEOLOGISTS:</u>	Hannah Thatcher, Daniel Haynes Derry Callender, David Mueller
<u>GEOSTEERING SYSTEM:</u>	Sunburst Digital Wellsite Geological System
<u>ROCK SAMPLING:</u>	30' from 8,200' - 10,810' 10' from 10,810' -11,080' 30' from 11,080' - 20,560' (TD)
<u>SAMPLE EXAMINATION:</u>	trinocular microscope & fluoroscope
<u>SAMPLE CUTS:</u>	Trichloroethylene
<u>GAS DETECTION:</u>	MSI (Mudlogging Systems, Inc.) TGC - total gas with chromatograph Serial Number(s): ML-382
<u>ELECTRIC LOGS:</u>	none attempted
<u>DRILL STEM TESTS:</u>	none attempted
<u>DIRECTIONAL DRILLERS:</u>	RPM Mike Crow, Jordon Jensen
<u>MWD:</u>	Ryan Directional Service Inc. Daniel Ogden

**CASING:**

Surface: 13.375" 36# J-55 set to 2,070'  
Intermediate Surface: 9 5/8" 40# HCL-180 set to 6,050'  
Intermediate: 7" 32# P-110 set to 11,006'

**SAFETY/ H,S MONITORING:**

Oilind Safety

**KEY OFFSET WELLS:**

**Oasis Petroleum North America**

**Wade Federal 5300 21-30 12T**

SW NW Section 30, T153N, R100W

McKenzie Co., ND

**KB: 2,024'**

**Oasis Petroleum North America**

**Wade Federal 5300 21-30 14T2**

SW NW Section 30, T153N, R100W

McKenzie Co., ND

**KB: 2,024'**

**Oasis Petroleum North America**

**Chalmers 5301 44-24 4T2R**

SE SE Section 24, T153N, R101W

McKenzie Co., ND

**KB: 1,968'**

**WELL LOCATION PLAT**

OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN SUITE 1500, HOUSTON, TX 77002

SECTION 30, T153N, R100W 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

EDGE OF

FOUND STONE

W/ REBAR

*Daryl D. Kaseman*



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS. REGISTRATION NUMBER  
3880 ON 3/19/14 AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
THE OFFICES OF INTERSTATE  
ENGINEERING, INC.

STAKED ON 3/17/14  
VERTICAL CONTROL DATUM WAS BASED UPON  
CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST  
OF ERIC BAES OF OASIS PETROLEUM, I CERTIFY THAT THIS  
PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR  
UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO  
THE BEST OF MY KNOWLEDGE AND BELIEF.

ERIC BAES  
OASIS PETROLEUM

3/17/14  
DARYL D.  
KASEMAN  
LS-3880

- - MONUMENT - RECOVERED
- ✗ - MONUMENT - NOT RECOVERED

DARYL D. KASEMAN LS-3880

© 2014, INTERSTATE ENGINEERING, INC.

1/8



Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sioux City, IA 51101  
Ph: (402) 433-5617  
Fax (402) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
WELL LOCATION PLAT  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA  
Drawn By: B.H.L. Project No.: S14-09-019.01  
Checked By: D.D.K. Date: MAR 2014

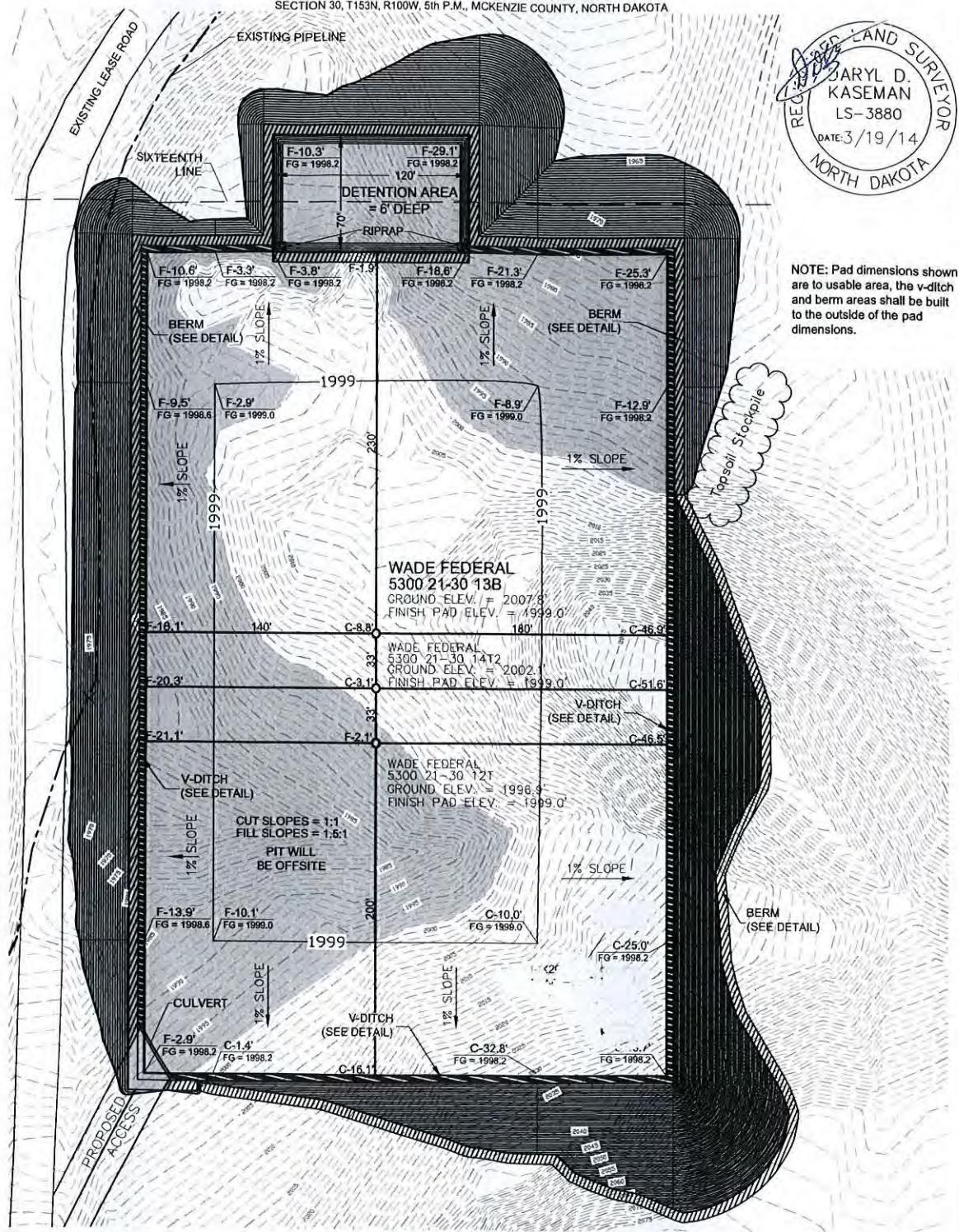
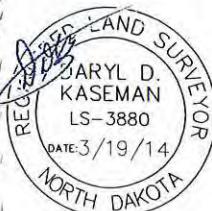
Revision No.	Date	By	Description



PAD LAYOUT

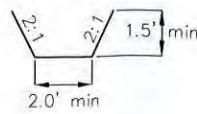
OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED AND  
SEALED BY DARYL D. KASEMAN, PLS,  
REGISTRATION NUMBER 3880 ON 3/19/14  
AND THE ORIGINAL DOCUMENTS ARE STORED  
AT THE OFFICES OF INTERSTATE ENGINEERING,  
INC.

V-DITCH DETAIL



Proposed Contours      — BERM  
Original Contours      — DITCH

0      60  
1" = 60'



(C) 2014, INTERSTATE ENGINEERING, INC. NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

3/8

**INTERSTATE**  
Engineering  
Professionals you need, people you trust

SHEET NO.

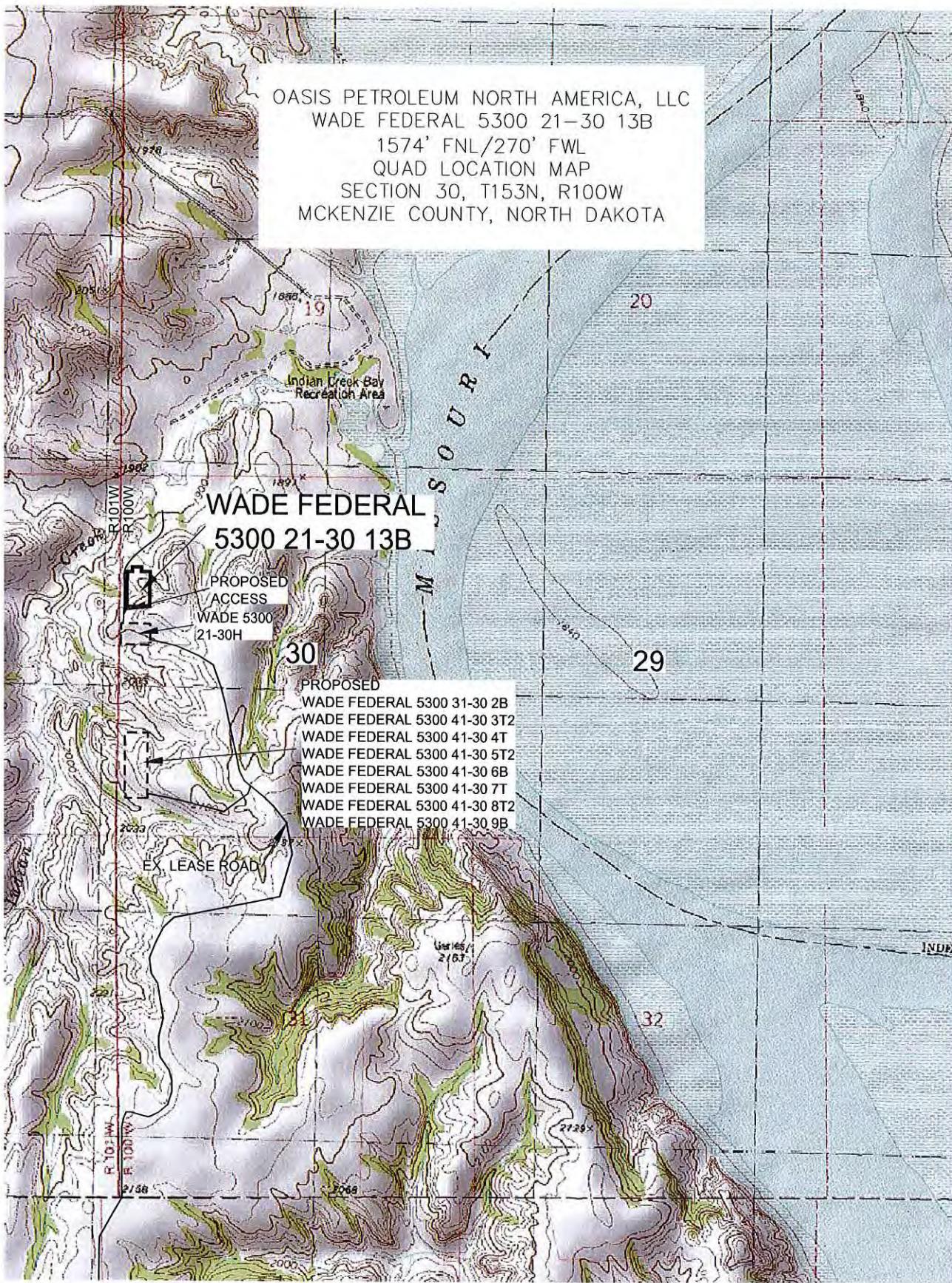
Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Montana, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
PAD LAYOUT  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H.      Project No.: S1409-019.01  
Checked By: D.D.K.      Date: MAR 2014

Revision No.	Date	By	Description

Scale: Per GAO's Note: Federal S300 21-30 13B Inv - 1/8" = 60' + 1/2" Proj Inv



© 2014, INTERSTATE ENGINEERING, INC.

**5/8**



SHEET NO.

Interstate Engineering, Inc.  
 P.O. Box 648  
 425 East Main Street  
 Sidney, Montana 59270  
 Ph (406) 433-5617  
 Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 QUAD LOCATION MAP  
 SECTION 30, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By:	B.H.H.	Project No.:	S14-09-019.01
Checked By:	D.D.K.	Date:	MAR. 2014

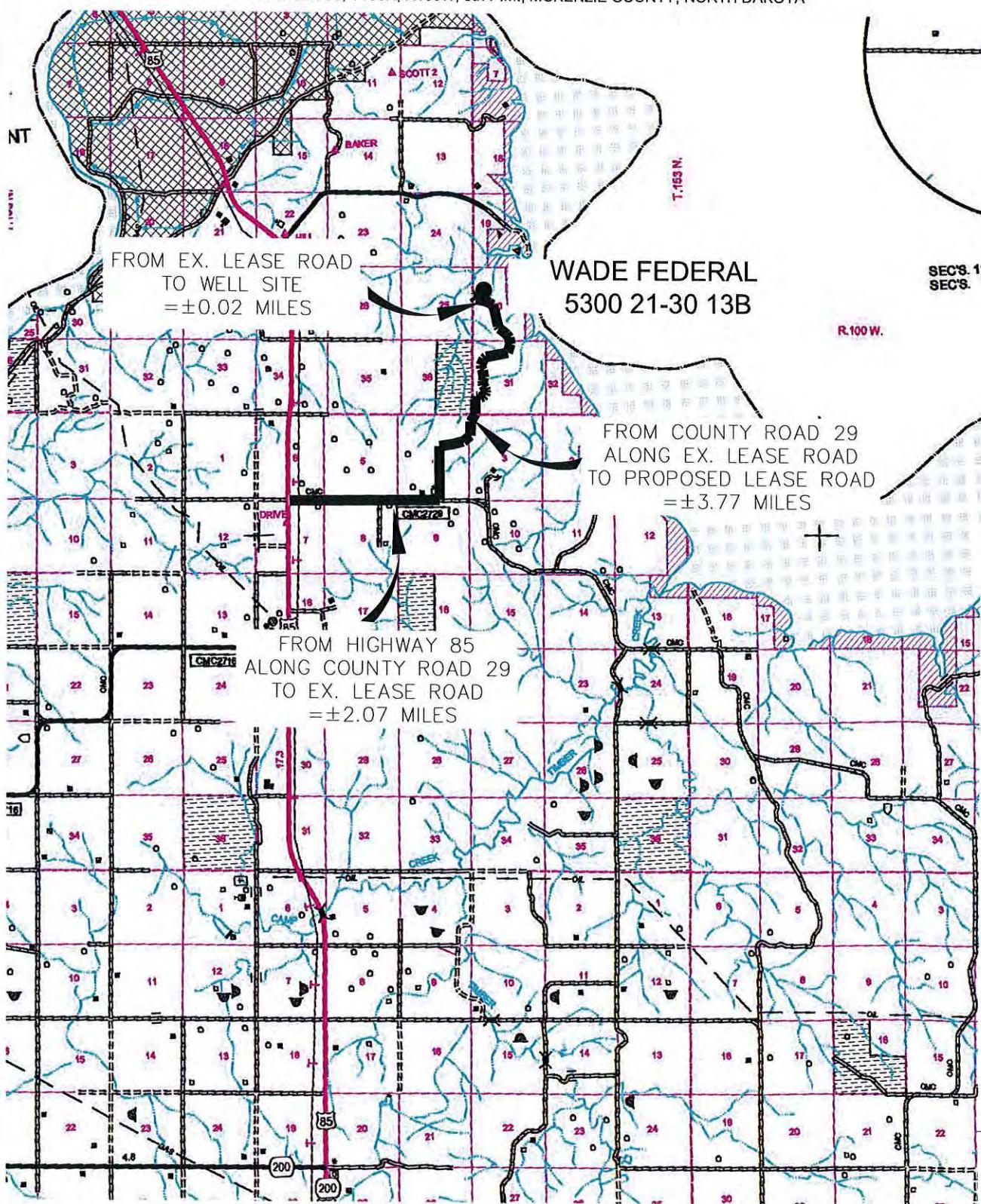
Revision No.	Date	By	Description

# COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"WADE FEDERAL 5300 21-30 13B"

1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



© 2014, INTERSTATE ENGINEERING, INC.

SCALE: 1" = 2 MILE

6/8



Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.Interstateeng.com](http://www.Interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
COUNTY ROAD MAP  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

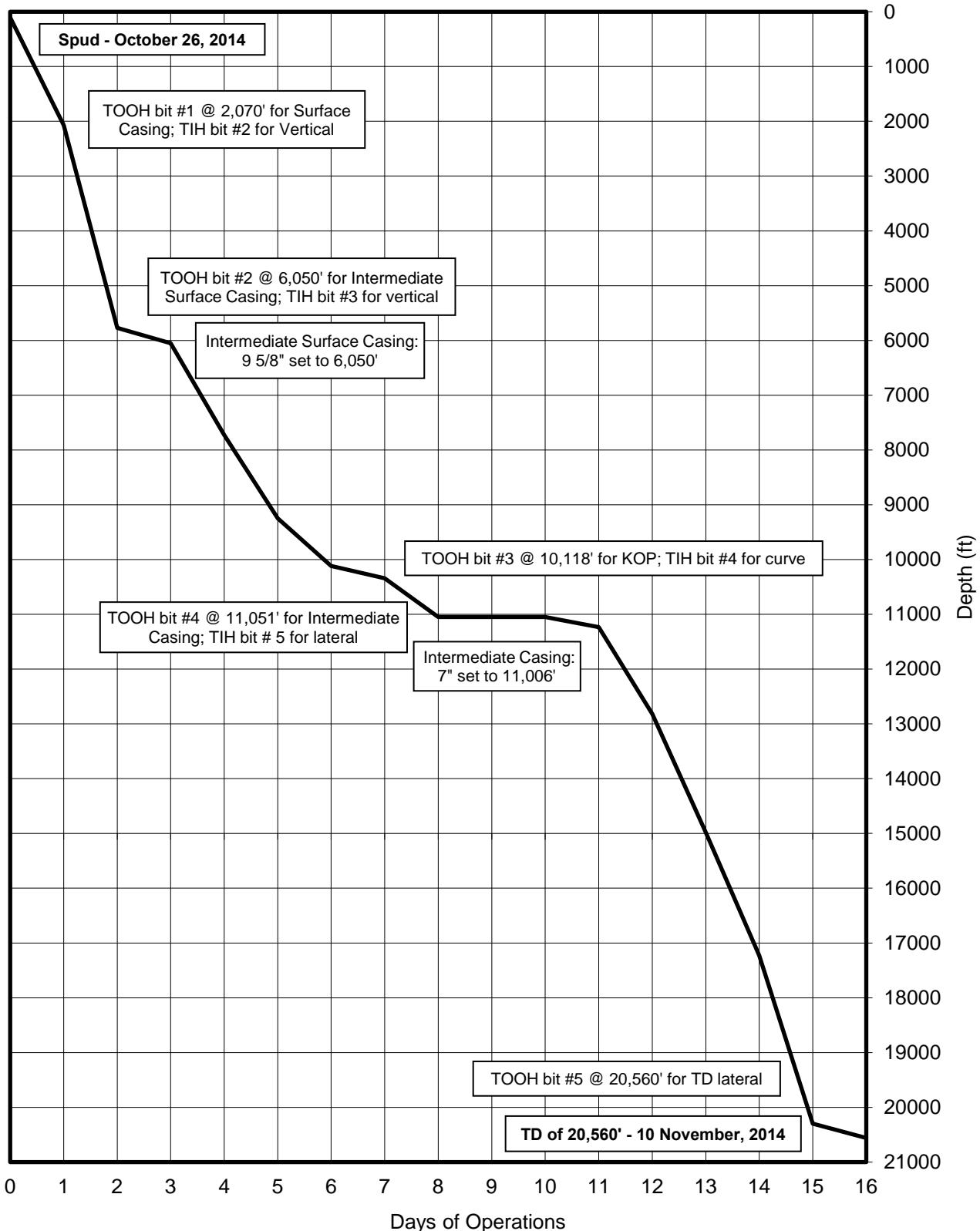
Drawn By: B.H.H. Project No.: S14-09-019.01  
Checked By: D.D.K. Date: MAR, 2014

Revision No.	Date	By	Description

# TIME VS. DEPTH

Oasis Petroleum N. A., LLC

Wade Federal 5300 21-30 13B



# MORNING REPORT SUMMARY

Day	Date 2014	Depth (6000 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity Summary		Formation
0	10/26	105'	0'	-	-	-	-	-	-	-	-	-	Rig up, Nipple Up, Choke Line, Test BOP, Pick up BHA.	-	-
1	10/27	2,070'	4896	1	20	70	-	275	1800	80	80	562	Drill 105' to 2,070', circulate and condition, TOOH, R/U casers, run casing, R/D casers, circulate and condition, R/U cementers, circulate/cement/displace, R/D cementers, install well heads	Pierre	
2	10/28	5,772'	3702	2	25	70	10	327	3800	95	95	668	P/U BHA, TIH, FIT test, drill out float & shoe, drill F/2070 to 2160, waiting on third party tools trouble shoot MWD, drill F/2160 to 3630, well control BOP	-	-
3	10/29	6,050'	4897	2	20	30	15	275	3500	80	80	562	Drill F/5772 to 6050, circulate and condition, TOOH, install/remove wear bushing, pull rotating head, install trip nipple, TOOH, L/D BHA, install/remove wear bushing, R/U casers, run casing, weatherford verify landing it, landed, circulate and condition, R/U cementers, primary cementing, L/D landing joint, R/D floor, dail, ext., elevators, run pack off, install/remove wear bushing, install Swift		
4	10/30	7,725'	1675	3	22	50	25	275	3550	80	80	562	Install/remove wear bushing, weatherford pack off & test, P/U BHA, TIH, install/remove wear bushing, install trip nipple, circulate and condition, drilling cement, float and shoe assembly, float @ 6032 & shoe @ 6050, pressure test, Amnsden		
5	10/31	9,248'	1523	3	33	55	25	275	3750	80	80	562	Drill F/7725 to 8050, rig service, trouble shoot HMI screens & fix, drill F/8050 to 8626, BOP drill, drill F/8626 to 9248	Ratcliffe	
6	11/1	10,118'	870	3	35	40	-	310	3600	75	75	632	Drill from 9,248' to 9,837', service top drive, removed cable wrapped in shives, Lodepole	Lodgepole	
7	11/2	10,340'	222	4	10	15	40	258	3600	75	75	527	Trip out of hole, lay down BHA, cased hole logs, CBL, RU loggers & held PJSM, cased hole logs, RD loggers, pick up BHA, trip in hole, install/remove wear bushing, remove trip nipple, install Rot head, circulate and condition test MWD & fill hole, trip in hole, circulate and condition fill and test, cut drilling line, trip in hole from 6,049 to 10,118', slide drilling troughing, service rig trouble shoot HMI screens, slide drilling curve from 10,118' to 10340	Lodgepole	
8	11/3	11,051'	711	4	25	30	40	258	3800	75	75	527	Run casing, R/D casers, circulate cement, displace (circulate)	Middle Bakken	
9	11/4	11,051'	0	3	35	40	45	310	3400	75	75	527	Drill F/9481-9944, Service Rig, Drill 9944-10210 circulate and condition,	Middle Bakken	
10	11/5	11,051'	0	4	25	30	40	258	3600	75	75	527	Run casing, R/D casers, circulate cement, displace (circulate), nipple down BOPS/set casing slips and cut casing, nipple down BOPS and lift, stack/cleaning tanks, run casing/set casing slips, run casing/cut off casing, nipple up BOPS, function test BOPs/blinds/rams/annular/HCR, pre job safety/pressure testing/rig up pressure tester, test BOPs/test well head to 250 low/ 5000 high), pressure test CSG/SHOE held 2500 psi for 30 min.	Middle Bakken	

# MORNING REPORT SUMMARY

Day	Date 2014	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity Summary		Formation
11	11/6	11,236'	185	5	20	50	21	138	2450	0	80	281	Service top drive, change out lower well control, changing out transducer for MWD, out quill/back up wrench die/stabbing guide, pick up drill pipe from BHA to 1,120', downtime -powered catwalk change skate cable, pick up drill pipe from 1,120' to 8,200', pick up drill pipe from 8,200' to 10,200', change rotating head/rubber/remove trip nipple/install rotating head, pick up drill pipe from 10,200' to 10,331', drilling cement from 10,330' to 10,351', drilling cement/shoe track from 10,910' to 11,051', formation integrity test (FITT)/held 1800 psi for 30 min, drill from 11,051' to 11,236'.		Middle Bakken
12	11/7	12,819'	1583	5	15	50	12	138	3800	0	80	281	Drill F/11,236' to 11,948', service top drive, greased block crown, lower well and wash pipe, drill from 11,948' to 12,819'		Middle Bakken
13	11/8	14,985'	2166	5	21	50	19	138	3900	75	0	281	Rotary drilling F/12802 to 13632, Service rig functioned HCR and tested casing cage, Rotary drilling F/13632 T/14985		Middle Bakken
14	11/9	17,226'	2241	5	24	50	25	138	330	75	0	281	Rotary drilling F/14954 to 16052, Service top drive, Rotary drilling F/16052 to 17226		Middle Bakken
15	11/10	20,297'	3071	5	18	50	17	138	2525	64	0	281	Rotary drilling F/17194 T/18267, Service rig, Rotary drilling F/18267 T/20297		Middle Bakken
16	11/11	20,560'	263	5	18	50	17	138	2525	64	0	281	Rotary drilling F/20297 T/20560		Middle Bakken

## DAILY MUD SUMMARY

Date 2014	Mud Depth	Mud WT (ppg)	Vis (sec/ qt)	PV (cP)	YP (lbs/ 100 ft <sup>2</sup> )	Gels (lbs/ 100 ft <sup>2</sup> )	600/ 300	NAP/H <sub>2</sub> O (ratio)	NAP/H <sub>2</sub> O (% by vol)	Cake (API/ HTHP)	Cor. Solids (%)	Oil/H <sub>2</sub> O (%)	AIk	pH	Excess Lime (lb/bbl)	Cl- (mg/L)	LGS/ HGS (%)	Salinity (ppm)	Electrical Stability	Gain/ Loss (bbls)
10/26	2,070'	11.3	78	212	12	14/19/-	56/34	78/22	64/18	3	18	64/18	2/0	-	2.6	38k	3.6/12.3	258,111	560	-/221
10/27	2,326'	10.7	87	22	13	14/19/-	57/35	76.5/23.5	65/20	3	15	65/20	2/0	-	2.6	39k	2.5/10.3	243,204	635	-/10
10/28	5,734'	11.5	54	23	12	13/18/-	58/35	77.8/22.2	63/18	3	19	63/18	2/0	-	2.6	39k	4.2/12.3	263,117	550	-/169
10/29	6,050'	9.9	50	14	10	10/15/-	38/24	79.3/20.7	69/18	3	13	69/18	2/0	-	2.6	39k	4.2/6.2	263,117	635	-/331
10/30	8,045'	9.9	47	17	10	10/15/-	44/27	79.2/20.8	68.5/18	3	11.1	68.5/18	2.2/0	-	2.8	39k	4.1/6.8	263,117	625	-/65
10/31	9,571'	10	49	18	12	12/17/-	48/30	77.0/23.0	67/20	3	10.4	67/20	2.2	-	2.8	42k	3.5/6.8	257,102	755	-/175
11/01	10,118'	10.15	53	18	12	12/17/-	48/30	77.9/22.1	67/19	3	14	67/19	2.2	-	2.8	42k	4.3/6.9	264,320	745	-/69
11/02	10,449'	10.1	48	18	12	13/18/-	48/30	80.2/19.8	69/17	3	14	69/17	2.3	-	3	48k	5.0/6.7	264,320	777	-/44
11/03	11,051'	10.4	62	17	14	12/17/-	48/31	81.2/18.8	69/16	3	15	69/16	2.3	-	3	42k	4.4/8.2	264,320	875	-/10
11/04	11,051'	9.6	28	1	1	-	3/2	-	-	-	8.7	-	-	8	-	140k	0.1/0.4	-	-	-/1413
11/05	11,051'																			
11/06	11,236'	9.6	28	1	1	-	3/1	-	0/91.3	-	-	-	-	8	-	137k	0.1/1	-	-	-
11/07	12,819'	9.5	28	1	1	-	3/0	-	0/91.4	-	-	-	-	9	-	137k	0.1/0	-	-	-
11/08	14,985'	9.5	28	1	1	-	3/1	-	0/91.5	-	-	-	-	8	-	137k	0.1/1	-	-	-
11/09	17,226'	9.7	28	1	1	-	3/2	-	0/91.6	-	-	-	-	9	-	137k	0.1/0	-	-	-
11/10	19,435'	9.4	29	1	1	-	-3/2	-	0/91.7	-	-	-	-	8.5	-	147k	0.1/0	-	-	-

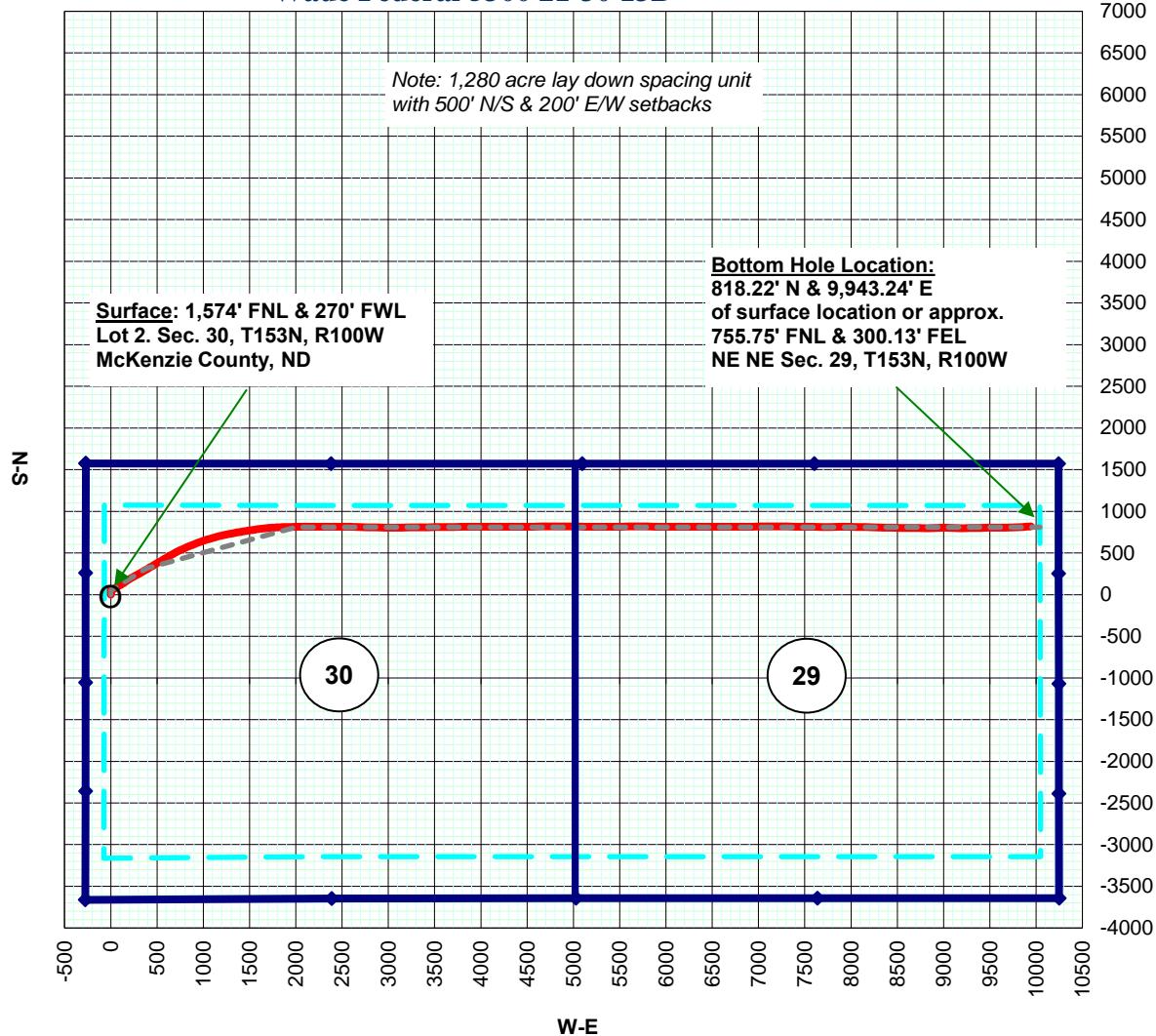
Change mud from diesel invert to salt water

## BOTTOM HOLE ASSEMBLY RECORD

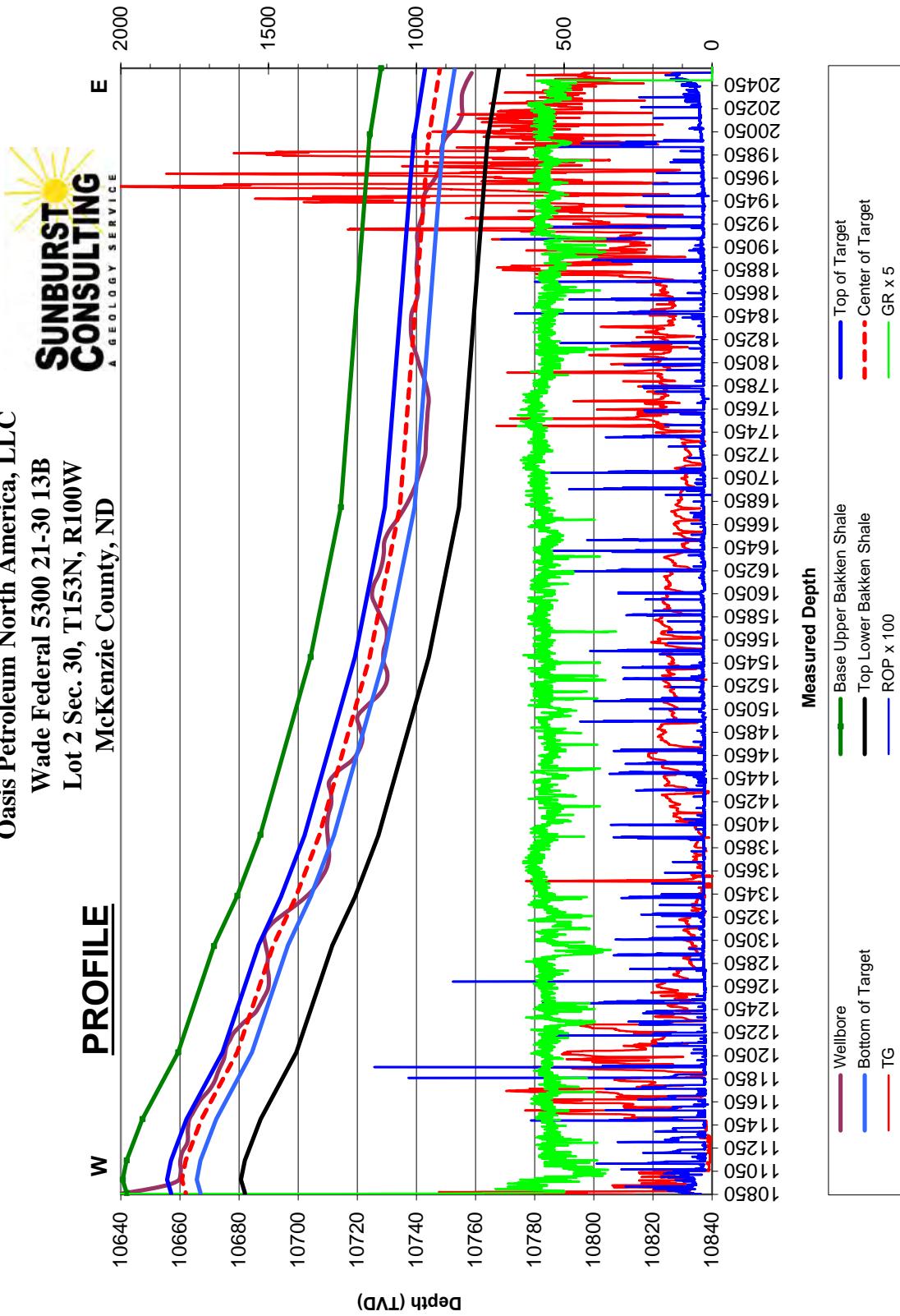
Bit #	Bit Data					Motor Data				Reason For Removal					
	Size (in.)	Type	Make	Model	Depth In	Depth Out	Footage	Hours	Σ hrs	Vert. Dev.	Make	Model	Bend	Rev/Gal	
1	17 1/2	PDC	Hughes	HC605S	0'	2,070'	2,070'	15	15	Surface	-	-	-	-	TD surface
2	12 1/4	PDC	NOV	DSS616D	2,070'	6,050'	3,980'	18.2	33.2	Vertical	-	-	-	-	Vertical
3	8 3/4	PDC	Varrel	-	6,050'	10,118'	4,068'	56.5	89.7	Vertical	Hunting	-	-	0.29	Vertical
4	8 3/4	PDC	Varel	6V513PEDU	10,118'	11,051'	933'	36	125.7	Curve	Baker	-	2.50°	0.29	TD curve
5	6	PDC	Varel	6V513PEDU	11,051'	20,560'	9,509'	94.75	220.45	Lateral	Baker	-	2.50°	0.29	TD curve

## PLAN VIEW

Oasis Petroleum North America, LLC  
Wade Federal 5300 21-30 13B



Oasis Petroleum North America, LLC  
 Wade Federal 5300 21-30 13B  
 Lot 2 Sec. 30, T153N, R100W  
 McKenzie County, ND



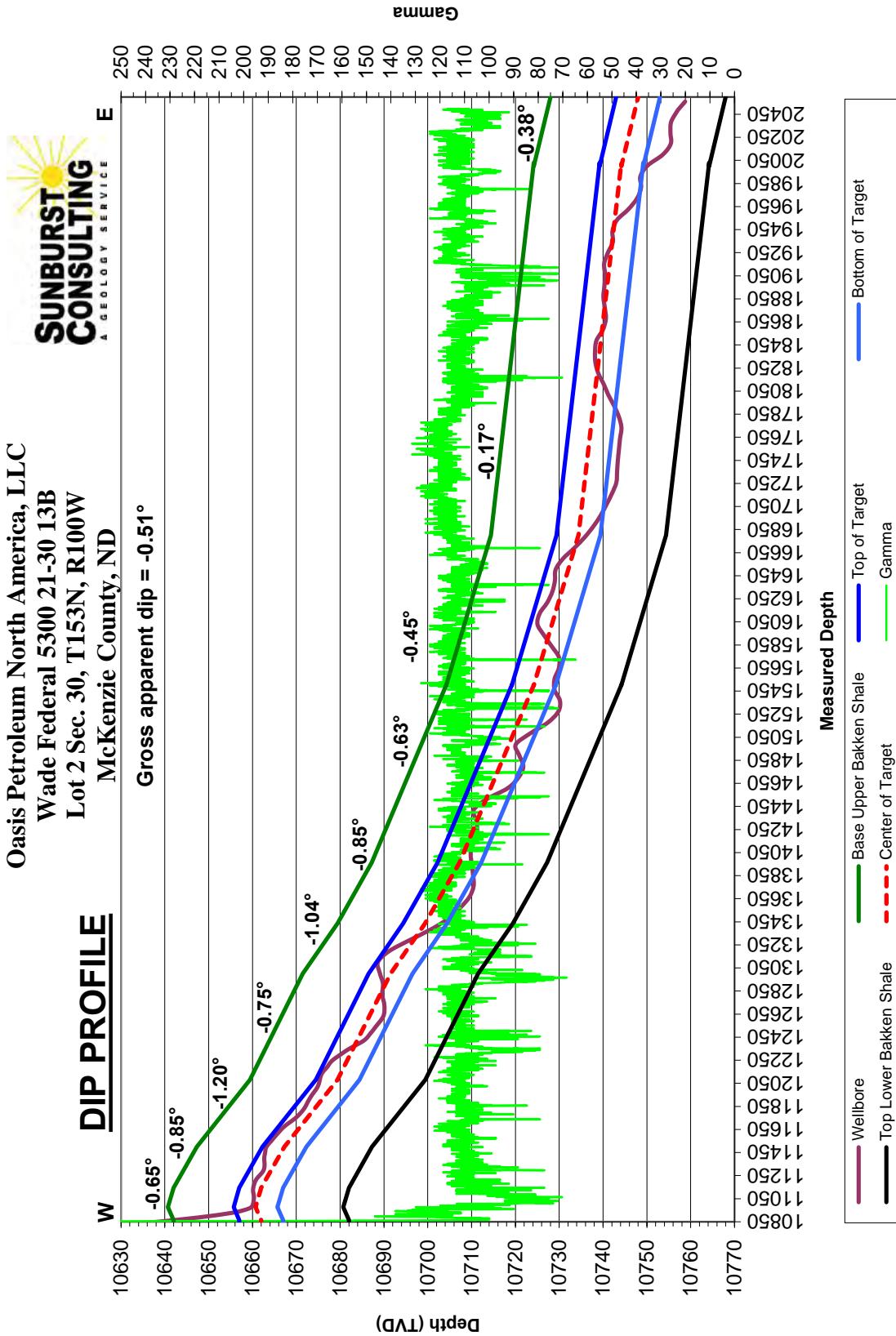
# FORMATION MARKERS & DIP ESTIMATES

*Oasis Petroleum North America, LLC - Wade Federal 5300 21-30 13B*

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
<b>Marker proj. to M.B. top</b>							
M. Bakken entry	10,861'	10,642.00					Gamma
Center of target	10,976'	10,640.70	-1.30	115.00	<b>0.65</b>	Up	Gamma
Low gamma above center	11,143'	10,642.00	1.30	167.00	<b>-0.45</b>	Down	Gamma
Top of target	11,500'	10,647.30	5.30	357.00	<b>-0.85</b>	Down	Gamma
Low gamma at top of target	12,079'	10,659.43	12.13	579.00	<b>-1.20</b>	Down	Gamma
Low gamma above center	13,000'	10,671.50	12.07	921.00	<b>-0.75</b>	Down	Gamma
High gamma at base	13,435'	10,679.40	7.90	435.00	<b>-1.04</b>	Down	Gamma
High gamma at base	13,963'	10,687.23	7.83	528.00	<b>-0.85</b>	Down	Gamma
High gamma at base	15,502'	10,704.20	16.97	1539.00	<b>-0.63</b>	Down	Gamma
Low gamma at center	16,800'	10,714.40	10.20	1298.00	<b>-0.45</b>	Down	Gamma
High gamma at base	20,030'	10,724.20	9.80	3230.00	<b>-0.17</b>	Down	Gamma
	20,560'	10,727.70	3.50	530.00	<b>-0.38</b>	Down	
<b>Gross Dip</b>							
Initial M. Bakken Contact	10,861'	10,642.00					
Projected Final M.B. Contact	20,560'	10,727.70	85.70	9699.00	<b>-0.51</b>	Down	Projection

Oasis Petroleum North America, LLC  
 Wade Federal 5300 21-30 13B  
 Lot 2 Sec. 30, T153N, R100W  
 McKenzie County, ND

## DIP PROFILE



&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional

Date: 11/20/2014  
 Time: 10:53  
**F9 to re-calculate**

Proposed dir: 85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
Tie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	149.00	0.80	334.90	149.00	0.94	-0.44	-0.36	0.54
2	244.00	0.90	333.80	243.98	2.21	-1.05	-0.87	0.11
3	337.00	1.20	346.40	336.97	3.81	-1.60	-1.29	0.41
4	399.00	1.20	344.80	398.96	5.07	-1.93	-1.51	0.05
5	461.00	1.30	346.30	460.94	6.38	-2.26	-1.74	0.17
6	524.00	1.20	356.60	523.93	7.73	-2.47	-1.84	0.39
7	615.00	1.10	342.80	614.91	9.52	-2.79	-2.01	0.32
8	707.00	1.10	354.90	706.89	11.24	-3.13	-2.21	0.25
9	799.00	0.80	29.20	798.88	12.68	-2.89	-1.86	0.68
10	891.00	1.30	32.80	890.86	14.12	-2.01	-0.87	0.55
11	983.00	1.10	27.60	982.84	15.78	-1.04	0.23	0.25
12	1075.00	0.90	36.30	1074.83	17.15	-0.20	1.18	0.27
13	1167.00	1.10	2.00	1166.82	18.61	0.26	1.75	0.67
14	1260.00	1.10	341.20	1259.80	20.35	0.00	1.64	0.43
15	1352.00	1.10	334.10	1351.78	21.98	-0.67	1.10	0.15
16	1444.00	1.10	322.40	1443.77	23.47	-1.59	0.30	0.24
17	1537.00	0.90	330.40	1536.75	24.81	-2.50	-0.50	0.26
18	1630.00	0.80	308.40	1629.74	25.85	-3.37	-1.28	0.36
19	1723.00	0.80	302.10	1722.73	26.60	-4.43	-2.28	0.09
20	1816.00	1.10	320.30	1815.72	27.63	-5.55	-3.31	0.45
21	1909.00	0.90	334.80	1908.71	28.98	-6.43	-4.08	0.35
22	2002.00	0.70	333.30	2001.70	30.15	-7.00	-4.55	0.22
23	2018.00	1.20	335.30	2017.69	30.39	-7.11	-4.64	3.13
24	2118.00	1.10	341.30	2117.67	32.25	-7.85	-5.24	0.16
25	2183.00	1.30	334.60	2182.66	33.51	-8.37	-5.65	0.38
26	2276.00	1.30	324.20	2275.64	35.31	-9.44	-6.57	0.25
27	2369.00	1.40	325.60	2368.61	37.11	-10.70	-7.68	0.11
28	2462.00	1.10	3.70	2461.59	38.94	-11.28	-8.12	0.93
29	2556.00	1.10	3.60	2555.57	40.74	-11.17	-7.86	0.00
30	2649.00	1.10	327.00	2648.56	42.38	-11.60	-8.16	0.74
31	2742.00	0.90	339.90	2741.54	43.81	-12.34	-8.78	0.32
32	2835.00	0.60	125.30	2834.54	44.22	-12.19	-8.60	1.54
33	2929.00	1.10	150.60	2928.53	43.15	-11.35	-7.84	0.65
34	3022.00	0.90	154.80	3021.51	41.71	-10.60	-7.21	0.23

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional

Date: 11/20/2014  
 Time: 10:53  
**F9 to re-calculate**

Proposed dir: 85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
35	3115.00	0.90	170.80	3114.50	40.32	-10.17	-6.89	0.27
36	3208.00	1.10	154.70	3207.49	38.80	-9.67	-6.52	0.37
37	3302.00	1.50	168.10	3301.46	36.78	-9.03	-6.05	0.53
38	3395.00	0.50	72.60	3394.45	35.71	-8.39	-5.50	1.75
39	3488.00	0.80	43.70	3487.45	36.30	-7.56	-4.61	0.47
40	3581.00	0.80	45.30	3580.44	37.22	-6.65	-3.63	0.02
41	3674.00	0.70	37.30	3673.43	38.13	-5.84	-2.76	0.16
42	3768.00	0.80	28.60	3767.42	39.17	-5.18	-2.01	0.16
43	3861.00	0.70	31.90	3860.41	40.22	-4.57	-1.32	0.12
44	3954.00	0.50	23.40	3953.41	41.07	-4.11	-0.79	0.23
45	4048.00	0.70	11.50	4047.40	42.01	-3.83	-0.44	0.25
46	4141.00	0.70	25.30	4140.40	43.08	-3.47	0.00	0.18
47	4234.00	0.20	64.80	4233.39	43.66	-3.08	0.44	0.60
48	4327.00	0.10	61.10	4326.39	43.77	-2.87	0.66	0.11
49	4420.00	0.10	313.70	4419.39	43.87	-2.85	0.68	0.17
50	4513.00	0.40	250.20	4512.39	43.81	-3.22	0.31	0.39
51	4607.00	0.40	239.10	4606.39	43.53	-3.81	-0.30	0.08
52	4700.00	0.60	219.40	4699.39	42.99	-4.40	-0.93	0.28
53	4793.00	0.70	224.40	4792.38	42.21	-5.10	-1.69	0.12
54	4886.00	0.50	217.10	4885.38	41.48	-5.74	-2.39	0.23
55	4979.00	0.70	218.40	4978.37	40.71	-6.34	-3.05	0.22
56	5072.00	1.20	193.80	5071.36	39.32	-6.93	-3.74	0.68
57	5165.00	1.40	192.90	5164.33	37.27	-7.41	-4.39	0.22
58	5258.00	0.60	182.40	5257.32	35.67	-7.69	-4.79	0.88
59	5351.00	0.50	158.90	5350.31	34.81	-7.56	-4.74	0.26
60	5444.00	0.70	160.60	5443.31	33.89	-7.23	-4.48	0.22
61	5537.00	1.10	161.20	5536.30	32.51	-6.75	-4.11	0.43
62	5630.00	1.80	161.80	5629.27	30.28	-6.01	-3.55	0.75
63	5723.00	1.20	154.00	5722.24	28.02	-5.12	-2.85	0.68
64	5815.00	1.20	150.40	5814.22	26.31	-4.22	-2.10	0.08
65	5909.00	1.20	144.80	5908.19	24.65	-3.17	-1.18	0.12
66	6002.00	1.50	162.80	6001.17	22.70	-2.25	-0.42	0.55
67	6090.00	0.70	216.90	6089.15	21.16	-2.23	-0.52	1.40
68	6181.00	0.60	241.20	6180.15	20.49	-2.98	-1.33	0.32
69	6274.00	0.90	60.40	6273.15	20.62	-2.77	-1.11	1.61

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional

Date: 11/20/2014  
 Time: 10:53  
**F9 to re-calculate**

Proposed dir: 85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
70	6368.00	1.00	53.90	6367.13	21.47	-1.47	0.26	0.16
71	6461.00	0.80	46.10	6460.12	22.39	-0.35	1.45	0.25
72	6554.00	0.70	49.60	6553.11	23.21	0.55	2.42	0.12
73	6647.00	0.50	32.90	6646.11	23.92	1.21	3.13	0.28
74	6740.00	0.60	37.90	6739.10	24.65	1.73	3.70	0.12
75	6833.00	0.20	4.80	6832.10	25.19	2.04	4.06	0.48
76	6926.00	0.00	288.30	6925.10	25.35	2.05	4.08	0.22
77	7019.00	1.40	3.50	7018.09	26.49	2.12	4.24	1.51
78	7112.00	1.80	12.50	7111.06	29.05	2.51	4.83	0.51
79	7205.00	1.70	7.40	7204.01	31.84	3.00	5.55	0.20
80	7298.00	1.60	3.30	7296.97	34.51	3.25	6.02	0.17
81	7391.00	1.10	11.60	7389.95	36.68	3.51	6.44	0.58
82	7484.00	1.00	12.30	7482.93	38.34	3.86	6.93	0.11
83	7578.00	0.80	10.30	7576.92	39.79	4.15	7.34	0.22
84	7671.00	0.50	357.10	7669.91	40.83	4.25	7.52	0.36
85	7764.00	0.40	32.50	7762.91	41.51	4.40	7.72	0.31
86	7857.00	0.30	284.10	7855.91	41.85	4.34	7.69	0.61
87	7951.00	0.30	243.80	7949.91	41.80	3.88	7.23	0.22
88	8044.00	0.50	221.90	8042.91	41.39	3.39	6.71	0.27
89	8137.00	0.40	172.20	8135.90	40.76	3.16	6.43	0.42
90	8230.00	0.20	225.20	8228.90	40.33	3.09	6.32	0.35
91	8324.00	0.30	217.40	8322.90	40.02	2.83	6.03	0.11
92	8417.00	0.20	223.30	8415.90	39.71	2.57	5.75	0.11
93	8510.00	0.10	290.00	8508.90	39.62	2.38	5.56	0.20
94	8603.00	0.10	343.50	8601.90	39.72	2.28	5.47	0.10
95	8696.00	0.40	217.90	8694.90	39.54	2.06	5.23	0.50
96	8790.00	0.30	257.80	8788.90	39.23	1.62	4.76	0.27
97	8883.00	0.50	260.70	8881.90	39.12	0.98	4.12	0.22
98	8976.00	0.30	281.40	8974.89	39.10	0.34	3.48	0.26
99	9069.00	0.40	280.90	9067.89	39.21	-0.22	2.93	0.11
100	9163.00	0.20	302.20	9161.89	39.36	-0.68	2.49	0.24
101	9256.00	0.50	305.30	9254.89	39.68	-1.15	2.04	0.32
102	9349.00	0.40	290.50	9347.89	40.03	-1.78	1.44	0.16
103	9442.00	0.40	278.40	9440.88	40.19	-2.41	0.83	0.09
104	9535.00	0.40	267.30	9533.88	40.22	-3.05	0.19	0.08

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional
Date:	11/20/2014
Time:	10:53
F9 to re-calculate	
Proposed dir:	85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
105	9629.00	0.40	312.90	9627.88	40.43	-3.62	-0.36	0.33
106	9722.00	0.50	278.70	9720.88	40.71	-4.26	-0.98	0.30
107	9815.00	0.40	263.50	9813.87	40.73	-4.98	-1.69	0.17
108	9908.00	0.40	265.70	9906.87	40.67	-5.63	-2.34	0.02
109	10001.00	0.40	272.00	9999.87	40.66	-6.28	-2.99	0.05
110	10063.00	0.40	301.50	10061.87	40.78	-6.68	-3.38	0.33
111	10095.00	0.40	312.70	10093.87	40.91	-6.86	-3.55	0.24
112	10126.00	2.20	44.40	10124.86	41.41	-6.52	-3.17	7.25
113	10157.00	6.10	53.60	10155.77	42.82	-4.78	-1.32	12.72
114	10188.00	10.20	56.10	10186.45	45.33	-1.17	2.47	13.27
115	10220.00	13.90	56.30	10217.74	49.04	4.38	8.31	11.56
116	10250.00	14.90	55.30	10246.80	53.24	10.55	14.79	3.43
117	10281.00	16.20	54.60	10276.66	58.01	17.35	21.96	4.24
118	10312.00	19.90	54.60	10306.13	63.57	25.18	30.21	11.94
119	10343.00	23.50	55.60	10334.93	70.12	34.58	40.11	11.67
120	10374.00	27.60	56.40	10362.89	77.59	45.67	51.76	13.27
121	10405.00	31.70	57.70	10389.83	85.92	58.54	65.26	13.39
122	10436.00	35.30	58.20	10415.68	95.00	73.04	80.44	11.65
123	10468.00	39.00	56.80	10441.18	105.39	89.33	97.51	11.86
124	10499.00	43.00	57.20	10464.57	116.46	106.38	115.40	12.93
125	10530.00	46.50	56.40	10486.58	128.41	124.64	134.56	11.44
126	10561.00	47.80	52.40	10507.67	141.64	143.11	154.03	10.35
127	10592.00	51.00	51.60	10527.84	156.13	161.65	173.68	10.51
128	10623.00	54.70	52.50	10546.56	171.32	181.13	194.32	12.16
129	10654.00	58.10	55.30	10563.71	186.52	202.00	216.34	13.30
130	10685.00	62.20	57.50	10579.14	201.39	224.39	239.85	14.59
131	10716.00	66.50	58.20	10592.56	216.25	248.05	264.63	14.02
132	10747.00	69.10	58.50	10604.27	231.31	272.48	290.19	8.43
133	10778.00	69.20	58.60	10615.30	246.43	297.19	316.04	0.44
134	10809.00	70.10	58.50	10626.08	261.59	321.99	341.97	2.92
135	10840.00	73.50	57.90	10635.76	277.11	347.01	368.16	11.12
136	10871.00	76.00	57.10	10643.92	293.18	372.23	394.59	8.44
137	10903.00	78.20	56.90	10651.06	310.16	398.39	422.03	6.90
138	10934.00	82.30	57.00	10656.31	326.82	424.00	448.89	13.23
139	10965.00	86.90	57.40	10659.23	343.54	449.93	476.09	14.89

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional
Date:	11/20/2014
Time:	10:53
F9 to re-calculate	
Proposed dir:	85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
140	10990.00	89.50	57.20	10660.01	357.03	470.96	498.13	10.43
141	11051.00	89.90	56.00	10660.33	390.61	521.88	551.59	2.07
142	11082.00	90.30	56.00	10660.28	407.95	547.58	578.60	1.29
143	11112.00	90.20	56.30	10660.15	424.66	572.49	604.77	1.05
144	11143.00	89.70	57.50	10660.17	441.59	598.46	632.02	4.19
145	11174.00	89.50	57.30	10660.39	458.29	624.58	659.39	0.91
146	11205.00	89.40	57.90	10660.69	474.90	650.75	686.82	1.96
147	11236.00	88.50	59.60	10661.26	490.98	677.25	714.52	6.20
148	11267.00	88.70	59.70	10662.01	506.64	703.99	742.43	0.72
149	11298.00	89.30	60.50	10662.55	522.09	730.86	770.46	3.23
150	11329.00	90.00	62.40	10662.74	536.90	758.09	798.79	6.53
151	11360.00	90.00	63.10	10662.74	551.09	785.65	827.40	2.26
152	11391.00	90.20	63.60	10662.69	565.00	813.36	856.13	1.74
153	11421.00	89.60	65.30	10662.74	577.94	840.42	884.15	6.01
154	11452.00	89.80	65.80	10662.90	590.77	868.64	913.31	1.74
155	11483.00	89.80	65.90	10663.01	603.45	896.93	942.53	0.32
156	11514.00	88.60	68.00	10663.44	615.59	925.45	971.93	7.80
157	11545.00	88.70	67.90	10664.18	627.22	954.17	1001.50	0.46
158	11576.00	88.80	68.50	10664.85	638.73	982.95	1031.10	1.96
159	11607.00	88.60	70.60	10665.55	649.56	1011.98	1060.92	6.80
160	11638.00	88.70	70.60	10666.29	659.85	1041.22	1090.88	0.32
161	11669.00	88.40	71.00	10667.07	670.04	1070.48	1120.87	1.61
162	11701.00	87.80	72.90	10668.13	679.95	1100.89	1151.98	6.22
163	11732.00	88.00	72.70	10669.27	689.11	1130.48	1182.21	0.91
164	11762.00	88.40	73.50	10670.21	697.83	1159.17	1211.51	2.98
165	11793.00	88.70	75.10	10670.99	706.22	1189.01	1241.92	5.25
166	11824.00	88.80	75.70	10671.67	714.03	1219.00	1272.44	1.96
167	11855.00	89.30	76.40	10672.18	721.50	1249.08	1303.03	2.77
168	11886.00	89.20	78.00	10672.59	728.37	1279.31	1333.71	5.17
169	11916.00	89.10	77.90	10673.03	734.63	1308.64	1363.45	0.47
170	11947.00	89.00	78.80	10673.55	740.89	1339.00	1394.21	2.92
171	11978.00	88.80	79.60	10674.14	746.70	1369.44	1425.03	2.66
172	12009.00	89.10	79.90	10674.71	752.21	1399.94	1455.87	1.37
173	12040.00	89.50	79.90	10675.09	757.65	1430.46	1486.73	1.29
174	12071.00	89.70	79.50	10675.31	763.19	1460.96	1517.57	1.44

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional
Date:	11/20/2014
Time:	10:53
F9 to re-calculate	
Proposed dir:	85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
175	12101.00	89.60	79.60	10675.49	768.63	1490.46	1547.42	0.47
176	12133.00	89.30	80.20	10675.80	774.24	1521.96	1579.27	2.10
177	12164.00	88.40	81.10	10676.42	779.28	1552.55	1610.16	4.11
178	12194.00	88.90	80.50	10677.13	784.07	1582.15	1640.05	2.60
179	12225.00	89.10	81.60	10677.67	788.90	1612.77	1670.96	3.61
180	12256.00	87.90	82.90	10678.48	793.08	1643.47	1701.90	5.71
181	12286.00	87.80	82.80	10679.60	796.81	1673.22	1731.85	0.47
182	12318.00	87.90	83.50	10680.80	800.62	1704.97	1763.80	2.21
183	12349.00	87.40	85.70	10682.08	803.54	1735.80	1794.77	7.27
184	12380.00	87.10	86.10	10683.56	805.75	1766.69	1825.73	1.61
185	12411.00	87.40	86.40	10685.05	807.77	1797.59	1856.69	1.37
186	12441.00	88.80	87.30	10686.05	809.42	1827.52	1886.67	5.55
187	12473.00	88.80	86.90	10686.72	811.04	1859.47	1918.64	1.25
188	12504.00	88.70	88.10	10687.39	812.39	1890.44	1949.62	3.88
189	12536.00	89.00	89.70	10688.03	813.01	1922.42	1981.55	5.09
190	12631.00	88.80	89.40	10689.86	813.75	2017.40	2076.28	0.38
191	12725.00	90.90	89.90	10690.10	814.33	2111.40	2170.01	2.30
192	12819.00	89.70	89.10	10689.61	815.15	2205.39	2263.77	1.53
193	12913.00	90.10	89.40	10689.78	816.38	2299.38	2357.56	0.53
194	13007.00	90.80	90.50	10689.04	816.46	2393.37	2451.25	1.39
195	13101.00	89.70	90.10	10688.63	815.97	2487.37	2544.91	1.25
196	13195.00	87.20	91.30	10691.17	814.82	2581.32	2638.46	2.95
197	13288.00	87.20	91.90	10695.71	812.23	2674.17	2730.80	0.64
198	13382.00	86.80	92.00	10700.63	809.03	2767.99	2824.06	0.44
199	13476.00	88.30	91.00	10704.65	806.57	2861.87	2917.44	1.92
200	13570.00	88.40	90.50	10707.36	805.34	2955.82	3010.99	0.54
201	13663.00	89.00	89.90	10709.47	805.02	3048.79	3103.63	0.91
202	13757.00	89.80	89.10	10710.45	805.84	3142.78	3197.38	1.20
203	13851.00	90.30	88.50	10710.37	807.81	3236.76	3291.22	0.83
204	13945.00	90.10	90.00	10710.04	809.04	3330.75	3385.00	1.61
205	14039.00	90.20	90.00	10709.80	809.04	3424.75	3478.70	0.11
206	14134.00	89.30	89.30	10710.21	809.62	3519.75	3573.43	1.20
207	14229.00	89.50	89.30	10711.20	810.78	3614.73	3668.21	0.21
208	14323.00	90.60	89.00	10711.12	812.17	3708.72	3762.00	1.21
209	14418.00	90.20	88.90	10710.46	813.92	3803.70	3856.82	0.43

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional

Date: 11/20/2014  
 Time: 10:53  
**F9 to re-calculate**

Proposed dir: 85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
210	14513.00	86.20	88.80	10713.44	815.82	3898.62	3951.58	4.21
211	14608.00	88.00	89.70	10718.25	817.06	3993.48	4046.23	2.12
212	14703.00	89.00	90.90	10720.74	816.56	4088.45	4140.85	1.64
213	14797.00	89.70	90.00	10721.80	815.83	4182.44	4234.48	1.21
214	14892.00	91.40	90.20	10720.89	815.66	4277.43	4329.15	1.80
215	14986.00	89.60	89.90	10720.07	815.58	4371.42	4422.83	1.94
216	15081.00	86.50	89.40	10723.30	816.16	4466.35	4517.50	3.31
217	15176.00	88.60	89.90	10727.36	816.74	4561.26	4612.15	2.27
218	15271.00	88.50	89.30	10729.77	817.40	4656.23	4706.86	0.64
219	15365.00	91.00	89.60	10730.18	818.30	4750.21	4800.61	2.68
220	15460.00	90.50	90.00	10728.93	818.63	4845.20	4895.32	0.67
221	15555.00	89.50	90.00	10728.93	818.63	4940.20	4990.02	1.05
222	15649.00	89.30	90.80	10729.92	817.98	5034.19	5083.65	0.88
223	15744.00	90.70	90.40	10729.92	816.98	5129.19	5178.26	1.53
224	15839.00	91.30	89.70	10728.26	816.90	5224.17	5272.93	0.97
225	15934.00	90.80	90.90	10726.52	816.40	5319.15	5367.56	1.37
226	16028.00	91.00	90.00	10725.04	815.66	5413.14	5461.18	0.98
227	16123.00	88.40	89.30	10725.54	816.25	5508.12	5555.91	2.83
228	16218.00	89.50	89.60	10727.28	817.16	5603.10	5650.65	1.20
229	16313.00	89.10	90.00	10728.44	817.49	5698.09	5745.36	0.60
230	16407.00	90.20	90.10	10729.02	817.41	5792.09	5839.05	1.18
231	16502.00	89.60	90.90	10729.18	816.58	5887.09	5933.67	1.05
232	16596.00	88.40	90.70	10730.82	815.27	5981.06	6027.24	1.29
233	16690.00	88.40	90.70	10733.45	814.12	6075.02	6120.80	0.00
234	16785.00	88.70	89.40	10735.85	814.03	6169.98	6215.45	1.40
235	16880.00	88.90	89.10	10737.84	815.28	6264.96	6310.21	0.38
236	16975.00	89.10	90.10	10739.50	815.94	6359.94	6404.94	1.07
237	17069.00	89.30	89.70	10740.81	816.10	6453.93	6498.64	0.48
238	17164.00	89.20	91.30	10742.05	815.28	6548.91	6593.25	1.69
239	17258.00	89.60	90.70	10743.04	813.64	6642.89	6686.80	0.77
240	17353.00	90.20	89.60	10743.20	813.39	6737.89	6781.47	1.32
241	17448.00	89.60	89.40	10743.37	814.22	6832.89	6876.22	0.67
242	17543.00	90.10	88.80	10743.62	815.71	6927.87	6971.02	0.82
243	17637.00	89.60	89.40	10743.87	817.18	7021.86	7064.82	0.83
244	17732.00	90.00	89.40	10744.20	818.18	7116.85	7159.59	0.42

&lt;

# SUNBURST CONSULTING, INC.

&gt;

Operator:	Oasis Petroleum North America, LLC	
Well :	Wade Federal 5300 21-30 13B	
County:	McKenzie	State: ND
QQ:	Lot 2	Section: 30
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	1574	FN/SL: N
	270	FE/WL: W

Kick-off:	11/1/2014
Finish:	11/10/2014
Directional Supervision:	Ryan Directional

Date: 11/20/2014  
 Time: 10:53  
**F9 to re-calculate**

Proposed dir: 85.39

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
245	17826.00	90.70	90.20	10743.62	818.51	7210.85	7253.31	1.13
246	17921.00	90.60	90.90	10742.55	817.60	7305.84	7347.92	0.74
247	18015.00	91.00	90.40	10741.23	816.53	7399.82	7441.51	0.68
248	18110.00	90.30	91.00	10740.15	815.37	7494.81	7536.10	0.97
249	18205.00	91.20	90.50	10738.91	814.13	7589.79	7630.67	1.08
250	18300.00	89.60	90.70	10738.25	813.13	7684.78	7725.27	1.70
251	18394.00	90.50	89.40	10738.17	813.05	7778.78	7818.96	1.68
252	18489.00	89.10	89.90	10738.50	813.63	7873.77	7913.69	1.56
253	18584.00	89.10	90.20	10739.99	813.55	7968.76	8008.37	0.32
254	18679.00	90.10	91.50	10740.65	812.14	8063.75	8102.93	1.73
255	18773.00	90.20	91.50	10740.41	809.68	8157.71	8196.40	0.11
256	18868.00	90.20	91.10	10740.08	807.52	8252.69	8290.89	0.42
257	18963.00	89.50	91.40	10740.32	805.45	8347.66	8385.39	0.80
258	19058.00	90.30	91.20	10740.49	803.29	8442.64	8479.89	0.87
259	19152.00	90.00	90.70	10740.24	801.73	8536.63	8573.45	0.62
260	19247.00	89.00	91.30	10741.07	800.08	8631.61	8667.99	1.23
261	19342.00	89.60	90.50	10742.23	798.58	8726.59	8762.54	1.05
262	19437.00	90.50	90.00	10742.15	798.17	8821.58	8857.20	1.08
263	19532.00	88.30	88.00	10743.15	799.83	8916.55	8951.99	3.13
264	19626.00	88.50	87.40	10745.77	803.60	9010.44	9045.88	0.67
265	19721.00	89.10	97.70	10747.77	799.38	9105.20	9139.99	10.86
266	19816.00	89.80	87.00	10748.68	795.49	9199.97	9234.15	11.29
267	19911.00	90.40	87.50	10748.51	800.05	9294.86	9329.10	0.82
268	20005.00	87.60	90.00	10750.15	802.10	9388.81	9422.90	3.99
269	20100.00	88.20	89.80	10753.64	802.26	9483.75	9517.55	0.67
270	20195.00	89.60	89.40	10755.46	802.93	9578.72	9612.27	1.53
271	20290.00	90.50	89.50	10755.38	803.84	9673.72	9707.03	0.95
272	20384.00	89.30	87.40	10755.54	806.38	9767.68	9800.89	2.57
273	20479.00	89.00	85.90	10756.95	811.93	9862.50	9895.85	1.61
274	20498.00	88.70	85.50	10757.33	813.36	9881.44	9914.85	2.63
275	20560.00	88.70	85.50	10758.74	818.22	9943.24	9976.83	0.00

# FORMATION TOPS & STRUCTURAL RELATIONSHIPS

		Subject Well:						Offset Wells:		
		Oasis Petroleum N. A., LLC Wade Federal 5300 21-30 13B 1,574' FNL & 270 FWL Location: Lot 2 Section 30, T153N, R100W								
Elevation:	GL: 1,999'	Sub: 25'	KB: 2,024'					Dip To Wade Federal 5300 21-30 12T	Dip To Wade Federal 5300 21-30 14T2	Dip To Chalmers 5301 44-24 412R
Formation/ Marker	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	Driller's Depth Top (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	Dip To Prog.	Dip To Wade Federal 5300 21-30 12T	Dip To Wade Federal 5300 21-30 14T2
Kibbey Lime	8,308'	-6,284'	8,312'	8,311'	-6,287'	160'	2,349'	-3'	-3'	11'
Charles	8,470'	-6,446'	8,472'	8,471'	-6,447'	563'	2,189'	-1'	2'	-1'
UB	9,035'	-7,011'	9,035'	9,034'	-7,010'	79'	1,626'	1'	5'	1'
Base Last Salt	9,115'	-7,091'	9,114'	9,113'	-7,089'	48'	1,547'	2'	1'	10'
Ratcliffe	9,163'	-7,139'	9,162'	9,161'	-7,137'	170'	1,499'	2'	2'	8'
Mission Canyon	9,332'	-7,308'	9,332'	9,331'	-7,307'	556'	1,329'	1'	1'	13'
Lodgepole	9,886'	-7,862'	9,888'	9,887'	-7,863'	95'	773'	-1'	-1'	15'
Lodgepole A	9,983'	-7,959'	9,983'	9,982'	-7,958'	76'	678'	1'	3'	1'
Lodgepole B	10,060'	-8,036'	10,059'	10,058'	-8,034'	68'	602'	2'	4'	2'
Lodgepole C	10,131'	-8,107'	10,127'	10,126'	-8,102'	187'	534'	5'	4'	5'
Lodgepole D	10,315'	-8,291'	10,319'	10,313'	-8,289'	129'	347'	2'	-1'	2'
Lodgepole E	10,442'	-8,418'	10,471'	10,442'	-8,418'	87'	218'	0'	-10'	0'
Lodgepole F	10,524'	-8,500'	10,594'	10,529'	-8,505'	84'	131'	-5'	-2'	-5'
False Bakken	10,610'	-8,586'	10,771'	10,613'	-8,589'	11'	47'	-3'	-1'	-3'
Upper Bakken	10,619'	-8,595'	10,802'	10,624'	-8,600'	18'	36'	-5'	-3'	-5'
Middle Bakken	10,636'	-8,612'	10,861'	10,642'	-8,618'	15'	18'	-6'	-4'	-6'
Top of Target	10,647'	-8,620'	10,937'	10,657'	-8,633'	3'	3'	-10'	-11'	-13'
Landing Target	10,660'	-8,630'	11,051'	10,660'	-8,636'	-	0'	0'	-4'	-6'

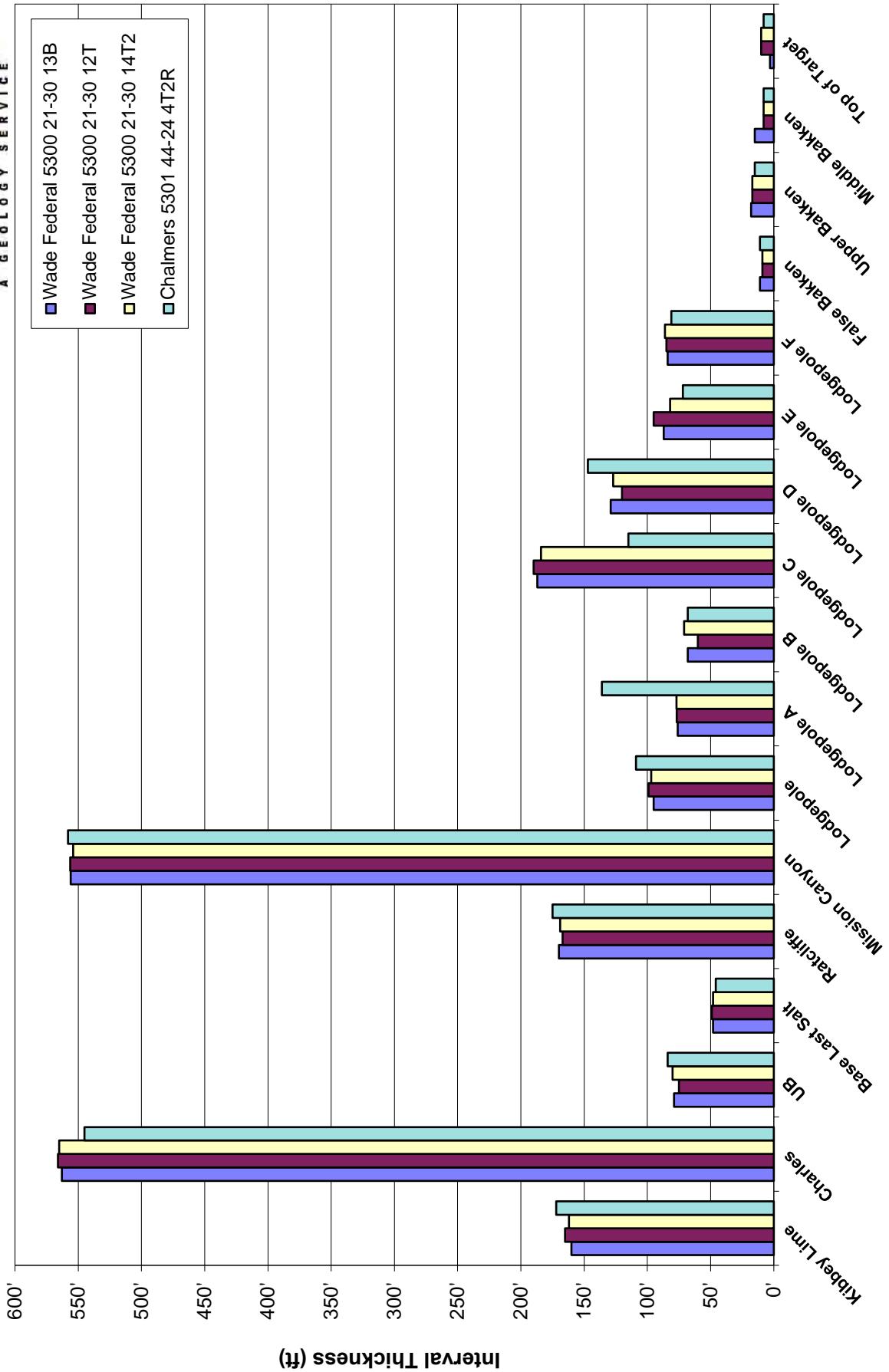
# CONTROL DATA

Operator:		Oasis Petroleum North America		Oasis Petroleum North America		Oasis Petroleum North America	
Well Name:		<b>Wade Federal 5300 21-30 12T</b>		<b>Wade Federal 5300 21-30 14T2</b>		<b>Chalmers 5301 44-24 4T2R</b>	
Location:		SW NW Section 30, T153N, R100W McKenzie Co., ND		SW NW Section 30, T153N, R100W McKenzie Co., ND		SE SE Section 24, T153N, R101W McKenzie Co., ND	
Elevation:		Shares pad with subject well KB: 2,024'		Shares pad with subject well KB: 2,024'		0.50 mile north of subject well KB: 1,968'	
Formation/ Zone		Datum (MSL)	Interval Thickness	Datum (MSL)	Interval Thickness	Datum (MSL)	Interval Thickness
	Top	Top	Thickness to Target	Top	Thickness to Target	Top	Thickness to Target
Kibbey Lime	8,308'	-6,284'	165'	8,348'	-6,284'	162'	2,346'
Charles	8,473'	-6,449'	566'	8,473'	-6,446'	565'	2,184'
UB	9,039'	-7,015'	75'	1,617'	9,035'	-7,011'	80'
Base Last Salt	9,114'	-7,090'	49'	1,542'	9,115'	-7,091'	48'
Ratcliffe	9,163'	-7,139'	167'	1,493'	9,163'	-7,139'	169'
Mission Canyon	9,330'	-7,306'	556'	1,326'	9,332'	-7,308'	554'
Lodgepole	9,886'	-7,862'	99'	770'	9,886'	-7,862'	97'
Lodgepole A	9,985'	-7,961'	77'	671'	9,983'	-7,959'	77'
Lodgepole B	10,062'	-8,038'	60'	594'	10,060'	-8,036'	71'
Lodgepole C	10,122'	-8,098'	190'	534'	10,131'	-8,107'	184'
Lodgepole D	10,312'	-8,288'	120'	344'	10,315'	-8,291'	127'
Lodgepole E	10,432'	-8,408'	95'	224'	10,442'	-8,418'	82'
Lodgepole F	10,527'	-8,503'	85'	129'	10,524'	-8,500'	86'
False Bakken	10,612'	-8,588'	9'	44'	10,610'	-8,586'	9'
Upper Bakken	10,621'	-8,597'	17'	35'	10,619'	-8,595'	17'
Middle Bakken	10,638'	-8,614'	8'	18'	10,636'	-8,612'	8'
Top of Target	10,646'	-8,622'	10'	10'	10,644'	-8,620'	10'
Landing Target	10,656'	-8,632'	-	0'	10,654'	-8,630'	-
				0'	10,616'	-8,648'	-
					0'	10,608'	8'
					10'	10,600'	8'
					18'	10,600'	8'
					35'	10,585'	15'
					44'	10,574'	11'
					81'	10,493'	42'
					86'	10,421'	31'
					130'	10,421'	16'
					17'	10,421'	8'
					18'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					9'	10,574'	8'
					17'	10,574'	8'
					18'	10,574'	8'
					35'	10,585'	8'
					44'	10,574'	8'
					81'	10,493'	8'
					86'	10,421'	8'
					130'	10,421'	8'
					17'	10,421'	8'
					18'	10,421'	8'
					35'	10,585'	8'
					44'	10,574'	8'



## INTERVAL THICKNESS

### Oasis Petroleum N. A., LLC - Wade Federal 5300 21-30 13B

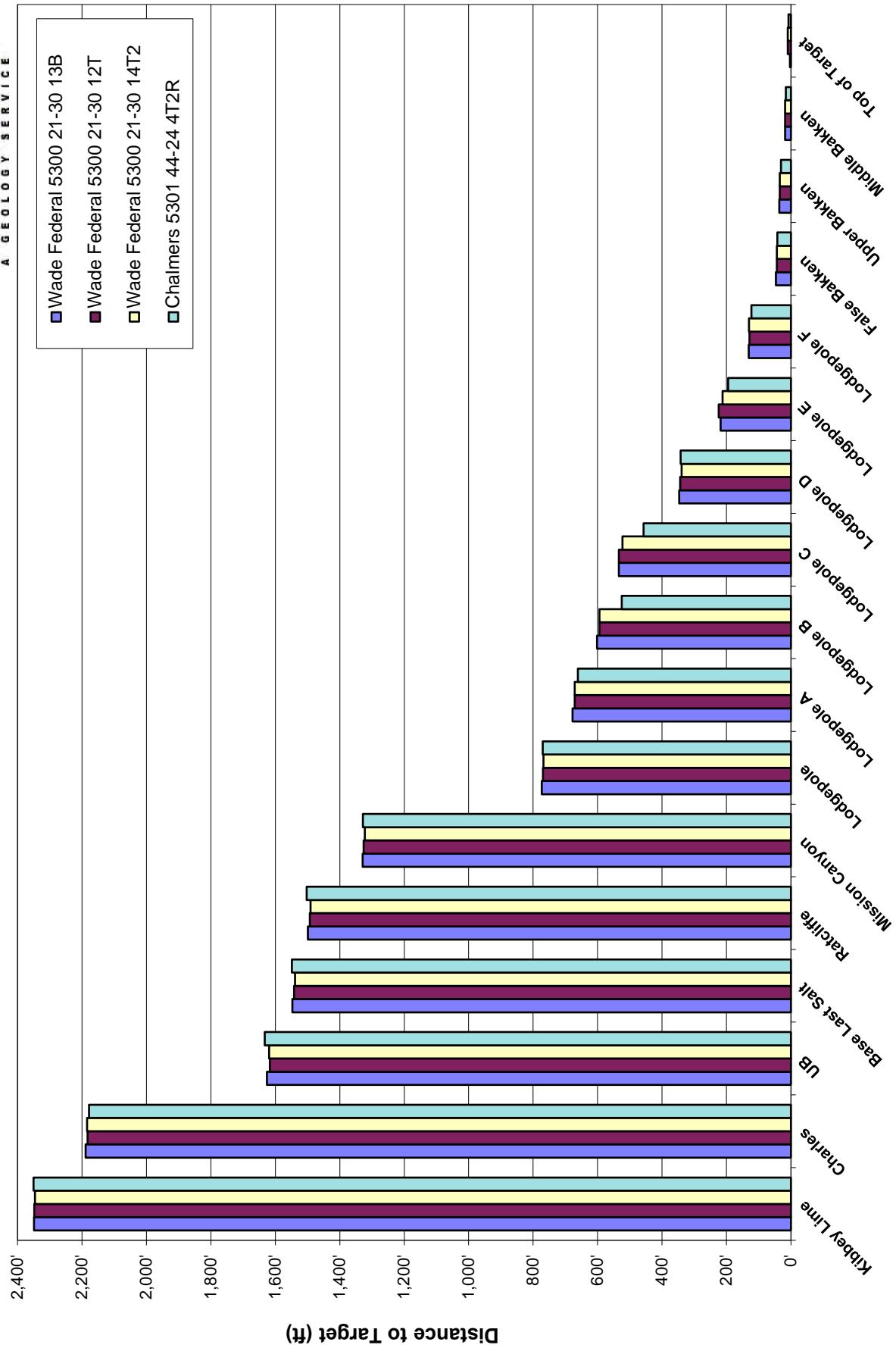


# LANDING PROJECTION

Formation/Zone:	Proposed Top of Target From:			
	Wade Federal 5300 21-30 12T	Wade Federal 5300 21-30 14T2	Chalmers 5301 44-24 4T2R	Average of Offset Wells
Kibbey Lime	10,659'	10,657'	10,661'	10,659'
Charles	10,654'	10,655'	10,649'	10,653'
UB	10,651'	10,653'	10,667'	10,657'
Base Last Salt	10,655'	10,652'	10,662'	10,656'
Ratcliffe	10,654'	10,652'	10,664'	10,657'
Mission Canyon	10,657'	10,653'	10,659'	10,656'
Lodgepole	10,657'	10,655'	10,657'	10,656'
Lodgepole A	10,653'	10,653'	10,643'	10,650'
Lodgepole B	10,652'	10,652'	10,583'	10,629'
Lodgepole C	10,660'	10,649'	10,583'	10,631'
Lodgepole D	10,657'	10,652'	10,655'	10,655'
Lodgepole E	10,666'	10,654'	10,637'	10,652'
Lodgepole F	10,658'	10,659'	10,652'	10,656'
False Bakken	10,657'	10,657'	10,655'	10,656'
Upper Bakken	10,659'	10,659'	10,655'	10,658'
Middle Bakken	10,660'	10,660'	10,658'	10,659'
Top of Target	10,667'	10,667'	10,665'	10,666'
Landing Target	10,660'	10,660'	10,660'	10,660'

# ISOPACH TO TARGET

## Oasis Petroleum North America, LLC - Wade Federal 5300 21-30 13B



# LITHOLOGY

## **Wade Federal 5300 21-30 13B**

*Rig crews caught lagged samples in 30' intervals under the supervision of Sunburst geologists. A detailed list of sampling intervals is included in the well data summary page. Sample or gamma ray marker tops have been inserted in the sample descriptions below for reference. Samples were examined wet and dry under a binocular microscope. Drilling fluid was diesel-based invert from surface casing to intermediate casing, while salt water drilling fluid was used throughout the lateral. Sample collection began at 8,200' MD.*

### **Logging began in the Kibbey Formation**

8,200-8,230 SILTSTONE: dark orange, light brown, tan, pink, soft, sub-blocky, calcite cemented, poorly cemented; rare ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: tan-off white, very fine grained, sub-rounded, moderately sorted, calcite cemented, poorly cemented

8,230-8,260 SILTSTONE: dark orange, light brown, tan, pink, soft, sub-blocky, calcite cemented, poorly cemented; rare ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

8,260-8,290 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

### **Kibbey "Lime"**

**[8,312' MD, 8,311' TVD (-6,287')]**

8,290-8,320 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

8,320-8,350 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

8,350-8,380 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

8,380-8,410 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

8,410-8,440 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

8,440-8,470 SILTSTONE: dark orange, light brown, tan pink, soft, sub-blocky, calcite cemented, poorly cemented; occasional ANHYDRITE: off white, amorphous texture; trace SILTY SANDSTONE: as above

### **Charles Formation: 1<sup>st</sup> Salt**

**[8,472' MD, 8,471' TVD (-6,447')]**

8,470-8,500 SILTSTONE: orange, brown, trace pink, soft to friable, sub-blocky, moderately calcite cemented; occasional ANHYDRITE: off-white, soft, amorphous

8,500-8,530 SALT: translucent, frosted, microcrystalline, anhedral, crystalline texture, hard; occasional ANHYDRITE: off-white, soft, amorphous

8,530-8,560 SALT: translucent, frosted, milky, microcrystalline, sub-euhedral, occasional SILTSTONE: orange, brown, tan, pink, soft, sub-blocky, moderately calcite cemented

8,560-8,590 SALT: translucent, frosted, microcrystalline, anhedral, crystalline, hard, occasional LIMESTONE: mudstone, medium gray, microcrystalline, friable-firm, dense, earthy, no visible porosity

8,590-8,620 SALT: translucent, frosted-white, microcrystalline, anhedral, crystalline, hard

8,620-8,650 LIMESTONE: mudstone, light to medium gray, occasional orange-brown, microcrystalline, soft to friable, argillaceous in part, chalky in part, no visible porosity; occasional SALT: translucent, frosted-white, microcrystalline, anhedral, crystalline, hard; occasional ANHYDRITE: off-white, microcrystalline, very soft, chalky, no visible porosity

8,650-8,680 SALT: translucent, microcrystalline, anhedral, crystalline, hard; occasional LIMESTONE: mudstone, light to medium gray, occasional orange-brown, microcrystalline, soft to friable, argillaceous in part, chalky in part, no visible porosity

8,680-8,710 LIMESTONE: mudstone, light to medium gray, tan-brown, friable-firm, argillaceous in part, earthy texture, no visible porosity; common ANHYDRITE: white, microcrystalline, soft, anhedral, chalky, no visible porosity

8,710-8,740 LIMESTONE: mudstone, light to medium gray, tan-brown, firm-hard, earthy texture, no visible porosity; white, off-white, microcrystalline, soft, anhedral, chalky, no visible porosity; occasional SALT: frosted, microcrystalline, anhedral, hard

8,740-8,770 LIMESTONE: mudstone, light to medium gray, tan-brown, firm-hard, earthy texture, no visible porosity; white, off-white, microcrystalline, soft, anhedral, chalky, no visible porosity

8,770-8,800 LIMESTONE: mudstone, light to medium gray, frequent brown, firm-hard, earthy texture, no visible porosity; common SALT: translucent, off-white, crystalline, anhedral, hard

8,800-8,830 LIMESTONE: mudstone, light to medium gray, common brown, microcrystalline, hard, earthy texture, no visible porosity

8,830-8,860 LIMESTONE: mudstone, light to medium gray, common brown, microcrystalline, hard, earthy texture, no visible porosity

8,860-8,890 LIMESTONE: mudstone, medium gray, medium brown, occasional tan, microcrystalline, friable-firm, earthy texture, dolomitic, no visible porosity; trace SALT: translucent, off-white, crystalline, anhedral, hard

8,890-8,920 LIMESTONE: mudstone, medium gray, medium gray, tan, microcrystalline, firm, earthy texture, dolomitic, no visible porosity

8,920-8,950 ARGILLACEOUS LIMESTONE: mudstone, medium gray, tan, microcrystalline, friable-firm, dense, earthy texture, no visible porosity; white, off-white, soft, amorphous, no visible porosity

8,950-8,980 ARGILLACEOUS LIMESTONE: mudstone, medium gray, light brown, tan, microcrystalline, friable-firm, dense, earthy texture, no visible porosity; white, off-white, soft to friable, amorphous, no visible porosity

8,980-9,010 LIMESTONE: mudstone, medium gray, light brown, dark brown, tan in part, microcrystalline, firm, dense, earthy texture, no visible porosity; white, off-white, soft, amorphous, no visible porosity

9,010-9,040 LIMESTONE: mudstone, light gray, light brown, tan, microcrystalline, friable-firm, earthy texture, no visible porosity; off-white, soft, amorphous, anhedral, no visible porosity; trace SALT: white, off-white, frosted, crystalline, hard, amorphous, no visible porosity

**UB** **[9,035' MD, 9,034' TVD (-7,010')]**

9,040-9,070 SALT: white, translucent, microcrystalline, firm, anhedral, crystalline, frosted; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, light brown, microcrystalline, friable, earthy texture, no visible porosity

9,070-9,100 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, light brown, microcrystalline, friable, earthy texture, no visible porosity; occasional SALT: white, microcrystalline, hard, anhedral

**Base Last Salt****[9,114' MD, 9,113' TVD (-7,089')]**

9,130-9,160 ARGILLACEOUS LIMESTONE: mudstone, light gray, light to medium brown, microcrystalline, friable-firm, earthy texture, no visible porosity; off-white, microcrystalline, soft, amorphous, no visible porosity

**Ratcliffe****[9,162' MD, 9,161' TVD (-7,137')]**

9,160-9,190 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium brown, microcrystalline, firm, earthy texture, no visible porosity; off-white, microcrystalline, soft, amorphous, no visible porosity

9,190-9,220 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense-earthy texture, no visible porosity; off white, soft, amorphous, no visible porosity

9,220-9,250 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense-earthy texture, no visible porosity; off white, soft, amorphous, no visible porosity

9,250-9,280 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense-earthy texture, no visible porosity; off white, soft, amorphous, no visible porosity

9,280-9,310 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, medium gray, microcrystalline, friable-firm, dense, earthy texture, no visible porosity

9,310-9,340 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, medium gray, microcrystalline, friable-firm, dense, earthy texture, no visible porosity

**Mission Canyon Formation****[9,332' MD, 9,331' TVD (-7,307')]**

9,340-9,370 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, medium gray, microcrystalline, friable-firm, dense, earthy texture, no visible porosity

9,370-9,400 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray, medium gray, microcrystalline, friable-firm, dense, earthy texture, no visible porosity

9,400-9,430 ARGILLACEOUS LIMESTONE: mudstone, medium gray, light brown, microcrystalline, firm, dense, earthy texture, occasional lamination in part, no visible porosity

9,430-9,460 ARGILLACEOUS LIMESTONE: mudstone, medium gray, light brown, microcrystalline, firm, dense, earthy texture, occasional lamination in part, no visible porosity

9,460-9,490 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,490-9,520 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,520-9,550 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,550-9,580 ARGILLACEOUS LIMESTONE: mudstone, light brown, dark brown, microcrystalline, firm, dense, earthy texture, lamination visible in part, no visible porosity

9,580-9,610 ARGILLACEOUS LIMESTONE: mudstone, light brown, dark brown, microcrystalline, firm, dense, earthy texture, lamination visible in part, no visible porosity

9,610-9,640 ARGILLACEOUS LIMESTONE: mudstone, light brown, dark brown, microcrystalline, firm, dense, earthy texture, lamination visible in part, no visible porosity

9,640-9,670 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,670-9,700 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,700-9,730 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,730-9,760 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray to black, microcrystalline, friable-firm, earthy texture, laminated in part, no visible porosity

9,760-9,790 ARGILLACEOUS LIMESTONE: mudstone, medium brown, medium gray, dark gray, occasional black, microcrystalline, friable-firm, earthy, occasional laminated in part, no visible porosity

9,790-9,820 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium gray, microcrystalline, firm, earthy texture, occasional laminated in part, no visible porosity

9,820-9,850 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium gray, occasional brown, microcrystalline, friable, earthy texture, no visible porosity

9,850-9,880 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, medium brown, microcrystalline, friable-fair, earthy texture, no visible porosity

### **Lodgepole Formation**

**[9,888' MD, 9,887' TVD (-7,863')]**

9,880-9,910 ARGILLACEOUS LIMESTONE: mudstone, medium gray-brown, occasional dark brown, occasional light brown-tan, microcrystalline, dark sample are firm, light brown friable, earthy texture, no visible porosity

9,910-9,940 ARGILLACEOUS LIMESTONE: mudstone, medium gray, brown, dark brown, microcrystalline, firm, earthy texture, no visible porosity

9,940-9,970 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, brown, microcrystalline, friable-firm, earthy texture, no visible porosity

9,970-10,000 ARGILLACEOUS LIMESTONE: mudstone, medium gray, medium-dark brown, microcrystalline, firm, earthy texture, no visible porosity; trace disseminated pyrite

10,000-10,030 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium gray, dark brown, microcrystalline, firm, earthy texture, no visible porosity

10,030-10,060 ARGILLACEOUS LIMESTONE: mudstone, medium brown, dark brown, microcrystalline, friable, earthy texture, no visible porosity

10,060-10,090 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium gray, brown, microcrystalline, friable-firm, earthy texture, no visible porosity

10,090-10,118 ARGILLACEOUS LIMESTONE: mudstone, light gray, medium gray, brown, microcrystalline, friable-firm, earthy texture, no visible porosity

10,118-10,150 ARGILLACEOUS LIMESTONE: mudstone, light to medium brown, common dark brown, microcrystalline, friable, firm in part, dense, no visible porosity

10,150-10,180 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, dense, trace disseminated pyrite, no visible porosity

10,180-10,210 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, dense, trace disseminated pyrite, no visible porosity



**False Bakken****[10,771' MD, 10,613' TVD (-8,589')]**

10,780-10,810 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, dense, trace disseminated pyrite, no visible porosity; trace SHALE: black-very dark brown, firm, blocky, earthy texture, no visible porosity, abundant brown even oil stain

**Bakken Formation: Upper Bakken Shale****[10,802' MD, 10,624' TVD (-8,600')]**

10,810-10,820 LIMESTONE: mudstone, gray to dark gray, microcrystalline, firm, dense, trace disseminated pyrite, no visible porosity; occasional SHALE: as above

10,820-10,830 SHALE: black-very dark brown, firm, blocky, earthy texture, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10,830-10,840 SHALE: black-very dark brown, firm, blocky, earthy texture, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10,840-10,850 SHALE: black-very dark brown, firm, blocky, earthy texture, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10,850-10,860 SHALE: black-very dark brown, firm, blocky, earthy texture, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

**Middle Bakken****[10,861' MD, 10,642' TVD (-8,618')]**

10,860-10,870 SHALE: black-very dark brown, firm, blocky, earthy texture, petroliferous, carbonaceous, no visible porosity, common brown even oil stain

10,870-10,880 SILTSTONE: medium gray, medium-dark brown, sub-blocky, moderately calcite cemented, earthy, calcite cemented; occasional SHALE: black, dark brown, blocky, earthy, even oil stain

10,880-10,890 SILTSTONE: medium gray, dark brown, sub-blocky, moderately calcite cemented, earthy, calcite cemented; rare disseminated pyrite

10,890-10,900 SILTSTONE: medium gray, medium brown, sub-blocky, moderately calcite cemented, earthy, moderately calcite cemented; rare disseminated pyrite

10,900-10,910 SILTSTONE: medium gray, medium brown, occasional dark brown, sub-blocky, earthy, moderately calcite cemented, trace oil stain; rare disseminated pyrite

10,910-10,920 SILTSTONE: medium gray, medium brown, sub-blocky, moderately calcite cemented, earthy, trace oil stain; rare disseminated pyrite; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,920-10,930 SILTSTONE: medium gray, dark gray, brown, sub-blocky, moderately calcite cemented, earthy, trace oil stain; rare disseminated pyrite; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,930-10,940 SILTSTONE: light gray, medium gray, friable-firm, sub-blocky, moderately calcite cemented, earthy, trace oil stain; rare disseminated pyrite; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,940-10,950 SILTSTONE: light gray, medium gray, friable-firm, sub-blocky, moderately calcite cemented, earthy, trace oil stain; rare disseminated pyrite; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,950-10,960 SILTSTONE: medium gray, sub-blocky, moderately calcite cemented, earthy, trace oil stain; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,960-10,970 SILTSTONE: light gray, medium gray, medium brown, friable-firm, sub-blocky, moderately calcite cemented, earthy, trace oil stain; occasional SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,970-10,980 SILTSTONE: medium gray, light brown, sub-blocky, friable, moderately calcite cemented, earthy, trace oil stain; common SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,980-10,990 SILTSTONE: light gray, medium gray, sub-blocky, friable, moderately calcite cemented, earthy, rare trace oil stain; SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10,990-11,000 SILTSTONE: medium gray, sub-blocky, friable-firm, calcite cemented, earthy, visible oil stain; common SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,000-11,010 SILTSTONE: light to medium gray, sub-blocky, friable-firm, calcite cemented, earthy, visible oil stain; common SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,010-11,020 SILTSTONE: light to medium gray, sub-blocky, friable-firm, calcite cemented, earthy, visible oil stain; common SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,020-11,030 SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,030-11,040 SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,040-11,050 SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11,080-11,110 SILTY SANDSTONE: medium to light gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast weak diffuse pale yellow cut fluorescence





11,950-11,980 SILTY SANDSTONE: light gray, light-brown, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

11,980-12,010 SILTY SANDSTONE: light gray, light-brown, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,010-12,040 SILTY SANDSTONE: light gray, light-brown, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,040-12,070 SILTY SANDSTONE: light to medium gray, light-brown, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, occasional disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,070-12,100 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,100-12,130 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, moderately cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,130-12,160 SILTY SANDSTONE: light to medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, moderately cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,160-12,190 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, moderately cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately weak diffuse cloudy pale yellow cut fluorescence

12,190-12,220 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately weak diffuse cloudy pale yellow cut fluorescence

12,220-12,250 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately weak diffuse cloudy pale yellow cut fluorescence

12,250-12,280 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately weak diffuse cloudy pale yellow cut fluorescence

12,280-12,310 SILTY SANDSTONE: light gray, very fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,310-12,340 SILTY SANDSTONE: light gray, very fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,340-12,370 SILTY SANDSTONE: light gray, very fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast weak diffuse cloudy pale yellow cut fluorescence

12,370-12,400 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,400-12,430 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,430-12,460 SILTY SANDSTONE: light gray, occasional medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,460-12,490 SILTY SANDSTONE: light gray, occasional medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,490-12,520 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,520-12,550 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,550-12,580 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,580-12,610 SILTY SANDSTONE: light to medium gray, fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,610-12,640 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,640-12,670 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,670-12,700 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,700-12,730 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,730-12,760 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

12,760-12,790 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence





13,630-13,660 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

13,660-13,690 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

13,690-13,720 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

13,720-13,750 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, common spotty light brown oil stain, fast moderately diffuse cloudy pale yellow cut fluorescence

13,750-13,780 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,780-13,810 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,810-13,840 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,840-13,870 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,870-13,900 SILTY SANDSTONE: light gray, rare medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,900-13,930 SILTY SANDSTONE: light gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,930-13,960 SILTY SANDSTONE: light gray, rare medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,960-13,990 SILTY SANDSTONE: light gray, rare medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

13,990-14,020 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,020-14,050 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,050-14,080 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,080-14,110 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,120-14,140 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,140-14,170 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, moderately calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,170-14,200 SILTY SANDSTONE: light gray, common medium gray, very fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,200-14,230 SILTY SANDSTONE: light gray, common medium gray, very fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,230-14,260 SILTY SANDSTONE: light gray, common medium gray, very fine grained, sub-rounded, firm, very well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,260-14,290 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,290-14,320 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,320-14,350 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast diffuse cloudy pale yellow cut fluorescence

14,350-14,380 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, fast diffuse cloudy pale yellow cut fluorescence

14,380-14,410 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,410-14,440 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,440-14,470 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite AND rare nodules pyrite, trace intergranular porosity, rare spotty light brown oil stain, fast diffuse cloudy pale yellow cut fluorescence

14,470-14,500 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain on light gray sample, moderately diffuse cloudy pale yellow cut fluorescence

14,500-14,530 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain on light gray sample, moderately diffuse cloudy pale yellow cut fluorescence

14,530-14,560 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,560-14,590 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,590-14,620 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,620-14,650 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately streaming cloudy pale yellow cut fluorescence

14,650-14,680 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,680-14,710 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,710-14,740 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,740-14,770 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,770-14,800 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,800-14,830 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,830-14,860 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

14,860-14,890 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence







16,150-16,180 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,180-16,210 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow streaming cloudy pale yellow cut fluorescence

16,210-16,240 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow streaming cloudy pale yellow cut fluorescence

16,240-16,270 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow streaming cloudy pale yellow cut fluorescence

16,270-16,300 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow streaming cloudy pale yellow cut fluorescence

16,300-16,330 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,330-16,360 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,360-16,390 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,390-16,420 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,420-16,450 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,450-16,480 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, trace disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,480-16,510 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,510-16,540 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,540-16,570 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,570-16,600 SILTY SANDSTONE: light gray, medium gray, occasional dark gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,600-16,630 SILTY SANDSTONE: light gray, medium gray, occasional dark gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,630-16,660 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,660-16,690 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, moderately sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,690-16,720 SILTY SANDSTONE: light gray, common medium gray, rare dark gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,720-16,750 SILTY SANDSTONE: light gray, common medium gray, rare dark gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,750-16,780 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,780-16,810 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, slow diffuse cloudy pale yellow cut fluorescence

16,810-16,840 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,840-16,870 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,870-16,900 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,900-16,930 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,930-16,960 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain, moderately diffuse cloudy pale yellow cut fluorescence

16,960-16,990 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain





17,830-17,860 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,860-17,890 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,890-17,920 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,920-17,950 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,950-17,980 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,950-17,980 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

17,980-18,010 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,010-18,040 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,040-18,070 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,070-18,100 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,100-18,130 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, common disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,130-18,160 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, common disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,160-18,190 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, common disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,190-18,220 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain

18,220-18,250 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain

18,250-18,280 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, occasional spotty light brown oil stain

18,280-18,310 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,310-18,340 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,340-18,370 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,370-18,400 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,400-18,430 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,430-18,460 SILTY SANDSTONE: light gray, occasional medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,460-18,490 SILTY SANDSTONE: light gray, occasional medium gray, very fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,490-18,520 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,520-18,550 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,550-18,580 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,580-18,610 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,610-18,640 SILTY SANDSTONE: light gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain

18,640-18,670 SILTY SANDSTONE: light gray, common medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain,

18,670-18,700 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain,

18,700-18,730 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, rare spotty light brown oil stain,

18,730-18,760 SILTY SANDSTONE: medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,760-18,790 SILTY SANDSTONE: medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,790-18,820 SILTY SANDSTONE: medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,820-18,850 SILTY SANDSTONE: light to medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,850-18,880 SILTY SANDSTONE: light to medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,880-18,910 SILTY SANDSTONE: light to medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,910-18,940 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,940-18,970 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

18,970-19,000 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

19,000-19,030 SILTY SANDSTONE: light gray, medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

19,030-19,060 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

19,060-19,090 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube







20,350-20,380 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

20,380-20,410 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

20,410-20,440 SILTY SANDSTONE: light gray, occasional medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, rare disseminated pyrite, trace intergranular porosity, sample contaminated with lube

20,440-20,470 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

20,470-20,500 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

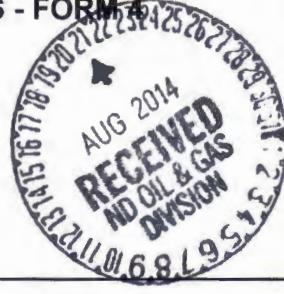
20,500-20,530 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube

20,530-20,560 SILTY SANDSTONE: light gray, rare medium gray, fine grained, sub-rounded, firm, well sorted, calcite cemented, poorly cemented, occasional disseminated pyrite, trace intergranular porosity, sample contaminated with lube



## SUNDRY NOTICES AND REPORTS ON WELLS - FORM 10

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.  
**28978**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Notice of Intent

Approximate Start Date  
**October 16, 2014**

Report of Work Done

Date Work Completed

Notice of Intent to Begin a Workover Project that may Qualify  
for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.

Approximate Start Date

Drilling Prognosis

Spill Report

Redrilling or Repair

Shooting

Casing or Liner

Acidizing

Plug Well

Fracture Treatment

Supplemental History

Change Production Method

Temporarily Abandon

Reclamation

Other **offsite pit**

### Well Name and Number

**Wade Federal 5300 21-30 13B**

Footages <b>1574 F N L</b>	<b>270 F W L</b>	Qtr-Qtr <b>LOT2</b>	Section <b>30</b>	Township <b>153 N</b>	Range <b>100 W</b>
Field <b>Baker</b>	Pool <b>Bakken</b>	County <b>McKenzie</b>			

### 24-HOUR PRODUCTION RATE

Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address

City

State

Zip Code

### DETAILS OF WORK

Oasis Petroleum North America LLC respectfully requests to use an offsite pit for this well. The following wells will also use this pit:

**Wade Federal 5300 31-30 2B**  
**Wade Federal 5300 41-30 3T2**  
**Wade Federal 5300 41-30 4T**  
**Wade Federal 5300 41-30 5T2**  
**Wade Federal 5300 41-30 6B**  
**Wade Federal 5300 41-30 7T**  
**Wade Federal 5300 41-30 8T2**  
**Wade Federal 5300 41-30 9B**  
**Wade Federal 5300 21-30 12T**  
**Wade Federal 5300 21-30 14T2**

Attached are the plats for the offsite pit location.

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9589</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature <i>Sonja Rolffes</i>	Printed Name <b>Sonja Rolffes</b>	
Title <b>Regulatory Analyst</b>	Date <b>August 20, 2014</b>	
Email Address <b>srrolffes@oasispetroleum.com</b>		

### FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>10-1-14</b>	
By <i>CJ Vizel</i>	
Title <i>Vizel</i>	

## OFF-SITE PIT AGREEMENT

In consideration of the sum of [REDACTED] paid by Oasis Petroleum North America LLC ("Oasis") the undersigned surface owners, Wesley Lindvig and Barbara Lindvig, for themselves and their heirs, successors, administrators and assigns, hereby acknowledge the receipt and sufficiency of said payment in full and complete settlement for and as a release of all claim for loss, damage or injury to the hereafter described surface property arising out of the off-site cuttings pit, in which the cuttings from the **Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2** wells will be buried, located on the approximately two (2.0) acre tract of land identified on the plat attached hereto as Exhibit "A" and which is situated on the following described real property located in McKenzie County, State of North Dakota, towit:

Township 153 North, Range 100 West, 5<sup>th</sup> P.M.  
Section 30: Lots 3 & 4 a/k/a W $\frac{1}{2}$ SW $\frac{1}{4}$

The undersigned knows that Oasis Petroleum North America LLC is the operator and will be drilling the **Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2** wells. The undersigned further states that they are fully aware that the cuttings generated from the drilling of the **Wade Federal 5300 21-30 13B, Wade Federal 5300 21-30 14T2** wells will be buried in the pit on the above described location.

Dated this 19 day of May, 2014.

### SURFACE OWNER(S)

Wesley Lindvig  
Wesley Lindvig  
Barbara T. Lindvig  
Barbara Lindvig

*for W.G.L.*  
*J.D.*  
*Location will be fenced after construction.*  
*Pit will be reclaimed to Owners Satisfaction*  
*for W.G.L.*

ACKNOWLEDGMENT INDIVIDUAL

State of North Dakota )

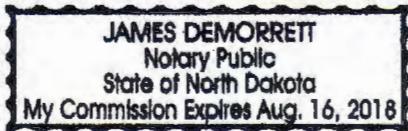
)

County of McKenzie )

BE IT REMEMBERED, That on this 19 day of May, 2014 before me, a Notary Public, in and for said County and State, personally appeared Wesley Lindvig and Barbara Lindvig, to me known to be the identical persons described in and who executed the within and foregoing instrument and acknowledged to me to that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my official signature and affixed my notarial seal, the day and year last above written.

My Commission expires:

A handwritten signature of James A. Demorrett in black ink.

Notary Public

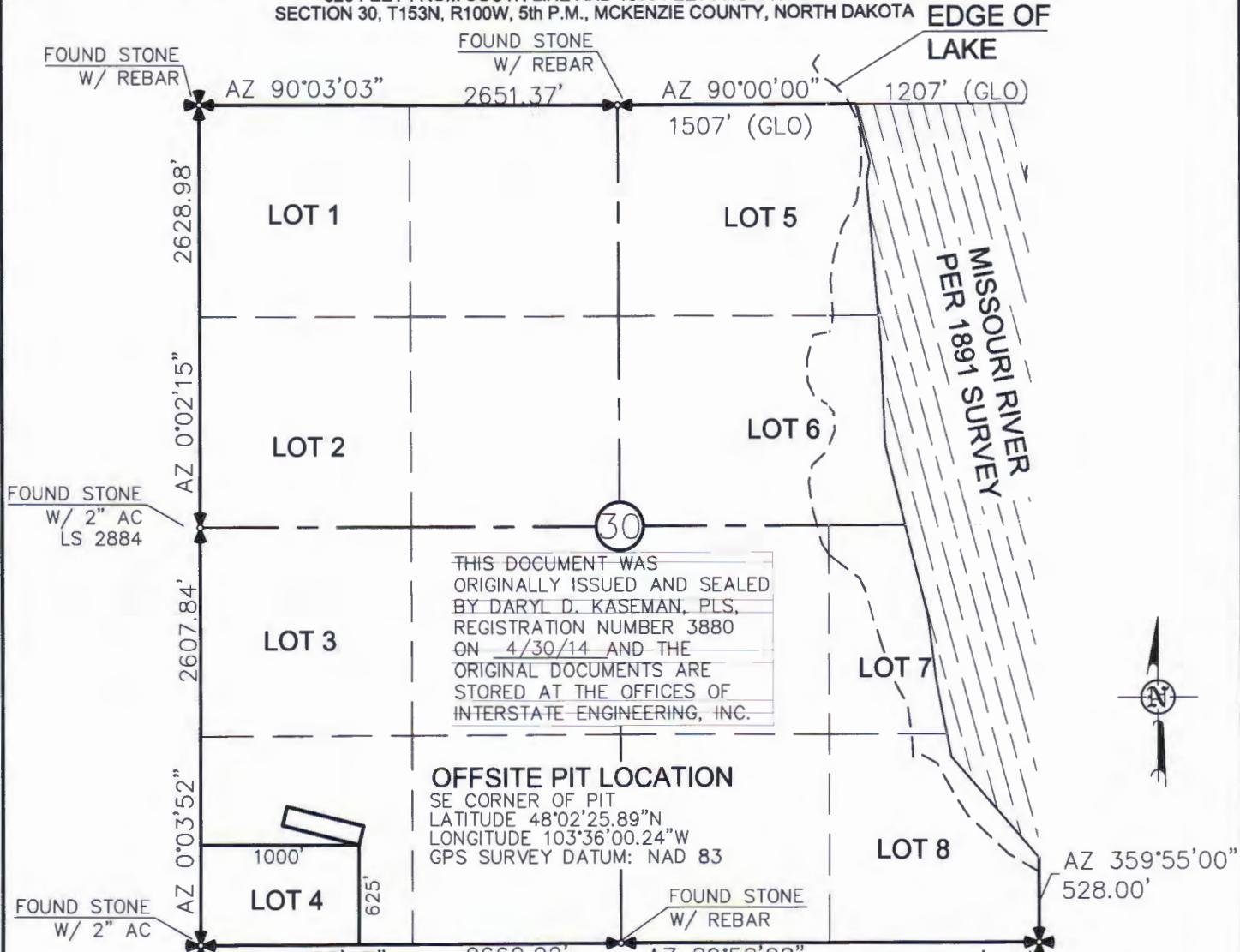
# OFFSITE PIT LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC

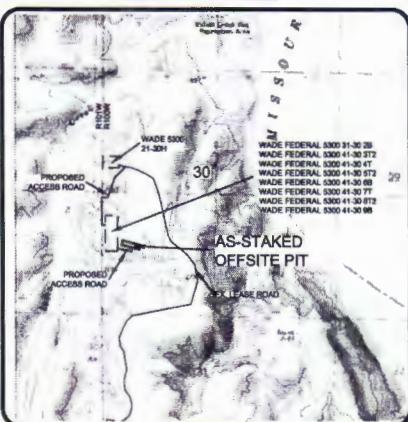
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 31-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"  
625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE

SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



## VICINITY MAP



© 2014, INTERSTATE ENGINEERING, INC.

1/3



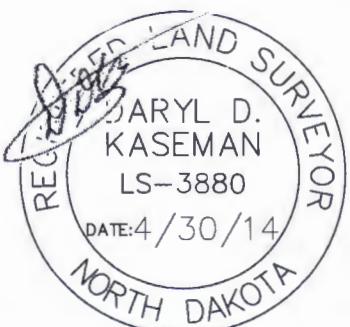
Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
OFFSITE PIT LOCATION PLAT  
SECTION 30, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-381 09  
Checked By: D.D.K. Date: APRIL 2014

Revision No.	Date	By	Description

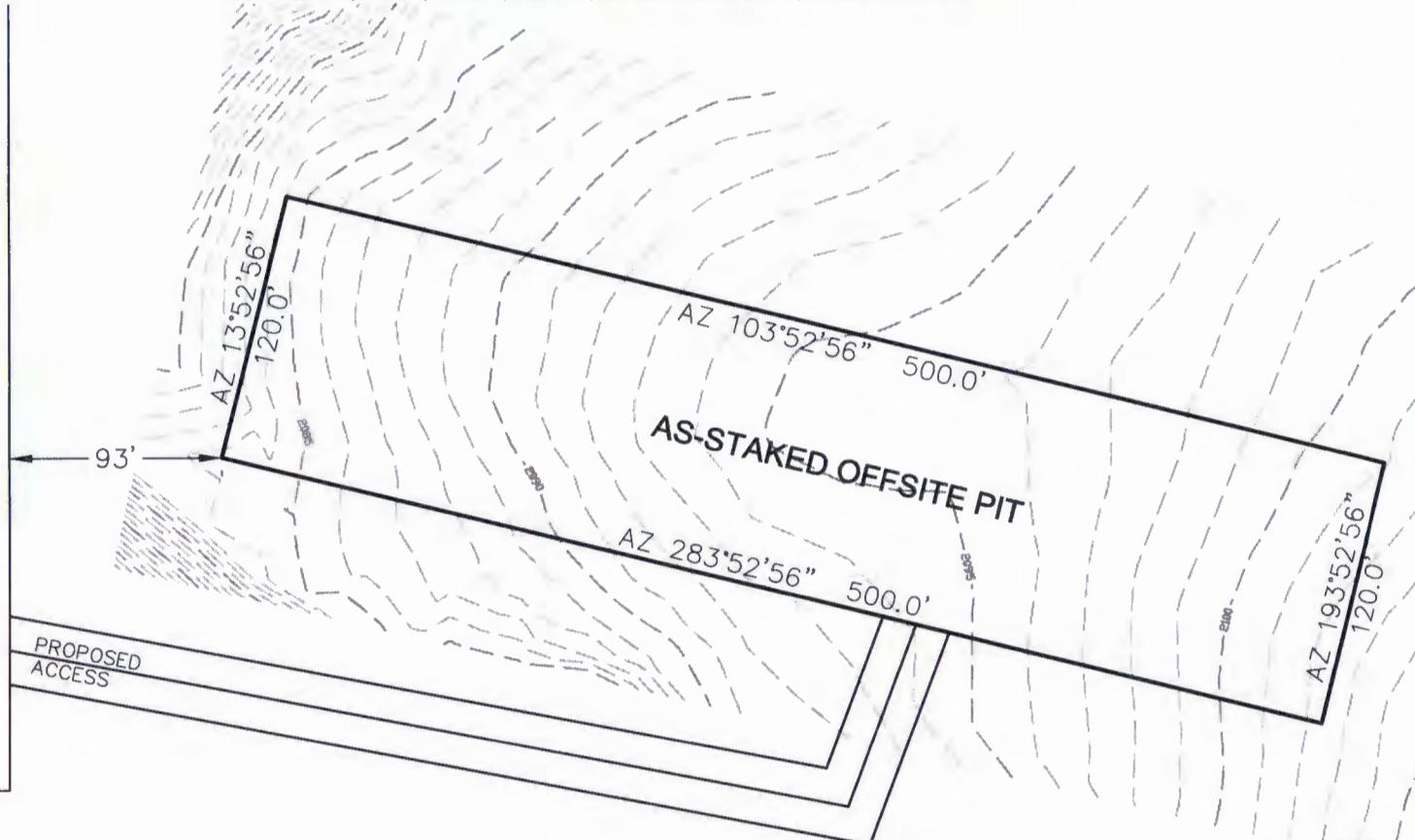
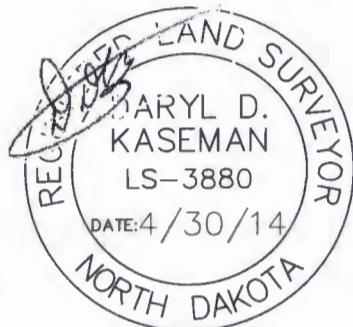


# PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

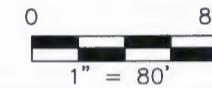
"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 31-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"  
625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WADE FEDERAL  
5300 31-30 2B  
WADE FEDERAL  
5300 41-30 3T2  
WADE FEDERAL  
5300 41-30 4T  
WADE FEDERAL  
5300 41-30 5T2  
WADE FEDERAL  
5300 41-30 6B  
WADE FEDERAL  
5300 41-30 7T  
WADE FEDERAL  
5300 41-30 8T2  
WADE FEDERAL  
5300 41-30 9B



THIS DOCUMENT WAS ORIGINALLY ISSUED  
AND SEALED BY DARYL D. KASEMAN,  
PLS, REGISTRATION NUMBER 3880 ON  
4/30/14 AND THE ORIGINAL  
DOCUMENTS ARE STORED AT THE  
OFFICES OF INTERSTATE ENGINEERING,  
INC.

NOTE: All utilities shown are preliminary only, a complete  
utilities location is recommended before construction.



© 2014, INTERSTATE ENGINEERING, INC.



2/3

Revision No.	Date	By	Description
OASIS PETROLEUM NORTH AMERICA, LLC PAD LAYOUT			
SECTION 30, T153N, R100W			
MCKENZIE COUNTY, NORTH DAKOTA			
Project No.: S13429-36109	Date: APRIL 2014		
B.H.H.			
D.D.K.			
Drawn By: Cimco			
Checked By:			

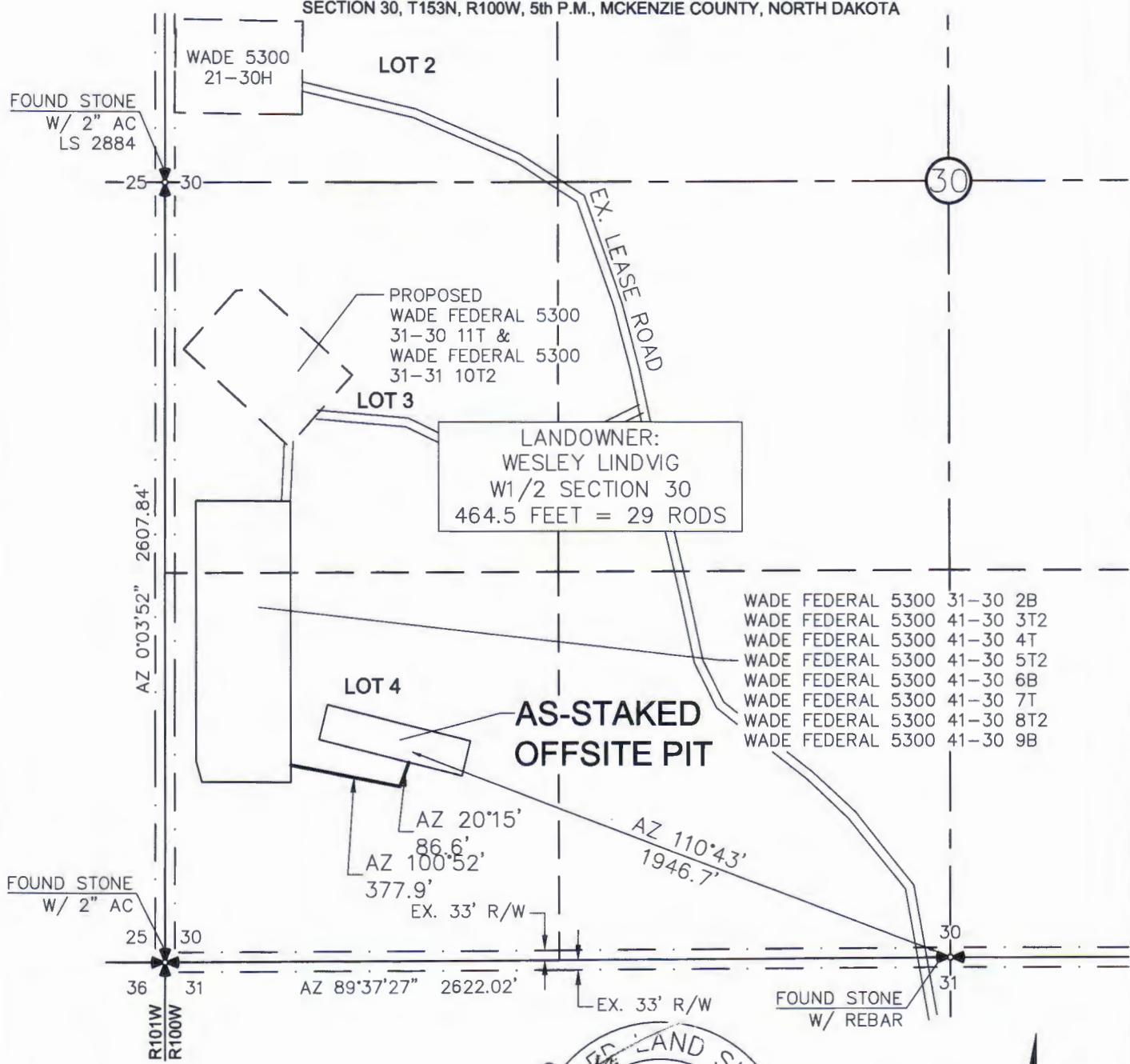
Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-3616  
www.interstateeng.com  
Other offices in Montana, North Dakota and South Dakota

# ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"AS-STAKED OFFSITE PIT FOR WADE FEDERAL 5300 31-30 2B, WADE FEDERAL 5300 41-30 3T2,  
WADE FEDERAL 5300 41-30 4T, WADE FEDERAL 5300 41-30 5T2, WADE FEDERAL 5300 41-30 6B,  
WADE FEDERAL 5300 41-30 7T, WADE FEDERAL 5300 41-30 8T2, & WADE FEDERAL 5300 41-30 9B"  
625 FEET FROM SOUTH LINE AND 1000 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS, REGISTRATION NUMBER  
3880 ON 4/30/14 AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
THE OFFICES OF INTERSTATE  
ENGINEERING, INC.



© 2014, INTERSTATE ENGINEERING, INC.

Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph: (406) 433-5617  
Fax: (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

OASIS PETROLEUM NORTH AMERICA, LLC  
ACCESS APPROACH  
SECTION 30, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-381.09  
Checked By: D.D.K. Date: APRIL 2014

Revision No.	Date	By	Description

3/3

 **INTERSTATE**  
ENGINEERING

SHEET NO.

Professionals you need, people you trust

Other offices in Minnesota, North Dakota and South Dakota

0 500  
1" = 500'



NOTE: All utilities shown are preliminary only, a complete  
utilities location is recommended before construction.



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.  
**28978**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>September 14, 2014</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input checked="" type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	

Well Name and Number

**Wade Federal 5300 21-30 13B**

Footages	Qtr-Qtr	Section	Township	Range
1574 F N L	270 F W L	LOT2	30	153 N 100 W
Field <b>Baker</b>	Pool <b>Bakken</b>		County <b>McKenzie</b>	

## 24-HOUR PRODUCTION RATE

Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

## DETAILS OF WORK

Oasis Petroleum North America LLC requests permission to make the following changes to the above referenced well:

Surface casing changed to 13 3/8"  
Contingency 9 5/8" casing added  
7" casing changed to all 32#

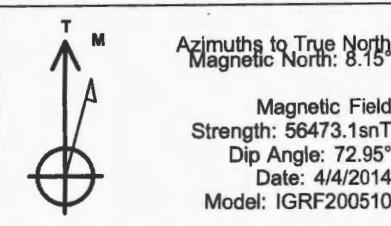
Attached are revised drill plan, plot and well summary.

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9563</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Sonja Rolfes</b>	
Title <b>Regulatory Specialist</b>	Date <b>September 4, 2014</b>	
Email Address <b>srolfes@oasispetroleum.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>9-9-14</b>	
By 	
Title <b>Petroleum Resource Specialist</b>	

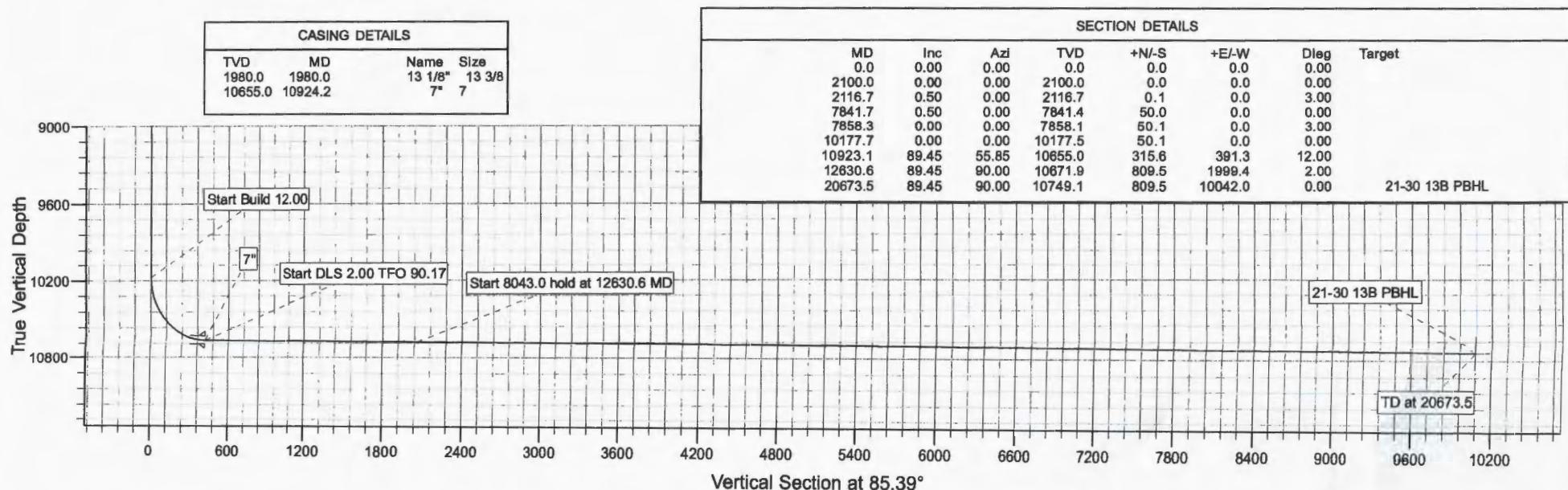
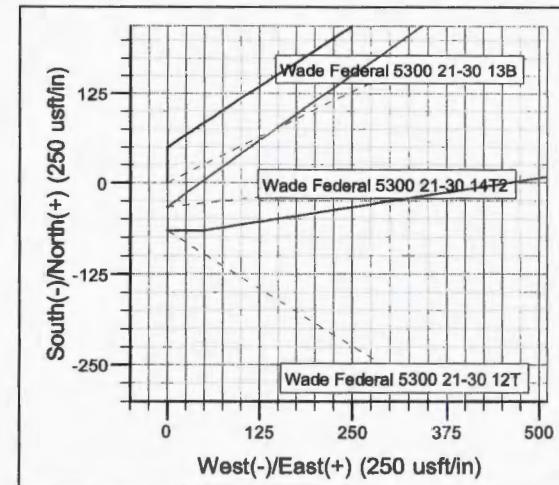
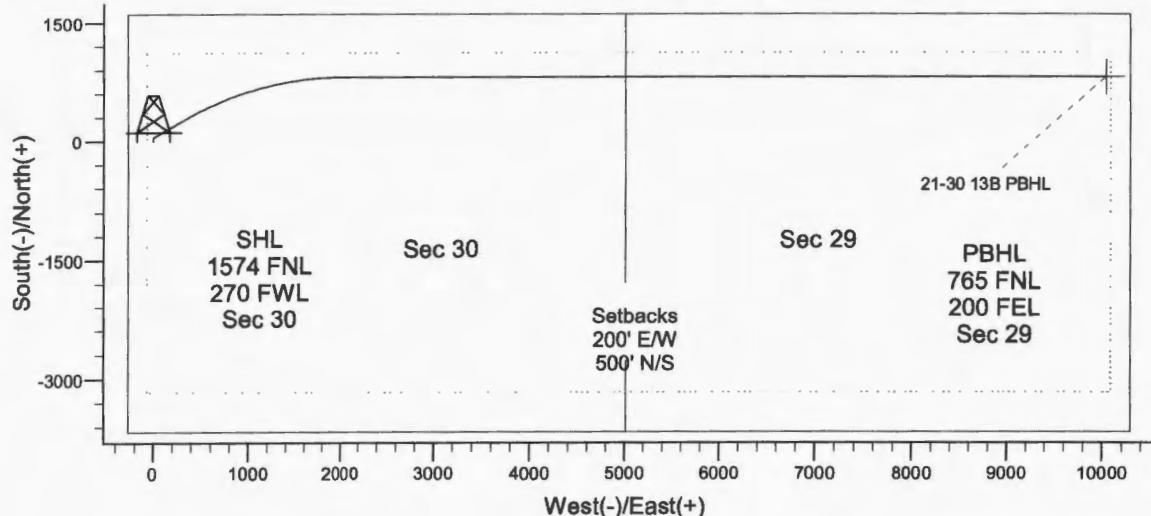
DRILLING PLAN							
OPERATOR	Oasis Petroleum Wade Federal 5300 21-30 13B			COUNTY/STATE	McKenzie Co., ND		
WELL NAME				RIG	B25		
WELL TYPE	Horizontal Middle Bakken			LOCATION			
LOCATION	SW NW 30-153N-107W	Surface Location (survey pt#)	1574' FNL	270' FWL	GROUND ELEV:	1998'	
EST. T.D.	20,874'	TOTAL LATERAL:	9,751'	KB ELEV:	2,024'	Sub Height:	25'
<b>MARKER</b>	<b>TVD</b>	<b>Subsea TVD</b>	<b>LOGS:</b>	<b>Type</b>	<b>Interval</b>		
Pierre	N DIC MAP	1,874	150	OH Logs: Request Log waiver based on the Wade Federal 5300 21-30H 600' S of surface location			
Greenhorn		4,521	-2,497	CBL/GR: Above top of cement/GR to base of casing			
Mowry		4,923	-2,899	MWD GR: KOP to lateral TD			
Dakota		5,347	-3,323				
Rierdon		6,380	-4,336	<b>DEVIATION:</b>	Surf: 3 deg. max., 1 deg / 100'; svy every 500' Prod: 5 deg. max., 1 deg / 100'; svy every 100'		
Dunham Salt		6,851	-4,827				
Dunham Salt Base		6,901	-4,877				
Pine Salt		7,161	-5,137				
Pine Salt Base		7,179	-5,158				
Opeche Salt		7,249	-5,225				
Opeche Salt Base		7,328	-5,304				
Amsden		7,569	-5,545				
Tyler		7,730	-5,706				
Otter/Base Minnelusa		7,957	-5,933	<b>CST'S:</b>	None planned		
Kibbey Lime		8,299	-6,275				
Charles Salt		8,441	-6,417	<b>CORES:</b>	None planned		
Base Last Salt		9,115	-7,091				
Mission Canyon		9,331	-7,307				
Lodgepole		9,881	-7,857				
False Bakken		10,612	-8,588				
Upper Bakken Shale		10,624	-8,600	<b>MUDLOGGING:</b>	Two-Man: Begin 200' above Kibbey 30' samples in curve and lateral		
Middle Bakken (Top of Target)		10,649	-8,625				
Middle Bakken (Base of target)		10,680	-8,636				
Lower Bakken Shale		10,674	-8,650				
Threeforks		10,698	-8,674				
<b>BOP:</b> 11" 5000 psi blind, pipe & annular							
Est. Dip Rate:	1.5%						
Max. Anticipated BHP:	4825						
<b>Surface Formation: Glacial till</b>							
<b>MUD:</b>	<b>Interval</b>	<b>Type</b>	<b>WT</b>	<b>Vis</b>	<b>WL</b>	<b>Remarks</b>	
Surface:	0' -	1,980' FWGel - Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks	
Intermediate:	1,980' -	10,923' Invert	9.5-10.4	40-50	30+RHp	Circ Mud Tanks	
Laterals:	10,923' -	20,674' Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks	
<b>CASING:</b>	<b>Size</b>	<b>Wt ppf</b>	<b>Hole</b>	<b>Depth</b>	<b>Cement</b>	<b>WOC</b>	<b>Remarks</b>
Surface:	13-5/8"	54.5#	17-1/2"	1,980'	To Surface	12	100' into Pierre
Intermediate (Dakota):	9-5/8"	40#	12-1/4"	6,400'	To Surface	24	Set Casing across Dakota
Intermediate:	7"	32#	8-3/4"	10,923'	4847	24	500' above Dakota
Production Liner:	4.5"	13.5#	6"	20,674'	TOL @ 10,128'		50' above KOP
<b>PROBABLE PLUGS, IF REQ'D:</b>							
<b>OTHER:</b>	<b>MD</b>	<b>TVD</b>	<b>FNL/FSL</b>	<b>FEL/FWL</b>	<b>S-T-R</b>	<b>AZI</b>	
Surface:	1,980	1,980	1574' FNL	270' FWL	T150N R100W Sec. 30		Survey Company:
KOP:	10,178'	10,178'	1524' FNL	270' FWL	T150N R100W Sec. 30	0.0	Build Rate: 12 deg /100'
EOC:	10,923'	10,655'	1258' FNL	661' FWL	T150N R100W Sec. 30	55.9	
Casing Point:	10,923'	10,655'	1258' FNL	661' FWL	T150N R100W Sec. 30	55.9	
Middle Bakken Lateral TD:	20,674'	10,749'	785' FNL	200' FEL	T150N R100W Sec. 29	90.0	
<b>Comments:</b>							
Request Log waiver based on the Wade Federal 5300 21-30H 600' S of surface location							
No frac string planned							
35 packers and 20 sleeves planned 3.6MM lbs 30% ceramic							
Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.							
68334-30-6 (Primary Name: Fuel, diesel) 68478-34-6 (Primary Name: Fuels, diesel, No. 2) 68478-30-2 (Primary Name: Fuel oil No. 2)							
68478-31-3 (Primary Name: Fuel oil, No. 4) 68008-20-6 (Primary Name: Kerosene)							
<b>OASIS</b> PETROLEUM							
Geology: N. Gabelman	3/20/2014			Engineering: s.m.g. 4.8.14			



Project: Indian Hills  
Site: 153N-100W-29/30  
Well: Wade Federal 5300 21-30 13B  
Wellbore: Wade Federal 13B  
Design: Dising#2

WELL DETAILS: Wade Federal 5300 21-30 13B

Northing 397868.63	Ground Level: 1999.0	Easting 1209741.76	Latitude 48° 2' 55.790 N	Longitude 103° 36' 10.970 W
-----------------------	----------------------	-----------------------	-----------------------------	--------------------------------



**Oasis Petroleum  
Well Summary**  
**Wade Federal 5300 21-30 13B**  
**Section 30 T153N R100W**  
**McKenzie County, ND**

**SURFACE CASING AND CEMENT DESIGN**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
13-3/8"	0' to 1,980'	54.5	J-55	STC	12.615"	12.459"	4,100	5,470	6,840

Interval	Description	Collapse		Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c	
0' to 1,980'	13-3/8", 54.5#, J-55, STC, 8rd	1130 / 1.22		2730 / 2.95	514 / 2.66

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9 ppg fluid on backside (1,980' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (1,980' setting depth).
- c) Based on string weight in 9 ppg fluid at 1,980' TVD plus 100k# overpull. (Buoyed weight equals 93k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2" hole with 50% excess to circulate cement back to surface.  
Mix and pump the following slurry.

**Pre-flush (Spacer):**      **20 bbls** fresh water

**Lead Slurry:**      **569 sks** (294 bbls) 2.9 yield conventional system with 94 lb/sk cement, .25 lb/sk D130 Lost Circulation Control Agent, 2% CaCl<sub>2</sub>, 4% D079 Extender and 2% D053 Expanding Agent.

**Tail Slurry:**      **349 sks** (72 bbls) 1.16 yield conventional system with 94 lb/sk cement, .25% CaCl<sub>2</sub> and 0.25 lb/sk Lost Circulation Control Agent

**Oasis Petroleum**  
**Well Summary**  
**Wade Federal 5300 21-30 13B**  
**Section 30 T153N R100W**  
**McKenzie County, ND**

**CONTINGENCY SURFACE CASING AND CEMENT DESIGN**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
9-5/8"	0' to 6,400'	40	L-80	LTC	8.835"	8.75"	5,450	7,270	9,090

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' to 6,400'	9-5/8", 40#, L-80, LTC, 8rd	3090 / 3.71	5750 / 1.24	837 / 3.86

**API Rating & Safety Factor**

- a) Collapse pressure based on 11.5 ppg fluid on the backside and 9 ppg fluid inside of casing.
- b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000 psi and a subsequent breakdown at the 9-5/8" shoe, based on a 13.5#/ft fracture gradient. Backup of 9 ppg fluid.
- c) Yield based on string weight in 10 ppg fluid, (217k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are based on 9-5/8" casing set in 12-1/4" hole with 10% excess in OH and 0% excess inside surface casing. TOC at surface.

**Pre-flush (Spacer):**      **20 bbls** Chem wash

**Lead Slurry:**      **592 sks** (210 bbls) Conventional system with 75 lb/sk cement, 0.5 lb/sk lost circulation, 10% expanding agent, 2% extender, 2% CaCl<sub>2</sub>, 0.2% anti-foam and 0.4% fluid loss agent.

**Tail Slurry:**      **521 sks** (108 bbls) Conventional system with 94 lb/sk cement, 0.3% anti-settling agent, 0.3% fluid loss agent, 0.3 lb/sk lost circulation control agent, 0.2% anti-foam and 0.1% retarder.

**Oasis Petroleum  
Well Summary  
Wade Federal 5300 21-30 13B  
Section 30 T153N R100W  
McKenzie County, ND**

**INTERMEDIATE CASING AND CEMENT DESIGN**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' – 10,928'	32	HCP-110	LTC	6.094"	6.000"	6730	8970	9870

\*\*\*Special drift

Interval	Length	Description	Collapse	Burst	Tension
			(psi) a	(psi) b	(1000 lbs) c
0' – 10,923'	10,923'	7", 32#, HCP-110, LTC, 8rd	11820 / 2.13*	12460 / 1.29	897 / 2.27
6,701' – 10,178'	3,477'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.38*	12460 / 1.29	

**API Rating & Safety Factor**

- a) \*Assume full casing evacuation with 10 ppg fluid on backside. \*\*Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10,655' TVD.
- c) Based on string weight in 10 ppg fluid, (296k lbs buoyed weight) plus 100k

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

**Pre-flush (Spacer):**      **50 bbls Saltwater**  
**40 bbls Weighted MudPush Express**

**Lead Slurry:**      **229 sks** (92 bbls) 2.21 yield conventional system with 47 lb/sk cement, 37 lb/sk D035 extender, 3.0% KCl, 3.0% D154 extender, 0.3% D208 viscosifier, 0.07% retarder, 0.2% anti-foam, 0.5 lb/sk, D130 LCM.

**Tail Slurry:**      **581 sks** (160 bbls) 1.54 yield conventional system with 94 lb/sk cement, 3.0% KCl, 35.0% Silica, 0.5% retarder, 0.2% fluid loss, 0.2% anti-foam and 0.5 lb/sk LCM.

**Oasis Petroleum  
Well Summary**  
**Wade Federal 5300 21-30 13B**  
**Section 30 T153N R100W**  
**McKenzie County, ND**

**PRODUCTION LINER**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Estimated Torque
4-1/2"	10,128' – 20,674'	13.5	P-110	BTC	3.92"	3.795"	4,500

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
10,128' – 20,674'	4-1/2", 13.5 lb, P-110, BTC, 8rd	10670 / 1.99	12410 / 1.28	443 / 2.02

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10,749' TVD.  
Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external
- b) fluid gradient @ 10,749' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 105k lbs.) plus 100k lbs overpull.

**Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.**

68334-30-5 (Primary Name: Fuels, diesel)  
 68476-34-6 (Primary Name: Fuels, diesel, No. 2)  
 68476-30-2 (Primary Name: Fuel oil No. 2)  
 68476-31-3 (Primary Name: Fuel oil, No. 4)  
 8008-20-6 (Primary Name: Kerosene)



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

**Department of Mineral Resources**

Lynn D. Helms - Director

**North Dakota Industrial Commission**

[www.dmr.nd.gov/oilgas](http://www.dmr.nd.gov/oilgas)

BRANDI TERRY  
OASIS PETROLEUM NORTH AMERICA LLC  
1001 FANNIN STE 1500  
HOUSTON, TX 77002 USA

Date: 7/28/2014

**RE: CORES AND SAMPLES**

Well Name: **WADE FEDERAL 5300 21-30 13B** Well File No.: **28978**  
Location: **LOT2 30-153-100** County: **MCKENZIE**  
Permit Type: **Development - HORIZONTAL**  
Field: **BAKER** Target Horizon: **BAKKEN**

Dear BRANDI TERRY:

North Dakota Century Code Section 38-08-04 provides for the preservation of cores and samples and their shipment to the State Geologist when requested. The following is required on the above referenced well:

- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.
- 2) Samples: The Operator is to begin collecting sample drill cuttings no lower than the:  
**Base of the Last Charles Salt**
  - Sample cuttings shall be collected at:
    - o 30' maximum intervals through all vertical and build sections.
    - o 100' maximum intervals through any horizontal sections.
  - Samples must be washed, dried, placed in standard sample envelopes (3" x 4.5"), packed in the correct order into standard sample boxes (3.5" x 5.25" x 15.25").
  - Samples boxes are to be carefully identified with a label that indicates the operator, well name, well file number, American Petroleum Institute (API) number, location and depth of samples; and forwarded in to the state core and sample library within 30 days of the completion of drilling operations.
- 3) Cores: Any cores cut shall be preserved in correct order, boxed in standard core boxes (4.5", 4.5", 35.75"), and the entire core forwarded to the state core and samples library within 180 days of completion of drilling operations. Any extension of time must have approval on a Form 4 Sundry Notice.

All cores, core chips, and samples must be shipped, prepaid, to the state core and samples library at the following address:

**ND Geological Survey Core Library  
2835 Campus Road, Stop 8156  
Grand Forks, ND 58202**

North Dakota Century Code Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed \$12,500 for each offense, and each day's violation is a separate offense.

Sincerely

Stephen Fried  
Geologist



## SUNDRY NOTICES AND REPORTS ON WELLS

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.  
**28978**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>May 1, 2014</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input checked="" type="checkbox"/> Other	<b>Waiver to rule Rule 43-02-03-31</b>

Well Name and Number <b>Wade Federal 5300 21-30 13B</b>				
Footages <b>1574 F N L</b>	Qtr-Qtr <b>270 F W L</b>	Section <b>LOT2</b>	Township <b>30</b>	Range <b>153 N 100 W</b>
Field	Pool <b>Bakken</b>	County <b>McKenzie</b>		

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address	City	State	Zip Code

### DETAILS OF WORK

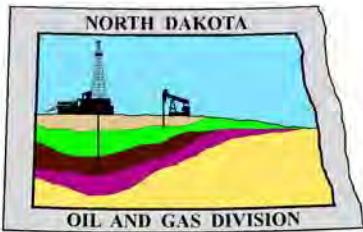
Oasis Petroleum respectfully requests a waiver to Rule 43-02-03-31 in regards to running open hole logs for the above referenced well. Justification for this request is as follows:

*#20197*  
The Oasis Petroleum/Wade Federal 5300 21-30H located within a mile of subject location

If this exception is approved, Oasis Petroleum will run a CBL on the intermediate string, and we will also run GR to surface. Oasis Petroleum will also submit two digital copies of each cased hole log and a copy of the mud log containing MWD gamma ray.

Company <b>Oasis Petroleum North America LLC</b>	Telephone Number <b>281-404-9491</b>	
Address <b>1001 Fannin, Suite 1500</b>		
City <b>Houston</b>	State <b>TX</b>	Zip Code <b>77002</b>
Signature 	Printed Name <b>Brandi Terry</b>	
Title <b>Regulatory Specialist</b>	Date <b>April 14, 2014</b>	
Email Address <b>bterry@oasispetroleum.com</b>		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>7-25-2014</i>	
By 	
Title <b>Stephen Fried Geologist</b>	



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

## Department of Mineral Resources

Lynn D. Helms - Director

## North Dakota Industrial Commission

[www.oilgas.nd.gov](http://www.oilgas.nd.gov)

July 25, 2014

Brandi Terry  
Regulatory Specialist  
OASIS PETROLEUM NORTH AMERICA LLC  
1001 Fannin Suite 1500  
Houston, TX 77002

**RE: HORIZONTAL WELL  
WADE FEDERAL 5300 21-30 13B  
LOT2 Section 30-153N-100W  
McKenzie County  
Well File # 28978**

Dear Brandi:

Pursuant to Commission Order No. 23752, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **500'** setback from the north & south boundaries and **200'** setback from the east & west boundaries within the 2560 acre spacing unit consisting of Sections 29 & 30 T153N R100W. **Tool error is not required pursuant to order.**

**PERMIT STIPULATIONS:** Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. Due to drainage adjacent to the well site, a dike is required surrounding the entire location. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

### Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

### Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. Based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 1074'N and 10043'E.

### Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

### Permit Fee & Notification

Payment was received in the amount of \$100 via credit card .The permit fee has been received. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

### **Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells**

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to [certsurvey@nd.gov](mailto:certsurvey@nd.gov). Survey points shall be of such frequency to accurately determine the entire location of the well bore. Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

### **Surface casing cement**

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

### **Logs**

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to [digitallogs@nd.gov](mailto:digitallogs@nd.gov).

Thank you for your cooperation.

Sincerely,

Alice Webber  
Engineering Tech



# APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 54269 (08-2005)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Type of Work <b>New Location</b>	Type of Well <b>Oil &amp; Gas</b>	Approximate Date Work Will Start <b>05 / 01 / 2014</b>	Confidential Status <b>No</b>
Operator <b>OASIS PETROLEUM NORTH AMERICA LLC</b>		Telephone Number <b>281-404-9491</b>	
Address <b>1001 Fannin Suite 1500</b>		City <b>Houston</b>	State <b>TX</b> Zip Code <b>77002</b>

Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet.  This well is not located within five hundred feet of an occupied dwelling.

## WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

Well Name <b>WADE FEDERAL</b>				Well Number <b>5300 21-30 13B</b>			
Surface Footages <b>1574 F N L      270 F W L</b>		Qtr-Qtr <b>LOT2</b>	Section <b>30</b>	Township <b>153 N</b>	Range <b>100 W</b>	County <b>McKenzie</b>	
Longstring Casing Point Footages <b>1258 F N L      662 F W L</b>		Qtr-Qtr <b>LOT1</b>	Section <b>30</b>	Township <b>153 N</b>	Range <b>100 W</b>	County <b>McKenzie</b>	
Longstring Casing Point Coordinates From Well Head <b>316 N From WH      392 E From WH</b>		Azimuth <b>55.85 °</b>	Longstring Total Depth <b>10924 Feet MD      10655 Feet TVD</b>				
Bottom Hole Footages From Nearest Section Line <b>764 F N L      201 F E L</b>		Qtr-Qtr <b>NENE</b>	Section <b>29</b>	Township <b>153 N</b>	Range <b>100 W</b>	County <b>Williams</b>	
Bottom Hole Coordinates From Well Head <b>810 N From WH      10042 E From WH</b>		KOP Lateral 1 <b>10178 Feet MD</b>	Azimuth Lateral 1 <b>90.0 °</b>	Estimated Total Depth Lateral 1 <b>20674 Feet MD      10749 Feet TVD</b>			
Latitude of Well Head <b>48 ° 02 ' 55.79 "</b>	Longitude of Well Head <b>-103 ° 36 ' 10.97 "</b>	NAD Reference <b>NAD83</b>		Description of Spacing Unit: <b>Sections 29 &amp; 30 T153N R100W</b>			(Subject to NDIC Approval)
Ground Elevation <b>2008 Feet Above S.L.</b>	Acres in Spacing/Drilling Unit <b>2560</b>	Spacing/Drilling Unit Setback Requirement <b>500 Feet N/S      200 Feet E/W</b>			Industrial Commission Order <b>23752</b>		
North Line of Spacing/Drilling Unit <b>10513 Feet</b>		South Line of Spacing/Drilling Unit <b>10522 Feet</b>		East Line of Spacing/Drilling Unit <b>5082 Feet</b>		West Line of Spacing/Drilling Unit <b>5236 Feet</b>	
Objective Horizons <b>Bakken</b>						Pierre Shale Top <b>1874</b>	
Proposed Surface Casing	Size <b>9 - 5/8 "</b>	Weight <b>36 Lb./Ft.</b>	Depth <b>1980 Feet</b>	Cement Volume <b>586 Sacks</b>	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.		
Proposed Longstring Casing	Size <b>7 - "</b>	Weight(s) <b>29/32 Lb./Ft.</b>	Longstring Total Depth <b>10924 Feet MD      10655 Feet TVD</b>		Cement Volume <b>800 Sacks</b>	Cement Top <b>4847 Feet</b>	Top Dakota Sand <b>5347 Feet</b>
Base Last Charles Salt (If Applicable) <b>9115 Feet</b>		NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.					
Proposed Logs <b>Triple Combo: KOP to Kibby GR/Res to BSC GR to surf CND through the Dakota</b>							
Drilling Mud Type (Vertical Hole - Below Surface Casing) <b>Invert</b>				Drilling Mud Type (Lateral) <b>Salt Water Gel</b>			
Survey Type in Vertical Portion of Well <b>MWD Every 100 Feet</b>		Survey Frequency: Build Section <b>30 Feet</b>		Survey Frequency: Lateral <b>90 Feet</b>		Survey Contractor <b>Ryan</b>	

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

**REQUIRED ATTACHMENTS:** Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, \$100 fee.

See Page 2 for Comments section and signature block.

**COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS****Documents forwarded by email: Drill plan with drilling fluids, Well Summary with casing/cement plans, Directional Plan & Plot, Plats**

Lateral 2

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD      Feet TVD			KOP Coordinates From Well Head From WH      From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	
Bottom Hole Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	

Lateral 3

KOP Lateral 3 Feet MD	Azimuth Lateral 3 °	Estimated Total Depth Lateral 3 Feet MD      Feet TVD			KOP Coordinates From Well Head From WH      From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	
Bottom Hole Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	

Lateral 4

KOP Lateral 4 Feet MD	Azimuth Lateral 4 °	Estimated Total Depth Lateral 4 Feet MD      Feet TVD			KOP Coordinates From Well Head From WH      From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	
Bottom Hole Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	

Lateral 5

KOP Lateral 5 Feet MD	Azimuth Lateral 5 °	Estimated Total Depth Lateral 5 Feet MD      Feet TVD			KOP Coordinates From Well Head From WH      From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	
Bottom Hole Footages From Nearest Section Line F      L		Qtr-Qtr	Section	Township <b>N</b>	Range <b>W</b>	County	

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.

Date

04 / 14 / 2014

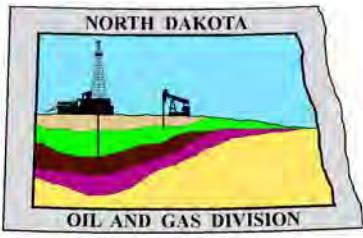
ePermit

Printed Name  
**Brandi Terry**Title  
**Regulatory Specialist****FOR STATE USE ONLY**

Permit and File Number <b>28978</b>	API Number <b>33 - 053 - 06131</b>
Field <b>BAKER</b>	
Pool <b>BAKKEN</b>	Permit Type <b>DEVELOPMENT</b>

**FOR STATE USE ONLY**

Date Approved <b>7 / 25 / 2014</b>
By <b>Alice Webber</b>
Title <b>Engineering Tech</b>



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

## Department of Mineral Resources

Lynn D. Helms - Director

## North Dakota Industrial Commission

[www.oilgas.nd.gov](http://www.oilgas.nd.gov)

April 9, 2014

**RE: Filter Socks and Other Filter Media  
Leakproof Container Required  
Oil and Gas Wells**

Dear Operator,

North Dakota Administrative Code Section 43-02-03-19.2 states in part that all waste material associated with exploration or production of oil and gas must be properly disposed of in an authorized facility in accord with all applicable local, state, and federal laws and regulations.

Filtration systems are commonly used during oil and gas operations in North Dakota. The Commission is very concerned about the proper disposal of used filters (including filter socks) used by the oil and gas industry.

Effective June 1, 2014, a container must be maintained on each well drilled in North Dakota beginning when the well is spud and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. The on-site container must be used to store filters until they can be properly disposed of in an authorized facility. Such containers must be:

- leakproof to prevent any fluids from escaping the container
- covered to prevent precipitation from entering the container
- placard to indicate only filters are to be placed in the container

If the operator will not utilize a filtration system, a waiver to the container requirement will be considered, but only upon the operator submitting a Sundry Notice (Form 4) justifying their request.

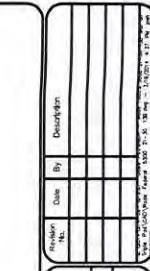
As previously stated in our March 13, 2014 letter, North Dakota Administrative Code Section 33-20-02.1-01 states in part that every person who transports solid waste (which includes oil and gas exploration and production wastes) is required to have a valid permit issued by the North Dakota Department of Health, Division of Waste Management. Please contact the Division of Waste Management at (701) 328-5166 with any questions on the solid waste program. Note oil and gas exploration and production wastes include produced water, drilling mud, invert mud, tank bottom sediment, pipe scale, filters, and fly ash.

Thank you for your cooperation.

Sincerely,

*Bruce E. Hicks*

Assistant Director

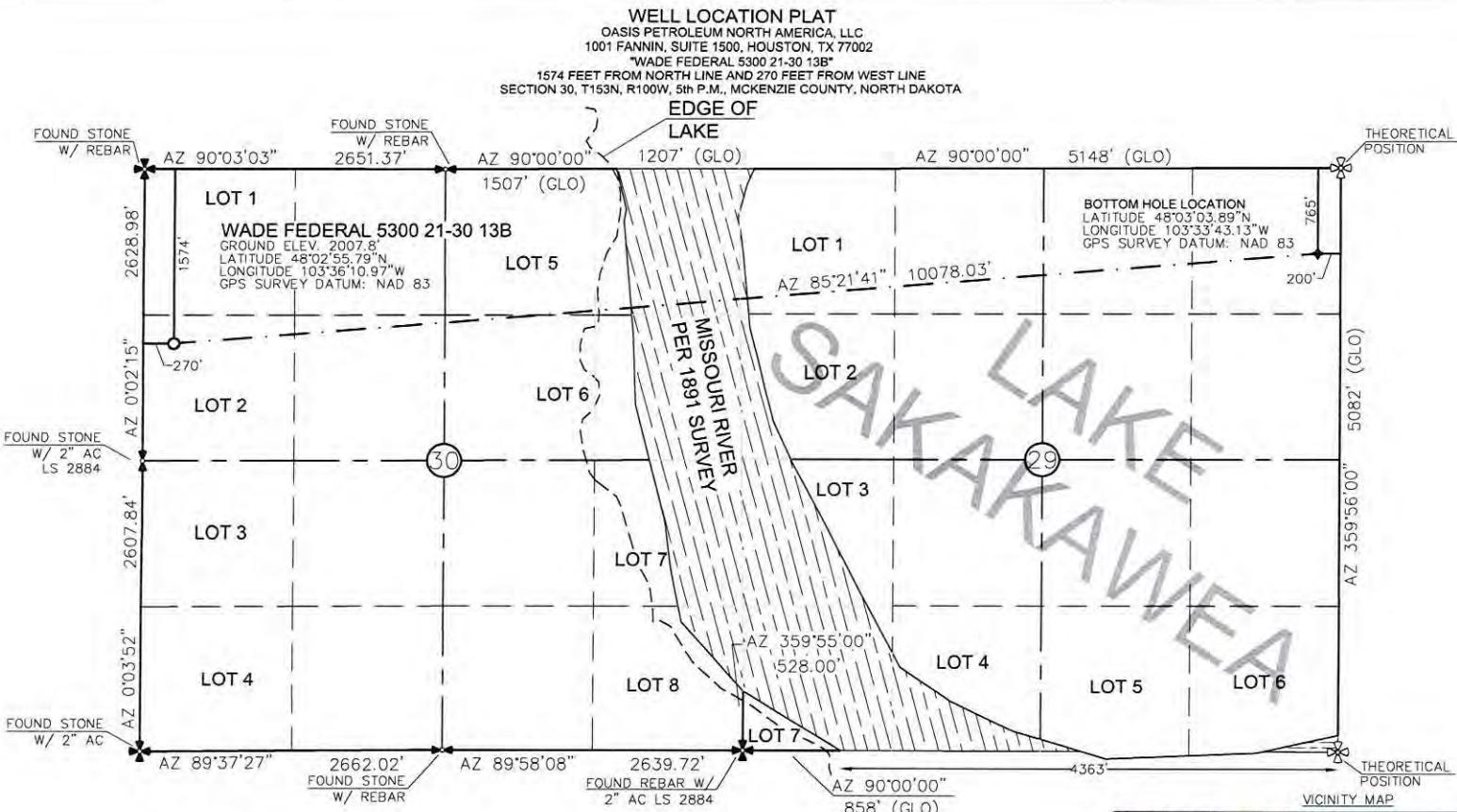


OASIS PETROLEUM NORTH AMERICA, LLC	WELL LOCATION PLAT
MCKENZIE COUNTY, NORTH DAKOTA	Project No.: S1050101
Date: Mar 2014	

Interstate Engineering Inc.
P.O. Box 648
125 East Main Street
Sidney, Montana 59270
Ph: (406) 423-3616
Fax: (406) 423-3616
www.interstate-engineering.com
Owner Name & Address & Phone Number



© 2014, INTERSTATE ENGINEERING, INC.



THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS. REGISTRATION NUMBER 3880 ON 3/19/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

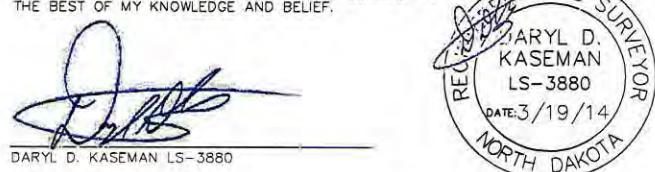


0 1000  
1" = 1000'

- MONUMENT - RECOVERED
- MONUMENT - NOT RECOVERED

STAKED ON 3/17/14  
VERTICAL CONTROL DATUM WAS BASED UPON  
CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



DARYL D. KASEMAN LS-3880



DRILLING PLAN							
OPERATOR	Oasis Petroleum	COUNTY/STATE			McKenzie Co., ND		
WELL NAME	Wade Federal 5300 21-30 13B	RIG			B25		
WELL TYPE	Horizontal Midline Bakken	Surface Location (survey plat)			1574' FNL		
LOCATION	SW NW 30-153N-100W	275' FWL			20,774'		
EST. T.D.	20,774'	GROUND ELEV:			1,999'	Sub Height: 25'	
TOTAL LATERAL:	9,851'	KB ELEV:			2,024'		
MARKER		TVD	Subsea TVD	LOGS:	Type	Interval	
Pierre	NDIC MAP	1,874	150	OH Logs: Request Log waiver based on the Wade Federal 5300 21-30H 600' S of surface location			
Greenhorn		4,521	-2,497	CBL/GR: Above top of cement/GR to base of casing			
Mowry		4,923	-2,899	MWD GR: KOP to lateral TD			
Dakota		5,347	-3,923				
Rierdon		6,360	-4,336	DEVIATION:	Surf: 3 deg. max., 1 deg / 100'; svry every 500' Prod: 5 deg. max., 1 deg / 100'; svry every 100'		
Dunham Salt		6,851	-4,827				
Dunham Salt Base		6,901	-4,877				
Pine Salt		7,161	-5,137				
Pine Salt Base		7,179	-5,155				
Opeche Salt		7,249	-5,225				
Opeche Salt Base		7,328	-5,304				
Amsden		7,569	-5,545				
Tyler		7,730	-5,706				
Otter/Base Minnelusa		7,957	-5,933	DST'S:	None planned		
Kibbey Lime		8,299	-6,275				
Charles Salt		8,441	-6,417	CORES:	None planned		
Base Last Salt		9,115	-7,091				
Mission Canyon		9,331	-7,307				
Lodgepole		9,881	-7,857				
False Bakken		10,612	-8,588				
Upper Bakken Shale		10,624	-8,600	MUDLOGGING:	Two-Man: Begin 200' above Kibbey 30' samples in curve and lateral		
Middle Bakken (Top of Target)		10,649	-8,625				
Middle Bakken (Base of target)		10,660	-8,636				
Lower Bakken Shale		10,674	-8,650				
Threeforks		10,698	-8,674				
BOP: 11" 5000 psi blind, pipe & annular							
Est. Dip Rate:	-0.55						
Max. Anticipated BHP:	4025			Surface Formation: Glacial till			
MUD:	Interval	Type	WT	Vis	WL	Remarks	
Surface:	0' -	1,974' FW/Gel - Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks	
Intermediate:	1,974' -	10,923' Invert	9.5-10.4	40-50	30+HHP	Circ Mud Tanks	
Laterall:	10,923' -	20,774' Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks	
CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface:	9-5/8"	36#	13-1/2"	1,974'	To Surface	12	100' into Pierre
Intermediate:	7"	29/32#	8-3/4"	10,923'	4847	24	500' above Dakota 50' above KOP
Production Liner:	4.5"	11.6#	6"	20,774'	TOL @ 10,128'		
PROBABLE PLUGS, IF REQ'D:							
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	
Surface:	1,974	1,974	1574' FNL	270' FWL	T150N R100W Sec. 30	Survey Company: Build Rate: 12 deg /100'	
KOP:	10,178'	10,178'	1524' FNL	270' FWL	T150N R100W Sec. 30	0.0	
EOC:	10,923'	10,655'	1258' FNL	661' FWL	T150N R100W Sec. 30	55.9	
Casing Point:	10,923'	10,655'	1258' FNL	661' FWL	T150N R100W Sec. 30	55.9	
Middle Bakken Lateral TD:	20,774'	10,750'	765' FNL	200' FEL	T150N R100W Sec. 29	80.0	
<b>Comments:</b>							
Request Log waiver based on the Wade Federal 5300 21-30H 600' S of surface location							
No frac string planned							
35 packers and 20 sleeves planned 3.6MM lbs 30% ceramic							
Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.							
68334-30-5 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2)							
68476-31-3 (Primary Name: Fuel oil, No. 4) 8008-20-6 (Primary Name: Kerosene)							
<b>OASIS</b> PETROLEUM							
Geology: N. Gabelman	3/20/2014	Engineering: smg 4.8.14					

**Oasis Petroleum**  
**Well Summary**  
**WADE FEDERAL 5300 21-30 13B**  
**Section 30 T153N R100W**  
**Mckenzie Co. ND**

**SURFACE CASING AND CEMENT DESIGN**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
9-5/8"	0' - 1980'	36	J-55	LTC	8.921"	8.765"	3400	4530	5660

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 1980'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.17	3520 / 3.79	453 / 2.80

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9 ppg fluid on backside (1980' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (1980' setting depth).
- c) Based on string weight in 9 ppg fluid at 1980' TVD plus 100k# overpull. (Buoyed weight equals 61k lbs.)

Cement volumes are based on 9-5/8" casing set in 13-1/2 " hole with 60% excess to circulate cement back to surface.

Mix and pump the following slurry.

**Pre-flush (Spacer):**      **20 bbls** fresh water

**Lead Slurry:**      **425 sks** (219 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent.

**Tail Slurry:**      **300 sks** (62 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

**Oasis Petroleum**  
**Well Summary**  
**WADE FEDERAL 5300 21-30 13B**  
**Section 30 T153N R100W**  
**Mckenzie Co. ND**

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 6701'	29	P-110	LTC	6.184"	6.059"	5980	7970	8770
7"	6701' - 10178'	32	HCP-110	LTC	6.094"	6.000"**	6730	8970	9870
7"	10178' - 10923'	29	P-110	LTC	6.184"	6.059"	5980	7970	8770

\*\*Special Drift 7" 32# to 6.0"

Interval	Length	Description	Collapse	Burst	Tension
			(psi) a	(psi) b	(1000 lbs) c
0' - 6701'	6701'	7", 29#, P-110, LTC, 8rd	8530 / 2.44*	11220 / 1.19	797 / 2.11
6701' - 10178'	3477'	7", 32#, HCP-110, LTC, 8rd	11820 / 2.23*	12460 / 1.29	
6701' - 10178'	3477'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.08**	12460 / 1.29	
10178' - 10923'	745'	7", 29#, P-110, LTC, 8rd	8530 / 1.53*	11220 / 1.16	

API Rating & Safety Factor

- a) \*Assume full casing evacuation with 10 ppg fluid on backside. \*\*Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10655' TVD.
- c) Based on string weight in 10 ppg fluid, (277k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Mix and pump the following slurry

**Pre-flush (Spacer):**      **100 bbls** Saltwater  
**20bbls** CW8  
**20bbls** Fresh Water

**Lead Slurry:**      **189 sks** (87 bbls), 11.8 lb/gal, 2.59 ft3/sk yield, Conventional system with 61 lb/sk cement, 10% NaCl, 23 lb/sk extender, 0.2% D046 Anti Foam, 0.25lb/sk D130 Lost Circulation, 0.8% D112 Fluid Loss, 6% D035 Extender.

**Tail Slurry:**      **589 sks** (163 bbls), 15.8 lb/gal, 1.55 ft3/sk yield, Conventional system with 94 lb/sk cement, 10% NaCl, 35% Silica, 0.2% fluid loss agent D167, 0.27% Retarder D198, 0.25 lb/sk D130 lost circulation control, 0.2% Anti Foam D046.

**Oasis Petroleum**  
**Well Summary**  
**WADE FEDERAL 5300 21-30 13B**  
**Section 30 T153N R100W**  
**Mckenzie Co. ND**

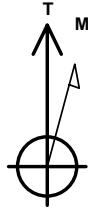
**PRODUCTION LINER**

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
4-1/2"	10128' - 20674'	11.6	P-110	BTC	4.000"	3.875"	2270	3020	3780

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10128' - 20674'	10546	4-1/2", 11.6 lb, P-110, BTC	7560 / 1.42	10690 / 1.10	385 / 1.88

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10749' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10749' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 105k lbs.) plus 100k lbs overpull.



Azimuths to True North  
Magnetic North: 8.15°  
  
Magnetic Field  
Strength: 56473.1 nT  
Dip Angle: 72.95°  
Date: 4/4/2014  
Model: IGRF200510



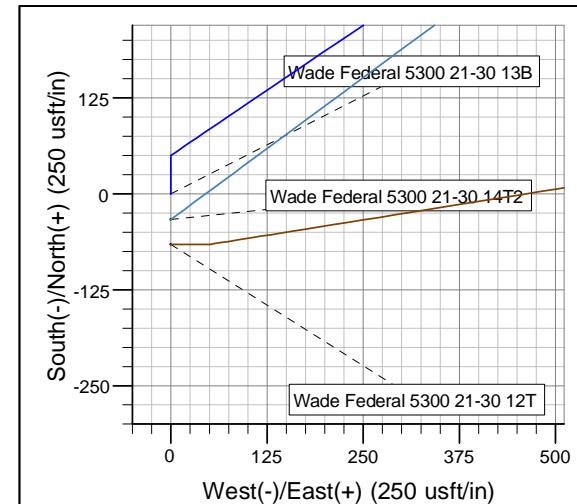
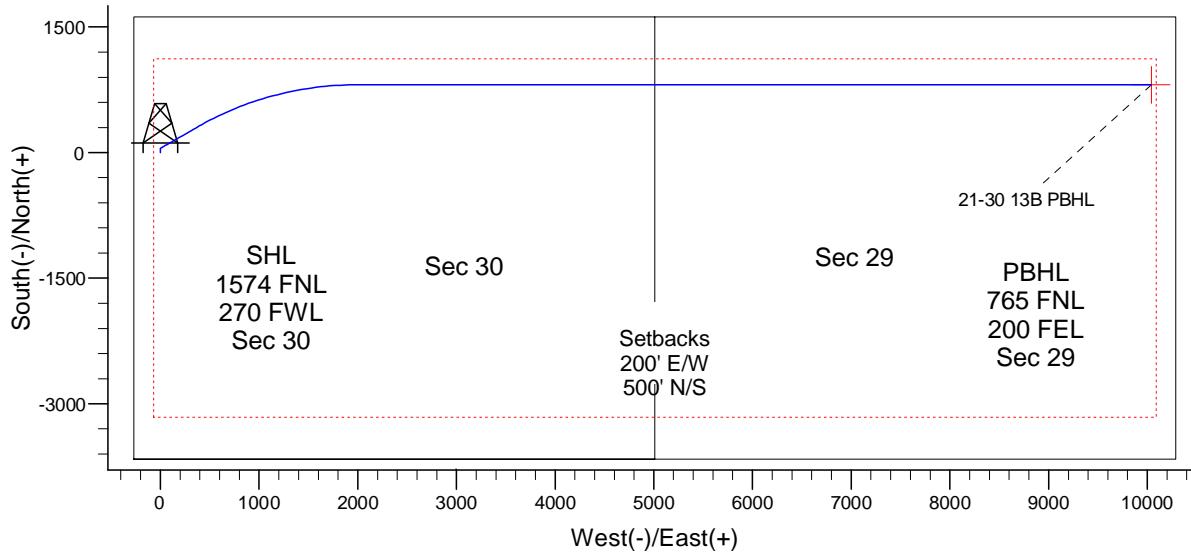
Project: Indian Hills  
Site: 153N-100W-29/30  
Well: Wade Federal 5300 21-30 13B  
Wellbore: Wade Federal 13B  
Design: Dising#2

WELL DETAILS: Wade Federal 5300 21-30 13B

Northing  
397868.63

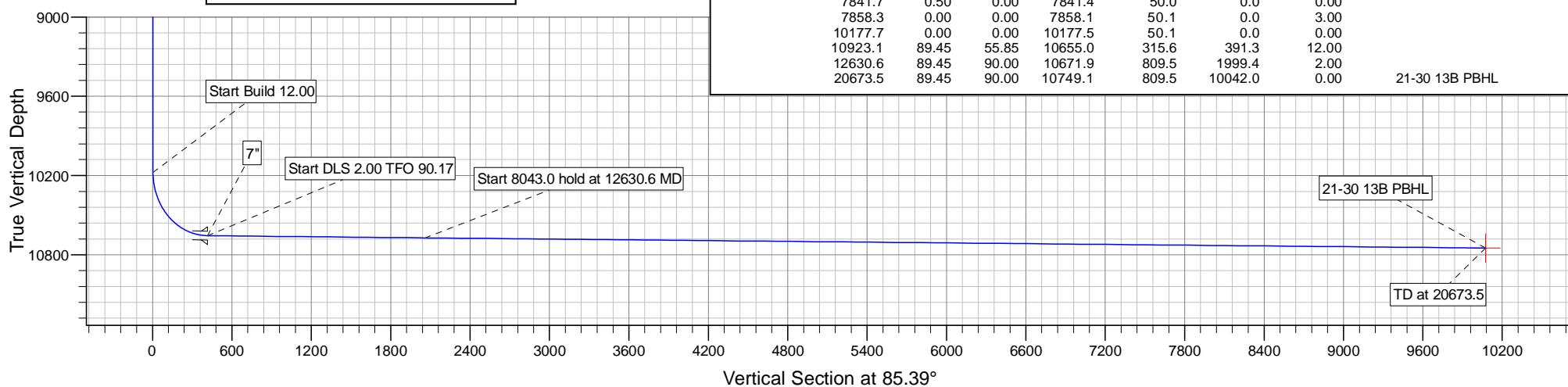
Ground Level:  
Easting  
1209741.76

1999.0  
Latitude  
48° 2' 55.790 N  
Longitude  
103° 36' 10.970 W



CASING DETAILS			
TVD	MD	Name	Size
1974.0	1974.0	9 5/8"	9-5/8
10655.0	10924.2	7"	7

SECTION DETAILS								
MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	Target	
0.0	0.00	0.00	0.0	0.0	0.0	0.00		
2100.0	0.00	0.00	2100.0	0.0	0.0	0.00		
2116.7	0.50	0.00	2116.7	0.1	0.0	3.00		
7841.7	0.50	0.00	7841.4	50.0	0.0	0.00		
7858.3	0.00	0.00	7858.1	50.1	0.0	3.00		
10177.7	0.00	0.00	10177.5	50.1	0.0	0.00		
10923.1	89.45	55.85	10655.0	315.6	391.3	12.00		
12630.6	89.45	90.00	10671.9	809.5	1999.4	2.00		
20673.5	89.45	90.00	10749.1	809.5	10042.0	0.00		21-30 13B PBHL



# **Oasis**

**Indian Hills**

**153N-100W-29/30**

**Wade Federal 5300 21-30 13B**

**Wade Federal 13B**

**Plan: Dising#2**

# **Standard Planning Report**

**25 July, 2014**

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

<b>Project</b>	Indian Hills		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	North Dakota Northern Zone		

<b>Site</b>	153N-100W-29/30				
<b>Site Position:</b>		<b>Northing:</b>	395,519.95 usft	<b>Latitude:</b>	48° 2' 32.580 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,209,617.13 usft	<b>Longitude:</b>	103° 36' 11.410 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-2.31 °

<b>Well</b>	Wade Federal 5300 21-30 13B				
<b>Well Position</b>	+N/-S +E/-W	2,351.8 usft 29.9 usft	<b>Northing:</b> <b>Easting:</b>	397,868.63 usft 1,209,741.75 usft	<b>Latitude:</b> <b>Longitude:</b>
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>
					1,999.0 usft

<b>Wellbore</b>	Wade Federal 13B				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b> (°)	<b>Dip Angle</b> (°)	<b>Field Strength</b> (nT)
	IGRF200510	4/4/2014	8.15	72.95	56,473

<b>Design</b>	Dising#2				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>		<b>Depth From (TVD)</b> (usft)	<b>+N/-S</b> (usft)	<b>+E/-W</b> (usft)	<b>Direction</b> (°)
		0.0	0.0	0.0	85.39

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,116.7	0.50	0.00	2,116.7	0.1	0.0	3.00	3.00	0.00	0.00	0.00
7,841.7	0.50	0.00	7,841.4	50.0	0.0	0.00	0.00	0.00	0.00	0.00
7,858.3	0.00	0.00	7,858.1	50.1	0.0	3.00	-3.00	0.00	0.00	180.00
10,177.7	0.00	0.00	10,177.5	50.1	0.0	0.00	0.00	0.00	0.00	0.00
10,923.1	89.45	55.85	10,655.0	315.6	391.3	12.00	12.00	0.00	0.00	55.85
12,630.6	89.45	90.00	10,671.9	809.5	1,999.4	2.00	0.00	2.00	0.00	90.17
20,673.5	89.45	90.00	10,749.1	809.5	10,042.0	0.00	0.00	0.00	0.00	21-30 13B PBHL

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,116.7	0.50	0.00	2,116.7	0.1	0.0	0.0	3.00	3.00	0.00
2,200.0	0.50	0.00	2,200.0	0.8	0.0	0.1	0.00	0.00	0.00
2,300.0	0.50	0.00	2,300.0	1.7	0.0	0.1	0.00	0.00	0.00
2,400.0	0.50	0.00	2,400.0	2.5	0.0	0.2	0.00	0.00	0.00
2,500.0	0.50	0.00	2,500.0	3.4	0.0	0.3	0.00	0.00	0.00
2,600.0	0.50	0.00	2,600.0	4.3	0.0	0.3	0.00	0.00	0.00
2,700.0	0.50	0.00	2,700.0	5.2	0.0	0.4	0.00	0.00	0.00
2,800.0	0.50	0.00	2,800.0	6.0	0.0	0.5	0.00	0.00	0.00
2,900.0	0.50	0.00	2,900.0	6.9	0.0	0.6	0.00	0.00	0.00
3,000.0	0.50	0.00	3,000.0	7.8	0.0	0.6	0.00	0.00	0.00
3,100.0	0.50	0.00	3,100.0	8.7	0.0	0.7	0.00	0.00	0.00
3,200.0	0.50	0.00	3,200.0	9.5	0.0	0.8	0.00	0.00	0.00
3,300.0	0.50	0.00	3,300.0	10.4	0.0	0.8	0.00	0.00	0.00
3,400.0	0.50	0.00	3,400.0	11.3	0.0	0.9	0.00	0.00	0.00
3,500.0	0.50	0.00	3,499.9	12.1	0.0	1.0	0.00	0.00	0.00
3,600.0	0.50	0.00	3,599.9	13.0	0.0	1.0	0.00	0.00	0.00
3,700.0	0.50	0.00	3,699.9	13.9	0.0	1.1	0.00	0.00	0.00
3,800.0	0.50	0.00	3,799.9	14.8	0.0	1.2	0.00	0.00	0.00
3,900.0	0.50	0.00	3,899.9	15.6	0.0	1.3	0.00	0.00	0.00
4,000.0	0.50	0.00	3,999.9	16.5	0.0	1.3	0.00	0.00	0.00
4,100.0	0.50	0.00	4,099.9	17.4	0.0	1.4	0.00	0.00	0.00
4,200.0	0.50	0.00	4,199.9	18.3	0.0	1.5	0.00	0.00	0.00
4,300.0	0.50	0.00	4,299.9	19.1	0.0	1.5	0.00	0.00	0.00
4,400.0	0.50	0.00	4,399.9	20.0	0.0	1.6	0.00	0.00	0.00
4,500.0	0.50	0.00	4,499.9	20.9	0.0	1.7	0.00	0.00	0.00
4,521.1	0.50	0.00	4,521.0	21.1	0.0	1.7	0.00	0.00	0.00
Greenhorn									
4,600.0	0.50	0.00	4,599.9	21.7	0.0	1.7	0.00	0.00	0.00
4,700.0	0.50	0.00	4,699.9	22.6	0.0	1.8	0.00	0.00	0.00
4,800.0	0.50	0.00	4,799.9	23.5	0.0	1.9	0.00	0.00	0.00
4,900.0	0.50	0.00	4,899.9	24.4	0.0	2.0	0.00	0.00	0.00
4,923.1	0.50	0.00	4,923.0	24.6	0.0	2.0	0.00	0.00	0.00
Mowry									
5,000.0	0.50	0.00	4,999.9	25.2	0.0	2.0	0.00	0.00	0.00
5,100.0	0.50	0.00	5,099.9	26.1	0.0	2.1	0.00	0.00	0.00
5,200.0	0.50	0.00	5,199.9	27.0	0.0	2.2	0.00	0.00	0.00
5,300.0	0.50	0.00	5,299.9	27.9	0.0	2.2	0.00	0.00	0.00
5,347.1	0.50	0.00	5,347.0	28.3	0.0	2.3	0.00	0.00	0.00
Dakota									
5,400.0	0.50	0.00	5,399.9	28.7	0.0	2.3	0.00	0.00	0.00
5,500.0	0.50	0.00	5,499.9	29.6	0.0	2.4	0.00	0.00	0.00
5,600.0	0.50	0.00	5,599.9	30.5	0.0	2.4	0.00	0.00	0.00
5,700.0	0.50	0.00	5,699.9	31.3	0.0	2.5	0.00	0.00	0.00
5,800.0	0.50	0.00	5,799.9	32.2	0.0	2.6	0.00	0.00	0.00
5,900.0	0.50	0.00	5,899.9	33.1	0.0	2.7	0.00	0.00	0.00
6,000.0	0.50	0.00	5,999.9	34.0	0.0	2.7	0.00	0.00	0.00
6,100.0	0.50	0.00	6,099.8	34.8	0.0	2.8	0.00	0.00	0.00
6,200.0	0.50	0.00	6,199.8	35.7	0.0	2.9	0.00	0.00	0.00
6,300.0	0.50	0.00	6,299.8	36.6	0.0	2.9	0.00	0.00	0.00
6,360.2	0.50	0.00	6,360.0	37.1	0.0	3.0	0.00	0.00	0.00
Rierdon									
6,400.0	0.50	0.00	6,399.8	37.5	0.0	3.0	0.00	0.00	0.00
6,500.0	0.50	0.00	6,499.8	38.3	0.0	3.1	0.00	0.00	0.00
6,600.0	0.50	0.00	6,599.8	39.2	0.0	3.1	0.00	0.00	0.00

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,700.0	0.50	0.00	6,699.8	40.1	0.0	3.2	0.00	0.00	0.00
6,800.0	0.50	0.00	6,799.8	40.9	0.0	3.3	0.00	0.00	0.00
6,851.2	0.50	0.00	6,851.0	41.4	0.0	3.3	0.00	0.00	0.00
<b>Dunham Salt</b>									
6,900.0	0.50	0.00	6,899.8	41.8	0.0	3.4	0.00	0.00	0.00
6,901.2	0.50	0.00	6,901.0	41.8	0.0	3.4	0.00	0.00	0.00
<b>Dunham Salt Base</b>									
7,000.0	0.50	0.00	6,999.8	42.7	0.0	3.4	0.00	0.00	0.00
7,100.0	0.50	0.00	7,099.8	43.6	0.0	3.5	0.00	0.00	0.00
7,161.2	0.50	0.00	7,161.0	44.1	0.0	3.5	0.00	0.00	0.00
<b>Pine Salt</b>									
7,179.2	0.50	0.00	7,179.0	44.3	0.0	3.6	0.00	0.00	0.00
<b>Pine Salt Base</b>									
7,200.0	0.50	0.00	7,199.8	44.4	0.0	3.6	0.00	0.00	0.00
7,249.2	0.50	0.00	7,249.0	44.9	0.0	3.6	0.00	0.00	0.00
<b>Opeche Salt</b>									
7,300.0	0.50	0.00	7,299.8	45.3	0.0	3.6	0.00	0.00	0.00
7,328.2	0.50	0.00	7,328.0	45.6	0.0	3.7	0.00	0.00	0.00
<b>Opeche Salt Base</b>									
7,400.0	0.50	0.00	7,399.8	46.2	0.0	3.7	0.00	0.00	0.00
7,500.0	0.50	0.00	7,499.8	47.1	0.0	3.8	0.00	0.00	0.00
7,569.2	0.50	0.00	7,569.0	47.7	0.0	3.8	0.00	0.00	0.00
<b>Amesden</b>									
7,600.0	0.50	0.00	7,599.8	47.9	0.0	3.9	0.00	0.00	0.00
7,700.0	0.50	0.00	7,699.8	48.8	0.0	3.9	0.00	0.00	0.00
7,730.2	0.50	0.00	7,730.0	49.1	0.0	3.9	0.00	0.00	0.00
<b>Tyler</b>									
7,800.0	0.50	0.00	7,799.8	49.7	0.0	4.0	0.00	0.00	0.00
7,841.7	0.50	0.00	7,841.4	50.0	0.0	4.0	0.00	0.00	0.00
7,858.3	0.00	0.00	7,858.1	50.1	0.0	4.0	3.00	-3.00	0.00
7,900.0	0.00	0.00	7,899.8	50.1	0.0	4.0	0.00	0.00	0.00
7,957.2	0.00	0.00	7,957.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Otter/Base Minnelusa</b>									
8,000.0	0.00	0.00	7,999.8	50.1	0.0	4.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,099.8	50.1	0.0	4.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,199.8	50.1	0.0	4.0	0.00	0.00	0.00
8,299.2	0.00	0.00	8,299.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Kibbey Lime</b>									
8,300.0	0.00	0.00	8,299.8	50.1	0.0	4.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	50.1	0.0	4.0	0.00	0.00	0.00
8,441.2	0.00	0.00	8,441.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Charles Salt</b>									
8,500.0	0.00	0.00	8,499.8	50.1	0.0	4.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,599.8	50.1	0.0	4.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,699.8	50.1	0.0	4.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	50.1	0.0	4.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	50.1	0.0	4.0	0.00	0.00	0.00
9,000.0	0.00	0.00	8,999.8	50.1	0.0	4.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,099.8	50.1	0.0	4.0	0.00	0.00	0.00
9,115.2	0.00	0.00	9,115.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Base Last Salt</b>									
9,200.0	0.00	0.00	9,199.8	50.1	0.0	4.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,299.8	50.1	0.0	4.0	0.00	0.00	0.00

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,331.2	0.00	0.00	9,331.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Mission Canyon</b>									
9,400.0	0.00	0.00	9,399.8	50.1	0.0	4.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,499.8	50.1	0.0	4.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	50.1	0.0	4.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	50.1	0.0	4.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	50.1	0.0	4.0	0.00	0.00	0.00
9,881.2	0.00	0.00	9,881.0	50.1	0.0	4.0	0.00	0.00	0.00
<b>Lodgepole</b>									
9,900.0	0.00	0.00	9,899.8	50.1	0.0	4.0	0.00	0.00	0.00
10,000.0	0.00	0.00	9,999.8	50.1	0.0	4.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,099.8	50.1	0.0	4.0	0.00	0.00	0.00
10,177.7	0.00	0.00	10,177.5	50.1	0.0	4.0	0.00	0.00	0.00
10,200.0	2.67	55.85	10,199.8	50.4	0.4	4.5	12.00	12.00	0.00
10,225.0	5.67	55.85	10,224.7	51.4	1.9	6.1	12.00	12.00	0.00
10,250.0	8.67	55.85	10,249.5	53.2	4.5	8.8	12.00	12.00	0.00
10,275.0	11.67	55.85	10,274.1	55.6	8.2	12.6	12.00	12.00	0.00
10,300.0	14.67	55.85	10,298.4	58.8	12.9	17.6	12.00	12.00	0.00
10,325.0	17.67	55.85	10,322.5	62.8	18.6	23.6	12.00	12.00	0.00
10,350.0	20.67	55.85	10,346.1	67.4	25.4	30.8	12.00	12.00	0.00
10,375.0	23.67	55.85	10,369.2	72.7	33.2	39.0	12.00	12.00	0.00
10,400.0	26.67	55.85	10,391.8	78.6	42.0	48.2	12.00	12.00	0.00
10,425.0	29.67	55.85	10,413.9	85.3	51.8	58.5	12.00	12.00	0.00
10,450.0	32.67	55.85	10,435.3	92.5	62.5	69.8	12.00	12.00	0.00
10,475.0	35.67	55.85	10,455.9	100.4	74.1	82.0	12.00	12.00	0.00
10,500.0	38.67	55.85	10,475.9	108.9	86.6	95.1	12.00	12.00	0.00
10,525.0	41.67	55.85	10,495.0	117.9	100.0	109.1	12.00	12.00	0.00
10,550.0	44.67	55.85	10,513.2	127.5	114.1	124.0	12.00	12.00	0.00
10,575.0	47.67	55.85	10,530.5	137.7	129.1	139.7	12.00	12.00	0.00
10,600.0	50.67	55.85	10,546.8	148.3	144.7	156.2	12.00	12.00	0.00
10,625.0	53.67	55.85	10,562.2	159.4	161.1	173.3	12.00	12.00	0.00
10,650.0	56.67	55.85	10,576.5	170.9	178.0	191.2	12.00	12.00	0.00
10,675.0	59.67	55.85	10,589.6	182.8	195.6	209.7	12.00	12.00	0.00
10,700.0	62.67	55.85	10,601.7	195.1	213.7	228.7	12.00	12.00	0.00
10,723.6	65.50	55.85	10,612.0	207.0	231.3	247.2	12.00	12.00	0.00
<b>False Bakken</b>									
10,725.0	65.67	55.85	10,612.6	207.7	232.4	248.3	12.00	12.00	0.00
10,750.0	68.67	55.85	10,622.3	220.7	251.4	268.3	12.00	12.00	0.00
10,754.8	69.25	55.85	10,624.0	223.2	255.1	272.2	12.00	12.00	0.00
<b>Upper Bakken Shale</b>									
10,775.0	71.67	55.85	10,630.8	233.9	270.9	288.8	12.00	12.00	0.00
10,800.0	74.67	55.85	10,638.0	247.3	290.7	309.6	12.00	12.00	0.00
10,825.0	77.67	55.85	10,644.0	260.9	310.8	330.7	12.00	12.00	0.00
10,850.0	80.67	55.85	10,648.7	274.7	331.1	352.1	12.00	12.00	0.00
10,852.1	80.92	55.85	10,649.0	275.8	332.8	353.9	12.00	12.00	0.00
<b>Middle Bakken (Top of Target)</b>									
10,875.0	83.67	55.85	10,652.1	288.6	351.6	373.6	12.00	12.00	0.00
10,900.0	86.67	55.85	10,654.2	302.6	372.2	395.3	12.00	12.00	0.00
10,923.1	89.45	55.85	10,655.0	315.6	391.3	415.4	12.00	12.00	0.00
10,924.2	89.45	55.87	10,655.0	316.2	392.2	416.3	2.00	-0.01	2.00
<b>7"</b>									
11,000.0	89.45	57.39	10,655.7	357.8	455.5	482.8	2.00	-0.01	2.00
11,100.0	89.44	59.39	10,656.7	410.3	540.7	571.9	2.00	-0.01	2.00
11,200.0	89.44	61.39	10,657.7	459.7	627.6	662.5	2.00	0.00	2.00
11,300.0	89.43	63.39	10,658.6	506.0	716.2	754.5	2.00	0.00	2.00

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,400.0	89.43	65.39	10,659.6	549.2	806.4	847.9	2.00	0.00	2.00
11,437.1	89.43	66.13	10,660.0	564.4	840.2	882.8	2.00	0.00	2.00
<b>Middle Bakken (Base of target)</b>									
11,500.0	89.43	67.39	10,660.6	589.3	898.0	942.4	2.00	0.00	2.00
11,600.0	89.43	69.39	10,661.6	626.1	990.9	1,038.0	2.00	0.00	2.00
11,700.0	89.42	71.39	10,662.6	659.7	1,085.1	1,134.6	2.00	0.00	2.00
11,800.0	89.42	73.39	10,663.6	689.9	1,180.4	1,232.0	2.00	0.00	2.00
11,900.0	89.43	75.39	10,664.6	716.8	1,276.7	1,330.2	2.00	0.00	2.00
12,000.0	89.43	77.39	10,665.6	740.4	1,373.9	1,429.0	2.00	0.00	2.00
12,100.0	89.43	79.39	10,666.6	760.5	1,471.9	1,528.2	2.00	0.00	2.00
12,200.0	89.43	81.39	10,667.6	777.2	1,570.4	1,627.8	2.00	0.00	2.00
12,300.0	89.43	83.39	10,668.6	790.4	1,669.5	1,727.7	2.00	0.00	2.00
12,400.0	89.44	85.39	10,669.6	800.2	1,769.1	1,827.6	2.00	0.00	2.00
12,500.0	89.44	87.39	10,670.6	806.5	1,868.9	1,927.6	2.00	0.00	2.00
12,600.0	89.45	89.39	10,671.6	809.3	1,968.8	2,027.5	2.00	0.01	2.00
12,630.6	89.45	90.00	10,671.9	809.5	1,999.4	2,057.9	2.00	0.01	2.00
12,700.0	89.45	90.00	10,672.5	809.5	2,068.8	2,127.2	0.00	0.00	0.00
12,800.0	89.45	90.00	10,673.5	809.5	2,168.8	2,226.8	0.00	0.00	0.00
12,854.5	89.45	90.00	10,674.0	809.5	2,223.3	2,281.1	0.00	0.00	0.00
<b>Lower Bakken Shale</b>									
12,900.0	89.45	90.00	10,674.4	809.5	2,268.8	2,326.5	0.00	0.00	0.00
13,000.0	89.45	90.00	10,675.4	809.5	2,368.8	2,426.2	0.00	0.00	0.00
13,100.0	89.45	90.00	10,676.4	809.5	2,468.8	2,525.8	0.00	0.00	0.00
13,200.0	89.45	90.00	10,677.3	809.5	2,568.8	2,625.5	0.00	0.00	0.00
13,300.0	89.45	90.00	10,678.3	809.5	2,668.8	2,725.2	0.00	0.00	0.00
13,400.0	89.45	90.00	10,679.2	809.5	2,768.8	2,824.9	0.00	0.00	0.00
13,500.0	89.45	90.00	10,680.2	809.5	2,868.8	2,924.5	0.00	0.00	0.00
13,600.0	89.45	90.00	10,681.2	809.5	2,968.8	3,024.2	0.00	0.00	0.00
13,700.0	89.45	90.00	10,682.1	809.5	3,068.8	3,123.9	0.00	0.00	0.00
13,800.0	89.45	90.00	10,683.1	809.5	3,168.7	3,223.5	0.00	0.00	0.00
13,900.0	89.45	90.00	10,684.0	809.5	3,268.7	3,323.2	0.00	0.00	0.00
14,000.0	89.45	90.00	10,685.0	809.5	3,368.7	3,422.9	0.00	0.00	0.00
14,100.0	89.45	90.00	10,686.0	809.5	3,468.7	3,522.6	0.00	0.00	0.00
14,200.0	89.45	90.00	10,686.9	809.5	3,568.7	3,622.2	0.00	0.00	0.00
14,300.0	89.45	90.00	10,687.9	809.5	3,668.7	3,721.9	0.00	0.00	0.00
14,400.0	89.45	90.00	10,688.8	809.5	3,768.7	3,821.6	0.00	0.00	0.00
14,500.0	89.45	90.00	10,689.8	809.5	3,868.7	3,921.2	0.00	0.00	0.00
14,600.0	89.45	90.00	10,690.8	809.5	3,968.7	4,020.9	0.00	0.00	0.00
14,700.0	89.45	90.00	10,691.7	809.5	4,068.7	4,120.6	0.00	0.00	0.00
14,800.0	89.45	90.00	10,692.7	809.5	4,168.7	4,220.3	0.00	0.00	0.00
14,900.0	89.45	90.00	10,693.6	809.5	4,268.7	4,319.9	0.00	0.00	0.00
15,000.0	89.45	90.00	10,694.6	809.5	4,368.7	4,419.6	0.00	0.00	0.00
15,100.0	89.45	90.00	10,695.6	809.5	4,468.7	4,519.3	0.00	0.00	0.00
15,200.0	89.45	90.00	10,696.5	809.5	4,568.7	4,619.0	0.00	0.00	0.00
15,300.0	89.45	90.00	10,697.5	809.5	4,668.7	4,718.6	0.00	0.00	0.00
15,354.7	89.45	90.00	10,698.0	809.5	4,723.4	4,773.2	0.00	0.00	0.00
<b>Threeforks</b>									
15,400.0	89.45	90.00	10,698.4	809.5	4,768.7	4,818.3	0.00	0.00	0.00
15,500.0	89.45	90.00	10,699.4	809.5	4,868.7	4,918.0	0.00	0.00	0.00
15,600.0	89.45	90.00	10,700.4	809.5	4,968.7	5,017.6	0.00	0.00	0.00
15,700.0	89.45	90.00	10,701.3	809.5	5,068.7	5,117.3	0.00	0.00	0.00
15,800.0	89.45	90.00	10,702.3	809.5	5,168.7	5,217.0	0.00	0.00	0.00
15,900.0	89.45	90.00	10,703.2	809.5	5,268.7	5,316.7	0.00	0.00	0.00
16,000.0	89.45	90.00	10,704.2	809.5	5,368.6	5,416.3	0.00	0.00	0.00

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,100.0	89.45	90.00	10,705.2	809.5	5,468.6	5,516.0	0.00	0.00	0.00
16,200.0	89.45	90.00	10,706.1	809.5	5,568.6	5,615.7	0.00	0.00	0.00
16,300.0	89.45	90.00	10,707.1	809.5	5,668.6	5,715.3	0.00	0.00	0.00
16,400.0	89.45	90.00	10,708.0	809.5	5,768.6	5,815.0	0.00	0.00	0.00
16,500.0	89.45	90.00	10,709.0	809.5	5,868.6	5,914.7	0.00	0.00	0.00
16,600.0	89.45	90.00	10,710.0	809.5	5,968.6	6,014.4	0.00	0.00	0.00
16,700.0	89.45	90.00	10,710.9	809.5	6,068.6	6,114.0	0.00	0.00	0.00
16,800.0	89.45	90.00	10,711.9	809.5	6,168.6	6,213.7	0.00	0.00	0.00
16,900.0	89.45	90.00	10,712.8	809.5	6,268.6	6,313.4	0.00	0.00	0.00
17,000.0	89.45	90.00	10,713.8	809.5	6,368.6	6,413.1	0.00	0.00	0.00
17,100.0	89.45	90.00	10,714.8	809.5	6,468.6	6,512.7	0.00	0.00	0.00
17,200.0	89.45	90.00	10,715.7	809.5	6,568.6	6,612.4	0.00	0.00	0.00
17,300.0	89.45	90.00	10,716.7	809.5	6,668.6	6,712.1	0.00	0.00	0.00
17,400.0	89.45	90.00	10,717.6	809.5	6,768.6	6,811.7	0.00	0.00	0.00
17,500.0	89.45	90.00	10,718.6	809.5	6,868.6	6,911.4	0.00	0.00	0.00
17,600.0	89.45	90.00	10,719.6	809.5	6,968.6	7,011.1	0.00	0.00	0.00
17,700.0	89.45	90.00	10,720.5	809.5	7,068.6	7,110.8	0.00	0.00	0.00
17,800.0	89.45	90.00	10,721.5	809.5	7,168.6	7,210.4	0.00	0.00	0.00
17,900.0	89.45	90.00	10,722.4	809.5	7,268.6	7,310.1	0.00	0.00	0.00
18,000.0	89.45	90.00	10,723.4	809.5	7,368.6	7,409.8	0.00	0.00	0.00
18,100.0	89.45	90.00	10,724.4	809.5	7,468.5	7,509.4	0.00	0.00	0.00
18,200.0	89.45	90.00	10,725.3	809.5	7,568.5	7,609.1	0.00	0.00	0.00
18,300.0	89.45	90.00	10,726.3	809.5	7,668.5	7,708.8	0.00	0.00	0.00
18,400.0	89.45	90.00	10,727.2	809.5	7,768.5	7,808.5	0.00	0.00	0.00
18,500.0	89.45	90.00	10,728.2	809.5	7,868.5	7,908.1	0.00	0.00	0.00
18,600.0	89.45	90.00	10,729.2	809.5	7,968.5	8,007.8	0.00	0.00	0.00
18,700.0	89.45	90.00	10,730.1	809.5	8,068.5	8,107.5	0.00	0.00	0.00
18,800.0	89.45	90.00	10,731.1	809.5	8,168.5	8,207.1	0.00	0.00	0.00
18,900.0	89.45	90.00	10,732.0	809.5	8,268.5	8,306.8	0.00	0.00	0.00
19,000.0	89.45	90.00	10,733.0	809.5	8,368.5	8,406.5	0.00	0.00	0.00
19,100.0	89.45	90.00	10,734.0	809.5	8,468.5	8,506.2	0.00	0.00	0.00
19,200.0	89.45	90.00	10,734.9	809.5	8,568.5	8,605.8	0.00	0.00	0.00
19,300.0	89.45	90.00	10,735.9	809.5	8,668.5	8,705.5	0.00	0.00	0.00
19,400.0	89.45	90.00	10,736.8	809.5	8,768.5	8,805.2	0.00	0.00	0.00
19,500.0	89.45	90.00	10,737.8	809.5	8,868.5	8,904.9	0.00	0.00	0.00
19,600.0	89.45	90.00	10,738.8	809.5	8,968.5	9,004.5	0.00	0.00	0.00
19,700.0	89.45	90.00	10,739.7	809.5	9,068.5	9,104.2	0.00	0.00	0.00
19,800.0	89.45	90.00	10,740.7	809.5	9,168.5	9,203.9	0.00	0.00	0.00
19,900.0	89.45	90.00	10,741.6	809.5	9,268.5	9,303.5	0.00	0.00	0.00
20,000.0	89.45	90.00	10,742.6	809.5	9,368.5	9,403.2	0.00	0.00	0.00
20,100.0	89.45	90.00	10,743.6	809.5	9,468.5	9,502.9	0.00	0.00	0.00
20,200.0	89.45	90.00	10,744.5	809.5	9,568.5	9,602.6	0.00	0.00	0.00
20,300.0	89.45	90.00	10,745.5	809.5	9,668.4	9,702.2	0.00	0.00	0.00
20,400.0	89.45	90.00	10,746.4	809.5	9,768.4	9,801.9	0.00	0.00	0.00
20,500.0	89.45	90.00	10,747.4	809.5	9,868.4	9,901.6	0.00	0.00	0.00
20,600.0	89.45	90.00	10,748.4	809.5	9,968.4	10,001.2	0.00	0.00	0.00
20,673.5	89.45	90.00	10,749.1	809.5	10,042.0	10,074.5	0.00	0.00	0.00

21-30 13B PBHL

# Oasis Petroleum

## Planning Report

<b>Database:</b>	OpenWellsCompass - EDM Prod	<b>Local Co-ordinate Reference:</b>	Well Wade Federal 5300 21-30 13B
<b>Company:</b>	Oasis	<b>TVD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Project:</b>	Indian Hills	<b>MD Reference:</b>	WELL @ 2024.0usft (Original Well Elev)
<b>Site:</b>	153N-100W-29/30	<b>North Reference:</b>	True
<b>Well:</b>	Wade Federal 5300 21-30 13B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wade Federal 13B		
<b>Design:</b>	Dising#2		

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
21-30 13B PBHL	0.00	0.00	10,749.1	809.0	10,042.0	398,272.37	1,219,808.20	48° 3' 3.748 N	103° 33' 43.158 W
- plan misses target center by 0.5usft at 20673.5usft MD (10749.1 TVD, 809.5 N, 10042.0 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,974.0	1,974.0 9 5/8"		9-5/8	13-1/2	
10,924.2	10,655.0 7"		7	8-3/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,874.0	1,874.0	Pierre		0.00	
4,521.1	4,521.0	Greenhorn		0.00	
4,923.1	4,923.0	Mowry		0.00	
5,347.1	5,347.0	Dakota		0.00	
6,360.2	6,360.0	Rierdon		0.00	
6,851.2	6,851.0	Dunham Salt		0.00	
6,901.2	6,901.0	Dunham Salt Base		0.00	
7,161.2	7,161.0	Pine Salt		0.00	
7,179.2	7,179.0	Pine Salt Base		0.00	
7,249.2	7,249.0	Opeche Salt		0.00	
7,328.2	7,328.0	Opeche Salt Base		0.00	
7,569.2	7,569.0	Amsden		0.00	
7,730.2	7,730.0	Tyler		0.00	
7,957.2	7,957.0	Otter/Base Minnelusa		0.00	
8,299.2	8,299.0	Kibbey Lime		0.00	
8,441.2	8,441.0	Charles Salt		0.00	
9,115.2	9,115.0	Base Last Salt		0.00	
9,331.2	9,331.0	Mission Canyon		0.00	
9,881.2	9,881.0	Lodgepole		0.00	
10,723.6	10,612.0	False Bakken		0.00	
10,754.8	10,624.0	Upper Bakken Shale		0.00	
10,852.1	10,649.0	Middle Bakken (Top of Target)		0.00	
11,437.1	10,660.0	Middle Bakken (Base of target)		0.00	
12,854.5	10,674.0	Lower Bakken Shale		0.00	
15,354.7	10,698.0	Threeforks		0.00	

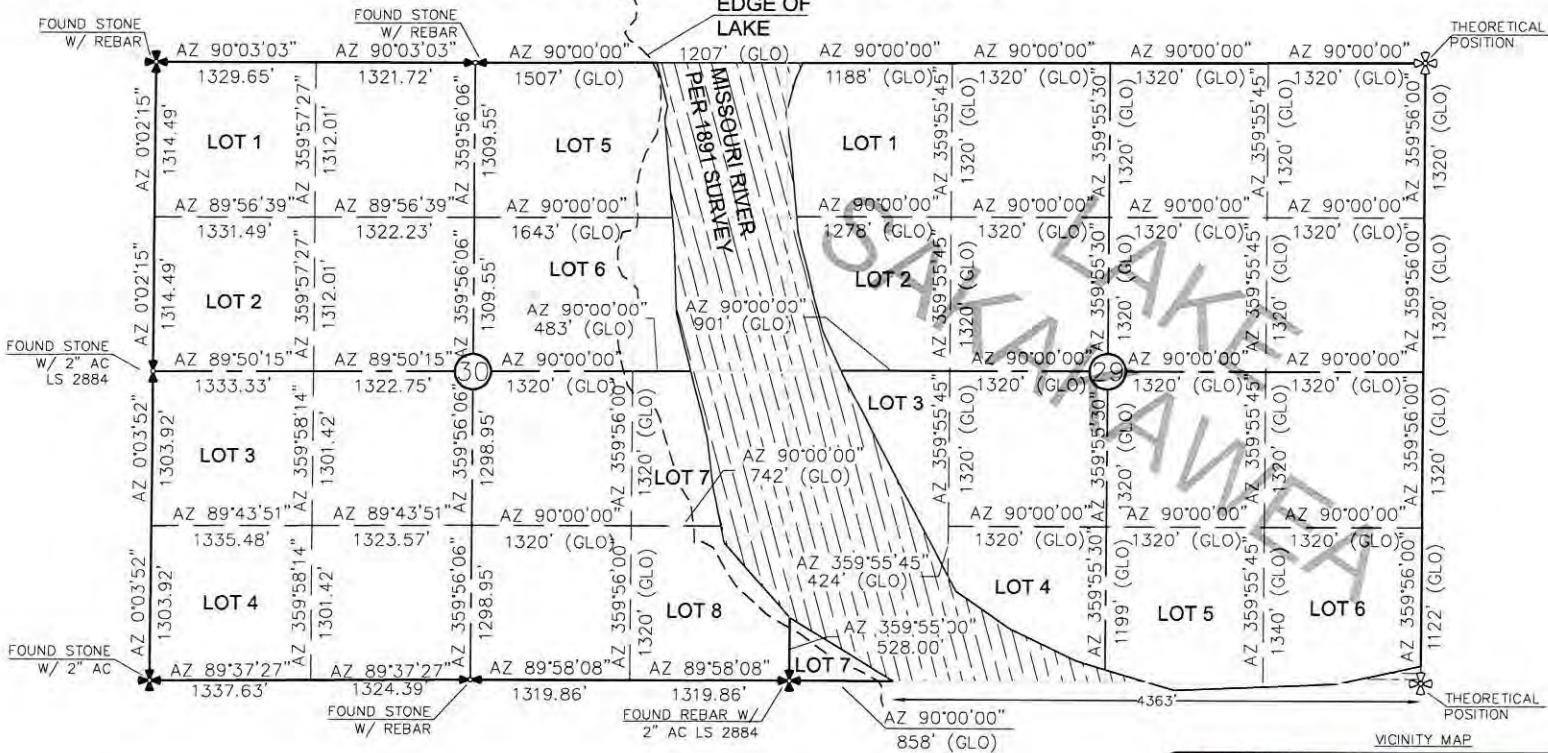


## SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"WADE FEDERAL 5300 21-30 13B"

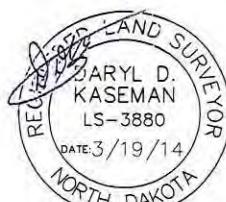
1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTIONS 29 & 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS., REGISTRATION NUMBER  
3880 ON 3/19/14. AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
THE OFFICES OF INTERSTATE  
ENGINEERING, INC.



ALL AZIMUTHS ARE BASED ON G.P.S.  
OBSERVATIONS. THE ORIGINAL SURVEY OF THIS  
AREA FOR THE GENERAL LAND OFFICE (G.L.O.)  
WAS 1897. THE CORNERS FOUND ARE AS  
INDICATED AND ALL OTHERS ARE COMPUTED FROM  
THOSE CORNERS FOUND AND BASED ON G.L.O.  
DATA. THE MAPPING ANGLE FOR THIS AREA IS  
APPROXIMATELY 0°03'.



© 2014. INTERSTATE ENGINEERING INC.

INTERSTATE  
ENGINEERING

ENGINEER

2/8

OASIS PETROLEUM NORTH AMERICA, LLC	
SECTION BREAKDOWN	
SECTIONS 29 & 30, T153N, R100W	
MCKENZIE COUNTY, NORTH DAKOTA	
Drawn By:	B.A.H.
Checked By:	D.D.K.
Project No.:	S14490101
Date:	MAR 2014

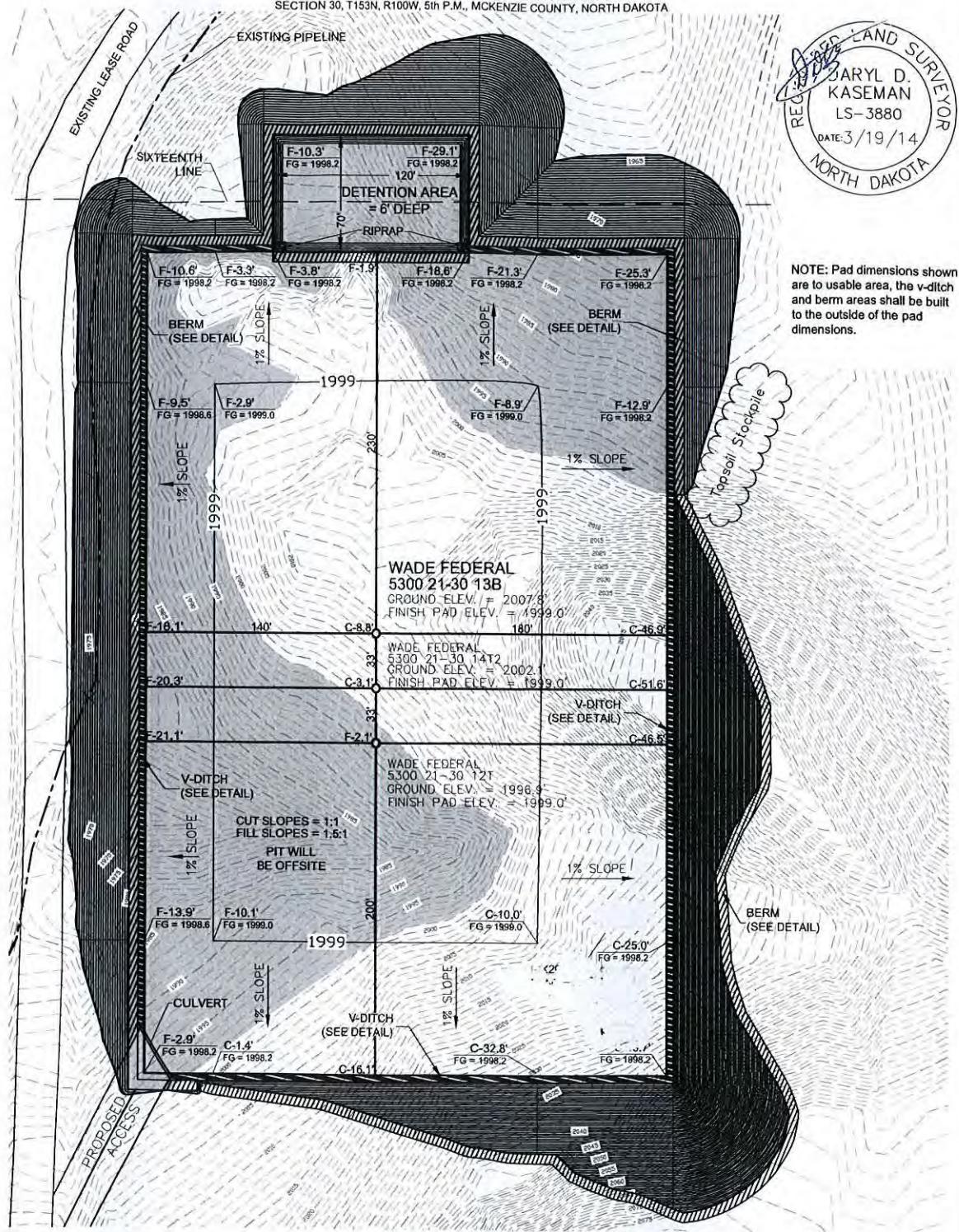
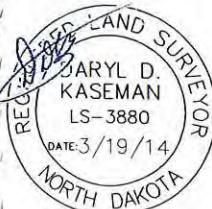
**Interstate Engineering, Inc.**  
 P.O. Box 648  
 425 East Main Street  
 Sidney, Montana 59270  
 Ph. (406) 433-5617  
 Fax (406) 433-5618  
[www.internationaleng.com](http://www.internationaleng.com)  
Open Office in Missoula, 49275 Deacon and 2nd Street

**INTERSTATE**  
ENGINEERING

PAD LAYOUT

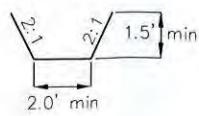
OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED AND  
SEALED BY DARYL D. KASEMAN, PLS,  
REGISTRATION NUMBER 3880 ON 3/19/14  
AND THE ORIGINAL DOCUMENTS ARE STORED  
AT THE OFFICES OF INTERSTATE ENGINEERING,  
INC.

V-DITCH DETAIL



Proposed Contours  
Original Contours

0 60'  
1" = 60'

(c) 2014, INTERSTATE ENGINEERING, INC. NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

3/8

**INTERSTATE**  
ENGINEERING  
Professionals you need, people you trust

Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.interstateengineering.com](http://www.interstateengineering.com)  
Other offices in Montana, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
PAD LAYOUT  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S1409-019.01  
Checked By: D.D.K. Date: MAR 2014

Revision No.	Date	By	Description

Scale: Per GAO's Note Federal S300 21-30-13B Inv - 1/8"=60' +/- 1% per

**WELL LOCATION SITE QUANTITIES**  
 OASIS PETROLEUM NORTH AMERICA, LLC  
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
 "WADE FEDERAL 5300 21-30 13B"  
 1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
 SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL SITE ELEVATION	2007.8
WELL PAD ELEVATION	1999.0
EXCAVATION	65,093
PLUS PIT	0
	<hr/>
	65,093
EMBANKMENT	49,762
PLUS SHRINKAGE (25%)	<hr/> 12,441
	<hr/>
	62,203
STOCKPILE PIT	0
STOCKPILE TOP SOIL (6")	4,561
BERMS	2,074 LF = 671 CY
DITCHES	1,461 LF = 223 CY
DETENTION AREA	1,377 CY
ADDITIONAL MATERIAL NEEDED	666
DISTURBED AREA FROM PAD	5.65 ACRES

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)

CUT END SLOPES AT 1:1

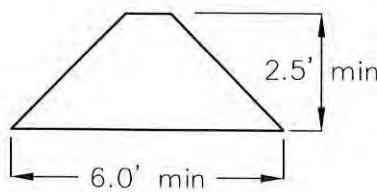
FILL END SLOPES AT 1.5:1

WELL SITE LOCATION

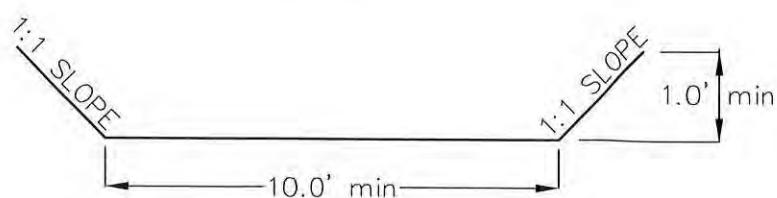
1574' FNL

270' FWL

BERM DETAIL



DITCH DETAIL



© 2014, INTERSTATE ENGINEERING, INC.

8/8  
SHEET NO.

**INTERSTATE**  
ENGINEERING  
Professionals you need, people you trust

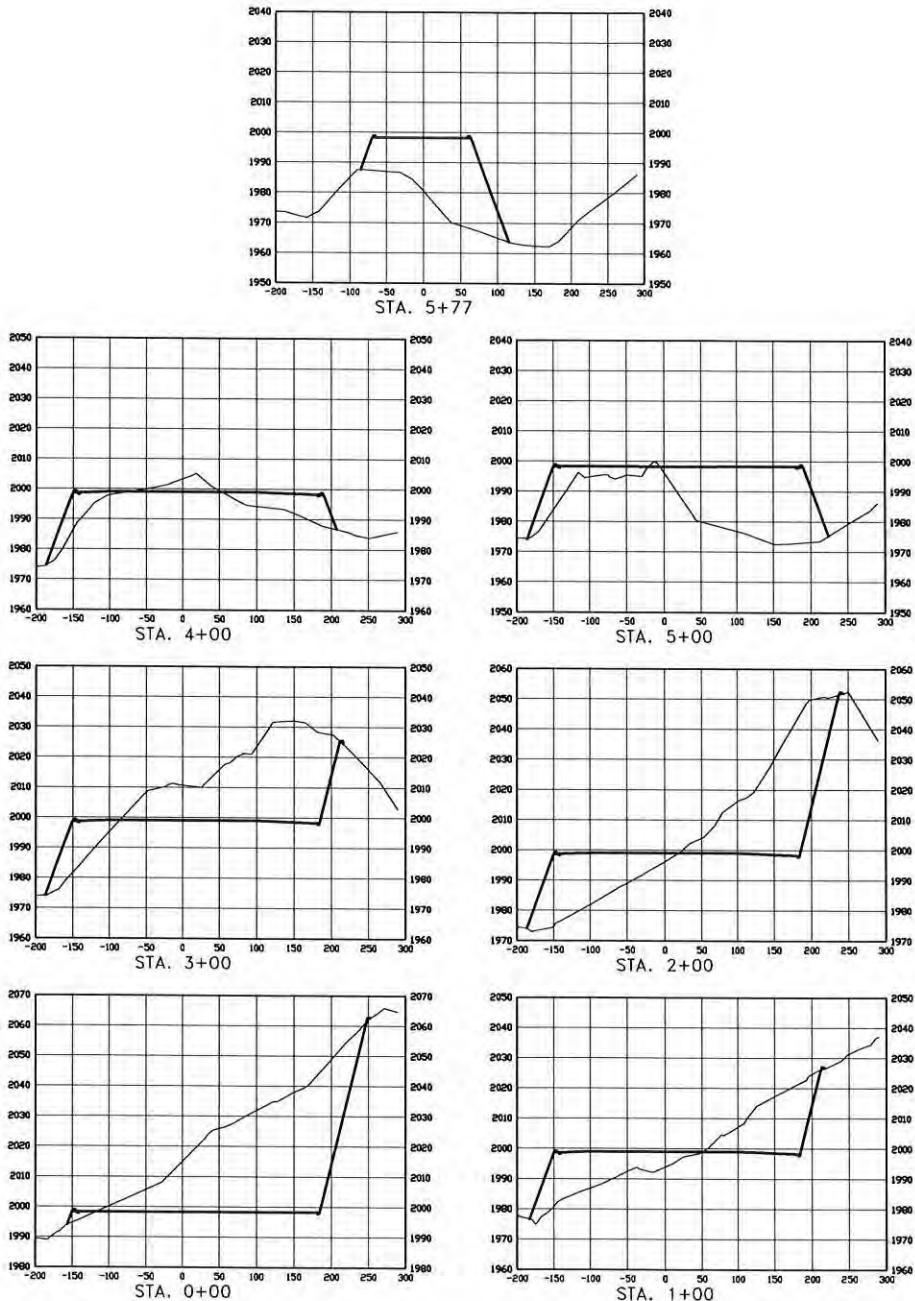
Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph. (406) 433-5617  
Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
QUANTITIES  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S14-09-019.01  
Checked By: D.D.K. Date: MAR. 2014

Revision No.	Date	By	Description

**CROSS SECTIONS**  
 OASIS PETROLEUM NORTH AMERICA, LLC  
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
 "WADE FEDERAL 5300 21-30 13B"  
 1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
 SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
 ISSUED AND SEALED BY DARYL D.  
 KASEMAN, PLS, REGISTRATION NUMBER  
 3880 ON 3/19/14 AND THE  
 ORIGINAL DOCUMENTS ARE STORED AT  
 THE OFFICES OF INTERSTATE  
 ENGINEERING, INC.

SCALE  
 HORIZ 1"=160'  
 VERT 1"=40'

© 2014, INTERSTATE ENGINEERING, INC.

7/8

**INTERSTATE**  
ENGINEERING

Professionals you need, people you trust

Interstate Engineering, Inc.  
 P.O. Box 648  
 425 East Main Street  
 Sidney, Montana 59270  
 Ph (406) 433-5617  
 Fax (406) 433-5618  
[www.interstategeng.com](http://www.interstategeng.com)

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 CROSS SECTIONS  
 SECTION 30, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S14-09-018-01

Checked By: D.D.K. Date: MAR 2014

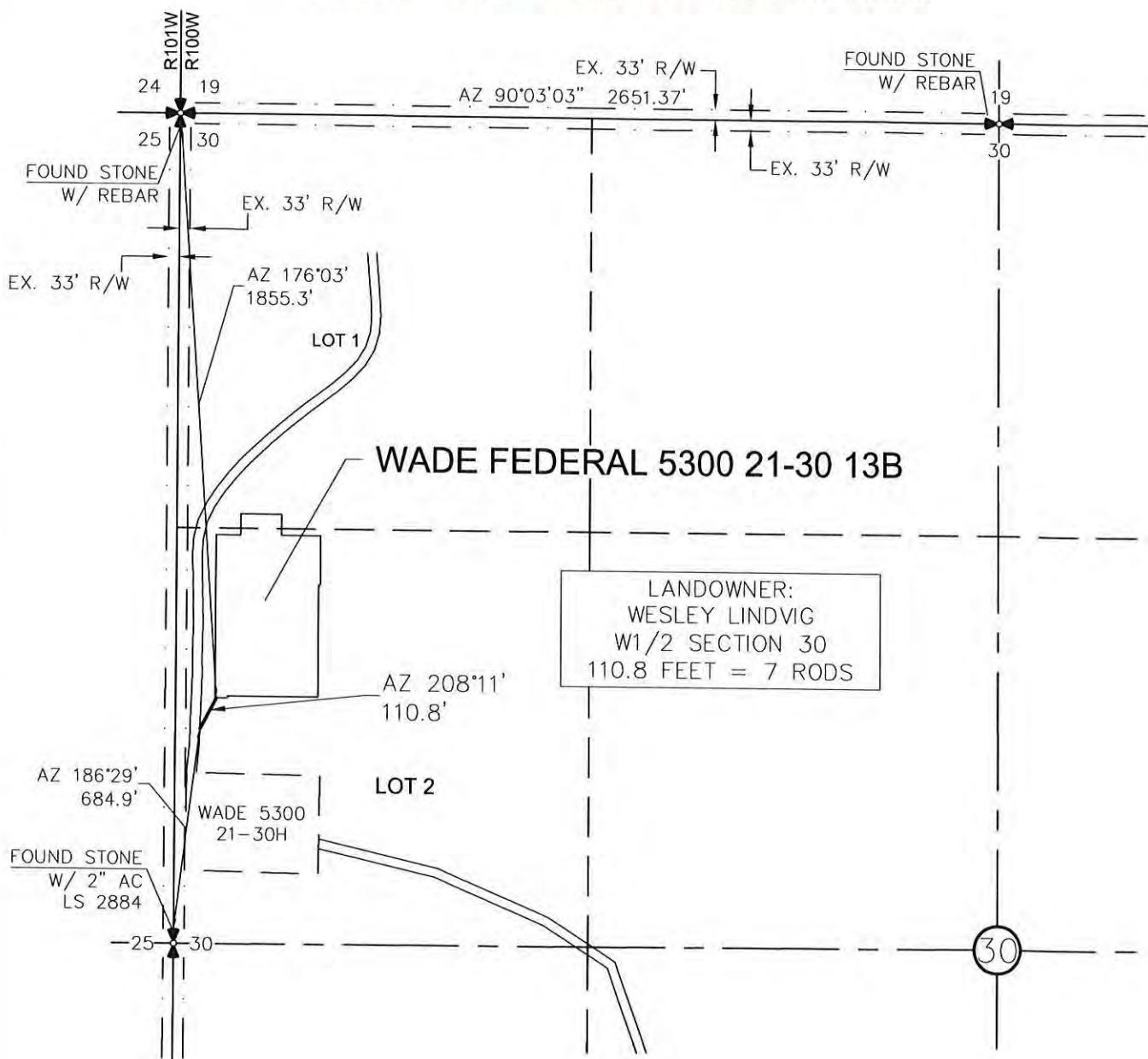
Revision No.	Date	By	Description

# ACCESS APPROACH

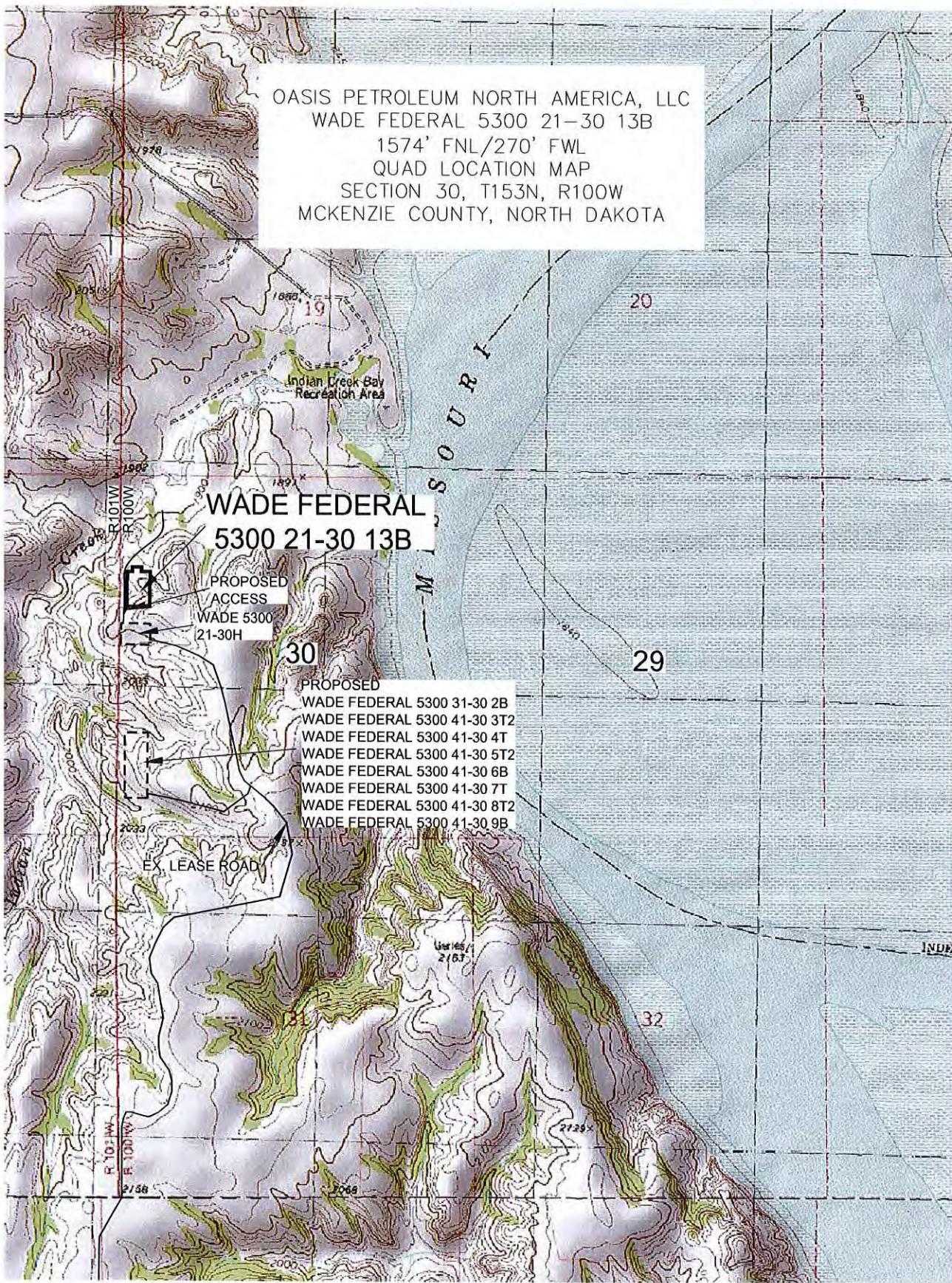
OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"WADE FEDERAL 5300 21-30 13B"

1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



Revision No.	Date	By	Description



© 2014, INTERSTATE ENGINEERING, INC.

5/8



SHEET NO.

Interstate Engineering, Inc.  
 P.O. Box 648  
 425 East Main Street  
 Sidney, Montana 59270  
 Ph (406) 433-5617  
 Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 QUAD LOCATION MAP  
 SECTION 30, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By:	B.H.H.	Project No.:	S14-09-019.01
Checked By:	D.D.K.	Date:	MAR. 2014

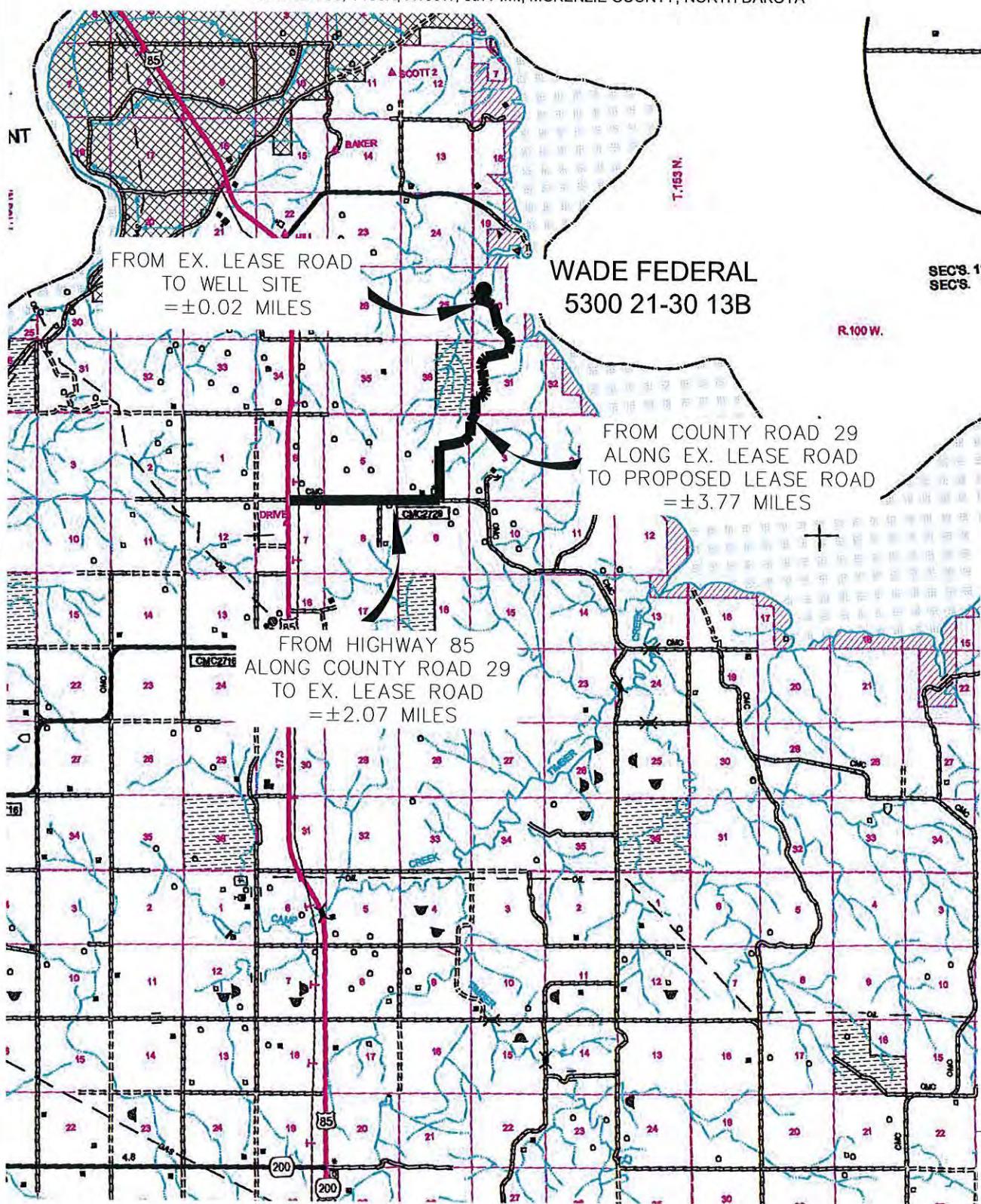
Revision No.	Date	By	Description

# COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"WADE FEDERAL 5300 21-30 13B"

1574 FEET FROM NORTH LINE AND 270 FEET FROM WEST LINE  
SECTION 30, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



© 2014, INTERSTATE ENGINEERING, INC.

SCALE: 1" = 2 MILE

6/8



Interstate Engineering, Inc.  
P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
Ph (406) 433-5617  
Fax (406) 433-5618  
[www.Interstateeng.com](http://www.Interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
COUNTY ROAD MAP  
SECTION 30, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S14-09-019.01  
Checked By: D.D.K. Date: MAR, 2014

Revision No.	Date	By	Description



## **STATEMENT**

This statement is being sent in order to comply with NDAC 43-02-03-16 (Application for permit to drill and recomplete) which states (in part that) "confirmation that a legal street address has been requested for the well site, and well facility if separate from the well site, and the proposed road access to the nearest existing public road". On the date noted below a legal street address was requested from the appropriate county office.

McKenzie County

Aaron Chisholm – GIS Specialist for McKenzie County

Wade Federal 5300 21-30 12T – 153N-100W-29/30 – 06/04/2014

Wade Federal 5300 21-30 13B – 153N-100W-29/30 – 06/04/2014

Wade Federal 5300 21-30 14T2 – 153N-100W-29/30 – 06/04/2014

A handwritten signature in blue ink, appearing to read "Lauri M. Stanfield". It is written over a horizontal line.

**Lauri M. Stanfield**

Regulatory Specialist

Oasis Petroleum North America, LLC

**From:** [Burk, Ashley N.](#)  
**To:** [Webber, Alice D.](#)  
**Subject:** FW: Wade Federal 5300 21-30 Pad  
**Date:** Friday, July 25, 2014 1:17:57 PM

---

---

**From:** Michael Kukuk [mailto:[mkukuk@oasispetroleum.com](mailto:mkukuk@oasispetroleum.com)]  
**Sent:** Friday, July 25, 2014 12:59 PM  
**To:** Burk, Ashley N.  
**Subject:** RE: Wade Federal 5300 21-30 Pad

Hi Ashley,

I was able to confirm that the cuttings will be hauled to the Indian Hills Waste Disposal.

Thank you,  
Michael

---

**From:** Burk, Ashley N. [<mailto:anburk@nd.gov>]  
**Sent:** Friday, July 25, 2014 9:46 AM  
**To:** Michael Kukuk  
**Subject:** RE: Wade Federal 5300 21-30 Pad

Michael,

Just realized that since there is not cuttings pit, we need to know what facility you will be hauling the cuttings to for all three wells.

Thanks and have a great Friday!

Ashley

---

**From:** Michael Kukuk [<mailto:mkukuk@oasispetroleum.com>]  
**Sent:** Thursday, July 24, 2014 4:56 PM  
**To:** Burk, Ashley N.  
**Subject:** RE: Wade Federal 5300 21-30 Pad

Hi Ashley,

Thank you for the update on the Wade Federals. We will address this ASAP –

Best,  
Michael

---

**From:** Burk, Ashley N. [<mailto:anburk@nd.gov>]  
**Sent:** Thursday, July 24, 2014 2:57 PM  
**To:** Michael Kukuk  
**Subject:** Wade Federal 5300 21-30 Pad

Michael,

It is my understanding that you just called looking to get the Wade Federal well pad issued ASAP, however we have two issues with this well pad.

I talked to Brandi this morning about the 14T2 well. Right now you have the surface casing at 1974', and we need that to be modified so that it is at least 1980'.

For the 13B well, the bottom hole location violates the 200' setback. According to the drilling plan, it is located 10,142' from the wellhead (the other two wells are 10,042'), which would therefore put it at 101' from the east line. I left Brandi a voicemail about this issue a few minutes ago.

The sooner we get these, the sooner we can get your permit.

Feel free to contact me with any questions regarding these issues.

Thanks,

**Ashley N. Burk**  
Permitting Technician  
NDIC, Dept. Mineral Resources  
Oil and Gas Division  
(701) 328-8093  
[anburk@nd.gov](mailto:anburk@nd.gov)



The information contained in this electronic mail transmission is confidential and intended to be sent only to the intended recipient of the transmission. If you are not the intended recipient or the intended recipient's agent, you are hereby notified that any review, use, dissemination, distribution or copying of this communication is strictly prohibited. You are also asked to notify the sender immediately by telephone and to delete this transmission with any attachments and destroy all copies in any form. Thank you in advance for your cooperation.

The information contained in this electronic mail transmission is confidential and intended to be sent only to the intended recipient of the transmission. If you are not the intended recipient or the intended recipient's agent, you are hereby notified that any review, use, dissemination, distribution or copying of this communication is strictly prohibited. You are also asked to notify the sender immediately by telephone and to delete this transmission with any attachments and destroy all copies in any form. Thank you in advance for your cooperation.