

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-101
May 27, 2004

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

Submit to appropriate District Office

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address APPROACH OPERATING, LLC 6500 WEST FREEWAY, SUITE 800 FORT WORTH, TX 76116		OGRID Number 248343
Property Code 36790	Property Name WOOLLEY FAMILY LP	API Number 30-39-30597
Proposed Pool 1 W225N5E3-1-1 MANCOS 001		Proposed Pool 2

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	3	28N	5E		2210	NORTH	935	EAST	RIO ARRIBA

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Work Type Code N	Well Type Code O	Cable/Rotary ROTARY	Lease Type Code P	Ground Level Elevation 9921.98' LSD
Multiple	Proposed Depth 2000	Formation GRANEROS	Contractor BEARCAT DRLG CO.	Spud Date ASAP
Depth to Groundwater: >100'		Distance from nearest fresh water well: >1000'		Distance from nearest surface water: >1000'
Pit: Liner: Synthetic <input checked="" type="checkbox"/> 12 mil thick Clay <input type="checkbox"/> Pit Volume: 4000 bbls Drilling Method: Fresh Water <input type="checkbox"/> Brine <input type="checkbox"/> Diesel/Oil-based <input type="checkbox"/> Gas/Air <input checked="" type="checkbox"/>				

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17 1/2"	9 5/8"	36.0#	350'	210	SURFACE
8 3/4"	4 1/2"	10.5 #	1700'	500	SURFACE

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21 Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Propose to drill into the Graneros Sh. exploring for oil and/or gas in all formations encountered.

(1) Shafco 11" Double Ram 3000# LWS
(1) Grant 11" rotating head, 3000#
(1) 5000# choke manifold
(1) Koomey 3 station 3000# w/air/hydraulic pump
(4) 10 gallon bottles

RCVD OCT 15 '07
OIL CONS. DIV.

**NOTIFY AZTEC OCD 24 HRS. DIST. 3
PRIOR TO CASING & CEMENT**

21 I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines <input type="checkbox"/> a general permit <input checked="" type="checkbox"/> , or an (attached) alternative OCD-approved plan <input type="checkbox"/> . Signature: <i>Glen W. Reed</i> Printed name: Glen W. Reed, P. E. Title: Senior Vice President of Operations E-mail Address: gwreed@approachresources.com Date: October 11, 2007 Phone: (817) 989-9000	OIL CONSERVATION DIVISION
	Approved by: <i>[Signature]</i>
	Title: Deputy Oil & Gas Inspector
	Approval Date: OCT 18 2007 District #3
Conditions of Approval Attached <input type="checkbox"/>	

OCT 18 2007

12 mil liner required

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30039-30397	² Pool Code 97649	³ Pool Name WL 2-8N 5E3; Maxced Oil
⁴ Property Code 36790	⁵ Property Name Woolley Family Limited Partnership	
⁶ OGRID No.	⁷ Operator Name Approach Operating LLC	⁸ Well Number Woolley Family LP #1 ⁹ Elevation 9921.98'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	**03	**28N	**05E		2210	NORTH	935	EAST	RIO ARRIBA

¹¹ Bottom Hole Location if Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

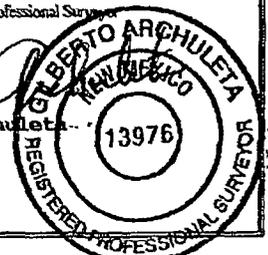
¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
			RCUD OCT 15 '07

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

OIL CONS. DIV.
DIST. 3

**Projection of township, range and section within the Tierra Amarilla Land Grant

16				¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well of this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <i>James S. Scott</i> Date: OCT 11, 2007 Printed Name: JAMES S. SCOTT
			Woolley Family LP No. 1	
	Woolley Family LP No. 1			¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 21 September 2007 Date of Survey Signature and Seal of Professional Surveyor <i>Gilberto Archuleta</i> Gilberto Archuleta No. 13976 Certificate Number
	Latitude - 36°41'27"88700"N Longitude - 106°23'11.85392"W			
	New Mexico State Plane Coordinate System - Central Zone x - 460,327.103 y - 2,071,752.215			





WOLLEY FAMILY I

Rio Arriba Co., NM

By: O. MELENDEZ

MAP PROJECTION

Datum: North American 1927 (NAD27)

State Plane: New Mexico Central (NAD27)

XY Units : FEET



June 18, 2008

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State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action: Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
 Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

Operator: Approach Operating, LLC OGRID #: 248343
Address: 6500 West Freeway, Suite 800 Fort Worth, TX 76116
Facility or well name: Woolley Family LP No. 1
API Number: 30-039-30397 OCD Permit Number: _____
U/L or Qtr/Qtr H Section 3 Township 28N Range 5E County: Rio Arriba
Center of Proposed Design: Latitude _____ Longitude _____ NAD: 1927 1983
Surface Owner: Federal State Private Tribal Trust or Indian Allotment

Pit: Subsection F or G of 19.15.17.11 NMAC
Temporary: Drilling Workover
Permanent Emergency Cavitation
 Lined Unlined
Liner type: Thickness _____ mil LLDPE HDPE PVC
 Other _____ String-Reinforced
Seams: Welded Factory Other _____
Volume: _____ bbl Dimensions: L _____ x W _____ x D _____

Closed-loop System: Subsection H of 19.15.17.11 NMAC
 Drying Pad Tanks Haul-off Bins Other _____
 Lined Unlined
Liner type: Thickness N/A mil LLDPE HDPE PVC
 Other _____
Seams: Welded Factory Other _____
Volume: N/A bbl N/A yd³
Dimensions: Length N/A x Width N/A

Below-grade tank: Subsection I of 19.15.17.11 NMAC
Volume: _____ bbl
Type of fluid: _____
Tank Construction material: _____
 Secondary containment with leak detection
 Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
 Visible sidewalls and liner
 Visible sidewalls only
 Other _____
Liner type: Thickness _____ mil HDPE PVC
 Other _____

Fencing: Subsection D of 19.15.17.11 NMAC
 Chain link, six feet in height, two strands of barbed wire at top
 Four foot height, four strands of barbed wire evenly spaced between one and four feet
Netting: Subsection E of 19.15.17.11 NMAC
 Screen Netting Other _____
 Monthly inspections
Signs: Subsection C of 19.15.17.11 NMAC
 12'x24', 2' lettering, providing Operator's name, site location, and emergency telephone numbers
 Signed in compliance with 19.15.3.103 NMAC

Alternative Method:
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration and approval.

Administrative Approvals and Exceptions:
Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.
Please check a box if one or more of the following is requested, if not leave blank:
 Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.
 Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

- | | |
|--|---|
| Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).
- Topographic map; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to temporary, emergency, or cavitation pits and below-grade tanks)
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits)
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.
- Written confirmation or verification from the municipality; Written approval obtained from the municipality | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 500 feet of a wetland.
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within the area overlying a subsurface mine.
- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within an unstable area.
- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within a 100-year floodplain.
- FEMA map | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.15 NMAC
- Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.15 NMAC
- Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- Geologic and Hydrogeologic Data (required for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.15 NMAC
- Siting Criteria Compliance Demonstrations (required for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC
- Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

NMAC

Previously Approved Design (attach copy of design) API Number: _____

Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.15 NMAC
- Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- Climatological Factors Assessment
- Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- Quality Control/Quality Assurance Construction and Installation Plan
- Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- Nuisance or Hazardous Odors, including H₂S, Prevention Plan
- Emergency Response Plan
- Oil Field Waste Stream Characterization
- Monitoring and Inspection Plan
- Erosion Control Plan
- Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

Proposed Closure: 19.15.17.13 NMAC

Type: Drilling Workover Emergency Cavitation Permanent Pit Below-grade Tank Closed-loop System Alternative

Proposed Closure Method: Waste Excavation and Removal
 On-site Closure Method (only for temporary pits and closed-loop systems)
 In-place Burial On-site Trench Burial
 Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC

Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

- | | |
|---|---|
| Ground water is less than 50 feet below the bottom of the buried waste.
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Ground water is between 50 and 100 feet below the bottom of the buried waste
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Ground water is more than 100 feet below the bottom of the buried waste.
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).
- Topographic map; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.
- NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.
- Written confirmation or verification from the municipality; Written approval obtained from the municipality | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within 500 feet of a wetland.
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within the area overlying a subsurface mine.
- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within an unstable area.
- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within a 100-year floodplain.
- FEMA map | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

- Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Haul-off Bins Only: (19.15.17.13.D NMAC) *Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings.*

Disposal Facility Name: Basin Disposal, Inc. Disposal Facility Permit Number: NM-01-0005

On-Site Closure Plan Checklist: (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

- Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- Construction and Design of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC
- Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Glenn W. Reed, P. E. Title: Executive Vice President – Operations and Engineering

Signature:  Date: 6-18-08

e-mail address: gwreed@approachresources.com Telephone: 817-989-9000

D Approval: Permit Application (including closure plan) Closure Plan (only)

OCD Representative Signature: _____ Approval Date: _____

Title: _____ OCD Permit Number: _____

Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC
 Closure Completion Date: _____

Closure Method:

- Waste Excavation and Removal On-Site Closure Method Alternative Closure Method
- If different from approved plan, please explain.

Closure Report Attachment Checklist: *Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.*

- Proof of Closure Notice
- Proof of Deed Notice (if applicable)
- Plot Plan
- Confirmation Sampling Analytical Results
- Waste Material Sampling Analytical Results
- Disposal Facility Name and Permit Number
- Soil Backfilling and Cover Installation
- Re-vegetation Application Rates and Seeding Technique
- Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD: 1927 1983

Operator Closure Certification:

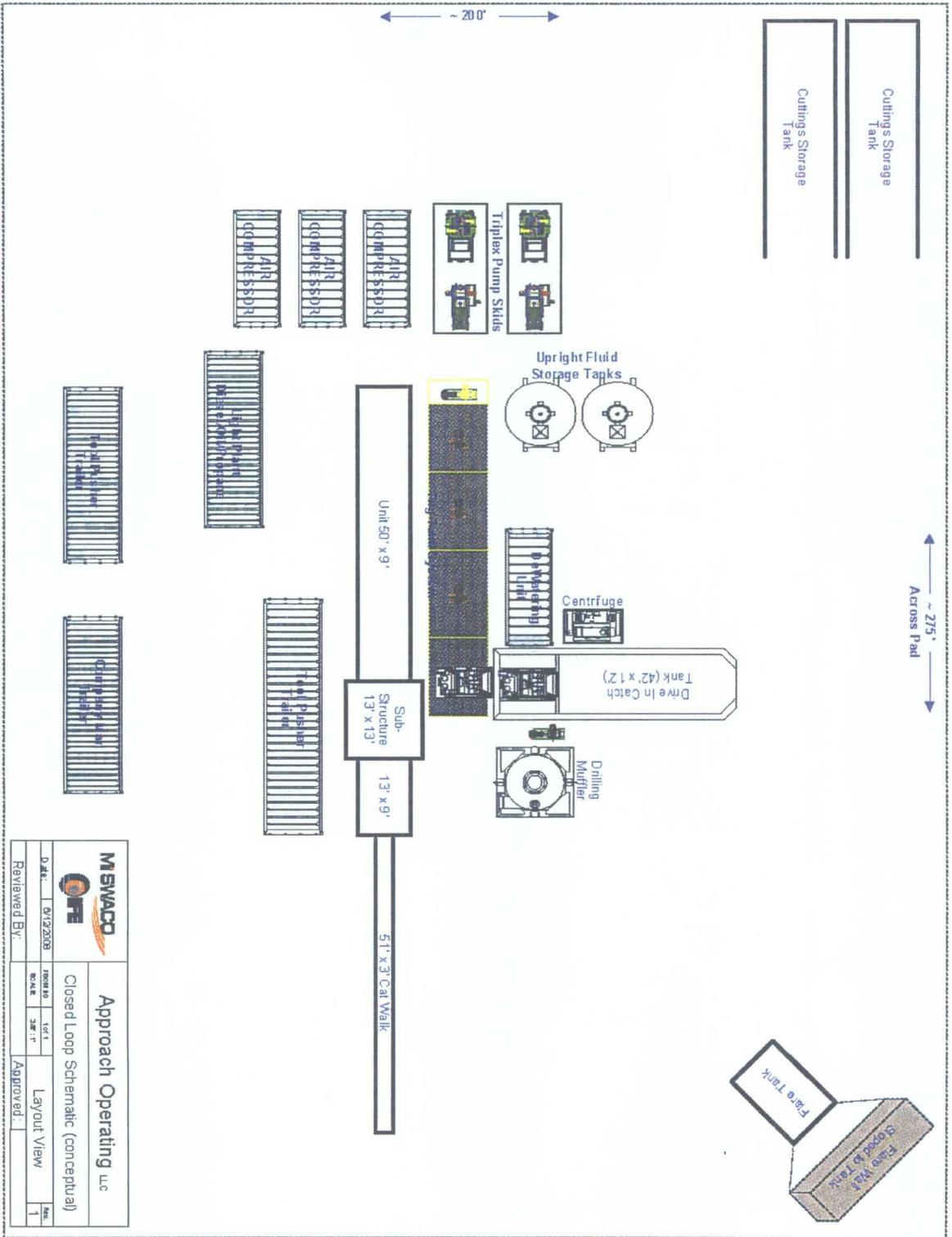
I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title: _____

Signature: _____ Date: _____

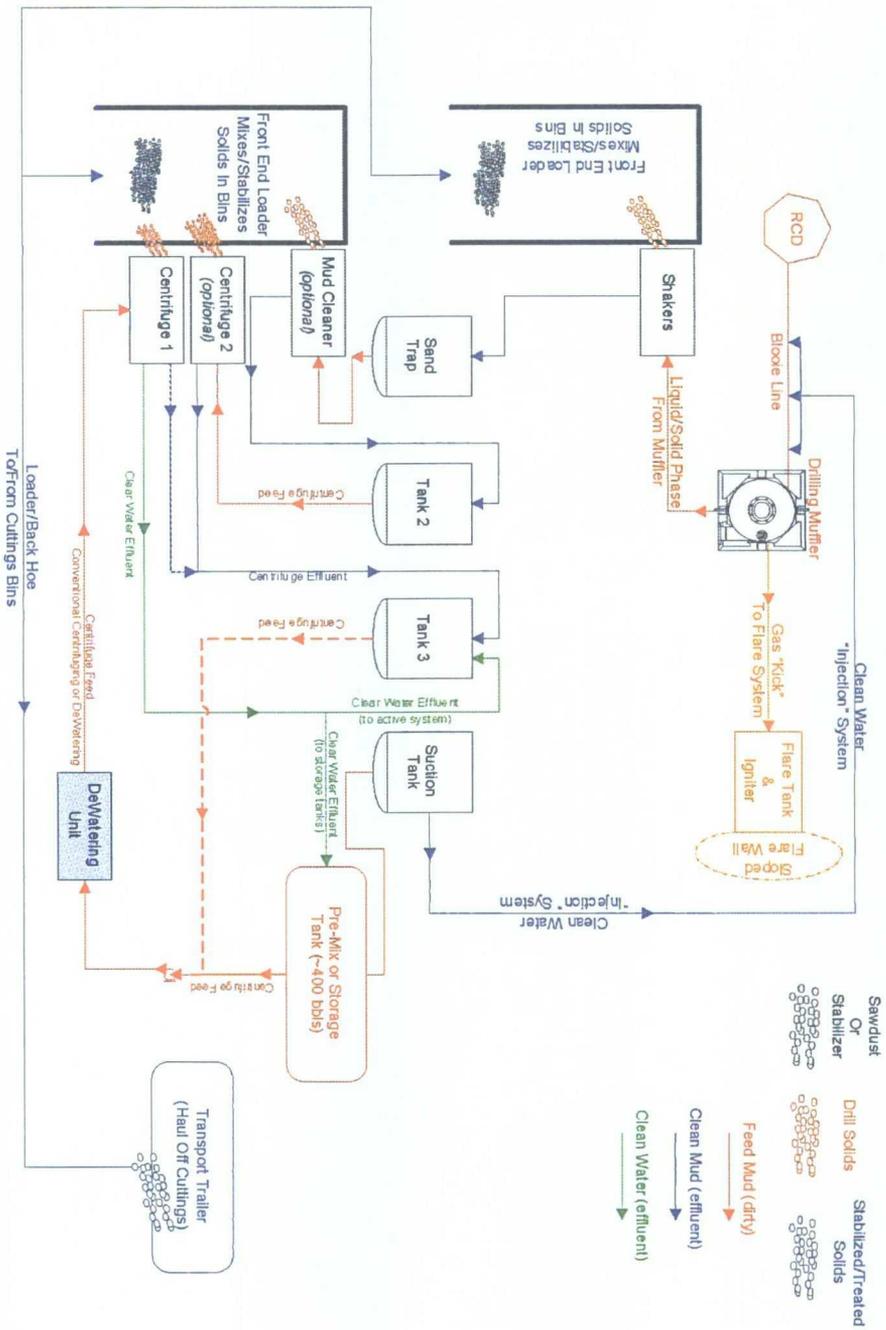
e-mail address: _____ Telephone: _____

Closed-Loop Schematic



				Approach Operating, LLC	
Closed Loop Schematic (conceptual)					
DATE: 07/12/2009	DRAWN:	10' x 1'	LAYOUT VIEW	SHEET: 38 of 38	REV: 1
Reviewed By:	Approved:				

Closed-Loop Schematic



		Approach Operating LLC	
Closed Loop Schematic (conceptual)			
Date:	01/22/2019	ISSUED:	1.01
Reviewed By:		SCALE:	3/4" = 1'
		Flow Process:	1
		Approved:	

- a. Surface Casing: Notched collar on bottom and 3 centralizers on the bottom 3 joints.
- b. Production Casing: 4-1/2" whirler type cement nosed guide shoe and a float collar on top of the shoe joint. Centralized with bow spring centralizers

V. Cementing:

- Surface Casing: 9-5/8" 32.3 lb/ft H-40 set to 350'.

Cement 0-350'

Fluid 1: Water Based Spacer

Water Fluid Density: 8.330
lbm/gal

Fluid Volume: 10 bbl

Fluid 2: Lead Cement

Premium Cement

lbm/gal Fluid Weight 15.600

94 lbm/sk Premium Cement (Cement) Slurry Yield: 1.180 ft³/sk

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) Total Mixing Fluid: 5.238

Gal/sk

2 % Calcium Chloride (Accelerator)

Top of Fluid: 0 ft

Calculated Fill: 350 ft

Volume: 42.139 bbl

Calculated Sacks: 200.503 sks

Proposed Sacks: 205 sks

Fluid 3: Water Based Spacer

Water Displacement

lbm/gal Fluid Density: 8.330

Fluid Volume: 23.966 bbl

- Production Casing: 4-1/2" 10.5 lb/ft J-55 casing set to TD.

Cement

Fluid Instructions

Fluid 1: Water Based Spacer

Water Fluid Density: 8.330
lbm/gal

Fluid Volume: 20 bbl

Fluid 2: Lead Cement

50/50 Poz Premium	Fluid Weight	13 lbm/gal
0.4 % Halad(R)-344 (Low Fluid Loss Control)	Slurry Yield:	1.436 ft ³ /sk
0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)	Total Mixing Fluid:	6.193
Gal/sk		
5 lbm/sk Gilsonite (Lost Circulation Additive)	Top of Fluid:	0 ft
	Calculated Fill:	2000 ft
	Volume:	156.266 bbl
	Calculated Sacks:	610.982 sks
	Proposed Sacks:	615 sks

Fluid 3: Water Based Spacer	Fluid Density:	8.330
Water Displacement		
lbm/gal	Fluid Volume:	31.197 bbl

- The wells will have 40' of 14" conductor set. Then a 12-1/4" hole will be drilled to about 350' when 9-5/8" surface casing will be set and cemented. We will drill out with a 8-3/4" bit using

MULTI-POINT SURFACE USE PLAN

1. Existing Roads:

When existing roads are used to access the proposed location they will be maintained in the same or better condition than presently found.

2. Planned Access Roads:

Some new access road will have to be constructed. If existing access road is also used, it will be maintained in at least the current condition and will be upgraded where necessary to provide uninterrupted access to the proposed well.

3. Location of Existing Wells:

Attached map (Plat # 1) shows existing wells within one mile radius of the proposed well. N/A

4. Location of Production Facilities:

In the event of production, production facilities will be located on the drill pad. The actual placement of this equipment will be determined when the well's production characteristics can be evaluated after completion.

To protect livestock and wildlife, equipment will be fenced. Any tanks will be enclosed by a dike.

Upon completion of drilling, the location and surrounding area will be cleared of all debris.

5. Water Supply:

Water for drilling and completion will be purchased from local sources.

6. Source of Construction Materials:

No additional construction materials will be required to build.

7. Methods of Handling Waste Disposal:

- a. The drill cuttings, fluids and completion fluids will be placed in the steel tanks. Upon completion, the pad will be leveled, contoured and reseeded with the appropriate seed mixture.
- b. All garbage and trash will be placed in a metal trash basket. It will be hauled off and dumped in an approved land fill upon completion of operations.
- c. Portable toilets will be provided and maintained during drilling operations.

8. Ancillary Facilities:

Ancillary facilities are to be based on well productivity. .

9. Well Site Layout:

A plat of the drill pad with location of drilling equipment and rig orientations also attached.

10. Plans for Restoration of Surface:

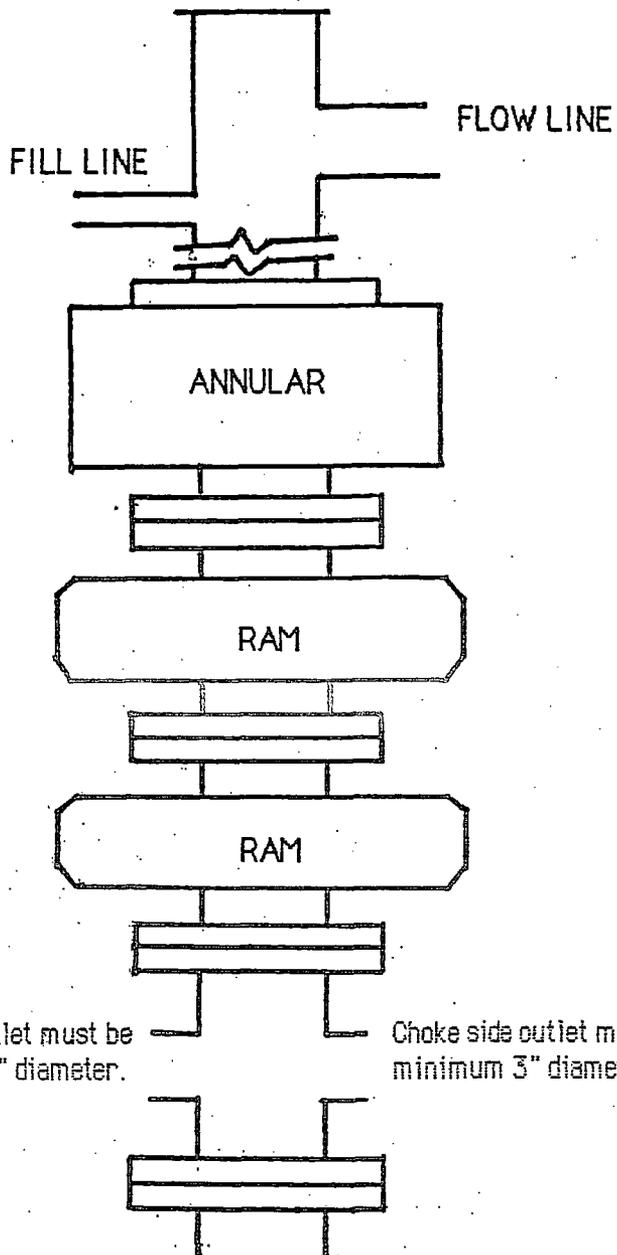
When the well is abandoned the location and access road will be cleaned and restored to the original topographical contours as much as possible. The area will be reseeded with appropriate seed mixture.

If the well is productive, areas not used in production will be contoured and seeded with stipulated seed mixture. Production equipment will be painted to blend with the natural color of the landscape.

11. Lessee's or Operator's Representative:

Glenn W. Reed, Executive Vice President – Engineering & Operations
Approach Resources
6500 West Freeway, Suite 800
Fort Worth, Texas 76116
Phone: (817) 989-9000

Glenn W. Reed
Executive Vice President – Engineering & Operations



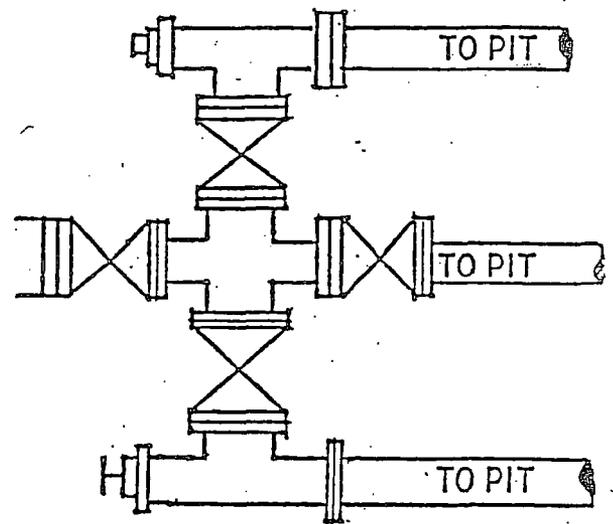
TYPICAL BOP STACK
& CHOKE MANIFOLD

There will be at least 2 chokes and 2 choke line valves (3" minimum). The choke line will be 3" in diameter. There will be a pressure gauge on the choke manifold.

Kill side outlet must be minimum 2" diameter.

Choke side outlet must be minimum 3" diameter.

Kill line will be minimum 2" diameter and have 2 valves, one of which shall be a minimum 2" check valve.



Upper kelly cock will have handle available.
Safety valve and subs will fit all drill string connections in use.
All BOPE connections subjected to well pressure will be flanged, welded, or clamped.

Approach Resources

Well Control Equipment Schematic for 3K Service

Attachment to Drilling Technical Program

Exhibit #1
Typical BOP setup

