

District I1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720**District II**811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720**District III**1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170**District IV**1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101

August 1, 2011

Permit 207366

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

1. Operator Name and Address DEVON ENERGY PRODUCTION COMPANY, LP 333 W. Sheridan Avenue Oklahoma City, OK 73102		2. OGRID Number 6137
		3. API Number 30-015-43262
4. Property Code 315070	5. Property Name HARROUN TRUST 6 SWD	6. Well No. 001

7. Surface Location

UL - Lot A	Section 6	Township 24S	Range 29E	Lot Idn 1	Feet From 660	N/S Line N	Feet From 350	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot A	Section 6	Township 24S	Range 29E	Lot Idn 1	Feet From 660	N/S Line N	Feet From 350	E/W Line E	County Eddy
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9. Pool Information

SWD;DEVONIAN	96101
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Additional Well Information

11. Work Type New Well	12. Well Type Oil SWD	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 2949
16. Multiple N	17. Proposed Depth 16075	18. Formation Devonian	19. Contractor	20. Spud Date
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	26	20	94	450	1080	0
Int1	17.5	13.375	68	2750	2230	0
Int2	12.25	9.625	40	10500	1980	2550
Prod	8.5	7	29	14400	640	10300

Casing/Cement Program: Additional Comments

Please refer to drilling plan for complete cement table with 9-5/8" Inter Two Stage Option *This is a SWD well
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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000	3000	
Annular	3000	3000	
Annular	5000	5000	
Double Ram	5000	5000	
Annular	10000	10000	
Double Ram	10000	10000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
 I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.

Signature:

Printed Name: Electronically filed by Randy Bolles

Title: Manager, Regulatory Affairs

Email Address: randy.bolles@dmv.com

Date: 7/15/2015

Phone: 405-228-8588

OIL CONSERVATION DIVISION

Approved By:

Title: Dist II Supervisor

Approved Date: 7/31/15

Expiration Date: 7/31/2017

Conditions of Approval Attached

NM OIL CONSERVATION

ARTESIA DISTRICT

State of New Mexico
JUL 17 2015

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

☐ AMENDED REPORT

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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311 S. First St., Artesia, NM 88210
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District IV
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Phone: (505) 476-3460 Fax: (505) 476-3462

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 LATN Number 30-015-43262		2 Pool Code 96101	3 Pool Name SWD; Devonian
4 Property Code 315070	5 Property Name HARROUN TRUST 6 SWD		6 Well Number 1
7 OGRID No. 6137	8 Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.		9 Elevation 2949.3

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
1	6	24 S	29 E		660	NORTH	350	EAST	EDDY

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 39.93	13 Joint or Infill 0	14 Consolidation Code			15 Order No.				

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

<p>S89°35'46"E 2641.66 FT</p> <p>NW CORNER SEC. 6 LAT. = 32.2543216"N LONG. = 104.0323498"W NMSP EAST (FT) N = 456385.89 E = 634380.54</p> <p>LOT 4</p>			<p>S89°35'48"E 2649.74 FT</p> <p>N CORNER SEC. 6 LAT. = 32.2542498"N LONG. = 104.0238067"W NMSP EAST (FT) N = 456367.27 E = 637021.56</p> <p>LOT 3</p>			<p>S89°35'48"E 2649.74 FT</p> <p>NE CORNER SEC. 6 LAT. = 32.2541772"N LONG. = 104.0152375"W NMSP EAST (FT) N = 456348.63 E = 639670.65</p> <p>LOT 2</p>		
<p>N00°18'02"W 2666.62 FT</p> <p>LOT 5</p>			<p>HARROUN TRUST "6" SWD 1 ELEV. = 2949.3' LAT. = 32.2523727"N (NAD83) LONG. = 104.0163634"W NMSP EAST (FT) N = 455691.13 E = 639324.51</p> <p>LOT 6</p>			<p>LOT 7</p>		
<p>N00°18'20"W 2666.55 FT</p> <p>SW CORNER SEC. 6 LAT. = 32.2396647"N LONG. = 104.0323069"W NMSP EAST (FT) N = 451053.97 E = 634408.74</p>			<p>S CORNER SEC. 6 LAT. = 32.2396190"N LONG. = 104.0327671"W NMSP EAST (FT) N = 451044.84 E = 637049.13</p>			<p>SE CORNER SEC. 6 LAT. = 32.2395725"N LONG. = 104.0151888"W NMSP EAST (FT) N = 451035.71 E = 639701.43</p>		
<p>N89°48'07"W 2640.98 FT</p> <p>N89°48'10"W 2652.89 FT</p>								

0.660

350'

1.0"

SURFACE LOCATION

NOTE:
LATITUDE AND LONGITUDE COORDINATES
ARE SHOWN USING THE NORTH
AMERICAN DATUM OF 1983 (NAD83).
LISTED NEW MEXICO STATE PLANE EAST
COORDINATES ARE GRID (NAD83). BASIS
OF BEARING AND DISTANCES USED ARE
NEW MEXICO STATE PLANE EAST
COORDINATES MODIFIED TO THE
SURFACE.

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 at 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.

Trina C. Couch 7/15/15
Signature Date

Trina C. Couch, Regulatory Analyst
Printed Name

trina.couch@dmv.com
E-mail Address

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.

MAY 14, 2015
Date of Survey

William F. Jaramillo
Signature and Seal of Professional Surveyor

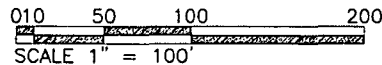
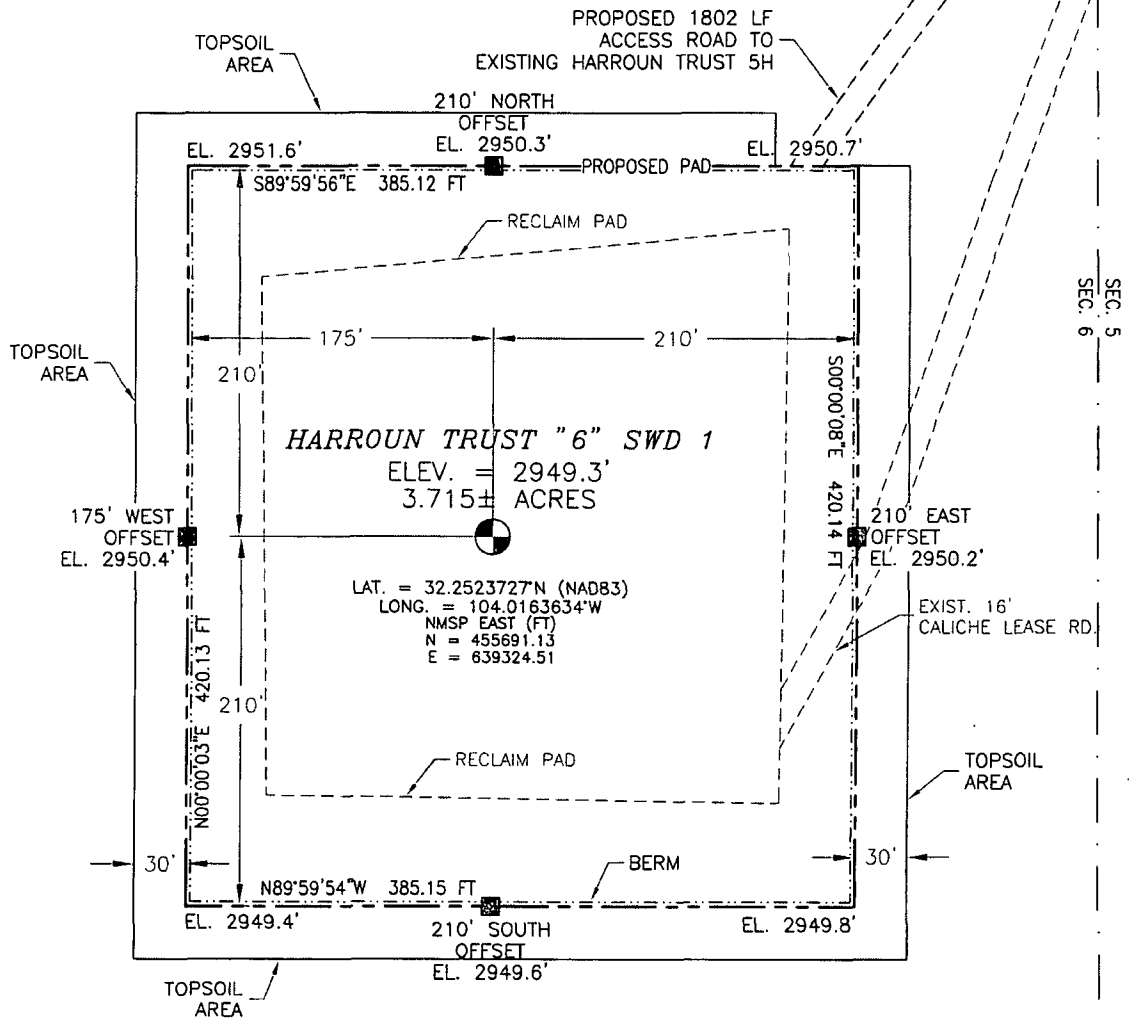
Certificate Number: WILLIAM F. JARAMILLO, PLS 12797

SURVEY NO. 3980

RD
7/31/15

SECTION 6, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). ADJUSTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



DIRECTIONS TO LOCATION
BEGINNING AT THE INTERSECTION OF US 285 AND CR 720 (DUARTE ROAD) GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON LEFT, GO NORTH AND NORTHEAST ON HARROUN ROAD CROSS RIVER FOR 3.1 MILES TO FORK IN ROAD, TAKE LEFT CONTINUE NORTH ON HARROUN ROAD 0.5 OF A MILE TO A CALICHE LEASE ROAD ON RIGHT, GO EAST ON CALICHE LEASE ROAD TO EXISTING PAD FOR HARROUN TRUST 5H, FROM SOUTHEAST CORNER OF PAD FOLLOW CENTERLINE FLAGS FOR PROPOSED ROAD, NORTH OF POWER LINE, AND ACROSS ABANDONED CONCRETE LINE DITCH TO THE NORTHEAST PAD CORNER FOR THIS LOCATION, FOR A TOTAL OF 1802' OF PROPOSED ROAD.

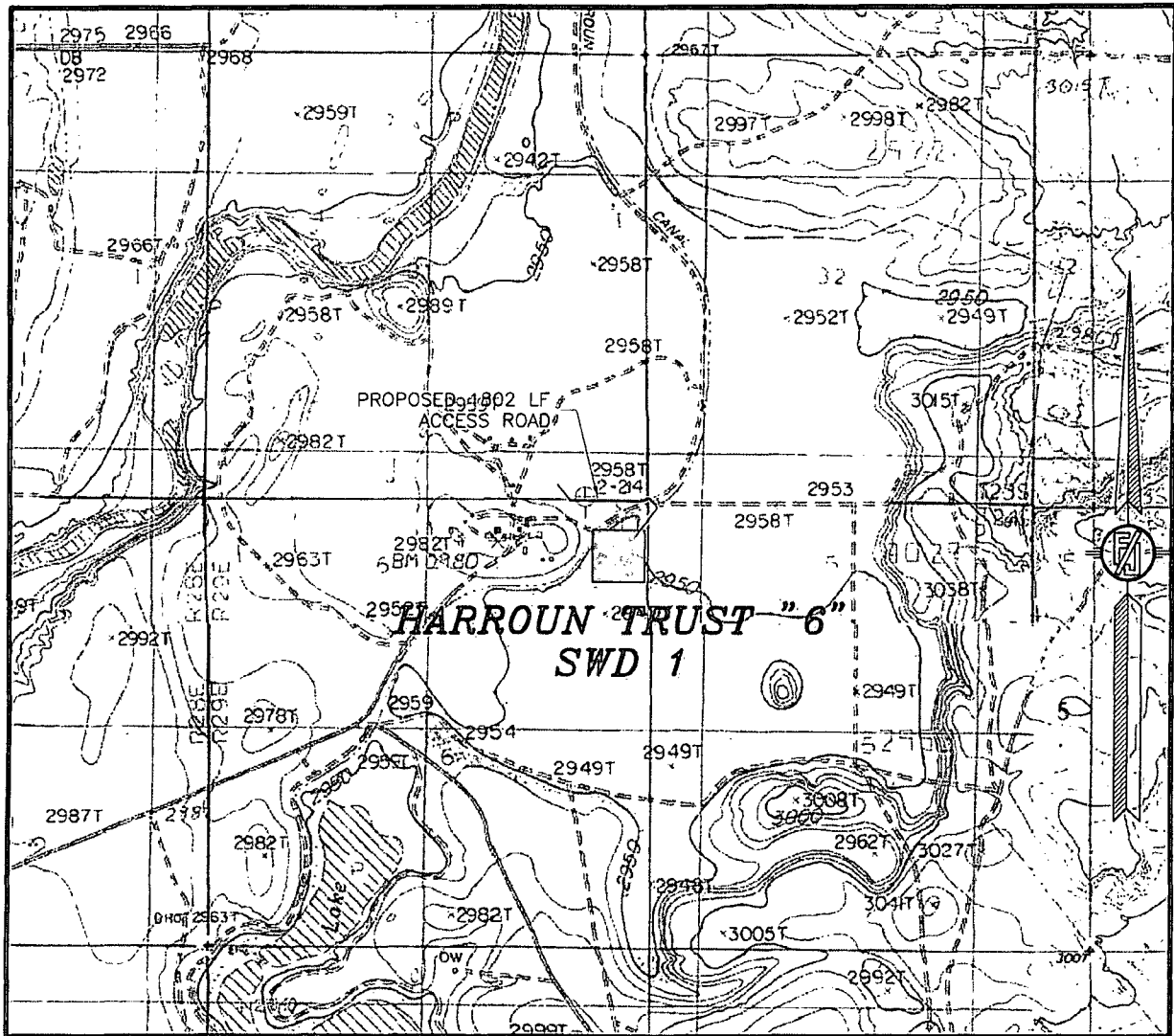
DEVON ENERGY PRODUCTION COMPANY, L.P.
HARROUN TRUST "6" SWD 1
LOCATED 660 FT. FROM THE NORTH LINE
AND 350 FT. FROM THE EAST LINE OF
SECTION 6, TOWNSHIP 24 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 14, 2015

SURVEY NO. 3980

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 6, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 LOVING & MALAGA

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

HARROUN TRUST "6" SWD 1

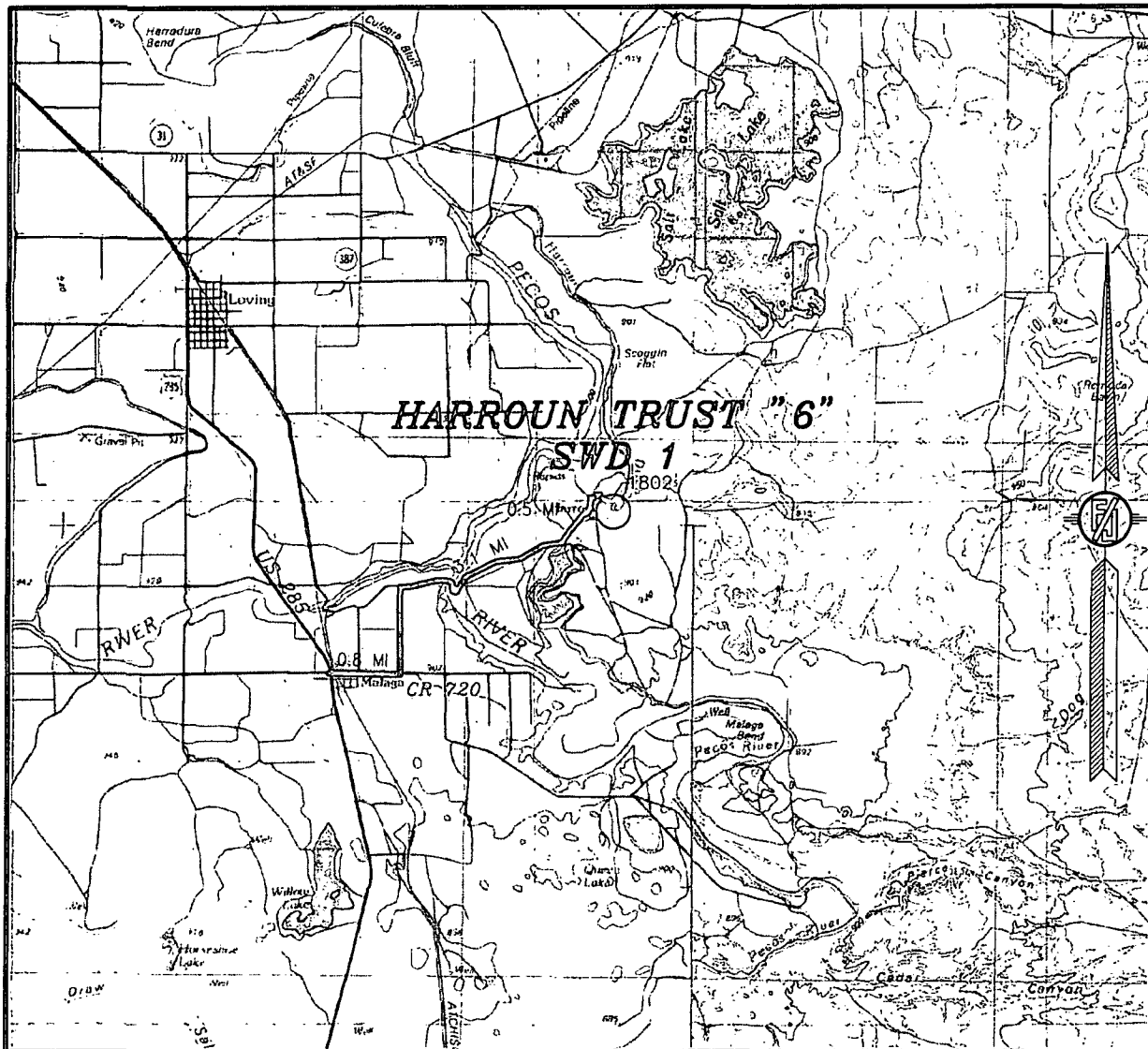
LOCATED 660 FT. FROM THE NORTH LINE
 AND 350 FT. FROM THE EAST LINE OF
 SECTION 6, TOWNSHIP 24 SOUTH,
 RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

MAY 14, 2015

SURVEY NO. 3980

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 6, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

HARROUN TRUST "6" SWD 1

LOCATED 660 FT. FROM THE NORTH LINE

AND 350 FT. FROM THE EAST LINE OF

SECTION 6, TOWNSHIP 24 SOUTH,

RANGE 29 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

MAY 14, 2015

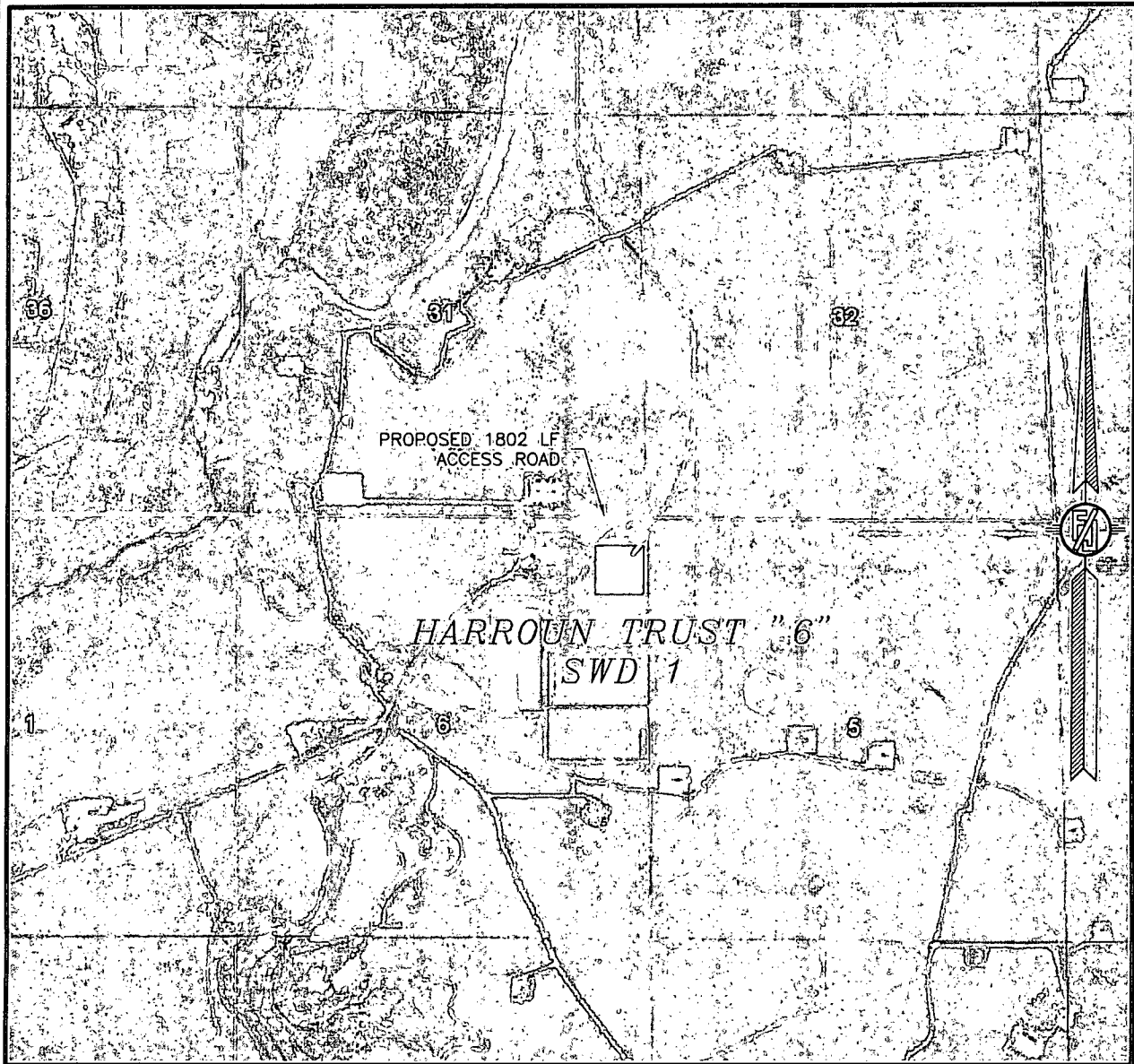
DIRECTIONS TO LOCATION

BEGINNING AT THE INTERSECTION OF US 285 AND CR 720 (DUARTE ROAD) GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON LEFT, GO NORTH AND NORTHEAST ON HARROUN ROAD CROSS RIVER FOR 3.1 MILES TO FORK IN ROAD, TAKE LEFT CONTINUE NORTH ON HARROUN ROAD 0.5 OF A MILE TO A CALICHE LEASE ROAD ON RIGHT, GO EAST ON CALICHE LEASE ROAD TO EXISTING PAD FOR HARROUN TRUST 5H, FROM SOUTHEAST CORNER OF PAD FOLLOW CENTERLINE FLAGS FOR PROPOSED ROAD, NORTH OF POWER LINE, AND ACROSS ABANDONED CONCRETE LINE DITCH TO THE NORTHEAST PAD CORNER FOR THIS LOCATION, FOR A TOTAL OF 1802' OF PROPOSED ROAD.

SURVEY NO. 3980

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 6, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEBRUARY 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.

HARROUN TRUST "6" SWD 1

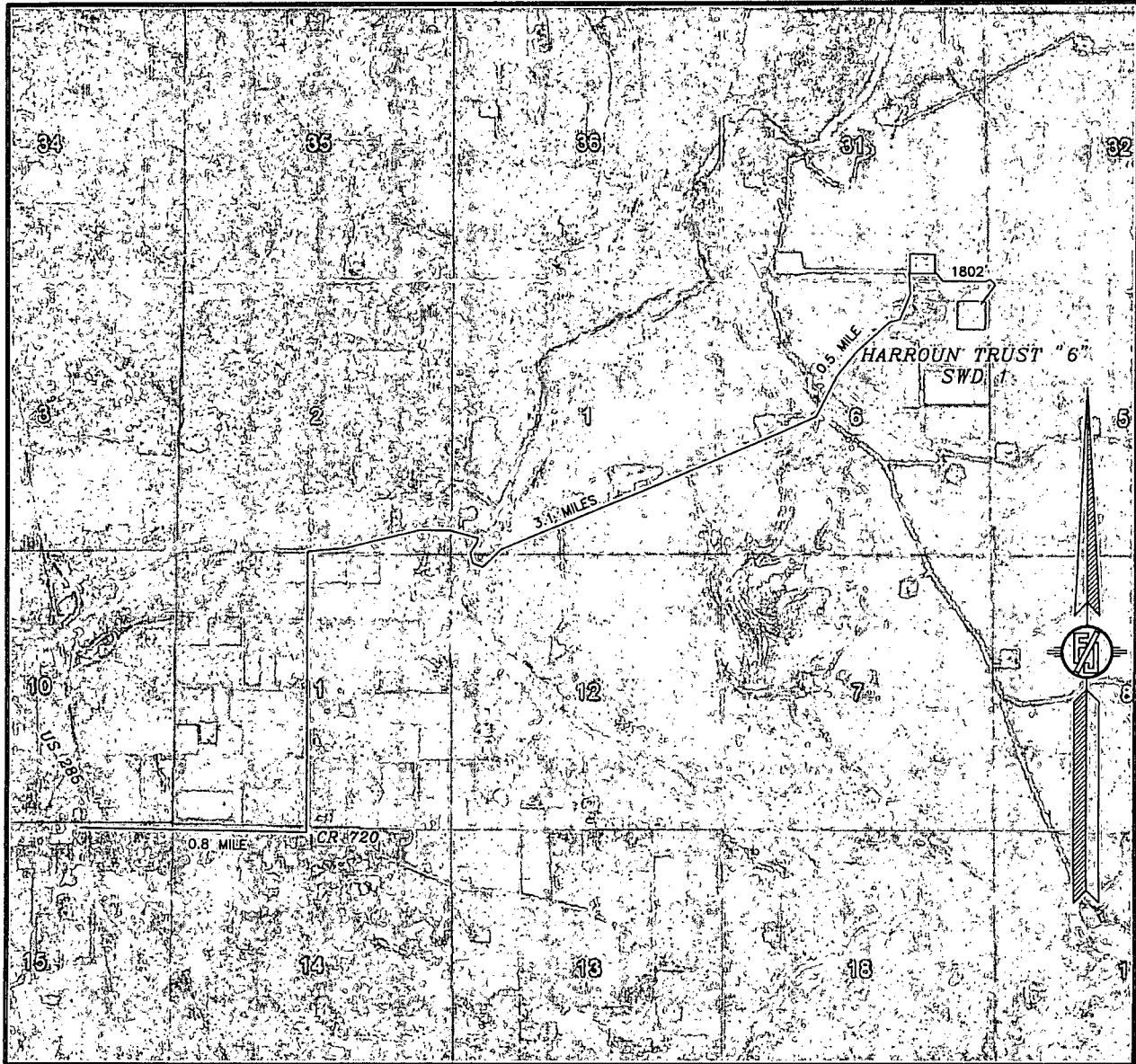
LOCATED 660 FT. FROM THE NORTH LINE
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SECTION 6, TOWNSHIP 24 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 14, 2015

SURVEY NO. 3980

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 6, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 ACCESS AERIAL ROUTE MAP



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 APRIL 2013

DEVON ENERGY PRODUCTION COMPANY, L.P.

HARROUN TRUST "6" SWD 1

LOCATED 660 FT. FROM THE NORTH LINE
 AND 350 FT. FROM THE EAST LINE OF
 SECTION 6, TOWNSHIP 24 SOUTH,
 RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

MAY 14, 2015

SURVEY NO. 3980

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

DRILLING PROGRAM

Devon Energy Production Company, L.P.
Harroun Trust 6 SWD 1

1. **Geologic Name of Surface Formation: Quarternary**
2. **Estimated Tops of Geological Markers & Depths of Anticipated FW, Oil, or Gas:**

FORMATION NAME	TVD	Water, Oil/Gas
Rustler	40	
Top Salt	600	
Castile	1200	
Base of Salt	2515	
Delaware	2775	
1BSLM	6540	
1BSSS	7500	
2BSSS	8250	
3BSSS	9370	
Wolfcamp	9745	
Penn Shale	11325	
Strawn	11560	
Atoka	11750	
Morrow	12600	
Barnett	13400	
Missippi Lime	14150	
Woodford	14325	
Devonian	14450	Injection zone
Fusselman	14700	Injection zone
Montoya	15550	Injection zone
Simpson	15875	Injection zone
Well TD	16075	
Ellenburger	16420	

Pressure Control Equipment:

The BOP system used to drill the 17-1/2" hole will consist of a 20" 2M Annular preventer. The BOP system will be tested as a 2M system per BLM Onshore Oil and Gas Order 2 prior to drilling out the casing shoe.

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the first intermediate hole section. The BOP system will be tested as a 3M system per BLM Onshore Oil and Gas Order 2 prior to drilling out the casing shoe.

A 5M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the second intermediate hole section. The BOP system will be tested as a 5M system per BLM Onshore Oil and Gas Order 2 prior to drilling out the casing shoe.

A 10M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the third intermediate and open/injection hole sections. The BOP system will be tested as a 10M system per BLM Onshore Oil and Gas Order 2 prior to drilling out the casing shoe.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 10,000 psi WP.

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line); **if an H&P rig drills this well. Otherwise no flex line is needed.** The line will be kept as straight as possible with minimal turns.

Devon requests the option of utilizing a mulitbowl wellhead system.

Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.

3. Casing Program:

Hole Size	Hole Interval	Casing OD	Casing Interval	Weight (lb/ft)	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
26"	0 - 450'	20"	0 - ~450'	94	BTC	J-55	1.84	1.84	3.1
17-1/2"	450 - 2750'	13-3/8"	0 - ~2750'	68	BTC	J-55	1.24	2.16	1.83
12-1/4"	2750 - 10500'	9-5/8"	0 - ~10500'	40	BTC	P-110	1.44	1.58	2.38
8-1/2"	10500-14400'	7"	~10000-~14400'	29	BTC	P-110	1.10	2.38	3.8
6"	14400 - ~16075'	Open hole							

Casing Notes:

- All casing is new and API approved
- Casing will never be completely evacuated and safety factors for intermediate strings assumes 1/3 evacuation to deepest subsequent open hole section depth

Maximum TVD: 16175'

4. Proposed mud Circulations System:

Depth	Mud Weight	Viscosity	Fluid Loss	Type System
0 - 450'	8.3 – 8.5	30-34	N/C	FW
450-2750'	10.0 – 10.2	28-32	N/C	Brine
2750-10500'	8.6-9.5	28-32	N/C	FW/Brine
10500-14325'	10.0-13.0	35-45	<10	Brine or OBM
14325-16075'	8.3-8.6	28-32	N/C	FW

The necessary mud products for weight addition and fluid loss control will be on location at all times. Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. If abnormal pressures are encountered, electronic/mechanical mud monitoring equipment will be installed.

5. Cementing Table:

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
20" Surface	1080	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
13-3/8" Inter	1420	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	810	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter	1270	11.9	12.89	2.31	n/a	Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	710	14.4	5.76	1.25	15	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.4% Halad-9 + 0.1% HR-601
9-5/8" Inter Two Stage Option	1370	11.9	12.89	2.31	n/a	1 st Stage Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	400	14.4	5.76	1.25	15	1 st Stage Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.4% Halad-9 + 0.1% HR-601
	DV Tool = 2800ft					
	70	12.9	9.81	1.85	14	2 nd Stage Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	60	14.8	6.32	1.33	6	2 nd Stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7" Inter	640	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

DV Tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

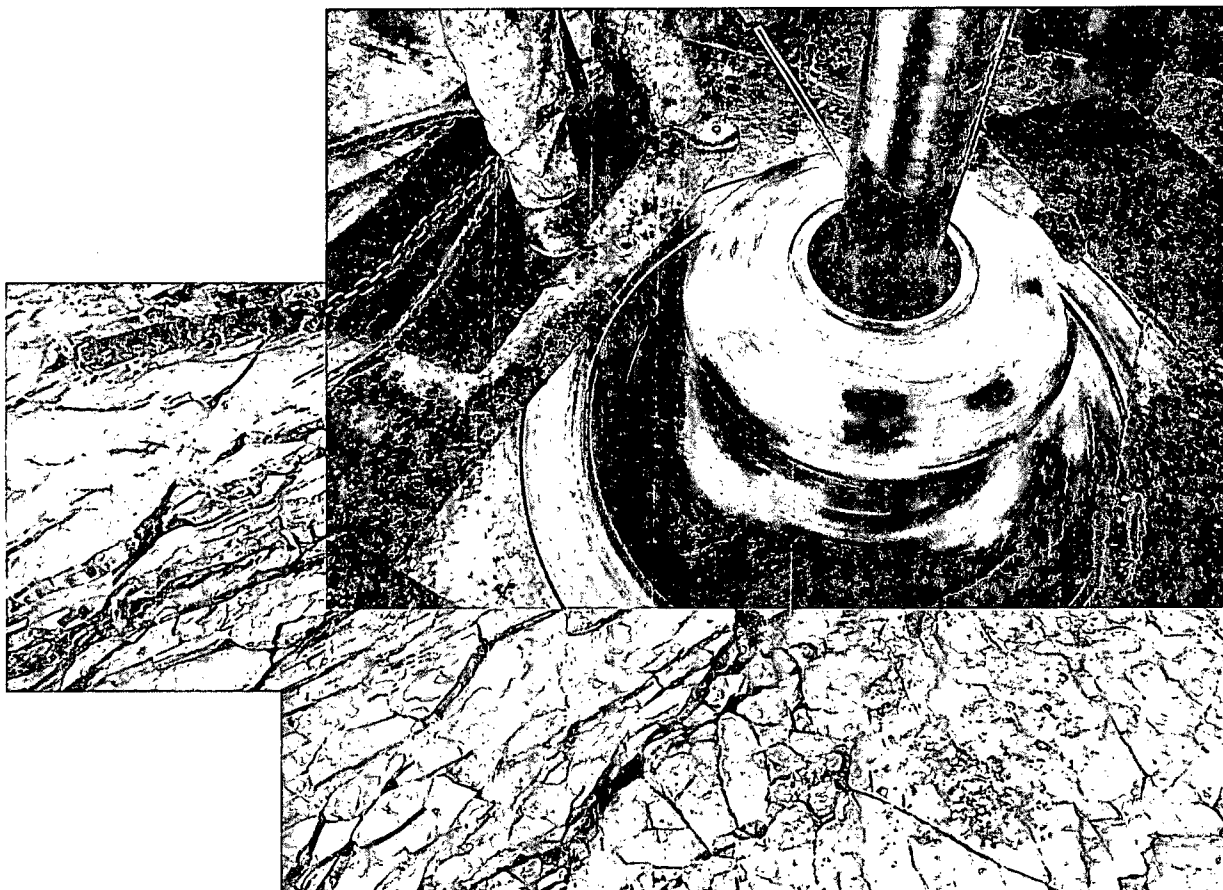
Casing String	TOC	% Excess
20" Surface	0'	100%
13-3/8" Intermediate	0'	75%
9-5/8" Intermediate	2550'	50%
9-5/8" Intermediate Two Stage Option	1 st Stage = 2800' / 2 nd Stage = 2550'	50%
7" Intermediate	10,300'	25%

Notes:

- Cement volumes Surface 100%, 1st Intermediate 75%, 2nd Intermediate 50% and 3rd Intermediate based on at least 25% excess.
- Actual cement volumes will be adjusted based on fluid caliper and/or caliper log data



Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

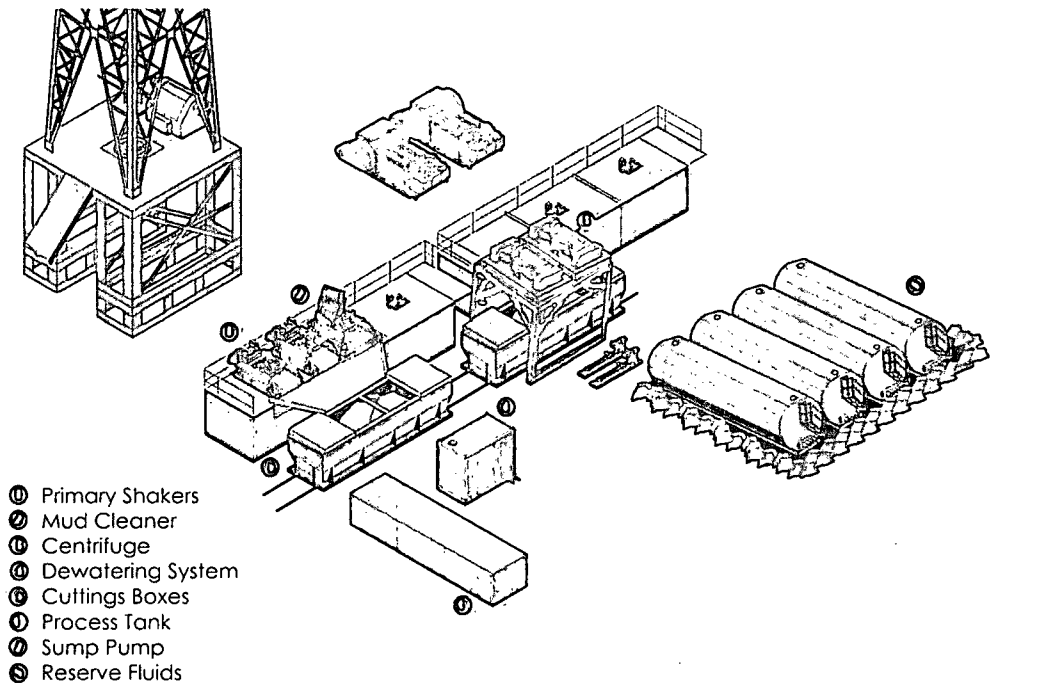
II. Operations and Maintenance Plan

Primary Shakers: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Closed Loop Schematic



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

Process Tank: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

Permit Conditions of Approval

API: 30-015-43262

OCD Reviewer	Condition
SRD	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.

SRD

Cannot inject into well until SWD is
approved by Santa Fe and order # issued.