



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

July 31, 2015

WELL WORK PERMIT

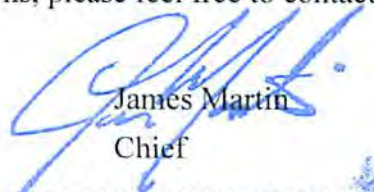
Horizontal 6A Well

This permit, API Well Number: 47-10303129, issued to SWN PRODUCTION COMPANY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: WILLIAM RITCHEA WTZ 3H
Farm Name: RITCHEA, WILLIAM D. & SHIRLI
API Well Number: 47-10303129
Permit Type: Horizontal 6A Well
Date Issued: 07/31/2015

Promoting a healthy environment.

07/31/2015

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

- 1) Well Operator: SWN Production Co., LLC 494512924 103-Wetzel 007-Proc 681- Wileyville
Operator ID County District Quadrangle
- 2) Operator's Well Number: William Ritchea WTZ 3H Well Pad Name: William Ritchea WTZ Pad
- 3) Farm Name/Surface Owner: William D. & Shirley E. Ritchea Public Road Access: Harland Ridge
- 4) Elevation, current ground: 1563.4' Elevation, proposed post-construction: 1563.4'
- 5) Well Type (a) Gas Oil Underground Storage
Other _____
(b) If Gas Shallow Deep
Horizontal
- 6) Existing Pad: Yes or No yes
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 7530', Target Base TVD- 7577', Anticipated Thickness- 47' Associated Pressure- 4900
- 8) Proposed Total Vertical Depth: 7556'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 16,067'
- 11) Proposed Horizontal Leg Length: 7598.29'
- 12) Approximate Fresh Water Strata Depths: 519'
- 13) Method to Determine Fresh Water Depths: USGS well tops data
- 14) Approximate Saltwater Depths: 770'
- 15) Approximate Coal Seam Depths: 1476'
- 16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.
- 17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No
- (a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	649'	649'	612 sx/CTS
Coal	9 5/8"	New	J-55	40#	2969'	2969'	1123 sx/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	16,067'	16,067'	Last CTS TO BE USED TO BE USED TO BE USED
Tubing	2 3/8"	New	P-110	4.7#	Approx. 7556'	Approx. 7556'	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			
Sizes:	5 1/2"			
Depths Sct:				

WW-6B
(10/14)

10303129
API NO. 47-~~6~~ -
OPERATOR WELL NO. William Ritchea WTZ 3H
Well Pad Name: William Ritchea WTZ Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate any potential zones between and including the Benson to Marcellus. **If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50'-75' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' below and cts.)

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production unites, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 80 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 13.6

22) Area to be disturbed for well pad only, less access road (acres): 9.7

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

24) Describe all cement additives associated with each cement type:

See Attachment ***

Dmit 6-9-15

25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of 30 min on bottoms up and continuing until operator is satisfied with borehole conditions.

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Office of Oil & Gas
JUN 15 2015

*Note: Attach additional sheets as needed.

SLB Cement Additives

***Ref: 2013-78

	Product Name	Product Use	Chemical Name	CAS Number
Surface	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	S001	calcium chloride	calcium chloride	10043-52-4
	SPACER			
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
Intermediate	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	D044	granulated salt	sodium chloride	7647-14-5
	D153	Anti-Settling Agent	chrystalline silica	14808-60-7
	SPACER			
	D020	bentonite extender	bentonite	1302-78-9
Kick Off Plug	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	D080	cement liquid dispersant	product classified as non-hazardous.	
	D801	mid-temp retarder	product classified as non-hazardous	
	D047	antifoam agent	polypropylene glycol	25322-69-4
	SPACER			
	B389	MUDPUSH* Express	Carbohydrate	proprietary
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary
	D031	barite	barium sulfate	7727-43-7
			fatty acid amine	proprietary
		ethoxylated alcohol	proprietary	
		glycerol	56-81-5	
B220	surfactant	2,2'-Iminodiethanol	111-42-2	
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary

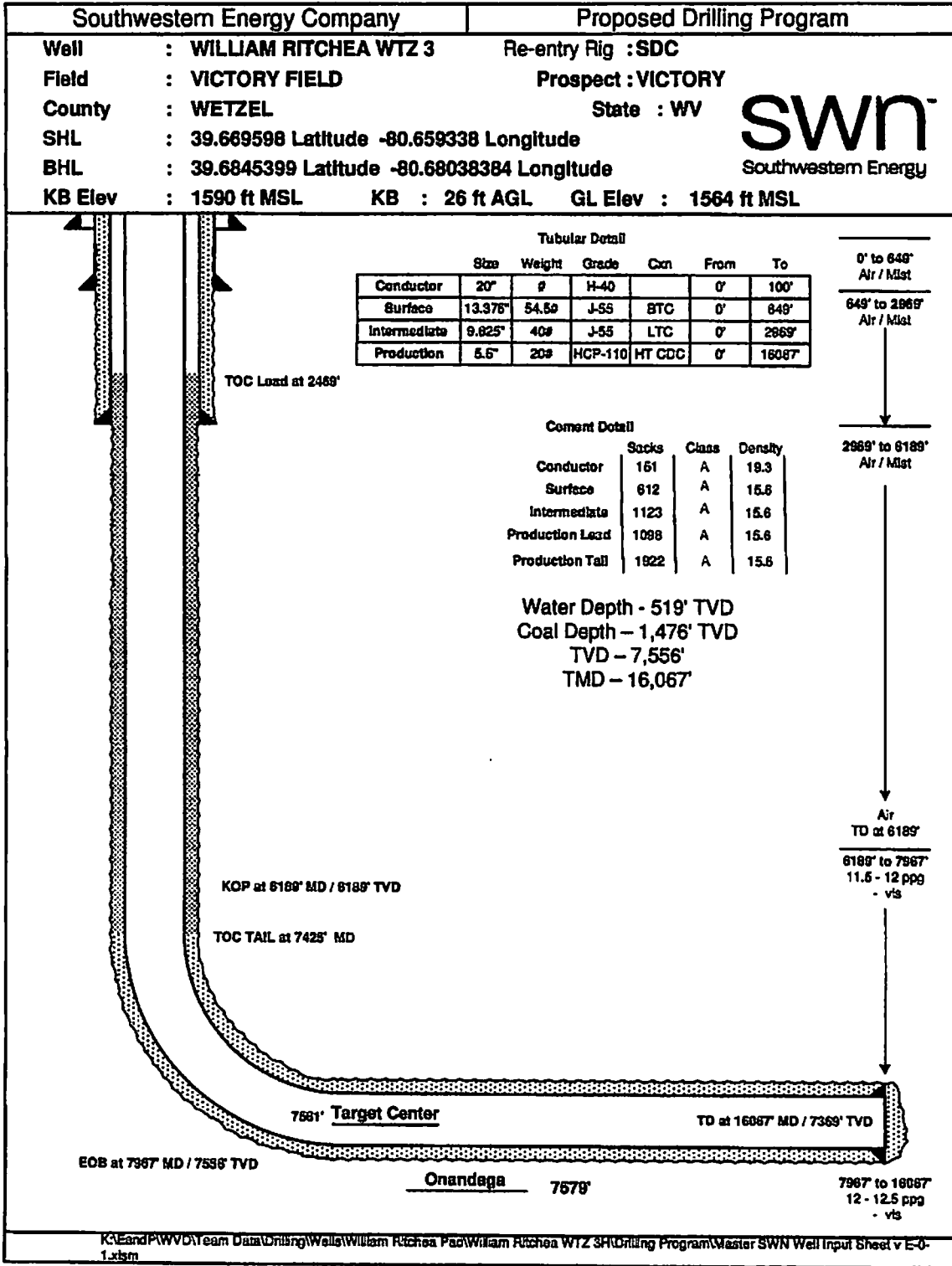
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JUN 15 2015

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Production - Lead	D154	low-temperature extender	non-crystalline silica	7631-86-9
	D400	EasyBLOK	boric acid	10043-35-3
	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
	D201	basic cements enabler	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D202	low-temperature solid dispersant	sulphonated synthetic polymer	proprietary
			formaldehyde (impurity)	50-00-0
	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
D167	UNIFLAC* S	aliphatic amide polymer	proprietary	
D065	TIC* Dispersant	Sodium Polynaphthalene Sulfonate	9008-63-3	
		Sodium Sulfate	7757-82-6	
D201	basic cements enabler	chrystalline silica	14808-60-7	
		metal oxide	proprietary	
D153	Anti-Settling Agent	chrystalline silica	14808-60-7	
	SPACER			
B389	MUDPUSH* Express	Carbohydrate	proprietary	
D206	Antifoaming Agent	Silica Organic Polymer	proprietary	
D031	barite	barium sulfate	7727-43-7	
B220	surfactant	fatty acid amine	proprietary	
		ethoxylated alcohol	proprietary	
		glycerol	56-81-5	
		2,2'-Iminodiethanol	111-42-2	

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WW-9
(9/13)

API Number 47 - 64 -
Operator's Well No. William Ritchea WTZ 3H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 49447757

Watershed (HUC 10) Little Fishing Creek Quadrangle 681- Wileyville

Elevation 1563.4' County 103-Wetzel District 7- Proctor

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: closed loop system in place at this time- cuttings will be taken to a permitted landfill.

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 2D0072539/ 2D0413175/ 2D0610306/ 2D0610317)
- Reuse (at API Number at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum.)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility.)

*DRIT
6-9-15*

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air drill to KOP, Fluid drill with SOB from KOP to TD

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? see attached sheets

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? meadow SWF- 1032, SS Grading SWF- 4902, Northwestern SWF- 1025, Short Creek 1034/WW0109517/CID28726, Carbon Limestone 28725/CID28726
Arden Landfill 10072, American U2-12954, Country wide 38390/CID38390, Pine Grove 13688

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *[Signature]*

Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Supervisor

Subscribed and sworn before me this 15th day of June

Brittany R Woody Notary Public

My commission expires 11/27/22



Form WW-9

Operator's Well No. William Ritchea WTZ 3H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 13.6 Prevegetation pH _____

Lime as determined by pH test min. 2 _____ Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
White Grove	15	White Grove	15
Red Top	15	Red Top	15
Orchard Grass	20	Orchard Grass	20

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: 

Comments: _____

Title: Oil and Gas Inspector

Date: 6-9-15

Field Reviewed? Yes No

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JUN 15 2015

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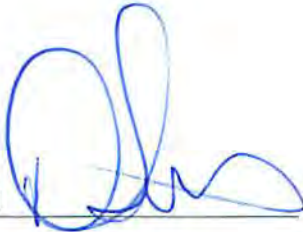
Marcellus Well Drilling Procedures
And Site Safety Plan

SWN Production Co., LLC

47 - 051 -

Well name: William Ritchea WTZ 3H
Willeyville, Quad
Proctor, District
Wetzel County, West Virginia

Submitted by:



Danielle Southall

5/29/2015

Date:

Title Regulatory Supervisor

SWN Production Co., LLC

Approved by:



Date:

6-9-15

Title: Oil & Gas Inspector

Approved by:

Date:

Title:

SWN Production Co., LLC – Confidential

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07/31/2015

10303129

I. Contacts, Schedules, and Meetings

A. SWN Production Company, LLC. 24 Hour Hotline: 1-877-879-0376

B(a). Emergency Telephone Numbers:

Agency Type	Name	Phone Number	Cell
County Police	Wetzel County	911 or 304-843-1500	
State Police	Wetzel County	304-843-4100	
Ambulance Service	Wetzel County	911 or 304-843-1500	
Hospital	Wetzel County	304-845-3211	
Fire Department	Wetzel County	911 or 304-842-1500	
Dicky Hall	Drilling Engineer Manager	832-796-7139	
Bill Igou	Drilling Superintendent	570-996-4272	501-654-4161
Danny Brooks	Drilling Superintendent	570-996-4298	501-269-2946
Peter Cain	HSE Field Specialist	281-217-4552	
Derek Cutright	Operations General Manager	281-618-7473	
Chris Flanagan	Production Field Manager	832-796-1626	
Michelle McCracken	Manager HSE	281-618-6284	
Derek Haught	WV Oil and Gas Inspector		304-206-7613
Joe McCourt	Inspector Supervisor		304-380-2467
James Martin	Chief	304-926-0499 x 1654	
Wetzel County OEM	Wetzel County	304-455-6960	
WV DEP	Emergency Pollution and Spills	1-800-642-3074	
<u>Contractor's</u>	<u>Company</u>	<u>Phone</u>	
Well Control Co's	Boots & Coots	1-800-256-9688	
	Halliburton	1-800-409-6479	
Earthwork/Equipment	Triple J Contractors	304-472-3962	
Remediation/Cleanup	Weaverton Environmental	724-746-4850	
Remediation/Cleanup	Ryan Environmental	304-842-5578	
Remediation/Cleanup	Central Environmental Services	304-863-8867	
Heavy Equipment	Kanawha Stone	304-755-8271	
Heavy Equipment/Rouster	Arvilla Pipeline	304-665-2652	
Heavy Equipment	Hoy Contracting	724-627-0272	
Cleanup Supplies	McJunkin Supply	304-472-3565	

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JUN 15 2015

Legend

- William Ritchea WTZ Pad
- USGS NURE Well
- Streams
- 1,500' Radius of Site
- Parcel Outside the Radius
- Parcel Within 1,500' of Site - 10 parcels highlighted
- Baseline Sample Location
- Spring
- Water Well
- Stream
- Baseline Sample Location labeled with:
 - Parcel Number
 - System Location Code
 - Sample Date
 - Location Type

Permit Map

William Ritchea WTZ Pad
 William Ritchea WTZ Pad
 West Virginia

SWN Production Company, LLC

Scale: 1 inch = 700 feet

Notes:
 1. SWN is abbreviation for SWN Production Company, LLC
 2. The stream and surface water data were obtained from: <http://wvgis.wvu.edu/data/dataset.php?ID=265>
 Map Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet
 Datum: North American 1983
 False Easting: 1,968,500,000
 William Ritchea WTZ Pad
 39.669518
 -80.659527

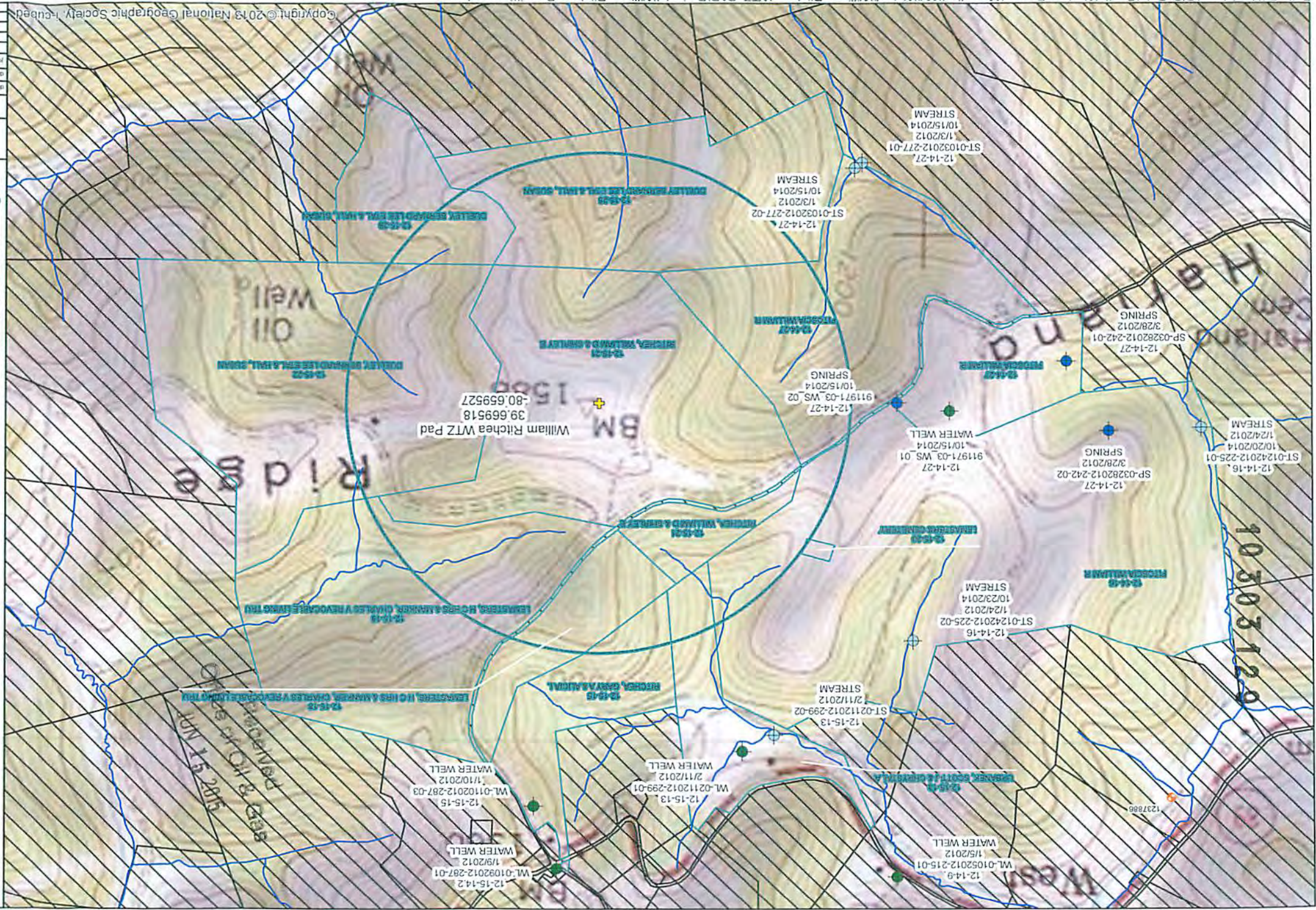
Drawn	Checked	Approved	Figure no.
06/05/2015	06/05/2015		1

Revision table:

NO.	DATE	REVISION

File No. 31 ST26 (00,000,1000,0100)
 File No. William_Ritchea_Permitting

leidos



10303129

WW-6A1
(5/13)

Operator's Well No. William Ritchie WZ 3H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
SEE EXHIBIT				

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

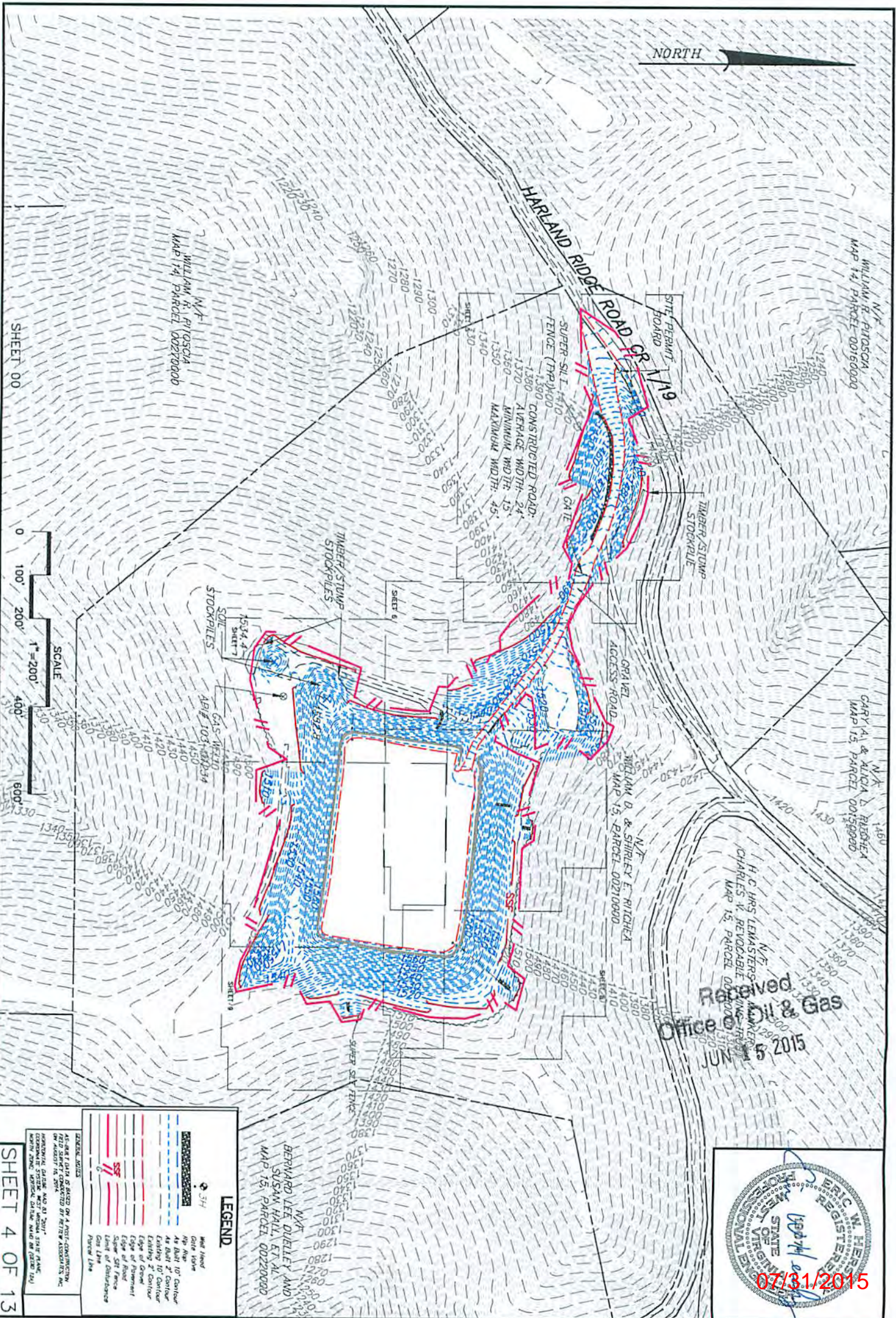
The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: SWN Production Company, LLC.

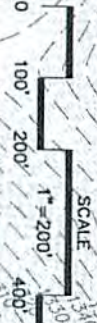
By: Caleb Weaver

Its: Landman

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Office of Oil & Gas
JUN 15 2015



SHEET 00



LEGEND

	Well Head
	Gate Valve
	10' Contour
	2' Contour
	Existing 2' Contour
	Edge of Gravel
	Edge of Footprint
	Slope 5%
	Level of disturbance
	Power Lines

SHEET 4 OF 13

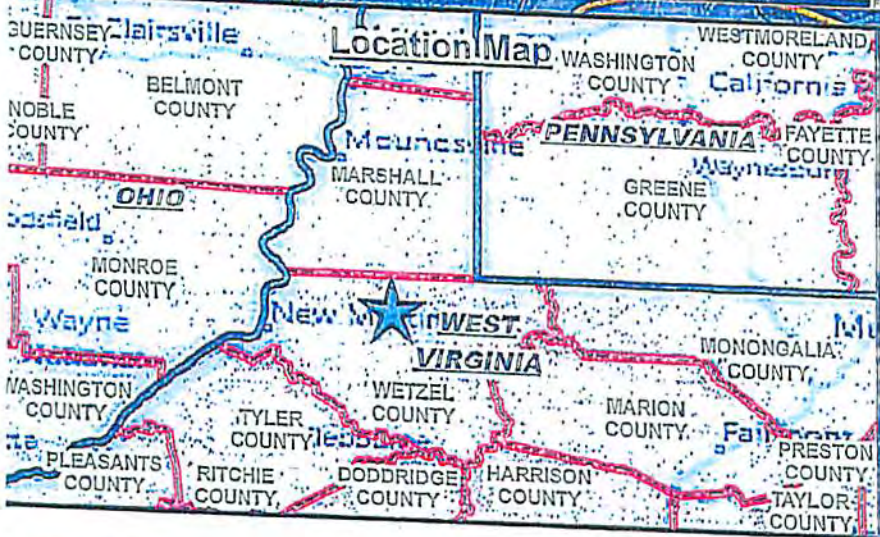
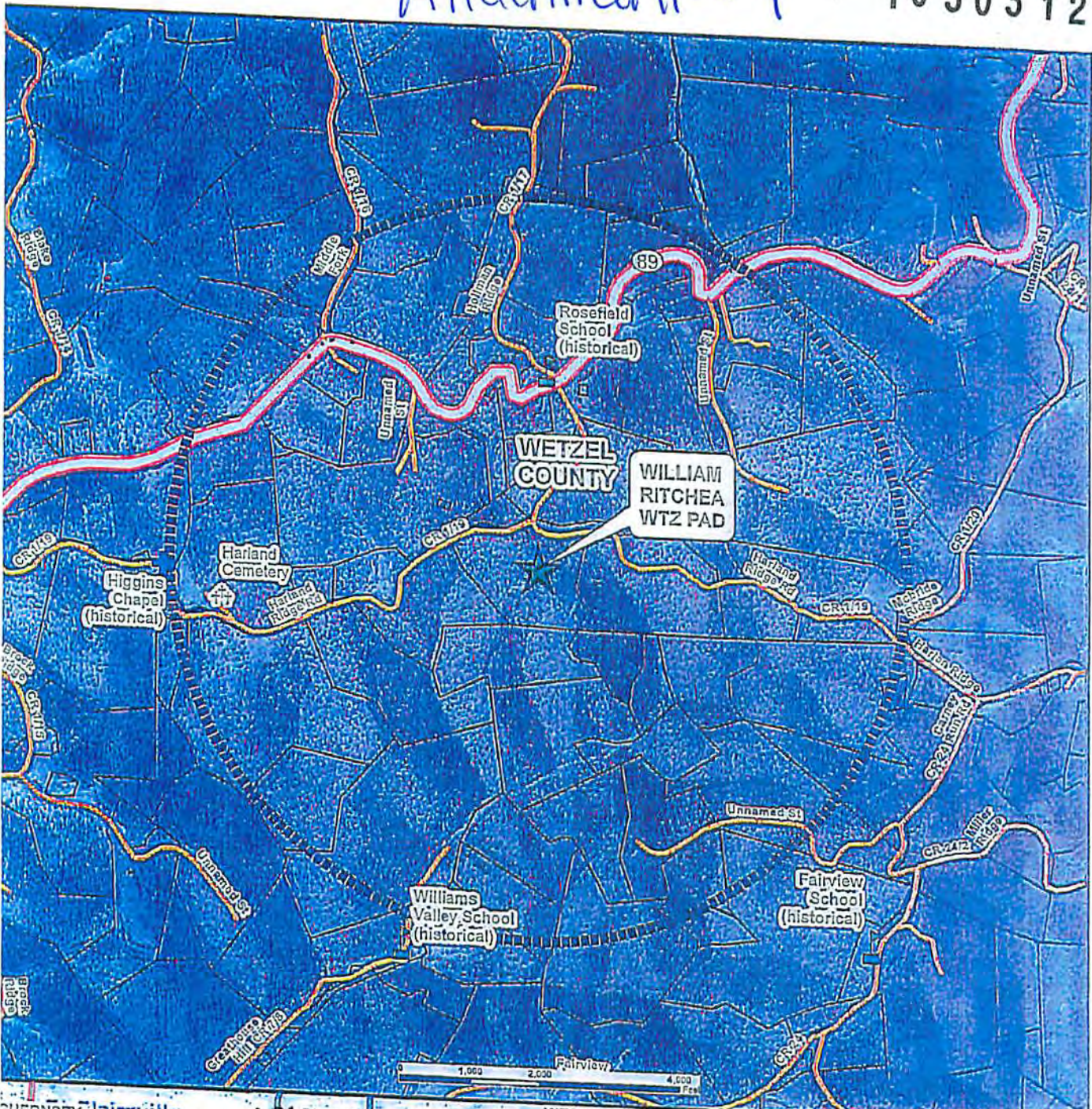


AS-BUILT SITE PLAN OVERVIEW
FOR
**WILLIAM & SHIRLEY RITCHEA
WTZ PAD A**

RETTEW

RETTEW Associates, Inc.
5143 Stoneman Road, Suite 100, North Canton, OH 44720
Phone (330) 818-9770 • Fax (330) 818-9760
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

DRAWN BY: JAR
DATE: 08/28/2014
SCALE: 1" = 200'
DWG. NO. 085418003



Legend

★ received

Office of Oil & Gas

JUN 15 2015

- William Ritchea Wtz Pad
- Commercial Building
- 1/2 Mile Radius
- County Line

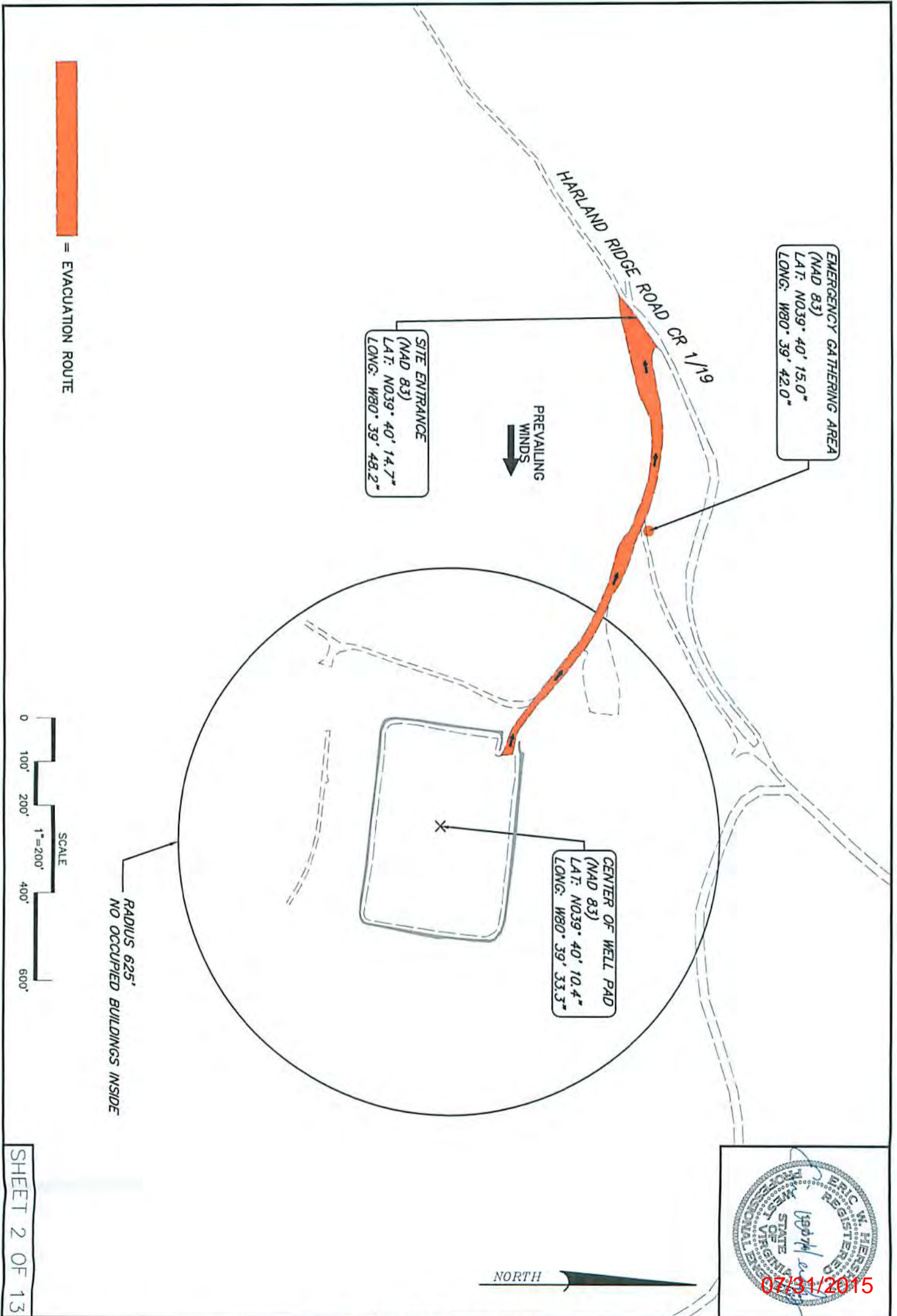
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WILLIAM RITCHEA Wtz PAD

Wetzel County, West Virginia

Scale: 1:24,000

Projection: SPCS West Virginia, North (NAD83)



SHEET 2 OF 13

EVACUATION ROUTE/ PREVAILING WINDS
 FOR
WILLIAM & SHIRLEY RITCHEA
WTZ PAD A

PROCTOR DISTRICT

WETZEL COUNTY, WV

RETTEW

RETTEW Associates, Inc.
 5143 Stoneham Road, Suite 100, North Canton, OH 44720
 Phone (330) 818-9770 • Fax (330) 818-9760
 Engineers • Planners • Surveyors • Landscape Architects
 Environmental Consultants

DRAWN BY: JAR
 DATE: 08/28/2014
 SCALE: 1" = 200'
 DWG. NO. 085418003

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A. Well Work and Procedures

1. -Well Work Detail: Drill and stimulate the Marcellus formation. If we should encounter a void, place a basket above and below the void area – balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50-100' below void. If freshwater is encountered deeper than anticipated it must be protected, set casing at least 50' below but not more than 100' below freshwater and cts.
2. -All casing cemented will not be disturbed for at least 8 hours after cementing operations.
3. -Surface, Coal, and Intermediate strings will be pressure tested at a pressure 20% greater than what is expected to be exerted on each string throughout the remainder of the well operations.
4. -No oil or gas production or pressure should exist on the surface or coal protection strings.
5. -A Formation Integrity Test (FIT) will be performed immediately following the drill out of intermediate casing.
6. -Centralizers will be used in the well. However, the placement of the centralizers will be contingent on the final well log and directional data.
7. -Production casing will be pressure tested at a pressure 20% greater than what is expected to be exerted upon it during fracturing operations. Upon completion of fracturing operations the production casing will be pressure tested at a pressure 20% greater than expected shut in pressure.
8. -Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks.
9. See Attachment #1

B. A copy of the Site Safety Plan will be provided to the local county emergency office at least 7 days before dirt work or well work commences

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4. Chemical Inventory & MSDS

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- A. MSDS- please refer to CD
- B. MSDS sheets will be available in the tool- pusher's office.
- C. Please see below:

SLB Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number	% Concentration Used
Surface	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
	D130	polyester flake - lcm	Polypropylene glycol	25322-69-4	0.125 lb/sk
	S001	calcium chloride	calcium chloride	10043-52-4	2% BWOC
	SPACER				
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	1 lb/bbl
Intermediate	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
	D130	polyester flake - lcm	Polypropylene glycol	25322-69-4	0.125 lb/sk
	D044	granulated salt	sodium chloride	7647-14-5	10% BWOW
	D153	Anti-Setting Agent	crystalline silica	14808-60-7	0.15% BWOC
	SPACER				
	D020	bentonite extender	bentonite	1302-78-9	20 lb/bbl
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	1 lb/bbl
Kick Off Plug	D080	cement liquid dispersant	product classified as non-hazardous		0.05 gal/sk
	D801	mid-temp retarder	product classified as non-hazardous		0.01 gal/sk
	D047	antifoam agent	polypropylene glycol	25322-69-4	0.02 gal/sk
	SPACER				
	B389	MJDPUSH* Express	Carbohydrate	proprietary	1 lb/bbl
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary	0.1 gal/bbl
	D031	barite	barium sulfate	7727-43-7	310 lb/bbl
			fatty acid amine	proprietary	
			ethoxylated alcohol	proprietary	
	B220	surfactant	glycerol	56-81-5	1 gal/bbl
Production - Lead	D167	UNFLAC* S	aliphatic amide polymer	proprietary	0.35% BWOC
	D154	low-temperature extender	non-crystalline silica	7631-86-9	6% BWOC
	D400	EasyBLOK	boric acid	10043-35-3	0.8% BWOC
	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
	D201	basic cements enabler	Polypropylene glycol	25322-69-4	0.2% BWOC
			crystalline silica	14808-60-7	
	D202	low-temperature solid dispersant	metal oxide	proprietary	0.2% BWOC
			sulphonated synthetic polymer	proprietary	
			formaldehyde (impurity)	50-00-0	0.3% BWOC
	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
	D167	UNFLAC* S	Polypropylene glycol	25322-69-4	0.2% BWOC
	D065	TIC* Dispersant	aliphatic amide polymer	proprietary	0.35% BWOC
			Sodium Polynaphthalene Sulfonate	9008-63-3	
			Sodium Sulfate	7757-82-6	0.25% BWOC
	D201	basic cements enabler	crystalline silica	14808-60-7	0.2% BWOC
			metal oxide	proprietary	0.2% BWOC
	D153	Anti-Setting Agent	crystalline silica	14808-60-7	0.2% BWOC
	SPACER				
	B389	MJDPUSH* Express	Carbohydrate	proprietary	proprietary
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary	proprietary
	D031	barite	barium sulfate	7727-43-7	7727-43-7
		fatty acid amine	proprietary	proprietary	
		ethoxylated alcohol	proprietary	proprietary	
B220	surfactant	glycerol	56-81-5	56-81-5	
		2,2'-iminodiethanol	111-42-2	111-42-2	

***Ref. 2013-78

5. BOP and Well Control

A. The following is a list of the blow-out prevention equipment that will be utilized at various times during the drilling of the well:

13-3/8" Casing String
13- 5/8" Annular

9-5/8" Casing String
11" 5000 psi BOP Stack

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B. Testing of the BOP stack intermediate drilling phase will be conducted upon initial set up and the annular tested to 70% of capacity. For the Bottom and horizontal wellbore drilling phase, the BOP

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equipment will be tested upon initial installation – Annulars to 70% of capacity and rams to 80% of capacity. Bottom & Horizontal drilling phase also requires testing every 21 days and after every bit trip.

C. The BOP equipment shall be function tested upon initial installation, weekly, and after each bit trip unless otherwise authorized by the Office as part of a well work permit. It shall be pressure tested upon initial installation and every twenty-one (21) days thereafter. All pressure tests shall be performed for thirty (30) minutes. Annular preventers should be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity.

D. BOP equipment and assembly installation schedule:

BLOWOUT PREVENTER SCHEMATIC			
WELL :	SWN Production Company, LLC.		
FIELD :			
RIG :			
COUNTY :			
OPERATION :	17 1/2" Surface Hole		STATE : / /
			REVISION : / /
Component Descriptions			Date: / /
Size	Pressure	Description	Name:
A 13 1/2"	500 psi	Rotating Head	
B			
C			
D			
E			
F			
G			
H			
OSA			
C See			
D See			
A See			
			Trip Tank Required: Yes <input type="checkbox"/> No <input type="checkbox"/>
Kill Line			Choke Line
ID	Pressure	Description	ID Pressure Description
Testing Requirements			Flowline to closed loop pits with bypass vent line to flare
Date	Pressure	Frequency	ID Pressure Description
Rotating Head	250 / 500 psi	Once prior to DO chase	
			Approved by: Date:
			Name: / /
			Signature: / /

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BLOWOUT PREVENTER SCHEMATIC

WELL :
 FIELD :
 RIG :
 COUNTY :
 OPERATION : 8 1/2" or 7 1/2" Production Hole

STATE :
 REVISION : : / /

Component Descriptions

Size	Pressure	Description
A	11"	600 psi Rotating Head
B	11"	5,000 psi Annular
C	11"	5,000 psi Pipe Ram
D	11"	5,000 psi BEnd Ram
E	11"	5,000 psi Mud Cross
F		
G		
H		
DSA		
C Sec		
B Sec 13 3/4" 3M x 11" 8M w/ 6M Gate Valves		
A Sec 13 3/4" SOW x 13 3/4" 3M w/ 3M Gate Valve		

Revised	Revised

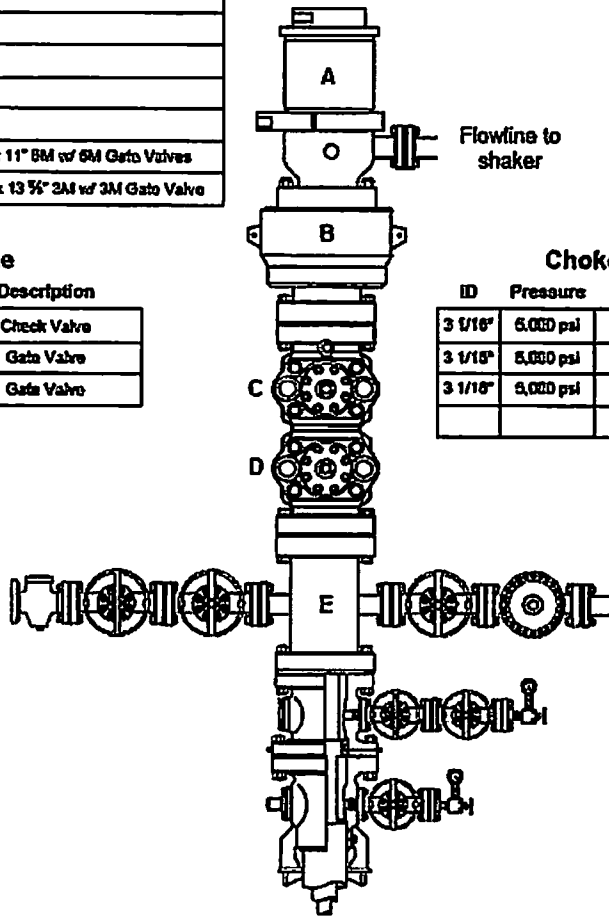
Trip Tank Required: Yes No

Kill Line

ID	Pressure	Description
2 1/16"	5,000 psi	Check Valve
2 1/16"	5,000 psi	Gate Valve
2 1/16"	5,000 psi	Gate Valve

Choke Line

ID	Pressure	Description
3 1/16"	5,000 psi	Gate Valve
3 1/16"	5,000 psi	HCR Valve
3 1/16"	5,000 psi	Steel or CoTex Line



Testing Requirements

Item	Pressure	Frequency
Rotating Head	250 / 500 psi	Once prior to DO shoe
Annular	250 / 1,500 psi	Every 21 Days
Rams	250 / 5,000 psi	Every 21 Days
Choke Manifold	250 / 5,000 psi	Every 21 Days

• Function test on trips

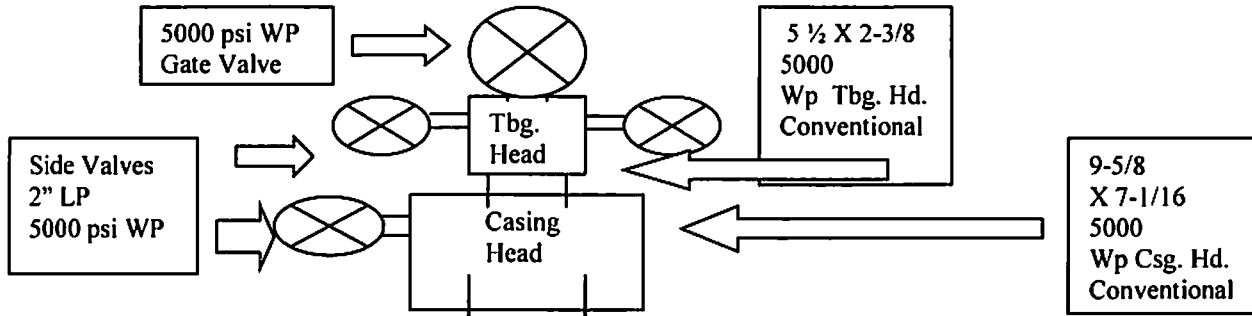
Approved by _____ Date _____
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D. The following persons that will be involved in the drilling operations are BOP certified:

Rig Toolpusher
Rig Morning Tour Driller
Rig Evening Tour Driller

E-G. See diagram below:



H. Well Killing Operations Method and Type

1. Barite and saturated brine will be available if necessary to weight up beyond the proposed compositions. Should a significant gas flow occur, historical data from the field shows that the brine is of sufficient weight to kill the well.
2. No mixing units will be required since only brine would be utilized in the unlikely event of a significant gas show.
3. Once it is confirmed that a significant gas flow has occurred, the wait and weight method will be employed. The mud weight required to kill the well will be calculated and the surface mud system density will be increased to the desired weight. A pumping schedule to circulate the kick out of the well will be calculated and followed once the surface mud system is of proper density.

6. Hydrogen Sulfide (H₂S)

1. A. Safety Equipment

1. (10) 5 – minute escape packs will be installed on the rig floor for a quick escape.
2. (1) 10 – minute escape pack will be installed on the board.
3. (4) 30 – minutes SCBA's will be on-site. Two SCBA's will be placed at the entrance to the location (Muster Point #1) and the other two placed at Muster Point #2 on the other side of the location. This will allow either equipment to be in area that is upwind.
4. (1) 4 – multichannel H₂S Monitor with sensors placed on the floor, shakers, bell nipple and other to be placed where needed.
5. (2) hand held multi-gas monitor or a box of H₂S tubes and a box of SO₂ tubes to perform test in the event a monitor has been sounded.
6. (2) Safety Area Signs
7. (1) Condition Sign
8. (2) Wind socks that are to be placed in areas that can be seen from all directions on the rig and at an height with good wind flow.

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B. Training

1. Basic awareness training (either video or booklet review) will occur on-site and may require two trips in order to train all rig crew members
2. Each crew member will be given certification test to verify his competence to respond in an H2S situation.
3. Physically show members how to properly don a mask and perform a qualitative fit test (banana oil) if utilizing a tight fitting mask as an escape unit.
4. Identify and discuss the location of escape units, SCBA's and location of H2S monitors and sensors.

C. In the unlikely event that hydrogen sulfide would be present, all affected residents and agencies would be notified by telephone or in person by a SWN Production Company, LLC representative, and access would be controlled by a sign, color coded flags and a sign-in sheet. Oil and Gas Inspector (Bill Hendershot) will be called at 304-986-3732.

D. In case of an emergency on the drilling site, all persons on location will exit via the access road and meet at the evacuation meeting area designated on the attached EVACUATION PLAN. The highest ranking drilling contractor representative will be responsible for comparing the persons that were present on location to those persons gathered at the designated evacuation meeting area. Any evacuation deemed necessary of residents in the surrounding area will be accomplished by telephone or door-to-door contact from a SWN representative.

E. We will establish Protection Zones while drilling that will be located at the predetermined muster points furthest upwind of the location of the H2S.

F. PPE Available

1. (10) 5 – minute escape packs will be installed on the rig floor for a quick escape.
2. (1) 10 – minute escape pack will be installed on the board.
3. (4) 30 – minutes SCBA's will be on-site. Two SCBA's will be placed at the entrance to the location (Muster Point #1) and the other two placed at Muster Point #2 on the other side of the location. This will allow either equipment to be in area that is upwind.

Detection, Warning, and Monitoring Equipment

1. (1) 4 – multichannel H2S Monitor with sensors placed on the floor, shakers, bell nipple and other to be placed where needed.
2. (2) hand held multi-gas monitor or a box of H2S tubes and a box of SO2 tubes to perform test in the event a monitor has been sounded.
3. (2) Safety Area Signs
4. (1) Condition Sign
5. (2) Wind socks that are to be placed in areas that can be seen at all times on the rig and at an height with good wind flow.

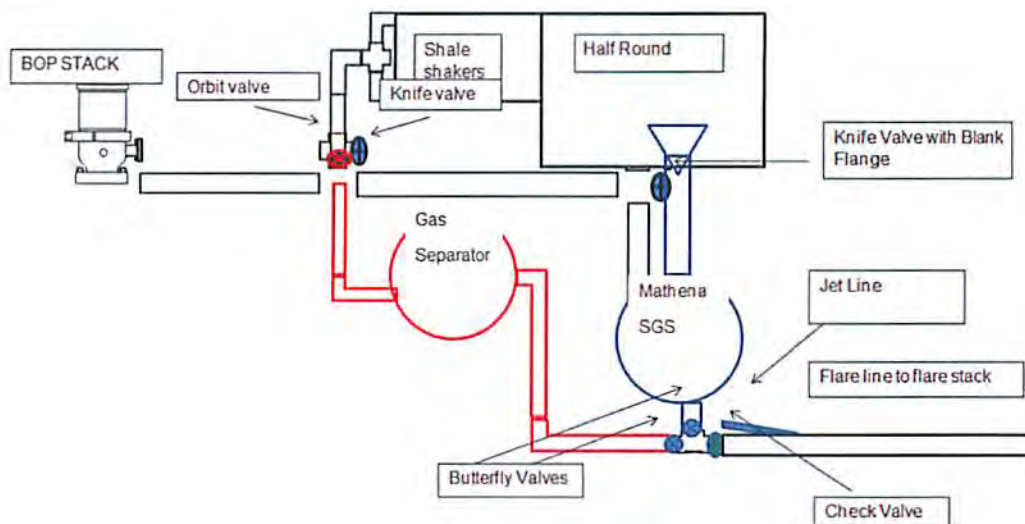
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7. Flaring

A. Well Flaring

1. No flaring is anticipated on this well and therefore no flare lines will be utilized. Based on offset well information no significant gas flows should be encountered during drilling. If a significant show is encountered the gas would be flared through the 7" flanged flowline. This flowline will be anchored to the ground using chains and deadman stakes, and will be approximately 75 feet long.
2. In the unlikely event that gas needs to be flared. The well would be shut-in, and a smudge pot would be set up as a primary ignition with a marine flare pistol used as a backup igniter.
3. All flammable material within a minimum distance of 50' from the end of the flow line will be cleared, in case a flare would be needed.
4. The fire department will be notified immediately prior to flaring.
5. The duration of flaring typically will not last more than 7 days.
6. Schematic:



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8. Collision Avoidance**Wellbore Anti-Collision and Directional Surveying****1. Survey Requirements**

- a. All wells shall be surveyed from the wellhead to a total depth using the guidelines specified in this document.
- b. Survey tool selection shall be based on the anti-collision requirements, survey tool accuracy, target size, and depth. Survey accuracy objectives shall be specified for each well in multiwell pad design.
- c. SWN preferred method of survey calculations shall be the Minimum Radius of Curvature method.
- d. All survey data shall be required to have azimuths pre-corrected to Grid North. The values for convergence and declinations and depth datum details used shall be reported on all definitive surveys. Additionally, survey tool accuracy should be specified on all surveys presented to SWN.
- e. During collision scans all offset well surveys will be evaluated for accuracy.

1.1 General Requirements

In all development wells, regularly spaced MWD or Magnetic Single Shot Surveys shall be taken at a frequency not to exceed 300'. During directional drilling the frequency shall be increased to every 90'. Additional surveys may be taken at the discretion of the directional driller, Drilling Representative, Drilling Superintendent, or Drilling Engineer.

Additional multi-shot surveys shall be taken in the following circumstances:

- 1.1.1 Gyro Single Shot Surveys shall be taken when drilling surface hole sections whenever magnetic interference is detected.
- 1.1.2 Gyro Multi Shot Surveys shall be taken to decrease positional uncertainty prior to drilling critical hole sections (i.e. high pressure sections, critical wellbore proximity hole sections, etc.). In this instance the requirements for the GMS shall be clearly stated in the drilling program.
- 1.1.3 In all pad drilling operations of multiple wells all surface casings will be surveyed with GMS before drilling that string.

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1.2 *Magnetic Survey Requirements*

- 1.2.1 MWD or Magnetic Single Shot (MSS) Surveys shall be taken at intervals of not more than 300' in vertical wells and at intervals of not more than 180' in tangent sections of deviated wells and at intervals of not more than 90' during build, turn, or drop sections.
- 1.2.2 The directional drilling contractor will calculate the following before each BHA is run:
 - a. Sufficient non-magnetic spacing is in place at both MWD and MMS positions to deliver < 1 degree azimuth error due to drill string interference.
 - b. BHA SAG correction for MWD and MMS positions. If SAG corrections is ≥ 0.1 degree inclination it must be applied.

1.3 *Gyro Survey Requirements*

- 1.3.1 Gyro Multi-Shot (GMS) surveys shall be run in all surface and in intermediate casing strings for wells with S.F. < 2.0 on pad drilling projects.
- 1.3.2 Gyro Single Shot (GSS) shall be used in place of magnetic survey instruments in all cases where magnetic interference from nearby wells is experienced until separations from existing wells exceeds 30', or at any time when magnetic interference from other wells is suspected.

1.4 *Survey Quality Control and Reporting*

- 1.4.1 Deviation calculations shall be performed on the rig independently by the directional driller and the Drilling Representative using the minimum radius of curvature method. The calculations shall be performed using a company approved program. The directional drilling contractor is responsible for the accurate reporting of all wellbore positioning data. The directional drilling contractor will present the definitive surveys utilizing data from any of SWN's surveying contractors.
- 1.4.2 The quality of the surveys taken shall be checked independently by the directional driller using the surveying contractor's approved survey acceptance criteria. For Gyro surveys this required a review and approval of the Gyro contractor's QA sheet. For MWD surveys this requires a review of the QA data sheet and a comparison to any MMS surveys.
- 1.4.3 The SWN representative will check tie-in data before drilling out of each hole section. Projected surveys will never be used to tie-in subsequent surveys.

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- 1.4.4 The Drilling Engineer and directional drilling contractor will ensure all directional drilling proposals include the correct tie-in data and clearly identify the projection to which the plan is tied. This projection will be replaced with a survey once drilling commences.
- 1.4.5 All definitive surveys will contain the following data:
- a. Well Name
 - b. Rig Floor Elevation
 - c. Local Coordinates
 - d. Section Plane
 - e. Declination Applied
 - f. Grid Convergence Applied
 - g. Any other correction applied
 - h. UTM Model
 - i. Survey History – Depths and Dates
 - j. Survey Tool Errors

2. Well Planning Requirements

2.1 General Requirements

- 2.1.1 No two wellbores should be designed to be closer than 10' once drilling commences. In the event that two surface locations are closer than 10' apart then directional equipment will be required below conductor and greater than 10' of separation shall be achieved as soon as possible.
- 2.1.2 During evaluation of well planning scenarios under the guidance of this policy, a situation may arise where a planning classification conflict occurs. In these situations the drilling department has the responsibility for safe operations and is therefore the ultimate decision making authority on all well classifications.
- 2.1.3 The Directional Drilling Contractor and Drilling Engineer shall make all efforts to plan well to avoid classification conflicts.
- 2.1.4 During the well planning process, the Directional Drilling Contractor and the Drilling Engineer shall calculate a Separation Factor for all potential collision risk wells identified in the clearance scan.
- 2.1.5 All wells planned with a S.F. of less than any point closer than 10' planned center to center separation will be reviewed with the Drilling Engineering Manager prior to pre-spud meetings.

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- 2.1.6 After completion of location and prior to setting the conductor the land survey company will resurvey the stakes for each surface location and drive a steel stake in the ground identifying each individual well. An as-built will be created and circulated to the Drilling Engineer and Drilling Superintendent identifying each well and the appropriate X and Y locations.
- 2.1.7 The Drilling Superintendant will create a bubble plot of the location to indicate well location to compare to the As-Built Survey Plat.

2.2 Well Planning Process

- 2.2.1 A clearance scan shall be performed and validated for all well plans between the Drilling Engineer and Directional Contractor.
- 2.2.2 Every nearby well will be classified using the Planning Matrix (Appendix J).
- 2.2.3 Using the chosen well plan scenario and calculated Separation Factors, the potential collision risk will be categorized as one of these types:

4	Intolerable - Undrillable well.
3	Manageable Risk - High priority evaluation risk
2	Reasonable Risk - Evaluate and monitor
1	Negligible Risk - No further action required

- This compilation of scenarios was developed to address the majority of situations that could arise give the current types of well currently being drilled. In the future, if a different collision situation develops due to operational or area changes then this matrix will require modification (Appendix L).
- Well Category Definitions
 - a. Category 4 – Undrillable well
Wells classified into this category present an unacceptable risk to personnel and/or facilities. Wells classified as 4 must be re-planned to an acceptable risk category.
 - b. Category 3 – Manageable Risk
Wells classified into this category are deemed drillable based on the presence of physical mitigation

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(barriers below collision point, improved directional control/monitoring, etc.). Wells classified in this category during planning operations must be approved by the Drilling Engineering Manager.

- c. **Category 2 – Reasonable Risk**
Well classified into this category are deemed drillable with lower risk of collision. All physical mitigation should be considered during planning.
- d. **Category 1 – Negligible Risk**
This category is used for wells that require no additional actions as they are currently planned.

3. Well Execution Requirements

3.1 General Requirements

- 3.1.1 The Drilling Representative shall have overall responsibility for the maintenance of safe operations when drilling in close proximity to other wells. The lead directional driller is responsible for the accurate reporting of the wellbore positioning and projection and calculation of bit position and uncertainty at the bit (Appendix A-I and L).

3.2 Suspension of Drilling Operations

The following rules shall apply at all times when the calculated Separation Factor for the drilling well crosses either into a Category 4 classification or exceeds the Separation Factor specified in the wellplan.

- 3.1.1 When the classification of any collision risk well is Category 4 or the Separation Factor exceeds that specified in the wellplan, the Drilling Superintendent shall be informed and drilling shall immediately cease.
- 3.1.2 A plan of action shall be formulated after considering the following options:

- a. Re-survey the current well with a more accurate survey tool to reduce the radius of uncertainty and increase the projected S.F. to return the well to Category 3 or that specified by the wellplan.
- b. Make a trip to allow use of a steering BHA to alter the well path and increase the projection of S.F. to Category 3 or that specified by the wellplan.

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- c. Plug the well and side-track at a depth where the well can be safely re-drilled.

4. Drilling and Survey Procedure Guidelines

The following guidelines and procedures detail the typical responses to be enacted in the event of drilling with close proximity to existing wells.

3.1 General Guidelines for Drilling with Proximity to Other Wells

The following guidelines should be considered prior to commencement of drilling collision-critical hole sections. A collision-critical hole section shall be defined as any interval of the drilling well requiring a form of mitigation to either detect or avoid a collision (Appendix M).

- 4.1.1 Magnetic based surveying instruments shall not be used as the prime source of well location identification within 20' of any collision risk well. When magnetic interference is suspected, gyro surveys should be run. Once free of magnetic interference, gyro surveys are unnecessary.
- 4.1.2 When doubt exists as to the accuracy of magnetic based survey information, these shall be checked with a gyro based tool before drilling ahead.
- 4.1.3 Proximity calculations and projections shall be performed at regular intervals depending on the collision risk. A minimum frequency of twice daily is mandatory, however when drilling with a S.F. of less than 1.5, the frequency shall be increased to every stand drilled.

4.2 Drilling Procedure

- 4.2.1 Proximity calculations shall be routinely performed when drilling hole sections of Category 2 or Category 3 wells.
- 4.2.2 When well paths are identified as converging and the proximity scan indicates a S.F. of less than stated in the drilling plan, the following procedure shall be applied:
 - a. The last survey station shall be calculated, plotted, and agreed by the directional driller and Drilling Representative.
 - b. The last survey station shall be extrapolated to depth corresponding to the bit position after drilling the next single.
 - c. An appropriate S.F. factor will be calculated using the projection of the next single.
- 4.2.3 Depending on the results of the proximity scan, the Drilling Representative shall enact the provisions of the policy per Section 3.4 if required.

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- 4.2.4 Re-instatement of collision risk wells and stand down from the anti-collision procedures above shall only be performed when the S.F. is restored to the planned values for the depth or the current well is below the deepest collision issue.

4.3 *Tool Face Offset Procedure*

The On Site Supervisor may elect to utilize some or all of this procedure based on the confidence of third party personnel and criticality of drilling orientation (Appendix N).

- 4.1.1 If there are two directional drillers on location, both are to be on the drill floor when assembling the BHA.
- 4.1.2 Make up BHA and torque all connection's between the motor and MWD to recommended make up values.
- 4.1.3 Adjust motor AKO to needed bend and torque to recommended make up values.
- 4.1.4 Directional Driller will scribe motor/MWD as per Directional Companies guidelines.
- 4.1.5 MWD engineer imputes calculated value into MWD surface computer. Directional Driller will double check value was correctly placed in the computer.
- 4.1.6 The Directional Driller(s) and MWD operator should both be involved in measuring and calculating the tool face offset and double-checking each other while obtaining the correct value.

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Appendix A – Field Specific Requirements for SIMOPS:
Drilling in addition to Completion &/or Production Operation(s)

		Fayetteville	Haynesville	Barnett	Marcellus	Eagle Ford
Common Well Spacing		Various	20'	15'	14'	20'
Under Substructure	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	No				
	Cage	Depends - If Warranted				
	Subsurface Mech Barrier	Yes - All Capable Wells				
	Surface Mech Barriers	Yes - All Wells				
	Remove WH	Depends - If Warranted				
	Collision Barriers	Depends - If Warranted				
	Completion Operation(s) Allowed	No - Not Possible				
	Other Considerations	Requires VP approval to circumvent policy				
Separation Factor < 2.0	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	Only wells (and affiliated pressurized equipment) that are located <u>outside</u> the rig fall radius, not required to have a Subsurface Mechanical Barrier per Anti-Collision requirements and <u>not adjacent</u> to Mob and Demob routes.				
	Cage	Yes - All Capable Wells located <u>inside</u> the rig fall radius				
	Subsurface Mech Barrier	Yes - All Capable Wells located <u>inside</u> the rig fall radius and those required by Anti-Collision requirements				
	Surface Mech Barriers	Yes - All Wells located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob routes				
	Remove WH	No				
	Collision Barriers	Yes - All Capable Wells and equipment located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob Routes				
	Completion Operation(s) Allowed	No				
	Other Considerations	Requires VP approval to circumvent policy				
Separation Factor > 2.0	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	Only wells (and affiliated pressurized equipment) that are located <u>outside</u> the rig fall radius, not required to have a Subsurface Mechanical Barrier per Anti-Collision requirements and <u>not adjacent</u> to Mob and Demob routes.				
	Cage	Yes - All Capable Wells located <u>inside</u> the rig fall radius				
	Subsurface Mech Barrier	Yes - All Capable Wells located <u>inside</u> the rig fall radius and those required by Anti-Collision requirements				
	Surface Mech Barriers	Yes - All Wells located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob routes				
	Remove WH	No				
	Collision Barriers	Yes - All Capable Wells and equipment located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob Routes				
	Completion Operation(s) Allowed	No				
	Other Considerations	Requires DM approval to circumvent policy				
PIC						

Received
Drilling Representative
Office of Oil & Gas
JUN 15 2015

**Appendix B – Field Specific Requirements for SIMOPS:
More than one Completion and/or Production Operation(s)**

		Fayetteville	Haynesville	Barnett	Marcellus	Eagle Ford
Common Well Spacing		Various	20'	15'	14'	20'
Stimulation	SI for MIRU / RDMO	Yes - All Wells				
	Cage	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collison Barrier	Yes, Mob & Demob Routes				
	Production Allowed	Yes, if wells <u>are not</u> adjacent to Mob & Demob Routes and / or within Potential Impact Area of Heavy Lifts. Must consider if wells could be impacted by stimulation				
Workover Rig and Coiled Tubing	SI for MIRU / RDMO	Yes - All Wells				
	Cage	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collision Barrier	Depends - Yes, Mob & Demob Routes when numerous vehicles and/or significant amounts of transported equipment will be involved				
	Production Allowed	Yes, if wells are outside the rig fall radius, <u>are not</u> adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts.				
Sticlcline and Wireline	SI for MIRU / RDMO	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Cage	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collision Barrier	No				
	Production Allowed	Yes, if wells <u>are not</u> within Potential Impact Area of Heavy Lifts				
PIC - When Completions Department is involved		Completion Representative				
PIC - Otherwise		Production Representative				

Received
Office of Oil & Gas
JUN 15 2015
Received
Office of Oil & Gas
JUN 15 2015

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
Ritchea North WT3H
Wetzel County, West Virginia

#	TMP	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
10	<u>12-0009-0040-0000</u>	1-254868-000	Edward A. Neuman and Isabelle Neuman, his wife, Frances Alma Emmert, Mary A. Barnes, widow, Loretta M. Sappington, widow, John A. Noon and Alison Noon, his wife	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Chesapeake Appalachia, L.L.C.	12.50%	<u>47A/67</u> <u>84A/129</u> <u>90A/242</u> <u>157A/540</u>
10	<u>12-0009-0040-0000</u>	1-298009-001	The Mary E. Tracy Trust dated April 6, 1910, by Terri Coleman Hufnagel, acting as Substitute Trustee	Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	15.00%	<u>113A/71</u> <u>157A/540</u>
9	<u>12-0009-0045-0000</u>	1-254812-000	Otis Simmons and Mabel Simmons, his wife, Ethel Ramsey and Elmer Ramsey, her husband, and Harold Simmons and Roxie Simmons, his wife	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>52A/263</u> <u>84A/129</u> <u>90A/242</u> <u>157A/540</u>
8	<u>12-0009-0046-0001</u>	1-264519-000	F. E. Buchner, single, Willard Herman, single, Dale A. Herman, single, Ray C. Herman, single, Dora Hall Palmer, widow, and Frankie E. Woodstuff and Albert Woodstuff, her husband	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>47A/275</u> <u>84A/129</u> <u>90A/242</u> <u>157A/540</u>
7	<u>12-0014-0006-0000</u>	WV0000128-000	Ray C. Herman and Rose M. Herman, his wife, and Dail A. Herman, single	Mobay Chemical Corporation Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>60A/143</u> <u>65A/67</u> <u>120A/109</u> <u>157A/540</u>

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Ritchea North WTZ3H
 Wetzel County, West Virginia

#	TMP	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
7	<u>12-0014-0006-0000</u>	1-254831-000	Ray C. Herman and Dail A. Herman	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>45A/314</u> <u>84A/129</u> <u>90A/242</u> <u>157A/540</u>
6	<u>12-0014-0009-0000</u>	WV0000129-002	William D. Ritchea and Shirley E. Ritchea, husband and wife	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>63A/48</u> <u>102A/302</u> <u>157A/540</u>
6	<u>12-0014-0009-0000</u>	WV0000129-001	Lewis F. Blake and Opal M. Blake	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>66A/93</u> <u>102A/302</u> <u>157A/540</u>
6	<u>12-0014-0009-0000</u>	WV0000129-003	Albert Woodstuff, a widower	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>71A/250</u> <u>102A/302</u> <u>157A/540</u>
5	<u>12-0014-0009-0001</u>	WV0000130-001	Lewis F. Blake and Opal M. Blake	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>66A/92</u> <u>103A/350</u> <u>157A/540</u>

103-03129

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
Ritchea North WTZ3H
Wetzel County, West Virginia

#	TMP	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
5	<u>12-0014-0009-0001</u>	WV0000130-002	Albert Woodstuff, widower	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>71A/252</u> <u>102A/302</u> <u>157A/540</u>
4	<u>12-0014-0009-0003</u>	WV0000130-001	Lewis F. Blake and Opal M. Blake	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>66A/92</u> <u>103A/350</u> <u>157A/540</u>
4	<u>12-0014-0009-0003</u>	WV0000130-002	Albert Woodstuff, widower	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>71A/252</u> <u>102A/302</u> <u>157A/540</u>
3	<u>12-0014-0016-0000</u>	WV0000109-001	TASA Corporation, formerly TASA Coal Company	J&J Enterprises, formerly TASA Coal Company Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>65A/313</u> <u>103A/350</u> <u>157A/540</u>
3	<u>12-0014-0016-0000</u>	WV0000109-002	Herbert W. Lindsay and Marie Lindsay, husband and wife	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>64A/423</u> <u>102A/302</u> <u>157A/540</u>

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Ritchea North WTZ3H
 Wetzel County, West Virginia

#	TMP	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
3	<u>12-0014-0016-0000</u>	WV0000109-003	Russell Rand and Gwendolyn Rand, husband and wife	Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>64A/425</u> <u>102A/350</u> <u>157A/540</u>
2	<u>12-0015-0020-0000</u>	MO-2-583	William D. Ritchea & Shirley E. Ritchea	Mobay Chemical Corporation	12.50%	<u>60A-59</u>
1	<u>12-0015-0021-0000</u>	WV0000113-000	William D. Ritchea and Shirley E. Ritchea, husband and wife	Mobay Chemical Corporation Wescap Oil and Gas Company Haddad and Brooks, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	<u>60A/59</u> <u>63A/34</u> <u>66A/547</u> <u>102A/302</u> <u>157A/540</u>



320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450

Surveying • handa-inc.com

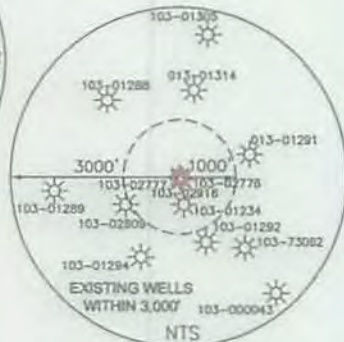
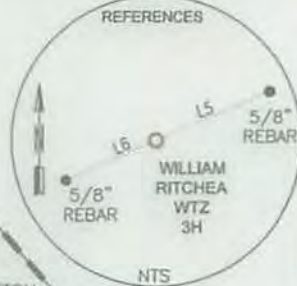
LINE	DESCRIPTION	DISTANCE	DESCRIPTION	MONUMENT
L1	N 73°37'23" W	1320.66'	SHL TO LANDMARK	5/8" REBAR
L2	S 47°43'14" W	855.75'	SHL TO LANDMARK	5/8" REBAR
L3	N 83°59'15" W	564.20'	SHL TO TPL	
L4	N 45°06'42" W	7598.35'	TPL TO BHL	
L5	N 66°30'17" E	298.77'	SHL TO REF. PNT.	5/8" REBAR
L6	S 66°18'02" W	239.24'	SHL TO REF. PNT.	5/8" REBAR

TRACT	SURFACE OWNER(S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES	LEASE NUMBER
1	WILLIAM D RITCHEA & SHIRLEY E RITCHEA (S/R)	12-15-21	62.00	WV-0000113-000
3	WILLIAM R PITOSCA (S) TASA CORPORATION (R) HERBERT W LINDSAY & MARIE LINDSAY (R) RUSSELL RAND & GWENDOLYN RAND (R)	12-14-16	104.01	WV-0000109-001 WV-0000109-002 WV-0000109-003
2	LEMASTERS CEMETERY (S)	12-15-2	0.35	UNLEASED
6	WILLIAM D RITCHEA & SHIRLEY E RITCHEA (S/R) LEWIS F BLAKE & OPAL M BLAKE (R) ALBERT WOODSTUFF (R)	12-14-9	88.37	WV-0000129-002 WV-0000129-001 WV-0000129-003
5	WAYNE HUGGINS & SANDRA HUGGINS (S) LEWIS F BLAKE & OPAL M BLAKE (R) ALBERT WOODSTUFF (R)	12-14-9.1	12.69	WV-0000130-001 WV-0000130-002
4	WAYNE L GODDARD (S) LEWIS F BLAKE & OPAL M BLAKE (R) ALBERT WOODSTUFF (R)	12-14-9.3	0.16	WV-0000130-001 WV-0000130-002
7	MICHAEL E LASURE & VELVA C LASURE (S) RAY C HERMAN & ROSE HERMAN (R) DARL A HERMAN (R) RAY C HERMAN & DARL A HERMAN (R)	12-14-6	52.89	WV-0000128-000 1-254831-000
8	WAYNE HUGGINS & SANDRA M HUGGINS (S) F E BUCHNER (R), WILLARD HERMAN (R), DALE A HERMAN (R), RAY C HERMAN (R), DORA HALL PALMER (R), & FRANKIE E WOODSTUFF & ALBERT WOODSTUFF (R)	12-9-46.1	25.00	1-264519-000
9	NORMAN E KEENEY JR & NANCY M KEENEY (S) OTIS SIMMONS & MABEL SIMMONS (R) ETHEL RAMSEY & ELMER RAMSEY (R) HAROLD SIMMONS & ROXIE SIMMONS (R)	12-9-45	100.00	1-254812-000
10	VERIL JEROME BLAKE, RODNEY BLAKE & JEROME MICHAEL (S) EDWARD A NEUMAN & ISABELLE NEUMAN (R), FRANCES ALMA EMMERT (R), MARY A BARNES (R), LORETTA M SAPPINGTON (R), & JOHN A NOON & ALISON NOON (R) THE MARY E TRACY TRUST DATED APRIL 6, 1910 (R)	12-9-4	50.00	1-254866-000 1-298009-001

NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 1000 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

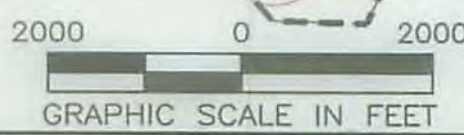
REFERENCES



SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83): LATITUDE: 39.669598° LONGITUDE: -80.659338°	
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,406,606.134 EASTING: 1,736,277.689	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,391,142.332 EASTING: 529,218.498	
TURNING POINT LOCATION (TPL):	
GEOGRAPHIC (NAD83): LATITUDE: 39.669766° LONGITUDE: -80.661330°	
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,406,665.205 EASTING: 1,735,716.853	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,391,160.337 EASTING: 529,047.555	
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83): LATITUDE: 39.684540° LONGITUDE: -80.680384°	
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,412,025.028 EASTING: 1,730,336.079	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,392,794.014 EASTING: 527,407.492	



SWN PRODUCTION COMPANY, LLC
"WILLIAM RITCHEA WTZ 3H"
SURFACE HOLE
ELEV: 1563.4'



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 667 *Darrell R. Boice*



COMPANY: **SWN** Production Company, LLC

	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS	MINIMUM DEGREE OF ACCURACY: 1/200	WILLIAM RITCHEA WTZ
	WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	PROVEN SURVEY SOURCE OF ELEVATION: GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: 3H API WELL #: 47 103 03129 HGA

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW

WATERSHED: LITTLE FISHING CREEK ELEVATION: 1563.4'

DISTRICT: PROCTOR COUNTY: WETZEL QUADRANGLE: WILEYVILLE, WV

SURFACE OWNER: WILLIAM D & SHIRLEY E RITCHEA ACREAGE: ±62.00

OIL & GAS ROYALTY OWNER: WILLIAM D & SHIRLEY E RITCHEA ACREAGE: ±62.00

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,556' TVD 16,067' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	REVISIONS:	DATE: 05-14-2015
○ PROPOSED SURFACE HOLE / BOTTOM HOLE		
⊙ EXISTING / PRODUCING WELLHEAD	--- LEASE BOUNDARY	
⊗ ABANDONED WELL	--- 500' DHP BUFFER	
⊕ PLUGGED & ABANDONED WELL	- - - MAR 1 - - - MARCELLUS DHP	
△ CUT CONDUCTOR	- - - ABANDONED PATH	
		DRAWN BY: S. HUTSON
		SCALE: 1" = 2000'
		DRAWING NO: 58712
		WELL LOCATION PLAT

10303129



PO Box 1300
Jane Lew, WV 26378
PHONE: (832) 796-1610

May 29, 2015

Ms. Laura Adkins
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed William Ritchea WTZ 1H and William Ritchea WTZ 3H in Wetzel County, West Virginia, Drilling under Middle Fork Road, State Highway 89, and Harland Ridge Road.

Dear Ms. Adkins:

SWN Production Company, LLC ("SWN") is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to SWN's right to drill under Middle Fork Road, State Highway 89, and Harland Ridge Road. Please be advised that SWN has leased all mineral owners under said route as it relates to the above-referenced well and unit.

Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Caleb Weaver".

Caleb Weaver
Landman
SWN Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

R²
A → *V⁺*
Received
Office of Oil & Gas
The Right People doing the Right Things,
wisely investing the cash flow from
our underlying Assets will create Value+
JUN 15 2015

07/31/2015

Certification of Notice is hereby given:

THEREFORE, I _____, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>SWN Production Co., LLC</u>	Address:	<u>P.O. Box 1300</u>
By:	<u>Dee Southall</u>		<u>Jane Lew, WV 26378</u>
Its:	<u>Regulatory Supervisor</u>	Facsimile:	_____
Telephone:	<u>832-796-1610</u>	Email:	<u>Dee_Southall@swn.com</u>



Subscribed and sworn before me this 15th day of June 2015.
Brittany R Woody Notary Public
 My Commission Expires 11/27/22

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Office of Oil & Gas
JUN 15 2015

WW-6A
(9-13)

10303129
API NO. 47-
OPERATOR WELL NO. William Ritchea WTZ 3H
Well Pad Name: William Ritchea WTZ Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: _____ Date Permit Application Filed: _____

Notice of:

- PERMIT FOR ANY WELL WORK CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE REGISTERED MAIL METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
Name: William & Shirley Ritchea
Address: HC Box 239
New Martinsville, WV 26155

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: CNX Center %Leatherwood
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: William & Shirley Ritchea
Address: HC Box 239
New Martinsville, WV 26155

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

Received
Office of Oil & Gas
JUN 15 2015

*Please attach additional forms if necessary

07/31/2015

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 6/12 Date Permit Application Filed: 6/12

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

- SURFACE OWNER(s)
Name: _____
Address: _____
Name: _____
Address: _____
- SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
Name: _____
Address: _____
- SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

- COAL OWNER OR LESSEE
Name: _____
Address: _____
- COAL OPERATOR
Name: _____
Address: _____

- SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: Bernard Duelly
Address: 1192 Waterloo Road
Mogadore, OH 44260
- OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

Received
Office of Oil & Gas

JUN 15 2015

*Please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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WW-6A
(8-13)

10303129
API NO. 47-69
OPERATOR WELL NO. William Ritchea WTZ 3H
Well Pad Name: William Ritchea WTZ Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article shall file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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07/31/2015

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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JUN 15 2015

WW-6A
(8-13)

API NO 10303129
OPERATOR WELL NO. William Ritchea WTZ 3H
Well Pad Name: William Ritchea WTZ Pad

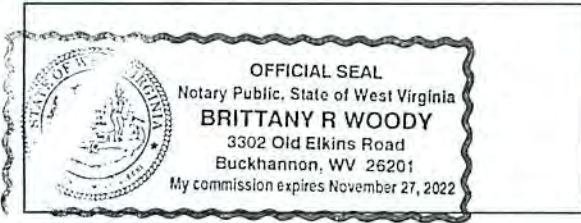
Notice is hereby given by:

Well Operator: SWN Production Co., LLC
Telephone: 832-796-1610
Email: Dee_Southall@swn.com

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: _____

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.



Subscribed and sworn before me this 15th day of June 2015
Brittany R Woody Notary Public
My Commission Expires 11/27/2022

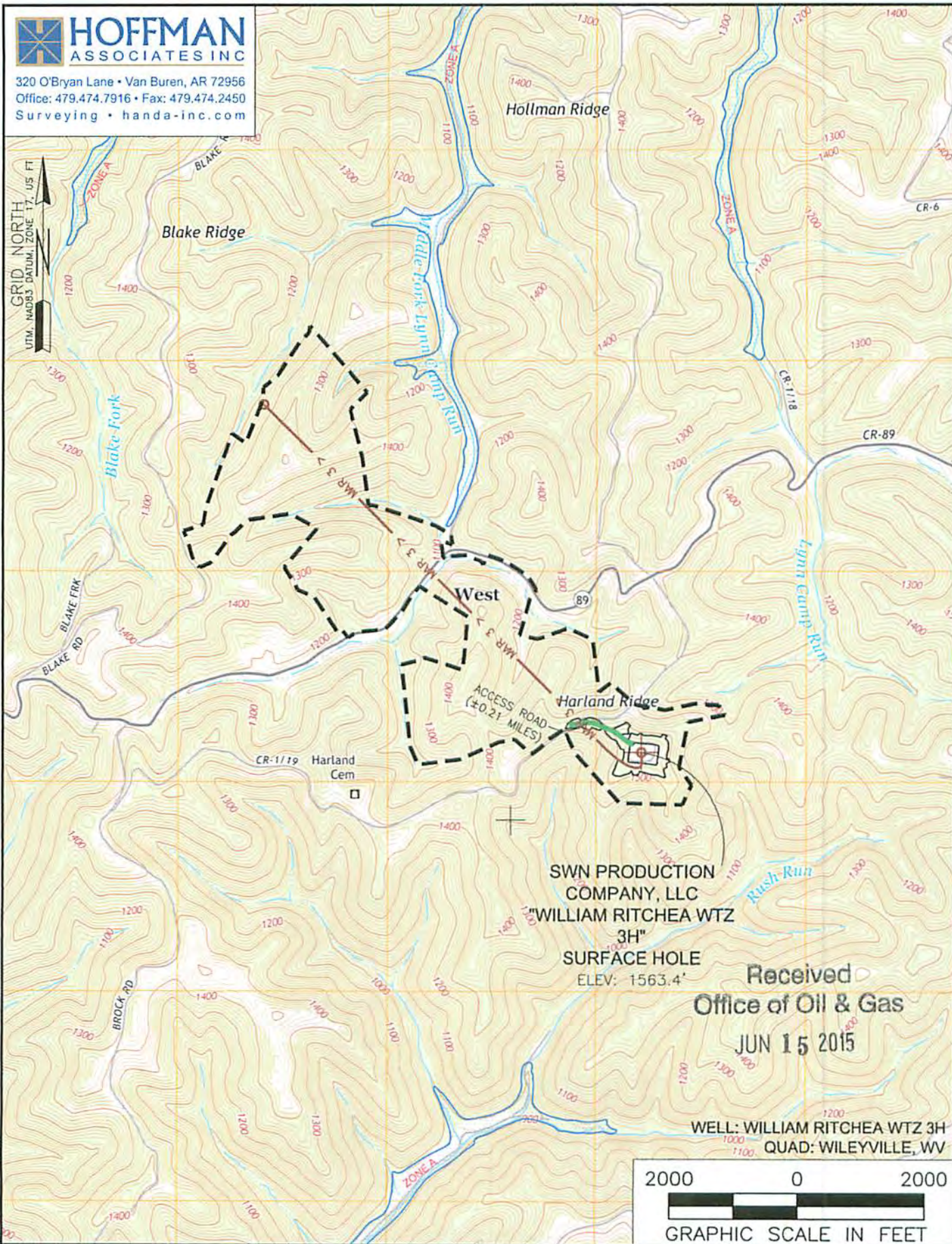
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JUN 15 2015

07/31/2015



320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

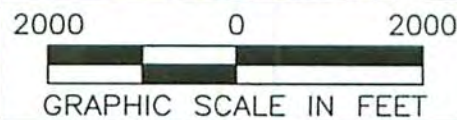
GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



SWN PRODUCTION COMPANY, LLC
"WILLIAM RITCHEA WTZ 3H"
SURFACE HOLE
ELEV: 1563.4'

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Office of Oil & Gas
JUN 15 2015

WELL: WILLIAM RITCHEA WTZ 3H
QUAD: WILEYVILLE, WV



NAME AND DISTANCE TO THE NEAREST STREAM: AN UNNAMED TRIBUTARY OF RUSH RUN IS LOCATED ±0.27 MILES SOUTHWEST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.	COMPANY: SWN Production Company, LLC	SWN Production Company™
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET		OPERATOR'S WILLIAM RITCHEA WTZ		07/31/2015
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF WETZEL COUNTY, WEST VIRGINIA; MAP NUMBER 54103C0075C; EFFECTIVE DATE: SEPTEMBER 25, 2009.		WELL #: 3H		
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊗ EXISTING / PRODUCING WELLHEAD ⊗ ABANDONED WELL ⊗ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		Ⓜ EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD	LOCATION: PROCTOR DISTRICT, WETZEL COUNTY, WEST VIRGINIA	
		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 39.669598° LONGITUDE: -80.659338°		
		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 39.684540° LONGITUDE: -80.680384°		
		REVISIONS:	DATE: 05-14-2015	
		DRAWN BY: S. HUTSON		
		SCALE: 1" = 2000'		
		DRAWING NO: 58712		
		TOPOGRAPHIC MAP		

10303129

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

Date of Notice: 05/28/2015 Date Permit Application Filed: Ull

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: William D. & Shirley E. Ritchea ✓ Name: _____
Address: HC 60 Box 239 Address: _____
New Martinsville, WV 26155

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 529,214.208
County: Wetzel Northing: 4,391,142.747
District: Proctor Public Road Access: Harland Ridge RT 1/19
Quadrangle: Wileyville Generally used farm name: _____
Watershed: Middle Ohio North

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC Authorized Representative: _____
Address: PO Box 1300, 179 Innovation Drive Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378 Jane Lew, WV 26378
Telephone: 304-884-1611 Telephone: 304-884-1614
Email: micah_feather@swn.com Email: Danielle_Southall@swn.com
Facsimile: _____ Facsimile: _____

Received
Office of Oil & Gas
JUN 15 2015

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

10303129

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 05/28/2015 Date Permit Application Filed: 4/12

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL RETURN RECEIPT REQUESTED
- HAND DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: <u>William D. & Shirley E. Ritchie</u>	Name: _____
Address: <u>HC 60 Box 239</u> <u>New Martinsville, WV 26155</u>	Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>529,214.208</u>
County: <u>Wetzel</u>	Northing: <u>4,391,142.747</u>
District: <u>Proctor</u>	Public Road Access: <u>Harland Ridge RT 1/19</u>
Quadrangle: <u>Wileyville</u>	Generally used farm name: _____
Watershed: <u>Upper Ohio</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: <u>SWN Production Company, LLC</u>	Address: <u>PO Box 1300, 179 Innovation Drive</u>
Telephone: <u>304-884-1614</u>	<u>Jane Lew, WV 26378</u>
Email: <u>Danielle_Southall@swn.com</u>	Facsimile: <u>304-472-4225</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Office of Oil & Gas
JUN 19 2015

10303129



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

May 29, 2015

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the William Ritchea Pad WTZ 3H Well Site, Wetzel County

Dear Mr. Martin,

The West Virginia Division of Highways has issued permit 06-2011-0618 to Southwestern Energy for access to the State Road for the well site located off of Wetzel County Route 1/19 SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

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JUN 15 2015

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

Gary K. Clayton
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator

Cc: Brittany Woody
Southwestern Energy
CH, OM, D-6
File

10303129

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
NALCO ONESOURCE	EC6110A	Biocide	Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compounds	N/A-063
	EC6629A	Biocide	No Hazardous Components	NONE
WEATHERFORD	WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
	WBK-134	Breaker	Ammonium Persulfate	007727-54-0
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
	WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
			Water	007732-18-5
	WFR-55LA	Friction Reducer	No Hazardous Components	NONE
	WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
	WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
			Potassium Hydroxide	001310-58-3
	WXL-101LE	Crosslinker	No Hazardous Components	NONE
	WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
	WXL-105L	Crosslinker	Water	007732-18-5
			Ethylene Glycol	000107-21-1
Boric Acid			010043-35-3	
Ethanolamine			000141-43-5	
SCHLUMBERGER	B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
	L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
	Breaker J218	Breaker	Diammonium Peroxidisulphate	7727-54-0
	EB-Clean* J475 Breaker		Diammonium Peroxidisulphate	7727-54-0
	Friction Reducer B315	Friction Reducer	Distillates (petroleum), Hydrotreated light Aliphatic Alcohol Glycol Ether	64742-47-8 Proprietary
	Friction Reducer J609		Ammonium Sulfate	7783-20-2

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
SCHLUMBERGER	Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
	Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7601-54-9 107-21-1
	Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303 96-4
	Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310 58-3

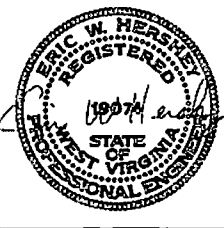
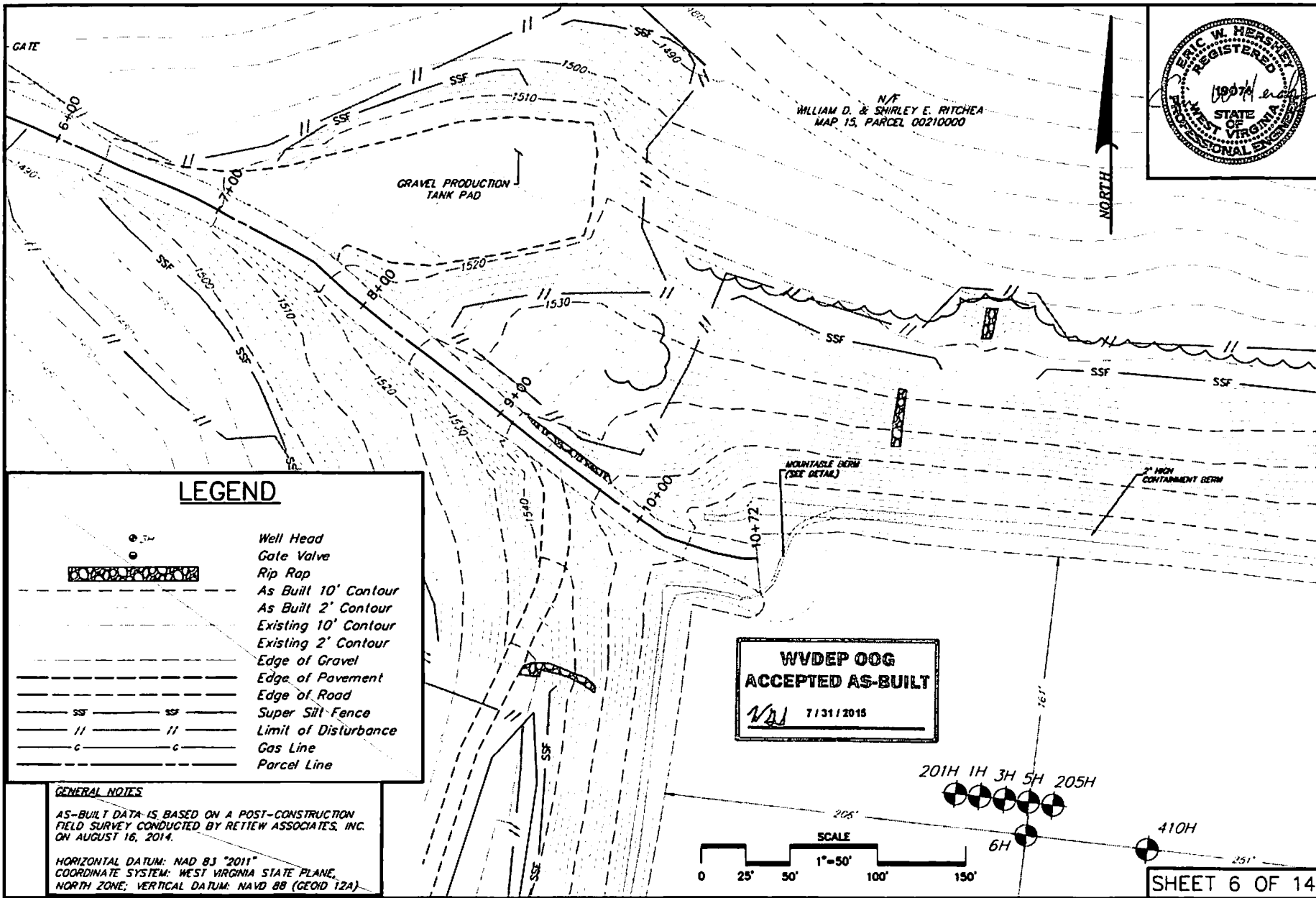
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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
BAKER HUGHES	ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
			Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compound	068424-85-1
		Water		007732-18-5
	BF-7L	Buffer	Potassium Carbonate	000584-08-7
	ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
			Water	007732-18-5
	Enzyme G-I	Breaker	No Hazardous Components	NONE
	ENZYME G-NE	Breaker	No Hazardous Components	NONE
	FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
	GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
			Polysaccharide Blend	N/A-021
	SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
Ethylene Glycol			000107-21-1	
XLW-32	Crosslinker	Boric Acid	010043-35-3	
		Methanol (Methyl Alcohol)	000067-56-1	
FRAC TECH SERVICES	APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
	B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
	BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
	FRW-200	Friction Reducer	No Hazardous Components	NONE
	HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
	KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
	LTB-1	Breaker	Ammonium Persulfate	N/A

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DATE: 07/29/2015
SCALE: 1" = 50'
DWG. NO. 087569009

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RETTEW Associates, Inc.
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www.rettew.com • Email: info@rettew.com

AS-BUILT SITE PLAN
FOR
**WILLIAM & SHIRLEY RITCHEA
WTZ PAD A**
PROCTOR DISTRICT WETZEL COUNTY, WV

LEGEND

- Well Head
- Gate Valve
- Rip Rap
- As Built 10' Contour
- As Built 2' Contour
- Existing 10' Contour
- Existing 2' Contour
- Edge of Gravel
- Edge of Pavement
- Edge of Road
- Super Silt-Fence
- Limit of Disturbance
- Gas Line
- Parcel Line

GENERAL NOTES

AS-BUILT DATA IS BASED ON A POST-CONSTRUCTION FIELD SURVEY CONDUCTED BY RETTEW ASSOCIATES, INC. ON AUGUST 16, 2014.
HORIZONTAL DATUM: NAD 83 "2011"
COORDINATE SYSTEM: WEST VIRGINIA STATE PLANE, NORTH ZONE; VERTICAL DATUM: NAVD 88 (GEOID 12A)

**WVDEP OOG
ACCEPTED AS-BUILT**
WJR 7/31/2015

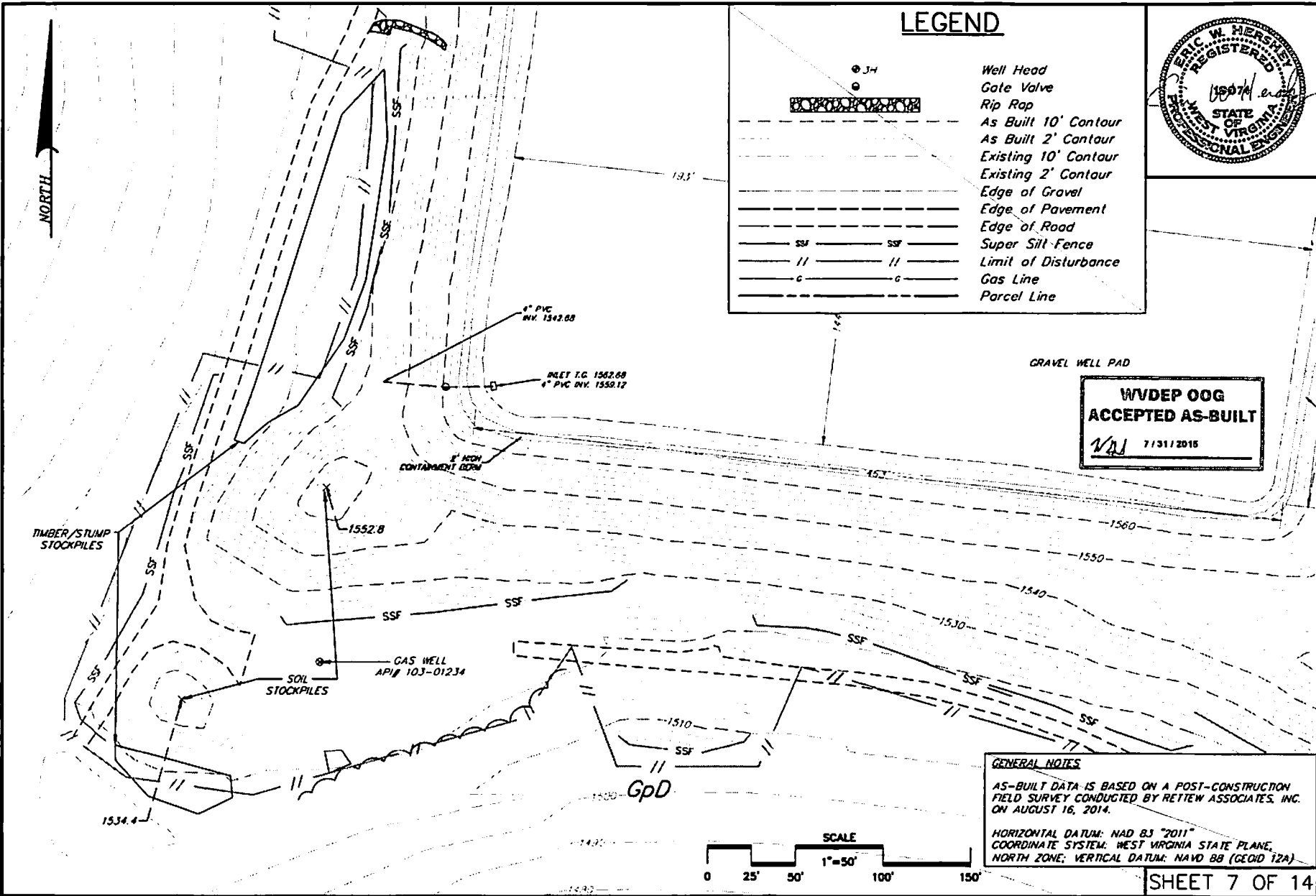


LEGEND

	Well Head
	Gate Valve
	Rip Rap
	As Built 10' Contour
	As Built 2' Contour
	Existing 10' Contour
	Existing 2' Contour
	Edge of Gravel
	Edge of Pavement
	Edge of Road
	Super Silt Fence
	Limit of Disturbance
	Gas Line
	Parcel Line

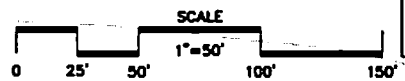


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 DATE: 07/28/2015
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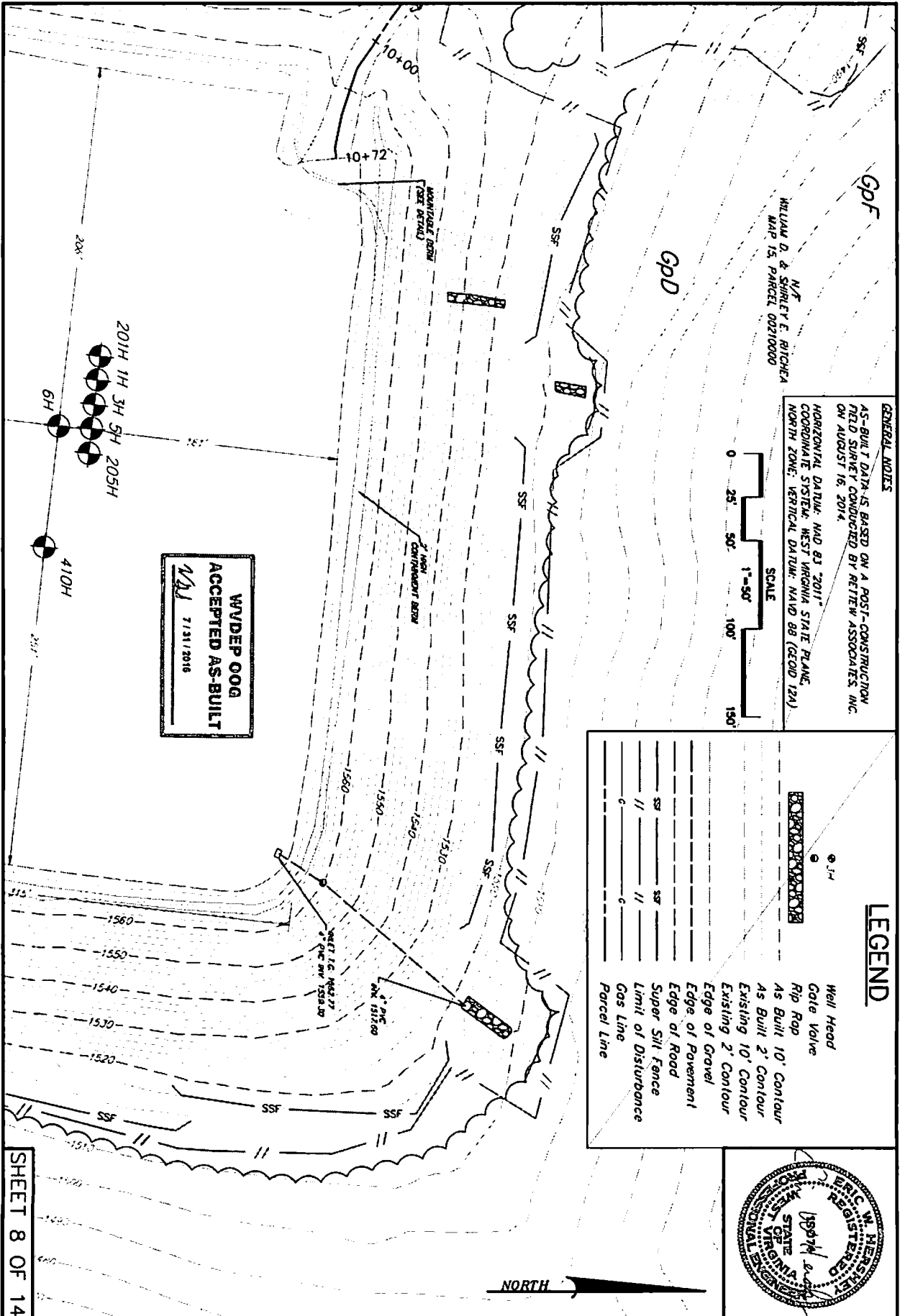
**WVDEP OOG
 ACCEPTED AS-BUILT**
 VAW 7/31/2015

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 HORIZONTAL DATUM: NAD 83 "2011"
 COORDINATE SYSTEM: WEST VIRGINIA STATE PLANE,
 NORTH ZONE; VERTICAL DATUM: NAVD 88 (GEOID 12A)



RETTEW
 RETTEW ASSOCIATES, INC.
 5143 Sandstone Ridge, Suite 100, North Canton, OH 44720
 Phone (330) 818-0770 • Fax (330) 818-8760
 Virginia • West Virginia • Kentucky • Tennessee • Pennsylvania • North Carolina

AS-BUILT SITE PLAN
 FOR
**WILLIAM & SHIRLEY RITCHEA
 WTZ PAD A**
 PROCTOR DISTRICT
 WETZEL COUNTY, WV

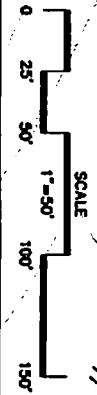
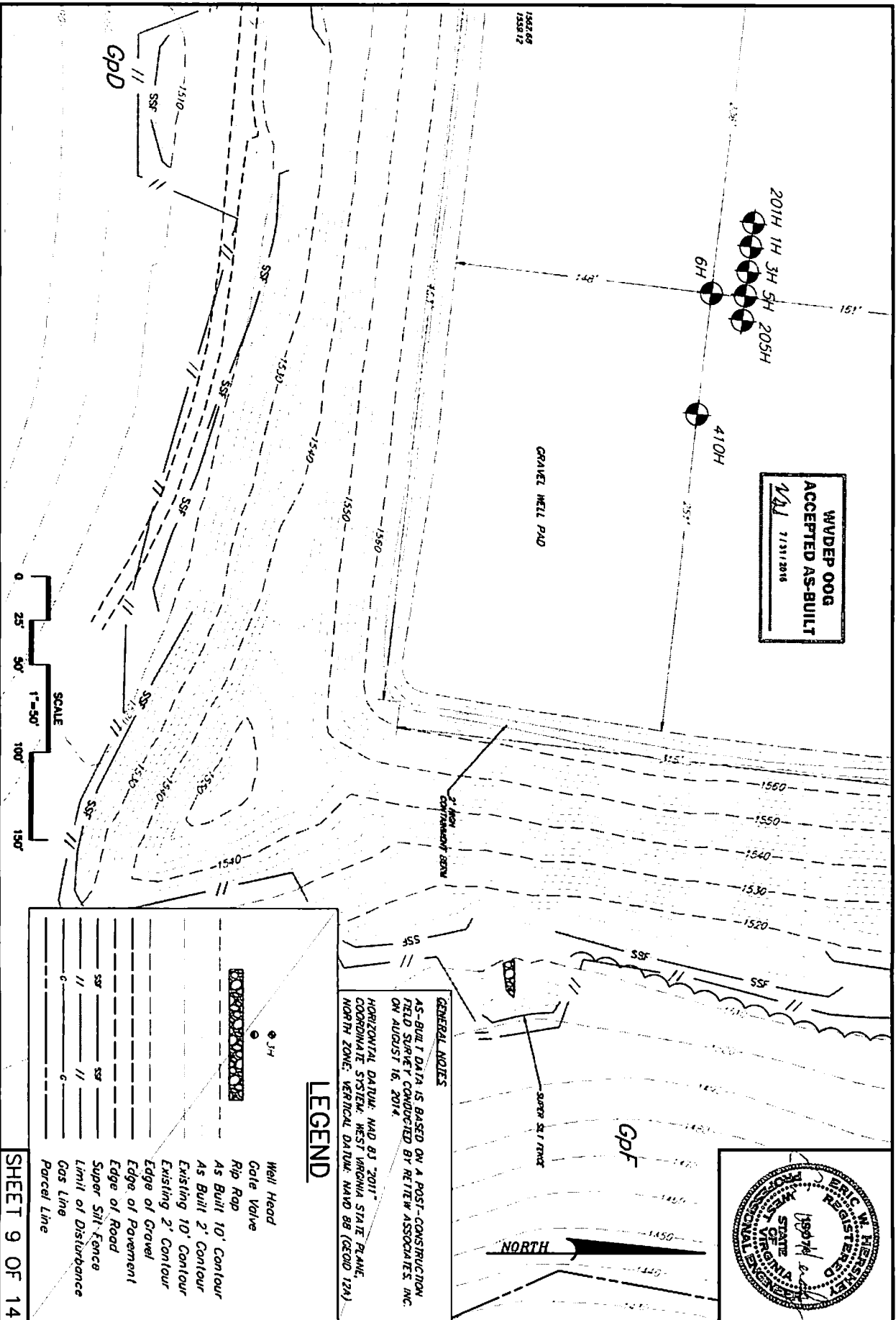


SHEET 8 OF 14

AS-BUILT SITE PLAN
FOR
WILLIAM & SHIRLEY RITCHEA
WTZ PAD A
PROCTOR DISTRICT WETZEL COUNTY, WV

RETTEW.
RETTEW Associates, Inc.
3145 Stuzsham Road, Suite 100, North Canton, OH 44720
Phone (330) 818-9770 • Fax (330) 818-9760
Digitally signed by Eric W. Hershhey, DN: cn=Eric W. Hershhey, o=RETTEW Associates, Inc., email=eric@rettew.com, c=US

DRAWN BY: JAR
DATE: 07/29/2015
SCALE: 1" = 30'
DWG. NO. 087569009

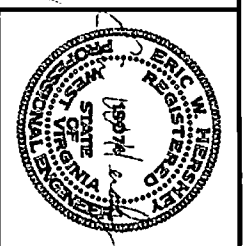


SHEET 9 OF 14

LEGEND

	Well Head
	Gate Valve
	Rip Rap
	As Built 10' Contour
	As Built 2' Contour
	Existing 10' Contour
	Existing 2' Contour
	Edge of Gravel
	Edge of Pavement
	Edge of Road
	Super Silt Fence
	Limit of Disturbance
	Gas Line
	Parcel Line

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 HORIZONTAL DATUM: NAD 83 "2011"
 COORDINATE SYSTEM: WEST VIRGINIA STATE PLANE,
 NORTH ZONE. VERTICAL DATUM: NAVD 88 (GEOID 124)



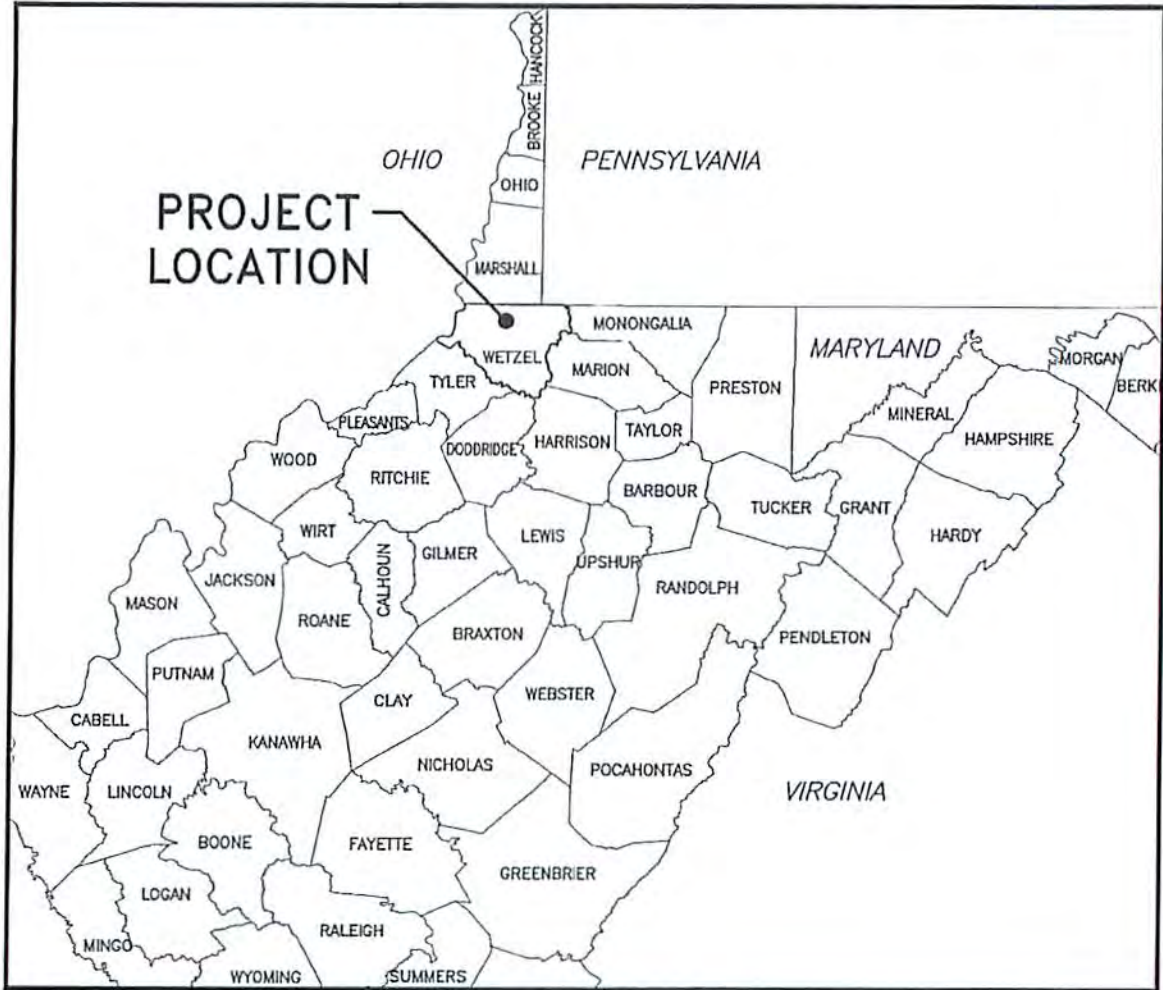
AS-BUILT SITE PLAN
 FOR
WILLIAM & SHIRLEY RITCHEA
WTZ PAD A
 PROCTOR DISTRICT WETZEL COUNTY, WV

RETTEW
 RETTEW Associates, Inc.
 5145 Shafter Road, Suite 100, North Canton, OH 44720
 Phone (330) 618-9770 • Fax (330) 618-9760
 Licensed Professional Engineer
 Environmental Consultants

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 DATE: 07/29/2015
 SCALE: 1" = 50'
 DWG. NO. 087569009

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AS-BUILT SITE PLAN FOR WILLIAM & SHIRLEY WTZ PAD A PROCTOR DISTRICT, WETZEL COUNTY



COUNTY MAP
N.T.S.

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Miss Utility of West Virginia

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AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-245-4848.

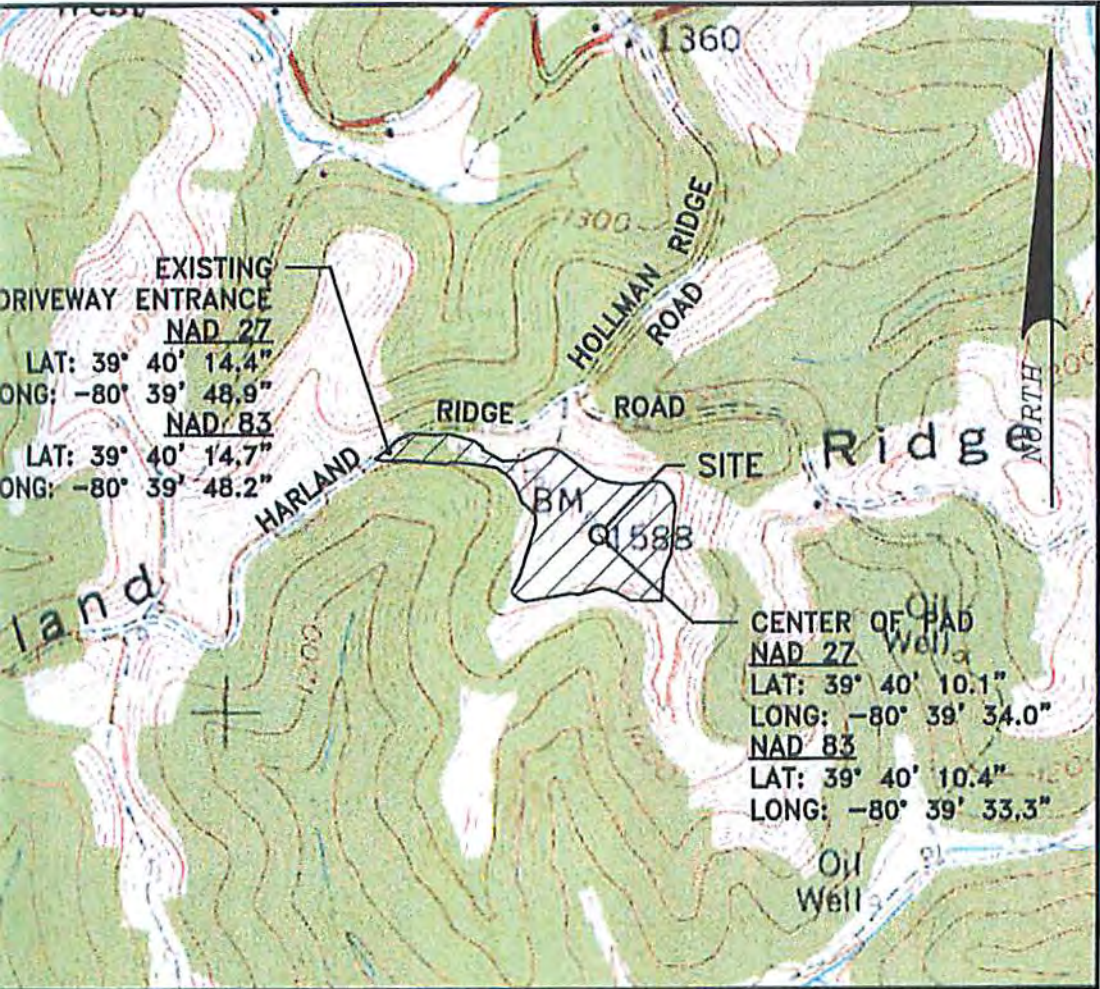
OPERATOR
SWN PRODUCTION CO., LLC
ATTN: DEE SOUTHALL
P.O. BOX 1300
JANE LEW, WV 26378
(832) 796-1614

10 303 129

WILLIAM & SHIRLEY RITCHEA WETZEL COUNTY, WEST VIRGINIA



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DATE: 05/28/2015
SCALE: AS SHOWN
DWG. NO. 087569009



LOCATION MAP

SCALE - 1"=1000'

Dmt
6-9-15

SITE DATA

TOTAL DISTURBED AREA: 13.6 ACRES
DISTURBED AREA: 3.9 ACRES
UNDISTURBED ACRES: 9.7 ACRES
ACCESS ROAD LENGTH: 1,079'
ACCESS ROAD AVERAGE WIDTH: 24'
PAD ELEVATION: 1,563.0'

LIST OF DRAWINGS

- 1 OF 13 COVER SHEET
- 2-3 OF 13 EVACUATION ROUTE/ PREVAILING WINDS
- 4 OF 13 AS-BUILT SITE PLAN OVERVIEW
- 5-9 OF 13 AS-BUILT SITE PLAN
- 10-12 OF 13 RECLAMATION PLAN
- 13 OF 13 DETAILS



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Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

COVER SHEET

FOR

WILLIAM & SHIRLEY RITCHEA
WTZ PAD A

WETZEL COUNTY, WV

PROCTOR DISTRICT

SHEET 1 OF 13

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