

APPROVED

NAME: *David A. ...*

DATE: *11/8/17*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513067

API: 47 - 017 - 06758

Submission: Initial Amended

Notes:

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01/05/2018

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-017-06758 County Doddridge District South West
Quad Oxford Pad Name OXF155 Field/Pool Name N/A
Farm name Haessly Land & Timber LLC Well Number 513067
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,340,496.70 Easting 516,423.42
Landing Point of Curve Northing 4,340,405.73 Easting 515,907.09
Bottom Hole Northing 4,341,241.08 Easting 515,467.29

Elevation (ft) 1199' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Water base Mud 12 ppg., barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrocchrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 02/09/2016 Date drilling commenced 03/18/2017 Date drilling ceased 06/08/2017
Date completion activities began 8/9/2017 Date completion activities ceased 8/13/2017
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 59,183,204,262,419 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1462 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 132,252,292,532 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
01/05/2018



API 47- 017 - 06758 Farm name Haessly Land & Timber LLC Well number 513067

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	30"	26"	40'	NEW	A-500	N/A	Y
Surface	17 1/2"	13 3/8"	567'	NEW	J-55	397'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	3468'	NEW	A-500	1338'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	10,816'	NEW	P-110	N/A	N
Tubing							
Packer type and depth set							

Comment Details N/A

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	48.9	15.6	1.18	57.7	0	8
Surface	CLASS A	805	15.6	1.20	966	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	175 / 1050	15.6 / 15.6	1.18 / 1.2	1466.5	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS H / CLASS H	453/425	15.2 / 15.6	1.25 / 2.06	1441.75	5200	72
Tubing							

Drillers TD (ft) 10,826 Loggers TD (ft) N/A

Deepest formation penetrated _____ Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 4525

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

CONDUCTOR: NONE

SURFACE: 2 CENTRALIZERS AT JOINTS 1 and 8

INTERMEDIATE: 8 CENTRALIZERS PLACED EVERY 500'

PRODUCTION: Spiral body composite centralizers placed every joint from bottom to KOP.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6650</u>	<u>TVD</u>	<u>7483</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 951 psi Bottom Hole N/A psi DURATION OF TEST 86.00 hrs

OPEN FLOW Gas 7,291 mcfpd Oil N/A bpd NGL 69 bpd Water 705 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	<u>0</u>		<u>0</u>		
<u>SW & Oil Show</u>	<u>1462</u>	<u>1462</u>	<u>1462</u>	<u>1462</u>	<u>SW & Oil Show</u>

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Please insert additional pages as applicable.

Drilling Contractor Decker Drilling Rig 11
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company Gyrodatta Incorporated
Address 73 Noblestown Road City Carnegie State PA Zip 15106

Cementing Company BJ Cementing Services
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Stimulating Company U.S. Well Services
Address 770 South Post Oak Lane, Suite 410 City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by James Abbott Telephone (412) 553-5996
Signature [Signature] Title Dir Completions Date 10/26/2017

API 47- 017 - 06758 Farm name Haessly Land & Timber LLC Well number 513067

Drilling Contractor Savanna Drilling (Rig 655)
Address 125 Industry Road City Waynesburg State PA Zip 15370

Logging Company Scientific Drilling
Address 124 Vista Drive City Charleroi State PA Zip 15022

Logging Company Baker Hughes
Address 400 Technology Dr #120 City Canonsburg State PA Zip 15317

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Pad Well #: OXF155H4	API: 47-017-06758	Permit #: 47-01706758			
Lat/Long Data Source:	Latitude (°): 39° 12' 50.328" N	Longitude (°): 80° 48' 34.668" W			
Formation Name	Drill Top MD (ftKB)	Drill Top (TVD) (ftKB)	Drill Btm MD (ftKB)	Drill Btm (TVD) (ftKB)	Gas At (TVD GL)
Fresh Water Zone	1	1	422	422	
SAND / SHALE	1	1	135	135	
WASHINGTON COAL	135	135	137	137	
SAND / SHALE	137	137	255	255	
WAYNESBURG-A COAL	255	255	257	257	
SAND / SHALE	257	257	295	295	
UNIONTOWN COAL	295	295	297	297	
SAND / SHALE	297	297	535	535	
SWEICKLEY COAL	535	535	538	538	
SAND / SHALE	538	538	1573	1573	
MAXTON	1573	1573	1662	1662	
SAND / SHALE	1662	1662	1918	1918	
BIG LIME	1918	1918	2051	2051	
SAND / SHALE	2051	2051	2208	2208	
WEIR	2208	2208	2323	2323	
SAND / SHALE	2323	2323	2419	2419	
GANTZ	2419	2419	2503	2503	
FIFTY FOOT	2503	2503	2566	2566	
SAND / SHALE	2566	2566	2611	2611	
THIRTY FOOT	2611	2611	2651	2650	
GORDON	2651	2650	2695	2694	
SAND / SHALE	2695	2694	2757	2756	
FOURTH SAND	2757	2756	2792	2791	
SAND / SHALE	2792	2791	2933	2932	
BAYARD	2933	2932	3158	3157	
SAND / SHALE	3158	3157	3256	3255	
WARREN	3256	3255	3311	3310	
SPEECHLEY	3327	3326	3419	3418	
SAND / SHALE	3419	3418	3845	3844	
BALLTOWN A	3845	3844	4003	4002	
SAND / SHALE	4003	4002	4459	4458	
RILEY	4459	4458	4515	4514	
SAND / SHALE	4515	4514	4892	4868	
BENSON	4892	4868	5007	4965	
SAND / SHALE	5007	4965	5149	5075	
ALEXANDER	5149	5075	5238	5140	
ELK	5238	5140	6823	6316	6145
SONYEA	6823	6316	7059	6472	6308, 642
MIDDLESEX	7059	6472	7089	6491	
GENESEE	7089	6491	7186	6549	
GENESE0	7186	6549	7368	6625	6610
TULLY	7368	6625	7453	6647	
HAMILTON	7453	6647	7483	6655	
MARCELLUS	7483	6655	10826	6612	6640

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513067 47-017-06758-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	7/21/2017	10,793	10,816	10	MARCELLUS
1	8/9/2017	10,632	10,754	32	MARCELLUS
2	8/9/2017	10,432	10,594	40	MARCELLUS
3	8/9/2017	10,232	10,394	40	MARCELLUS
4	8/9/2017	10,032	10,194	40	MARCELLUS
5	8/10/2017	9,832	9,994	40	MARCELLUS
6	8/10/2017	9,632	9,794	40	MARCELLUS
7	8/10/2017	9,432	9,594	40	MARCELLUS
8	8/11/2017	9,232	9,394	40	MARCELLUS
9	8/11/2017	9,032	9,194	40	MARCELLUS
10	8/11/2017	8,832	8,994	40	MARCELLUS
11	8/11/2017	8,632	8,794	40	MARCELLUS
12	8/12/2017	8,432	8,594	40	MARCELLUS
13	8/12/2017	8,232	8,394	40	MARCELLUS
14	8/12/2017	8,032	8,194	40	MARCELLUS
15	8/12/2017	7,832	7,994	40	MARCELLUS
16	8/12/2017	7,632	7,794	40	MARCELLUS
17	8/13/2017	7,432	7,594	40	MARCELLUS

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513067 47-017-06758-0000 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	8/9/2017	9	6,770	8,504	4,473	0	822	0
1	8/9/2017	95	7,780	8,788	2,952	447500	7,600	0
2	8/9/2017	93	7,624	9,283	3,297	450600	7,546	0
3	8/9/2017	93	7,928	9,374	3,323	450500	7,444	0
4	8/10/2017	95	7,629	8,401	3,000	450800	7,435	0
5	8/10/2017	93	7,283	7,534	2,875	447800	8,726	0
6	8/10/2017	94	7,477	7,908	2,727	450100	8,358	0
7	8/10/2017	91	7,143	8,997	3,063	449600	9,135	0
8	8/11/2017	90	6,980	7,420	3,687	446900	9,938	0
9	8/11/2017	93	7,144	7,222	4,950	447520	8,108	0
10	8/11/2017	89	6,889	7,968	3,126	450800	9,042	0
11	8/11/2017	87	7,017	8,719	3,090	451100	9,584	0
12	8/12/2017	94	7,304	7,644	2,838	449700	8,359	0
13	8/12/2017	94	6,744	7,801	2,772	452100	8,042	0
14	8/12/2017	95	6,991	7,250	2,806	452300	7,257	0
15	8/12/2017	87	6,465	8,265	3,091	450400	9,479	0
16	8/13/2017	90	6,838	7,860	2,932	450200	9,003	0
17	8/13/2017	88	7,133	7,586	2,907	447900	8,024	0

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/9/2017
Job End Date:	8/13/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06758-00-00
Operator Name:	EQT Production
Well Name and Number:	513067
Latitude:	39.21350700
Longitude:	-80.80993400
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,655
Total Base Water Volume (gal):	6,043,884
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	USWS	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	86.47780	None
MC MX 5-3886	Multi-Chem Group	Specialty Brine					
				Listed Below			

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AP ONE	USWS	Gel Breaker					
				Listed Below			
LT Flush System	USWS	Base / Flush Oil					
				Listed Below			
Other Chemical (s)	Listed Above (s)	See Trade Name (s) List					
				Listed Below			
NWA-200s	USWS	FR Activator					
				Listed Below			
SI-1200S	USWS	Scale Inhibitor					
				Listed Below			
Sand (Proppant)	USWS	Proppant					
				Listed Below			
MX-7-3971	Multi-Chem Group	Defoamer					
				Listed Below			
MC MX 8-2544	Multi-Chem Group	Live Culture - Nitrate Reducing Bacteria					
				Listed Below			
WFRC-2100	USWS	Cationic Friction Reducer					

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				Listed Below			
WFRC-2200	USWS	Cationic Friction Reducer					
				Listed Below			
AI-303	USWS	Acid Corrosion Inhibitor					
				Listed Below			
Hydrochloric Acid (15%)	USWS	Acid					
				Listed Below			
LGC-15	USWS	Water Gelling Agent					
				Listed Below			
Alpha Flo-2FE	USWS	Oilfield Surfactant Flowback					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Silica Substrate	14808-60-7	100.00000	13.10950	None
			Calcium Nitrate.4H2O	13477-34-4	100.00000	0.10587	None
			Distrillates (Petroleum), Hydrotreated Light	64742-47-8	30.00000	0.02402	
			Distrillates (Petroleum), Hydrotreated Light	64742-47-8	30.00000	0.02402	None
			Proprietary Activating Agent	Proprietary	100.00000	0.02316	None
			Proprietary Activating Agent	Proprietary	100.00000	0.02316	
			Hydrochloric Acid	7647-01-0	15.00000	0.02296	None

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			Hydrotreated light distillate (petroleum)	64742-47-8	100.00000	0.01375	None
			Sodium Chloride	7647-14-5	100.00000	0.00934	None
			Alcohols, C11-14-ISO, C13-Rich, Ethoxylated	78330-21-9	5.00000	0.00400	None
			Alcohols, C11-14-ISO, C13-Rich, Ethoxylated	78330-21-9	5.00000	0.00400	
			Alcoholols, C10-14, Ethoxylated	66455-15-0	50.00000	0.00123	
			Alcoholols, C10-14, Ethoxylated	66455-15-0	50.00000	0.00123	None
			Alkyl phosphonic acid	Proprietary	5.00000	0.00117	None
			Alkyl phosphonic acid	Proprietary	5.00000	0.00117	
			Sodium nitrate	7631-99-4	5.00000	0.00047	None
			Methanol	67-56-1	30.00000	0.00025	
			Methanol	67-56-1	30.00000	0.00025	None
			Cationic copolymer of acrylamide	69418-26-4	30.00000	0.00019	None
			Cationic copolymer of acrylamide	69418-26-4	30.00000	0.00019	
			Hydrotreated light distillate (petroleum)	64742-47-8	30.00000	0.00019	None
			Hydrotreated light distillate (petroleum)	64742-47-8	30.00000	0.00019	
			Ammonia	7664-41-7	0.50000	0.00012	
			Ammonia	7664-41-7	0.50000	0.00012	None
			Petroleum Distillates	64742-47-8	60.00000	0.00005	None
			Ethylene glycol	107-21-1	40.00000	0.00003	None
			Proprietary Ingredient	Proprietary	5.00000	0.00003	
			Proprietary Ingredient	Proprietary	5.00000	0.00003	None
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00003	None
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00003	
			Cinnamaldehyde	104-55-2	20.00000	0.00002	None
			Butyl cellosolve	111-76-2	20.00000	0.00002	None

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			Formic acid	64-18-6	20.00000	0.00002	None
			Naphtha, Hydrotreated Heavy	64742-48-9	1.00000	0.00001	None
			Naphtha, Hydrotreated Heavy	64742-48-9	1.00000	0.00001	
			Polyether	Proprietary	10.00000	0.00001	None
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00000	None
			Ammonium Persulfate	7727-54-0	100.00000	0.00000	None

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

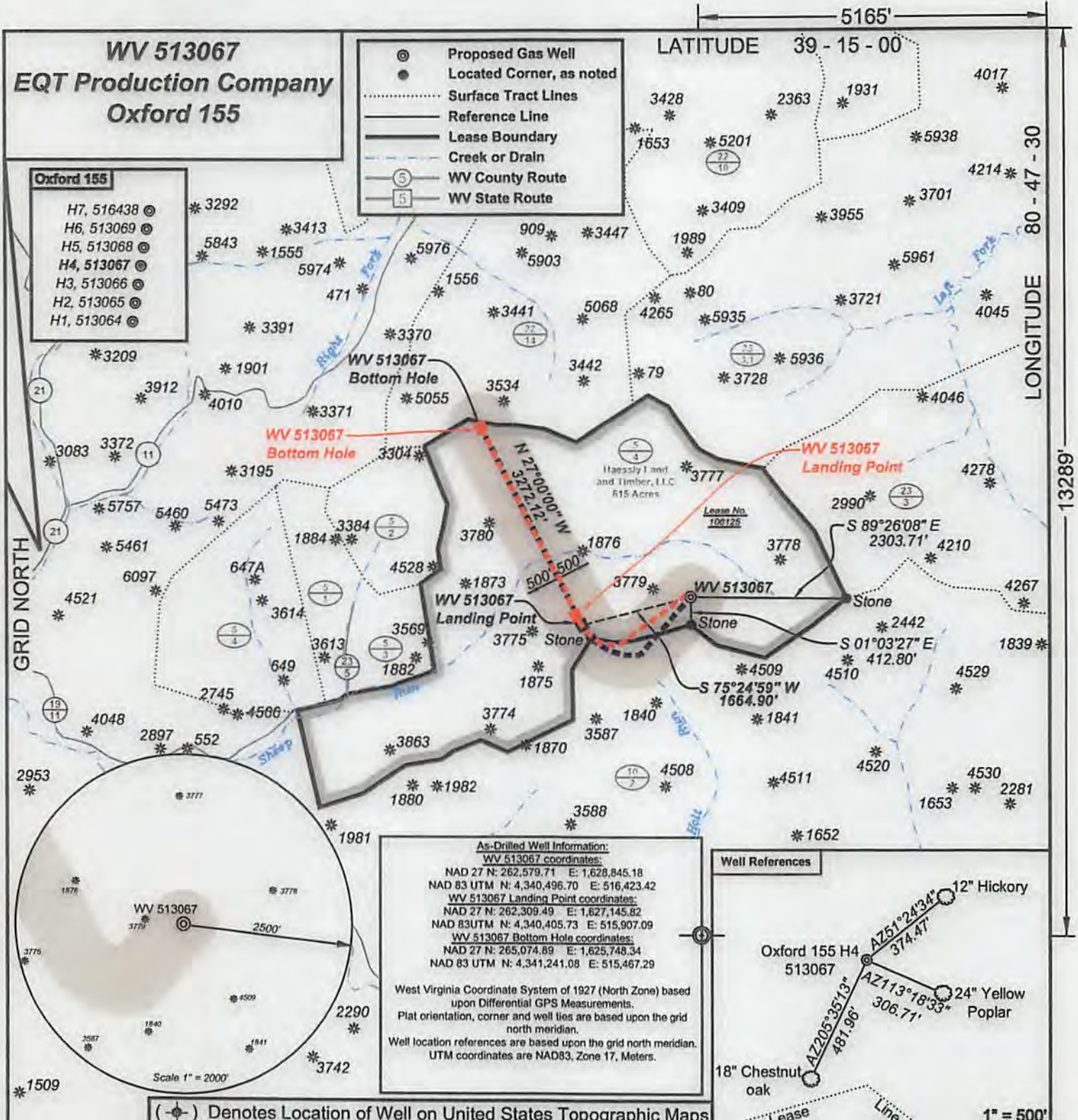
** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

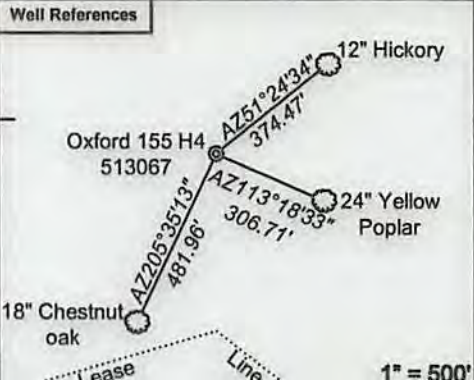
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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As-Drilled Well Information:
WV 513067 coordinates:
 NAD 27 N: 262,579.71 E: 1,628,845.18
 NAD 83 UTM N: 4,340,496.70 E: 516,423.42
WV 513067 Landing Point coordinates:
 NAD 27 N: 262,309.49 E: 1,627,145.82
 NAD 83 UTM N: 4,340,405.73 E: 515,907.09
WV 513067 Bottom Hole coordinates:
 NAD 27 N: 265,074.89 E: 1,625,748.34
 NAD 83 UTM N: 4,341,241.08 E: 515,467.29

West Virginia Coordinate System of 1927 (North Zone) based upon Differential GPS Measurements.
 Plat orientation, corner and well lies are based upon the grid north meridian.
 Well location references are based upon the grid north meridian.
 UTM coordinates are NAD83, Zone 17, Meters.



(-o-) Denotes Location of Well on United States Topographic Maps



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 the regulations issued and prescribed by the Department of Environmental Protection.

Ben R. Singleton
 P.S. 2092



FILE NO: 239-13
 DRAWING NO: Oxford 155 H4
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1:2500
 PROVEN SOURCE OF ELEVATION: NGS CORS Station



DATE: September 15 20 17
 OPERATOR'S WELL NO. 513067
 API WELL NO 47 - 017 - 06758
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original 1212 Proposed 1199 WATERSHED Sheep Run of South Fork of Hughes River QUADRANGLE: Oxford
 DISTRICT: South West COUNTY: Doddridge
 SURFACE OWNER: Haessly Land & Timber, LLC ACREAGE: 615
 ROYALTY OWNER: Eli Nutter Heirs LEASE NO: 106125 ACREAGE: 615
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD 6,611

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
 ADDRESS: 115 Professional Place PO Box 280 ADDRESS: 115 Professional Place PO Box 280
 Bridgeport, WV 26330 Bridgeport, WV 26330

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