

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

API 47 - 061 - 01792 County Monongalia District Clay
Quad Blacksville Pad Name MEPCO Field/Pool Name _____
Farm name MEPCO, LLC Well Number MEPCO 11H
Operator (as registered with the OOG) Northeast Natural Energy LLC
Address 707 Virginia Street E., Suite 1200 City Charleston State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4390694.1 Easting 572697.4
Landing Point of Curve Northing 4390303.6 Easting 570458.6
Bottom Hole Northing 4392574.7 Easting 570318.7

Elevation (ft) 1,420' 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)
Synthetic Based Mud - Horizontal Section: BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-SEAL PLUS, HRP, LIME, M-I WATE (BARITE),
M-I-X II MEDIUM, MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT PLUG MEDIUM

Date permit issued 12/01/2017 Date drilling commenced 02/22/2018 Date drilling ceased 7/29/2018
Date completion activities began 11/8/2018 Date completion activities ceased 12/3/2018
Verbal plugging (Y/N) N Date permission granted NA Granted by NA **RECEIVED**
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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug **SEP 9 2019**

Freshwater depth(s) ft 906' Open mine(s) (Y/N) depths N WV Department of Environmental Protection
Salt water depth(s) ft 2027', 2250', 2460' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 848', 930' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by: MJR 10/28/2019

API 47-061 - 01792

Farm name MEPCO, LLC

Well number MEPCO 11H

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"	24"	40'	N	N/A	N/A	Grouted In
Surface	17-1/2"	13-3/8"	1,410'	N	54.5	N/A	Y, 30 bbl
Coal							
Intermediate 1	12-1/4"	9-5/8"	2425'	N	40	N/A	Y, 20 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	18,754'	N	20	N/A	N
Tubing	N/A	2-7/8"		N		N/A	
Packer type and depth set							

Comment Details _____

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	4,500 PSI Grout	40	-	3Yds	-	CTS	-
Surface	Class A + 2%	1136	15.6	1.18	1340	CTS	8
Coal							
Intermediate 1	Class A + 1%	800	15.6	1.19	952	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class A + Additives	3560	14.5	1.16	4,125	1280'	48
Tubing							

Drillers TD (ft) 18,794'

Loggers TD (ft) 18,764'

Deepest formation penetrated Marcellus

Plug back to (ft) NA

Plug back procedure NA

Kick off depth (ft) 5,723'

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 _____

Surface: Bow spring centralizers every 3rd joint or approximately 120'

Intermediate: Bow spring centralizers every 3rd joint or approximately 120'

Production: Rigid body centralizers placed at a minimum of every other joint (~80') from TD to surface

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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Lithology/Formation	Top Depth in FT TVD	Bottom Depth in FT TVD	Describe rock type and record quantity and type of fluid (freshwater, brine, oil, gas, H2S, etc)
Shale/Sand	0	384	Shale/Sand
Shale	384	400	Shale
sand/shale	400	466	sand/shale
shale	466	470	shale
Sandstone/shale/coal	470	570	Sandstone/shale/coal
sand/shale	570	848	sand/shale
coal	848	853	coal
sand/shale	853	930	sand/shale
coal	930	933	sandstone/shale/coal - water @ 906'
sand/shale	933	1214	sand/shale
shale/red rock	1214	1651	shale/red rock
sand/shale	1651	2010	sand/shale
red rock	2010	2110	red rock
Big Lime	2110	2248	Big Lime
Big Injun	2248	2370	Big Injun
siltstone	2370	2430	siltstone
Berea	2430	2450	Berea
siltstone	2450	2610	siltstone
Gantz	2610	2630	Gantz
Upper Devonian undifferentiated	2630	2920	Upper Devonian undifferentiated
red rock/siltstone	2920	3080	red rock/siltstone
Devonian silt/sand/shale	3080	7290	Devonian silt/sand/shale
Middlesex	7290	7530	Middlesex
Burkett	7530	7710	Burkett
Geneseo	7710	7770	Geneseo
Tully	7770	7830	Tully
Hamilton	7830	7890	Hamilton
Marcellus	7890	8082	Marcellus
Onondaga	8082	8114	Onondaga
Huntersville chert	8114		Huntersville chert

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MEPCO 11H STIMULATION INFORMATION

Stage Number	Report Date	Avg Treating Rate	Avg Treating Pressure (psi)	Breakdown Pressure (psi)	ISIP (psi)	Total Proppant Amount (lbs)	Flush Volume (bbls)	Total Clean Fluid (Bbls)	Pad Volume (bbls)
1	11/8/2018	80	8,989	8,429	5,419	301,380	416	7,623	1,100
2	11/8/2018	81	9,208	7,862	5,763	452,060	411	9,652	538
3	11/9/2018	79	9,957	7,766	6,681	416,630	408	10,160	462
4	11/9/2018	80	10,029	6,989	5,500	449,540	402	9,641	450
5	11/10/2018	79	10,113	8,239	5,805	450,380	399	9,554	214
6	11/11/2018	78	9,842	7,919	6,328	450,160	400	9,864	195
7	11/11/2018	80	9,686	7,001	6,383	455,740	387	9,557	475
8	11/12/2018	78	9,729	7,525	6,423	451,980	390	9,755	160
9	11/12/2018	79	9,941	8,301	5,543	450,200	384	9,590	445
10	11/13/2018	78	10,077	8,638	5,779	450,000	382	9,829	429
11	11/13/2018	81	9,972	7,734	5,823	451,380	372	9,956	460
12	11/14/2018	79	9,658	7,916	6,054	450,560	374	9,255	86
13	11/14/2018	80	9,874	7,347	6,323	450,740	365	9,821	429
14	11/14/2018	79	9,320	7,415	6,389	451,080	355	13,368	570
15	11/17/2018	80	9,308	7,237	5,873	448,620	355	10,196	520
16	11/17/2018	83	9,503	7,387	6,182	449,900	353	9,629	590
17	11/18/2018	80	9,332	7,148	5,294	450,900	345	9,232	453
18	11/18/2018	81	9,399	7,494	6,068	439,340	339	9,787	438
19	11/19/2018	82	9,654	7,756	6,105	452,390	335	9,595	450
20	11/19/2018	83	9,872	7,783	5,886	455,480	338	9,854	405
21	11/20/2018	85	10,185	8,048	5,499	448,760	333	9,309	400
22	11/20/2018	85	9,458	7,034	5,381	449,940	323	9,835	25
23	11/21/2018	83	9,722	7,486	5,227	447,920	323	9,644	400
24	11/21/2018	79	9,333	7,475	5,437	450,280	329	9,434	429
25	11/21/2018	82	9,522	7,310	6,030	451,130	312	9,840	400
26	11/22/2018	81	9,757	7,067	5,686	450,020	305	9,727	429
27	11/14/2018	79	9,543	8,223	5,517	436,740	301	10,779	346
28	11/23/2018	81	9,207	7,321	5,546	443,260	302	9,360	396
29	11/23/2018	84	9,230	7,506	5,399	451,290	289	9,780	429
30	11/24/2018	81	9,503	7,541	5,658	450,090	285	9,797	465
31	11/24/2018	80	9,215	7,418	5,218	450,200	274	9,515	429
32	11/25/2018	81	9,194	7,834	6,372	453,560	280	9,692	393
33	11/25/2018	82	9,206	7,360	6,282	386,300	302	8,213	429
34	11/25/2018	83	9,123	7,729	5,106	449,480	267	9,838	430
35	11/26/2018	84	8,994	7,408	5,608	450,920	263	9,753	429
36	11/26/2018	84	8,943	7,362	6,409	449,650	265	9,911	432
37	11/27/2018	80	8,434	6,649	5,298	449,980	253	9,489	400
38	11/27/2018	85	8,998	7,144	5,910	449,610	250	9,546	429
39	11/28/2018	86	9,122	6,903	6,225	452,980	229	8,319	429
40	11/29/2018	82	9,623	7,237	5,617	449,740	242	9,796	420
41	11/29/2018	84	8,827	7,097	5,067	449,180	237	9,796	130
42	11/29/2018	83	8,710	7,113	5,063	450,540	232	9,012	50
43	11/30/2018	80	8,294	7,608	5,980	449,260	227	10,087	429
44	12/1/2018	84	8,470	8,090	5,849	449,380	227	9,186	80
45	12/1/2018	85	8,463	7,180	5,530	451,400	218	9,546	429
46	12/1/2018	85	8,244	6,847	5,578	449,990	219	8,886	90
47	12/1/2018	84	8,657	7,394	5,589	449,500	220	9,372	90

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MEPCO 11H PERFORATION RECORD				
Stage Number	Report Date	Cluster 5 Bottom TD	Cluster 1 Top TD	Total Shots
1	11/8/2018	-	18,702	-
2	11/8/2018	18,406	18,565	40
3	11/9/2018	18,203	18,363	40
4	11/9/2018	18,001	18,161	40
5	11/10/2018	17,799	17,959	40
6	11/11/2018	17,597	17,757	40
7	11/11/2018	17,395	17,554	40
8	11/12/2018	17,193	17,352	40
9	11/12/2018	16,990	17,150	40
10	11/13/2018	16,788	16,948	40
11	11/13/2018	16,586	16,746	40
12	11/14/2018	16,384	16,544	40
13	11/14/2018	16,182	16,341	40
14	11/14/2018	15,980	16,139	40
15	11/17/2018	15,777	15,937	40
16	11/17/2018	15,575	15,735	40
17	11/18/2018	15,373	15,533	40
18	11/18/2018	15,171	15,331	40
19	11/19/2018	14,969	15,128	40
20	11/19/2018	14,767	14,926	40
21	11/20/2018	14,564	14,724	40
22	11/20/2018	14,362	14,522	40
23	11/21/2018	14,160	14,320	40
24	11/21/2018	13,958	14,118	40
25	11/21/2018	13,756	13,915	40
26	11/22/2018	13,554	13,713	40
27	11/14/2018	13,351	13,511	40
28	11/23/2018	13,149	13,309	40
29	11/23/2018	12,947	13,107	40
30	11/24/2018	12,745	12,905	40
31	11/24/2018	12,543	12,702	40
32	11/25/2018	12,341	12,500	40
33	11/25/2018	12,138	12,298	40
34	11/25/2018	11,936	12,096	40
35	11/26/2018	11,734	11,894	40
36	11/26/2018	11,532	11,692	40
37	11/27/2018	11,330	11,489	40
38	11/27/2018	11,128	11,287	40
39	11/28/2018	10,925	11,085	40
40	11/29/2018	10,723	10,883	40
41	11/29/2018	10,521	10,681	40
42	11/29/2018	10,319	10,479	40
43	11/30/2018	10,117	10,276	40
44	12/1/2018	9,915	10,074	40
45	12/1/2018	9,712	9,872	40
46	12/1/2018	9,510	9,670	40
47	12/1/2018	9,308	9,468	40

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API Permit #: 47-061-01769

Customer: Northeast

Lease and Well Name: Mecco 11-H

A.F.E #: 100401-602



Job Type: 13.375 Surface

Cement Operator: Ralph Hiles

Date Cemented: 2/24/2018

Drilling Contractor: Highlands 8

Cement Slurry Information							
No. of Sacks	Cement Blend Composition	Yield (ft ³ /sk)	MixWater (gal/sk)	Density (lb/gal)	(bbl) Mix Water	(ft ³) Of Slurry	(bbl) Of Slurry
1136	Class A + 2% CaCl ₂ + .25 % Celloflake	1.18	5.20	15.6	141	1340	239
Totals					141	1340	239

Wellbore Information									
	New/Used	Diameter (in)	Weight (lb/ft)	Top (ft)	Bottom (ft)	Collapse/Burst Pressures (psi)		Requested TOC (ft)	Surface
Casing	New	13 3/8	54.5	0	1,410			TVD (ft)	1,424
Previous Casing		24		0	40			Displacement Depth (ft)	1,358
Tubing or Drillpipe									
Open Hole		17 1/2		1,410	1,424			Displacement (bbl)	212.0
Open Hole									

Pumping Returns		Cement Slurry Temperature Record (°F)					Fluid Information	
Spacer or Gel Sweep Return Seen At Surface	Yes	Cement	Reading 1	Reading 2	Reading 3	Average	Mix Water Temp (°F)	54
Cement Returns Seen at Surface	Yes	Blend 1	68	68	68	68	Displacement Fluid Type	Water
Amount of Cement Returns (BBL)	30	Blend 2					Displacement Fluid Temp (°F)	54
		Blend 3					Displacement Fluid Density (lb/gal)	8.4

Time	Rate (bpm)	Volume (bbl)	Pressure (psi)	Event or Stage Description
17:30				Arrive on location
17:01				Wait on rig to run casing
17:30				Spot trucks, Rig up, Wait on rig to run casing
19:15				Hold Safety Meeting
19:33	3.0	3	2700	Pump Fresh Water , Pressure test
19:35	5.5	180	100	Load casing with processed water
20:03	5.5	10	100	Switch to fresh water
20:05	5.5	25	105	Pump Gel with fresh water
20:10	5.5	10	100	Pump Fresh Water
20:12	5.5	1136 sacks / 241 bbl	275	Mix and Pump Cement at 15.6
20:55				Shut Down, Drop Plug
20:58	6.0	212	90 to 540	Displace Plug with processed water
21:30	3.5		540	Plug Lands, Bump plug to 900, Shut Down
21:35		1 barrel back	900	Hold 5 Minutes, Release Pressure
21:40			900 to 0	Floats Hold
21:55				Wash Up, Rack Out
23:00				Leave Location

Comments:

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Thank You for your Business

UWS Cement Operator Signature:

Ralph Hiles

Customer Representative Signature:



Cement Job Log

Customer: NORTHEAST NATURAL ENERGY LLC	Date: 7/28/2018	Serv. Supervisor: Jason Beeson
Cust. Rep.: josh	Ticket #: JWV1807-0042	Serv. Center: Jane Lew, WV
Lease: Mepco 11H	API Well #:	County: Monongalia State: West Virginia
Well Type:	Rig: Patterson 334	Type of Job: Production Casing

Materials Furnished by C&J ENERGY SERVICES

Plugs	Casing Hardware	Physical Slurry Properties					
		Sacks of Cement	Fluid Dens (lb/gal)	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbls)	Mix Water (bbls)
Spacer 1:	CJ810 PureScrub Spacer + 1 gal/bbl CPC35	-	13.5			100	
Lead							
Tail:	50:50 CJ010:CJ910 + 0.25% CJ210F + 0.1% CJ501 + 0.2% CJ504 + 0.2% CJX157011	3560	14.5	1.16	4.91	734	416

Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA								
SIZE (in)	EXCESS (%)	DEPTH (ft)	TYPE (CSG/TBG/DP)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
8 3/4		6402	Casing	5 1/2	20		18754		4.79		
8 1/2		18754									

PREVIOUS CASING DATA				PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
SIZE (in)	WEIGHT (lbs/ft)	ID (in)	DEPTH (ft)	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
9 5/8	40	8.84	2425					18754	18729		

WELL FLUID		DISPLACEMENT FLUID (STG 1)			DISPLACEMENT FLUID (STG 2)			WATER ON LOC (bbl)	DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)
TYPE	DENSITY	VOLUME	TYPE	DENSITY	VOLUME	TYPE	DENSITY				
		414 bbl	fresh	8.3 ppg				2000	2650	6964	6500

Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press. (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details
10:00 PM						0	arrived on location
4:00 AM						0	spot trucks rig up
9:30 AM						0	safety meeting
9:45 AM						0	psi test @ 6500 launch bottom plug
9:50 AM						0	preload top plug
10:05 AM	6	1035			100	100	spacer slurry @ 13.5 ppg
10:17 AM	8.3	1768			735	835	tail slurry @ 14.5 ppg
10:39 AM	9.6	2075				835	tail slurry @ 14.5 ppg
10:55 AM	5.3	1900				835	bottom plug down
10:57 AM	9.3	2380				835	tail slurry @ 14.5 ppg
11:44 AM						835	shut down wash lines
11:49 AM	9.3	2862			414	1249	drop top plug
12:14 PM	7	4757				1249	displacement
12:37 PM	6.7	5037				1249	spacer to surface @ 355 bbl 59 bbl return
12:48 PM	5	4681				1249	slow rate
12:49 PM		5450				1249	plug down
12:54 PM						1249	float held 7 bbl return
12:56 PM		5159				1249	re bump plug
1:01 PM						1249	float held 7 bbl return
						1249	
						1249	
						1249	
						1249	
						1249	

Left Yard	7/27/18 7:00 PM	Left Loc.	7/28/18 3:00 PM	Start Pump	7/28/18 10:05 AM
Arrived Loc.	7/27/18 10:00 PM	Returned Yd		End Pump	7/28/18 1:00 PM

Bumped Plug (psi)	Final Differential (psi)	Floats Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Full Circ. During Job (Y/N)	Max Pump Pressure (psi)	Standby Charged (hrs)	Signature
Yes	4681	Yes	0	0	Yes	5450	13	Jason Beeson Office of Oil and Gas Service Supervisor

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NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
 Field: Monongalia
 Facility: MEPCO Pad

Slot: Slot #11
 Well: MEPCO LLC 11H
 Wellbore: MEPCO LLC 11H PWB

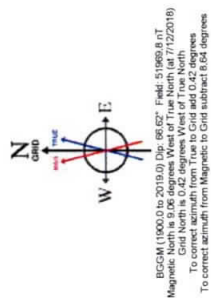
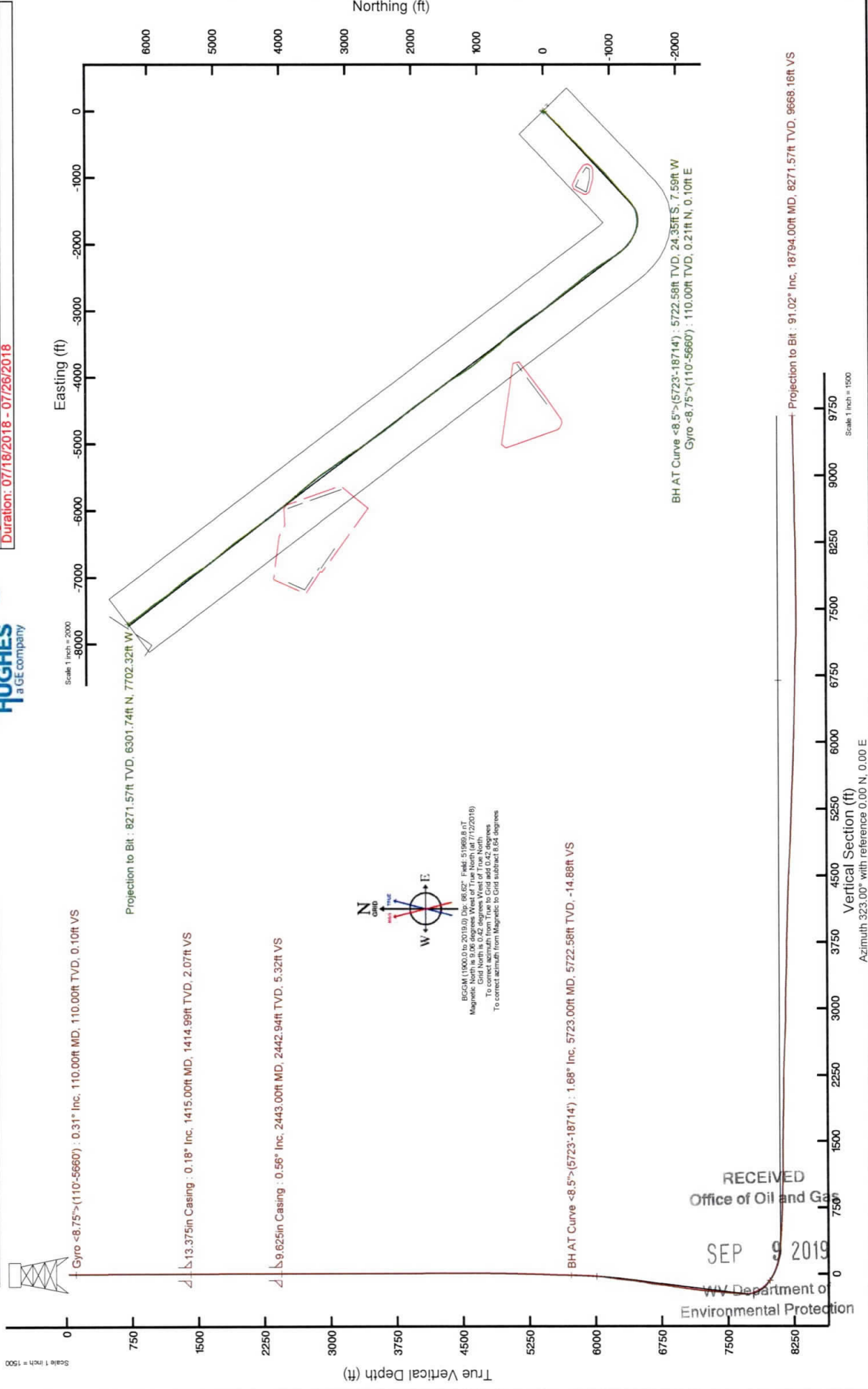
Fig reference wellbore is MEPCO LLC 11H PWB Rev A.0	Grid System: NAD83 / Lambert West Virginia 3P / NAD83 Zone 18N, US Feet
True vertical depths are referenced to Patterson 334 (KB)	* - Wellbore was transformed from a different geoidic datum
Measured depths are referenced to Patterson 334 (KB)	North Reference: Grid north
Patterson 334 (KB) to Mean Sea Level: 1440 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: Slot #11): -1424 feet	Depth are in feet
Coordinates are in feet referenced to BH	Created by: Inhouse on 2018/07/27
	Database: WVA_PetroData

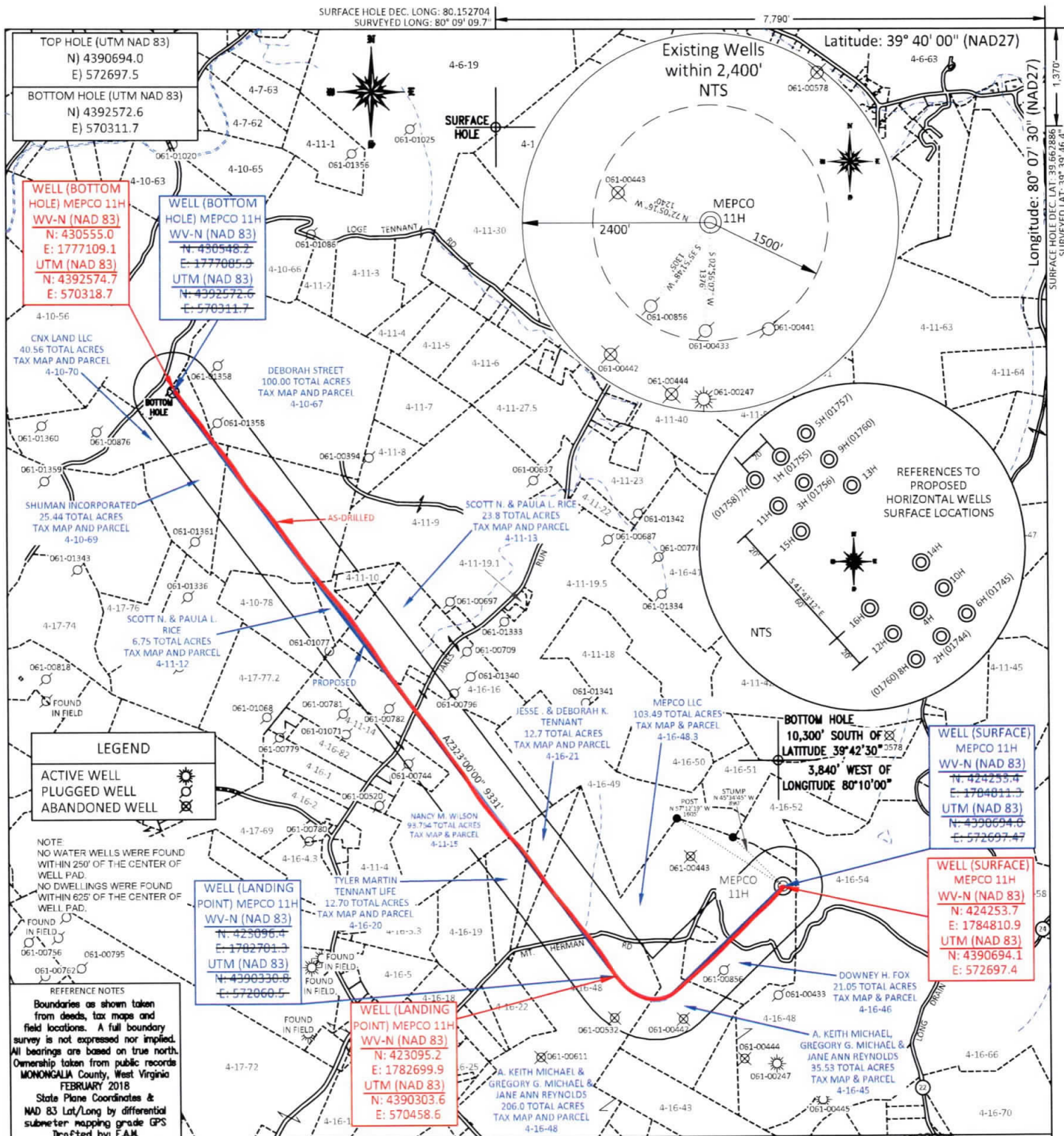


Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
MEPCO Pad	1784821.230	424282.090	80°09'08.866"W
Local N (ft)	Local E (ft)	Grid North (US ft)	Latitude
-28.73	-9.88	1784811.250	39°39'46.677"N
Slot #11			25ft
Patterson 334 (KB) to Ground level (At Slot: Slot #11)			-1424ft
Mean Sea Level to Ground level (At Slot: Slot #11)			1440ft

Comments

API: 47-081-01792-0000
 BH Job #: 9264736
 Rig: Patterson 334
 Duration: 07/18/2018 - 07/26/2018





FILE #: NNE16
 DRAWING #: 2932
 SCALE: PLAT: 1" = 1800'
TICK: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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.

Signed: [Signature]
 L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WYDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

Well Type: Oil Waste Diposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: DUNKARD CREEK
 COUNTY/DISTRICT: MONONGALIA / CLAY
 SURFACE OWNER: MEPCO LLC
 OIL & GAS ROYALTY OWNER: NNE LLC ET AL
 LEASE NUMBERS: _____

DATE: AUGUST 5, 2019
 OPERATOR'S WELL #: MEPCO 11H (AS-DRILLED)
 API WELL #: 47 61 01792
 STATE COUNTY PERMIT
 AS-BUILT ELEVATION: 1,420.20'
 QUADRANGLE: BLACKSVILLE
 ACREAGE: 103.49 +/-
 ACREAGE: 361.72 +/-

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS
 ESTIMATED DEPTH: TVD: 8,222' TMD: 18,893.51'
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
 DESIGNATED AGENT: JOHN ADAMS
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301