

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

API 47-033-05768 County Harrison District Union
Quad Mount Clare Pad Name Paletta Field/Pool Name _____
Farm name Domineck Paletta Estate C/O Tony Paletta, G. Diane Sullivan Well Number 3
Operator (as registered with the OOG) Arsenal Resources
Address 6031 Wallace Road Ext., Ste 300 City Wexford State PA Zip 15090

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4340235.65 Easting 554642.38
Landing Point of Curve Northing 4340403.58 Easting 554799.99
Bottom Hole Northing 4341680.15 Easting 554325.58

Elevation (ft) 1165 1161.40 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 Oil-Based Mud

Date permit issued 9/20/2013 Date drilling commenced 5/11/2015 Date drilling ceased 4/13/2017
Date completion activities began 05/17/2017 Date completion activities ceased 05/29/2017
Verbal plugging (Y/N) N Date permission granted NA Granted by NA

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

Freshwater depth(s) ft _____ Open mine(s) (Y/N) depths N
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths N
Coal depth(s) ft _____ Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

APPROVED
NAME: S. Debnath
DATE: 11/13/2017

Reviewed by:
[Signature]

01/05/2018

API 47- 033 - 05768

Farm name Dominock Paletta Estate C/O Tony Paletta, G. Diane Sullivan Well number 3

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"	80'	New	94.00	NA	Y
Surface	17 1/2"	13 3/8"	587'	New	54.50	120'	Y
Coal	NA	NA	NA	NA	NA	NA	NA
Intermediate 1	12 1/4"	9 5/8"	2,628.8'	New	40	NA	Y
Intermediate 2	NA	NA	NA	NA	NA	NA	NA
Intermediate 3	NA	NA	NA	NA	NA	NA	NA
Production	8 1/2"	5 1/2"	12,251'	New	20	NA	N
Tubing	NA	NA	NA	NA	NA	NA	NA
Packer type and depth set		NA					

Comment Details Cement to surface on Conductor, Surface, and Intermediate. Top of Cement at 1,600'

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	A	210	15.60	1.20	252	Surface	8+
Surface	A	568	15.60	1.20	681.6	Surface	8+
Coal	NA	NA	NA	NA	NA	NA	NA
Intermediate 1	A	536/172	14.50/15.70	1.55/1.29	830.8/221.88	Surface	8+
Intermediate 2	NA	NA	NA	NA	NA	NA	NA
Intermediate 3	NA	NA	NA	NA	NA	NA	NA
Production	A	896/1080	13.8/15.00	1.33/1.33	1191.68/1436.4	1,600'	8+
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 12,258 Loggers TD (ft) NA

Deepest formation penetrated Marcellus Plug back to (ft) NA

Plug back procedure NA

Kick off depth (ft) KOP of Curve at 6232, No Plug

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 _____

24" - No centralizers 13 3/8" - one bow spring centralizer on every other joint 9 5/8" - one bow spring centralizer every third joint from TD to surface 5 1/2" - one semi rigid centralizer on every joint from TD of casing to end of
Then every other joint to KOP. Every third joint from KOP to 2,500'; there will be no centralizers from 2,500' to surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS 23 stages, 920 perforations

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 033 - 05768

Farm name Dominick Paletta Estate C/O Tony Paletta, G. Diana Sullivan

Well number 3

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		See Attached			

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations 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)
			See Attached					

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Please insert additional pages as applicable.

Stage No.	Perforation Date	Perforated From MD Ft.	Perforated to MD Ft.	Number of Perforations	Formation(s)
1	5/28/2017	7606	7768	40	Marcellus Shale
2	5/28/2017	7806	7968	40	Marcellus Shale
3	5/28/2017	8006	8168	40	Marcellus Shale
4	5/27/2017	8206	8368	40	Marcellus Shale
5	5/27/2017	8406	8568	40	Marcellus Shale
6	5/26/2017	8606	8768	40	Marcellus Shale
7	5/25/2017	8806	8968	40	Marcellus Shale
8	5/25/2017	9006	9168	40	Marcellus Shale
9	5/25/2017	9206	9368	40	Marcellus Shale
10	5/24/2017	9406	9568	40	Marcellus Shale
11	5/23/2017	9606	9768	40	Marcellus Shale
12	5/23/2017	9806	9968	40	Marcellus Shale
13	5/22/2017	10006	10168	40	Marcellus Shale
14	5/22/2017	10206	10368	40	Marcellus Shale
15	5/21/2017	10406	10568	40	Marcellus Shale
16	5/21/2017	10606	10768	40	Marcellus Shale
17	5/21/2017	10806	10968	40	Marcellus Shale
18	5/20/2017	11006	11168	40	Marcellus Shale
19	5/19/2017	11206	11368	40	Marcellus Shale
20	5/19/2017	11406	11568	40	Marcellus Shale
21	5/18/2017	11606	11768	40	Marcellus Shale
22	5/17/2017	11806	11968	40	Marcellus Shale
23	5/16/2017	12006	12165	40	Marcellus Shale

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Stage	Stimulation	Average	Average	Breakdown	ISIP	Sand	Water
Number	Date	Rate	Pressure	Pressure		Volume	Volume
		(bpm)	(psi)	(psi)	(psi)	lbs	Bbls
1	5/17/2017	75	7951	5622	4278	497860	12631
2	5/18/2017	70	8044	7927	4488	417720	11372
3	5/19/2017	77	7898	7201	4947	500840	13165
4	5/19/2017	80	7422	6157	4997	503360	9478
5	5/20/2017	77	7636	6339	5181	484780	9926
6	5/20/2017	80	7567	6401	4970	494520	10732
7	5/21/2017	80	7482	6103	5246	503680	10194
8	5/21/2017	75	7853	6279	4851	458720	11991
9	5/22/2017	80	7485	6284	4755	499020	10067
10	5/22/2017	79	7306	6528	4974	506300	9673
11	5/23/2017	79	7415	6345	5183	499380	9934
12	5/23/2017	69	7936	5460	4942	500200	14327
13	5/24/2017	81	7875	6796	5230	504660	13090
14	5/24/2017	76	7445	6767	5018	497120	10841
15	5/25/2017	66	8162	7025	4849	500280	15461
16	5/25/2017	77	7642	6560	5521	442860	12421
17	5/26/2017	80	7629	9933	5433	504980	10221
18	5/27/2017	79	7439	6463	5169	502380	10608
19	5/27/2017	80	7182	6594	5560	500900	9802
20	5/27/2017	78	7596	7157	5688	501120	9737
21	5/28/2017	79	7561	6941	5215	502960	9555
22	5/28/2017	80	7018	3525	5509	504100	9632
23	5/28/2017	78	7431	6609	5378	499760	11255

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus Shale	7188	TVD	7484 MD
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
Sand/silt	0	6903	0	7030	sand/silt
Burket	6903	6923	7030	7055	Shale
Tully	6923	6998	7055	7160	Limestone
Mahantango	6998	7143	7160	7453	Shale
Marcellus	7143	7188	7453	7484	Shale, gas
Purcell	7188	7192	7484	7494	Limestone, gas
Lower Marcellus	7192	7233	7494	12258	Shale, gas

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Please insert additional pages as applicable.

Drilling Contractor H&P
Address 1437 South Boulder Ave. City Tulsa State OK Zip 74119

Logging Company NA
Address _____ City _____ State _____ Zip _____

Cementing Company Universal
Address 18360 Technology Dr Box 4 City Meadville State PA Zip 16335

Stimulating Company Keane Group
Address 2121 Sage Road City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by Arsenal Resources Telephone _____
Signature [Signature] Title PERMITTING MANAGER Date 8/22/17

Submission of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/17/2017
Job End Date:	5/29/2017
State:	West Virginia
County:	Harrison
API Number:	47-033-05768-00-00
Operator Name:	Arsenal Resources
Well Name and Number:	Paletta 3H
Latitude:	39.21020000
Longitude:	-80.36820000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,233
Total Base Water Volume (gal):	10,930,080
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	Ascent	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.47891	None
Sand (Proppant)	Keane	Proppant	Crystalline silica: Quartz (SiO2)	14808-60-7	100.00000	11.00754	None
Hydrochloric Acid (7.5%)	Keane	Acid Inhibitor	Water	7732-18-5	92.50000	0.36038	None
			Hydrochloric Acid	7647-01-0	7.50000	0.02922	None
KFR-16FW	Keane	Friction Reducer	Water	7732-18-5	60.00000	0.05852	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01951	None
			ammonium chloride	12125-02-9	1.50000	0.00146	None
			oleic acid diethanolamide	93-83-4	1.50000	0.00146	None
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00098	None
MBC-516	Keane	Biocide	Water	7732-18-5	56.70000	0.00499	None
			Glutaral	111-30-8	26.70000	0.00235	None

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			didecylmethylammonium chloride	7173-51-5	8.00000	0.00070	None
			quatamary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00047	None
			ethonal	64-17-5	2.80000	0.00025	None
KLSI-21	Keane	Scale Inhibitor					
			polyphosphoric acids, esters with triethanolamine, sodium salts	68131-72-6	30.00000	0.00464	None
KAI-12	Keane	Acid Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00086	None
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00043	None
			Cinnamaldehyde	104-55-2	10.00000	0.00021	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00021	None
			Ethoxylated alcohol	68131-39-5	10.00000	0.00021	None
			formic acid	64-18-6	10.00000	0.00021	None
			isoproyl alcohol	67-63-0	5.00000	0.00011	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	92.50000	0.36038	
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01951	
			Glutaral	111-30-8	26.70000	0.00235	
			oleic acid diethanolamide	93-83-4	1.50000	0.00146	
			ammonium chloride	12125-02-9	1.50000	0.00146	
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00098	
			didecylmethylammonium chloride	7173-51-5	8.00000	0.00070	
			quatamary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00047	
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00043	
			ethonal	64-17-5	2.80000	0.00025	
			Ethoxylated alcohol	68131-39-5	10.00000	0.00021	
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00021	
			formic acid	64-18-6	10.00000	0.00021	
			Cinnamaldehyde	104-55-2	10.00000	0.00021	
			isoproyl alcohol	67-63-0	5.00000	0.00011	
			Water	7732-18-5	85.00000	0.00010	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

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)

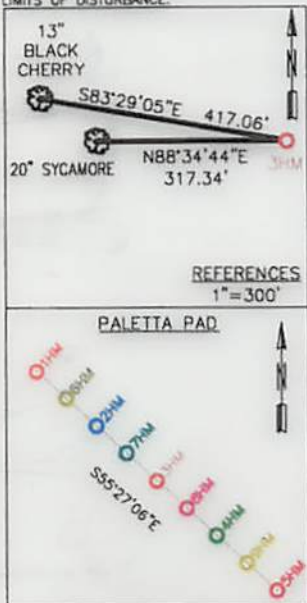
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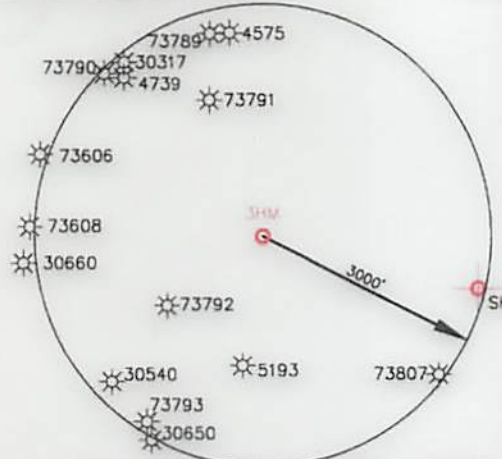
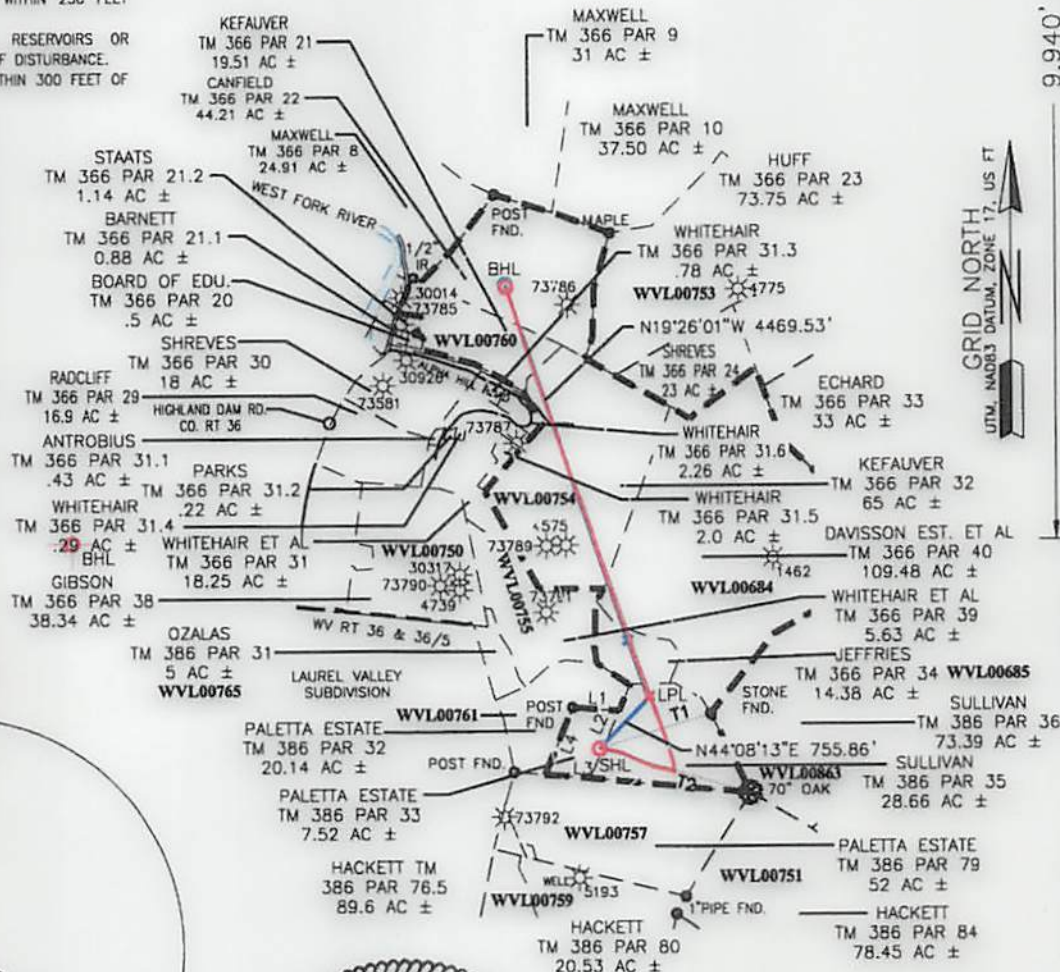
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108
NOTES ON SURVEY

- 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 CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

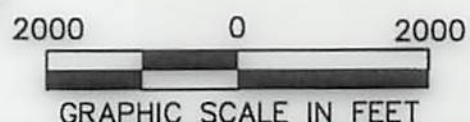


PROPOSED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,340,235.65	
EASTING: 554,642.38	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,340,577.80	
EASTING: 554,728.61	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,341,685.77	
EASTING: 554,323.41	

AS-DRILLED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,340,235.65	
EASTING: 554,642.38	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,340,403.58	
EASTING: 554,799.89	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,341,680.15	
EASTING: 554,325.58	



LINE	BEARING	DISTANCE
L1	S86°10'43"E	487.67'
L2	S23°37'40"W	756.81'
L3	N85°48'29"W	478.81'
L4	N23°04'17"E	750.93'
T1	S73°01'21"W	1218.18'
T2	N73°42'20"W	1648.42'



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. 2270 *MSW* 8/24/17

<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p>	<p>PALETTA PAD</p> <p>OPERATOR'S WELL #: 3HM</p> <p>API WELL #: 47 033 05768 STATE COUNTY PERMIT</p>
	<p>WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW</p> <p>WATERSHED: WEST FORK RIVER</p> <p>DISTRICT: UNION COUNTY: HARRISON</p> <p>SURFACE OWNER: DOMINECK PALETTA, ESTATE</p> <p>OIL & GAS ROYALTY OWNER: DOMINECK PALETTA ESTATE C/O TONY PALETTA, DIANE G. SULLIVAN</p> <p>DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION</p> <p>CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE X (SPECIFY) AS-DRILLED</p> <p>TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,233 TO 12,258 TD</p>	<p>WELL OPERATOR: ARSENAL RESOURCES</p> <p>ADDRESS: 6031 WALLACE ROAD EXTENTION #300</p> <p>CITY: WEXFORD STATE: WV ZIP CODE: 15090</p> <p>DESIGNATED AGENT: WILLIAM VEIGEL</p> <p>ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200</p> <p>CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330</p>