

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

API 47 - 061 - 01800 County Monongalia District Clay
Quad Blacksville Pad Name Yost Field/Pool Name _____
Farm name Yost Heritage Inc. Well Number 7H
Operator (as registered with the OOG) Northeast Natural Energy LLC
Address 707 Virginia St. 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 4388286.9 Easting 567080.6
Landing Point of Curve Northing 4388095.0 Easting 566556.2
Bottom Hole Northing 4390615.9 Easting 564723.6

Elevation (ft) 1,492' 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 7/9/2018 Date drilling commenced 8/28/2018 Date drilling ceased 3/7/2019
Date completion activities began 5/4/2019 Date completion activities ceased 6/2/2019
Verbal plugging (Y/N) NA 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 180', 480', 1,378' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2410' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 775', 930', 1,115' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-061 - 01800 Farm name Yost Heritage Inc. Well number 7H

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	NA	NA	Y, CTS
Surface	17.5	13-3/8	1,480	N	54.5	NA	CTS, 61 bbl
Coal							
Intermediate 1	12.25	9-5/8	2,630	N	40	NA	CTS, 25 bbl
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	19,499'	N	20	NA	N
Tubing							
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	4500 psi grout					CTS	48
Surface	Class A	1,248	15.6	1.1979	1,495	CTS	8
Coal							
Intermediate 1	Class A	839	15.2	1.2618	1,059	CTS	8
Intermediate 2							
Intermediate 3							
Production	Class A	3,119	14.5	1.15	4,210	646'	48
Tubing							

Drillers TD (ft) 19,539' Loggers TD (ft) 19,509'
 Deepest formation penetrated Marcellus Plug back to (ft) NA
 Plug back procedure NA

Kick off depth (ft) 6,441'

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 _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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	120	Shale/Sand
Shale/sand/silt	120	390	Shale/sand/silt with water @ 180'
sand/shale	390	510	sand/shale with water @ 480'
sandstone/siltstone	510	775	sandstone/siltstone
coal	775	780	coal
sandstone/limestone	780	930	sandstone/limestone
coal	930	940	coal
sandstone/limestone	940	1020	sandstone/limestone
Limestone	1020	1050	Limestone
Limestone/siltstone	1050	1110	Limestone/siltstone
coal	1110	1115	coal
Limestone	1115	1140	Limestone
Limestone/sandstone/shale	1114	1260	Limestone/sandstone/shale
red shale/siltstone	1260	1440	red shale/siltstone with water @ 1378'
sandstone/siltstone	1440	1680	sandstone/siltstone
sandstone/siltstone/lime	1680	2310	sandstone/siltstone/lime
Big Lime	2310	2400	Big Lime
Big Injun	2400	2580	Big Injun
siltstone	2580	2620	siltstone
Gantz	2620	2680	Gantz
siltstone	2680	3050	siltstone
Sandstone	3050	3180	Sandstone
Upper Devonian undifferentiated	3180	6000	Upper Devonian undifferentiated
siltstone/shale/gray shale	6000	6450	siltstone/shale/gray shale
Devonian silt/sand/shale	6450	7550	Devonian silt/sand/shale
Middlesex	7550	7770	Middlesex
Burkett	7770	7960	Burkett
Geneseo	7960	8011	Geneseo
Tully	8011	8062	Tully
Hamilton	8062	8176	Hamilton
Marcellus	8176	TD	Marcellus

Yost 7H Stimulation Information

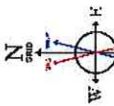
Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbls)
1	43,586	4,713	6,968	8,539	86	552	6,971	299,300	429
2	43,589	4,994	7,960	9,600	90	444	8,947	399,200	430
3	43,589	4,675	7,198	9,492	88	556	8,986	399,060	422
4	43,589	4,440	6,863	9,567	90	413	8,437	401,200	422
5	43,590	5,272	7,076	9,397	89	393	8,617	402,240	413
6	43,591	5,342	7,842	9,178	86	429	9,829	400,660	409
7	43,592	4,550	7,169	9,229	89	592	8,366	382,950	410
8	43,592	4,891	8,024	9,275	87	440	7,956	402,640	400
9	43,592	4,668	8,056	8,992	81	326	7,766	401,320	396
10	43,593	4,804	8,078	8,897	84	541	8,511	404,060	391
11	43,593	4,972	7,362	8,742	82	282	8,120	401,500	388
12	43,594	4,981	7,937	8,561	80	394	7,627	405,600	382
13	43,594	4,610	8,542	8,755	79	227	7,937	401,020	382
14	43,594	4,872	7,751	8,701	79	357	7,650	402,520	379
15	43,595	5,212	7,754	8,562	80	423	7,615	401,460	369
16	43,595	4,846	7,984	8,906	81	360	7,654	405,850	370
17	43,596	4,875	8,474	8,805	81	127	8,131	398,000	364
18	43,596	5,141	8,194	8,881	86	340	7,830	403,020	360
19	43,597	5,062	8,602	8,621	81	165	8,173	401,120	352
20	43,597	4,911	8,347	8,953	83	392	8,049	400,670	347
21	43,598	5,689	6,331	8,378	81	429	7,730	400,600	347
22	43,599	4,975	7,594	8,410	81	118	7,905	398,340	346
23	43,599	5,044	7,848	8,435	82	109	7,994	401,040	343
24	43,600	4,887	7,605	8,379	82	225	7,544	401,720	332
25	43,600	5,225	7,380	8,219	81	138	8,601	399,740	326
26	43,600	4,777	7,434	8,432	82	203	7,561	401,180	322
27	43,601	4,757	8,006	8,271	81	175	7,793	398,260	318
28	43,601	5,013	8,034	8,494	80	164	7,760	405,580	313
29	43,602	5,210	7,551	8,295	82	232	7,840	402,920	309
30	43,602	5,591	7,785	8,580	79	192	7,762	400,720	304
31	43,603	5,745	8,014	8,409	81	95	7,856	407,360	303
32	43,603	5,908	7,303	8,180	80	225	7,632	402,930	292
33	43,604	5,370	7,715	8,052	81	243	8,058	406,040	292
34	43,604	5,668	8,228	8,418	80	117	7,576	405,160	288
35	43,605	5,794	7,608	8,339	82	198	7,526	400,680	283
36	43,605	5,697	7,567	8,214	80	313	7,581	405,080	275
37	43,608	5,890	7,606	8,125	80	181	8,220	399,740	272
38	43,609	5,681	7,932	7,790	80	151	8,059	400,150	270
39	43,610	5,424	7,379	7,870	80	407	8,773	399,660	263
40	43,610	5,609	7,406	8,006	79	126	7,935	401,000	260
41	43,611	5,280	7,872	7,265	80	376	9,166	398,840	254
42	43,611	5,072	7,157	7,977	80	210	8,253	402,800	251
43	43,612	5,320	7,618	7,667	80	187	8,089	404,340	250
44	43,612	5,710	7,320	7,625	80	545	8,477	406,360	241
45	43,613	5,320	6,648	7,535	79	116	7,740	400,520	232
46	43,613	5,143	7,125	7,645	80	202	8,233	407,420	232
47	43,614	5,579	7,653	7,656	80	160	7,942	402,380	230
48	43,614	4,704	6,619	7,615	80	84	8,488	400,420	225
49	43,615	5,257	7,236	7,481	80	120	8,020	402,020	223
50	43,615	5,237	7,060	7,283	79	215	8,258	399,760	217
51	43,616	5,259	7,967	7,659	81	94	8,034	403,820	210
52	43,616	4,892	8,231	7,849	82	146	7,830	400,380	207
53	43,616	4,890	7,795	7,514	81	218	8,111	400,780	198

Yost 7H Perforation Record				
Stage Number	Report Date	Cluster 5 Bottom TD	Cluster 1 Top TD	Total Shots
1	5/1/2019	0	19,450	0
2	5/4/2019	19,161	19,318	40
3	5/4/2019	18,961	19,119	40
4	5/4/2019	18,762	18,919	40
5	5/5/2019	18,562	18,720	40
6	5/6/2019	18,363	18,520	40
7	5/7/2019	18,163	18,321	40
8	5/7/2019	17,964	18,121	40
9	5/7/2019	17,764	17,922	40
10	5/8/2019	17,565	17,722	40
11	5/8/2019	17,365	17,523	40
12	5/9/2019	17,166	17,323	40
13	5/9/2019	16,966	17,124	40
14	5/9/2019	16,767	16,924	40
15	5/10/2019	16,567	16,725	40
16	5/10/2019	16,368	16,525	40
17	5/11/2019	16,168	16,326	40
18	5/11/2019	15,969	16,126	40
19	5/12/2019	15,769	15,927	40
20	5/12/2019	15,570	15,727	40
21	5/13/2019	15,370	15,528	40
22	5/14/2019	15,171	15,328	40
23	5/14/2019	14,971	15,129	40
24	5/15/2019	14,772	14,929	40
25	5/15/2019	14,572	14,730	40
26	5/15/2019	14,373	14,530	40
27	5/16/2019	14,173	14,331	40
28	5/16/2019	13,974	14,131	40
29	5/17/2019	13,779	13,932	40
30	5/17/2019	13,575	13,732	40
31	5/18/2019	13,379	13,535	40
32	5/18/2019	13,175	13,333	40
33	5/19/2019	12,976	13,134	40
34	5/19/2019	12,776	12,932	40
35	5/20/2019	12,577	12,735	40
36	5/20/2019	12,377	12,535	40
37	5/23/2019	12,178	12,336	40
38	5/24/2019	11,978	12,136	40
39	5/25/2019	11,779	11,937	40
40	5/25/2019	11,579	11,737	40
41	5/26/2019	11,380	11,538	40
42	5/26/2019	11,180	11,338	40
43	5/27/2019	10,981	11,138	40
44	5/27/2019	10,781	10,939	40
45	5/28/2019	10,582	10,739	40
46	5/28/2019	10,382	10,540	40
47	5/29/2019	10,183	10,340	40
48	5/29/2019	9,983	10,141	40
49	5/30/2019	9,784	9,941	40
50	5/30/2019	9,584	9,742	40
51	5/31/2019	9,385	9,542	40
52	5/31/2019	9,185	9,343	40
53	5/31/2019	8,986	9,143	40

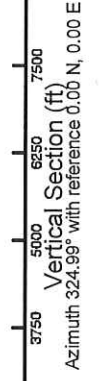
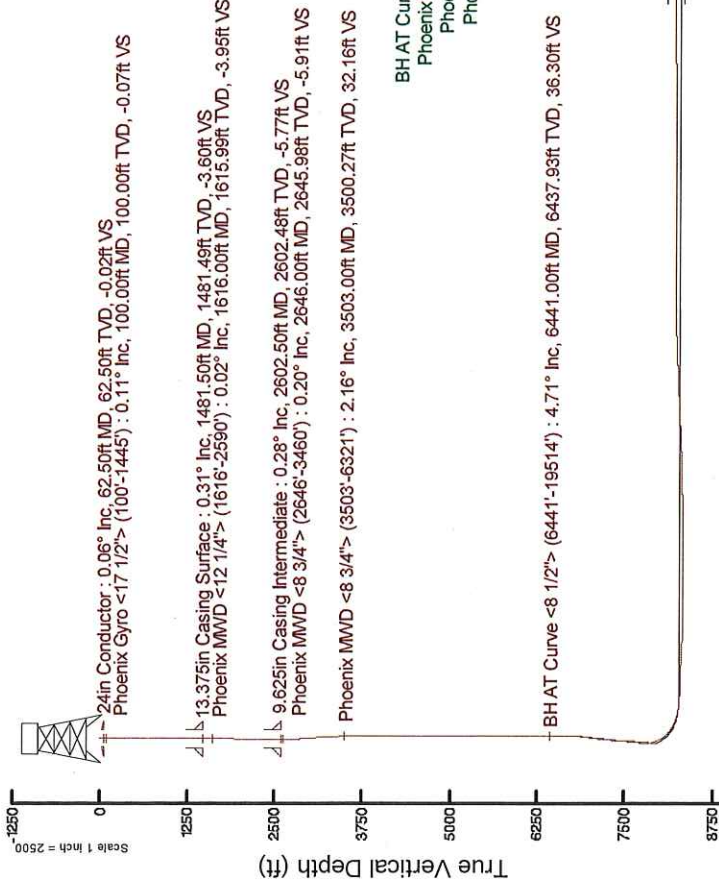
NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
 Slot: Slot 07
 Well: Yost 7H
 Wellbore: Yost 7H PWB
 Facility: Yost Pad

Plot reference wellpath is Yost 7H PWB RevA.0	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet
True vertical depths are referenced to Precision 228 (RKB)	North Reference: Grid north
Measured depths are referenced to Precision 228 (RKB)	Scale: True distance
Precision 228 (RKB) to Mean Sea Level: 1514.5 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot 07): -1492.1482 feet	Created by: ablenj on 2019-04-22
Coordinates are in feet referenced to Slot	Database: WA_MPL_EASTERNUS_Dein



User specified Dip: 8.63 deg; Field: 52170.5 T
 Magnetic North is 8.63 degrees West of True North (at 28 Mar 2019)
 To: Grid North is 0.46 degrees West of True North
 To: Grid North is 0.46 degrees West of True North
 To correct azimuth from Magnetic to Grid subtract 8.63 degrees

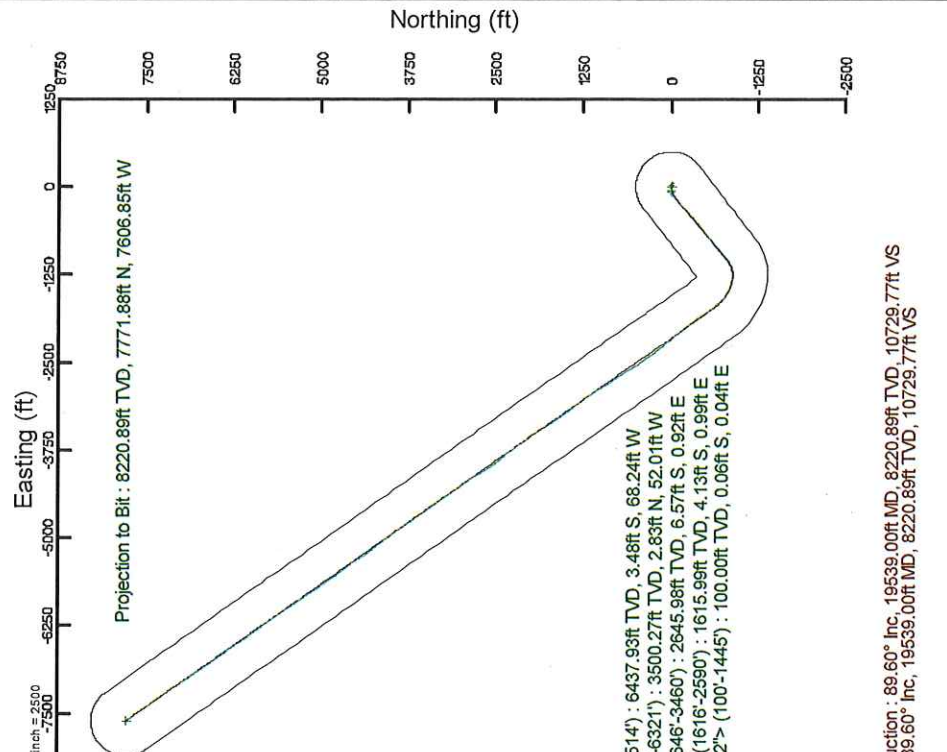


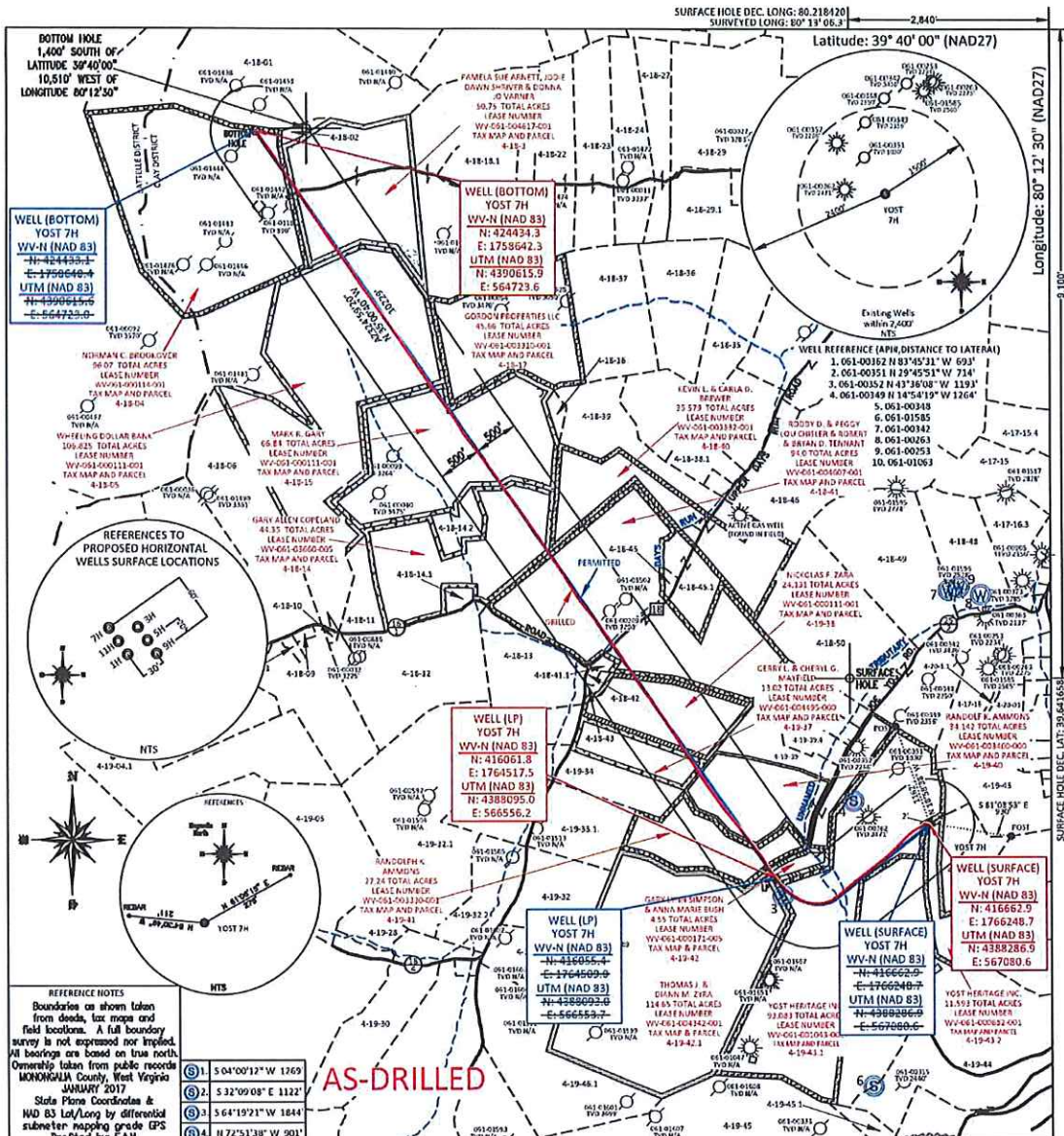
Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Yost Pad	1766284.700	418664.100	39°38'30.274"N	80°13'05.121"W
Local N (ft)	Local E (ft)	Grid East (US ft)	Latitude	Longitude
Slot 07	-36.00	1766248.700	39°38'30.259"N	80°13'05.581"W
Slot 07	-36.00	1766248.700	39°38'30.259"N	80°13'05.581"W
Precision 228 (RKB) to Ground level (At Slot: Slot 07)			22.5ft	
Mean Sea Level to Ground level (At Slot: Slot 07)			-1492.1482	
Precision 228 (RKB) to Mean Sea Level			1514.5ft	

Comments

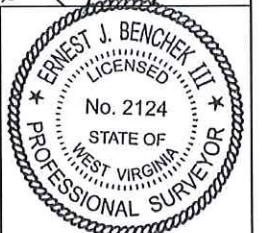
API: 47-061-01800-0000
 BH Job #: 109667247
 Rig: Precision 228
 Duration: 09/31/2019 - 04/11/2019





REFERENCE NOTES
 Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia JANUARY 2017
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS drilled by EAJ

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: _____
 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: YOST HERITAGE INC.
 OIL & GAS ROYALTY OWNER: JOE POGUE, ET AL
 LEASE NUMBERS: _____

DATE: SEPTEMBER 26, 2019
 OPERATOR'S WELL #: YOST 7H (AS-DRILLED)
 API WELL #: 47 61
 STATE COUNTY PERMIT

CURRENT ELEVATION: 1,492'
 QUADRANGLE: BLACKSVILLE
 ACREAGE: 11.593 +/-
 ACREAGE: 766.413 +/-

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: 8,220.89' TMD: 19,539'
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
 DESIGNATED AGENT: JOHN ADAMS
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

Cementing Treatment



Start Date	8/31/2018	Field Ticket#	
End Date	8/31/2018	Well	YOST 7H
Client	NORTHEAST NATURAL ENERGY LLC	API#	47-061-01800
Client Field Rep.	Ross	Well Classification	
Service Sup.	Paul Christ	County	MONONGALIA
District	Bridgeport, WV	State/Province	WV
Type of Job	Surface	Formation	Marcellus Shale
Execution ID	EXC-10568-T6H4T402	Rig	Highlands 8
Project ID	PRJ1010311		

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)	Grade	Thread
Previous Casing	23.25	24.00	94.58	40.00	40.00			
Open Hole	17.50			1,480.00	1,480.00	40.00		
Casing	12.62	13.38	54.50	1,460.00	1,460.00			

Shoe Length (ft): 40.00

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Bottom Plug Provided By		Tool Depth (ft)	1,432.00
Bottom Plug Size		Max Tubing Pressure - Rated (psi)	
Top Plug Used?	Yes	Max Tubing Pressure - Operated (psi)	

Cementing Treatment



Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	
Top Plug Size	13.375	Max Casing Pressure - Operated (psi)	
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity		Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	BTC
Landing Collar Depth (ft)	1,420	Top Connection Size	13.375

CIRCULATION PRIOR TO JOB

Well Circulated By	BJ	Solids Present at End of Circulation	No
Circulation Prior to Job	No	10 sec SGS	
Circulation Time (min)		10 min SGS	
Circulation Rate (bpm)		30 min SGS	
Circulation Volume (bbls)	360.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)		Gas Units	
Mud Density Out (ppg)			
PV Mud In			
PV Mud Out			
YP Mud In			
YP Mud Out			

TEMPERATURE

Cementing Treatment



Ambient Temperature (°F)	77.00	Slurry Cement Temperature (°F)	88.00
Mix Water Temperature (°F)	75.00	Flow Line Temperature (°F)	

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Planned Top of Fluid (Ft)	Length (Ft)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	Fresh Water	8.3400			0.00				10.0000
Spacer / Pre Flush / Flush	Gel Spacer	8.6100			0.00				25.0000
Spacer / Pre Flush / Flush	Fresh Water	8.3400			0.00				10.0000
Tail Slurry	Cement Slurry	15.6000	1.1979	5.23	0.00	1460	1248	1,495.0000	266.2000
Displacement Final	Fresh Water	8.3400			0.00			0.0000	219.5000

Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	Gel Spacer	EXTENDER, BENTONITE	20.0000	PPB
Spacer / Pre Flush / Flush	Gel Spacer	Fresh Water	100.0000	PCT
Spacer / Pre Flush / Flush	Gel Spacer	IntegraSeal POLI	1.0000	PPB
Tail Slurry	Cement Slurry	CEMENT, CLASS A	100.0000	PCT
Tail Slurry	Cement Slurry	IntegraSeal POLI	0.2500	LBS/SK
Tail Slurry	Cement Slurry	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	BWOB

TREATMENT SUMMARY

Cementing Treatment



Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Annulus Pressure (psi)	Comments
8/31/2018 6:22:00 AM	Fresh Water	6.00	235.00	200.00		
8/31/2018 7:05:00 AM	Gel Spacer	4.00	25.00	300.00		
8/31/2018 7:15:00 AM	Fresh Water	4.00	10.00	200.00		
8/31/2018 7:15:00 AM	Cement Slurry	5.50	266.20	600.00		
8/31/2018 8:21:00 AM	Fresh Water	7.00	221.00	1,100.00		
			Min	Max		Avg
Pressure (psi)			200.00	1,100.00		480.00
Rate (bpm)			4.00	7.00		5.30

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	61.00
Calculated Displacement Volume (bbls)	221.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	221.00	Amount of Spacer to Surface	0.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	1.00
Bump Plug Pressure (psi)	1,100.00	Total Volume Pumped (bbls)	780.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	Full	Lost Circulation During Cement Job	No

CEMENT PLUG

Cementing Treatment



Bottom of Cement Plug?	No	Wiper Balls Used?	No
Wiper Ball Quantity		Plug Catcher	No
Number of Plugs			

SQUEEZE

Injection Rate (bpm)	Fluid Density (ppg)
Injection Pressure (psi)	ISIP (psi)
Type of Squeeze	FSIP (psi)
Operators Max SQ Pressure (psi)	

COMMENTS

Treatment Report

Job Summary

Cementing Treatment



Start Date	9/3/2018	Field Ticket#	
End Date	9/3/2018	Well	YOST 7H
Client	NORTHEAST NATURAL ENERGY LLC	API#	47-061-01800
Client Field Rep.	Company man	Well Classification	
Service Sup.	Daniel Hensley	County	MONONGALIA
District	Bridgeport, WV	State/Province	WV
Type of Job	Intermediate	Formation	Marcellus Shale
Execution ID	EXC-10677-K4S9V102	Rig	Highlands 8
Project ID	PR11010430		

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)	Grade	Thread
Previous Casing	12.62	13.38	54.50	1,474.00	1,480.00			
Open Hole	12.25	0.00	0.00	2,650.00	2,630.00	40.00		
Casing	8.84	9.63	40.00	2,595.00	2,630.00			

Shoe Length (ft): 45.00

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Bottom Plug Provided By		Tool Depth (ft)	2,550.00
Bottom Plug Size		Max Tubing Pressure - Rated (psi)	
Top Plug Used?	Yes	Max Tubing Pressure - Operated (psi)	

Cementing Treatment



Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	
Centralizers Used	No	Pipe Movement	None
Centralizers Quantity		Job Pumped Through	Manifold
Centralizers Type		Top Connection Thread	buttress
Landing Collar Depth (ft)	2,550	Top Connection Size	9.625

CIRCULATION PRIOR TO JOB

Well Circulated By		Solids Present at End of Circulation	No
Circulation Prior to Job	No	10 sec SGS	
Circulation Time (min)		10 min SGS	
Circulation Rate (bpm)		30 min SGS	
Circulation Volume (bbls)		Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)		Gas Units	
Mud Density Out (ppg)			
PV Mud In			
PV Mud Out			
YP Mud In			
YP Mud Out			

TEMPERATURE

Cementing Treatment



Ambient Temperature (°F)		Slurry Cement Temperature (°F)	77.00
Mix Water Temperature (°F)	71.00	Flow Line Temperature (°F)	

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Planned Top of Fluid (Ft)	Length (Ft)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	Gel Spacer	8.6100			0.00				25.0000
Spacer / Pre Flush / Flush	Fresh Water	8.3400			0.00				10.0000
Tail Slurry	Cement Slurry	15.2000	1.2618	5.75	0.00	2630	839	1,059.0000	188.4000
Displacement Final	Fresh Water	8.3400			0.00			0.0000	196.4000

Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	Gel Spacer	Fresh Water	100.0000	PCT
Spacer / Pre Flush / Flush	Gel Spacer	EXTENDER, BENTONITE	20.0000	PPB
Tail Slurry	Cement Slurry	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	1.5000	BWOB
Tail Slurry	Cement Slurry	CEMENT, CLASS A	100.0000	PCT
Tail Slurry	Cement Slurry	FOAM PREVENTER, FP-13L	0.7000	GALS/100SK

TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Annulus Pressure (psi)	Comments
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Cementing Treatment



9/3/2018 10:35:00 AM	Gel Spacer	4.00	25.00		
9/3/2018 10:40:00 AM	Fresh Water	0.00	10.00		
9/3/2018 10:45:00 AM	Cement Slurry	0.00	188.40		
9/3/2018 11:36:00 AM	Fresh Water	0.00	196.40		
		Min	Max	Avg	
Pressure (psi)		0.00	1,400.00	500.00	
Rate (bpm)		3.00	7.00	4.00	

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	25.00
Calculated Displacement Volume (bbls)	193.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	193.00	Amount of Spacer to Surface	25.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	
Bump Plug	Yes	Amount Bled Back After Job	1.00
Bump Plug Pressure (psi)	1,400.00	Total Volume Pumped (bbls)	
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	Full	Lost Circulation During Cement Job	No

CEMENT PLUG

Bottom of Cement Plug?	No	Wiper Balls Used?	No
Wiper Ball Quantity		Plug Catcher	No
Number of Plugs			

Cementing Treatment



SQUEEZE

Injection Rate (bpm)	Fluid Density (ppg)
Injection Pressure (psi)	ISIP (psi)
Type of Squeeze	FSIP (psi)
Operators Max SQ Pressure (psi)	

COMMENTS

Treatment Report

Job Summary

pumped 5 bbl water to load lines tested kickouts noticed a leak replaced rubber seal, tested lines psi held, pumped 155 bbl processed water, 10 bbl fresh water, 25 bbl gel, 10 bbl water, 188 bbl cement @ 15.2 ppg (839 sks) shutdown dropped plug displaced 193 bbl processed water (lost processed water with 80 bbl left able to get it back finished displacement) bumped plug final psi 950 bumped to 1400 psi held 5 min flowed 1 bbl to truck floats held. 25 bbl cement to surface

Cement Job Log

C&J ENERGY SERVICES												
Customer: NORTHEAST NATURAL ENERGY LLC				Date: 4/12/2019				Serv. Supervisor: Aaron Shreve				
Cust. Rep.: Josh Grim				Ticket #: JWW1904-0010				Serv. Center Jane Lew - 3044				
Lease: Yost 7 H				API Well #: 47-061-01800				County: Monongalia State: WV				
Well Type:				Rig: Precision 228				Type of Job: Production Casing				
OPEN HOLE DATA				TUBULAR DATA								
12.25 in. O.H. (2,585 to 2,592 ft) 8.75 in. O.H. (2,592 to 6,377 ft) 8.5 in. O.H. (6,377 to 19,539 ft)				5.5 in. 20#, (0 to 19,499 ft)		SIZE WEIGHT	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
PREVIOUS CASING DATA				PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS				
9.625 in. 40# (0 to 2,585 ft)				TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP	
WELL FLUID		DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)				WATER ON LOC (bbl)	
TYPE	DENSITY	VOLUME	TYPE	DENSITY	6090	6920	6300				2000	
Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details					
8:00PM						0	Arrive on Location					
9:00PM						0	Landed Last Joint					
9:30PM						0	Finished Rigging Down Casing Crew					
9:45PM						0	Spot Trucks /Rig In Iron					
12:00AM						0	Safety Meeting					
1:45AM						0	Finished Circulating					
1:55AM						0	Stab Head/Rig In Floor					
2:02AM	2.5	550				3	3	Load Lines				
2:05AM		6300					3	Psi Test				
2:15AM							3	Released Psi				
2:17AM	4	800				100	103	Start Spacer				
2:45AM	7.5	2045				788	891	Start Cement				
5:42AM							891	Shut Down/Set Valves/Wash Lines				
5:46AM							891	Load Plug/No Vacuum/Cement in Head				
5:50AM	7.5	3880				425	1316	Release Plug				
5:15AM	6	4780					1316	100BBLS Away				
5:45AM	6	5055					1316	250BBLS Away				
6:09AM	6	5980					1316	380BBLS Away/Flow Line Plugged Off				
6:17AM	3.4	5160					1316	415BBLS Away				
6:20AM	3.4	5660					1316	Landed Plug				
6:25AM							1316	Check Floats-Floats Held/7BBLS Back				
6:31AM	3	5100					1316	Repressured Up/Bled Back 7BBLS Back				
6:45AM						7	1323	Wash Up				
10:00AM							1323	Wash Out Stack/Flow Line/Rig Down/Leave Location				
Left Yard	4/12/2019@6:00PM			Left Loc.	4/13/2019@10:00AM			Start Pump	4/13/2019@2:17AM			
Arrived Loc.	4/12/2019@8:00PM			Returned Yd.	4/13/2019@12:00PM			End Pump	4/13/2019@6:20AM			
Bumped Plug (psi)	Final Differential (psi)	Floats Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Top of Cement (ft)	Full Circ. During Job (Y/N)	Max Pump Pressure (psi)	Casing Rotation	Standby Charged (hrs)	Casing Reciprocation		
Yes	5160	Yes	0	0	646	Yes	6090		10			
							<i>Aaron Shreve</i>					
							Service Supervisor					
							Date					

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/3/2019
Job End Date:	6/1/2019
State:	West Virginia
County:	Monongalia
API Number:	47-061-01800-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Yost 7H
Latitude:	39.64165800
Longitude:	-80.21842000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,228
Total Base Water Volume (gal):	17,977,072
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Company 1	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.32740	None
Sand (Proppant)	Producers Service Corp	Proppant					
StimSTREAM FR 9800	Producers Service Corp	Friction Reducer	Silica Substrate	14808-60-7	100.00000	12.32610	None
			copolymer of 2-propenamide	Proprietary	30.00000	0.01610	None
			Petroleum Distillate	64742-47-8	20.00000	0.01073	None
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00107	None
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00107	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00054	None
7.5% HCL	Producers Service Corp	Acidizing	Hydrochloric Acid	7647-01-0	7.50000	0.01974	None
BIOC11139A	Producers Service Corp	Biocide					
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00676	None
			Glutaraldehyde	111-30-8	10.00000	0.00225	None

SCAL16486A	Producers Service Corp	Scale Inhibitor	Ethanol	64-17-5	5.00000	0.00113	None
			Amine Triphosphate	Proprietary	30.00000	0.00198	None
			Sodium Phosphate	7632-05-5	30.00000	0.00198	None
			Ethylene Glycol	107-21-1	30.00000	0.00198	None
4-N-1	Producers Service Corp	Inhibitor					
			Acetic acid	64-19-7	90.00000	0.00046	None
			Methanol	67-56-1	10.00000	0.00005	None
			2-Ethylhexanol	104-76-7	10.00000	0.00005	None
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00003	None
			Diethanolamine	111-42-2	1.00000	0.00001	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					
			Petroleum Distillate	64742-47-8	20.00000	0.01073	
			Glutaraldehyde	111-30-8	10.00000	0.00225	
			Sodium Phosphate	7632-05-5	30.00000	0.00198	
			Amine Triphosphate	Proprietary	30.00000	0.00198	
			Ethanol	64-17-5	5.00000	0.00113	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00107	
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00107	
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00054	
			2-Ethylhexanol	104-76-7	10.00000	0.00005	
			Methanol	67-56-1	10.00000	0.00005	
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00003	
			Diethanolamine	111-42-2	1.00000	0.00001	

* 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)

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Northeast Natural Energy LLC
API No: 47-061-01800 County: Monongalia
District: Clay Well No: 7H
Farm Name: Northeast Natural Energy LLC

Discharge Date/s From:(MMDDYY) NA To: (MMDDYY) NA
Discharge Times. From: _____ To: _____

Total Volume to be Disposed from this facility (gallons): _____

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
- (2) UIC: _____ Permit No. _____
- (3) Offsite Disposal: _____ Site Location: _____
- (4) Reuse: _____ Alternate Permit Number: _____
- (5) Centralized Facility: _____ Permit No. _____
- (6) Other method: _____ (Include an explanation)

Follow Instructions below to determine your treatment category:

Optional Pretreatment test: _____ Cl- mg/l _____ DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative?
(Y/N) _____ If yes, who? _____ and place a four (4) on line 7.
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) _____ If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) _____ If yes, go to line 4
If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) _____ If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) _____ If yes, go to line 6
If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) _____ If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. _____ is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: Utilized a closed loop system

Name of Principal Exec. Officer: Hollie Medley
Title of Officer: Regulatory Manager
Date Completed: 10/24/19

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the 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.

Hollie M Medley
Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results

API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	5	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl	5,000	_____	5,000	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results

API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	10	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results

API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	20	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results

API No: _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	1	_____	N/A	N/A	Days
Fe	Monitor	_____	Monitor	_____	mg/l
D.O.	Monitor	_____	Monitor	_____	mg/l
Settleable Sol.	Monitor	_____	Monitor	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Activated Carbon (0.175)		_____	N/A	N/A	lb/B1
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____