		United States Environmer	ntal Protection Agency	For Official Use Only		
			Date Received			
A FD/	•	Underground Inje				
\$EP/	Pe	rmit Application f		Permit Number		
	(Coll	ected under the authority of t Sections 1421, 1422, and	d 40 CFR Part 144)			
		Read Attached Inst	tructions Before Startin	g		
I. Owner Name, Address	s, Phone Number an	d/or Email	II. Operator Name, Add	ress, Phone Number and/or I	Email	
Bull Run Resources L 200 Liberty Street, Su Warren PA 16365 Sam@bullrunenergy.c 814-706-7302	ite 20		Same as Owner			
III. Commercial Facility	IV. Ownership	V. Permit Action Requests	bd	VI. SIC Code(s)	VII. Indian Count	
	X Private	X New Permit		E.	Yes	
Yes X No	Federal	Permit Renewal		1311	XNO	
A NO	State/Tribal/	Modification			Canada and The	
	Municipal	Add Well to Area Perm	nit			
		Other				
VIII Type of Permit (For	multiple walter user	ditional page(a) to provide (	he information requested for an	ch additional well)	-	
			he information requested for ea	cir auditional wen)		
		Field and/or Project Names				
X B. Area	Cur	tis Lot 2				
IX. Class and Type of W						
A. Class B. Type (ente		be code is "X," explain.				
II R	NA					
X. Well Status			XI. Well Information			
and the second			All from information			
-	Tel a		A PSI AL	17 001 (FF100) (FF110)		
A. Operating	B. Conversio			37-083-(55309);(55310)		
A. Operating Date Injection Started	Date Well Cons			37-083-(55309);(55310) Same as API's		
			Permit (or EPA ID) Number	· · · · · · · · · · · · · · · · · · ·		
Date Injection Started	Date Well Cons 01/01/2011		Permit (or EPA ID) Number Full Well Name	Same as API's		
Date Injection Started	Date Well Cons 01/01/2011 for Multiple Wells,	tructed	Permit (or EPA ID) Number Full Well Name or Project	Same as API's		
Date Injection Started	Date Well Cons 01/01/2011 for Multiple Wells,	tructed	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude 4	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location	Date Well Cons 01/01/2011 for Multiple Wells,	tructed Approximate Center of Field of lines of quarter section and d	Permit (or EPA ID) Number Full Well Name or Project	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest	tructed Approximate Center of Field of lines of quarter section and d	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section	tructed Approximate Center of Field of lines of quarter section and d	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started         XII. Location of Well or,         Locate well in two direct         Surface Location         1/4 of	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section	Approximate Center of Field of lines of quarter section and d	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started         XII. Location of Well or,         Locate well in two direct         Surface Location         1/4 of         ft. from (N	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section	Approximate Center of Field of lines of quarter section and d Township Ra	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude	Same as API's Curtis Lot 2 (#12);(#13) 1.838749°		
Date Injection Started         XII. Location of Well or,         Locate well in two direct         Surface Location         11/4 of         ft. from (N         ft. from (E	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section //S) Line /W) Line	tructed Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII.	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude 4 Longitude -7 Attachments	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° 8.717399°		
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location 1/4 of ft. from (N ft. from (E In Cl	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section //S) Line //W) Line n addition to the lass) on separat	Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. is form, complete Attack e sheets. Submit complet	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Irige Attachments hements A-U (as appropri- te information, as require	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° '8.717399° ate for the specific we		
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location 1/4 of ft. from (N ft. from (E In Cl	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section //S) Line //W) Line n addition to the lass) on separat	Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. is form, complete Attack e sheets. Submit complet s, maps or other figures,	Permit (or EPA ID) Number Full Well Name or Project Irilling unit nge Latitude 4 Longitude -7 Attachments hments A-U (as appropriet inter information, as required by the applicable letter.	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° '8.717399° ate for the specific we		
Date Injection Started	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section (/S) Line (/W) Line h addition to the lass) on separate st all attachment	tructed Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. is form, complete Attacl e sheets. Submit comple s, maps or other figures, XIV.	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Latitude 4 Longitude -7 Attachments hments A-U (as appropri- te information, as require by the applicable letter. Certification	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° 8.717399° ate for the specific we d in the instructions an	nd	
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location I1/4 of ft. from (N ft. from (E In ft. from (E In ft. from (E) In ft. ft. from (E) In ft. ft. from (E) In ft.	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section (/S) Line (/W) Line h addition to the hass) on separate st all attachments alty of law that I has inquiry of those in the Line Market Construction Line Market	tructed Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. S form, complete Attack e sheets. Submit comple s, maps or other figures, XIV. ve personally examined and a dividuals immediately respore	Permit (or EPA ID) Number Full Well Name or Project Irilling unit nge Latitude 4 Longitude -7 Attachments hments A-U (as appropriet inter information, as required by the applicable letter.	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° 8.717399° ate for the specific we d in the instructions an	t and all attachments	
Date Injection Started XII. Location of Well or, Locate well in two direct Surface Location 11/4 of ft. from (N ft. from (E) (E) ft. from (E) (E) ft. ft. from (E) (E) ft. ft. from (E) (E) ft.	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section (VS) Line (W) Line (W) Line addition to the lass) on separation st all attachments alty of law that I have inquiry of those in te. I am aware that 0 CFR § 144.32) (Please Type or Print)	tructed Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. is form, complete Attacl e sheets. Submit complet s, maps or other figures, XIV. ve personally examined and a dividuals immediately resport there are significant penalties	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Inge Latitude 4 Longitude -7 Attachments hments A-U (as approprint te information, as requires by the applicable letter. Certification Imfamiliar with the information rsible for obtaining the information	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° 8.717399° ate for the specific we d in the instructions an ation, I believe that the infor ion, including the possibility Date Signed	t and all attachments mation is true, y of fine and	
Date Injection Started	Date Well Cons 01/01/2011 for Multiple Wells, tions from nearest 1/4 of Section (VS) Line (W) Line (W) Line addition to the lass) on separation st all attachments alty of law that I have inquiry of those in te. I am aware that 0 CFR § 144.32) (Please Type or Print)	tructed Approximate Center of Field of lines of quarter section and d Township Ra of quarter section of quarter section. XIII. is form, complete Attacl e sheets. Submit complet s, maps or other figures, XIV. ve personally examined and a dividuals immediately resport there are significant penalties	Permit (or EPA ID) Number Full Well Name or Project Irilling unit Inge Latitude 4 Longitude -7 Attachments hments A-U (as approprint te information, as requires by the applicable letter. Certification Imfamiliar with the information rsible for obtaining the information	Same as API's Curtis Lot 2 (#12);(#13) 1.838749° 8.717399° ate for the specific we d in the instructions an ation, I believe that the infor ion, including the possibility Date Signed	t and all attachments	

### ATTACHMENT A

#### Part I.

Bull Run Resources is proposing injection into the Curtis Lot 2 #12 and #13. These are both vertical wells and have the following coordinates:

Curtis Lot 2 #12
41.838727° N
78.718666° W
Curtis Lot 2 #13
41.838804° N
78.716231° W

#### Part II.

The AOR is defined by the area inside of two overlapping arcs, each having a ¼ mile radius and center at each of the injection wells.

#### Part III.

Attached are three maps of the Area Permit project. For each map, the required items are located within the boundaries (AOR, 1/4<sup>th</sup> mile beyond AOR, and 1 mile beyond AOR). Map areas that extend beyond required buffers may have items omitted.

- MAP A-1. Topographic map showing the AOR and the follow items:
  - o All wells
  - o AOR boundary
  - Springs and surface bodies of water (none)
  - o Mines and quarries (none)
  - Residences, schools, hospitals (none)
  - Roads (shown on underlying USGS topo)
  - Table 1-A, details on wells within AOR
- MAP A-2. Topographic map extending ¼ mile beyond AOR
  - o All wells
  - Springs and surface bodies of water (shown on underlying USGS topo)
  - o Mines and quarries (none)
  - o Residences, schools, hospitals (none)
  - Roads (shown on underlying USGS topo)
- MAP A-3. Topographic map extending 1 mile beyond AOR
  - Project injection wells
  - o AOR boundary
  - Outcrops of injection and confining formation (none)
  - o All surface water intake and discharge structures (none)
  - All hazardous waste treatment, storage or disposal facilities (none)

#### Part IV.

See Table 2-A for a tabulation of well construction data for wells within AOR that penetrate the injection formations.

#### Part V.

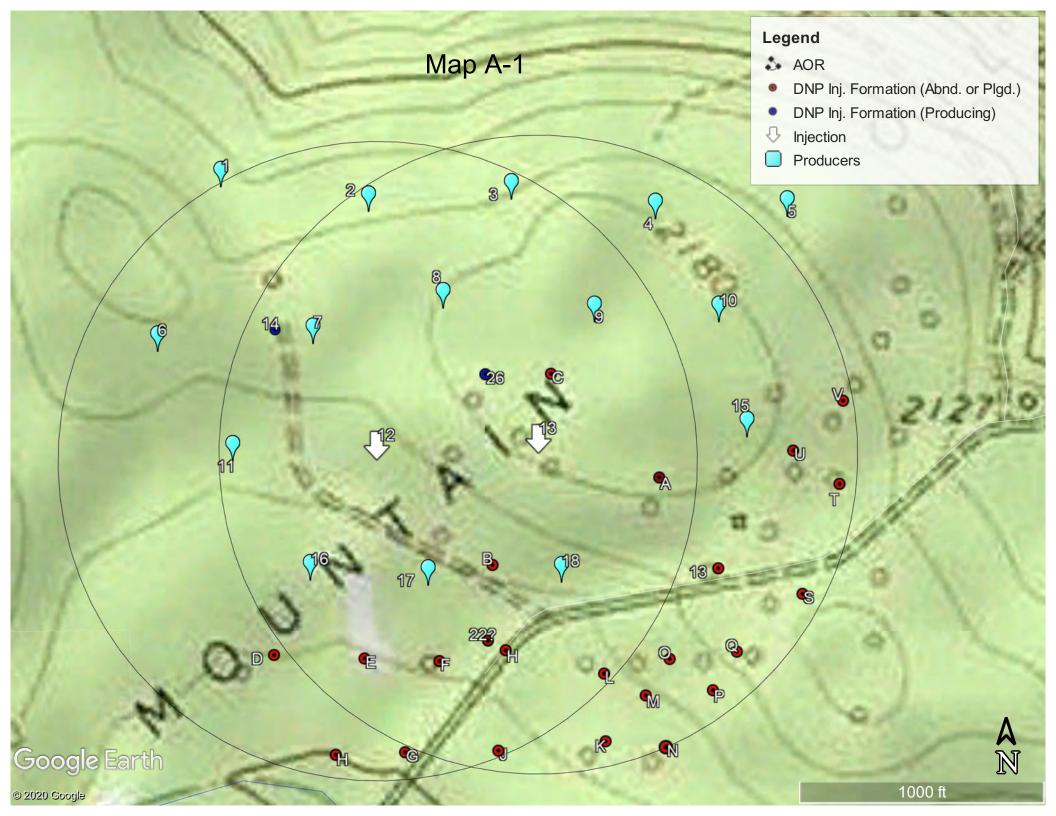
The following landowners are identified as following within an area ¼ of a mile from the AOR.

US Department of Agriculture, US Forest Service, 4 Farm Colony Drive, Warren, PA 16365

Seneca Resources Corp, PO BOX 125 Kane, PA 16735

Proof of notification



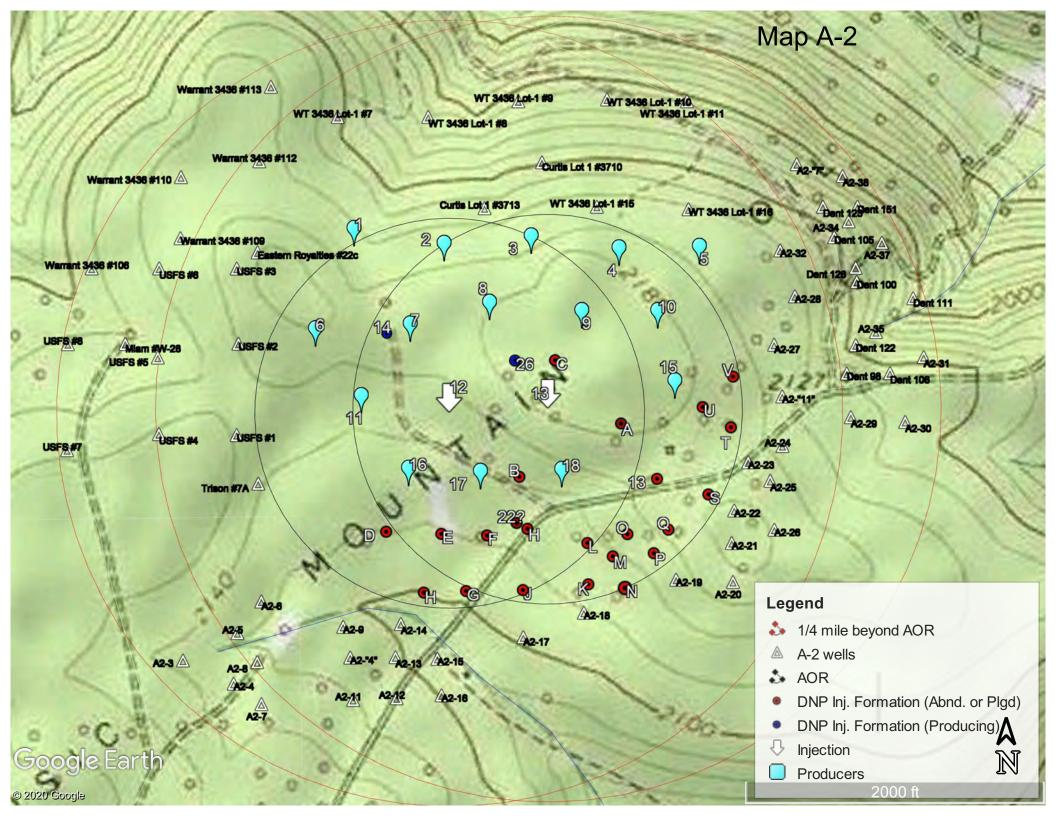


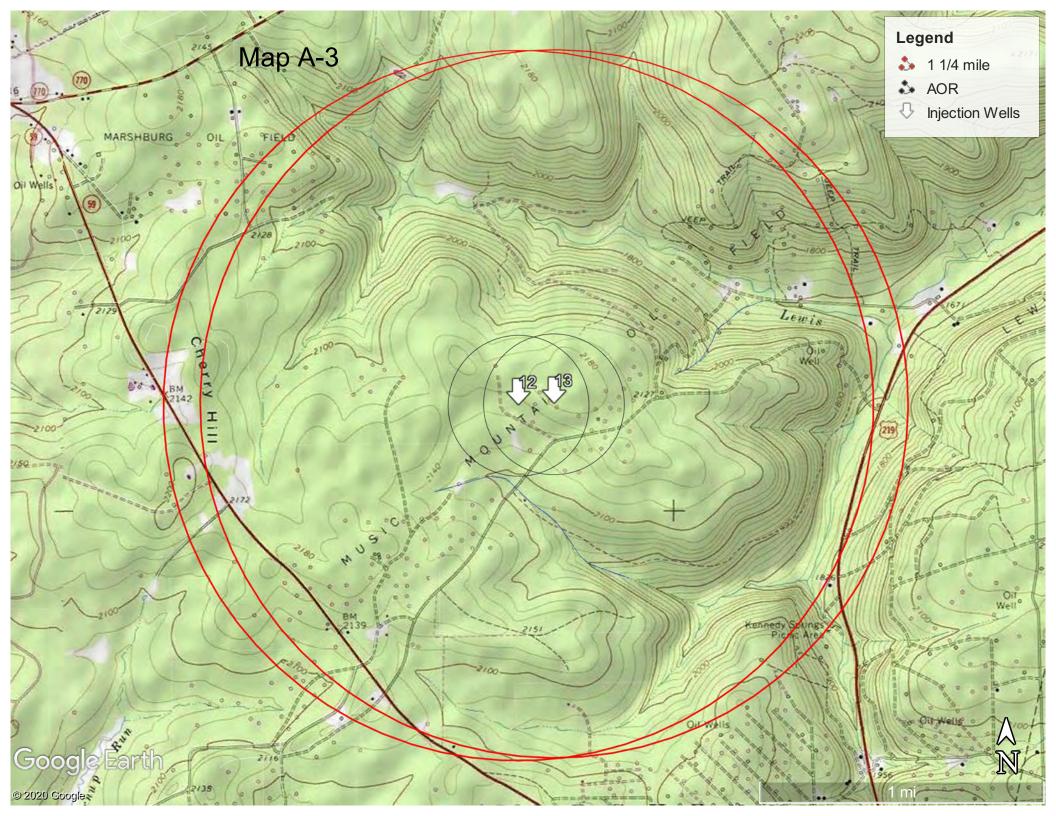
# Table 1-A

lcon	Map Number	ΑΡΙ	Status for Permit	Operator	Source of Knowledge
white arrow	13	37-083-55310	Injector	Bull Run	Company files
white arrow	12	37-083-55309	Injector	Bull Run	Company files
blue ballon	1	37-083-51246	Producer	Bull Run	Company files
blue ballon	2	37-083-51247	Producer	Bull Run	Company files
blue ballon	3	37-083-51248	Producer	Bull Run	Company files
blue ballon	4	37-083-51249	Producer	Bull Run	Company files
blue ballon	6	37-083-54199	Producer	Bull Run	Company files
blue ballon	7	37-083-55306	Producer	Bull Run	Company files
blue ballon	8	37-083-55307	Producer	Bull Run	Company files
blue ballon	9	37-083-51254	Producer	Bull Run	Company files
blue ballon	10	37-083-51255	Producer	Bull Run	Company files
blue ballon	11	37-083-55308	Producer	Bull Run	Company files
blue ballon	15	37-083-51259	Producer	Bull Run	Company files
blue ballon	16	37-083-55313	Producer	Bull Run	Company files
blue ballon	17	37-083-55312	Producer	Bull Run	Company files
blue ballon	18	37-083-55311	Producer	Bull Run	Company files
Blue Bullseye	14	37-083-14489	DNP	Bull Run	Company files
Blue Bullseye	26	37-083-14477	DNP	Bull Run	Company files
Red Bullseye	А	unknown	DNP	Abon.	Atlas
Red Bullseye	В	unknown	DNP	Abon.	Atlas
Red Bullseye	С	unknown	DNP	Abon.	Atlas
Red Bullseye	D	unknown	DNP	Abon.	Atlas
Red Bullseye	E	unknown	DNP	Abon.	Atlas
Red Bullseye	F	unknown	DNP	Abon.	Atlas
Red Bullseye	G	unknown	DNP	Abon.	Atlas
Red Bullseye	Н	unknown	DNP	Abon.	Atlas
Red Bullseye	I	unknown	DNP	Abon.	Atlas
Red Bullseye	J	unknown	DNP	Abon.	Atlas
Red Bullseye	К	unknown	DNP	Abon.	Atlas
Red Bullseye	L	unknown	DNP	Abon.	Atlas
Red Bullseye	Μ	unknown	DNP	Abon.	Atlas
Red Bullseye	Ν	unknown	DNP	Abon.	Atlas
Red Bullseye	0	unknown	DNP	Abon.	Atlas
Red Bullseye	Р	unknown	DNP	Abon.	Atlas
Red Bullseye	Q	unknown	DNP	Abon.	Atlas
Red Bullseye	S	unknown	DNP	Abon.	Atlas
Red Bullseye	Т	unknown	DNP	Abon.	Atlas
Red Bullseye	U	unknown	DNP	Abon.	Atlas
Red Bullseye	V	unknown	DNP	Abon.	Atlas

DNP = "Does/did not Penetrate Injection Formation"

Atlas = "Oil and Gas Field Atlas of the Bradford Quadrangle, PA Dept. of Internal Affairs, 1951"





# Table 2-A

Мар	Status	Measure	Measured Depth Feet		Data	Cement	Тор
Number	for Permit	<b>Conductor Casing</b>	Surface Casing	TD	Drilled	Returns	Cement
13	Injector	36	450	2223	3/14/2011	yes	NA
12	Injector	23	455	2233	2/21/2011	yes	NA
1	Producer	22	582	2216	11/30/2006	yes	NA
2	Producer	22	586	2225	12/18/2006	yes	NA
3	Producer	21	584	2212	12/13/2006	yes	NA
4	Producer	21	581	2222	12/11/2006	yes	NA
6	Producer	42	455	2200	5/23/2011	yes	NA
7	Producer	27	455	2196	3/2/2011	yes	NA
8	Producer	37	455	2168	2/26/2011	no	4' CLL
9	Producer	21	586	2252	12/6/2006	yes	NA
10	Producer	22	582	2252	12/5/2006	yes	NA
11	Producer	23	455	2169	2/16/2011	yes	NA
15	Producer	23	583	2240	12/11/2006	yes	NA
16	Producer	unkw	452	2166	??/??/2006	yes	CLL*
17	Producer	60	455	2128	5/31/2011	yes	NA
18	Producer	54	455	2183	2/11/2011	yes	NA

CLL = Cement Locator Log

\* = Cement report not found, CLL shows cement from shallowest data point

### Attachment B.

#### Part I

#### **Geologic Data**

The stratigraphic and structural geology of the proposed waterflood is extremely simple and well characterized. Modern geophysical logs are available across the area at a well spacing of approximately 500 ft. The Upper Devonian sequence consists of thick mudstones confining layers 50+ feet thick interbedded with 5-100 feet thick sandstone. There is almost no structure across the waterflood area, sandstones are found at consistent subsea depths.

There is less than 30 ft of topographic relief between wells 12 and 13. All depths presented are measured depth from surface. Below are geologic data on the formations from the surface to the base of the proposed injection wells.

					Well #	<b>12</b>		
Formation	Driller's Sand	Lithology	Тор	Base	Thickness	*USDW's	Interprated Pore Fluid	Notes
Pottsville Series	NA	Regolith/Soil	0	39	39	NA	unsaturated groundwater	
Pottsville Series	NA	silty mudstone	39	200	161	80'	fresh water	freshwater found at 200'
Кпарр	NA	silty mudstone	200	300	100	I	fresh water	
Oswayo	NA	silty mudstone	300	436	136	319'	fresh water	
Cattaraugus	NA	red shale	436	610	174	NA		
Cattaraugus	NA	siltstone	610	636	26	NA	brine/gas	low poristy
Conneaut Group	NA	shale	636	1097	461	NA		
Conneaut Group	NA	Red Shale	1097	1122	25	NA		
Conneaut Group	NA	Shale	1122	1400	278	NA		
Conneaut Group	Bradford First	brown sandstone	1400	1432	32	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1432	1526	94	NA		
Canadaway	<b>Clarendon Sand</b>	Sandstone	1526	1544	18	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1544	1566	22	NA		
Canadaway	Tiona Sand	Sandstone	1566	1584	18	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1584	1700	116	NA		
Canadaway	Bradford Second	Sandstone	1700	1770	70	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1770	1826	56	NA		
Canadaway	Harrisburg Run	Sandstone	1826	1856	30	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1856	1980	124	NA		
Canadaway	Bradford Third	Sandstone	1980	2008	28	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2008	2086	78	NA		
Canadaway	Lewis Run	Sandstone	2086	2093	7	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2093	2233	140	NA		

#### The source of the following data is driller's logs and geophysical wireline logs.

				Well	#13			
Formation	Driller's Sand Names	Lithology	Тор	Base	Thickness	*USDW's	Interprated Pore Fluid	Notes
Pottsville Series	NA	sandstone	0	39	39	NA	unsaturated groundwater	
Pottsville Series/Knapp	NA	silty mudstone	39	264	225	110'	fresh water	freshwater found 139-264'
Кпарр	NA	silty mudstone	264	300	36	I	fresh water	
Oswayo	NA	silty mudstone	300	464	164	349'	fresh water	
Cattaraugus	NA	red shale	464	636	172	NA		
Conneaut Group	NA	shale	636	1432	796	NA		
Conneaut Group	Bradford First	brown sandstone	1432	1462	30	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1462	1598	136	NA		
Canadaway	Bradford Second	Sandstone	1598	1632	34	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1632	1730	98	NA		
Canadaway	Harrisburg Run	Sandstone	1730	1802	72	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1802	2008	206	NA		
Canadaway	Bradford Third	Sandstone	2008	2034	26	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2034	2114	80	NA		
Canadaway	Lewis Run	Sandstone	2114	2120	6	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2120	2233	113	NA		

\*The precise depths that USDW's may be found in an individual well are subject to the interpretation of the driller. There are no know water wells near the proposed waterflood. To account for all potential USDW's, the drilling reports of all 19 wells drilled on the Curtis Lot 2 lease were examined. The deepest freshwater encountered was at 1831' AMSL in well #17. The shallowest freshwater reported was at 2070' AMSL. This 239' thick zone of potential USDW's is presented on the preceding table and in the other attachments to this permit, adjusted to the surface elevation of each well.

#### Porosity and Permeability of Injection Zones

#### Well #13

Bradford 3<sup>rd</sup>: Density log derived porosity from 6-17% with average porosity of 11.5% over 31 net feet of pay. Permeability unknown.

Lewis Run: Density log derived porosity from 7-15% with average porosity of 11.5% over 6 net feet of pay. Permeability unknown.

#### Well #12

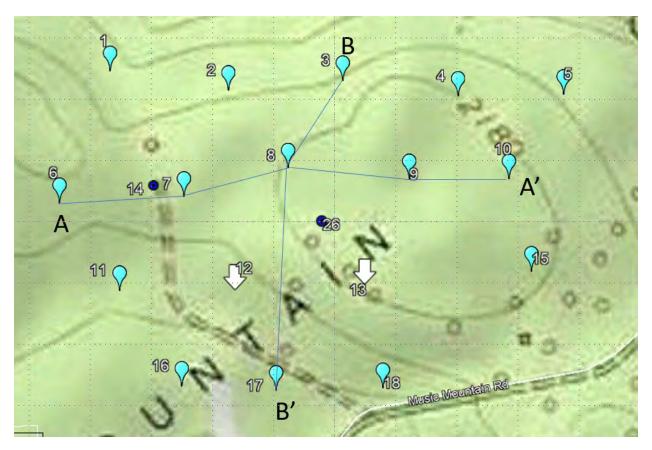
Bradford 3<sup>rd</sup>: Density log derived porosity from 8-17% with average porosity of 13.6% over 29 net feet of pay. Permeability unknown.

Lewis Run: Density log derived porosity from 8-17% with average porosity of 12.2% over 9 net feet of pay. Permeability unknown.

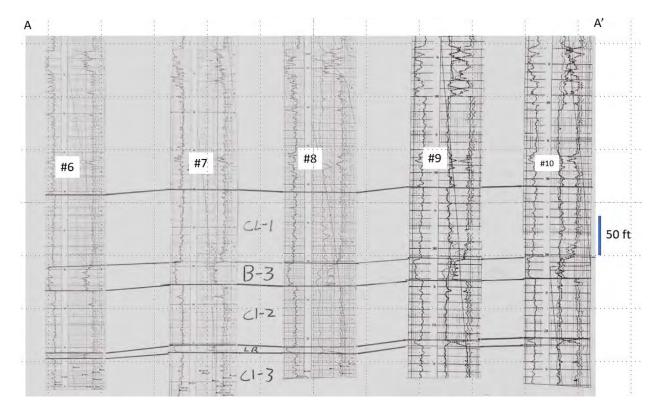
#### **Geologic Cross-sections.**

An east-west and north-south cross-section is presented below. The following abbreviations are used in the cross-sections:

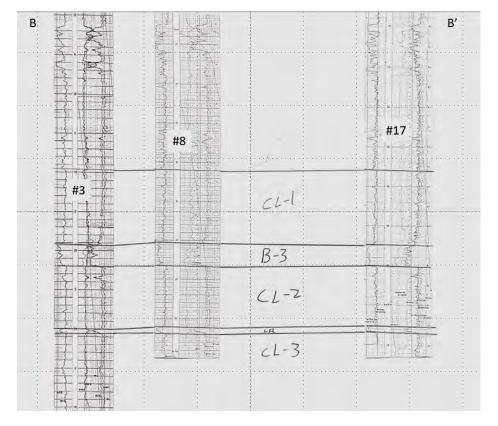
- CL-1 "Confining Layer One"
- B-3 "Bradford Third Injection Zone"
- CL-2 "Confining Layer Two"
- LR "Lewis Run Injection Zone"
- CL-3 "Confining Layer Three"



Key map for cross-sections



Cross-section A-A'.



Cross-section B-B'.

#### Faults/Fracture Systems

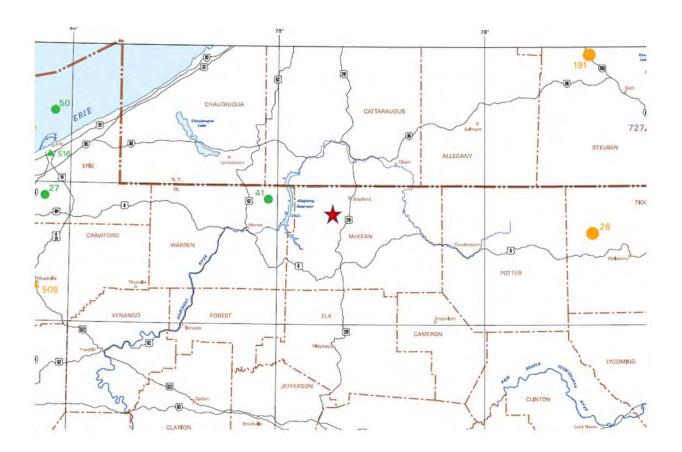
There are no known faults or fracture systems of a scale relevant to this permit application. Well control is very tight with modern geophysical logs throughout the area. There are no missing or repeat stratigraphic sections that would indicate normal or reverse faulting. Published structural maps of key marker beds indicate gently undulating structure inconsistent with major faulting.

There is over 100 years of historical injection into the target zones in the Bradford Oil Field. No issues related to faults or fractures has been identified in the many papers and studies reviewed by Bull Run.

#### Seismic Activity

There have been no historical earthquakes in McKean County according to "Earthquakes Epicenters in and near Pennsylvania" published by the PA Department of Conservation and Natural Resources in 2004. The red star on map B-1 indicates the proposed waterflood. Precambrian basement is greater than 8,000 feet below the injection zones.

There is over 100 years of historical injection into the target zones in the Bradford Oil Field. No issues related to seismic activity has been identified in the many papers and studies reviewed by Bull Run.



#### Part II

#### Fluid Pressure and Estimated Fracture Pressure

Bull Run will be converting existing hydro-fractured (frac'ed) production wells into injection wells so the fracture gradient can be estimated with Instantaneous Shut-in Pressure data (ISIP) observed during completion. It is assumed that the SG of the frac fluid was 1.0 g/cm3.

#### Lewis Run Fracture Gradient

Well #12 is not frac'ed in the Lewis Run, the well got "wild" and the frac crew was unable to complete the job. The nearest well with clear ISIP data is #13 with an ISIP of 2000 PSI at 2116', yielding an FG of 1.38 psi/Ft.

#### Bradford 3rd Fracture Gradient

Neither well #12 nor #13 are fractured in the Bradford 3<sup>rd</sup>. Well #12 was frac'ed in the Harrisburg Run, which is approximately 100' above the Bradford 3<sup>rd</sup>. In well #12, the ISIP was 1800 PSI at 1845', yielding a FG of 1.41 psi/Ft.

#### Fluid SG

The proposed injection fluid is produced brine from conventional shallow oil production. Ten samples of conventional oil well brine from across NW Pennsylvania were analyzed and the highest Sg found was 1.089. (Dresel and Rose 2010). This is higher than Bull Run has ever encountered in the field with hydrometer testing of our produced brine. An estimated maximum Sg of 1.1 is used to determine Pmax in the calculations below.

#### **Pmax Calculations**

For simplicity, the lower FG of 1.38 PSI/Ft is used for both zones to calculate Pmax's. These Pmax's are well below breakdown pressure of the formations. In addition, breakdown at the low injection rates of a waterflood, in contrast the high rates during a frac job, is extremely unlikely. None the less, should breakdown be observed, Bull Run will cease injection and notify the EPA to determine next steps.

<u>Note</u>: The Lewis Run is cemented off in Well #13. However, Bull Run is applying for this permit with the intention of potentially drilling out the Lewis Run and injecting into this zone. Bull Run may inject into the zones simultaneously or individually. The following table shows calculated Pmax's for each well and zone.

	#12	#13	Units
Fracture Gradient	1.38	1.38	#/Ft
Max Sg of Brine	1.10	1.10	NA
Top of Brad 3rd	1980	2008	Feet MD
Top of Lewis Run	2086	2114	Feet MD
Pmax Brad 3rd	1789	1814	psi
Pmax Lewis Run	1884	1910	psi
Pmax Simultaneous Injection	1789	1814	psi
* Lewis Run is cemented, see te	xt		

#### Pmax Data

#### Physical and Chemical Characteristics of the Injection Zone

The Bradford 3<sup>rd</sup> has been described as a "chocolate-brown sandstone composed predominantly of fine to very fine angular quartz grains" by (Fettke 1938). The chemical composition from a core is presented below.

# Table 9. Chemical analysis of Bradford Third sandstone from a depth of 1741.92 feet in core 9.

SiO <sub>2</sub> Al <sub>2</sub> O <sub>8</sub> Fe <sub>2</sub> O <sub>3</sub> (includes FeO) MgO CaO	Percent 86.89 6.95 2.55 0.42 0.07	Alkalies H <sub>2</sub> O (combined) CO <sub>2</sub> C (organic)	Percent Not determ. 0.89 trace 0.30 98.07
---	--	---	--

#### From Fettke 1938

The Lewis Run sandstone has been described as "fine-grained chocolate brown sandstone ranging in thickness from 6-12" by (Fettke 1941). Given the similar appearance and stratigraphic proximity to the Bradford 3<sup>rd</sup>, one would expect similar chemical composition to the Bradford Third.

The proposed waterflood is within the Bradford Oil Field, which has been in production for more than 140 years. From 1921 until at least 1949, Bradford was the center of the water-flooding activity in the world (Buckwalter 1949). The proposed injection formations have been successfully waterflooded by thousands of injection wells.

The proposed injection fluid is produced brine from Upper Devonian conventional wells. This brine is essentially the same as the in-situ brine occurring in the injection formations. The practice of injecting produced brine into waterfloods is widespread in the area.

Many historical examples have shown that the physical and chemical composition of the both the injection fluid and injection zones is suitable for water flooding.

References Cited:

Dresel, P. Evans, and Rose, Arthur W., 2010, *Chemistry and Origin of Oil and Gas Well Brines in Western Pennsylvania*, Open-File Oil and Gas Report 10-01.0

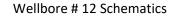
Fettke, Chas. R., 1938, *The Bradford Oil Field Pennsylvania and New York*, Commonwealth of Pennsylvania Dept. of Env. Resources

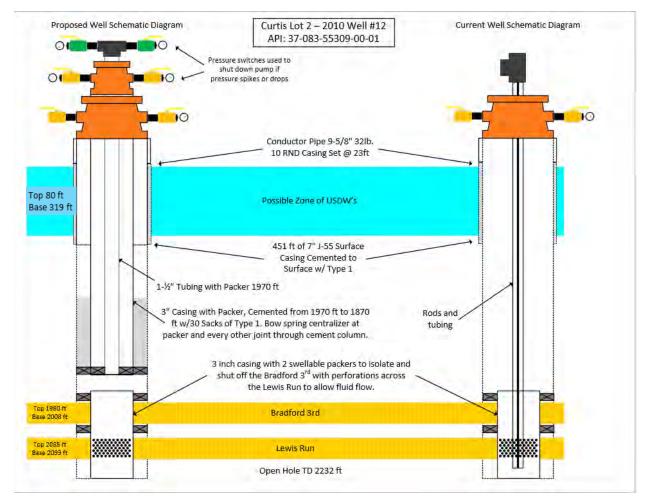
Fettke, Chas, R., 1941, *Music Mountain Oil Pool*, Commonwealth of Pennsylvania Dept. Of Internal Affairs

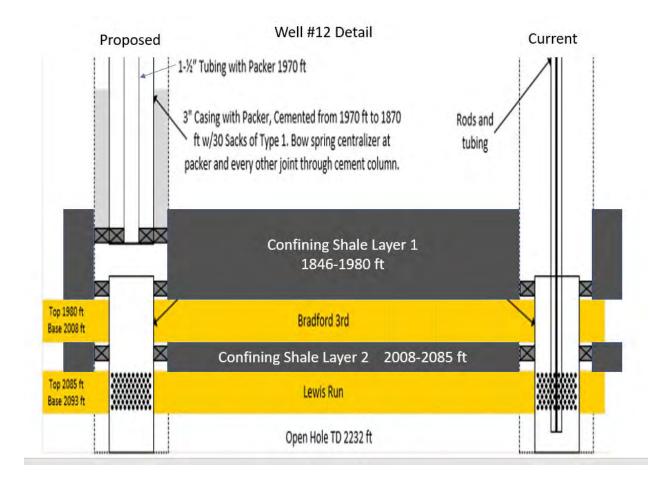
Buckwalter, John F., 1949, Water Flooding the Bradford Field, American Geological Society, Vol 1

#### Attachment C:

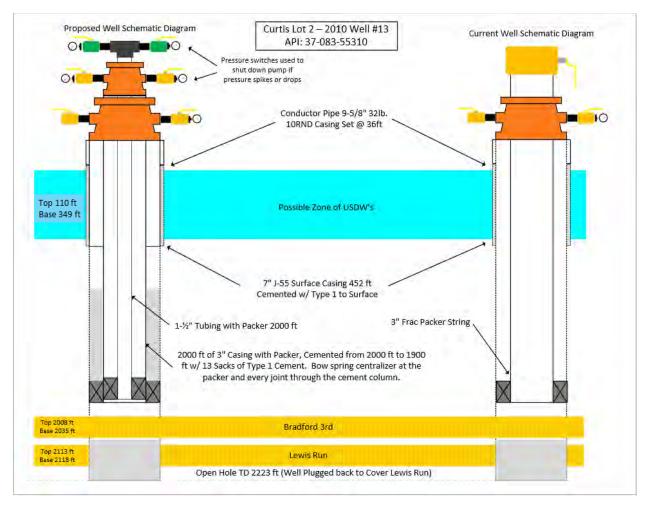
#### Part I

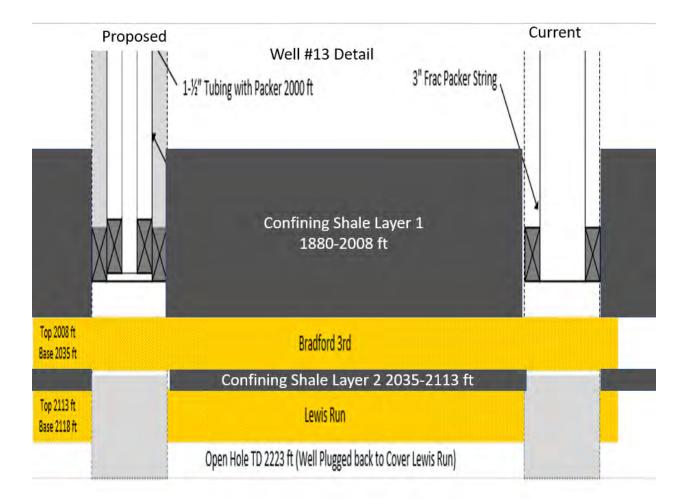






#### Wellbore # 13 Schematics





Part II

#### Proposed Logs and Tests

Well #12 and #13:

Cement Bond Log will be run to verify more than 50' of cement above packer on 3" protective casing

#### **Proposed Stimulation Plans**

Well #12

No Stimulation planned. When Bradford Third is going to be injected into 3" bottom pipe will be perforated.

Well #13

If Lewis Run is drilled out, it may be hydro fractured to penetrate cement skin factor.

#### Alarms and Shut-Downs

Wells #12 and #13:

"Pressure Up Circuit Open" switches will be installed on backside of injection tubing to shutdown injection in the event of injection tubing or packer failure.

"Pressure Down Circuit Open" switches will be installed on tubing to shutdown injection if surface failure occurs.

Tank Sentinel auto gauge will be used for monitoring and alarms on brine tank levels on surface

Time lapse cellular enabled camera will monitor pump and pressure chart recorder

#### Well Completion and Cementing Records

See Attachment C-1.

#### Previously Run Logs/Test

See Attachment C-1 for logs

CURTIS WELL SERVICE PO BOX 367 SUGAR GROVE, PA 16350

DATE\_ 3-15,-11 COMPANY CATALYS WELL NO #12-FARM Curtis Lot 2

ORDER NO. 03-1628 CUST. REP. RANDLY. CUMIS · CHSNG TYPE OF SERVICE

CASING LENGTH 450 BBLS/FT 0465 = 18.67BIG HOLE 450 BBLS/FT 246 = 12.60(.0195-8 INCH, .0247 - 8 5/8, .0268 8 3/4) NO. OF SACKS 80 MIX WATER 160 SLURRY 160 SLURRY WT. 15.6 MIX WATER 5.2 X 80 SACKS  $\div 42 =$  WATER SLURRY 52 SACKS X 1.18  $\div$  5.61 = SLURRY CAL. 94 X 80 SACKS X % OF CAL = LBS (25%) 0.025

40% 20% OVER 168 BBLS

BARRELS PER FT.	WEIGHT PER FT.	SIZE O.D. IN.		SACKS	MIX	SLURRY 15.6	CALCIUM 2%	3%
0.0381	13	6 5/8		30	3.7	6.3	56	85
0.0366	17	*6 5/8		35	4.3	7.3	65	
0.0355	20	6.5/8		.40	4.9	8.4	75	113
0.0348	22	*6 5/8		45	5.6	9.5	85	127
0.0341	24	6 5/8		50	6.2	. 10.5	94	141
0.0333	26	*6 5/8		55	6.8	11.6	103	155
0.0326	28	6 5/8		60	7.4	12.6	113	169
0.0322	29	*6 5/8		65	8	13.7	122	183
0.0313	32	6 5/8		70	8.7	14.7	132	197
0.0415	17	7		.75	) 9.3	15.8	141	212
0.0405	20	7		80	9.9	16.8	150	226
0.0398	22	7		85	10.5	17.9	160	240
0.0394	23	7		90	11.1	18.9	169	254
0.039	24	7		95	11.8	20	179	268
0.0383	26	7		100	. 12.4	21	188	282
0.0375	28	7		105	13	22	206	296
0.0371	29	7	-	110	13.6	23.1	207	310
0.0368	30	7		115	14.2	24.2	216	324
0.0361	32	7		120	14.9	25.2	226	338

in a subman of	INJECTI	ON	PRESSUF	RE	REMARKS
TIME	RATE,	BBLS IN	CSG.	TBG	A
840	4	20.0	100		Pumped water
8:45	4	¥	100		Aunped Gel + FIA
8:46	-	ar an fairsance los	President Taling approximity	~	moved cement,
8:52	4	16.8	75		funces creat
8:56	3	19.0	275		Displaced Lemet
9:01			350		plug Down
				-	

AVER. RATE 3.0	PRODUCTS	JSED		
MAX. PRESSURE 356	CEMENT	80545	MULTI-SEAL	40
AVER. PRESSURE 75,	CALCIUM	150*	7" PLUG	
ENGINEER Jim Brasston	GEL (BET)	100	6 5/8" PLUG	

100

2264 427

3000-FM-OOGM0004b Rev. 5/2012 pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OFFICE OF OIL AND GAS MANAGEMENT

#### **Completion Report**

Troj CE1-C-10

D	EP USE ONLY
Site ID	Primary Facility ID
Client ID	Sub Facility Id

Weil Operator         DEP ID# 34294         Weil APP # 34294           Address 424 South 27 <sup>th</sup> St Suite 304         LAT - 41' 50' 19 LAT - 41' 50' 19	com Amend FLUID Water Mar tal Gallons	of Wate		Volume Water 40,200	Well # 12 Serial # (Gallons) (Gallons) Recycled 26,800 and /JOM	
Address         Interference	com Amend FLUID Water Mar tal Gallons	ed Comp nagemen of Water	Project Number County McKean USGS 7.5 min. qu Lewis Run pletion Report nt Plan ID	Volume Water 40,200 Quantity /	Serial # Section (Gallons) Recycleo 26,800	
Instruction       International construction       International construction         Pittaburgh       Pa       Zip Code       Municipality         Phone       Fax       15203       Internationality         Phone       Fax       Internationality       Latayette         International constructure       Stimulationality       Internationality       Internationality         International constructure       Internationality       Internationality       Internationality         International constructure       Internationality       Internationality       Internationality         Internating	com Amend FLUID Water Mar tal Gallons	ed Comp nagemen of Water	County McKean USGS 7.5 min. qu Lewis Run pletion Report nt Plan ID	Volume Water 40,200 Quantity /	(Gallons) (Recyclec 26,800	
State       Zip Code       Municipality         Phone       Fax       15203       Latayette         Phone       Fax       412-325-4356       Email         Check the appropriate submission:       □ Original Completion Report         STIMULATION BASE         List Water Management Plan Source(s)       1         1.	com Amend FLUID Water Man tal Gallons tal Gallons	of Wate	County McKean USGS 7.5 min. qu Lewis Run pletion Report nt Plan ID	Volume Water 40,200 Quantity /	(Gallons) Recyclet 26,800	
Phone       Fax       13200       Email       di@catalystenergyinc         412-325-4350       Griginal Completion Report       STIMULATION BASE         List Water Management Plan Source(s)       1       1         2.       3.       4.       5.       6.         6.       DEP Biologist Review/Date       To         6.       DEP Biologist Review/Date       To         2.       Other Base Fluid(s) Used       1.         2.       2.       Vell Products:       Condensate         Vell Products:       Gas Btu       Oil API G       Condensate         Well Products:       Gas Btu       Oil API G       Condensate         Well Products:       Gas Btu       Name       Name         Perforation Company       Frac Company       Name       Name         Name       Ion Carey       Address       Address	Amend FLUID Water Mar tal Gallons	of Wate	USGS 7.5 min. qu Lewis Run pletion Report nt Plan ID	Volume Water 40,200 Quantity /	(Gallons) Recyclet 26,800	
Check the appropriate submission:   Original Completion Report  STIMULATION BASE List Water Management Plan Source(s)  .  List M	Amend FLUID Water Mar tal Gallons	of Wate	nt Plan ID r Used	Water 40,200 Quantity /	(Gallons) Recycled 26,800	
STIMULATION BASE List Water Management Plan Source(s)  1.  2.  3.  4.  5.  6.  DEP Biologist Review/Date  5.  6.  DEP Biologist Review/Date  Tc  Cother Base Fluid(s) Used  1.  2.  STIMULATION/PRODUCTION INF Radioactive tracers used?  24 Hr. Open-Flow (MCF/Day) / Date NA /  Well Products: Gas Btu Oil API G Condensat  WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address	Total (	of Wate	nt Plan ID	Water 40,200 Quantity /	Recycle 26,800	
List Water Management Plan Source(s)  1.  2.  3.  4.  5.  6.  DEP Biologist Review/Date Tc DEP Biologist Review/Date Tc Other Base Fluid(s) Used  1.  2.  STIMULATION/PRODUCTION INF Radioactive tracers used?  24 Hr. Open-Flow (MCF/Day) / Date NA / Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address	Water Mar tal Gallons	of Wate	r Used	Water 40,200 Quantity /	Recycle 26,800	
1.       2.         3.	tal Gallons Total (	of Wate	r Used	Water 40,200 Quantity /	Recycle 26,800	
3. 4. 5. 6. DEP Biologist Review/Date To Company Specify Tracer NA / Specify Tracer NA / Well Products: Gas Btu Oil API G Condensate <b>WELL SERVICE COM</b> Perforation Company Name Penn Air Notch Service Inc Address Address Address	Total (	Quantit		40,200 Quantity /	26,800	
4. 5. 6. DEP Biologist Review/Date Tc Other Base Fluid(s) Used 1. 2. STIMULATION/PRODUCTION INF Radioactive tracers used? 24 Hr. Open-Flow (MCF/Day) / Date NA / Well Products: Gas Btu Other Base Tu Condensate WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address Address Address	Total (	Quantit		40,200 Quantity /	26,800	
5. 6. DEP Biologist Review/Date Tc Other Base Fluid(s) Used 1. 2. STIMULATION/PRODUCTION INF Radioactive tracers used? 24 Hr. Open-Flow (MCF/Day) / Date Specify Tracer NA / Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Frac Company Name Penn Air Notch Service Inc Address Address Address	Total (	Quantit		40,200 Quantity /	26,800	
5. 6. DEP Biologist Review/Date Tc Other Base Fluid(s) Used 1. 2. STIMULATION/PRODUCTION INF Radioactive tracers used? 24 Hr. Open-Flow (MCF/Day) / Date Specify Tracer NA / Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Frac Company Name Penn Air Notch Service Inc Address Address Address	Total (	Quantit		40,200 Quantity /	26,800	
6. DEP Biologist Review/Date Tc Other Base Fluid(s) Used 1. 2. STIMULATION/PRODUCTION INF Radioactive tracers used? 24 Hr. Open-Flow (MCF/Day) / Date Specify Tracer NA / Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address	Total (	Quantit		40,200 Quantity /	26,800	
Review/Date     IC       Other Base Fluid(s) Used       1.     2.       STIMULATION/PRODUCTION INF       Radioactive tracers used?       24 Hr. Open-Flow (MCF/Day) / Date       Specify Tracer       Well Products:     Gas Btu       Oil API G     Condensat       WELL SERVICE COM       Perforation Company       Name     Penn Air Notch Service Inc       Penn Air Notch Service Inc     Address	Total (	Quantit		40,200 Quantity /	26,800	
Review/Date     IC       Other Base Fluid(s) Used       1.     2.       STIMULATION/PRODUCTION INF       Radioactive tracers used?       24 Hr. Open-Flow (MCF/Day) / Date       Specify Tracer       Well Products:     Gas Btu       Oil API G     Condensat       WELL SERVICE COM       Perforation Company       Name     Penn Air Notch Service Inc       Penn Air Notch Service Inc     Address	Total (	Quantit		40,200 Quantity /	26,800	
1. 2. STIMULATION/PRODUCTION INF Radioactive tracers used? Specify Tracer Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address			ty all Fluid(s)	1	and /UOM	
2.  STIMULATION/PRODUCTION INF Radioactive tracers used? Specify Tracer Well Products: Gas Btu Oil API G Condensate WELL SERVICE COM Perforation Company Name Penn Air Notch Service Inc Address Address Address			ty all Fluid(s)	1		
STIMULATION/PRODUCTION INF         Radioactive tracers used?       24 Hr. Open-Flow (MCF/Day) / Date         Specify Tracer       NA /         Well Products:       Gas Btu       Oil API G       Condensate         WELL SERVICE COM         Perforation Company         Name       Iron Carey         Penn Alr Notch Service Inc       Address			ty all Fluid(s)			
Radioactive tracers used?       24 Hr. Open-Flow (MCF/Day) / Date NA /         Specify Tracer       NA /         Well Products:       Gas Btu       Oil API G       Condensate         WELL SERVICE COM         Perforation Company       Frac Company         Name       Name       Name         Penn Air Notch Service Inc       Iron Carey       Address			y all Fluid(s)	67 000/		
Radioactive tracers used?       24 Hr. Open-Flow (MCF/Day) / Date NA /         Specify Tracer       NA /         Well Products:       Gas Btu       Oil API G       Condensate         WELL SERVICE COM         Perforation Company       Frac Company         Name       Name       Name         Penn Air Notch Service Inc       Iron Carey       Address	ORMATIC	NAL /YAIT		67,0007		
Specify Tracer     NA /       Well Products:     Gas Btu     Oil API G     Condensate       WELL SERVICE COM       Perforation Company     Frac Company       Name     Name     Name       Penn Air Notch Service Inc     Iron Carey     Address       Address     Address     Address						
WELL SERVICE COM           Perforation Company         Frac Company           Name         Name           Penn Air Notch Service Inc         Iron Carey           Address         Address	24 Hr.	Shut-in P NA /	Pressure:/ Date		etion Date: /4/14	
Perforation Company         Frac Company           Name         Name           Penn Air Notch Service Inc         Iron Carey           Address         Address	APIG		Other	GOR		
Name Name Iron Carey Address Address	PANIES					
Name Name Iron Carey Address Address		PIL	g Drill Out/Fl	ow Back Co	mpany	
Address Address		Nan	ne			
Address		Add	Iress			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100	1000			
City – State- Zip City – State – Zip	- Zip City - Stat			- State - Zip		
Bradford, PA 16701 Pittsburgh, PA 15203 Phone Phone	, PA 15203 Phone					
814-368-7918 412-325-4350						
I do hereby certify to the best of my knowledge, information and b	elief that t	he info	ormation cont	ained on th	is Comple	
tion Report is true and correct. I am aware that there are significa	nt penaltie	es for s	submitting fall	se informat	ion, includ	
ing the possibility of fine and imprisonment.		-				
Well Operator's Signature		DE	EP USE ONL	Y		
Review	ed by:			D	ate:	
Nouglas & Jones 4-7/14 -	1 (	lin	N	4-	25 14	
Printed Name/I/Title: Date: Comme	nts:	/	1		and t	
Douglas E. Jones / Vice President/ General Manager		()	/			
		0	BECEW	-		
Page 1 of						

APR 1.8 2014

ENVIRONMENTAL PROTECTION WARREN DISTRICT OFFICE

## 8000-FM-OOGM0004b Rev. 5/2012

Stage No.	Perforation Date	Stage Perforated From TMD Ft.	PERFORATIO Stage Perforated To TMD Ft.		
110.	3/4/14	1405.0	TMD Ft.	The second se	Formation(s)
2	3/4/14	1421.8		1	Well notched not perforated
	3/4/14	1424.6		1	
	3/4/14	1701.4		1	
	3/4/14	1704.3		1	
,	3/4/14	1707.3		1	
7	3/4/14	1717.0		1	
3	3/4/14	1720.8		1	
)	3/4/14	1724.7		1	
10	3/4/14	1732.1			
1	3/4/14	1734.8		1	
2	3/4/14	1742.3			
13	3/4/14	1742.5		1	
4	3/4/14	1757.0		1	
15	3/4/14	1829.1		1	
16	3/4/14	1846.5		1	
5	514114	1040.0		1	
			the second second		
		-			
		1			
	1				
				e if additional rows/stages	

### Well API# 37-083-55309-\_\_\_

Page \_\_\_\_ of \_

8000-FM-OOGM0004b Rev. 5/2012

#### 55309 Well API# 37-<u>083-55<del>39-</del>--</u>

	orginated as 11	ade Secret of Connor	ential proprietary information	on must be clearly identified	as such and should	I be submitted on the "Confidential S	timulation Fluid Additives" for
Trade Name	Suppliér	Purpose	Ingredients	CAS # of Chemical Component	Max. Compo- nent % Mass in Additive	Chemical Component % Mass used in Total Base Fluid (Pg 1)	Comment
entonite Gel		Gelling agent	Bentonite	NA	NA	NA	
				-			
	-						
	-						
				-			
	1						
					-		
	1						
	1	-					
	-						

Page \_\_\_\_ of \_\_\_

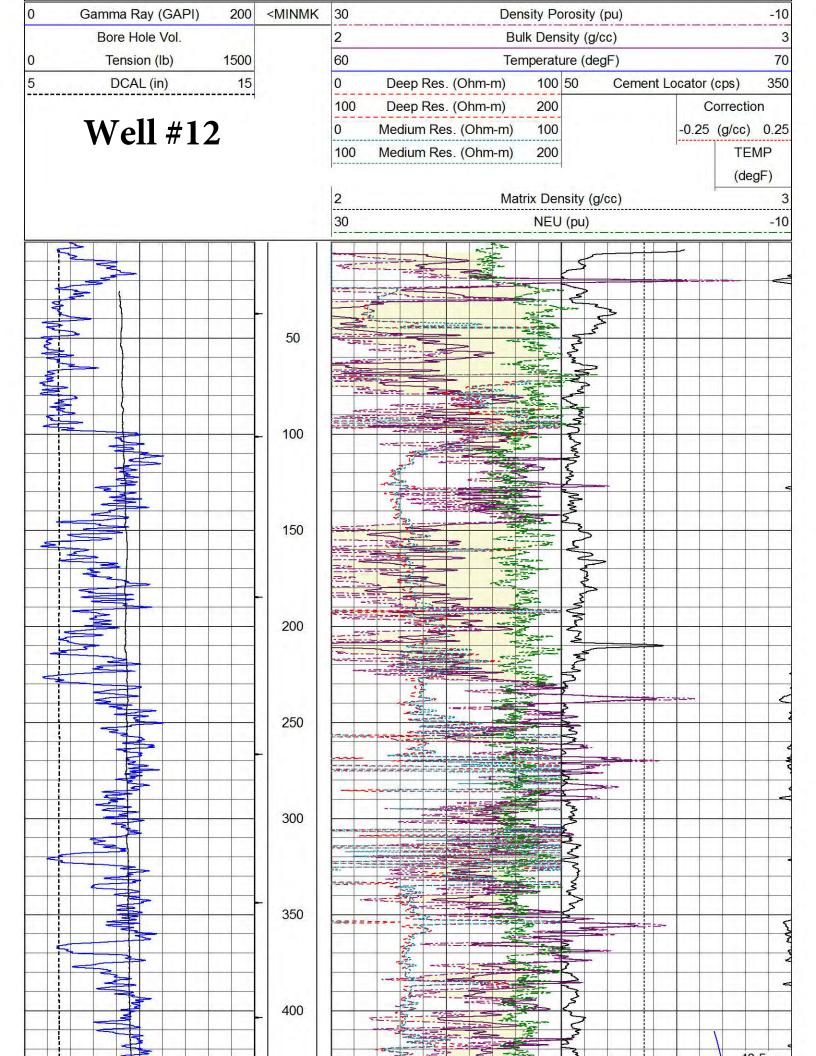
# 8000-FM-OOGM0004b Rev. 5/2012

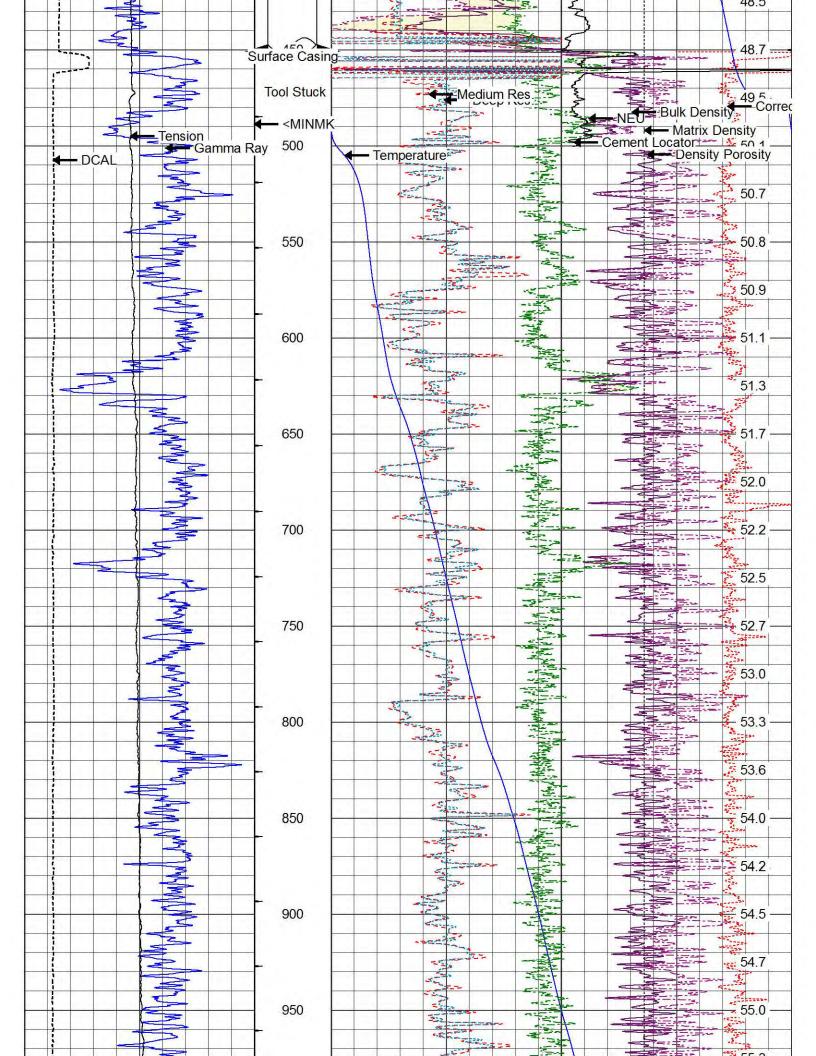
Con	nplete a separa	te record for each s	stimulation stage. (P	JLATION INFORM	ines for additional stan	es or additional pages as	applicable)
Stg #	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant Type	Proppant Mesi Size(s)
1	3/4/14	18.0	1600	1700	1050	Sand	20/40
2	3/4/14	17.9	1950	2450	1100	Sand	20/40
3	3/4/14	18.5	1800	1300	1100	Sand	20/40
1	3/4/14	18.5	2000	2200	1300	Sand	20/40
5	3/4/14	18.0	1950	1000	1250	Sand	20/40
5	3/4/14	18.0	2000	1000	1250	Sand	20/40
7	3/4/14	18.0	2500	2200	1300	Sand	20/40
3	3/4/14	17.0	2100	2780	1300	Sand	20/40
9	3/4/14	17.1	2100	1000	1350	Sand	20/40
10	3/4/14	18.0	2400	2200	1400	Sand	20/40
11	3/4/14	18.6	2400	1700	1400	Sand	20/40
12	3/4/14	18.0	2800	2900	1350	Sand	20/40
13	3/4/14	14.0	3850	3700	1500	Sand	20/40
14	3/4/14	14.0	3600	2700	1300	Sand	20/40
15	3/4/14	6.0	4000	2800	1500	Sand	20/40
16	3/4/14		4000	2900	1900	Sand	20/40
17				2700	1500		
18						-	
19							
20							
21							
22	1						
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
0							

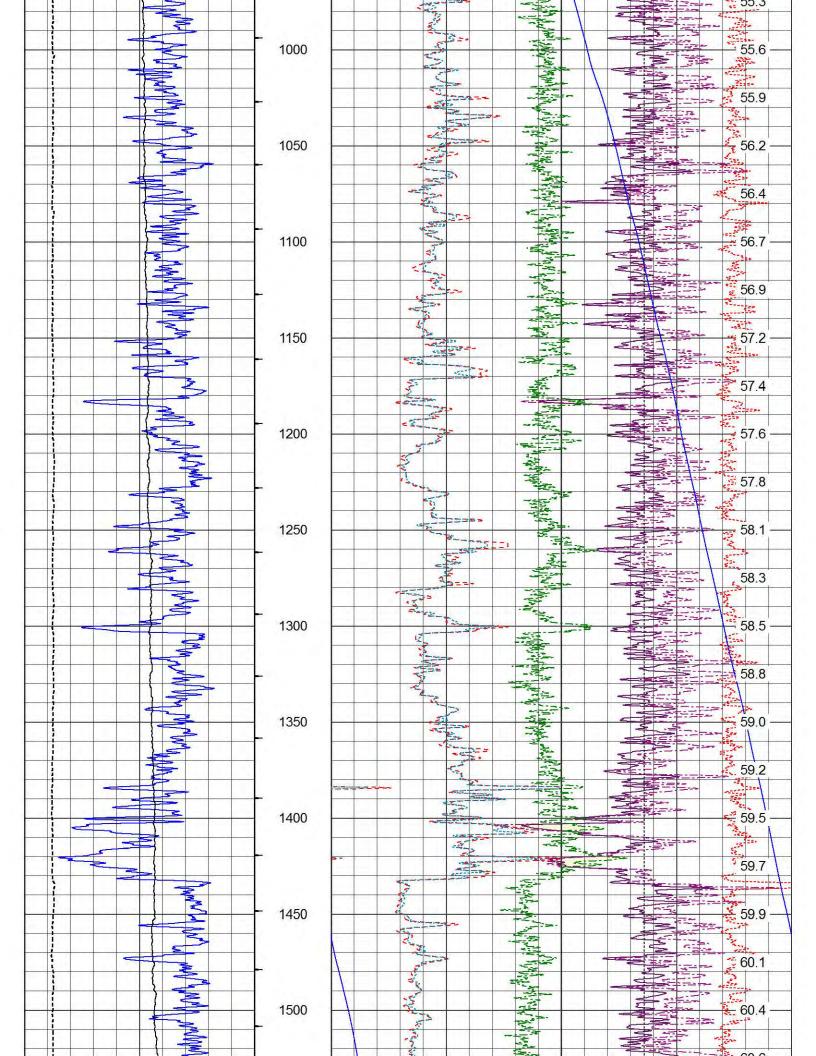
## Well API# 37-083-55309-\_\_\_

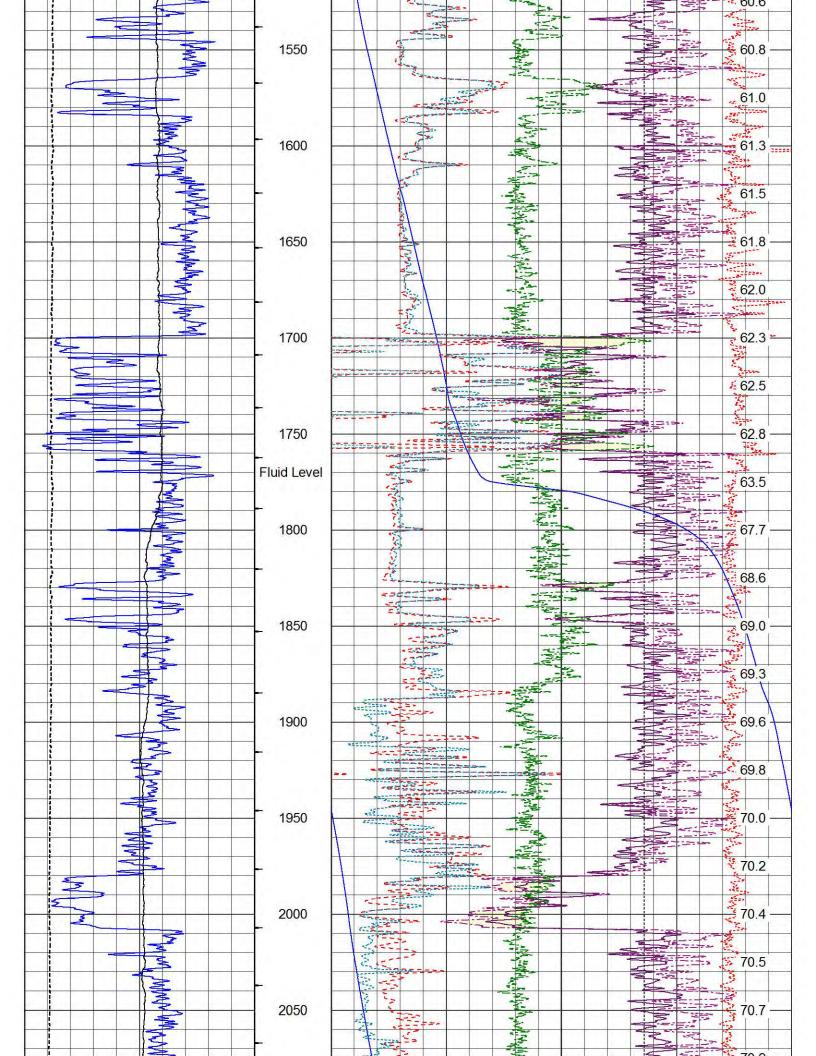
÷

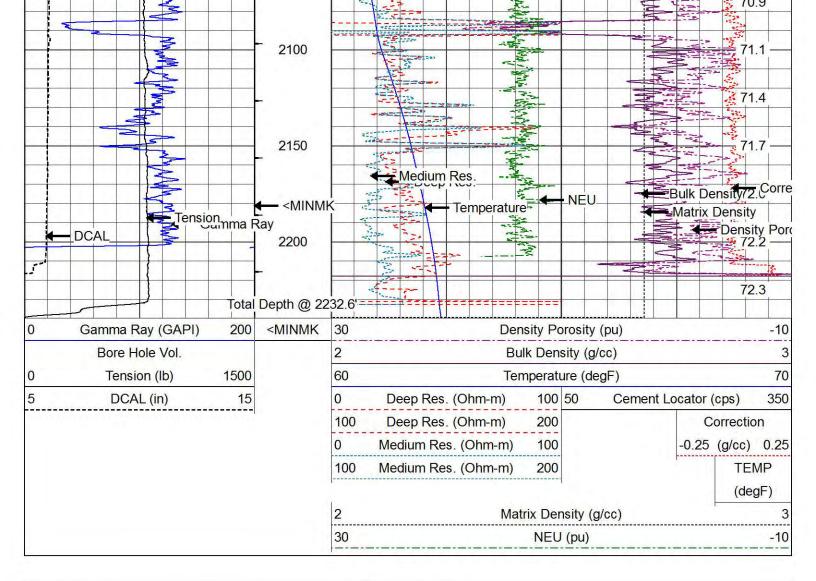
Page \_\_\_\_ of \_\_\_











Database File Dataset Pathname Dataset Creation	curtislot/l	lot2-l212-hri.dt 2-12/run1/merg 4 17:16:04 201	o ge1	alibration Report	t			
			Dual Indu	ction Calibratior	Report			
	Serial- Surfac	Model: e Cal Performe	ed:	DI	L4-GEAR			
		Readings		F	References		Resu	lts
Loop:	Air	Loop		Air	Loop		m	b
Deep Medium	0.015 0.017	0.655 0.736	V V	2.000 6.000	315.000 295.000	mmho/m mmho/m	489.196 401.814	-5.327 -0.852
		Co	ompensated	Density Calibra	ation Report			
	Master Before	Model: / Verifier: Calibration Pe Survey Verific urvey Verificat	ation Perfo	/ Tu rmed:	D-7-GD7 ie Aug 20 11	1:37:53 2013		
Master Calibratio	on				A			
		Density		Fa	r Detector	Near Dete	ector	

CURTIS WELL SERVICE PO BOX 367 SUGAR GROVE, PA 16350

DATE 2-23 COMPANY WELL NO FARM 11 2

ORDER NO. CUST. REP. TYPE OF SERVICE

20% OVER 16.88 BBLS

CASING LENGTH  $450^{\circ}$  BBLS/FT  $4645^{\circ} = 18.67^{\circ}$ BIG HOLE  $450^{\circ}$  BBLS/FT  $4268^{\circ} = 12.0^{\circ}$ (.0195-8 INCH, .0247 - 8 5/8, .0268 8 3/4) NO. OF SACKS  $87^{\circ}$  MIX WATER  $5.0^{\circ}$  SLURRY  $17.0^{\circ}$  SLURRY WT. 15.6 MIX WATER 5.2 X  $87^{\circ}$  SACKS  $\div$  42 = WATER SLURRY  $87^{\circ}$  SACKS X 1.18  $\div$  5.61 = SLURRY CAL. 94 X  $87^{\circ}$  SACKS X % OF CAL = LBS (25%) 0.025

BARRELS PER FT.	WEIGHT PER FT.	SIZE O.D. IN.		SACKS	MIX	SLURRY 15.6	CALCIUM 2%	3%
0.0381	13	6 5/	8	30	3.7	6.3	56	85
0.0366	17	*6 5/	8	35		7.3	65	99
0.0355	20	6.5/	8	40		8.4	75	113
0.0348	22	*6 5/8	3	45	5.6	9.5	85	127
0.0341	24	6 5/	В	50	6.2	10.5	94	141
0.0333	26	*6 5/8	3	55	6.8	11.6	103	155
0.0326	28	6 5/8	3	60	7.4	12.6	113	169
0.0322	29	*6 5/8	3	65	8	13.7	122	183
0.0313	32	6 5/8	3	70	' 8.7	14.7	132	197
0.0415	17	7	7	75	9.3	15.8	141	212
0.0405	20	. 7	7	80	9.9	- 16.8	150	226
0.0398	22	7	7	85	10.5	17.9	160	240
0.0394	23	7	1	90	11.1	18.9	169	254
0.039	24	7	1	95	11.8	20	179	268
0.0383	26	7	1	100	12.4	21	188	282
0.0375	28	7	1	105	13	22	206	296
0.0371	29	7	-	110	13.6	23.1	207	310
0.0368	30	. 7	1	115	14.2	24.2	216	324
0.0361	32	7	L	120	14.9	25.2	226	338
	INJECTION		PRESSU	RE	REMARKS			
		BLS IN	CSG.	TBG	Λ	1		
	4	300	50		Huno	es write	r	
	11					11	1 - 11/	

TIME	RATE,	BBLS IN	CSG.	TBG	A
	4.	300	50		themped water
	4	50	50		puipes be d fitte
		-			miles Lement
	4	17.0	56	-	Huge is Coment 1
	3	18.67	250		Disviered Leavenet
			350		Plug Dain

AVER. RATE 5.0	PRODUCTS USED ,
MAX. PRESSURE 356	CEMENT 8/ 50 MULTI-SEAL 40
AVER. PRESSURE 75	CALCIUM 150 7" PLUG
ENGINEER 1530 Cm	GEL (BET) / 00 6 5/8" PLUG

5500-FM-OG0004b 3/2011



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

# **Completion Report**

 DEP USE ONLY

 Site ID
 Primary Fac ID

 Client
 Subfacility Id

If you a	o eubraitting this O			Well Info	rmation		1 Mg.	10.21
Well Ope	rator	ompletion Report attac	ched to the	Well Record,	you only need to enter the	well API # in this :	section.	
Catalyst	Energy, Inc.		EP ID# 3535	VVen API # (P	remnit / rceg)	Project Number	- 10	Acres
Address		14	1000	37 - 083-553 Well Farm Na	10	CET C	Serial	#
424 Sout	th 27th St Suite 304			Curtis Lot 2	arne	L2-13	Jonal	II.
City Pittsburg	h	State	Zlp Code	County		Municipality		
Phone		PA Fax	15203	McKean		Lafayette	advectate man	
412-325-		412,925 4250		Email dj@catalyster	nerrying com	USGS 7.5 mln. qu Lewis Run	laorangie mat	1
Check	the appropriate sul		Original Co	ompletion Rep	ort Amended Co	mpletion Report		
ALL ALL	Chief Marsh Street	12.			BASE FLUID	a filler for the	Spring.	建立定地。
List	Water Managemen	t Plan Approved Wa			Water M	anagement ID No.	Volum	e (Gallons)
1. n/a								
2,								
3.								
4.								
5.								
6.								
_					Recy	cled Water Used		
		Other Base	e Fluid(s)C	omponents U	Jsed		ing and	
1.								
2.								
					Total Base Fluid(s)/Co	mponents Used		
120.2			PEF	FORATIO	NRECORD	1997 - Series - Serie	ASTREES &	THE BUSIERS
Stage No.	Perforation Date	Stage Perforated From		Perforated To	Perf. Orientation (Vertical, Horizontal, Rad	ial)	Formation	
1	5/25/11		1432.9		n/a	Bradford 1st	(Note well not	ched)
2	5/25/11		1453.7			_		
3	5/25/11		1620.0			Tiona		_
4	5/25/11		1732.0			Bradford 2nd	I	
5	5/25/11		1735.3					
6	5/25/11		1742.2			_		
7	5/25/11		1747.7			BECEIVE	0/	
8	5/25/11		1750.7			JAN 30 20	12	
9	5/25/11		1763.7		Ef	WIRONMENTAL PRO	TECTION	
10	5/25/11		1766.7		NG	RTHWEST REGION	AL OFFICE	
11	5/25/11		1769.8					
2	5/25/11 5/25/11		1772.8 2116.1	1.1		Lewis Run		

-1-

5500-FM-OG0004b 3/2011

#### Well API# 37-083-55310-\_--

escriptive Additive Type	sential proprietary information should be clearly identified a Chemical Component(s) listed on Material Safety Data Sheet of the Additive	CAS No. of Chemical Component	Chemical Component % By Volume In Additive	C	hemical Com	al Component % By Volume used in Each Subgo				
*84 · · · ·			Additive	Stage No.	Stage No.	Stage No.	Stage No.	Stage No.	Stage 1	
one		S SMALL	Correction and Marcalaka and						-	
						-			-	
							-	-	-	
					-		-		1	
					-			-	1	
						-	-	-	1	
					-	-	-		+	
				-	-		-	-	-	
				-	-		-		1	
							-		1	
					-		-		1	
				-					1	
			-			-	1			
					-	-	-		1	
				-	-	-	-			
				-	-	-				
					-	-				
		-		-	-					
				-	-					

-2-

### 5500-FM-OG0004b 3/2011

Well API# 37 -083-55310-\_-\_

Open Flow Production: n/a	24 Hr. Open Flow Production: n/a	NFORMATION (WELL 24 Hr. Shut-In Pressure: n/a	Flow Back Date:		
	STIMULATION IN	FORMATION (STAGE			
Complete a separate record	or each stimulation stage. (Please insert	additional copies of this pag	e for additional stages).		
Stage No.: 13	Stimulation Date: 6/11/11		Pump Rate: 18.0		
Pressure (psi): 2700	Shut-in Surface Pressu n/a	ire:	6 Minute Shut-In Surface Pressure: n/a		
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amoun 80sx	nt:	Propping Agent Size: 20/40		
Stage No.:	Stimulation Date:		Pump Rate:		
Pressure (psi):	Shut-In Surface Pressur	re:	5 Minute Shut-in Surface Pressure:		
Propping Agent Type:	Propping Agent Amo	ount:	Propping Agent Size:		
Stage No.:	Stimulation Date:		Pump Rate:		
Pressure (psi):	Shut-In Surface Pressur	re:	5 Minute Shut-In Surface Pressure:		
Propping Agent Type:	Propping Agent Amount	t	Propping Agent Size:		
Stage No.:	Stimulation Date:		Pump Rate:		
Pressure (psi):	Shut-in Surface Pressure	e:	5 Minute Shut-In Surface Pressure:		
Propping Agent Type:	Propping Agent Amount	ie *	Propping Agent Size:		
Stage No.:	Stimulation Date:		Pump Rate:		
Pressure (psi):	Shut-in Surface Pressure	e:	5 Minute Shut-In Surface Pressure:		
Propping Agent Type:	Propping Agent Amount:		Propping Agent Size:		
Stage No.:	Stimulation Date:		Pump Rate:		
Pressure (psi):	Shut-in Surface Pressure	82	5 Minute Shut-in Surface Pressure:		
Propping Agent Type:	Propping Agent Amount:		Propping Agent Size:		
			well service companies involved.)		
ame on Carey	Name Iron Carey (Farc work		Name Penn Gold Welli Services (Logging)		
ddress	Address 424 South 27th St Sit		Address 7 Main St		
24 South 27th St Site 304 ity - State- Zip	City - State - Zip		City – State – Zip		
ittsburgh, PA 15203	Pittsburgh, PA 15203		Bradford, PA 16701		
none 12-325-4350	Phone 412-325-4350		Phone 314-368-7119		
do hereby certify to the ompletion Report is true	he best of my knowledge, infor	mation and belief that	It the information contained on this alties for submitting false information,		
ell Operator's Signatu	the second se	Derasta D	EP USE ONLY		

		Reviewed by:	Date:
Title: Vice President/ General Manager	Date:	Comments:	

## 5500-FM-C/G0004b 3/2011

Open Flow Production:		NFORMATION (W	/ELL)
1/a	and a part now Production:	24 Hr. Shut-in Pres	sure: Flow Back Date:
	n/a	n/a	n/a
omplete a second	STIMULATION IN	FORMATION (ST	AGE)
semplete a separate record f	or each stimulation stage. (Please insert	additional copies of th	is page for additional stages)
	Stimulation Date:		Pump Rate:
Pressure (pisi):	5/25/11		17.0
800	Shut-in Surface Press	ure:	5 Minute Shut-In Surface Pressure:
ropping Agent Type:	n/a Bronning Acast Ac		n/a
0/40 Ottawa Sand	Propping Agent Amoun 60sx	nt	Propping Agent Size: 20/40
stage No.:	Stimulation Date:		Pump Rate:
ressure (psi):	5/25/11		17.8
800	Shut-In Surface Pressu	ire:	5 Minute Shut-In Surface Pressure:
ropping Agent Type:	n/a Propping Agent Ame	numb.	n/a Propping Agent Size:
0/40 Ottawa Sand	70sx	Juni.	20/40
Stage No.:	Stimulation Date:		Pump Rate:
ressure (psi):	5/25/11		17.2
500	Shut-In Surface Pressu n/a	re:	5 Minute Shut-in Surface Pressure: n/a
ropping Agent Type:	Propping Agent Amoun	t	Propping Agent Size:
0/40 Ottawa Sand	70sx		20/40
tage No.:	Stimulation Date: 5/25/11		Pump Rate: 17.7
ressure (psl):	Shut-In Surface Pressu	re <sup>,</sup>	5 Minute Shut-in Surface Pressure:
300	n/a	ia.	n/a
ropping Agent Type: 0/40 Ottawa Sand	Propping Agent Amoun	t.	Propping Agent Size:
tage No.:	70sx Stimulation Date:		20/40 Pump Rate:
age no	5/25/11		17.7
ressure (psi):	Shut-in Surface Pressur	e:	5 Minute Shut-In Surface Pressure:
500 ropping Agent Type:	n/a		n/a Propping Agent Size:
0/40 Ottawa Sand	Propping Agent Amount 60sx	Ę.	20/40
tage No.:	Stimulation Date:		Pump Rate:
	5/25/11		17.7
essure (psi): /50	Shut-In Surface Pressur	e:	5 Minute Shut-in Surface Pressure: n/a
opping Agent Type:	n/a Propping Agent Amount		Propping Agent Size:
/40 Ottawa Sand	60sx		20/40
ELL SERVICE COMPAN	IES (Provide the name, address, an	d telephone number	r of all well service companies involved.)
ime Carrie	Name Iron Carey (Farc work		Name Penn Gold Welll Services (Logiging)
on Carey Idress	Address	9	Address
4 South 27th St Suite 304	424 South 27th St Su	ite 304	7 Main St
y - State- Zip	City – State – Zip Pitttsburgh, PA 1520	3	City - State - Zip
tsburgh, PA 15203		-	Bradford, PA 16701
0.005 4050	Phone 412-325-4350		Phone 814 268 7110
2-325-4350		mation and holio	814-368-7119 of that the information contained on thi
moletion Report is true	and correct I am aware that th	ere are significant	t penalties for submitting false information
	fine and imprisonment.	ore are significant	penanos for submitting faise information
COMPANY OF THE REAL PROPERTY O	and the second se		DED LISE ONLY
Vell Operator's Signatu	(e	Reviewed by:	DEP USE ONLY

Title: Vice President/ General Manager

Date:

**NALS** 

Comments:

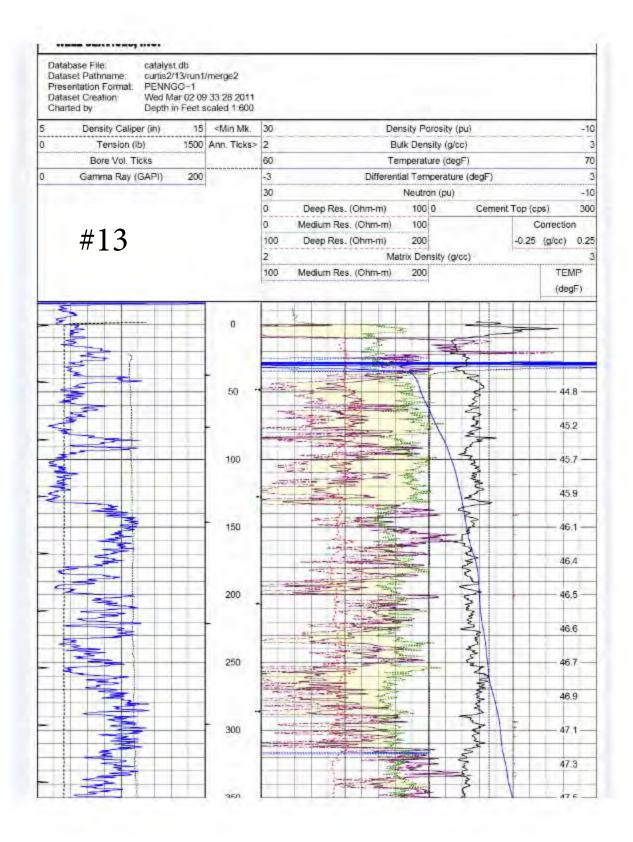
### 5500-FM-OG0004b 3/2011

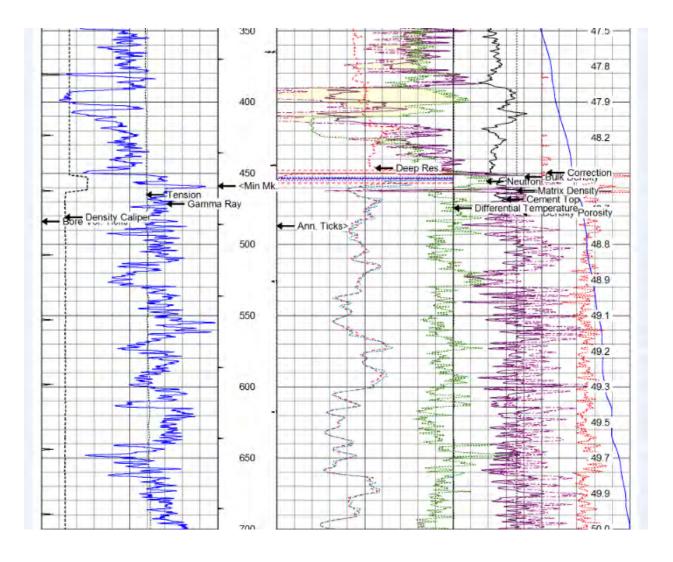
Well API# 37 -083-55310-\_-\_

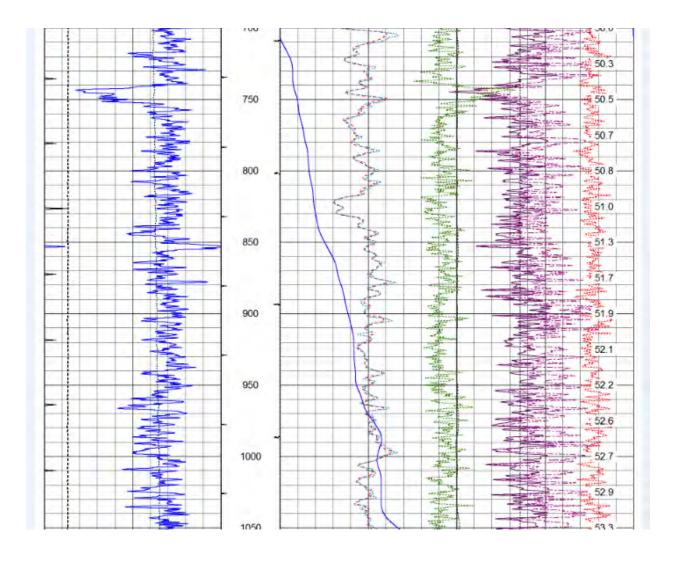
Open Flow Production: n/a	24 Hr. Open Flow Production: n/a	NFORMATION (WELL 24 Hr. Shut-in Pressure: n/a		Flow Back Date: n/a	
	STIMULATION IN	FORMATION (STAGE	E)	11111111111111111111111111111111111111	
Complete a separate record for	or each stimulation stage. (Please insert	additional copies of this page	ge for additio	nal stages).	
Stage No.: 7	Stimulation Date: 5/25/11		Pump Rate: 187.6		
Pressure (psi): 3150	Shut-in Surface Press	ure:	5 Minute Sh	ut-in Surface Pressure:	
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amoun 80sx	nt:	Propping Ag 20/40	gent Size:	
Stage No.: 8 Skipped	Stimulation Date: 5/25/11		Pump Rate: 17.6		
Pressure (psi): 2750	Shut-in Surface Pressu n/a	ire:	5 Minute Shut-in Surface Pressure: n/a		
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amo 60sx	ount:	Propping A 20/40	igent Size:	
Stage No.:	Stimulation Date: 5/25/11		Pump Rate: 17.6		
Pressure (psi): 2900	Shut-in Surface Pressur n/a	re:	5 Minute Shut-in Surface Pressure: n/a		
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount 60sx		Propping Age 20/40	ent Size:	
Stage No.: 10 Skipped	Stimulation Date: 5/25/11		Pump Rate:		
Pressure (psi):	Shut-in Surface Pressur	e:		t-in Surface Pressure:	
Propping Agent Type:	Propping Agent Amount:		Propping Agent Size:		
Stage No.:	Stimulation Date: 5/25/11		Pump Rate: 17.8		
Préssuré (psl): 1900	Shut-in Surface Pressure n/a		5 Minute Shut-In Surface Pressure: n/a		
ropping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 114sx		Propping Agent Size: 20/40		
Stage No.:	Stimulation Date: 5/25/11		Pump Rate: 17.9		
ressure (psi): 000	Shut-In Surface Pressure n/a		5 Minute Shut- n/a	In Surface Pressure:	
ropping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 70sx		Propping Ager 20/40	nt Size:	
	ES (Provide the name, address, and			e companies involved.)	
ame on Carey	Name Iron Carey (Farc work)		Name Penn Gold W	Velli Services (Logging)	
dress 24 South 27th St Site 304	Address 424 South 27th St Site	1	Address 7 Main St		
ty - State- Zip ttsburgh, PA 15203	City - State - Zip Pittsburgh, PA 15203	0	City - State - 2 Bradford, PA		
one 2-325-4350	Phone 412-325-4350 a best of my knowledge, inform	F	Phone 314-368-711	9	

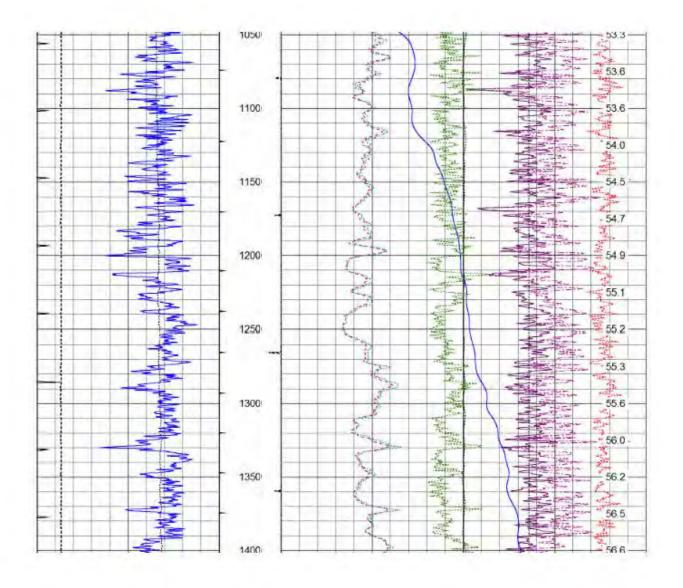
including the possibility of fine and imprisonment... Well Operator's Signature DEP USE ONLY Date: Reviewed by: 6 C 2 L Title: Vice President/ General Manager ler 7 Date: Comments:

(If you will need more space than this page, please photocopy the blank form before filling It in)         Formation Name or Type       Top (feet)       Bottom (feet)       Gas at (feet)       Oil at (fresh / bring; ft.)       Source of Data         Shale       0'       39'       464'       (feet)       (fresh / bring; ft.)       Source of Data         Shale       464'       640'       664'       Fresh Water       Driller         Vanango 3rd       664'       741'       756'       Driller       Driller         Shale       664'       741'       756'       Driller       Driller         Shale       664'       741'       0'//// 82'       Driller       Driller         Shale       756'       1417'       Noted       Electric Log       Electric Log         Base of C Shale       1167'       Electric Log       Electric Log       Electric Log         Shale       1462'       1484'       1574'       Electric Log       Electric Log         Shale       1633'       1731'       Electric Log       Electric Log         Shale       1633'       1731'       Electric Log       Electric Log         Shale       1867'       187'       186'//////       Electric Log <tr< th=""><th></th><th></th><th>LOG OF</th><th>FORMA</th><th>TIONS</th><th>Well API#</th><th>37-083-55310</th></tr<>			LOG OF	FORMA	TIONS	Well API#	37-083-55310
Formation Name or Type(feet)(fee	(If you will	need more spa	ce than this pa	ge, please phot	ocopy the blan		t in.)
Shale0'39'39'A64'Red Rock39'464'640'DrillerShale464'640'664'741'DrillerShale664'741'756'DrillerMagee Hollow741'756'Rate notDrillerShale756'1417'InotedElectric LogShale756'1417'Electric LogShale1462'1484'Electric LogShale1462'1484'Electric LogShale163'1731'Electric LogShale163'1731'Electric LogShale163'1731'Electric LogShale163'1731'Electric LogShale1867'1867'Electric LogBradford 2nd1731'1807'Electric LogShale1878'2007'Electric LogBradford 3rd2007'2058'ShowNoShale1878'2007'Electric LogBradford 3rd2007'2058'ShowNoLewis Run2113'2120'1694'ShowLewis Run2113'2120'Electric Log	Formation Name or Type					Water at (fresh / brine; ft.)	Source of Data
I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has	Shalee Red Rock Shale Venango 3rd Shale Magee Hollow Shale Bradford 1st Shale Clarendon Shale Tiona Shale Bradfford 2nd Shale Harrisburg Run Shale Bradford 3rd Shale Lewis Run Shale	0' 39' 464' 640' 664' 741' 756' 1167' 1417' 1462' 1484' 1574' 1633' 1731' 1807' 1878' 2007' 2058' 2113' 2120'	39' 464' 640' 664' 741' 756' 1417' 1462' 1484' 1574' 1633' 1731' 1807' 1867' 1878' 2007' 2058' 2113' 2120' 2223'	Show @ 1694'	No	Fresh Water @ 264' Rate not noted	Driller Driller Driller Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log
	Well Operator's Signature		1/27/12	Revie	wed by:	2	Date: 2-2/-15
Wonglus Em 1/27/12 The 2-21-12	Vice President/ General Mana		//			Commer	nts:









	1		DEPA	COMMONWEAL RTMENT OF EN		NNSYLVA	NIA	-		USE ON	LY Pomary Fi
			(	DIL AND GAS M	ANAGEMEI	NT PROG	RAM	Site IC			7133
			Well Re	ecord and	Com	pletio	n Repor	t	76535		Subfacility
CATAL Address	YST ENERGY	Y, INC.		DEP ID# 76535	Well API	# (Permit / 54007-00	Reg)	_	roject Numbe CEI-C-10	ef	Acri
	ANBERRY W	OODS DR	STE 290.		Well Farm	Name & V		1246		Seria	1.0
City	ERRY TOWN		State	1.6 0000	County	McKear		LZ 10 Nunicipality	Lafay	ette	
Phone (724) 775	9-9040		Fax		USGS 7.5	min, quadr	angle map				
Check all	that apply:	Original W	ell Record	Original Compl	etion Repor		nended Well R	ecord [	Amended	Comple	tion Rej
			WEL	L RECOR		comple	te the Log o	of Forma	tions on ba	ack (pa	ge 2)
Well T	vpe	Gas 🗶		ombination O	1 1100	_	jection	Storag		Dispos	
Drilling M		Rotary - A		tary – Mud		ble Tool					
Cote Drilling	Started	Date Dri	ling Completed	Surface Ele		t. To	2176	er ft.	Total De	pth - Los	gger ft.
4.1	Casing an			Cement retu Cement retu	rned on s		asing?	Yes	No Yes	10 1	N/A
Hole Pip	e Size Wt.	Thread / Weld	Amount in Well (ft)	Materia	I Behind I	Pipe		Hardwa	re / Centro	epth	Dat Rui
1" 9	48h 32	T	7,	Scaded	in					1.00	7
34 -	7" 20	T	452'	Type I cenest			Cent.	NA		250	?
				OMPLETI			<b>_</b>				
-	function Doc	ord		JWPLET			I tion Recor	d			
202	foration Rec	Perforated	Date	Interval Tr		-	luid	-	ig Agent	Ave	erage
Date	From 1398	NA	Duie	Intervor II		Type	Amount 6000	Type	Amount		ction
23/11	1695	N/A	1			H20	6000	_	60	1/	.4
1	1699		-	-		1	7000		70		
1	1708						7000		70		
	1712						8000				
						L	8000		60	_	
	1840	1		1							
rol Open Flo	2078	1		Natural R	ock"		8000		80	*	
Treatment	2078 2081 Mon	l L		Pressure After Trea	V	kwn	4000		80 Hours		Days
Treatment n Flow	2078 2081 Mon			Pressure After Trea Rock Press	tment sure	.k-n			80	[	Days
Treatment n Flow	2078 2081 Mon		the name, addre	Pressure After Trea Rock Press	tment sure umber of al	k I well serv	ice companies	involved.	80 Hours	[	
rral Open File Treatment n Flow II Service e Hence ess	2078 2081 Mon			Pressure After Trea Rock Press ess, and phone n Syperice W	tment sure umber of al	k I well serv	rice companies		80 Hours	[	
Treatment n Flow II Service * Hence	2078 2081 Mon		Name	Pressure After Trea Rock Press ess, and phone n Syperier W Holley A	tment sure umber of al	k I well serv	rice companies Name Addres		80 Hours	[	

5500-FM-OG0004a 2/2011 pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

## COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

	DEP USE OF	NLY	-		
Site ID		Primary Fac ID			
Client Id		Subfa	cility Id		

## Well Record

Well Operator Catalyst Energy In		A LE LE ALLANS	AND A STREET, STR	DEP ID# 76535	Well API # (Perr	nit / Reg)		Project Number	0	Acres
Address				10555	37-083-55311 Well Farm Name			CEIC /	Serial	#
424 South 27 <sup>th</sup> St City Pittsburgh	Suite 304		State	Zip Code	Curtis Lot 2 County		Municipality	L2-18		
Phone		Fax	PA	15203	McKean		Lafayette			
412-325-4350		4	12-425-4356	5	Email dj@catalystene	rgyinc.com	USGS 7.5 m Lewis Run	ISGS 7.5 mln. quadrangle map ewis Run		
Check the approp	oriate Submissio	on:	$\boxtimes$	Original Well F	Record	Amended	and the second se			
Well Type	Gas	🖾 Oi	1	Combination C	Dil & Gas	Injection		torage	Disp	oosal
Well Orientation	Vertical	De	eviated from	Vertical (Side v	iew and Deviated	Survey must l	be attached)			
Drilling Method	Rotary - /		and a local division of the local division o	Rotary - Mud		Cable Tool	and the second se			
Date Drilling Started 2/11/11	Date Drilling Co 2/15/11		Surface Elev 2140	211 B B B B B B B B B B B B B B B B B B	epth - Driller 1 183 ft.	otal Depth – Log 2183 ft.	ger Depti	of Deepest Free	sh Ground	ft.
		NEALSAL	N TRANS	And in case of the local division of the loc	EMENT			ale les de	and the second	in the second
Cement returned	on surface casing	2	Yes 🗆	If No prov	vide top of cement a	nd method used	to determine:	Car Construction of the	at the d	Charle Had Shak in
	and a same of a shirt				ida has af	nd mothed used	la datassiasi		<u></u>	□ N/A
Cement returned	in coal protective	casing?	□ Yes □	No Ir No, prov	ide top of cement a	na method used	to determine:			
Cement returned	on intermediate ca	asing?	Yes 🗌	No If No, prov	ride top of cement a	nd method used	to determine:	-		□ N/A
Casing String		Type of Cement Amount of Cement Gas Block (or					equiva	lent) Us		
Conductor			n/a				/			STAR
Surface		Class A			RECEN	80sx	VI	Yes 🛛	No [	] N/A
Coal Protective			n/a					Yes 🗌		N/A
Intermediate			n/a		DEC 16 LORDIECTION Yes No     NORTHWEST HERICONAL OFFICE     Yes No     NORTHWEST HERICONAL OFFICE     Yes No				N/A	
Production	1		n/a		NORTHWEST	All Barris		Yes		N/A
FIGULCION			iwa					Yes		] N/A
								Yes		] N/A
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	TEST TEAL OF THE TEAL OF THE		WUNTER STATE	-	10280000000		Charles Carl	Yes 🗌	NO L	] N/A
			anterio eng	CASING	AND TUBING			100	1	is of i
	e Wt.	Thread		sing / Tubing Ty	Amount i vpe Well (ft.)		/ Hardware Size	/ Centralize	/	Date Rur
Hole Size Pipe St			bee	10 RND	53.8					
		Thre	au			1001	224'			2/11/1
Size Pipe Sta 11" 9 5/8		Thre			- 455'	422' 323'	125'	26'		
Size         Pipe Size           11"         9 5/8           8 3/4"         7"	32lb. 20lb.		ad		<mark>- 455'</mark> 2122	323'	Hookwa	11		6/21/1
Size         Pipe Size           11"         9 5/8           8 3/4"         7"           6 1/4'         1 1/2	32lb. 20lb. 1.9 lb	Thre	ad ad			323' 573'	Hookwa	11		
Size         Pipe Size           11"         9 5/8           8 3/4"         7"           6 1/4'         1 1/2	32lb. 20lb. 1.9 lb	Thre thre	ad ad		2122	323' 573' 5' 1975'	Hookwa Swell	u ing		
Size         Pipe Size           11"         9 5/8           8 3/4"         7"           6 1/4'         1 1/2	32lb. 20lb. 1.9 lb	Thre thre	ad ad		2122	323' 573'	Hookwa Swell	u ing		6/21/1 6/21/
Size         Pipe Size           11"         9 5/8           8 3/4"         7"           6 1/4'         1 1/2	32lb. 20lb. 1.9 lb	Thre thre	ad ad		2122	323' 573' 5' 1975'	Hookwa Swell	u ing		

- 1 -

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at	Oil at	nk form before filling Water at	
Sandstone Shale Red Rock Shale Venango 3rd Shale Magee Hollow Shale Base of C Shale Bradford 1st Shale Clarendon Shale Tiona Shale Bradfford 2nd Shale Harrisburg Run Shale Bradford 3rd Shale Lewis Run Shale	0' 114' 464' 520' 606' 639' 688' 728' 1150' 1395' 1439' 1461' 1553' 1574' 1604' 1776' 1834' 1851' 1982' 2021' 2079' 2092'	114' 464' 520' 606' 639' 688' 728' 1395' 1439' 1461' 1553' 1574' 1594' 1609' 1776' 1834' 1851' 1982' 2021' 2079' 2085' 2183	(feet) No Show	(feet) No Show	(fresh / brine; ft.) Not noted	Source of Data Driller Driller Driller Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log
do hereby certify to the best of een properly cased and cemen ontained in the permit for this reventer with a pressure rating 78.84(f). I am aware that there	well. In ad greater that	rdance with th Idition, I do I an 3,000 psi	he requireme hereby certify has passed	that any a pressure	Pa. Code Chapter casing which is a test in accorda	r 78 and any conditions attached to a blow-ou ance with 25 Pa. Code
nd imprisonment.					DEP USE C	

Title: Vice President/ General Manager

- 2 -

Comments:

00004 Rev 2/2001	COMMONWEALTH OF PENNSYLVANIA	Bew MY 7 DEP USE ONLY
	DEPARTMENT OF ENVIRONMENTAL PROTECTI OIL AND GAS MANAGEMENT PROGRAM	Client Id Eth La II II
WELL RE	CORD AND COMPLETION	REPORT
Address BOX 2587 DUKE CENTER MONEL - 466 3452 Check all that apply DOrginal Well Re	LEWIS	N R NUNICIPOLITY N LAYFAYETTE RUN P(L,
Conginal Well Re	ecord Original Completion Report	
Well Type Gas 🕅 OI	WELL RECORD Also complète	
Drilling Method , Rotary – Air	Rotary – Mud X Cable Tool	njection Storage Disposal
Date Dailing Started Date Drilling C	Completed Surface Elevation Total	Depth-Driller 2 8 ft L828 ft
Cooling and Tubica	Cement returned on surface cas	and a second sec
Casing and Tubing	Cement returned on coal protect	Ive casing? Yes No N/A Packer / Hardware / Centralizers Date
	ell (ft) Type and Amount	Type Size Depth Run
8" 7 00 17 THRANG 4 Q4 2" Threas 1	135 HO SACK CEMENT 800	
	135 HO SACK CEMENT 800	=/276 7/25/0
Q*4 2"Threas["	55 40 SACK CEMENT 800 COMPLETION REPORT	
	COMPLETION REPORT	Start Tisp
Q4 2"Thread	COMPLETION REPORT Stimulation Date Interval Treated Type A	on Record Propping Agent Average
Perforation Record Date Interval Perforated From EXECTONAL OF NOPTHWEST RE CLONAL OF AUral Open Flow N A-	COMPLETION REPORT Stimulation Date Interval Treated Type A AFTTACHED INTERVE	on Record Propping Agent Imount Type Amount Injection
QA     Q''     Thread       Perforation Record       Date     Interval Perforated       From     ETE       DEC     1 is 2001       CALL     ENVISIONAL PROTUCE       NOPTHIWEST RECIONAL OF       atural Open Flow     N A-       Iter Treatment     N A-	COMPLETION REPORT Stimulation Date Interval Treated Type A ATTACHED Interval Rock NA Pressure NA After Treatment NA	Propping Agent Average Injection NOV-19R Hours Days Hours Days
Perforation Record Date Interval Perforated From EXECTONAL OF DIC 1 5 201 CNU'ST DATEENTAL PROTICE NUPTHINEST RE CIONAL OF Aural Open Flow N A- Iter Treatment pen Flow N A- Iter Treatment N A- Itel Service Companies – Provide the r	COMPLETION REPORT Stimulation Date Interval Treated Type A ATTACHED Natural Rock Pressure After Treatment Rock Pressure After Treatment Rock Pressure After Treatment Rock Pressure After Treatment Rock Pressure After Treatment Rock Pressure Natural Rock Pressure After Treatment Rock Pressure Natural Rock Pressure After Treatment Rock Pressure Natural Rock Pressure After Treatment Rock Pressure Natural Rock Pressure After Treatment Rock Pressure Natural Rock Pressure Natural Rock Pressure After Treatment Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure Natural Rock Pressure	Propping Agent Average Injection Average Injeco Injeco Injection Average Injeco Inje
QA     Q''     Thread       Perforation Record       Date     Interval Perforated       From     ETE       DEC     1 is 2001       CALL     ENVISIONAL PROTUCE       NOPTHIWEST RECIONAL OF       atural Open Flow     N A-       Iter Treatment     N A-	COMPLETION REPORT Stimulation Date Interval Treated Type A ATTACHED Natural Rock NA Pressure NA After Treatment NA atter Treatment NA harme, address, and phone number of all well service con Name Address	Propping Agent Average Injection MOV-1900 Hours Days Hours Days

00-FM-0G00	04 Rev 2/2001	· · · · · · · · · · · · · · · · · · ·	"Ca
		COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM	Site Id Primary Facility
	WELL RE	CORD AND COMPLETION REPO	Client Id Sub-facility Id
Bexa	is oil FNC	DEP ID# Well API # (Permit / Reg) 39 784 31-083-14489-R Well Form Name	Project Number Acres
none	0FWTER 66-3452	Stote Zip Code County KEAN MCKEAN USCS 75 mm quadrangle grap	LAYFAY ETTE
		LEWIS RU	V PA.
. 82, 14,			Il RecordAmended Completion Report
Well Type		WELL RECORD Also complete Log of	
Drilling Met	hod Rotary - Air	Rotary – Mud Cable Tool	
Date Dalling Sto	arted   Date Dalling	Completed T Surface Elevation ; Total Depth -	
		Cement returned on surface casing?	,9 ft <u>1872;9 ft</u> ☐ Yes ☐ No
	asing and Tubing	Cement returned on coal protective cas	
Hole Size Pipe	Size Wt, Thread Ar		er / Hardware / Centralizers Date De Size Depth Run
64 0		60 45 SACKS CEMENT	7/101
64 2		NOV 1	1/19/5 9 2001
64 A		850 	1/9/5 9 2001
64 4	" Th. 1	800 NOV 1 COMPLETION REPORT	
		850 NOV 1 COMPLETION REPORT Stimulation Re	
Perfe	oration Record	COMPLETION REPORT	cord
	oration Record	COMPLETION REPORT	Cord Propping Agent Average
	oration Record	COMPLETION REPORT COMPLETION REPORT Stimulation Re Date Interval Treated Type Amoun ATTACAEC	cord Propping Agent Average Type Amount Injection
Date	oration Record Interval Perforated From To	Retural Rock Pressure	Cord Propping Agent Average Type Amount Injection PECEIVICD
Date Natural Open I After Treatmen Open Flow	Plow	Returnal Rock Notural Rock Pressure ATTACAEC Natural Rock Pressure After Treatment Rock Pressure	Cord Propping Agent Average Type Amount Injection MAR 1 2 712 Contraction MAR 1 2 712 Contraction Contrecon Contra
Date Natural Open I After Treatmen Open Flow Well Servia	Prove Pr	NOV 1 COMPLETION REPORT Stimulation Re Date Interval Treated Type Amoun ATTACAEC Natural Rock Pressure After Treatment Rock Pressure The name, address, and phone number of all well service companies	Cord Propping Agent Average Type Amount Injection PECEIVID MAR 12772 Contraction MAR 12772 Contraction MAR 12772 Contraction Hours Days Hours Days sinvolved
Date Natural Open I After Treatmer Open Flow Well Servio	Provent From To From To Fro	NOV 1 COMPLETION REPORT Stimulation Re Date Interval Treated Type Amoun ATTACAEC Natural Rock Pressure After Treatment Rock Pressure The name, address, and phone number of all well service companies	Cord Propping Agent Average Type Amount Injection PECEIVID MAR 12772 Contraction MAR 12772 Contraction MAR 12772 Contraction Hours Days Hours Days sinvolved
Date Natural Open I After Treatmer Open Flow Well Servit Address Boo	Prove Pr	850       NOV 1         NOV 1         Stimulation Report         Date Interval Treated Type Amoun         ATTTACAEC         Natural Rock Pressure         ATTTACAEC         Natural Rock Pressure         ATTTACAEC         Natural Rock         Natural Rock         Pressure         After Treatment Rock Pressure         Natural Rock         Acteristic         Natural Rock         Address         Natural Rock         Natural Rock         Natural Rock	Cord Propping Agent Average Type Amount Injection MAR 1 2 7.12 MAR 1 2 7.12 MAR 1 2 7.12 MAR 1 2 7.12 MAR 1 2 7.12 Hours Days Hours Days Sinvolved The Stofe-Dip MAY 2 0 2002



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

Well Record

	DEP US	EONLY	
Site ID		Primar	y Fac ID
Client Id	_	Subfac	ality Id

		10 M			WELLI	INFOR	RMATH	ON			-				
Well Open Catalyst	ator Energy Inc			1	DEP ID# 76535		API # (P)		eg)		Projec C E	t Number	10	Acres	
	th 27th St St	uite 304					Farm Nar is Lot 2	me				ell # L2-17		riai #	
Pittsburg	gh			State PA	Zip Code 15203	Coun McK				Municipality Lafayette	1				
Phone 412-325-	4350		Fax 412-	425-4356		Emai dj@d	l catalyste	energyir	ic.com	USGS 7.5 r Lewis Run	SGS 7.5 min. quadrangle map wis Run				
Check th	ne appropri	ate Submission	:		Original Well	Record			Amended W						
Well	Туре	🗌 Gas	🖾 Oil		Combination	Oil & G	as		njection		Storag	e		isposal	
Well Or	ientation	Vertical	Devia	ated from \	/ertical (Side	view an	nd Devia	ted Sur	vey must be	e attached)					
Date Drill	Method ng Started 1/11	Rotary – Air Date Drilling Com 6/4/11		urface Eleva 2130 f		d Depth 128.3		Total I	Cable Tool Depth – Logge 128.3 ft.	er Dept	Depth of Deepest Fresh Groundwater 364 ft.				-
12	1.1.1				(	CEME	NT					1	1120	2	
Cement	returned on	surface casing?	×	Yes 🗆 I	No If No, pr	ovide top	o of cerner	nt and m	ethod used to	determine:					
Cement	returned on	coal protective c	asing?	Yes I	No If No, pre	ovide top	o of cerner	nt and m	ethod used to	determine:				□ N/A	
Cement	returned on	intermediate cas	sing?	Yes I	No If No, pr	ovide top	o of cemer	nt and m	ethod used to	determine:				🗌 N/A	
Casing S	String		Туре	of Cemen	t		A	mount	of Cement	ment Gas Block (or equivalent) U			ivalent) Us	ed	
Conduc	tor		n/	a						1984					5.0
Surface			Class A 🛛 🕅 Số sx				sx		QY	es 🛛	No	□ N/A			
Coal Pr	otective		n/	a							DY	es [	] No	🛛 N/A	_
Interme	diate		n/	a							QY	es [	] No	🖾 N/A	_
Product	ion		n/	a		-					DY T		] No	N/A	_
			_								U Y		] No	□ N/A	_
													] No		_
4.985 6.5	Markall.		1000		CASING	SAND	TUBI	NG		CRE CONTRACTOR			1 10		-
的合于自己的		Concentration of	a the start	The second	GAUIN	2 AME	Amou		Packer	/ Hardwar	0/0	ontrolis	ore	- Aller	
Hole Size	Pipe Size	Wt.	Thread Weld		ing / Tubing	Туре	Well		Type	Size	6/0		pth	Date Ru	n
11"	9 5/8"		Threa	d	10 RND		6	60'							
8 3/4"	7"	20lb.	Threa	d			4	55'	422' 323'	224		2	6'	5/32/	11
6 1/4'	1 1/2"	1/9 lb	thread	ł			21	14.3	Hook Wall				26'	6/27/	11
												CEIVE		1	
										1		302			
										ENV	RUNN	ENTAL P	NAL OF	FICE	_
If any ca	asing is we	lded, provide th	ne name	of the wel	der: n/a plete the Log	of Form	nations (	on back	(page 2)						

-1-

hale     64'     439'     Fresh Water     Driller       ed Rock     439'     545'     007'     No rate     Driller       ihale     630'     630'     no rate     Driller     Driller       ihale     630'     633'     @ 214'     Driller     Driller       ihale     720'     1386'     no rate     Inter     Electric Log       ihale     720'     1386'     no rate     Inter     Electric Log       ihale     1431'     1454'     No rate     Inter     Electric Log       isaes of C Shale     1431'     1454'     no rate     Ielectric Log       isaendon     1454'     1564'     noted     Ielectric Log       ishale     1564'     1686'     Ielectric Log     Ielectric Log       ishale     1767'     1838'     Ielectric Log     Ielectric Log       ishale     1879'     1973'     2014'     Ielectric Log       ishale     2014'     2077'     No     No       shale     2014'     2077'     No     No       shale     2085'     2128.3'     Show     Ielectric Log	(If you will	need more spa	ce than this pag	ge, please photo	copy the blan	k form before filling i	( <i>In.</i> )
andstone       0       64'       439'       Fresh Water       Driller         hale       64'       439'       Kater       Biller       Driller         ecRock       439'       545'       607'       No rate       Driller         enango 3rd       607'       630'       noted       Driller       Driller         ihale       630'       683'       @ 214'       Driller       Driller         ihale       630'       683'       @ 284'       Driller       Driller         itage of C Shale       1135'       @ 284'       No rate       Electric Log         itaredford 1st       1386'       1431'       No rate       Electric Log         itarendon       1454'       1543'       I564'       I594'       Electric Log         itariaburg Run       1584'       1698'       Electric Log       Electric Log         itariaburg Run       138'       1879'       Shale       Electric Log       Electric Log         shale       2014'       2077'       No       No       Electric Log         shale       2085'       2128.3'       Show       Show       Electric Log         shale       2085'       2128.3'       Show <th>Formation Name or Type</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Source of Data</th>	Formation Name or Type						Source of Data
hale     64'     439'     Fresh Water     Driller       ed Rock     439'     545'     007'     No rate     Driller       ihale     630'     630'     no rate     Driller     Driller       ihale     630'     633'     @ 214'     Driller     Driller       ihale     720'     1386'     no rate     Inter     Electric Log       ihale     720'     1386'     no rate     Inter     Electric Log       ihale     1431'     1454'     No rate     Inter     Electric Log       isaes of C Shale     1431'     1454'     no rate     Ielectric Log       isaendon     1454'     1564'     noted     Ielectric Log       ishale     1564'     1686'     Ielectric Log     Ielectric Log       ishale     1767'     1838'     Ielectric Log     Ielectric Log       ishale     1879'     1973'     2014'     Ielectric Log       ishale     2014'     2077'     No     No       shale     2014'     2077'     No     No       shale     2085'     2128.3'     Show     Ielectric Log	Sandstone			1.000	1.000	1.000.0001.001	
ted Rock       439'       545'       007'       No rate         hale       545'       607'       solution       noted         ichale       630'       683'       @ 214'       Driller         itage Hollow       683'       720'       No rate       noted         itage of C Shale       1135'       @ 224'       Driller       Electric Log         itage of C Shale       1135'       @ 224'       No rate       Electric Log         shale       1431'       1454'       noted       Electric Log         itage of C Shale       1135'       @ 2264'       No rate       Electric Log         itage of C Shale       1543'       1564'       noted       Electric Log         itage of C 2nd       1564'       1669'       radford 2nd       1698'       Electric Log         itage ford 3rd       1973'       2014'       Electric Log       Electric Log       Electric Log         shale       2017'       No       No       Electric Log       Electric Log         shale       2014'       2077'       No       No       Electric Log         shale       2085'       2128.3'       Show       Show       Electric Log         icha b	Shale			N		Fresh Water	Driller
hale     545'     607'     No rate     Driller       enango 3rd     607'     630'     noted     noted       hale     630'     683'     @ 214'     Driller       tagee Hollow     683'     720'     No rate     noted       hale     720'     1386'     noted     Electric Log       sase of C Shale     1135'     @ 264'     Electric Log       iradford 1st     1386'     1431'     No rate     Electric Log       Shale     1431'     1564'     noted     Electric Log       ilarendon     1454'     1543'     Is64'     noted       ilona     1564'     1594'     Is68'     Electric Log       shale     1879'     1767'     Is88'     Electric Log       shale     1879'     1973'     Electric Log     Electric Log       shale     2014'     2077'     No     No     Electric Log       shale     2085'     2128.3'     Show     Show     Electric Log	Red Rock						
enango 3rd       607'       630'       moted         hale       630'       683'       @ 214'         hale       720'       1366'       noted         itage Hollow       683'       720'       No rate         itage Cr Shale       1135'       @ 226'         stase of C Shale       1135'       @ 226'         Shale       1431'       1454'       noted         clarendon       1454'       1564'       noted         ibale       1564'       1564'       noted         ibale       1564'       1564'       Electric Log         ibale       1767'       1838'       1879'       Electric Log         shale       1767'       1838'       1879'       Electric Log         shale       2077'       No       No       Electric Log         shale       2014'       2077'       No       No         ewis Run       2077'       2085'       Show       Show       Electric Log         shale       2085'       2128.3'       No       No       Image: Show       Show         of a hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Image: Show       Show	Shale						Driller
thale       630'       683'       720'       In the second and comparison of the second and compared the se							
tagee Hollow       683'       720'       No rate         hale       720'       1386'       noted       Electric Log         isase of C Shale       1135'       No rate       noted       Electric Log         Shale       1431'       1454'       noted       Electric Log         Shale       1431'       1454'       noted       Electric Log         Shale       1454'       1564'       noted       Electric Log         Shale       1564'       1564'       noted       Electric Log         Shale       1564'       1698'       radford 2nd       Electric Log         Shale       1767'       1838'       Electric Log       Electric Log         Shale       2014'       2077'       No       No       Electric Log         Shale       2014'       2077'       No       No       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         I' do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Deen propenty cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any c	Shale						Driller
ihile       720'       1386'       noted       Electric Log         iase of C Shale       1135'       02 64'       No rate       Electric Log         Shale       1431'       1454'       No rate       noted       Electric Log         Shale       1431'       1454'       noted       Electric Log         Shale       1431'       1454'       noted       Electric Log         Shale       1564'       1594'       Electric Log       Electric Log         Shale       1564'       1698'       Electric Log       Electric Log         Shale       1767'       1838'       Electric Log       Electric Log         Shale       1973'       2014'       Electric Log       Electric Log         Shale       2014'       2077'       No       No       Electric Log         Shale       2085'       2128.3'       Show       Show       Show         Shale       2085'       2128.3'       No       No       Electric Log         I'd ohereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         I'd ohereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log </td <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td>				_			
tase of C Shale 1135' tradford 1st 1386' 1431' 1454' Darendon 1454' 1543' 1454' Darendon 1454' 1543' 1564' Darendon 1454' 1594' Thale 1594' 1594' Thale 1594' 1594' Thale 1767' 1838' tarrisburg Run 1338' 1879' Shale 1767' 2085' Show No Shale 2014' 2077' No Shale 2014' 2077' No Shale 2014' 2077' No Shale 2014' 2077' No Shale 2085' 2128.3' T do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow							Electric Log
Iradford 1st       1386'       1431'       No rate noted       Electric Log         Shale       1454'       1543'       Integration       Electric Log         Ibale       1543'       1564'       Electric Log       Electric Log         Shale       1594'       1698'       Electric Log       Electric Log         Shale       1594'       1698'       Electric Log       Electric Log         Shale       1594'       1698'       Electric Log       Electric Log         Shale       1767'       1838'       Electric Log       Electric Log         Shale       1879'       1973'       Electric Log       Electric Log         Shale       1277'       No       No       Electric Log         Shale       2014'       2077'       No       No         Shale       2014'       2077'       No       No         Lewis Run       2085'       2128.3'       Show       Show       Electric Log         I'd o hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         I'd o hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         I'd o hereby certify to the			1000				Licourio Log
Shale       1431'       1454'       noted         Jarendon       1454'       1543'       Electric Log         Jona       1564'       1594'       Electric Log         Jona       1564'       1698'       Electric Log         Shale       1698'       1767'       Base       Electric Log         Shale       1767'       1838'       Electric Log       Electric Log         Shale       1879'       1973'       Zol14'       Electric Log       Electric Log         Shale       2014'       2077'       No       No       Electric Log         Shale       2014'       2077'       No       No       Show       Electric Log         Shale       2014'       2077'       No       No       No       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Image: Show			1424				Electric Log
Clarendon       1454'       1543'       Electric Log         Shale       1543'       1564'       Electric Log         Shale       1594'       1698'       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1879'       9173'       Electric Log         Shale       2014'       2077'       No       No         Shale       2085'       2128.3'       Electric Log         Shale       2085'       2128.3'       Image: Shale       Image: Shale         1       do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record         Image: Shale       Image: Shale       Image: Shale       Image: Shale         1       1       1       1       1       1         Image: Shale       2085'       2128.3'       Image: Shale							LICOUID LOG
Shale       1543'       1564'       Electric Log         Shale       1594'       1698'       Electric Log         Shale       1698'       1767'       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1879'       1973'       Electric Log         Shale       2014'       2077'       No       No         Shale       2014'       2077'       No       No         Shale       2014'       2077'       No       No         Shale       2085'       2128.3'       Electric Log         Shale       2085'       2128.3'       Electric Log         In do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         In do hereby cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi       Condition, I do hereby certify that any casing which is attached to a blow         Contrained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow       Electric condition and permit a pressure test in accordance with 25 Pa. Code Chapter 78 and any conditi						noted	Electric Log
iona       1564'       1594'       Electric Log         shale       1594'       1698'       Electric Log         shale       1767'       1838'       Electric Log         Harrisburg Run       1838'       1879'       Electric Log         shale       1879'       1973'       Electric Log         shale       2014'       2077'       No       No         shale       2085'       2128.3'       Show       Show         shale       2085'       2128.3'       Show       Show         do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Description of the permit for this well. In addition, 1 do hereby certify that any casing which is attached to a blow         contained in the permit for this well. In addition, 1 do hereby certify that any casing which is attached to a blow							LICCUIC LOY
Shale       1594'       1698'       Iffer       Electric Log         Shale       1767'       1838'       Electric Log         Shale       1879'       1973'       Electric Log         Shale       1879'       1973'       Electric Log         Shale       2014'       2017'       No       No         Shale       2017'       2085'       Show       Show         ewis Run       2077'       2085'       Show       Show         Shale       2085'       2128.3'       Electric Log         Shale       2085'       2128.3'       Electric Log							Electric Log
Bradfford 2nd       1698'       1767'       I838'       Electric Log         Shale       1767'       1838'       I879'       Electric Log         Shale       1879'       1973'       Image: Shale       Electric Log         Shale       1879'       1973'       Image: Shale       Electric Log         Shale       2014'       2077'       No       No         Shale       2017'       2085'       Show       Show         Shale       2085'       2128.3'       Electric Log         Shale       2085'       2128.3'       Electric Log         Shale       2085'       2128.3'       Electric Log         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         Desen properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition       Show 25 Pa. Code Chapter 78 and any condition							Electric Log
Shale       1767'       1838'       Electric Log         Harrisburg Run       1838'       1879'       Electric Log         Shale       1973'       2014'       Electric Log         Shale       2014'       2077'       No       No         Shale       2014'       2077'       No       No         Lewis Run       2077'       2085'       Show       Show         Shale       2085'       2128.3'       Show       Show         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record in been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-commented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition commented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition commented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition commented in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-commented in accordance with acordance with accordance with acordance with accordanc							Electric Log
Harrisburg Run       1838'       1879'       Electric Log         Shale       1879'       1973'       Electric Log         Bradford 3rd       1973'       2014'       Electric Log         Shale       2014'       2077'       No       No         Shale       2014'       2077'       No       No         sewis Run       2077'       2085'       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         Ido hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record to been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow.							Electric Log
Shale       1879'       1973'       2014'       Electric Log         Shale       2014'       2077'       No       No       No         ewis Run       2077'       2085'       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Electric Log         I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record in been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition condition in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-concerviting areaser than 3.000 psi has passed a pressure test in accordance with be requiremented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition property cased and cemented than 3.000 psi has passed a pressure test in accordance with 25 Pa. Code Chapter 78 and any condition property case for this well. In addition, I do hereby certify that any casing which is attached to a blow-concerviting areasement than 3.000 psi has passed a passed a pressure test in accordance with 25 Pa. Code Chapter 78 and any condition property case for this well.							Electric Lea
Bradford 3rd       1973'       2014'       No       No       No         Shale       2014'       2077'       2085'       Show       Show       Electric Log         ewis Run       2077'       2085'       Show       Show       Show       Electric Log         Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Electric Log         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Image: Show         Image: Shale       2085'       2128.3'       Image: Show       Show       Show       Image: Show         Image: Shale       2085'       Show       Image: Show       Show       Show       Show         Image: Shale       Image: Show       Image							Electric Log
Shale       2014'       2077'       No       No       No         Lewis Run       2077'       2085'       Show       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Show       Show       Electric Log         I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric Log         I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Description of the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow.							Florida Lan
Lewis Run       2077'       2085'       Show       Show       Show       Electric Log         Shale       2085'       2128.3'       Show       Show       Show       Electric Log         I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record       Electric To an any conditional and the requirements of 25 Pa. Code Chapter 78 and any conditional portion of the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow.						y	Electric Log
Shale 2085' 2128.3' I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow							
I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-				Show	Show		Electric Log
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C	Shale	2085'	2128.3'				
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
respector with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co						1	
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							and the second
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditi contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. C							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditio contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- concentry with a pressure rating greater than 3 000 psi has passed a pressure test in accordance with 25 Pa. Co							
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditie contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow- preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Co \$78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of the second seco	I do hereby certify to the best	t of my know	vledge, infor	mation and b	elief that th	he well identified	on this Well Record
contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-	hear properly cased and com	onted in acc	ordance with	the require	nents of 25	Pa. Code Chap	ter 78 and any conditi
respector with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Co	contained in the normit for th	is well In	addition. I de	o hereby cer	tify that an	v casing which	is attached to a blow-
	mentar with a proceura rat	ina areater	than 3,000 t	osi has dass	ed a press	ure test in accoi	rdance with 25 Pa. C

Well Operator's Signature	DEP U	SEONLY
Douglas @ mas 12-14-11	Reviewed by:	Date:
Title: Date: Vice President/ General Manager	Com	nments:

-2-



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM 
 DEP USE ONLY

 Site Id
 Primary Facility Id

 Client Id
 Sub-facility Id

PITTS COPY

## WELL RECORD AND COMPLETION REPORT

Well Op Cata	erator lyst Energy	y, Inc.				10# 4294	Well API # (Permit / Reg) 37-083-51259			Project N	Project Number			Acres	
Address			r. Suite 29	0			Well Farm Name Curtis Lot 2					Well # L2-15	Serial	#	
City Cra	nberry Tr	wp		State P/		lip Code 16066	County McKea	an			Municip Lafay				
Phone 724	-779-905	3		Fax 724-7	-779-9040 USGS 7.5 min. quadrangle mo				gle map	D					
Check	all that app	oly: 🖂	Driginal We	ell Record	Orig	Driginal Completion Report Amended Well Record Amended Con							Comple	tion Report	
				WEL	LF	RECOR	RD Also	complete	Log	of Form	ations	on back (	page 2	2)	
We	II Туре	G	as 🗵	] Oil 🗌	] Con	nbination	Oil & Gas	🗌 In	ijectio	on [	Sto	orage [	Dis	posal	
Drillin	g Method	R				– Mud	Cat	ole Tool							
Date Dr	Are Drilling Started 12/11/06     Date Drilling Complete 12/13/06       Casing and Tubing       Classing and Tubing       Hole     Pipe Size       Wt.     Thread       / Weld     Well (ft)       11"     9 5/8"     32 lb.       3/4"     7"     20 lb.					Surface E	levation 2180 ft.	Tota		n - Driller 240 ft.		Total Dep	2240		
	Drilling Method       Image: Rotary - Air         Date Drilling Started       Date Drilling Complet         12/11/06       Date Drilling Complet         Casing and Tubing         Hole       Pipe Size         Vit       Thread         Amount       / Weld         11"       9 5/8"         3/4"       7"         20 lb.       Thread         51/4"       2"         Thread       2109.0					ement ret	urned on s urned on c		sing?	X Ye	es_[	No		N/A	
Hole Size	Pipe Size	Wt.	111111	Amount in Well (ft)	-	Mater	and Amou	Pipe	Pad			re / Centra ze De	epth	Date Run	
11"	9 5/8"	32 lb.	Thread	22.6											
8 3/4"	7"	20 lb.	Thread	583.0	12	25 sx Class	A cement w	3% CaCl2						12/11/06	
6 1⁄4"	2"		Thread	2109.0										3/1/07	
					CC	OMPLE	TION RE	PORT							
				1				Stimula	tion	Record	d	ng Agent	1 41	01000	
Dat	0	rom	To	Da	te	Intervo	al Treated	Туре	Amo		Туре	Amount	In	verage jection Rate	
2/28/07 Notched 1382.0 1393.5 1396.1 1553.0 1692.0 1694.7 1702.0 1706.0 1719.7 1749.0 1829.0 1839.7		3/1/	3/1/07		dford 1 <sup>st</sup> Fiona sburg Run Jford 3rd	Water	70 70 80 80 70 70 70 70 70 70 70	000 000 000 000 000 000 000 000	20/40 Ottawa Sand	70sx 70sx 70sx 80sx 80sx 80sx 70sx 70sx 70sx 80sx 80sx 80sx	17.7 BI 17.8 BI 17.8 BI 17.7 BI 17.7 BI 17.6 BI 17.6 BI 17.6 BI 17.6 BI 17.7 B 17.5 BI	PM @ 1890 psi PM @ 2080 psi PM @ 2080 psi PM @ 2100 psi PM @ 2670 psi PM @ 2800 psi PM @ 2800 psi PM @ 2330 psi PM @ 2330 psi PM @ 2340 psi PM @ 2560 psi Skipped			
2077.0												5004		on pp ca	
		NA				Pres		NA				Hou	rs	Days	
After Treatment NA Open Flow NA							r Treatment k Pressure	NA			_	Hou	rs	Days	
	Service C	ompani	es Prov	ride the name,		ss, and ph	one number (	of all well se	rvice c		s involve	ed.			
	ne Drilling						Services (F	racture W	ork)			Vell Service	s (Log	ging)	
City - St	ne Drive ate - Zip				City - St	ey Avenue ate – Zip	е			City - S	ite 119 tate - Zip	0	_		
Phone	ford, PA 362-6579			F	hone	ford, PA	2		_	Phone	-248-1	0.0			
014-	502-05/9				014-	-300-0228	)			124	-240-1	001			

DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

	DEP USE ONLY	12
Site ID	Prim	ary Fac ID
Client Id	Subf	acility Id

## Well Record

Well Opera	itor		Mar Shirt		DEP ID#	Well API # (P	100 C 100 C	Reg)	行业派统公司行	Project Nu	mber	ALC: NO	Acres
	Energy Inc				76535	37-083-553					L CI	0	nui sa
Address 424 Sout City	th 27th St St	uite 304				Well Farm Nar Curtis Lot 2	me				-11	Serial 1	¢
Pittsburg	h	4		State PA	Zip Code 15203	County McKean			Municipality Lafayette				
hone 12-325-4	1350		Fax 41	2-425-4356		Email dj@catalyste	energyi	nc.com	USGS 7.5 m Lewis Run	nin. quadra	angle ma	p	
Check th	e appropri	ate Submissio	n:	$\boxtimes$ (	Original Well R	ecord		Amended We	ell Record				
Well	Туре	Gas			Combination O	I & Gas		Injection		torage	[	Dispo	osal
Well Ori	entation	Vertical	Dev	viated from V	/ertical (Side vi	ew and Devia			attached)				
-	Method	Rotary - A			Rotary - Mud			Cable Tool					
Date Drillin 2/16	ng Started 5/11	Date Drilling Cor 2/18/11	mpleted	Surface Eleval 2140 ft		epth – Driller B.7 ft.		Depth - Logge 168.7 ft.	r Depti	1 of Deepe 200	est Fresh		vater ft.
· SPERIO			Merry 4		GE	MENT		201	100000	2 Chi	in th	and the second	
Cement r	eturned on	surface casing?	7		If No, provi	de top of cemer	nt and m	nethod used to	determine:				
Cement r	eturned on	coal protective	casing?	Yes IN	If No, provi	de top of cemer	nt and m	nethod used to	determine:				□ N/A
Cement r	eturned on	intermediate ca	ising?		If No, provi	de top of cemer	nt and m	nethod used to	determine:				□ N/A
Casing S	tring		Тур	e of Cement	t	A	mount	of Cement		Gas Blo	ck (or e	quivale	ent) Us
Conduc	tor		,	n/a			REC	ENEC		同家犯当			
Surface			Cla	ass A		1	DEC 1	6x2011	[	Yes	⊠N	•	N/A
Coal Pro	otective		r	n/a		ENVIR	ONMEN	AL PROTECT	ION [	Yes		0 🛛	N/A
ntermed	liate		I	n/a						Yes	ΠN	• 🛛	N/A
Producti	on		, ,	n/a					1	Yes		• 🛛	N/A
									[	Yes		•	N/A
									[	Yes		•	N/A
						an spicer was	10000			Yes		• 🗆	N/A
A Sha	A ARA	<u> Willington o</u>	2200		CASING .	AND TUBI	NG	1. 1. 1. 1. 1.			dic14	N. SPA	一定
Hole Size	Pipe Size	Wt.	Thread		ing / Tubing Ty	Amou pe Well	anal.	Packer / Type	Hardware	Centr	Depth	-1	ate Ru
11"	9 5/8"	32lb.	Threa		10 RND		3.4						
8 3/4"	7"	20lb.	Threa	ad		45	55'	422' 323'	224' 125'		26'		2/16/1
6 1/4'	1 1/2"	1.9 lb	threa	ad		212	21.9						6/15/1
664	3'2"	Q#	н			50	61'	Hook wa	al pack	er Q	561'	6	15/11
						10	765	Swelling	packer	2	_		6/15
		1						Swell	1	61		-	11/
						7	021	Juel	we in	der			6/15

-1-

			FORMA			37-083-55308
(If you will					k form before filling i	t in.)
Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shalee	0'	464'				
ed Rock	464'	545'				Driller
Shale	545'	615'				
enango 3rd	615'	640'			Fresh Water	Driller
hale	640'	702'			@ 200'	
lagee Hollow	702'	722'			Rate not	Driller
Shale	722'	1383'			noted	and the second sec
ase of C Shale	1138'					Electric Log
radford 1st	1383'	1430'				
hale	1430'	1452'				Electric Log
larendon	1452'	1454'				LIGOTIO LOG
hale	1454'	1564'				Electric Log
iona	1564'	1610'				LICOTIO LOG
hale	1610'	1699'				Electric Log
Bradfford 2nd	1699'	1795'				LIGOUIO LOY
shale	1795'	1825'				Electric Log
larrisburg Run	1825'	1840'				Electric Log
Shale	1840'	1974'				Electric Los
Bradford 3rd	1974'	2022'				Electric Log
Shale	2022'		Chan	Nie		Electric Loss
ewis Run		2084'	Show	No		Electric Log
Shale	2084' 2094'	2094' 2168.7	@ 1699'	Show		Electric Log
do hereby certify to the best been properly cased and cem contained in the permit for the preventer with a pressure rate (78.84(f). I am aware that the and imprisonment. Yellioperator's Signature	ented in acc is well. In a ing greater t ere are signif	ordance wit addition, I d han 3,000 j ficant penalt	h the requiren to hereby cer psi has pass ies for submi Revie	ments of 25 tify that any ed a pressu	Pa. Code Chapt casing which is re test in accord	er 78 and any condition s attached to a blow-o dance with 25 Pa. Coo ding the possibility of fir
itle: /ice President/ General Manag	Date:	12-14-1	<u> </u>		Comment	

-2-



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM 
 DEP USE ONLY

 Site Id
 Primary Facility Id

 Client Id
 Sub-facility Id

		W	ELL F	RECC	DRD	AND	COMPLI	ETION	REP	ORT					
Well Op Cata	erator lyst Energy,	Inc.				DEP ID# 3429		# (Permit / Re 083-512		Project	Numbe	ы.		Acres	
Address 800 (	Cranberry V	Nood Dr	. Suite 29	0				n Name S Lot 2					# 2-10	Serial	#
City	nberry Tw	p			PA	Zip Co 160	service and the second service of the second s	ean			Munic	ipality yette			
Phone 724	-779-9053	3		Fax 72	24-77	9-9040		5 min. quadra is Run	angle map	c.					
Check	all that apply	y: 🖂	Driginal We	II Record		Original C	Completion Rep	ort 🗌 Am	ended W	/ell Reco	ord [	Ame	ended C	omplet	ion Report
				W	/ELI	REC	ORD Al	so comple	te Log	of Forr	nation	is on t	back (p	bage 2	2)
We	II Туре	G	as 🛛	] Oil		Combina	ation Oil & Ga	as 🗌	Injectio	n	St	torage	e [	Disp	oosal
Drillin	g Method		otary – Ai	r [	Rot	tary - Mi	ud 🗌 C	able Tool							
Date Dri	Illing Started 12/4/06		Date Drill	ing Comp 12/5/0		Surf	ace Elevation 2190 ft.	To	otal Depth	252 ft		Ţ	otal Dep	2252	
					0	Cemen	t returned on	surface c		-		No	)	2202	n
	Casin	ig and	Tubin	g	_		t returned on		-	_		Yes	N	0 🛛	N/A
Hole Size	Pipe Size	W†.	Thread / Weld	Amou Well			aterial Behin Type and Am			ker / H		are / G Size		lizers epth	Date Run
11"	9 5/8"	32 lb.	Thread	21.	8				_						
8 3/4"	7"	20 lb.	Thread	582	.0	125 sx (	Class A cement	w 3% CaCl2	2						12/4/06
6 1⁄4"	2"		Thread	2145	5.0							_			2/21/07
						COMP	PLETION F	REPORT							
	Perforati	ion Re	cord erforated					Stimul		Reco				-	
Dat	0	ervar r om	To		Date	Int	erval Treated	d Type	Fluid Amo	ount	Туре	oing A An	nount		ection
2/20	1/07 Not	tched	1421.0 1430.8 1433.5 1448.3 1451.4 1595.0 1604.3 1732.5 1743.8 1747.7 1758.7 1763.8 1747.5 1788.5 1871.5 1876.5 2113.0		2/21/0	7	Bradford 1st Tiona Bradford 2 <sup>ret</sup> Harrisburg Run Bradford 3 <sup>ret</sup> Lewis Run	Water	60 60 60 60 60 60 80 80 80 60 60 70 70 60 70 70 70 70 70 70 70	000 000 000 000 000 000 000 000 000 00	20/40 Ottaw Sanc	a 1	705x 605x 605x 605x 605x 605x 805x 805x 805x 805x 805x 605x 705x 605x 705x 805x 805x	17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.8 BF 17.7 BF 17.7 BF 17.7 BF 17.7 BF 17.7 BF 17.7 BF	M @ 1900 psi PM @ 1800 psi PM @ 1800 psi PM @ 1860 psi PM @ 2100 psi PM @ 2100 psi PM @ 2200 psi PM @ 2200 psi PM @ 2170 psi PM @ 2170 psi PM @ 2500 psi PM @ 2500 psi PM @ 2500 psi PM @ 2000 psi PM @ 2000 psi PM @ 2360 psi
Natural	Open Flow	NA					Natural Rock Pressure	NA					Hour	s	Days
After Tre Open Fl		NA					After Treatment Rock Pressure	NA					Hour	s	Days
Well S	Service Co	mpani	es Prov	ide the n	ame, a	ddress, ar	nd phone numbe	er of all well :	service c	ompanie	es involv	ved.			

Keane Drilling	Superior Well Services (Fracture Work)	Superior Well Services (Logging)
Address	Address	Address
Keane Drive	Holley Avenue	Route 119
City - State - Zip	City - State - Zip	City - Stote - Zip
Bradford, PA	Bradford, PA	Blacklick, PA
Phone	Phone	Phone
814-362-6579	814-368-6228	724-248-1001



City - State - Zip Bradford, PA

814-362-6579

#### COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

 DEP USE ONLY

 Site Id
 Primary Facility Id

 Client Id
 Sub-facility Id

#### Client Id WELL RECORD AND COMPLETION REPORT DEP ID# Well API # (Permit / Reg) Project Number Acres 34294 37-083-51254 Catalyst Energy, Inc. Well Farm Name Well # Serial # Address 800 Cranberry Wood Dr. Suite 290 Curtis Lot 2 L2-9 City State Zip Code County Municipality PA 16066 McKean Lafayette Cranberry Twp USGS 7.5 min. quadrangle map Phone Fax 724-779-9053 724-779-9040 Lewis Run Original Well Record Original Completion Report Amended Well Record Amended Completion Report Check all that apply: WELL RECORD Also complete Log of Formations on back (page 2) Well Type IIO 🛛 Gas Combination Oil & Gas Injection Storage Disposal **Drilling Method** 🛛 Rotary - Air Rotary - Mud Cable Tool Date Drilling Started Date Drilling Completed Surface Elevation Total Depth – Driller Total Depth - Logger 12/6/06 12/7/06 2252 ft. 2252ft. 2190 ft. Cement returned on surface casing? Xes No Casing and Tubing Yes No XI/A Cement returned on coal protective casing? Hole Material Behind Pipe Packer / Hardware / Centralizers Date Thread Amount in Pipe Size Wt. Size / Weld Well (ft) Type and Amount Type Size Depth Run 11" 9 5/8" 32 lb. Thread 20.8 8 3/4" 7" 20 lb. Thread 586.0 125 sx Class A cement w 3% CaCl2 12/6/06 6 1/4" 2" 2/26/07 Thread 2155.5 COMPLETION REPORT Perforation Record Stimulation Record Interval Perforated Fluid **Propping Agent** Average Date Date Interval Treated From To Type Amount Type Amount Injection Rate Bradford 1<sup>st</sup> 1441.5 7000 70sx 17 8 BPM @ 1020 psi 2/25/07 Notched 2/26/07 Water 20/40 1457.4 17 8 BPM @ 1810 psi 7000 70sx 1461.6 Tiona 7000 17 8 BPM @ 1910 psi 70sx Ottawa 1604.0 7000 70sx 17 7 BPM @ 2100 psi 1728.9 17.8 BPM @ 2050 psi 17.8 BPM @ 2010 psi Bradford 2nd 7000 70sx 1741.5 Sand 8000 80sx 1744.0 60sx 17 8 BPM @ 2900 psi 6000 1751 8 17 8 BPM @ 2020 psi 17 7 BPM @ 2190 psi 8000 80sx 1755.0 6000 60sx 1768.8 17.4 BPM @ 3320 psi 8000 80sx 1774.0 8000 BOsx 17.4 BPM @ 3120 ps 1779.0 17 5 BPM @ 3350 psi 7000 70sx 1790.7 45sx 17.5 BPM @ 3100 psi 4500 1798 5 8000 80sx 15.2 BPM @ 3280 ps Harrisburg Run 1884.6 17.6 BPM @ 2940 psi 17.7 BPM @ 2260 psi 7000 70sx Bradford 3" 2123.5 8000 80sx Lewis Run Natural Open Flow Natural Rock NA NA Pressure Hours Days After Treatment After Treatment NA NA Open Flow Rock Pressure Hours Days Well Service Companies -- Provide the name, address, and phone number of all well service companies involved. Keane Drilling Superior Well Services (Fracture Work) Superior Well Services (Logging) Address Addres Addres Holley Avenue Keane Drive Route 119

City - State - Zip Bradford, PA

814-368-6228

City - State - Zip Blacklick, PA

724-248-1001

pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

#### COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

a second	DEP USE ONLY	127
Site ID	Primary Fac I	D
Client Id	Subfacility id	

## Well Record

Well Operator       DEP ID#       Well API # (Permit / Reg)       Project Number         Catalyst Energy Inc       76535       37-083-55307       Image: Catalyst Energy Inc         Address       424 South 27 <sup>th</sup> St Suite 304       Well Farm Name       Image: Catalyst Energy Inc       Image: Catalyst Energy Inc       Well Farm Name       Image: Catalyst Energy Inc       Image: Catalyst Energy Inc       Well Farm Name       Image: Catalyst Energy Inc       Image: Catalyst Energy Inc       Well #       Image: Catalyst Energy Inc	Serial i	
Address     Well Farm Name     Well #       424 South 27 <sup>th</sup> St Suite 304     State     Zip Code     Curtis Lot 2     L2-8       City     Pittsburgh     PA     15203     McKean     Lafayette       Phone     412-325-4350     Fax     USGS 7.5 min. quadrangle       412-325-4350     412-425-4356     Email     USGS 7.5 min. quadrangle       Check the appropriate Submission:     Ø Original Well Record     Amended Well Record       Well Type     Gas     Ø Oil     Combination Oil & Gas     Injection       Well Orientation     Ø Vertical     Deviated from Vertical (Side view and Deviated Survey must be attached)       Drilling Method     Ø Rotary – Air     Rotary ~ Mud     Cable Tool	Serial i map	
City Plitsburgh       State PA       Zip Code 15203       County McKean       Municipality Lafayette         Phone 412-325-4350       Fax 412-425-4356       Email dj@catalystenergyinc.com       USGS 7.5 min. quadrangle Lewis Run         Check the appropriate Submission:       Ø Original Well Record       Amended Well Record         Well Type       Gas       Ø II       Combination Oil & Gas       Injection       Storage         Well Orientation       Ø Vertical       Deviated from Vertical (Side view and Deviated Survey must be attached)       Storage         Drilling Method       Ø Rotary – Air       Rotary – Mud       Cable Tool         Date Drilling Completed       Surface Elevation       Total Depth – Driller       Total Depth – Logger       Depth of Deepest Filler	🗌 Disp	osal
412-325-4350     412-425-4356     dj@catalystenergyinc.com     Useds 7.5 min. quadrange       Check the appropriate Submission:     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Well Type     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Well Type     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Well Type     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Well Orientation     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Drilling Method     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission       Date Drilling Started     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission     Image: Completed Submission	🗌 Disp	osal
Check the appropriate Submission:       Image: Constraint of the submission of t		osal
Well Orientation       Image: Vertical       Deviated from Vertical (Side view and Deviated Survey must be attached)         Drilling Method       Image: Rotary - Air       Image: Rotary - Mud       Image: Cable Tool         Date Drilling Started       Date Drilling Completed       Surface Elevation       Total Depth - Driller       Total Depth - Logger       Depth of Deepest Filling		osal
Drilling Method         Image: Construction of the state of the	resh Ground	
Date Drilling Started Date Drilling Completed Surface Elevation Total Depth - Driller Total Depth - Logger Depth of Deepest Fr	resh Ground	
	resh Ground	
2/26/11 3/1/11 2180 ft. 2167.5 ft. 2167.5 ft. 214		water ft.
CEMENT		50
Cement returned on surface casing?		
Cement returned on coal protective casing? Yes No		N/A
Cement returned on intermediate casing? Yes No		□ N/A
Casing String Type of Cement Amount of Cement Gas Block (	or equival	ent) Use
Conductor n/a		
Surface Class A 75sx 🗆 Yes 🖸	No [	] N/A
Coal Protective n/a Yes	No 🛛	N/A
Intermediate n/a Yes	No 🛛	N/A
Production n/a 🗌 Yes	No 🛛	N/A
Yes [	No [	] N/A
Yes [	No [	] N/A
Yes [	No [	] N/A
CASING AND TUBING	18. mg	
Hole Thread / Amount in Packer / Hardware / Centraliz		Sec. 23.
Size         Pipe Size         Wt.         Weld         Casing / Tubing Type         Well (ft.)         Type         Size         Detection           11"         9 5/8"         32lb.         Thread         10 RND         36.5         10 RND         36.5         10 RND         10 RND<	epth I	Date Run
8 3/4" 7" 20/b Thread 455' 422' 224'	26'	2/26/11
	49'	5/19/1
RECEIVED		
FFH		
If any casing is welded, provide the name of the welder: n/a		
HERIONAL OFFICE		
If any casing is welded, provide the name of the welder: n/a Also complete the Log of Formations on back (page 2)		

		LOG OF	FORMA	TIONS	Well API#	37-083-55307
(If you will	need more spa				k form before filling i	t in.)
Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shale	0'	39'				
Sandstone/ Shale	39'	89'			1.	Driller
Shale	89'	495'	1		-	Dill
Red Rock/ Shale	495'	640'			Fresh Water	Driller
'enango 3rd Shale	640'	665'			@ 214'	Electric Log
ase of C Shale	665'	1415'			Rate not	Electric Log
radford 1st	1168'	1450			noted	Electric Log
Shale	1415'	1458'				Electric Log
larendon	1458'	1480'			10	Electric Log
Shale	1480'	1570'				Electric Log
iona	1570'	1589'				Electric Log
Shale	1589'	1646'	1			Electric Log
	1646'	1726'				
radfford 2nd	1726'	1806'				Electric Log
Shale	1806'	1860'				
larrisburg Run	1860'	1884'	11			Electric Log
Shale	1884'	2003'				
radford 3rd	2003'	2032'	Show	No		Electric Log
Shale	2032'	2111'	@ 1699'	Show		Contraction
ewis Run	2111'	2119'				Electric Log
Shale	2119'	2167.5				
do hereby certify to the best een properly cased and ceme ontained in the permit for thi reventer with a pressure ratii 78.84(f). I am aware that the nd imprisonment.	ented in acco is well. In a ng greater ti	ordance with addition, I d han 3,000 j	h the requirer o hereby cer osi has passe ies for submi	nents of 25 tify that any ed a pressu	Pa. Code Chapi casing which i ire test in accor	ter 78 and any condition is attached to a blow-ou dance with 25 Pa. Cod ding the possibility of fin
te: ice President/ General Manag	Date:	<u></u>			Comment	ts:

# 5500-FM-OG0004a 2/2011 COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

Well Record

DI	EP USE ONLY
Site ID	Primary Fac ID
Client Id	Subfacility Id

					V	VELL IN	FORMAT	ION						International
Well Op Catalys	perator st Energy Inc				DEP ID 76	roe l	Well API # (F 37-083-553				Project	Number C10		Acres
Address 424 St	outh 27th St S	Suite 304					Well Farm Na Curtis Lot 2	ame			Wei		Serial #	
City Pittsbu	urgh			State PA		Code	County McKean			Municipali Lafayette	ty			
Phone 412-32	5-4350		Fax 41	2-425-435	56		Email dj@catalyst	enerav	inc.com	USGS 7.5	min. quad	drangle map		
Check	the appropr	iate Submissic	on:	Þ	Origin	al Well Re			Amended W	Lewis Run ell Record				
We	ell Type	🗌 Gas	🛛 Oil	C	] Comb	ination Oil	& Gas		Injection		Storage		Dispos	al
Well C	Drientation	Vertical	De De	viated from	Vertica	al (Side vie	w and Devia	ated Su	urvey must be	attached)			-	
Drillin	ng Method	Rotary -				y - Mud			Cable Tool				_	
	Illing Started	Date Drilling Co 3/5/11	mpleted	Surface Ele 2165	vation	Total Dep	oth – Driller 96 ft.		Depth - Logge 2196 ft.	er Der	oth of Dee 20	pest Fresh G	roundwa ft	
- 76		48 B.	111				MENT	-	2100 10		20			
Cemen	t returned on	surface casing	?	🛛 Yes 🗆	] No	If No, provid	le top of ceme	ent and r	method used to	determine:		- i go the s		
Cemen	t returned on	coal protective	casing?	Yes	] No	If No, provid	e top of ceme	ent and r	method used to	determine:			C	N/A
		intermediate ca		Yes [		If No, provid	e top of ceme	ent and r	method used to	determine:			0	] N/A
Casing				e of Ceme			1	Amour	t of Cement		Gac P	lock (or eq	uhalar	4) 11 and
							- '	unoun	it of cement		Gas b	lock (or eq	uivalen	n) Usea
Condu				n/a								57.11		6-27
	rotective			ass A					ECEIVE	0-/	Ye			
Interme				n/a n/a				J	AN 30 20	112	Ye:			
Produc				n/a				CNN/IQ/	WEST REGION	OTECTION				
110000				<i>u</i> a				NORTH	WEST REGION	AL OFFICE	T Yes		_	
											Ye			
											Yes			N/A
ane in	5.500		1		C	ASING A	ND TUBI	NG		1	10		and -	N/A
Hole		T	Thread	1		18 1. 2. 7 1. 1.	Amou		Packer	Hardwa	re / Cer	ntralizers	at and at a	1
Size	Pipe Size	Wt.	Weld		asing / T	Tubing Type	e Well	(ft.)	Туре	Size		Depth	Da	te Run
11"	9 5/8"	32lb.	Threa	ad	10	RND	2	27						
8 3/4"	7"	20lb.	Threa	ad			4	55'	422' 323'	22 12		26'		3/2/11
6 1/4'	1 1/2"	1.9 lb	threa	d			21	40.5	Hook Wall			637'-641		6/9/11
				-				_	1000 M					
				_									-	_
									-	-		_	-	
					-		-			-				_
If any ca	asing is weld	ded, provide th	ne name	of the we	Ider. n	n/a								
and and a		a saidhe o searchan		Alee			amatian	an harl	(0000 2)					

Also complete the Log of Formations on back (page 2)

Vell Operator's Signature	(If you will			FORMA			: 37- <u>083-55306</u>
Shale     0'     464'       Shale     570'     629'       Shale     570'     629'       Shale     654'     1399'       Base of C Shale     1153'       Bradford 1st     1399'     1449'       Shale     654'     156'       Shale     1449'     1471'       Clarendon     1471'     1561'       Shale     166'     1582'       Clarendon     1471'     1581'       Shale     1662'     1719'       Bradford 2nd     1719'     1788'       Shale     1662'     1719'       Bradford 3rd     1995'     2041'       Shale     1864'     1995'       Shale     2041'     2104'       Shale     2112'     2196'   (a betwis Run 2112' 2196' (b betwis Run Shale 2112' 2196' (a betwis Run Shale 2112' 2196' Shale 2112' 2196' Shale 2112' 2196' Shale 2112' 2196' Shale 2104' Sh	Formation Name or Type	Top (feet)	Bottom	Gas at	Oil at	Water at	
been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any condition contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-or preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code C78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fir and imprisonment. Vell Operator's Signature DEP USE ONLY	Red Rock Shale Venango 3rd Shale Base of C Shale Bradford 1st Shale Clarendon Shale Tiona Shale Bradfford 2nd Shale Harrisburg Run Shale Bradford 3rd Shale Lewis Run	464' 570' 629' 654' 1153' 1399' 1449' 1471' 1561' 1582' 1625' 1719' 1788' 1845' 1864' 1995' 2041' 2104'	570' 629' 654' 1399' 1449' 1471' 1561' 1582' 1625' 1719' 1788' 1845' 1864' 1995' 2041' 2104' 2112'			@ 200' Rate not	Driller Electric Log Electric Log Electric Log Electric Log Electric Log Electric Log
Date:	been properly cased and ceme contained in the permit for this preventer with a pressure ratir \$78.84(f). I am aware that the and imprisonment.	nted in accc s well. In a ng greater ti ne are signifi	ordance with ddition, 1 dd han 3,000 p cant penalti	the require b hereby ce bsi has pass es for subm Revie	ments of 25 rtify that anj ed a pressi itting false in	Pa. Code Chap y casing which i ure test in accor nformation, inclu	ter 78 and any condition is attached to a blow-o rdance with 25 Pa. Cou ding the possibility of fin

- 2 -

DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

	DEP USE OI	NLY					
Site ID		Primary Fac ID					
Client Id		Subfe	icility Id				

# 

Well Type Well Orientatic Drilling Metho Date Drilling Starte 5/23/11	bprlate Submiss	ion: Oil Dev Air completed 11 g? e casing? casing? Typ	lated from	Original V Combinal Vertical (S Rotary – ration T ft. No If No No If No No If No	37     We     Cu     Cu     ise Cou     Cou     Cou     Em     Cu     Cu	@catalyste ord Gas and Deviat - Driller ft. IENT top of cemer top of cemer	nergyin A I I I I I I I I I I I I I I I I I I		Municipality Lafayette USGS 7.5 m Lewis Run ell Record Si attached) r Depth determine: determine:	in. quadr torage of Deep 339	C-B	P Dis	sposal
424 South 27th 3 24 South 27th 3 24 South 27th 3 24 South 27th 3 24 South 27th 3 25 South 3 26 South 3 26 South 3 26 South 3 27 S	opriate Submiss Gas M Ø Vertical Ø Ø Rotary - d Date Drilling C 5/26/ I on surface casin I on coal protectiv	d11 and and a set of the set of	PA 2-425-4356 2 2-425-4356 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1520 Original V Combinal Vertical (S Rotary – Iation T ft. T No If No No If No	We Cu is Cou 3 Mc di m di Well Recor- tion Oil & G Side view is Side view is Mud Total Depth 2200 % CEM o, provide to o, provide to	ell Farm Nan urtis Lot 2 ounty ccKean nail @catalyste ord Gas and Devial n - Driller ft. IENT top of cerner	nergyin A A I I I I I I I I I I I I I I I I I	Amended Win njection vey must be Cable Tool pepth – Logge 200 ft.	Municipality Lafayette USGS 7.5 m Lewis Run ell Record Si attached) r Depth determine: determine:	Weil i L in. quadr torage torage 339	2-6 angle ma [ est Fresh	P Dis	aposal ndwater ft.
ity Pittsburgh Pittsburgh hone 12-325-4350 check the appr Well Type Well Orientatic Drilling Metho Date Drilling Starte 5/23/11 cement returned Cement returned Cement returned Casing String Conductor Surface	opriate Submiss Gas M Ø Vertical Ø Ø Rotary - d Date Drilling C 5/26/ I on surface casin I on coal protectiv	d11 and and a set of the set of	PA 2-425-4356 2 2-425-4356 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1520 Original V Combinal Vertical (S Rotary – Iation T ft. T No If No No If No	ie Col 3 Mc Em dj@ Nell Recor- tion Oil & Side view is Mud Total Depth 2200 Si CEM o, provide to	CKean nail @catalyste ord Gas and Deviat - Driller ft. IENT top of cemer	A A A A A A A A A A A A A A A A A A A	Amended Win njection vey must be Cable Tool pepth – Logge 200 ft.	Lafayette USGS 7.5 m Lewis Run ell Record Sattached) r Depth determine: determine:	in. quadr torage of Deep 339	angle ma [ est Fresh	Dis Grour	ndwater ft.
hone 12-325-4350 theck the appr Well Type Well Orientatic Drilling Metho bate Drilling Starte 5/23/11 Coment returned Coment returned Coment returned Conductor Surface	Gas Gas Consultation of the second	d11 and and a set of the set of	2-425-4356 2-425-4356 2120 2120 2170	Griginal V Combinal Vertical (S Rotary – ration T ft. No If No No If No No If No	Em dj@ Nell Record tion Oil & 6 Side view of Mud Total Depth 2200 CEFM o, provide to	all Gcatalyste ord Gas and Deviat n - Driller ft. IENT top of cerner top of cerner	A A A A A A A A A A A A A A A A A A A	Amended Win njection vey must be Cable Tool pepth – Logge 200 ft.	USGS 7.5 m Lewis Run ell Record sitached) r Depth determine: determine:	torage of Deep 339	[ est Fresh	Dis Grour	ndwater ft.
Well Type Well Orientatic Drilling Metho bate Drilling Starte 5/23/11 Cement returned Cement returned Cement returned Casing String Conductor Surface	Gas Gas Consultation of the second	ion: Oil Dev Air completed 11 g? e casing? casing? Typ	Image: Wight of the second	Original V Combinal Vertical (S Rotary – ration T ft. No If No No If No No If No	Vell Record tion Oil & di Side view to Mud Total Depth 2200 CELM o, provide to o, provide to	@catalyste ord Gas and Deviat - Driller ft. IENT top of cemer top of cemer	A A A A A A A A A A A A A A A A A A A	Amended Win njection vey must be Cable Tool pepth – Logge 200 ft.	Lewis Run ell Record sattached) r Depth determine: determine:	torage of Deep 339	[ est Fresh	Dis Grour	ndwater ft.
Well Type Well Orientatic Drilling Metho iate Drilling Starte 5/23/11 Coment returned Coment returned Coment returned Coment returned Coment returned Conductor Conductor	Gas Gas Consultation of the second		/lated from Surface Elev 2170 Yes Yes	Combinat Vertical (S Rotary – ation T ft. S No If No No If No	tion Oil & G Side view a Mud Total Depth 2200 CEMI o, provide to	Gas and Devia - Driller ft. IENT top of cemer top of cemer	I lited Sun C C Total D 2 t and me	njection vey must be Cable Tool pepth – Logge 200 ft. ethod used to ethod used to	stached) r Depth determine: determine:	of Deep 339	est Fresh	Grour	ndwater ft.
Well Orientatic Drilling Metho late Drilling Starte 5/23/11 Cement returner Cement returner Cement returner Cement returner Casing String Conductor Surface	n 🛛 Vertical d 🖾 Rotary - d Date Drilling C 5/26/ on surface casin	Dev Air completed 11 e casing? casing? Typ	/lated from Surface Elev 2170 Yes Yes Yes Yes Yes	Vertical (S Rotary – ration T ft. S No If No No If No	Side view a Mud Total Depth 2200 CEMI o, provide to o, provide to	and Deviat - Driller ft. IENT top of cerner top of cerner	Total D 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Cable Tool Pepth – Logge 200 ft.	attached) r Depth determine: determine:	of Deep 339	est Fresh	Grour	ndwater ft.
Drilling Metho bate Drilling Starte 5/23/11 Cement returned Cement returned Cement returned Cement returned Casing String Conductor Surface	d 🛛 Rotary - d Date Drilling C 5/26/	Air ompleted 11 e casing? casing? Typ	□ Surface Elev 2170 ¥ Yes □ ¥ Yes □ ¥ Yes □	Rotary – ration T ft. 199 No If No No If No No If No	Mud Total Depth 2200 (CEM) o, provide to o, provide to	I – Driller ft. IENT top of cemer top of cemer	Total D 2 t and me	Cable Tool Depth – Logge 200 ft. Sethod used to bethod used to	r Depth determine: determine:	339			ft.
Coment returned Coment returned Coment returned Coment returned Coment returned Coment returned Conductor Conductor Conductor	d Date Drilling C 5/26/ on surface casin	e casing?	Surface Elev 2170	No If No No If No	Total Depth 2200 CEM o, provide to o, provide to	ft. IENT top of cerner top of cerner	Total D 2 at and me	Pepth - Logge 200 ft. athod used to athod used to	determine: determine:	339			ft.
5/23/11 Cement returned Cement returned Cement returned Casing String Conductor Surface	5/26/	g?   e casing?   casing?   Typ	2170	ft. No <sup>If No</sup> No <sup>If No</sup>	2200 CEVI o, provide to	ft. IENT top of cerner top of cerner	2 It and me	200 ft.	determine: determine:	339			ft.
Cement returner Cement returner Cement returner Casing String Conductor Surface	on surface casin	g?   e casing?   casing?   Typ	<mark>⊠ Yes</mark> □ □ Yes □ □ Yes □	No If No No If No No If No	o, provide to	IENT top of cerner top of cerner	it and me	athod used to	determine:				
Cement returned Cement returned Casing String Conductor Surface	l on coal protectiv	e casing?   casing?   Typ	<mark>⊠ Yes</mark> □ □ Yes □ □ Yes □	No If No No If No No If No	o, provide to	top of cerner top of cerner	t and me	ethod used to	determine:			an sye	□ N/A
Cement returned Cement returned Casing String Conductor Surface	l on coal protectiv	e casing?   casing?   Typ	Yes	No If No No If No	o, provide to	top of cerner	t and me	ethod used to	determine:				□ N/A
Cement returne Casing String Conductor Surface		casing?	Yes 🗌	No If No		top of cemer							N/A
Casing String Conductor Surface	I on intermediate	Тур		No	o, provide to		t and me	thod used to	determine:				
Conductor Surface			e of Ceme	nt									□ N/A
Surface		1				A	mount	of Cement		Gas Blo	ock (or e	equiv	alent) Used
			n/a						2			1	
Cool Destastin		Cla	ass A				6	5sx	Yes No				□ N/A
Loar Protectiv	9		n/a						Yes No 🛛				X N/A
ntermediate			n/a						1	Yes		-	X N/A
Production			n/a		-					Yes			X N/A
Toduction			<i>u</i> a							Yes			N/A
										Yes			
										Yes		1	
There is the	CLARAGE PERMIT	and Cashiel	(Series and	10.00				General Service		1105			
A RELEASE		12.340 好客的		CAS	ING AN	ID TUBI		and the second design of the	2 3. Walter		高的感	5	States -
Hole		Thread				Amou			Hardware	/Cent	-		2
Size Pipe		Weld		asing / Tub		Well		Туре	Size	T	Depth	1	Date Run
	5/8" 32lb.	Thre	ad	10 RM	ND		2.4	422'	224'			-	
8 3/4"	20lb.	Thre	ad			48	55'	323'	125'	_	26'		5/23/11
6 1/4' 1	1/2" 1/9 lb	threa	ad			21	14.5	Hook Wall		-	522'		6/30/11
									RECEIV	=0	/		
								D	EC 07 2	2011			
								ENVIA		OTEM	ON		
						-	-	NORTH	WEST REGIO	NAL OFF	ICE	-	

-1-

(If you will			FORMA		Well API# k form before filling i	: 37- <u>083</u> - <u>55351</u>
Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone/Shale Shale	0' 64'	64' 464'			Fresh Water	Driller
Red Rock Shale	464' 570'	570' 634'	-		@214' No rate	Driller
Venango 3rd Shale	634' 640'	640' 704'			noted @ 339'	Driller
Magee Hollow Shale	704' 708'	708' 1400'			No rate noted	Electric Log
Base of C Shale	1173'		-		noted	
Bradford 1st Shale	1400' 1449'	1449' 1484'			-	Electric Log
Clarendon Shale	1484' 1564'	1564' 1582'				Electric Log
Tiona Shale	1582' 1634'	1634' 1720'				Electric Log
Bradfford 2nd Shale	1720' 1804'	1804' 1861'				Electric Log
Harrisburg Run	1861'	1902'				Electric Log
Shale Bradford 3rd	1902' 1998'	1998' 2046'				Electric Log
Shale Lewis Run	2046' 2107'	2107' 2115'	Show @ 1720'	No Show		Electric Log
Shale	2115'	2200'				
I do hereby certify to the be- been properly cased and cer contained in the permit for preventer with a pressure ra §78.84(f). I am aware that the and imprisonment. Well operator's Signature	mented in act this well. In	addition, 1	th the require do hereby ce psi has pass lties for subm	rtify that an	y casing which ure test in acco nformation, inclu	is attached to a blow-oul rdance with 25 Pa. Code ding the possibility of fine ONLY
Title: Vice President/ General Man	Date:	40/11			Commer	nts:

-2-

## APPROVAL PENDING

5500-FM-OG0004 Rev. 2/2001 N.L.

S

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

23	DEA	USEONLY
-5 5	te Id	Primary Facility Id
MAY	lient Id	Sub-facility Id
Numbe	10	Acres
~	Well #	Serial #
Munic	pality yette	
ord	Amondod	Completion Report

## WELL RECORD AND COMPLETION REPORT

Catalyst Energy, Inc.				34294	Well API # ( 37-08	Permit / Reg 33-51249		CI-(-	10	Acres			
Address 800 Ci	ranberry V	Nood Dr	Suite 29	0		Well Farm N Curtis Lo				Well #	Serial	#	
City	berry Tw	'n		State		County				ipality			
Phone				Fax		USGS 7.5 m	n. quadrang	jie map	Lala	ayette			
	779-9053				779-9040	Lewis							
Check al	II that apply	y: 🖾	original We	I Record	Original Con	pletion Report	Amen	ided Well I	Record	Amended	Complet	ion Report	
		_	1	WE	LL RECC	RD Also	complete	Log of F	Formation	ns on back (	page 2	2)	
Well	Туре	Ga	as 🛛	Oil [	] Combinatio	on Oil & Gas	🗌 In	jection	🗆 s	torage [	Disp	osal	
	Method	R	otary - Ai	and a distant manufacture of	Rotary - Mud	and the second sec	le Tool				_		
	ng Started 12/11/06			ing Complete 2/12/06	d i Surface	Elevation 2180 ft.	Tota	Depth - D		Total De		2222ft.	
	Casin	and and	Tubin	a		eturned on s			Yes	No	-		
Unin		9				eturned on c		T					
Hole	Pipe Size	Wt.	Thread / Weld	Amount ir Well (ft)	0.20020	erial Behind F be and Amou		Тур		size D	epth	Date Run	
11"	9 5/8"	32 lb.	Thread	21.0				 					
8 3/4"		20 lb.	Thread	581.0	125 sx Cla	ss A cement w	3% CaCl2	1				12/11/06	
6 1⁄4"	2"		Thread	2135.0				1				2/14/07	
					COMPL	ETION RE	PORT						
F	Perforati			_			Stimula		cord		-	_	
Date	Date Interval Perforated From To		Do	ite Inter	val Treated	Type FI	Amoun		e Amount		ection		
2/13/0	07 Not	tched	1416 3 1418.9 1421 5 1424.0 1438.2 1441.8 1580.5 1588.3 1640.5 1722.7 1725.5 1731.0 1734.7 1738.4 1751.8 1772.0 1864.0 2034.0 2103.0	2/14	4/07 E	Tiona Tiona Iradford 2 <sup>nd</sup> Bradford 3 <sup>nd</sup> Lewis Run	Water	6000 6000 7000 6000 7000 7000 7000 7000	20/4 Ottav San	Va 60sx 60sx 70sx 60sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 80sx 70sx 70sx 80sx 70sx 80sx 70sx 70sx 80sx 70sx	17 8 8F 17.8 8F 17.8 8F 17.8 8F 17.8 8F 17.8 8F 17.7 8F 17.7 8F 17.7 8F 17.7 8F 17.7 8F 17.7 8F 17.7 8F 17.7 8F 17.6 8 17.7 6F 10.6 8F 16.3 9F 13.5 8 47.8 8F 17.7 8F	M @ 1880 ps M @ 1860 ps M @ 1870 ps M @ 1910 ps M @ 2080 ps M @ 2090 ps M @ 2090 ps M @ 2120 ps M @ 2120 ps M @ 2120 ps M @ 2120 ps M @ 2510 ps Skipped PM @ 2350 ps M @ 2650 ps M @ 2650 ps M @ 3560 ps M @ 3560 ps PM @ 3560 ps PM @ 2180 ps PM @ 2180 ps	
Natural O		NA			Pr	aturol Rock essure	NA	M	IAY 1 1	2007 но	Jrs	Days	
After Treat Open Flow	A	NA			R	ter Treatment ock Pressure	NA			Hou	Jrs	Days	
Well Se	ervice Co	mpanie	es Provi	ide the name	, address, and j	phone number of	of all well se	rvice com	anies invp	NONAL OFFICE	-		
Well Service Companies Provide the name, address           Name         Name           Keane Drilling         Name			Superior We	ell Services (F	racture We	ork)	Superior	Well Service	es (Log	ging)			
	Drive				Address Holley Aven		,		Address Route 119				
	e - Zip ord, PA				City - State - Zip Bradford, PA				City - State - Zip Blacklick, PA				
	814-362-6579				Phone 814-368-6228				Phone 724-248-1001				

		LOG OF	FORMA	TIONS	Well AP	#: 37-083-51249
Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone	0	45'				Driller
Sandstone/Shale	45'	75'				
Shale	75'	405'			Fresh Water	Driller
Sandstone	405'	465'			@165'	-
Red Rock/Shale	465'	795'			3GPM	Driller
Shale Bradford 1 <sup>st</sup> Sandstone	795' 1374'	1374'	No Chau			Electric Log
Shale	1374	1450' 1574'	No Show			Electric Log
Tiona	1574'	1645'	No Show			Electric Log
Shale	1645'	1716'	NO ONOW			Elocato Eog
Bradford 2 <sup>nd</sup> Sandstone	1716'	1792'	No Show		1.000	Electric Log
Shale	1792'	1974'			1	
Bradford 3rd	1974'	2021'	No Show			Electric Log
Shale	2021'	2094'				5
Lewis Run Sandstone	2094'	2108'	Show @			Electric Log
Shale	2108'	TD	2103'			
Carrier and Factory						Electric Log
		y rows if nec	essary to ma	ke all of pa	ge 2 fit on one page	The second se
Well Operator's Signatu	ire:		Poul	wed by:	DEP USE C	and the state of t
1) 0 (0)	and		KOVIE	wed by:		Date:
ille:	Date:		Com	ments:		



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM 
 DEP USE ONLY

 Site Id
 Primary Facility Id

 Client Id
 Sub-facility Id

## WELL RECORD AND COMPLETION REPORT

Well Ope Catal	erator yst Energ	y, Inc.			DEP ID# 34294	Well API # (F 37-08	ermit / Reg) 3-51248		Project Number Acres			
Address			. Suite 29	0		Well Form No Curtis Lo				Well # #3	Serial #	
City	berry T	wp		State PA	Zip Code 16066				Municip Lafay		4	
Phone 724-	779-905	53		Fax 724-7	79-9040	USGS 7.5 min		le map				
Checka	all that app	oly: 🖂	Driginal We	II Record	Original Con	npletion Report	Amen	ded Well R	ecord	Amended (	Completion Repor	
				WEL	L RECC	DRD Also	complete	Log of Fo	ormations	on back (	page 2)	
Wel	І Туре	Ga	as 🛛	Oil	Combinatio	on Oil & Gas	🗌 Inj	jection	Sto	orage [	Disposal	
	g Method	R	otary – Ai		otary - Mud		le Tool					
Date Dri	ling Started 12/13/0	6		ng Completed	Surface	2160ft.	Total	Depth - Dri 2212			2212 ft.	
	Casi	ng and	Tubin	g		eturned on si eturned on co		-		No	0 🖂 N/A	
Hole Size	Pipe Size	e Wt.	Thread / Weld	Amount in Well (ft)	Mat	erial Behind P	ipe	1	/ Hardwa	re / Centro		
11"	9 5/8"	32 lb.	Thread	21.0								
8 3/4"	7"	20 lb.	Thread	584.0	125 sx Cla	ss A cement w 3	3% CaCl2				12/13/0	
6 1⁄4"	2"		Thread	2134.9							2/2/07	
		_			COMPL	ETION RE	PORT					
	Perfora		erforated		-		Stimulat	tion Red		ing Agent	Average	
Dat	0	rom	To	Dat	e Inter	val Treated	Туре	Amount		Amount	Injection	
2/1	/07 N	lotched 1418.0 1423.3 1434.8 1439.8		1423.3		Bradford 1 <sup>st</sup>	Water	8000 7000 7000 7000	20/40 Ottawa Sand	70sx	17.8 BPM @ 1950 17.8 BPM @ 1880 17.8 BPM @ 2200 17.8 BPM @ 1960	
			1579.0 1604.8 1717.1 1719.8 1728.5 1731.3		B	Tiona radford 2nd		7000 7000 8000 8000 8000 8000	Sanu	70sx 70sx 80sx 80sx 80sx 80sx	17.8 BPM @ 2170 17.8 BPM @ 2060 17.8 BPM @2130 17.8 BPM @ 2030 17.7 BPM @ 2330 17.7 BPM @ 2190	
	1726.3 1731.3 1744.7 1762.1 1764.8 2035.0 2102.9				no sv H Bradford 318 6/24 Lewis Run		7000 8000 8000 3000 8000		70sx 80sx 80sx 30sx 80sx	17.7 BPM @ 2290 17.6 BPM @ 2830 17.7 BPM @ 2690 17.6 BPM @ 2570 17.7 BPM @ 2490		
Natural	Open Flow	NA				atural Rock	NA			Hou		
	atment	NA			A	ressure fter Treatment ock Pressure	NA			Hou		
Open F		Compani	ies Prov	vide the name.		phone number of		rvice comp	anies involv			
Name Kea	ne Drilling			r N	Superior W	ell Services (F		ork) No	ome Superior V	Well Service	s (Logging)	
	ne Drive			1	Address Holley Aver				Route 119			
Brac	ate - Zip Iford, PA				Bradford, P				ty - State - Zi Blacklick,			
Phone 814-	362-6579	·		P	hone 814-368-62	28		Ph	724-248-1	1001		



#### COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM

 DEP USE ONLY

 Site Id
 Primary Facility Id

 Client Id
 Sub-facility Id

		V	ELL F	RECORD	AND	COMPLET	FION F	REPOR	RT _			_	
Well Op Cata		ergy, Inc.			DEP ID#	Well AP1 # ( 37-08	Permit / Reg 33-51247		oject Number		Acre	5	
Address 800		rry Wood Di	r. Suite 29	0		Well Form N Curtis Lo				Well # L2 2	Seria	1.10	
Cily	nberry	Twp		State PA			in		Municip Lafay				
Phone	-779-9	1.1		Fax 724-7	79-9040	USGS 7.5 mi		gle map					
Check	all that	apply: 🖂	Original We	II Record	Original (	Completion Report	Amer	nded Well	Record	Amended	Comple	tion Report	
				WEL	L REC	CORD Also	complete	e Log of F	ormations	on back (	page	2)	
We	II Type	G	as 🛛	Oil 🗌	Combina	ation Oil & Gas		njection		orage [		posal	
Drillin	g Meth		otary - Ai		otary - M	ud 🗌 Cab	le Tool						
Date Dr	illing Start 12/18			ng Completed 2/20/06		ace Elevation 2160ft.	-	222	5 ft.	Total De	2225		
	Ca	ising and	Tubin	g	the second se	nt returned on sint returned on co				No Yes No	lo 🖂	N/A	
Hole Size	Pipe S	Size Wt.	Thread / Weld	Amount in Well (ft)	M	<b>Type and Amou</b>	Pipe	1	r / Hardwa	re / Centre		Date Run	
11"	9 5/8	3" 32 lb.	Thread	21.7									
8 3/4"	7"	20 lb.	Thread	586.0	125 sx	Class A cement w 3	3% CaCl2					12/18/06	
6 1⁄4"	2"		Thread	2119.8								1/30/07	
					COMP	PLETION RE	PORT						
Da		Interval P From		Dat	e In	terval Treated	Stimula Fl Type	tion Re luid Amoun	Proppi	ng Agent Amount		verage jection	
1/29	9/07	Notched	1390.5 1402.0		/07	Bradford 1 <sup>st</sup>	Water	7000 7000 7000	20/40 Ottawa	70sx	17.8 BF	PM @ 1860 ps PM @ 1940 ps PM @ 1940 ps	
		1402. 1404. 1419. 1423. 1564. 1705. 1708. 1713. 1719.		1402.0 1404.8 1419.0 1423.0 1564.0 1705.0 1708.0 1713.3 1719.0 1727.8		Tiona Bradford 2 <sup>rd</sup>		7000 7000 8000 8000 8000 8000 7000	Sand	705x	17.8 BF 17.8 BF 17.8 BF 17.6 BF 17.7 BF 17.7 BF	<sup>2</sup> M @ 2080 psi <sup>2</sup> M @ 2150 psi <sup>2</sup> M @ 2180 psi <sup>2</sup> M @ 2830 psi <sup>2</sup> M @ 2830 psi <sup>2</sup> M @ 2110 psi <sup>2</sup> M @ 2350 psi <sup>2</sup> M @ 2840 psi	
	_		1739.5 1824.8 1845.9 2087.8			Harrisburg Run Bradford 3rd _ No Lewis Run	5.H 6/20	7000 6000 7000 8000		70sx 60sx 70sx 80sx	17.7 BF	²M @ 2350 psi ²M @ 2320 psi ²M @ 2260 psi ²M @ 2300 psi	
Natural	Open Ro	<sup>w</sup> NA				Natural Rock Pressure	NA			Hou	15	Days	
After Tre Open F	eatment low	NA				After Treatment Rock Pressure	NA			Hou	rs	Days	
		e Compani	es Prov	ide the name,	address, ar	nd phone number o	f all well ser	rvice comp	anies involve	d			
Nome Kea	ne Drillin	ng		N	ame Superior	Well Services (Fi	racture Wo		ame Superior W	ell Service	s (Logo	ging)	
Address					ddress Holley Av				ddress Route 119				
City - St	ate - Zip			C	Bradford,			C	ity - Stote - Zip Blacklick, F				
Phone:	y - Stote - Zip Bradford, PA one 814-362-6579					Phone 814-368-6228				Phone 724-248-1001			



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS MANAGEMENT PROGRAM 
 DEP USE ONLY

 Sife Id
 Primary Facility Id

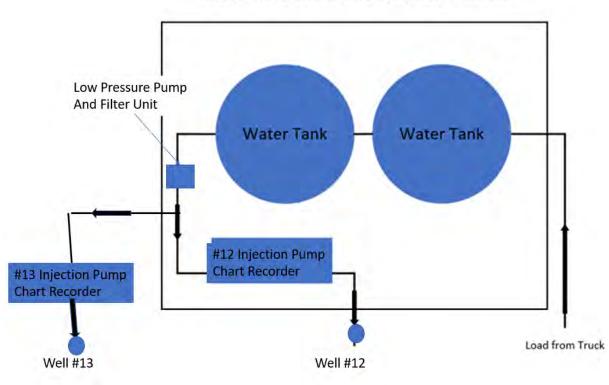
 Client Id
 Sub-facility Id

## WELL RECORD AND COMPLETION REPORT

Well Op Cata	erator lyst Ene	erav. In	IC.				84294		(Permit / Reg 83-51246		Projec	Number		Acres	
Address			1.5.31	. Suite 29	0			Well Form N Curtis L				-	Well # L2-1	Serial	#
City Cra	nberry	Twp			Sta F	A	Zip Code 16066	County McKea	an			Municip Lafay			
Phone 724	-779-9	053			Fax 724-	779-9	040	USGS 7.5 m	in, quadrang <b>Run</b>	gle mar	D				
Check	all that	apply:		riginal We	II Record	Orig	ginal Comp	letion Report	Amen	ded W	/ell Rec	ord	Amended (	Complet	tion Report
					WE	LL F	RECOR	RD Also	complete	Log	of For	mations	on back (	page 2	2)
We	II Туре	[	Ga	as 🛛	] Oil	Cor	nbination	Oil & Gas		jectio			rage [		oosal
Drillin	g Meth	od [		otary – Ai	r 🔲 I	Rotary	– Mud	Cat	ole Tool						
Date Dri	Illing Star				ing Complete 12/1/06	ed	Surface E	levation 2155 ft.	Tota		n - Driller 2216 f		Total De	2216	
1	-		and	Tubin			ement ret	urned on s		sing?	×	Yes [	] No		N/A
Hole	Dime	1	VALL	Thread	Amounti			urned on c ial Behind I		1			re / Centro		Date
Size	Pipe S	bize	Wt.	/ Weld	Well (ft)			and Amou			ype			epth	Run
11"	9 5/8	3" 3	32 lb.	Thread	22.3	-						_			
8 3/4"	7"	2	20 lb.	Thread	582.0	13	25 sx Class	A cement w	3% CaCl2						11/30/06
6 ¼"	2"			Thread	2120.5										1/24/07
		-		_		C	OMPLE	TION RE							
	Perfo			cord erforated		_	1		Stimula	tion	Reco	Proppi	ng Agent	A	/erage
Dat	e	From		To	D	ate	Intervo	al Treated	Туре	Amo	ount	Туре	Amount		jection
1/23		Notch	ed	1398.2 1401.5 1405.0 1416.0		24/07	Brad	dford 1 <sup>st</sup>	Water	70 70	00	20/40 Ottawa	70sx 70sx 70sx 80sx	17.9 BP 17.9 BP	M @ 1780 ps M @ 1760 ps M @ 1710 ps
				1419.4 1422.1 1561.3 1564.0			T	liona		70 60 70	00	Sand	70sx 60sx 70sx 70sx	17.8 BP 17.8 BP 17.8 BP	M @ 1830 ps M @ 1930 ps M @ 2040 ps M @ 2000 ps M @ 2070 ps
				1571.2 1700.8 1703.6 1706.5	-		Brac	dford 2 <sup>nd</sup>		80 80	00		60sx 80sx 80sx 70sx	17.7 BP 17.8 BP 17.8 BP	M @ 2360 ps M @ 2010 ps M @ 2100 ps M @ 2220 ps
				1716.8 1841.0 1973.5 1976.5 2088.5	-		Brac	sburg Run dford 3 <sup>rd</sup> vis Run		70 50 50	00 00 00 00		70sx 70sx 50sx 50sx 80sx	17.7 BP 12.1 BF	2M @ 2160 ps 2M @ 2710 ps 2M @ 1690 ps Skipped 2M @ 2510 ps
Natural	Open Flo		NA		_		Natu Press	ural Rock sure	NA				Hou	rs	Days
After Tre Open Fl		1	NA				After	r Treatment k Pressure	NA				Hou	rs	Days
Well S	Service	Com	panie	es Prov	ide the name		ess, and ph	one number o	of all well ser	rvice c			d.		
Name Kear	ne Drillir	ng						Services (F	racture Wo	ork)		perior W	/ell Service	s (Logg	jing)
Address Kear City - Sto	ne Drive	2				City - St	ey Avenue late – Zip	9				ess oute 119 State – Zip	)		
Brad	ford, PA	A					dford, PA				Phon	acklick, F	PA		
	Phone 814-362-6579				Phone 814-368-6228			724-248-1001							

## Attachment D: Injection Operation and Monitoring Program

## Flow Diagram



Steel Dike Containment Unit Located next to Well #12

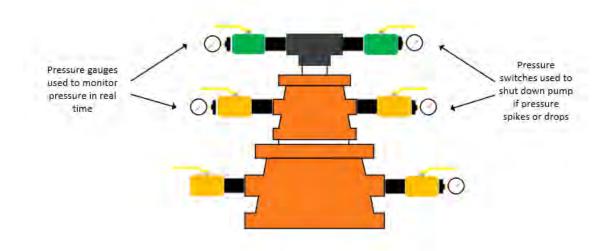
## **Contingency Plan**

The well heads will be equipped with gauges to monitor tubing and annular pressures of the 1-1/2" and 3". Pressure switches will be installed to shut the pump down in the event of an abnormal pressure changes as described in Attachment C Part II. This event will be reported to the EPA and investigated why pressure migration has occurred. Injection operations will cease until approval from the EPA.

## Surface Construction

A steel containment 14' x 40' x 6' tall will be placed on well location #12 as per diagram above. Water tanks are 240-barrel polyurethane. Drawing is provided above in flow diagram.

## **Monitoring Ports**



## **Sampling and Monitoring Devices**

The fluid injected will be conventional shallow oil and gas well brine. The only relevant parameter that may change from time to time is the Sg of the brine. Once monthly a sample will be drawn from the water tanks and tested with a hydrometer to ensure Sg remains less then < 1.1.

Each injection pump will have a 30-day chart recorder to record injection pressure. Each well head will have a rotary meter to record volume of injected fluid. Pumps are positive displacement and injection rate is controlled by RPM's of the drive shaft. Rates will be confirmed by monthly checks of volume.

## **Manifold Monitoring Devices**

Not applicable

## **Operating Data Information**

	#12	#13							
Average Rate	75	75	BWPD						
Max Rate	300	300	BWPD						
Averge Injection Pressure	1650	1650	PSI						
Maximum Injection Pressure	#12	#13	Units						
Pmax Brad 3rd	1789	1814	PSI						
Pmax Lewis Run	1884	1910*	PSI						
Pmax Simultaneous Injection	1789	1814	PSI						
* Lewis Run is cemented but may be reopened									

## **Injection Fluid**

The source of injection fluid is conventional shallow oil and gas well production brine. The formations these wells produce from are the Upper Deviation Venango Sandstones and the Upper Devonian Bradford Sandstones. The oilfields produced from are the Bradford, Warren, Clarendon, Lewis Run, Marshburg and Pleasant.

Annular fluid info not applicable.

Analysis of the Injection Fluid is found in attachment D-1.

# Attachment D-1 Analytical Services, Inc.

P.O. Box 237 Brockway, PA 15824-0237 Laboratory (814) 265-8749 FAX (814) 265-8749

#### **GENERAL CHEMICAL ANALYSIS REPORT**

**CUSTOMER: Hansen Services** 7 Mead Boulevard Clarendon, PA 16313 Attn: Justin Hansen

Page 1 of 5

SAMPLE DATE: 01/07/16 at 12:50 pm RECEIPT DATE: 01/07/16 at 5:40 pm

**REPORT DATE: 02/10/16** ASI ID#: 140687

**DESCRIPTION OF SAMPLE: Hansen Services** 

#### TOTAL ANALYSIS RESULTS:

PARAMETER	RESULT	UNIT		METHOD	BY	OATE & TIME	DATA QUALIFIER
TPH-HEM Oil & Grease	8	ma/L	5	SM 5520B	WB	01/21/16 @ 11:00 am	R3
TPH-DRÓ	<b>Z</b> ,450	µg/L	-	EPA 6015D	FL	02/04/16 @ 3:22 pm	3a
TPH-GRO	9,720	µց/∟	-	EPA 8015D	FL	02/03/16 @ 9:12 am	3a
Nitrate-N	< 50.0	mg/L	50.0	EPA 300.0	BB	01/16/16 @ 7:47 pm	
Nitrite-N	< 50.0	mg/L	50.0	EPA 300.0	вв	01/18/16 @ 7:47 pm	
Sulfate	791	mg/L	5	EPA 300.0	вв	01/18/16 @ 7:47 pm	E1
Fluoride	<0.5	mg/L	.15	SM 4500 F-C	cc	02/03/16 @ 11:16 am	
Bromide	585	mg/L	0,1	EPA 300.0	BB	01/18/16 @ 7:47 pm	
Dissolved Phosphorus	<.15	ന്ദു/L	.15	SM 4500 P-B, 5-E	WB	02/10/16 @ 10:30 am	
Dissolved Vanadium	<0.500	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:45 pm	
Dissolved Zinc	<0.500	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Titanium	<0.500	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Strontium	66.1	mg/L	0,500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Tip	<0.500	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Selenium	<0.500	നg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Antimony	<0.500	mg/L	0.500	EPA 200.8	сн	02/03/16 @ 4:46 pm	
Dissolved Lead	<0.500	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Nickel	<0.500	mg/L	Ð.500	EPA 200.8	Сн	02/03/16 @ 4:45 pm	
Dissolved Sodium	24,700	mg/L	500	EPA 200.8	СН	02/04/16 @ 1:25 pm	
Dissolved Molybdenum	<0.500	mg/L	0,500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Manganese	8.40	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Magnesium	1,230	mg/L	500	EPA 200.8	СН	02/04/16 @ 1:25 pm	
Dissolved Lithium	4.1	mg/L		6M 3111B	cc	02/08/16 @ 4:00 pm	1
Dissolved Potassium	69.5	mg/L	10.0	EPA 200.8	СН	02/04/16 @ 12:09 pm	
Dissolved Iron	88.8	mg/L	10.0	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Copper	0.708	mg/L	0.5	EPA 200.8	СН	02/03/16 @ 4:46 pm	
Dissolved Chromium	<0.500	mg/L	0.5	EPA 200.8	СН	02/03/16 @ 4:46 pm	-

R3: No duplicate due to insufficient sample volume.
 E1: Diluted sample result exceeded the calibrated range and high CCV, but is within the Linear Calibration Range. Concentration is considered an estimate.
 3a: this sample was received outside the EPA recommended holding time.

# Analytical Services, Inc.

P.O. Box 237 Brockway, PA 15824-0237

GENERAL CHEMICAL ANALYSIS REPORT

Laboratory (814) 265-8749 FAX (814) 265-8749

Page 2 of 5

CUSTOMER: Hansen Services 7 Mead Boulevard Clarendon, PA 16313 Attn: Justin Hansen

SAMPLE DATE: 01/07/16 at 12:50 pm RECEIPT DATE: 01/07/16 at 5:40 pm

REPORT DATE: 02/10/16 ASI ID#: 140687

**DESCRIPTION OF SAMPLE: Hansen Services** 

#### TOTAL ANALYSIS RESULTS:

	PARAMETER	RESULT	UNIT		METHOD	BY	DATE & TIME	DATA QUALIFIER
	Dissolved Cobalt	<0.500	mg/L	5	SM 5520B	СН	02/03/16 @ 4:46 pm	
	Dissolved Cadmium	<0.100	mg/L	50.0	EPA 300.0	СН	02/03/16 @ 4:46 pm	
-	Dissolved Beryllium	<0.100	mg/L	50.0	EPA 300.0	СН	02/03/15 @ 4:46 pm	
	Dissolved Barium	1.47	mg/L	5	EPA 300.0	СН	02/03/16 @ 4:46 pm	
	Dissolved Boron	2.97	mg/L	.15	SM 4500 F-C	СН	02/04/16 @ 12:09 pm	
╞	Dissolved Arsenic	0.648	mg/L	0.1	EPA 300.0	СН	02/03/16 @ 4:46 pm	
	Dissolved Atuminum	0.923	mg/L	0.500	EPA 200.8	СН	02/03/16 @ 4:46 pm	
	Total Inorganic Carbon	27.8	mg/L	0.5	SM 52100	ws	02/0816	
	тос	211.5	mg/L	0.5	SM 5310B	ws	02/0816	
	Hardness	22,600	mg/L	3310	SM 2340B	СН	02/04/16 @ 1:06 pm	
	Alkalinity to pH 4.5 as CaCOs	38	mg/L	1	SM 2320B	PW	01/12/18 @ 12:00 pm	
	Barium	1.31	mg/L	0,500	EPA 200.8	СН	02/03/16 @ 4:10 pm	
	TDS	81,860	mg/L	10	SM 2540C	PW	01/11/16 @ 9:45 am	
T	Manganese	8.58	mg/L	,500	EPA 200.8	СН	02/04/16 @ 1:06 pm	
	Chlorida	52,167	mg/L	3	EPA 300.0	BB	01/18/16 @ 7:47 pm	
	Magnesium	1,270	mg/L	500	EPA 200.8	СН	02/04/16 @ 1:05 pm	
	Iron	115	mg/L	10.0	EPA 200.8	СН	02/03/16 @ 4:10 pm	
-	Sodium	23,100	mg/L	500	EPA 200.8	CH	02/04/16 @ 1:06 pm	
	Conductivity	110,700	mg/L	0.1	SM 2510B	WB	01/20/16 @ 1:00 pm	
	Specific Gravity	1.080	mg/L	-		ws	02/08/16	
	Sulfide	2.6	mg/L	0.05	SM 4500 S-D	WB	02/10/16 @ 10:00 am	
	Temperature	2_4	ç	-	SM 25508	MC	01/07/16 @ 5:40 pm	
	Dissolved Oxygen	1.70	mg/L		SM 4500 O-G	MC	01/07/16 @ 5:40 pm	
	Density	1,080	\$.G	-		MC	01/07/16 @ 5:40 pm	
	PH (Field)	6,63			SM 4500 H+-B	MC	01/07/16 @ 5:40 pm	

# Analytical Services, Inc.

P.O. Box 237 Brockway, PA 15824-0237 Laboratory (814) 265-8749 FAX (814) 265-8749

#### **GENERAL CHEMICAL ANALYSIS REPORT**

**CUSTOMER: Hansen Services** 7 Mead Boulevard Clarendon, PA 16313 Attn: Justin Hansen

Page 3 of 5

SAMPLE DATE: 01/07/16 at 12:50 pm RECEIPT DATE: 01/07/16 at 5:40 pm

**REPORT DATE: 02/10/16** A\$I ID#: 140687

DESCRIPTION OF SAMPLE: Hansen Services

TOTAL ANALYSIS RESULTS:

PARAMETER	RESULT	UNIT	QUANTITATION LIMIT	METHOD	METHOD BY DAT	
Iron Bacteria	YES			Hot	ws	01/07/16 , Ended 01/10/16

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted. Willin Alabstal By: \_

Date: 02/10/16

For: William J. Sabatose, Chief Chemical Analyst

PADEP LAB ID#: 33-00411

# Analytical Services, Inc.

P.O. Box 237 Brockway, PA 15824-0237 Laboratory (814) 265-8749 FAX (814) 265-8749

## CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services 7 Mead Blvd. Clarendon, PA 16313 ASI ID#: 140687 SAMPLE DATE: 01/07/16 @ 12:50 RECEIVED: 01/07/16 @ 17:40 REPORTED: 02/09/16

ATTN: Justin Hansen

SAMPLE DESCRIPTION:

### TOTAL ANALYSIS RESULTS:

Parameter	Results	Units	Reporting Limit	Method	Date Analyzed	Time	Qualifier
1,3,5-trimethylbenzene	59.3	μg/L	10.0	SW 846-8260B	02/02/16	23:27	За
1,2,4-trimethylbenzene	136	μg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Benzene	2090	μg/L	25.0	SW 846-8260B	02/03/16	17:50	3а
Toluene	1870	μg/L	25.0	SW 846-8260B	02/03/16	17:50	3a
Ethylbenzene	90.2	μg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Xylenes (total)	957	μg/L	20.0	SW 846-8260B	02/02/16	23:27	3a
Isopropyibenzene	< 10.0	μg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Naphthalene	10.2	µg/L	10,0	SW 846-8260B	02/02/16	23:27	3a
sec-butylbenzene	< 10.0	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
tert-butylbenzene	< 10.0	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3а

Sample analyzed by Fairway Laboratories, PA Lab # 07-062

Qualifier 3a: This sample was received outside the EPA recommended holding time.

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

PADEP LAB ID#: 33-00411

Page: 4 of 5

# Analytical Services, Inc.

P.O. Box 237 Brockway, PA 15824-0237 Laboratory (814) 265-8749 FAX (814) 265-8749

## **CHEMICAL ANALYSIS REPORT**

CUSTOMER: Hansen Services 7 Mead Blvd. Clarendon, PA 16313 ASI ID#: 140687 SAMPLE DATE: 01/07/16 @ 12:50 RECEIVED: 01/07/16 @ 17:40 REPORTED: 02/09/16

ATTN: Justin Hansen

SAMPLE DESCRIPTION:

### TOTAL ANALYSIS RESULTS:

Parameter	Results	Units	Reporting Limit	Method	Date Analyzed	Time	Qualifier
Pyridine	< 40.0	μg/L	40.0	SW 846-8270D	02/03/16	14:53	3a, 2d
Acetophenone	< 20.0	μg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d
3 & 4-methylphenol	124	μg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d
2-methylphenol	101	μg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d

Sample enalyzed by Fairway Laboratories, PA Lab # 07-062

Qualifier 3a: This sample was received outside the EPA recommended holding time.

Qualifier 2d: The LCS spike recovery was outside acceptance limits for the noted analyte. Data accepted based on additional batch QC.

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

Willin Selector Reviewed and Approved By: For: William Sabatose, Chief Chemical Analyst

PADEP LAB ID#: 33-00411

Page: 5 of 5

Analytical Servinal P.O. Box 237 Bro	vices Inc	5824	www.a	albrockwa Ship: 51 P	y.com roChemTec	analytical@windstr h Dr. Brockway Pa 1682	eam.net	one: 814-265	Chain of Custody 8749 Fax:814-265-8749
Client: <u>Hansen</u> Address: 7 Mraa	Samila	4	Report To	: Just	in Hans	And which the second	4-688-463	The second rest of the second particular second s	
Sample Name	Date/Time	Туре	Containers	Matrix	Sampler	Notes		Analysis Requ	ested
1	12:35	Comp or Grab				D0-1,70	See (	ist (a	ttacnes)
2	1/7/16	Comp or Grab				1CMP, 4°C 2,4°C PHG,G3		. (	
3	1245	Comp or Grab	•						
4	12 30	Comp or Grab	•			SPEZIEL GMIN	×	V	
e :		Comp or Grab						<u></u>	·
<u>5</u>	1	Comp or Grab					· ·		
7		Comp or Grab							,
		Comp or Grab							
8		Comp or Grab				· · · · · · · · · · · · · · · · · · ·			
9		Comp or Grab							
10 Mate	x Code		Sa	mple Cond	lition	Relinquished By	Date	/Time	Organization
DW=Drinking Water	OL= OI		Sample on		(2) I N	MUTHL LOY		110 12	55
WW=Weste Water	IAQ#Aque	018	Bottles int		01 N 0.5 °C				
SL= Sludge	SW= Stor		Temperatu		<u>0.0.6</u>				
S= Solid	OT= Othe	r (specify)	sample pl	5		Received By	Date	e/Time	Organization
Special Requiremen	ts / Billing Int	ormation	1						
						- Pan-			
			<u> </u>			Ann	<u> </u>	7-16 17	40. 1997

.

Attachment E: Plugging & Abandonment

Please see EPA Forms 7520-19 for required information. Required diagrams are below.

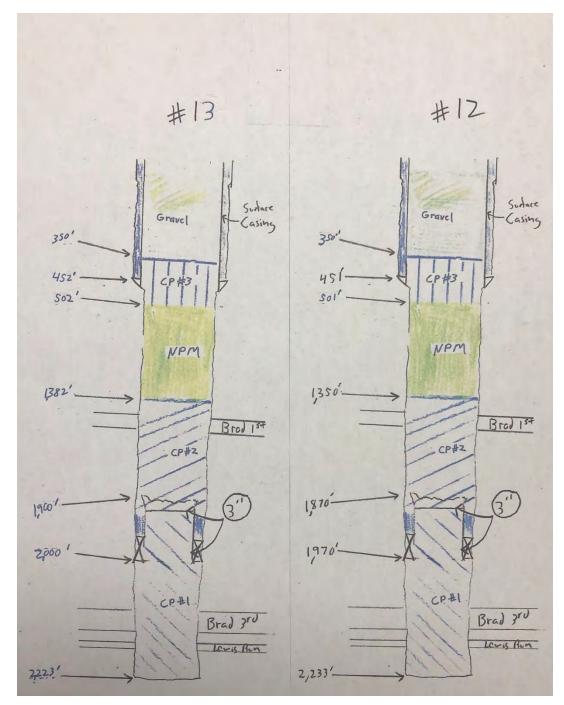


Diagram with depths for cement plugs

€EPA	WELL REWO	United States En	UGGING AND		T PLAN,
	OR Phone Number and/or Email of I	PLUGGING AND	ABANDONM	ENT AFFIDAVIT	
Bull Run Resourd 200 Liberty Stree Warren, PA 814-706-7302 sam@bullrunenen	ces LLC tt;Suite 20	*ermittee			
Permit or EPA ID N	łumber	API Number		Full Well Name	
PAS2R450BMC	K	37-083-55309-00-01		Curtis Lot 2 #12	
State		Count			
Pennsylvania		McK			
Locate well in two	directions from nearest lines o	f quarter section and drilling u	nit Latitude 41	.838727	
Surface Location			Longitude _7	0 710///	Т
	om (N/S) Line of quar om (E/W) Line of quar				
Well Class	Timing of Action (pick one)			Type of Action (p	lick one)
Injection we 1. 1- 2. Ce 3. Fr 4. Ce 5. Th 6. Ce	Notice Prior to Work Date Expected to Comm Report After Work Date Work Ended els will be plugged in accord 1/2" tubing and packer will ement plug #1 will be set fro ee standing 3" casing will be ement plug #2 will be set dir ne well will be filled with a ne ement plug #3 (CP#3) will be ne well will then be filled with	lance with Chapter 78. "Oil be retrieved from the 3" ca om 2233' into the open hole e shot near the cement top ectly above the first plug al onporous material (NPM) t e set from 501' to 350'	and Gas Wells" of the sing e section and extend and retrieved from nd extend to 1350'	I pages as necessary. See ins he Pennsylvania Code. ling into the 3" casing to the well	d Abandonment to a Non-Injection W
The tot	permanent marker will be c al cement slurry volume wil by pumping type 1 cement	l be ~32 <u>bbls</u> (~155 <u>sks</u> ) of	Type 1 cement per v	vell. All plugs will be set	
	r the penalty of law that I have p		niliar with the informat		
information is	and that, based on my inquiry of s true, accurate, and complete, fine and imprisonment. (Ref. 4)	I am aware that there are signi			
Name and Official 1	Title (Please type or print)	Signature	11	ļ.	Date Signed
	1		11/2		10/01/2020
Samuel V Harvey		tel.	102		

## T & K Well Service

#### 1365 Matthews Run Road Youngsville, PA 16371 814 (688-1225)

FIELD TICKET #'S Quote TOTAL HOURS 12 AMOUNT: \$ 3,800.50

Field Ticket #: Service Date:	Quote TBD		Company: Lease Well No:		Bull Run Resources Curtis Lot 2 Injection Well			
Additional Service	ces (see attached)	WELL SUPPLIES		\$/unit		Total	TOTAL HOURS	
Rig Work	T & K Well Service	Work required for plugging and abandonme	nt \$	12.00	\$	960.00		
Equipment Charge	Curtis Well Service	Cement truck charge	\$	1.00	\$	1,350.00		
Type 1 Cement	Curtis Well Service	150 Sks of Type 1 cement	\$	12.50	\$	1,875.00		
Bentonite	Curtis Well Service	2 Sks	\$	18.00	\$	36.00	12	
LCM (Multiseal)	Curtis Well Service	2 Sks	\$	44.75	\$	89.50	12	
Water Truck	Northern Tier	4 Hrs - Haul fresh water to rig	\$	75.00	\$	150.00		
Salvage	Goodman's	~8 Gross Ton @\$165.00 (50%)	\$	165.00	\$	(660.00)		
			Total:		\$	3,800.50		

		United States En	vironmental Protecti	on Agency
<b>€PA</b>				ID ABANDONMENT PLAN,
ame and Addres	os, Phone Number and/or Email o	R PLUGGING AND	ABANDONI	VIENT AFFIDAVII
Bull Run Resou 200 Liberty Str Warren, PA 814-706-7302 sam@bullruner	rrces LLC eet;Suite 20	remittee		
Permit or EPA ID		API Number		Full Well Name
PAS2R450BM		37-083-55310-00-00		Curtis Lot 2 #13
State		Coun	ity	
Pennsylvania		McK	Kean	
Locate well in tv	vo directions from nearest lines	of quarter section and drilling u	unit Latitude	41.838804
Surface Location	1			
1/4 of	1/4 of Section	Township Range	Longitude	-78.716231
	100 - 100			
ft.	from (N/S) Line of qua	arter section		
ft.	from (E/W) Line of qu	arter section.		
Well Class	Timing of Action (pick one)			Type of Action (pick one)
Class I	V Notice Prior to Work	A TALL AND A REAL PROPERTY.		Well Rework
✓ Class II		when injection stops		
Class III				Plugging and Abandonment
	Report After Work			
Class V				Conversion to a Non-Injection
Provide a narrati	Date Work Ended			onal pages as necessary. See instructions.
Provide a narrati Injection w 1. 1 2. ( 3. F 4. ( 5. 1 6. ( 7. 1 8. 4 The te	Date Work Ended we description of the work plann vells will be plugged in accor 1-1/2" tubing and packer wil Cement plug #1 will be set fr Free standing 3" casing will b Cement plug #2 will be set di The well will be filled with a Cement plug #3 (CP#3) will b The well will then be filled with A permanent marker will be otal cement slurry volume w m by pumping type 1 cemen	dance with Chapter 78. "Oil a l be retrieved from the 3" ca om 2233' into the open hole se shot near the cement top rectly above the first plug an nonporous material ( <u>NPM</u> ) to e set from 502' to 350' ith gravel to the surface. cemented in at the surface v ill be ~32 <u>bbls</u> (~155 <u>sks</u> ) of T	and Gas Wells" of sing e section and exter and retrieved from ad extend to 1382' o 100 feet below t vith a tag displayir Fype 1 cement per	onal pages as necessary. See instructions. the Pennsylvania Code. nding into the 3" casing to a depth of 1900 n the well he casing seat
Provide a narrati Injection w 1. 1 2. ( 3. F 4. ( 5. 1 6. ( 7. 1 8. 4 The to botto page)	Date Work Ended Date Work Pland Date Work Ended Date Work Pland Date Work Plan	dance with Chapter 78. "Oil a l be retrieved from the 3" ca om 2233' into the open hole se shot near the cement top- rectly above the first plug an nonporous material ( <u>NPM</u> ) to e set from 502' to 350' ith gravel to the surface. cemented in at the surface v ill be ~32 <u>bbls</u> (~155 <u>sks</u> ) of T t through 1/-1/2" tubing. Th <u>Certificat</u> personally examined and ma fa of those individuals immediatel . 1 am aware that there are sign	and Gas Wells" of sing e section and exter and retrieved from ad extend to 1382' to 100 feet below t vith a tag displayin fype 1 cement per se anticipated plug tion	onal pages as necessary. See instructions. the Pennsylvania Code. nding into the 3" casing to a depth of 1900 n the well he casing seat ng the API number. well. All plugs will be set from their

### T & K Well Service

1365 Matthews Run Road Youngsville, PA 16371 814 (688-1225)

tkwellservice16@gmail.com

FIELD TICKET #'S Quote TOTAL HOURS 12 AMOUNT: \$ 3,800.50

Field Ticket #:			Company			Bull Run Resources			
Service Date:	TBD	-	Lease We	II No:	Curtis Lot 2 Injection Well				
Additional Services (see attached)		WELL SUPPLIES		\$/unit		Total	TOTAL HOURS		
Rig Work	T & K Well Service	Work required for plugging and abandonme	nt Ş	12.00	\$	960.00			
Equipment Charge	Curtis Well Service	Cement truck charge	\$	1.00	\$	1,350.00			
Type 1 Cement	Curtis Well Service	150 Sks of Type 1 cement	\$	12.50	\$	1,875.00			
Bentonite	Curtis Well Service	2 Sks	\$	18.00	\$	36.00	12		
LCM (Multiseal)	Curtis Well Service	2 Sks	\$	44.75	\$	89.50	12		
Water Truck	Northern Tier	4 Hrs - Haul fresh water to rig	\$	75.00	\$	150.00			
Salvage	Goodman's	~8 Gross Ton @\$165.00 (50%)	\$	165.00	\$	(660.00)			
			Total:		\$	3,800.50			

& K Well Service

# Attachment F

#### STANDBY TRUST AGREEMENT

U.S. Environmental Protection Agency Underground Injection Control Financial Responsibility Requirement

 THIS TRUST AGREEMENT (the "Agreement") is entered into as of October 5, 2020

 by and between Bull Run Resources LLC
 , owner or operator, a propietership

 corporation / partnership / association / proprietorship (the "Grantor"), and

 Hamlin Bank and Trust Company
 (the "Trustee"), a Financial

 institution.

Whereas, the United States Environmental Protection Agency ("EPA"), an agency of the United States Government, has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for plugging and abandonment of the injection well or wells,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facility or facilities identified herein, and

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee,

NOW THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement: (a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor. (b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee. (c) Facility or activity means any "underground injection well" or any other facility or activity that is subject to regulation under the Underground Injection Control Program.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund (the "Fund") for the purpose of assuring compliance with the plugging and abandonment requirements established by EPA for the facilities identified on Schedule A. The Underground Injection Control regulations which govern the authorization to inject include a requirement for such financial assurance that the well or wells shall be plugged and abandoned at the time designated by EPA. The Grantor and the Trustee acknowledge that the Fund and all expenditures from the Fund shall be to fulfill the legal obligations of the Grantor under such regulations, and not any obligation of EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred

to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible, nor shall it undertake any responsibility, for the amount or adequacy of any additional payments necessary to discharge any liabilities of the Grantor established by EPA, nor shall the Trustee have any duty to collect such additional amounts from the Grantor.

Section 4. Payment for Plugging and Abandonment. The Trustee shall make payments from the Fund only for the costs of plugging and abandonment ("P&A") of the injection wells covered by this Agreement and the associated P&A Plan, only after EPA has advised the Trustee that work has been completed under the P&A Plan that complies with 40 C.F.R. § 144.28 and/or § 144.52. The Trustee shall not refund to the Grantor any amounts from the Fund unless and until EPA has advised the Trustee that the P&A Plan has been successfully completed. The Trustee shall not release any funds to the Grantor that are necessary to cover liability for any injection wells covered by this Agreement that remain unplugged.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion: (a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and (b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U. S. C. 80a-1 *et seq.*, including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered: (a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition; (b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted; (c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund; (d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and (e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate EPA Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the EPA Regional Administrator shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this

Agreement of any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the EPA Regional Administrator, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the EPA Regional Administrator to the Trustee shall be in writing, signed by the EPA Regional Administrators of the Regions in which the facilities are located, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or EPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or EPA, except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the appropriate EPA Regional Administrator, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the appropriate EPA Regional

Administrator, or by the Trustee and the appropriate EPA Regional Administrator if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the EPA Regional Administrator, or by the Trustee and the EPA Regional Administrator if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the EPA Regional Administrator issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of Pennsylvania

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by their respective representatives duly authorized and their seals to be hereunto affixed and attested as of the date first above written.

### GRANTOR

## TRUSTEE

Bull Run Resources LLC	
By: Samuel V. Harvey	
[Print name]	
Its: President	
[Title] Attest:	
Its: President	
[Title]	
[SEAL]	

Hamlin Bank and Trust Company

By: David Seipp

[Print name]

Its: Trust Officer

[Title]

Attest:

Frust Offic Its:

[Title]

[SEAL]

Before me came the individual whose identity I confirmed as <u>Samuel V. Harvey</u> and whose true signature is set forth above; wherefor have I set my hand and seal this  $5 \neq 16$  day of  $0 \neq 16e$ , 2020.

Mircheal &

Notary Public

COMMONWEALTH OF PENNSYLVANIA NOTARIAL SEAL Mischelle G. Heffner, Notary Public Smethport Boro, McKean County My Commission Expires Aug. 27, 2021 MEMBER, PENNSYLVANIAASSOCIATION OF NOTARIES Before me came the individual whose identity I confirmed as <u>David Seipp</u>, and whose true signature is set forth above; wherefor have I set my hand and seal this 5 H day of O HB H, 2020.

Mischell 49

Notary Public

COMMONWEALTH OF PENNSYLVANIA NOTARIAL SEAL Mischelle G. Heffner, Notary Public Smethport Boro, McKean County My Commission Expires Aug. 27, 2021 MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

#### CERTIFICATE OF ACKNOWLEDGMENT

FOR

## STANDBY TRUST FUND AGREEMENT

STATE OF Pennsylvania			
COUNTY OF McKean			
On this <u>5th</u>	day of October	, 20 20, before me p	ersonally came
Samuuel V. Harvey (Owner or Opera		who, being by me duly sworn, di	d depose
and say that he/she resid	les at 504 West 3rd Avenue, Warren	n PA 16365 (Address)	

 That he/she is President
 of Bull Run Resources LLC

 (Title)
 (Corporation)

the corporation described in and which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to such instrument in such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.

Mitchelle (Notary Public)

COMMONWEALTH OF PENNSYLVANIA NOTARIAL SEAL Mischelle G. Heffner, Notary Public Smethport EScall Kean County My Commission Expires Aug. 27, 2021 MEMBER, PENNSYLVANIAASSOCIATION OF NOTARIES

## SCHEDULE A

## Identification of Facilities and Cost Estimates

Schedule A is referenced in the standby trust agre	ement dated 10/5/2020 by and
between Bull Run Resources, LLC	
(Name of owner or operator)	
Hamlin Bank and Trust Compa	ny , the Trustee.
(Name of trustee)	, no maxor
EPA identification number	PAS2R450BMCK
Name of facility	Curtis Lot 2 #12
Address of facility	41.838749;-78.717399
	Lewis Run, PA 16738
Current plugging and abandonment cost estimate	\$3,800.50
	0/00/0000

Date of estimate

EPA identification number

Name of facility

Address of facility

Current plugging and abandonment cost estimate

Date of estimate

9/29/2020

PAS2R450BMCK Curtis Lot 2 #13 41.838749;-78.717399 Lewis Run, PA 16738

\$3,800.50 9/29/2020

## SCHEDULE B

## Description of Property / Financial Instrument

[Surety, Letter of Credit, etc.]

Schedule B is re	ferenced in the Standby Trust Agreement (Sectio	n 3) dated
by and between	Bull Run Resources, LLC	, the "Grantor,"
oy and between	(name of owner or operator)	
and Hamlin	Bank and Trust Company	, the "Trustee."
	name of the trustee)	

The fund consists of:

(Check on e and provide identification number)

0	Irrevocable Letter of Credit No.
0	Surety Performance Bond No.
•	Other (Describe) Certificate of Deposit #13273046

73046 132 THIS CERTIFICATE BULL RUN RESOURCES LLC EVIDENCES A Certificate Number DEPOSIT IN THE 10:10 Samuel 7.601 dol's OOL Account NAME(S) OF: OCTOBER 6, 2020 Bate 7,601.00 DOLLARS \$ IN THE AMOUNT OF TERM, MATURITY AND DESCRIPTION; This certificate has a term of \_\_\_\_\_ 30 MONTHS It will (first) mature APRIL 6, 2023 The minimum balance is \$ 1,000.00 11.01 BALLET % per year to the first maturity date. We calculate interest using the actual / 365 days per year method. We will compound interest (accrue interest on interest) \_\_\_\_ We will pay interest SEMI-ANNUALLY BY CHECK UNLESS WE TELL YOU OTHERWISE IN A SEPARATE DOCUMENT, INTEREST WILL NOT ACCRUE ON THIS DEPOSIT AFTER FINAL MATURITY. VIE(e)pp(p)be= **RENEWALS:** If checked, we will automatically renew this certificate on each succeeding maturity date. Each renewal term will be the same as the original term, beginning on the maturity date. We will not automatically renew this certificate (1) if you tell us not to do so, in writing, on or before the next maturity date; or (2) if you present this certificate to us for payment (or other disposition) on or within 10 calendar days after the maturity date if it has a term of more than 31 days, and one calendar day if it has a term of seven to 31 days. HAMLIN BANK AND TRUST COMPANY has a term of seven to 31 days. 1210 SINGLE MATURITY: If checked, we will not automatically renew this certificate. BY It will mature once on the maturity date. T.I.N.: 45-2055068 SONAL ACCOUNTS: You have requested and SOCIAL SECURITY OR EMPLOYER'S I.D. NUMBER - A d the type of account marked below. correct taxpayer identification number is required for almost every type of account. A certification of this number is also required and is contained on the first copy of this certificate. adividual. NONPERSONAL ACCOUNTS: Depositor is a: bint Account - With Survivorship (and not as tenants in common) Corporation ant Account - No Survivorship (as tenants in common) Partnership X LLC BACKUP WITHHOLDING - A certification that you are not subject to backup withholding is necessary for almost all accounts (except for persons who are exempt altogether). This certification is contained on the first copy of this form. Failure to provide this certification when required will cause us to withhold the percentage allowed under the Internal Revenue Code of the interest earned (for payment to the IRS). Providing a lease are filteriation are set in serious federal negatives rust: Separate Agreement Dated Authorization dated The NUMBER OF ENDORSEMENTS needed for ay-On-Death or 🔲 Revocable Trust false certification can result in serious federal penalties withdrawal or any other purpose is: nation as defined in this agreement eficianes named below) ENDORSEMENTS - SIGN ONLY WHEN YOU REQUEST WITHDRAWAL EVOCABLE JST OR PAY-X N-DEATH X ACCOUNT IEFICIARIES

2720 © 1983 Bankers Systems, Inc., St. Cloud, MN COMB-CD-SC (1) 6/22/2005 Customized

READ OTHER SIDE FOR ADDITIONAL TERMS

4

		1365 Matthews Run Road						
		1505 Midtinews Run Roau		FIELD	TIC	KET #'S		Quote
		Youngsville, PA 16371		TOTA	AL HO	OURS		12
		814 (688-1225)		AMO	UNT	4	\$	3,800.5
		tkwellservice16@gmail.com		- Inte	onn		4	5,000.5
		tkweiiservice16@gmail.com						
Field Ticket #: Quot	e	Status: To Be Completed Co	mpany:		Bull	Run Resource	es	
Service Date: TBD	,	Lea	ase Wel	No:	Curt	tis Lot 2 Inject	tion We	ell
Additional Services (se	e attached)	WELL SUPPLIES		/unit		Total	TOT	AL HOURS
	K Well Service	Work required for plugging and abandonment	\$	12.00	\$	960.00		
Equipment Charge Curt	tis Well Service	Cement truck charge	\$	1.00	\$	1,350.00		
Type 1 Cement Curt	tis Well Service	150 Sks of Type 1 cement	\$	12,50	\$	1,875.00		
Bentonite Curt	tis Well Service	2 Sks	\$	18,00	\$	36.00		12
LCM (Multiseal) Curl	tis Well Service	2 Sks	\$	44.75	\$	89.50		12
Water Truck N	lorthern Tier	4 Hrs - Haul fresh water to rig	\$	75.00	\$	150.00		
Salvage	Goodman's	~8 Gross Ton @\$165.00 (50%)	\$	165.00	\$	(660.00)		
		To	tal:		\$	3,800.50		
Pull tubing and casing. Set a RICES SUBJECT TO CHANG		Work to be Performed by the state of PA. Dump gravel and set monur	nent.					

# Attachment G.

Not Applicable

## Attachment H.

Not Applicable

# Attachment I.

No Existing Permits

# Attachment J.

Bull Run Resources produces oil and gas from conventional oil and gas wells located in Elk, Forest, Warren and McKean Counties, Pennsylvania.

# Attachment K.

# Wild and Scenic River Act

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

## **Historic Preservation Act**

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

# **Endangered Species Act**

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

# Coastal Zone Management Act

Not Applicable due to distance to coastal zones.