



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

January 08, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-9703856, issued to CNX GAS COMPANY LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: CENT22AHS
Farm Name: CNX GAS COMPANY, LLC
API Well Number: 47-9703856
Permit Type: Horizontal 6A Well
Date Issued: 01/08/2014

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

097 03856

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

97 05 287

1) Well Operator: CNX Gas Company LLC 494458046 Upshur Warren Century
Operator ID County District Quadrangle

2) Operator's Well Number: CENT22AHS Well Pad Name: CENT22HS

3 Elevation, current ground: 1581' Elevation, proposed post-construction: 1570'

4) Well Type: (a) Gas Oil Underground Storage

Other
(b) If Gas: Shallow Deep
Horizontal

5) Existing Pad? Yes or No: NO

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Formation - Marcellus, Depth - 7585' (BOTTOM), Thickness - 90', Pressure - 4400#

7) Proposed Total Vertical Depth: 7685'

8) Formation at Total Vertical Depth: Huntersville Chert

9) Proposed Total Measured Depth: 12,165'

10) Approximate Fresh Water Strata Depths: 215', 285', 410'

11) Method to Determine Fresh Water Depth: Offset Wells

12) Approximate Saltwater Depths: 2275'

13) Approximate Coal Seam Depths: 215', 285'

14) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill & stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 12165'. Well to be drilled to a TVD of 7685', formation @ IVD - Huntersville Chert. Well will be plugged back to an approximate depth of 7200' (approximate due to exact Kick of point being unknown). Plugging back will be done using the displacement method and Class A type cement. A solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement. Well bore will not be drilled any deeper than 100' into the Onondaga Group, nor will there be any production, perforation, or stimulation of any formations below the target formation.

17) Describe fracturing/stimulating methods in detail:
The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 5 Acres

19) Area to be disturbed for well pad only, less access road (acres): 4.57 Acres

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20)

CASING AND TUBING PROGRAM 097 03856

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill -up (Cu. Ft.)</u>
Conductor	20"	N	L.S.	81.3#	100	100	Grout to surface
Fresh Water	13 3/8"	N	J-55	54.5#	500	500	CTS w/ approved Class A Type Cement
Coal							
Intermediate	9 5/8"	N	J-55	36#	4150	4150	CTS w/ approved Class A Type Cement
Production	5 1/2"	N	P-110	20#	12165	12165	2400 cu. ft. w/ 50/50 POZ Lead & Class A Tail
Tubing	2 3/8"	N	J-55	4.7#	8000	8000	
Liners							

Bill Hatfield 9/3/2013

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	20"	26"	0.438	2110	Class A Type	1.18
Fresh Water	13 3/8"	17 1/2"	0.380	2730	Class A Type	1.39
Coal						
Intermediate	9 5/8"	12 1/4"	0.352	3520	Class A Type	1.18
Production	5 1/2"	8 3/4" and 8 1/2"	0.361	12640	Class A Type	1.26
Tubing	2 3/8"	5 1/2" CSG	0.190	7700
Liners						

PACKERS

Kind:	None			
Sizes:	None			
Depths Set:	None			

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21) Describe centralizer placement for each casing string. Conductor - No centralizers used. Fresh Water & Coal - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. Intermediate - Bow spring centralizers one on the first two joints and every fourth joint until inside surface casing. Production - Rigid bow spring centralizer on first joint then every 2 casing joints (free floating) through the lateral and the curve.
(Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

22) Describe all cement additives associated with each cement type. Conductor - 2% CaCl2.
Fresh Water/Coal - 2% CaCl2. Intermediate - 2% CaCl2. Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

23) Proposed borehole conditioning procedures. Conductor - The hole is drilled w/ air and casing ran in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Coal - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. Intermediate - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. (Note: Drilling soap may be utilized if hole gets wet/damp during the drilling of all air holes with the exception of the conductor). Production - The hole will be drilled with synthetic oil base mud and once at TD the hole is circulated at a drilling pump rate until the hole is clean. Once casing is ran the hole is circulated for a minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.

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Cement Additives

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- Conductor – 2% CaCl₂
- Freshwater/Coal – 2% CaCl₂
- Intermediate - 2% CaCl₂
- Production -
 - 2.6% Cement extender
 - 0.7% Fluid Loss Additive
 - 0.5% High Temperature Retarder
 - 0.2% Friction Reducer

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

097 03856

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name CNX Gas Company LLC OP Code 494458046

Watershed (HUC 10) Pecks Run Quadrangle Century

Elevation 1581' County Upshur District Warren

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used for drill cuttings? Yes No

If so, please describe anticipated pit waste: N/A

Will a synthetic liner be used in the pit? Yes No If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Recycle on other well on same pad or adjacent pads)

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and oil based mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Bactericide, Polymers and Weighting Agents

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Meadowfill, Northwestern Landfill, Max Environmental Yukon Landfill, & Bulger Landfill

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature [Signature]

Company Official (Typed Name) Jeremy Jones

Company Official Title Designated Agent General Manager WV Gas Operations

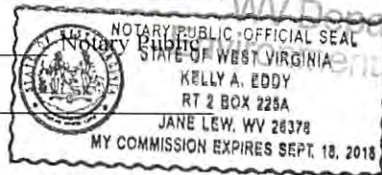
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Subscribed and sworn before me this 26th day of August, 20 13

Kelly A. Eddy

My commission expires September 18, 2018



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01/10/2014

CNX Gas Company LLC

Proposed Revegetation Treatment: Acres Disturbed 8.6 Prevegetation pH 6.5

Lime according to pH test Tons/acre or to correct to pH 7.0

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch Hay or Straw 2 Tons/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	25	Orchard Grass	25
Birdsfoot Trefoil	15	Birdsfoot Trefoil	15
Ladino Clover	10	Ladino Clover	10

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bill Hatfield

Comments: _____

Title: oil & gas inspector Date: 9/3/2013

Field Reviewed? (—) Yes () No

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Bill Hatfield 097/03856
9/3/2013

Safety Plan for Well # CENT22AHS

CNX Gas Company LLC

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01/10/2014



Water Management Plan. 097
Primary Water Sources



WMP- 01560

API/ID Number: 047-097-03856

Operator:

Consol Energy - WV

CENT22AHS

Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

APPROVED NOV 15 2013

Source Summary

097

03856

WMP-01560

API Number:

047-097-03856

Operator:

Consol Energy - WV

CENT22AHS

Stream/River

● Source **Tygart Valley River** Barbour Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/1/2014	9/1/2015	15,711,500		39.190421	-80.017423

Regulated Stream? Ref. Gauge ID: 3054500 TYGART VALLEY RIVER AT PHILIPPI, WV

Max. Pump rate (gpm): 1,470 Min. Gauge Reading (cfs): 355.01 Min. Passby (cfs) 344.41

DEP Comments:

Source Summary

WMP-01560

API Number:

047-097-03856

Operator:

Consol Energy - WV

CENT22AHS

Ground Water

● Source **PHL1 Groundwater Well** Barbour Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/1/2014	9/1/2015	15,711,500		39.191287	-80.019039

Regulated Stream? Ref. Gauge ID: 9999994 TYGART VALLEY RIVER AT PHILIPPI, WV

Max. Pump rate (gpm): 900 Min. Gauge Reading (cfs): 113.00 Min. Passby (cfs) 113.00

DEP Comments:

Refer to USGS Stream Gauging Station 03054500

01/10/2014

Source Detail

097

03856

WMP- 01560

API/ID Number: 047-097-03856

Operator:

Consol Energy - WV

CENT22AHS

Source ID: 28554 Source Name: PHL1 Groundwater Well
Consol Energy

Source Latitude: 39.191287
Source Longitude: -80.019039

HUC-8 Code: 5020001

Drainage Area (sq. mi.): 931.43 County: Barbour

Anticipated withdrawal start date: 9/1/2014

Anticipated withdrawal end date: 9/1/2015

Total Volume from Source (gal): 15,711,500

Max. Pump rate (gpm): 900

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

- Endangered Species?
- Trout Stream?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?
- Mussel Stream?
- Tier 3?

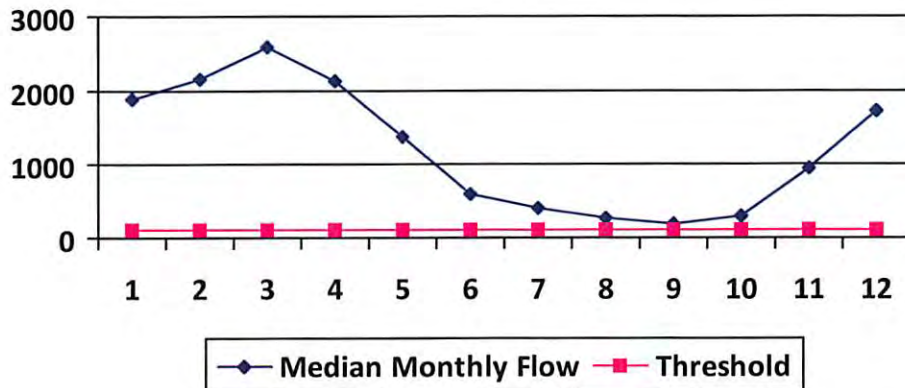
Reference Gaug: 9999994 TYGART VALLEY RIVER AT PHILIPPI, WV

Drainage Area (sq. mi.): 914.00

Gauge Threshold (cfs): 111

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	1,901.06	115.12	1,786.94
2	2,155.51	115.12	2,041.39
3	2,600.93	115.12	2,486.81
4	2,132.23	115.12	2,018.12
5	1,375.48	115.12	1,261.37
6	586.10	115.12	471.99
7	402.01	115.12	287.89
8	280.57	115.12	166.46
9	177.42	115.12	63.30
10	286.75	115.12	172.64
11	950.89	115.12	836.78
12	1,738.34	115.12	1,624.22

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 113.12
 Upstream Demand (cfs): 0.00
 Downstream Demand (cfs): 0.00
 Pump rate (cfs): 2.01
 Headwater Safety (cfs): 0.00
 Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 113.01
 Passby at Location (cfs): 113.12

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

01/10/2014

Source Detail

WMP- 01560

API/ID Number: 047-097-03856

097
Operator:

03856
Consol Energy - WV

CENT22AHS

Source ID: 28553 Source Name Tygart Valley River
Consol Energy

Source Latitude: 39.190421
Source Longitude: -80.017423

HUC-8 Code: 5020001

Drainage Area (sq. mi.): 931.43 County: Barbour

Anticipated withdrawal start date: 9/1/2014

Anticipated withdrawal end date: 9/1/2015

Endangered Species? Mussel Stream?

Trout Stream? Tier 3?

Total Volume from Source (gal): 15,711,500

Regulated Stream?

Max. Pump rate (gpm): 1,470

Proximate PSD? Taylor County PSD

Max. Simultaneous Trucks: 0

Gauged Stream?

Max. Truck pump rate (gpm)

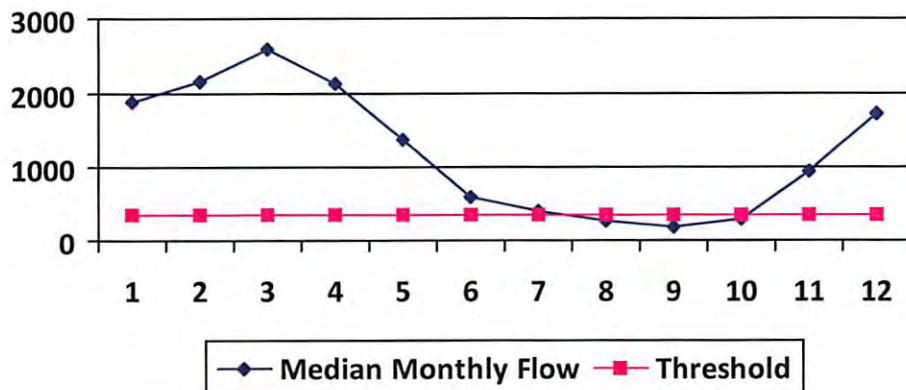
Reference Gaug 3054500 TYGART VALLEY RIVER AT PHILIPPI, WV

Drainage Area (sq. mi.) 914.00

Gauge Threshold (cfs): 341

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	1,901.06	361.51	1,542.64
2	2,155.51	361.51	1,797.09
3	2,600.93	361.51	2,242.51
4	2,132.23	361.51	1,773.82
5	1,375.48	361.51	1,017.07
6	586.10	361.51	227.69
7	402.01	361.51	43.59
8	280.57	361.51	-77.84
9	177.42	361.51	-181.00
10	286.75	361.51	-71.66
11	950.89	361.51	592.48
12	1,738.34	361.51	1,379.92

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 347.50

Upstream Demand (cfs): 10.73

Downstream Demand (cfs): 0.00

Pump rate (cfs): 3.28

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 355.01

Passby at Location (cfs): 347.50

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

01/10/2014



097 03856
Water Management Plan:
Secondary Water Sources



WMP- 01560 API/ID Number 047-097-03856 Operator: Consol Energy - WV
 CENT22AHS

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Lake/Reservoir

Source ID:	28557	Source Name	Little Hackers Creek Impoundment (WV83489)		Source start date:	9/1/2014
					Source end date:	9/1/2015
Source Lat:	39.1889	Source Long:	-80.0653	County	Barbour	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	15,711,500	
DEP Comments:	Little Hackers Creek Impoundment (WV83489) used by Wolf Run Mining Company - Sentinel Mine					

WMP-01560

API/ID Number

047-097-03856

Operator:

Consol Energy - WV

CENT22AHS

097

03856

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Multi-site impoundment

Source ID:	28558	Source Name	Warder North Impoundment		Source start date:	9/1/2014
					Source end date:	9/1/2015
Source Lat:	39.192505	Source Long:	-80.025198	County	Barbour	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	15,711,500	

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-189

Source ID:	28559	Source Name	Warder South Impoundment		Source start date:	9/1/2014
					Source end date:	9/1/2015
Source Lat:	39.19097	Source Long:	-80.025198	County	Barbour	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	15,711,500	

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-190

01/10/2014

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	28560	Source Name	Alton 1 Freshwater Impoundment		Source start date:	9/1/2014	
					Source end date:	9/1/2015	
		Source Lat:	38.794961	Source Long:	-80.184542	County	Upshur
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		15,711,500	
DEP Comments:							

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-194

Source ID:	28561	Source Name	Alton 2 Freshwater Impoundment		Source start date:	9/1/2014	
					Source end date:	9/1/2015	
		Source Lat:	38.806146	Source Long:	-80.195108	County	Upshur
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		15,711,500	
DEP Comments:							

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-195

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Recycled Frac Water

Source ID:	28555	Source Name	Fairmont Brine Processing	Source start date:	9/1/2014
			Commercial Supplier	Source end date:	9/1/2015
Source Lat:	39.5088	Source Long:	-80.126418	County	Marion
Max. Daily Purchase (gal)		Total Volume from Source (gal):			15,711,500
DEP Comments:					

Source ID:	28562	Source Name	ALT 1 Flowback Pit	Source start date:	9/1/2014
				Source end date:	9/1/2015
Source Lat:	38.793967	Source Long:	80.183196	County	Barbour
Max. Daily Purchase (gal)		Total Volume from Source (gal):			15,711,500
DEP Comments:					

Important:**097 03856**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	28563	Source Name	PHL 1 Flowback Pit		Source start date:	9/1/2014	
					Source end date:	9/1/2015	
		Source Lat:	39.192372	Source Long:	-80.018833	County	Barbour
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		15,711,500	
DEP Comments:							

Source ID:	28564	Source Name	Various		Source start date:	9/1/2014	
					Source end date:	9/1/2015	
		Source Lat:		Source Long:		County	
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		15,711,500	
DEP Comments: Sources include, but are not limited to: PHL4 and PHL13 well pads.							

HOY MURPHY LEASE CENT 22 WELL NO.S AHS-JHS

097 03856

Murphy

Run

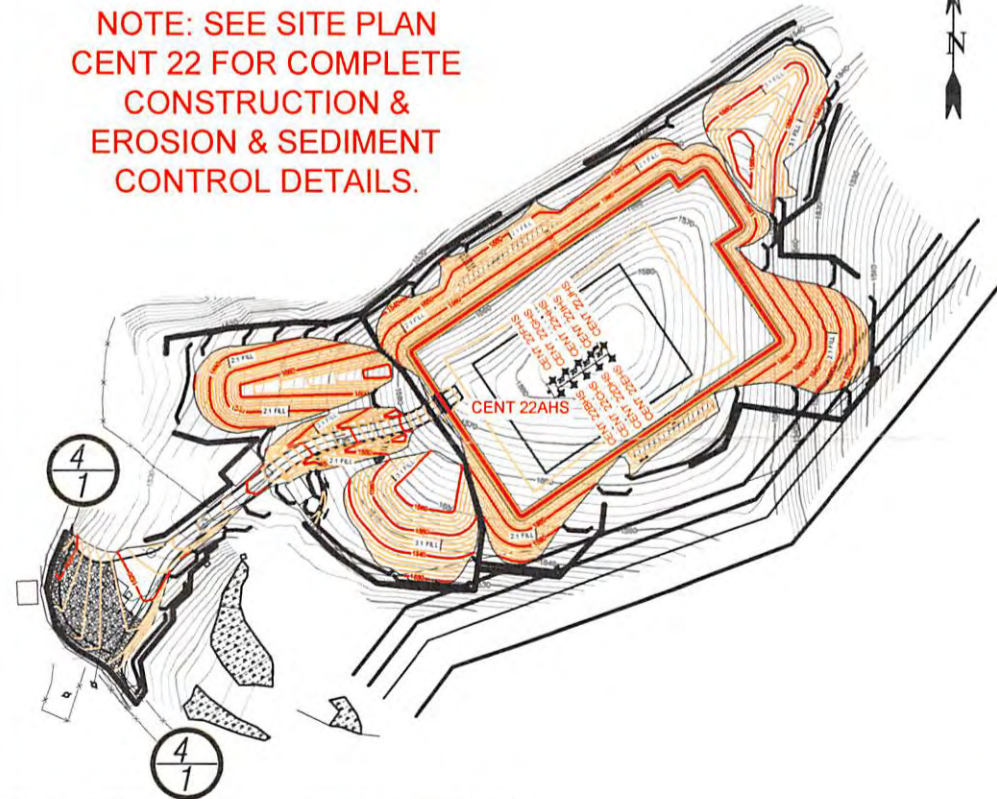
260' ± @
10-15% GRADE ±

325' ± @
5-10% GRADE ±

NOTE: SEE SITE PLAN
CENT 22 FOR COMPLETE
CONSTRUCTION &
EROSION & SEDIMENT
CONTROL DETAILS.

Detail Sketch for Proposed AHS-JHS Wells

NOTE: SEE SITE PLAN
CENT 22 FOR COMPLETE
CONSTRUCTION &
EROSION & SEDIMENT
CONTROL DETAILS.



01/10/2014

SCALE: 1" = 500'



Not To Scale

TOPO SECTION OF CENTURY 7.5'
USGS TOPO QUADRANGLE



Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS
PROJECT MGMT.



ENGINEERS
ENVIRONMENTAL

226 West Main St.
P.O. Box 150
Glenville, WV 26351
(204) 482-5634

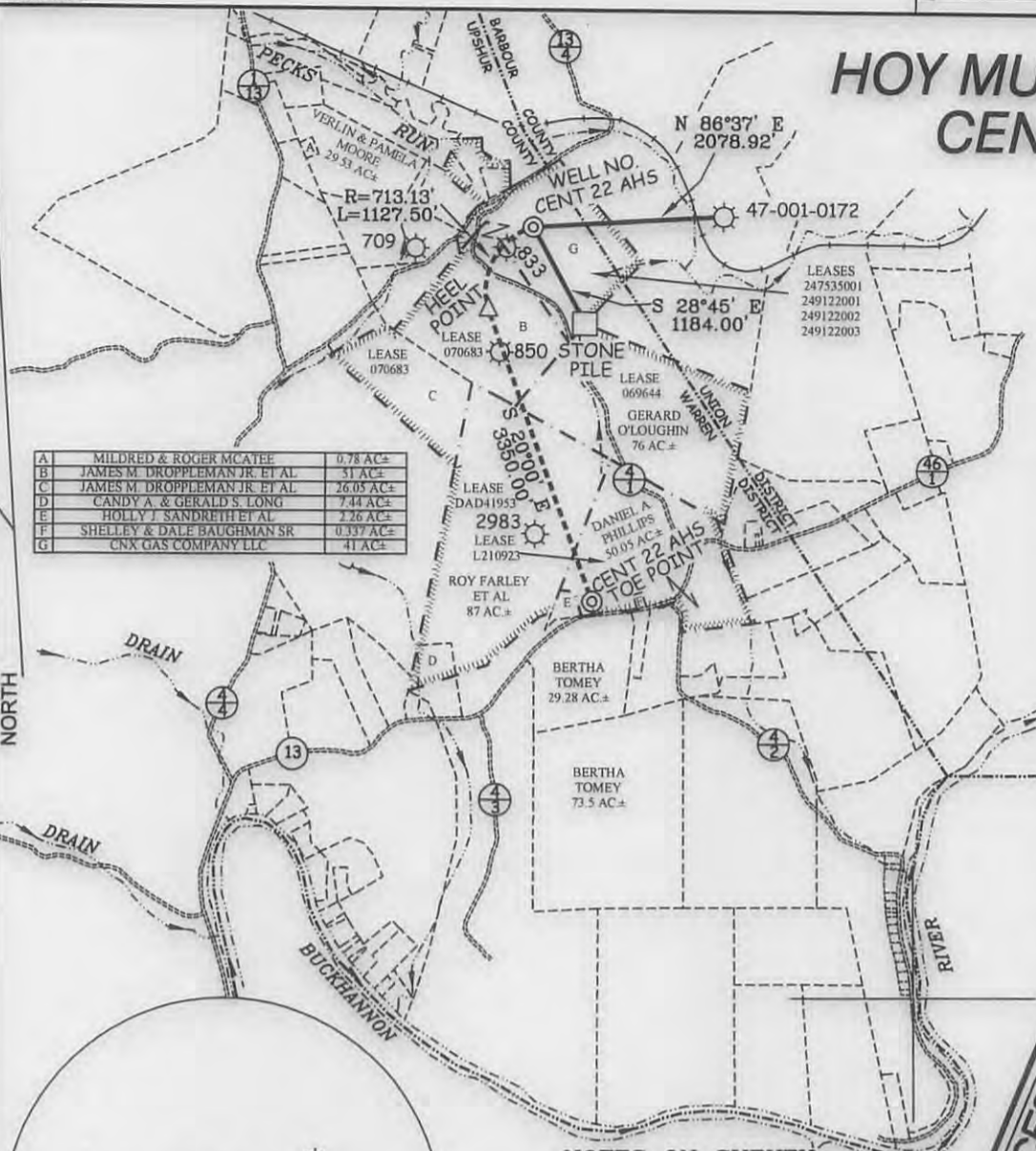
56065 Dilley Bottom Road
Shady Side, OH 43087
(740) 671-9911

HONESTY. INTEGRITY. QUALITY

DRAWN BY: C.P.M. FILE NO.: 7912 DATE: 08-15-13 CADD FILE: 7912REC-AHS.dwg

HOY MURPHY LEASE CENT22 AHS

10.647

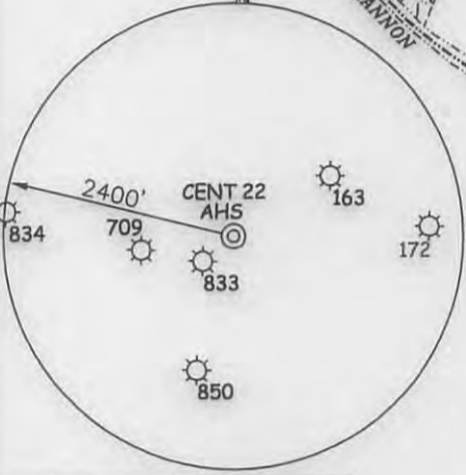


A	MILDRED & ROGER MCATEE	0.78 AC±
B	JAMES M. DROPPLEMAN JR ET AL	31 AC±
C	JAMES M. DROPPLEMAN JR ET AL	26.05 AC±
D	CANDY A. & GERALD S. LONG	7.44 AC±
E	HOLLY J. SANDRETH ET AL	2.26 AC±
F	SHELLEY & DALE BAUGHMAN SR	0.337 AC±
G	CNX GAS COMPANY LLC	41 AC±

CENT 22 AHS STATE PLANE COORDINATES SOUTH ZONE (NAD 27)	
N.	749,121.6
E.	2,243,043.9
LAT=(N) 39.054105 LONG=(W) 80.144227	
UTM (NAD 83)(METERS)	
N.	4,323,140.2
E.	574,063.9

CENT 22 AHS HEEL POINT STATE PLANE COORDINATES SOUTH ZONE (NAD 27)	
N.	749,233.2
E.	2,242,555.7
LAT=(N) 39.051679 LONG=(W) 80.145975	
UTM (NAD 83)(METERS)	
N.	4,322,869.5
E.	573,915.2

CENT 22 AHS TOE POINT STATE PLANE COORDINATES SOUTH ZONE (NAD 27)	
N.	745,085.2
E.	2,243,701.5
LAT=(N) 39.043007 LONG=(W) 80.142043	
UTM (NAD 83)(METERS)	
N.	4,321,910.5
E.	574,264.4



NOTES ON SURVEY

1. TIES TO WELLS, REFERENCES AND CORNERS ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 118 AT PAGE 126 & ADJOINING DEEDS.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF UPSHUR COUNTY IN JULY, 2012.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE).



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. *Gregory A. Smith*
677



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE AUGUST 16, 20 13
OPERATORS WELL NO. CENT 22 AHS
API WELL NO. 47 - 097 - 03856H6A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7912AHS(457-79)
PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE) SCALE 1" = 2000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,581' WATERSHED PECKS RUN
DISTRICT WARREN COUNTY UPSHUR QUADRANGLE CENTURY 7.5'
SURFACE OWNER CNX GAS COMPANY, LLC ACREAGE 41±
ROYALTY OWNER HOY RUSSELL MURPHY, ETAL LEASE ACREAGE 41±, 79±, 87±, 76±, 6± 0110/2014
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD 7,685' / TMD 12,165'

WELL OPERATOR CNX GAS COMPANY, LLC. DESIGNATED AGENT JEREMY JONES
ADDRESS P.O. BOX 1248 ADDRESS P.O. BOX 1248
JANE LEW, WV 26378 JANE LEW, WV 26378

COUNTY NAME PERMIT