



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, April 16, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

XTO ENERGY, INC.
810 HOUSTON STREET

FORT WORTH, TX 76102

Re: Permit approval for SANDS UNIT B 4H
47-049-02492-00-00

This well work permit 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 any additional specific 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 of 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.

Per 35 CSR 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- 0450.

James A. Martin
Chief

Operator's Well Number: SANDS UNIT B 4H
Farm Name: XTO ENERGY INC
U.S. WELL NUMBER: 47-049-02492-00-00
Horizontal 6A New Drill
Date Issued: 4/16/2019

PERMIT CONDITIONS

4704902492

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 (USACE). Through this permit, you are hereby being advised to consult with USACE 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 one hundred (100) 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. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. 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.
10. 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.

PERMIT CONDITIONS 4704902492

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



 west virginia department of environmental protection

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 Charleston, WV 25304
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 Fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
 dep.wv.gov

**ORDER
 ISSUED UNDER
 WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: XTO Energy, Inc.
 810 Houston Street
 Fort Worth, TX 76102

DATE: March 11, 2019
 ORDER NO.: 2019-W-6

INTRODUCTION

This Order (hereinafter “Order”) is issued by the Office of Oil and Gas (hereinafter “OOG”), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to XTO Energy, Inc. (hereinafter “XTO” or “Operator”), collectively the “Parties.”

FINDINGS OF THE CHIEF

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. XTO is a “person” as defined by W. Va. Code §22-6-1(n), with a corporate address as 810 Houston Street, Fort Worth, Texas 76102
3. On November 20, 2018, XTO submitted well work permit applications identified as API# 47-049-02491, 47-049-049-02492, 47-049-049-02493 and 47-049-049-02494. Then on January 10, 2019 XTO Energy, Inc. also submitted a well work permit application identified as API#s 47-049-02495. The proposed wells are to be located on the Sands Pad in Lincoln District of Marion County, West Virginia.
4. On November 20, 2018, XTO requested a waiver for wetland A and perennial stream 4 as outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47-049-02491, 47-049-049-02492, 47-049-049-02493, 47-049-049-02494 and 47-049-02495.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the Office of Oil and Gas shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The Office of Oil and Gas may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary.”

ORDER

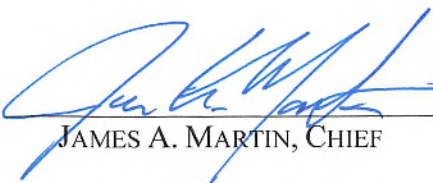
West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for wetland A and perennial stream 4 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47-049-02491, 47-049-049-02492, 47-049-049-02493, 47-049-049-02494 and 47-049-02495. The Office of Oil and Gas hereby **ORDERS** that XTO shall meet the following site construction and operational requirements for the Sands Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetland A is not at risk sedimentation due to its location upslope of the well pad.
- d. Perennial stream 4 shall have a compost filter sock trap and a layer of twelve-inch (12”) compost filter sock or double layers of twenty-four inch (24”) compost filter sock to prevent any sediment from reaching the perennial stream from the well pad. This along with temporary and permanent vegetative cover will prevent sediment from reaching the perennial stream.
- e. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- f. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- g. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- h. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- i. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- j. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- k. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- l. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 11th day of March, 2019.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

By: 
JAMES A. MARTIN, CHIEF

04/19/2019

11/3/14
Wetland and Perennial Stream Waiver Request

API Number: _____
Operator's Well Number: Sands

Well Operator: XTO Energy Inc.
Well Number: Sands Well Pad Name: Sands Well Pad
County, District, Quadrangle of Well Location: Marion County, Lincoln District, Shinnston, WV Quadrangle

Answer the questions below to request a waiver from West Virginia Department of Environmental Protection for any wetlands or perennial streams which lie within one hundred feet of proposed project Limit of Disturbance (LOD), which includes any erosion and sediment control devices to be used.

This waiver shall be requested pursuant to Chapter 22 Article 6A Section 12 of West Virginia Code, which states:

§22-6A-12(b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows:

- (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir.
- (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake.
- (3) For a groundwater source, the distance shall be measured from the wellhead or spring.

The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary.

§22-6A-12(c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section.

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NOV 20 2018

WV Department of
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04/19/2019

11/3/14
Wetland and Perennial Stream Waiver Request

API Number: _____
Operator's Well Number: Sands I

Answer in the space provided, or use additional pages as necessary to fully answer the questions below:

- 1. Describe the proposed project location, including unique identifying names of all wetlands, and the names of perennial streams for which the waiver is sought.**

XTO Energy Inc. proposes a new well pad project within the Lincoln District, Marion County. The proposed project site is approximately three miles west of Worthington, WV.

XTO Energy Inc. is requesting a waiver for two aquatic resources located within 100' of the proposed Sands Well Pad limit of disturbance. The proposed Sands Well Pad is located on a forested hilltop, which is also occupied by existing natural gas pipelines, conventional wells, and one existing unconventional well pad. A waiver is requested for one palustrine emergent wetland, Wetland A, which was identified on the northwestern side of the proposed pad. Wetland A is located approximately 50 feet northwest of the proposed well pad. A waiver is also requested for one perennial stream, named on project mapping as Stream 4, which is located on the southeast side of the proposed pad. Stream 4 is an unnamed tributary to Little Bingamon Creek. The proposed limit of disturbance is approximately 45 feet from Stream 4. All proposed wells are greater than 100' from any wetlands or streams.

- 2. Justify the proposed activity by describing alternatives to this project that were considered.**

- a. Include a No-Action Alternative as to show "the future without the project"
- b. Location Alternatives must be shown
- c. Must demonstrate why a one hundred foot buffer cannot be maintained
- d. Describe how the proposed project is the least environmentally damaging practicable alternative

Several alternatives were evaluated during early project development of the Sands Well Pad, which began in May 2017. XTO considered expanding the existing Fenn Well Pad, located approximately 1/2 mile south of the proposed Sands Well Pad. XTO also evaluated three (3) new potential well pad sites north of the existing Fenn Well Pad. Topography, streams, wetlands, pipelines, and other infrastructure were all considered during the selection of the final well pad size and location. The no-action alternative would also result in the construction of the nearby Mountaineer Compressor Station and new gas gathering lines and equipment along this forested ridge.

The area north of the Fenn Well Pad is a narrow ridgetop with steeply sloping forested hillsides. The selected site is the only well pad alternative location that can meet project requirements and it is also the least environmentally damaging and practicable alternative. Other alternatives were not selected due to environmental impacts and excessive earthwork and tree clearing. One stream channel and one wetland will be permanently impacted by the access road to the proposed well pad. The 100 foot buffer cannot be maintained due to minimum well pad size requirements. Please refer to the attached Alternatives Analysis for more details including a figure showing alternatives.

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11/3/14

Wetland and Perennial Stream Waiver Request

API Number: _____

Operator's Well Number: Sands _____

- 3. Identify sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. This description should include all additional erosion and sediment control measures and devices that will be used.**

Wetland A is located above the proposed well pad, and therefore, no primary or secondary impacts are anticipated. There are no additional measures to be taken for the protection of Wetland A.

Stream 4 flows to within approximately 40 feet of the proposed well pad limit of disturbance (LOD). The LOD remains within 100 feet of Stream 4 for approximately 500 feet along the east side of the proposed well pad. Stream 4 and other aquatic resources will be protected using a compost filter sock and sediment traps. The compost filter sock and traps are sized according to slope and drainage area, in accordance with the WV E&S BMP Manual (2006, revised 2016).

- 4. Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.**

- a. Specify in writing what additional controls, measures, devices, monitoring, etc. will be used to protect these wetlands and/or perennial streams for which the waiver is sought.

Please refer to the attached drawings.

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XTO Energy Inc.
Sands Well Pad
Lincoln District, Marion County, WV

A
WAIVER REQUEST MAP



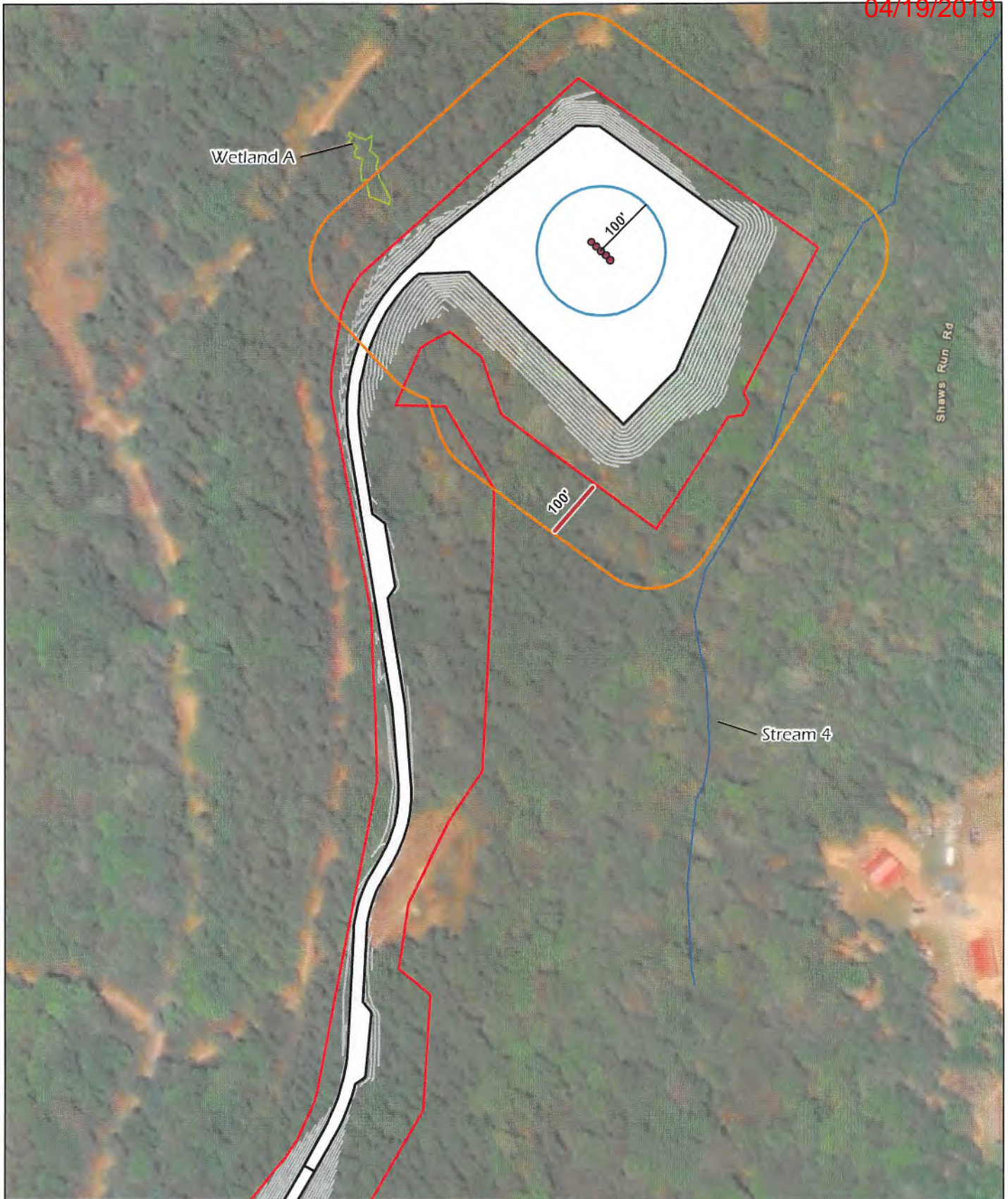
Wetland and Perennial Stream Waiver Request


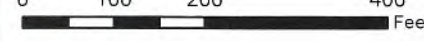


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04/19/2019



<p>Legend</p> <ul style="list-style-type: none"> ● Well Heads — Wetlands — Grading Contours — Streams Sands Well Pad Limit of Disturbance 100' Buffer from LOD of Well Pad 100' Buffer from Center Well Head 	<p>Sands Well Pad Waiver Permit Map</p>  <p>Lincoln District, Marion County, WV</p>	<p>Scale</p> <p>0 100 200 400 Feet</p>  <p> Gannett Fleming</p> <p>Map Prepared: 11/8/2018</p> 
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Service Layer Credits: Aerial imagery provided by ESRI/ArcGIS Online/Webservices; Grading design by Gannett Fleming 2018; Wetland Delineation completed by GF in 2016-2018.

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XTO Energy Inc.
Sands Well Pad
Lincoln District, Marion County, WV

B
ALTERNATIVE ANALYSIS



Wetland and Perennial Stream Waiver Request

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04/19/2019

Sands Well Pad Alternative Analysis

The proposed Sands Well Pad site was selected after evaluating several alternative sites in the surrounding area, on a property owned by XTO Energy Inc. (XTO). The property is located on the north side of Bingamon Road. The property is bounded on both the east and west sides by perennial stream channels. A narrow ridge runs through the center of the property, which limits the amount of available area for pad construction. Steeply sloping forested hillsides border the ridge to the east and west. The property also contains existing natural gas infrastructure, including conventional wells, low pressure gas pipelines, two high pressure gas pipelines, and an existing unconventional well pad. Site topography and existing natural gas infrastructure were the two primary limiting factors which dictated the selection of the proposed site. An Alternative Analysis Map depicting the site options is enclosed.

XTO evaluated three potential locations for the Sands Well Pad on the subject property, with preliminary site investigations beginning in May 2017. In October 2016, Mountain Gathering, LLC. (MG), a subsidiary of XTO, selected a site northeast of the existing Fenn Well Pad for the future construction of the Mountaineer Compressor Station, and thus eliminated one potential alternative location for the Sands Well Pad. XTO also considered expanding the existing Fenn Well Pad to accommodate additional wells. However, steeply sloping topography to the west of the pad, and a conventional well to the south restricted the available space to expand the existing pad.

Alternative Option 1 was located northwest of the selected site. Option 1 was determined not to be a viable alternative due to site topography, wetland impacts, and an existing XTO gas pipeline right-of-way. As observed across the entire subject property, topography at Option 1 is a steeply sloping forested hillside. Option 1 would require fill slopes to extend 130' along the western edge of the pad. Large fill slopes on steep hillside raise concern for pad stability. Additionally, significant construction costs would be incurred during earthwork activities. Option 1 also would require a permanent wetland impact to Wetland A. In order to avoid Wetland A, the pad would have to be moved westward, further increasing the size of the western fill slope. Lastly, a XTO pipeline right-of-way borders Option 1 to the east. The XTO pipeline follows the center of the ridge, pushing the site westward over the forested hillslope. An existing shallow well is located near the southwestern edge of the pad.

Alternative Option 2 was located southwest of the selected site. Option 2 was determined not to be a viable alternative due to the significant cut and fill slopes which would be required for pad construction. Similar to Alternative Option 1, existing grade at Option 2 requires long fill slopes on the western side of the pad, which would extend over 260' down the hill. Construction of the site is not feasible due to the size of the cut and fill slopes and stability concerns. Lastly, as seen on the Alternative Analysis Map, there is an existing dirt access road running north to Option 2 from the Fenn Well Pad. Construction of a new access road would have required significant stream and wetland impacts. Construction of Option 2 could also affect hydrology, causing indirect impacts to the existing wetlands east of Option 2.

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04/19/2019

The final Sands Well Pad site was selected due to its feasibility of construction and minimal environmental impacts. A majority of the pad is situated on a relatively flat hilltop, north of the proposed Mountaineer Compressor. One ephemeral stream channel and one palustrine emergent wetland must be crossed by the access road. However, all other impacts to streams and wetlands have been avoided.

The selected site was located and designed to minimize earth disturbance and resource impacts as much as possible. Yet, the final site was limited by several factors. The pad could not be shifted north due to a property boundary. Moving the pad northward would also result in an impact to Wetland 1 (PEM). To the east, the well pad is bordered by Stream 4, a perennial UNT to Little Bingamon Creek. Also to the east, is another property boundary, which roughly parallels Stream 4. To the south, the well pad is confined by ephemeral Stream 1. Shifting the pad to the south is not a viable alternative because terrain steepens moving southward. Lastly, to the west and northwest, an EQT right-of-way borders the Sands Well Pad. As per EQT requirements, no grading or earthwork may occur within EQT's right-of-way.

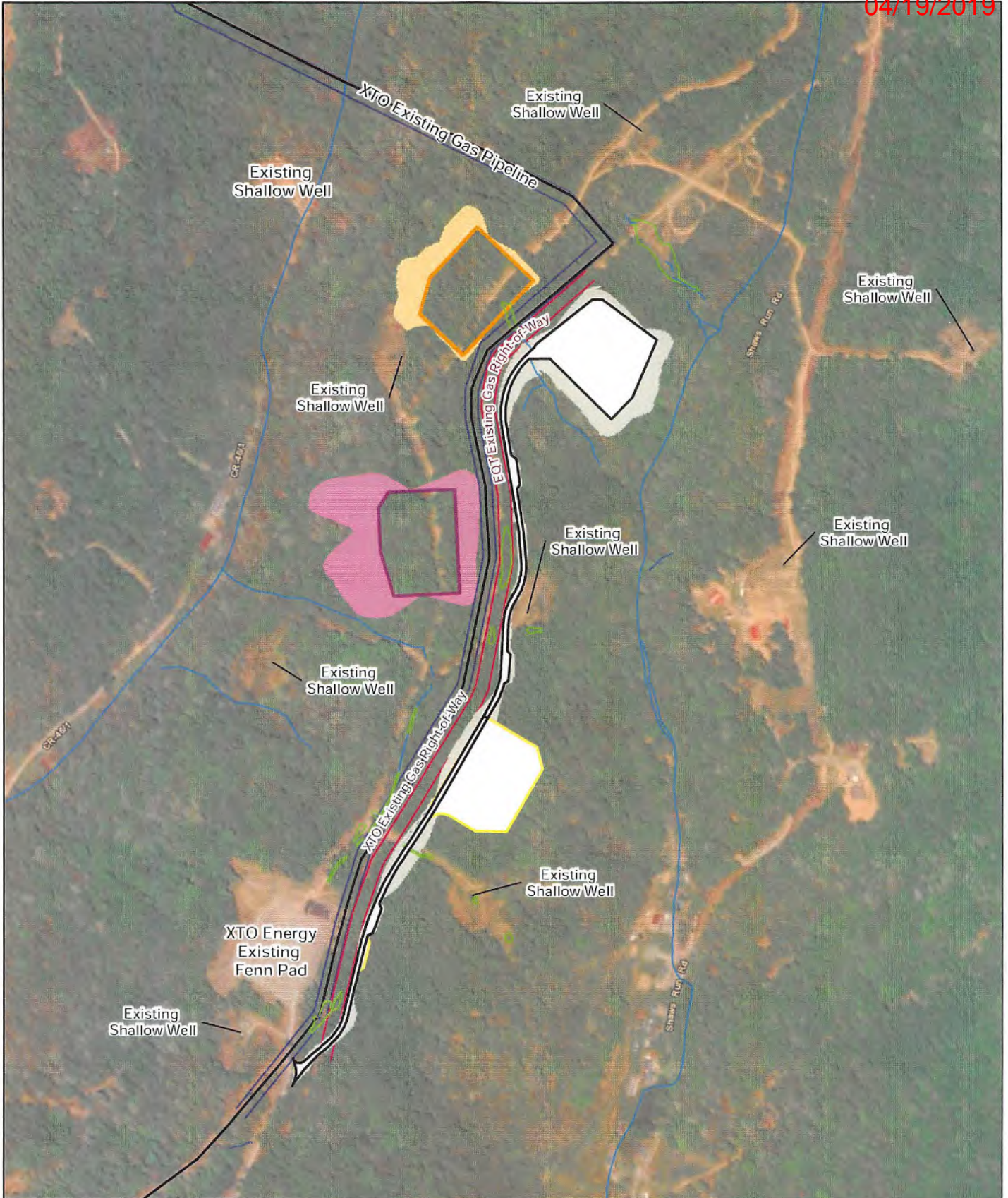
XTO is requesting WVDEP waivers for pad construction within 100' of a wetland and a perennial watercourse. The wetland, identified as Wetland A on project mapping, is located upslope of the proposed pad and shall not be impacted. The perennial watercourse, identified as Stream 4 on project mapping, flows to within 40 feet of the proposed limit-of-disturbance (LOD) along the east side of the pad. Stream 4 remains within 100 feet of the LOD for approximately 400 feet. Compost filter sock and traps in accordance with the WV E&S BMP Manual shall be used to protect the stream.

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04/19/2019



Legend

Mountain Gathering	EQT ROW
Existing Gas Pipeline	XTO ROW
Wetlands	Sands Pad First Alternative
Streams	Sands Pad Second Alternative
Grading Contours	Sands Pad Second Alternative Grading
Sands Well Pad	Sands Pad First Alternative Grading
Mountaineer Compressor Station	

Sands Well Pad Alternatives Analysis Map

XTO ENERGY
a subsidiary of sunoco

Lincoln District, Marion County, WV

Scale

0 250 500 1,000
Feet

Gannett Fleming

Map Prepared: 11/8/2018

N

Service Layer Credits: Aerial imagery provided by EsRI ArcGIS Online Webservices - Grading design by Gannett Fleming 2018

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NOV 20 2018
WV Department of
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WW-6B
(04/15)

API NO. 47- _____ - 04/19/2019
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

CTB
4/12/19

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

1) Well Operator: XTO Energy Inc. 494487940 Marion Lincoln Shinnston
Operator ID County District Quadrangle

2) Operator's Well Number: Sands Unit B 4H Well Pad Name: Sands Pad

3) Farm Name/Surface Owner: XTO Energy Inc. Public Road Access: Bingamon Road - Marion CR 48

4) Elevation, current ground: 1244' Elevation, proposed post-construction: 1,238'

5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____
(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation: Marcellus, Depth 7,384' - 7,544', Anticipated Thickness: 160', Associated pressure: 4,650 psi

8) Proposed Total Vertical Depth: 7,524'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20,950'

11) Proposed Horizontal Leg Length: 12,917'

12) Approximate Fresh Water Strata Depths: 113'

13) Method to Determine Fresh Water Depths: Offsetting Reports

14) Approximate Saltwater Depths: 1,437'

15) Approximate Coal Seam Depths: 28', 288', 408'

16) Approximate Depth to Possible Void (coal mine, karst, other): 408'

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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APR 12 2019
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4704902492

WW-6B
(04/15)

API NO. 47- _____ **04/19/2019**
 OPERATOR WELL NO. Sands Unit B 4H
 Well Pad Name: Sands Pad

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	24	New	A-252	95	40	40	59 / CTS
Fresh Water	13.375	New	H40	48	460	460	415 / CTS
Coal							
Intermediate	9.625	New	J55	36	3,100	3,100	1,262 / CTS
Production	5.5	New	P110	20	20,950	20,950	4,474 / 5,926
Tubing							
Liners							

CTB 4/12/19

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24	28	0.375	940	40	Standard	1.19
Fresh Water	13.375	17.5	0.33	1,730	380	Standard	1.19
Coal							
Intermediate	9.625	12.25	0.352	3,520	2,520	Standard	1.19
Production	5.5	8.5	0.361	12,640	6,140	35-65 POZ / Class H Tail	1.11 / 1.57
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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APR 12 2019

WV Department of
Environmental Protection

4704902492

WW-6B
(10/14)

API NO. 47- _____ - _____ **04/19/2019**
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill a new horizontal Marcellus well, utilizing synthetic mud and a closed loop system for both drilling and completion. Install new casing with centralizers.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

1. Acid Stage - Typically 1500 gallons of 7.5% hydrochloric acid to clear the perforation path in the wellbore.
2. Sand / Proppant Stages - Several stages of pumping water combined with sand at a targeted 80 bpm rate. The highest pressure and rate anticipated is 9,500 psig and 100 bpm. The sand size may vary from 100 mesh to 30/50 mesh size. 12,500 bbls slick water with 220,000 lbs 40/70, 270,000 lbs 100 mesh sands and 2,200 gals FR 133, 1,500 gals Bioplex 301 and 1,190 gals antiscala 30.
3. Flush Stage - Slickwater water stage to fill the wellbore to flush the sand from the wellbore. Depending on the water quality, a biocide, friction reducer, iron control, and scale inhibitor may be injected during the completion as well.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.73 +/-

22) Area to be disturbed for well pad only, less access road (acres): 2.69 +/-

23) Describe centralizer placement for each casing string:

Conductor: None
Fresh Water: Every 3rd joint from shoe to surface
Mine: Every 3rd joint from shoe to surface (if applicable)
Intermediate: Every 3rd joint from shoe to surface
Production: Every 3rd joint from shoe to 1,000' above the kick-off point

24) Describe all cement additives associated with each cement type:

Conductor: None
Fresh Water: Calcium Chloride and super flake
Mine: Calcium Chloride and super flake (if applicable)
Intermediate: Calcium Chloride and super flake
Production: Calcium Chloride, Bentonite, super flake, Air-Out, CR-1, FL-300, SEC10

25) Proposed borehole conditioning procedures:

Conductor: Hole is auger drilled: No conditioning required.
Fresh Water: Condition hole with air at TD until visibly clean, run casing, circulate and clear 1.5x pipe volume with fresh water before cementing.
Mine: Condition hole with air at TD until visibly clean, run casing, circulate and clear 1.5x pipe volume with water before cementing (if applicable).
Intermediate: Condition hole with air at TD until visibly clean, run casing, circulate and clear 1.5x pipe volume with water before cementing.
Production: Circulate hole with synthetic based drilling fluid at TD (1 bottoms up for each 2,000' of lateral drilled). TOOH and circulate minimum of 1 bottoms up and until returns are minimal at the base of the curve. Run casing, circulate and ensure good returns before cementing.

*Note: Attach additional sheets as needed.

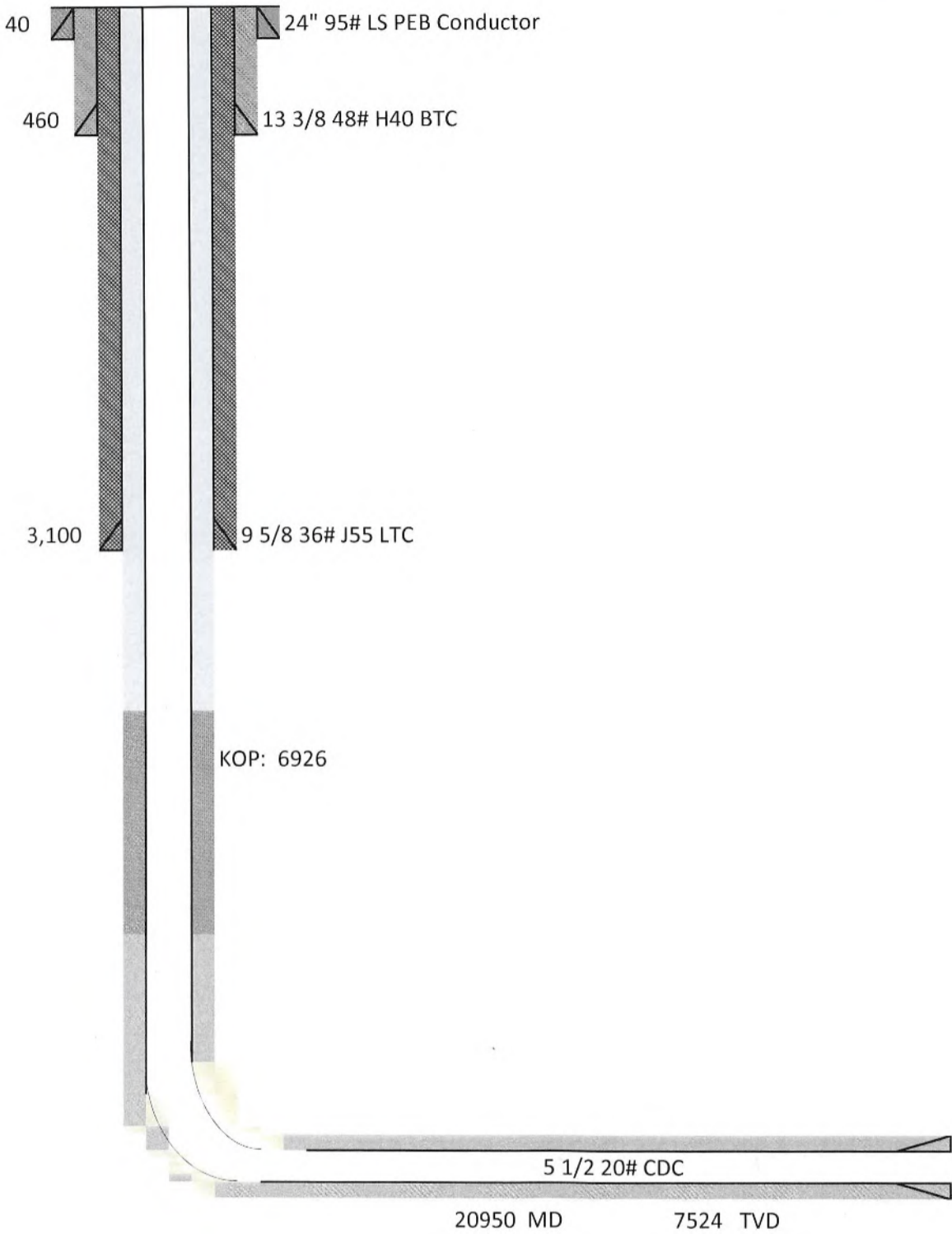
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4704902492

Sands Unit B 4H
Marion County, West Virginia



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Sands Unit B 4H – Mine Void Encounter Plan

Per communications with the WV Geology and Economic Survey there is a possible mine void in the Pittsburgh Coal seam under the Sands Pad in Marion County, WV. In preparation for drilling through a mine void, we will nipple up an annular preventer to be able to handle any flow should the void actually be encountered. We expect it to come in around 408' TVD from GL. We plan to set 13 3/8" casing as a surface/coal protective string ~50' below the base of this void. 04/19/2019

A cement basket will be run as close as possible to the top of the void.

A cement balance job will be performed to cement the shoe and the annulus below the mine if circulation cannot be established. A grout cement job will be performed on the annulus to cement above the mine.

Once cemented in place, we will continue on with our normal casing design, which would be to set 9-5/8" intermediate casing at ~3,100'.

Derek Ridgway
Drilling Engineer
XTO Appalachia
Cell: 878-208-3446
Derek_Ridgway@xtoenergy.com

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WW-9
(4/16)

API Number 47 - _____ - _____
Operator's Well No. Sands Unit B 4H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name XTO Energy Inc. OP Code 494487940

Watershed (HUC 10) Lower West Fork River (0502000206) Quadrangle Shinnston

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

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 4708509721, 4708505151, 3416729577, 3412124086, 3412123995)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

*SDW
11/15/2018*

Will closed loop system be used? If so, describe: Depending on brand, system would entail 2 centrifuges & another cutting drying method: grinder, drying shakers or verti-g mud.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air/water to 7100' then switch to synthetic

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

Additives to be used in drilling medium? See additional page

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) NA

-Landfill or offsite name/permit number? Meadowbrook Landfill - #SWF 1032

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

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 *Tim Sands*

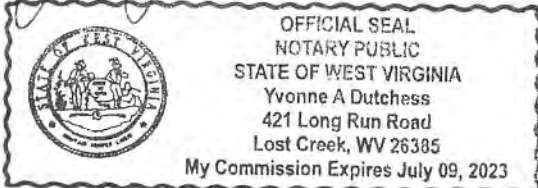
Company Official (Typed Name) Tim Sands

Company Official Title Regulatory Coordinator

Subscribed and sworn before me this 14th day of November, 2018

Yvonne A. Dutches Notary Public

My commission expires July 9, 2023



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WV Department of Environmental Protection

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04/19/2019

Form WW-9

Operator's Well No. Sands Unit B 4H

XTO Energy Inc.

Proposed Revegetation Treatment: Acres Disturbed 19.73 +/- Prevegetation pH

Lime 2 Tons/acre or to correct to pH

Fertilizer type 10-20-10

Fertilizer amount 1000 lbs/acre

Mulch 1.5 - 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type lbs/acre

Seed Type lbs/acre

Per plans

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: Pre-seed/mulch all disturbed areas as soon as reasonably possible per regulation. Upgrade E&S as necessary per WV DEP E&S manual.

Title: COG Inspection Date: 11/15/2018

Field Reviewed? (X) Yes () No

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XTO Drilling Additives

4704902491

Product Name	CAS#
Anco Mul XL	8002-43-5
Kensol 48H	64742-47-8
ANCO BAR (Barite)	7727-43-7
ANCO Drill (A, N)	25083-02-03
Anco Mul Ow	68442-77-3
Anco Mul P	70321-73-2
Anco Mul S	71.36-3 & 64742-95-6
Anco Mul Thin	111-76-2
	112-34-5
	104-76-7
	84989-14-0
	57-55-6
ANCO Phalt S	NA
ANCO Trol	NA
Calcium Carbonate	14808-60-7
	1317-65-3
Calcium Chloride	10043-52-4
Cedar Fiber	11132-73-3
CI-300A	NA
Graphite	7782-42-5
	14808-60-7
GSX-602 Petrogel 100	14808-60-7
	67-63-0
Lime	1305-62-0
	1305-78-8
	7631-86-9
	1309-48-4
Mica (F,C)	12001-26-2
	14808-60-7
Oil Dry	12174-11-7
	14808-60-7
Potassium Chloride (KCl)	7447-40-7
Salt	7647-14-5
Synthetic Based Mud	
Thunder Plug	
Walnut (F,M & C)	NA
Claytone II	

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Environmental Protection

04/19/2019

Revised (3/15)

Site Safety Plan Table of Contents

For H6A Well Work Permits and Deep Well Work Permits

Please prepare a Site Safety Plan to accompany each applicable H6A and/or Deep well work permit, adhering to the following organizational and informational structure. Plans submitted must contain an index of the content entirety including page-number references.

1. Contacts, Schedules, and Meetings

- A. Emergency point of contact for the well operator covering all phases of activities and including 24 hour contact information (35-8 5.7.b.4)
- B. List of telephone numbers for (35-8 5.6.4):
 - 1) Operator
 - 2) Contractors
 - 3) DEP office and oil/gas inspector
 - 4) Local emergency response units
 - 5) Local ER personnel
 - 6) All schools and public facilities within a one mile radius of proposed well site (35-8 5.7.b.5)
- C. Method of notification of public of H₂S gas presence and how access will be controlled. (applicable horizontal wells include all residents and emergency response personnel who may be affected by an event. Such events may include the presence of H₂S, blow-outs, and flaring) (35-8 5.7.f.1)
- D. Pre-spud meeting held prior to drilling operations, including (35-8 5.7.h):
 - 1) Attendance log, including personnel to be employed and involved in drilling operations
 - 2) Notification of County oil and gas inspector or other designated Office of Oil and Gas representative
- E. Describe schedule for conducting regular well site safety meetings. Log attendance at all meetings and also initiate check in check out during drilling, completion, and workover phases. (35-8 5.7.h)

2. Maps and Diagrams

- A. Plan view map of location, access road, pit(s), flare lines, nearby dwellings, note the north direction and the prevailing wind direction (35-8 5.7.b.1)
- B. Topographic map of well location, including
 - 1) 1 mile radius of well location
 - 2) UTM NAD 83 coordinates of well site entrance (35-8 5.7.b.2)
 - 3) UTM NAD 83 coordinates of the point the access road intersects the public route (35-8 5.7.b.2)
 - 4) Identify public route number and/or route name (35-8 5.7.b.2)
- C. Evacuation plan for the removal of personnel from the drilling location and residents in the surrounding area who have the potential to be affected by an emergency. (35-8 5.7.b.3)

3. Well Work

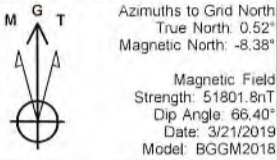
- A. Detailed written descriptions of well work and procedure to be used during the drilling, completion, and production phases, including schematic plan views of each (35-8 5.7.a)
- B. Statement detailing how a copy of the plan will be provided to the local emergency planning committee or county emergency services office within at least 7 days from land disturbance or well work. (35-8 5.7.a)

SDW
11/15/2018

04/19/2019



Company: XTO Energy
 Site: Sands Unit
 Well: Sands Unit B 4H
 Project: Marion County, West Virginia (NAD 27)
 Rig Name: Patterson 579

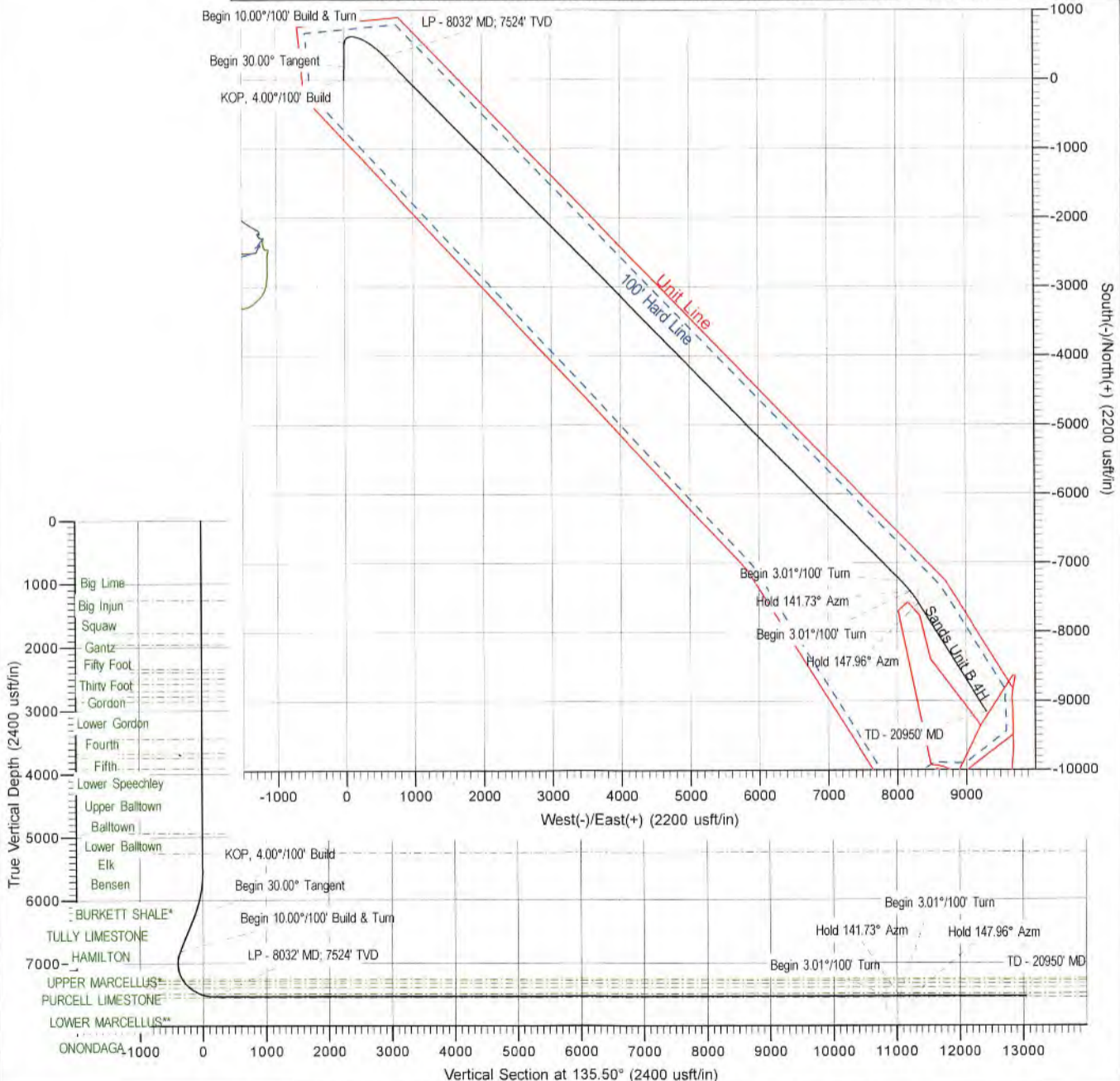


US State Plane 1927 (Exact solution)
 West Virginia North 4701

Created By: AAT
 Date: 14:59, March 28 2019
 Plan: Design #1

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation	
5533.00	0.00	0.00	5533.00	0.00	0.00	0.00	0.00	KOP, 4.00°/100' Build	
6282.89	30.00	0.53	6249.10	191.84	1.77	-135.59	191.85	Begin 30.00° Tangent	
6926.07	30.00	0.53	6806.14	513.37	4.74	-362.84	513.40	Begin 10.00°/100' Build & Turn	
8032.99	90.00	135.50	7524.00	336.50	589.50	173.18	1253.28	LP - 8032' MD; 7524' TVD	
18684.90	90.00	135.50	7524.00	-7261.47	8055.02	10825.08	11905.19	Begin 3.01°/100' Turn	
18892.10	90.00	141.73	7524.00	-7416.86	8191.93	11031.88	12112.39	Hold 141.73° Azm	
18892.89	90.00	141.73	7524.00	-7417.48	8192.42	11032.66	12113.18	Begin 3.01°/100' Turn	
19100.05	90.00	147.96	7524.00	-7586.77	8311.64	11236.98	12320.34	Hold 147.96° Azm	
20950.02	90.00	147.96	7524.00	-9154.89	9293.14	13043.38	14170.30	TD - 20950' MD	

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LP - Sands Unit B 4H	7524.00	336.50	589.50	352168.31	1770881.40	39° 27' 50.646 N 80° 18' 41.512 W	
IP1 - Sands Unit B 4H	7524.00	-7261.47	8055.02	344570.34	1778346.92	39° 26' 36.206 N 80° 17' 5.477 W	
IP2 - Sands Unit B 4H	7524.00	-7586.77	8311.64	344245.04	1778603.54	39° 26' 33.013 N 80° 17' 2.170 W	
PBHL - Sands Unit B 4H	7524.00	-9154.89	9293.14	342676.92	1779585.04	39° 26' 17.599 N 80° 16' 49.485 W	



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Directional are at the sole risk and responsibility of the customer. MS Directional is not responsible for the accuracy of this schematic or the information contained herein.

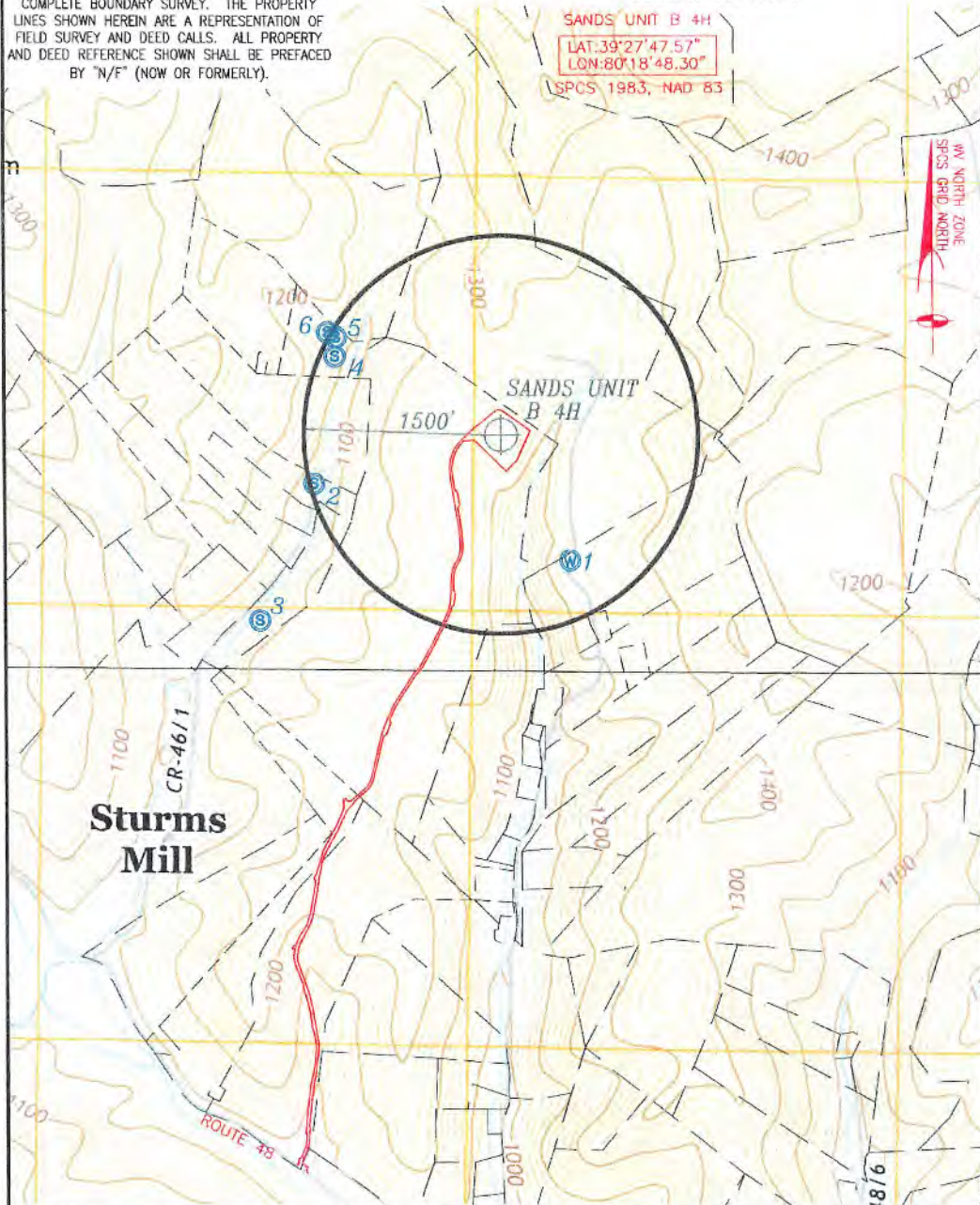
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FORM W-9

NOTE: THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY. THE PROPERTY LINES SHOWN HEREIN ARE A REPRESENTATION OF FIELD SURVEY AND DEED CALLS. ALL PROPERTY AND DEED REFERENCE SHOWN SHALL BE PREFACED BY "N/F" (NOW OR FORMERLY).

LEGEND

- WATER WELL
- SPRING/POND/STREAM
- SURFACE BOUNDARY



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WV Department of
Environmental Protection

POINT	NAME	ADDRESS	CITY	STATE	ZIP CODE	DISTANCE	BEARING	PARCEL I.D.
1	Ronald Weekly	263 Shaw Run Road	Worthington	WV	26591	1076'	S 28°55'25" E	Tax Map 11-53, Parcel 28
2	Joanne Sharp	307 Sharpe Hollow Road	Worthington	WV	26591	1466'	S 75°48'35" W	Tax Map 11-59, Parcel 46
3	Judy Richards	P.O. Box 41	Enterprise	WV	26568	2308'	S 52°48'17" W	Tax Map 11-57, Parcel 13
4	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1394'	N 64°41'16" W	Tax Map 11-59, Parcel 44.1
5	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1454'	N 59°26'31" W	Tax Map 11-59, Parcel 44.1
6	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1526'	N 59°29'05" W	Tax Map 11-59, Parcel 44.1

SANDS UNIT B 4H WATER OVERALL

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA | 2/11/2019 | JC2018-74 | SHEET 1 OF 2

JONES
CONSULTANTS
2402 PENNSYLVANIA 66
DELMONT, PA 15626
(724) 757 - 2417
www.jonesconsultant.com

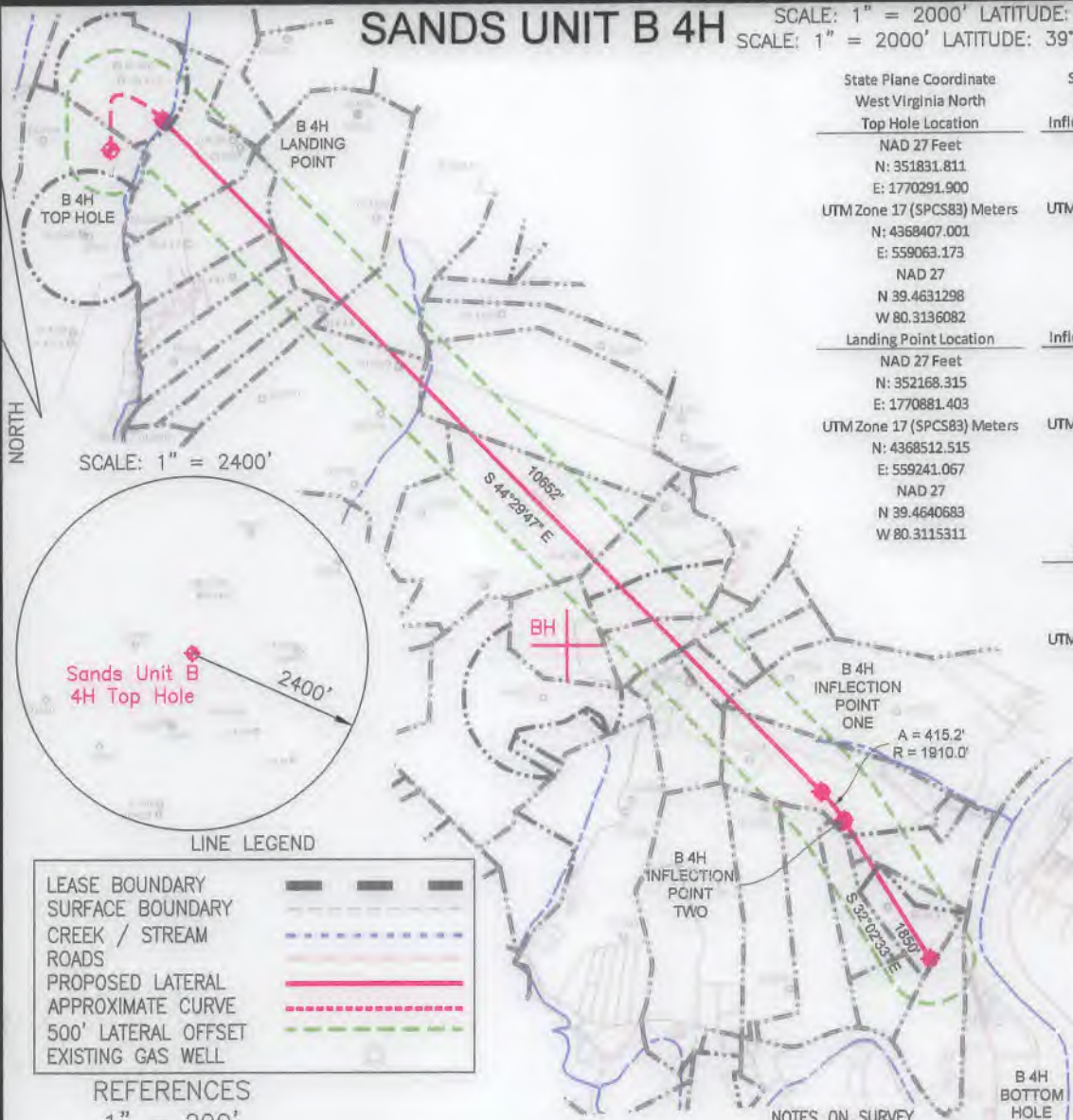
Shinnston Quad (2014)
Marion County, WV
Scale: 1" = 1000'
0' 1000'

XTO
ENERGY
190 THORN HILL ROAD
WARRENDALE, PA 15086

BOTTOM HOLE 8535' 6141' TOP HOLE

SANDS UNIT B 4H

SCALE: 1" = 2000' LATITUDE: 39°30'00" (TOP HOLE)
 SCALE: 1" = 2000' LATITUDE: 39°27'30" (BOTTOM HOLE)



State Plane Coordinate West Virginia North Top Hole Location	State Plane Coordinate West Virginia North Inflection Point One Location
NAD 27 Feet N: 351831.811 E: 1770291.900	NAD 27 Feet N: 344570.343 E: 1778346.922
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4368407.001 E: 559063.173 NAD 27 N 39.4631298 W 80.3136082	N: 4366235.598 E: 561554.140 NAD 27 N 39.4433906 W 80.2848547
Landing Point Location	Inflection Point Two Location
NAD 27 Feet N: 352168.315 E: 1770881.403	NAD 27 Feet N: 344245.040 E: 1778603.544
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4368512.515 E: 559241.067 NAD 27 N 39.4640683 W 80.3115311	N: 4366137.793 E: 561633.975 NAD 27 N 39.44250367 W 80.2839360
Bottom Hole Location	Bottom Hole Location
NAD 27 Feet N: 342676.916 E: 1779585.045	NAD 27 Feet N: 344245.040 E: 1778603.544
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4365665.025 E: 561940.966 NAD 27 N 39.4382219 W 80.2804126	N: 4366137.793 E: 561633.975 NAD 27 N 39.44250367 W 80.2839360

04/19/2019

LONGITUDE: 80°17'30" (TOP HOLE)
 LONGITUDE: 80°15'00" (BOTTOM HOLE)
 SCALE: 1" = 2000'
 SCALE: 1" = 2000'

SCALE: 1" = 2400'

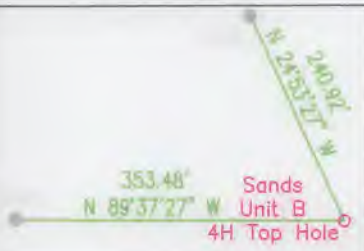
LINE LEGEND

LEASE BOUNDARY	---
SURFACE BOUNDARY	----
CREEK / STREAM	~~~~~
ROADS	=====
PROPOSED LATERAL	=====
APPROXIMATE CURVE	-----
500' LATERAL OFFSET	-----
EXISTING GAS WELL	o

REFERENCES
 1" = 200'

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND. **TH**
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
4. WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN OCTOBER 2018 AND FILES PROVIDED BY XTO ENERGY INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

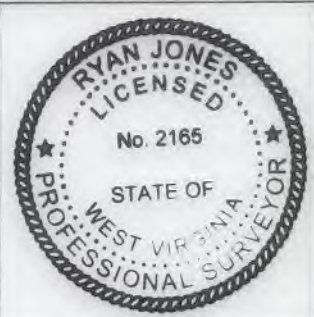


2402 PENNSYLVANIA 66 DELMONT, PA 15626
 (724) 757 - 2417 www.jonesconsultant.com SHEET 1 OF 2

FILE #: JC2018-74
 DRAWING #: SANDS UNIT B 4H WELL
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1:2500
 PROVEN SOURCE OF ELEVATION: RTK GPS

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

Signed: *[Signature]*
 R.P.E.: _____ P.S.: 2165



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



DATE: 4/1/2019
 OPERATOR'S WELL #: SANDS UNIT B 4H
 API WELL #: 47 049 02492
 STATE COUNTY PERMIT

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

WATERSHED: LOWER WEST FORK RIVER (0502000206)
 COUNTY/DISTRICT: MARION / LINCOLN
 SURFACE OWNER: XTO ENERGY INC
 OIL & GAS ROYALTY OWNER: XTO ENERGY INC

ELEVATION: 1,238' (PROPOSED GRADE)
 QUADRANGLE: SHINNSTON 7.5'
 ACREAGE: 105.34±
 ACREAGE: 1007.6±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,524' (TVD), 20,950' (TMD)

WELL OPERATOR: XTO ENERGY INC. Address: 190 THORN HILL ROAD City: WARRENDALE State: PA Zip Code: 15086

DESIGNATED AGENT: GARY BEALL Address: P.O. BOX 1008 City: JANE LEW State: WV Zip Code: 26378

SANDS UNIT B 4H

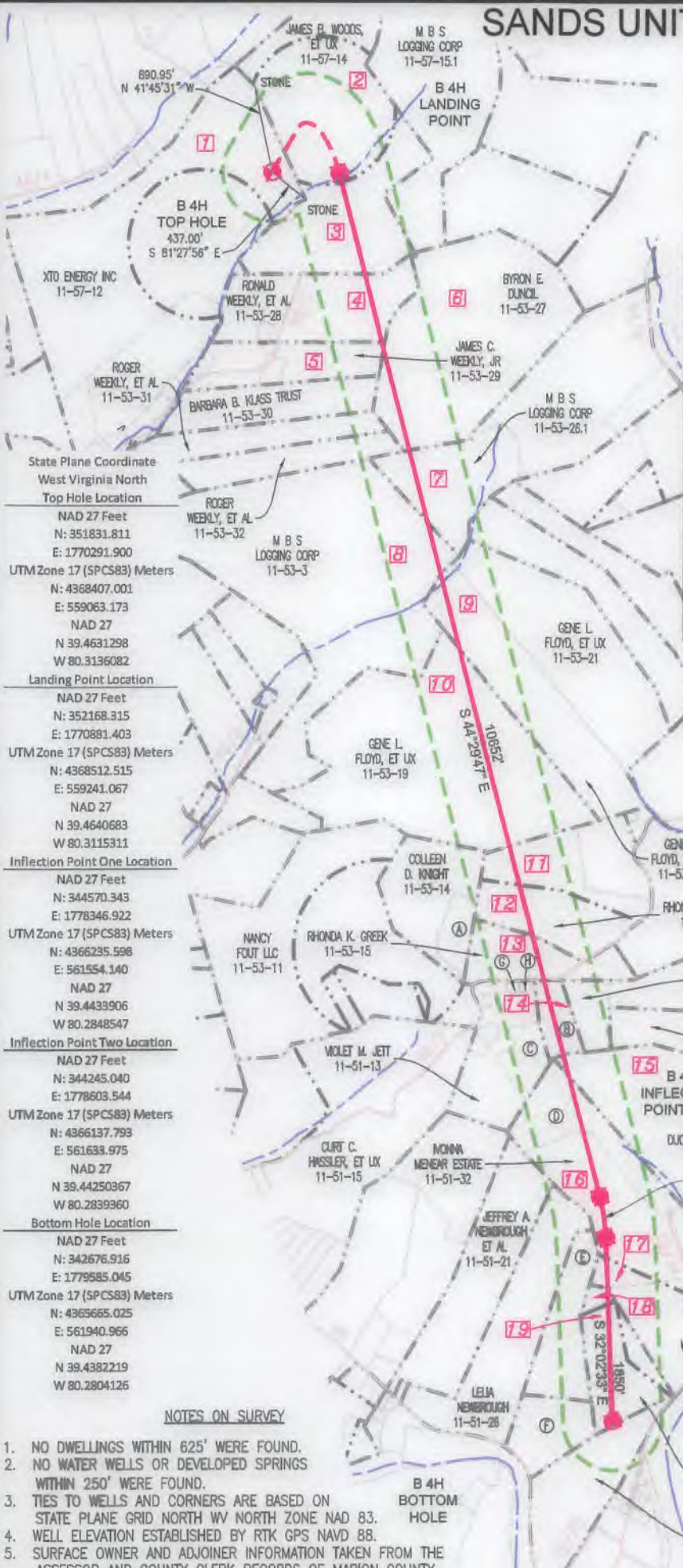
LINE LEGEND

LEASE BOUNDARY	---
SURFACE BOUNDARY	----
CREEK / STREAM	~~~~~
ROADS	----
PROPOSED LATERAL	---
APPROXIMATE CURVE	---
500' LATERAL OFFSET	---

04/19/2019

SANDS UNIT B 4H		
LEASE	LESSOR	MINERAL ACREAGE
1)	TRIO PETROLEUM CORP	138.05
2)	WACO OIL AND GAS CO. INC.	35.441
3)	WACO OIL AND GAS CO. INC.	85.25
4)	WILLIAM E. MOCKLER, ET AL	30.25
5)	JAMES C. WEEKLY, JR.	18.41
6)	SHARI J. SANDER	65.00
7)	BRUCE WILFONG, ET UX	68.25
8)	PATRICIA A. JUDY, ET AL	130.00
9)	A. M. HESS, ET UX	85.00
10)	WACO OIL AND GAS CO. INC.	86.00
11)	WACO OIL AND GAS CO. INC.	23.00
12)	RHONDA K. JOHNSTON GREEK	17.89375
13)	RHONDA K. JOHNSTON GREEK	15.54
14)	JOHN M. JETT, ET UX	7.12
15)	ULRIC LEDDY, ET AL	106.36
16)	J.P. SANDY, ET UX	78.000
17)	J.P. SANDY, ET UX	SAME AS 16
18)	J.P. SANDY, ET UX	SAME AS 16
19)	ALBERT W. FORD	18.00000

	SURFACE OWNER	TAX PARCEL
A	MISTI GODFREY	11-53-14.1
B	VIOLET M. JETT	11-51-11
C	VIOLET M. JETT	11-51-12
D	MARY A. EAVENSON	11-51-33
E	HERSCHEL H. WILFONG	11-51-27
F	BURTON E. MARTIN	11-51-28
G	VIOLET M. JETT	11-51-13.2
H	SUSAN E. JETT, ET AL	11-51-13.1



State Plane Coordinate
West Virginia North
Top Hole Location
NAD 27 Feet
N: 351831.811
E: 1770291.900
UTM Zone 17 (SPCS83) Meters
N: 4368407.001
E: 559063.173
NAD 27
N 39.4631298
W 80.3136082

Landing Point Location
NAD 27 Feet
N: 352168.315
E: 1770881.403
UTM Zone 17 (SPCS83) Meters
N: 4368512.515
E: 559241.067
NAD 27
N 39.4640683
W 80.3115311

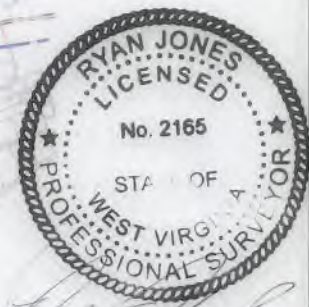
Inflection Point One Location
NAD 27 Feet
N: 344570.343
E: 1778346.922
UTM Zone 17 (SPCS83) Meters
N: 4366235.598
E: 561554.140
NAD 27
N 39.4433906
W 80.2848547

Inflection Point Two Location
NAD 27 Feet
N: 344245.040
E: 1778603.544
UTM Zone 17 (SPCS83) Meters
N: 4366137.793
E: 561638.975
NAD 27
N 39.44250367
W 80.2839360

Bottom Hole Location
NAD 27 Feet
N: 342676.916
E: 1779585.045
UTM Zone 17 (SPCS83) Meters
N: 4365665.025
E: 561940.966
NAD 27
N 39.4382219
W 80.2804126

NOTES ON SURVEY

- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN OCTOBER 2018 AND FILES PROVIDED BY XTO ENERGY INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.



[Signature]

JONES CONSULTANTS, LLC

SURVEYING • MAPPING • LAND • GAS WELL • PIPELINE
2402 PENNSYLVANIA 66 DELMONT, PA 15626
(724) 757 - 2417 www.jonesconsultant.com

SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT

SANDS UNIT B 4H

Drawn By: JRV	Date: 4/1/19	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA	
Scale: 1" = 1500'	Sheet: SHEET 2 OF 2	File No.:	JC2018-74



XTO ENERGY
190 THORN HILL ROAD
WARRENDALE, PA 15086

0' 1500'



04/19/2019

WW-6A1
(5/13)Operator's Well No. Sands Unit B 4H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
See attached				

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: XTO Energy Inc.

By: _____

Its: _____

Regulatory Coordinator

Page 1 of _____

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Sands B 4H Lease Ref	Lessor	Lessee	Royalty	Book/Page
		4704902492		
1	Trio Petroleum Corp.	Trio Petroleum Corp. to Waco Holding Company BK 56-879. Wacol Holding Company to Waco Oil & Gas Co. Inc. - BK 56-599. Waco Oil & Gas Co. Inc. to Linn Energy, LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200.	Min. 1/8	953-1119
2	Waco Oil and Gas Co., Inc.	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 40-311	Min. 1/8	978-954
3	Waco Oil and Gas Co., Inc.	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 40-311	Min. 1/8	978-954
4	William E. Mockler	Waco Oil and Gas Company, Inc. to Linn Energy, LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200	Min. 1/8	986-171
4	Robert P. Mockler and Roberta Mockler, his wife	Waco Oil and Gas Company, Inc. to Linn Energy, LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200	Min. 1/8	985-862
4	Eleanor Mockler Bush	Waco Oil and Gas Company, Inc. to Linn Energy, LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200	Min. 1/8	986-408
5	James C. Weekly, Jr.	Cardinal Energy to XTO Energy Inc. - AB 54-558.	Min. 1/8	989-44
6	Shari J. Sander, as Administratrix with the Will annexed in the Estate of Addie M. Simpson and as Power of Attorney for Edgar W. Rice	Waco Oil and Gas Co., Inc. to Linn Energy LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200.	Min. 1/8	986-461
7	Bruce Wilfong and Jeanie Wilfong	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	1010-1007
8	Patricia Ann Judy	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	986-794
8	Robert Fay Tetrick (Life Estate)	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	986-970
8	Charles Robert Judy, Jr. (Remainderman)	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	990-138
9	A. M. Hess and Sallie M. Hess, his wife	The Philadelphia Company of West Virginia to The Pittsburgh & WV Gas Co. - DB 236-111. The Pittsburgh & WV Gas Co. to Equitable Gas Company - DB 511-539. EQT Production Company to XTO Energy Inc. - AB 48-232.	Min. 1/8	200-46
10	Waco Oil and Gas Co., Inc.	Waco Oil and Gas Co., Inc. to Linn Energy LLC - AB 25-638. Linn Energy LLC to XTO Energy Inc. - AB 33-200.	Min. 1/8	981-150
11	Waco Oil & Gas Co., Inc.	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	1003-332
12	Rhonda K. Johnston Greek	XTO Energy Inc.	Min. 1/8	1102-822
13	Rhonda K. Johnston Greek	XTO Energy Inc.	Min. 1/8	1102-819
14	John M. Jett and Violet M. Jett (wife)	Exploration Partners, LLC to Waco Oil and Gas Co., Inc. - AB 27-57. Waco Oil & Gas, Inc. to XTO Energy Inc. - AB 42-37.	Min. 1/8	992-1031
15	Ulric Leddy	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	984-375
15	Wanda J. Benner and Murray Benner	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	983-522
16	J. P. Sandy and N. M. Sandy	Hope Natural Gas Company to Consolidated Gas Supply Corp. - DB 680-35. Consolidated Gas Supply Corp. to Consolidated Gas Transmission Corp. - AB 9-912. Consolidated Gas Transmission Corporation changed to CNG Transmission Corporation - B 65-196. CNG Transmission Corporation to Eastern States Oil & Gas, Inc. - AB 16-993. Through Articles of Merger Eastern States Oil & Gas, Inc. becomes EQT Production Company. 61-558. EQT Production Company to XTO Energy Inc. Book 55 Page 257.	Min. 1/8	140-278

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17	J. P. Sandy and N. M. Sandy	Hope Natural Gas Company to Consolidated Gas Supply Corp. - DB 680-35. Consolidated Gas Supply Corp. to Consolidated Gas Transmission Corp. - AB 9-912. Consolidated Gas Transmission Corporation changed to CNG Transmission Corporation - B 65-196. CNG Transmission Corporation to Eastern States Oil & Gas, Inc. - AB 16-993. Through Articles of Merger Eastern States Oil & Gas, Inc. becomes EQT Production Company. 61-558. EQT Production Company to XTO Energy Inc. Book 55 Page 257.	Min. 1/8	140-278
18	J. P. Sandy and N. M. Sandy	Hope Natural Gas Company to Consolidated Gas Supply Corp. - DB 680-35. Consolidated Gas Supply Corp. to Consolidated Gas Transmission Corp. - AB 9-912. Consolidated Gas Transmission Corporation changed to CNG Transmission Corporation - B 65-196. CNG Transmission Corporation to Eastern States Oil & Gas, Inc. - AB 16-993. Through Articles of Merger Eastern States Oil & Gas, Inc. becomes EQT Production Company. 61-558. EQT Production Company to XTO Energy Inc. Book 55 Page 257.	Min. 1/8	140-278
19	Albert Wayne Ford	Waco Oil and Gas Co., Inc. to XTO Energy Inc. AB 42-37	Min. 1/8	990-827

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04/19/2019



October 1, 2018

Mr. Shawn Columbus
EQT Production Company
625 Liberty Avenue, Suite 1700
Pittsburgh, PA 15222

RE: Permitting Letter Agreement for Sands B Unit 4H

Mr. Columbus,

XTO Energy Inc. ("XTO") is hereby requesting permission from EQT Production Company ("EQT") to proceed with plans to permit the horizontal well referenced above across the oil and gas leasehold rights that EQT owns under that certain leases (1) dated July 18, 1905, recorded in Deed Book 140, Page 278, Office of the Clerk of Marion County, West Virginia, and (2) dated June 26, 1906, recorded in Deed Book 146, Page 267, Office of the Clerk of Marion County, West Virginia (the "Leases"). By executing this letter agreement, EQT does not waive any rights in the Lease, and is not bound to consummate any transaction until and unless the parties enter into a definitive agreement allowing XTO the right to drill the above referenced wells through the Lease. The permission granted in this letter will terminate upon the earlier of (i) one year from the date you execute this letter agreement, or (ii) the parties entering into the definitive agreement(s) described herein.

If you are in agreement with the foregoing, please execute two originals of this letter agreement and return one original to my attention at: XTO Energy Inc., 22777 Springwoods Village Parkway, Land Dept. Loc 115, Spring, Texas 77389-1425. If you have any additional questions, please feel free to contact me at Brent_Evans@xtoenergy.com or (832) 625-0807.

Sincerely,

Brent Evans
Senior Landman

Acknowledged and agreed to this 17TH day of OCTOBER, 2018 by:

EQT Production Company

A handwritten signature in blue ink, appearing to read "James R. Stout", with a horizontal line underneath it. To the right of the signature, the initials "JC" are written in blue ink.

By: James R. Stout

Its: Manager - Land Optimization & Attorney-In-Fact

22777 Springwoods Village Parkway, Loc. 115, Spring, TX 77389-1425

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04/19/2019



XTO Energy, Inc.
22777 Springwoods
Village Pkwy
Spring, TX 77389-1425

October 18, 2018

Office of Oil & Gas
WVDEP
601 57th Street
Charleston, WV 25304

Re: Rights to Drill under Roads – Sands Unit B 4H

To Whom It May Concern:

Based on research by XTO Energy's Land Department, our contractor's and 3rd party title attorneys, we have all necessary mineral rights under Marion County Route 48/7, in the location of our planned well-bore for the Sands Unit B 4H.

Sincerely,

A handwritten signature in blue ink that reads 'Brent Evans'.

Brent Evans
Senior Landman
22777 Springwoods Village Pkwy.
Spring, TX 77389-1425

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WW-6AC
(1/12)

04/19/2019

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION**

Date of Notice Certification: 11/16/18

API No. 47- _____ - _____
Operator's Well No. Sands Unit B 4H
Well Pad Name: Sands Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>559063.173</u>
County: <u>Marion</u>		Northing: <u>4368407.001</u>
District: <u>Lincoln</u>	Public Road Access: <u>Bingamon Road - Marion CR 48</u>	
Quadrangle: <u>Shinnston</u>	Generally used farm name: <u>XTO Energy Inc.</u>	
Watershed: <u>Lower West Fork River (0502000206)</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p align="center">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
--	--

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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(1/12)

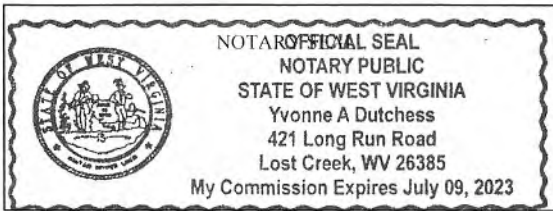
04/19/2019

Certification of Notice is hereby given:

THEREFORE, I Tim Sands, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: XTO Energy Inc.
By: *Tim Sands*
Its: Regulatory Coordinator
Telephone: 304-884-6000

Address: PO Box 1008
Jane Lew, WV 26378
Facsimile: 304-884-6809
Email: _____



Subscribed and sworn before me this 16th day of November 2018
Yvonne A. Dutches Notary Public
My Commission Expires July 9, 2023

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A
(9-13)

API NO. 47- - 04/19/2019
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 11/16/18 Date Permit Application Filed: 11/16/18

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
Name: XTO Energy Inc.
Address: PO Box 1008
Jane Lew, WV 26378
Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Christopher Halpenny
Address: 1250 Bingamon Rd
Worthington, WV 26591
Name: Douglas & Lillian Freeman
Address: 1146 Bingamon Rd
Worthington, WV 26591

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: See attached
Address: _____

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: See attached
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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WW-6A
(8-13)

API NO. 47- _____ - **04/19/2019**
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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(8-13)

API NO. 47- _____ - 04/19/2019
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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WW-6A
(8-13)

API NO. 47- - **04/19/2019**
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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4704902492

WW-6A
(8-13)

API NO. 47- _____ - **04/19/2019**
OPERATOR WELL NO. Sands Unit B 4H
Well Pad Name: Sands Pad

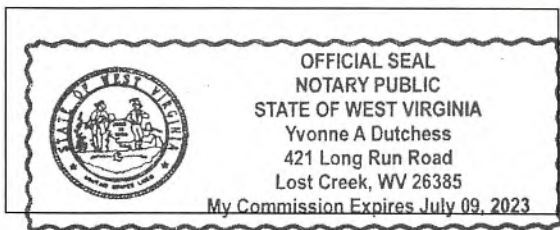
Notice is hereby given by:

Well Operator: XTO Energy, Inc.
Telephone: 304-884-6000
Email: _____

Address: PO Box 1008
Jane Lew, WV 26378
Facsimile: 304-884-6809

To: Asst Tim Sands
Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 16th day of November 2018
Yvonne A. Dutchess Notary Public
My Commission Expires July 9, 2023

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Environmental Protection

4704902492

Surface Owner

XTO Energy Inc.
PO Box 1008
Jane Lew, WV 26378

04/19/2019

Surface Owner - Access Road

Christopher Halpenny ✓
1250 Bingamon Rd.
Worthington, WV 26591

Douglas & Lillian Freeman ✓
1146 Bingamon Rd.
Worthington, WV 26591

Coal Owner or Lessee

Consolidation Coal Company ✓
1000 Consol Energy Drive
Canonsburg, PA 15317

Rochester & Pittsburgh Coal Company ✓
1000 Consol Energy Drive
Canonsburg, PA 15317

Water Wells or Springs

Ronald Weekly ✓
263 Shaw Run Road
Worthington, WV 26591

Mathew Jones ✓
539 Monroe Street
Fairmont, WV 26554

Joanne Sharp ✓
307 Sharpe Hollow Road
Worthington, WV 26591

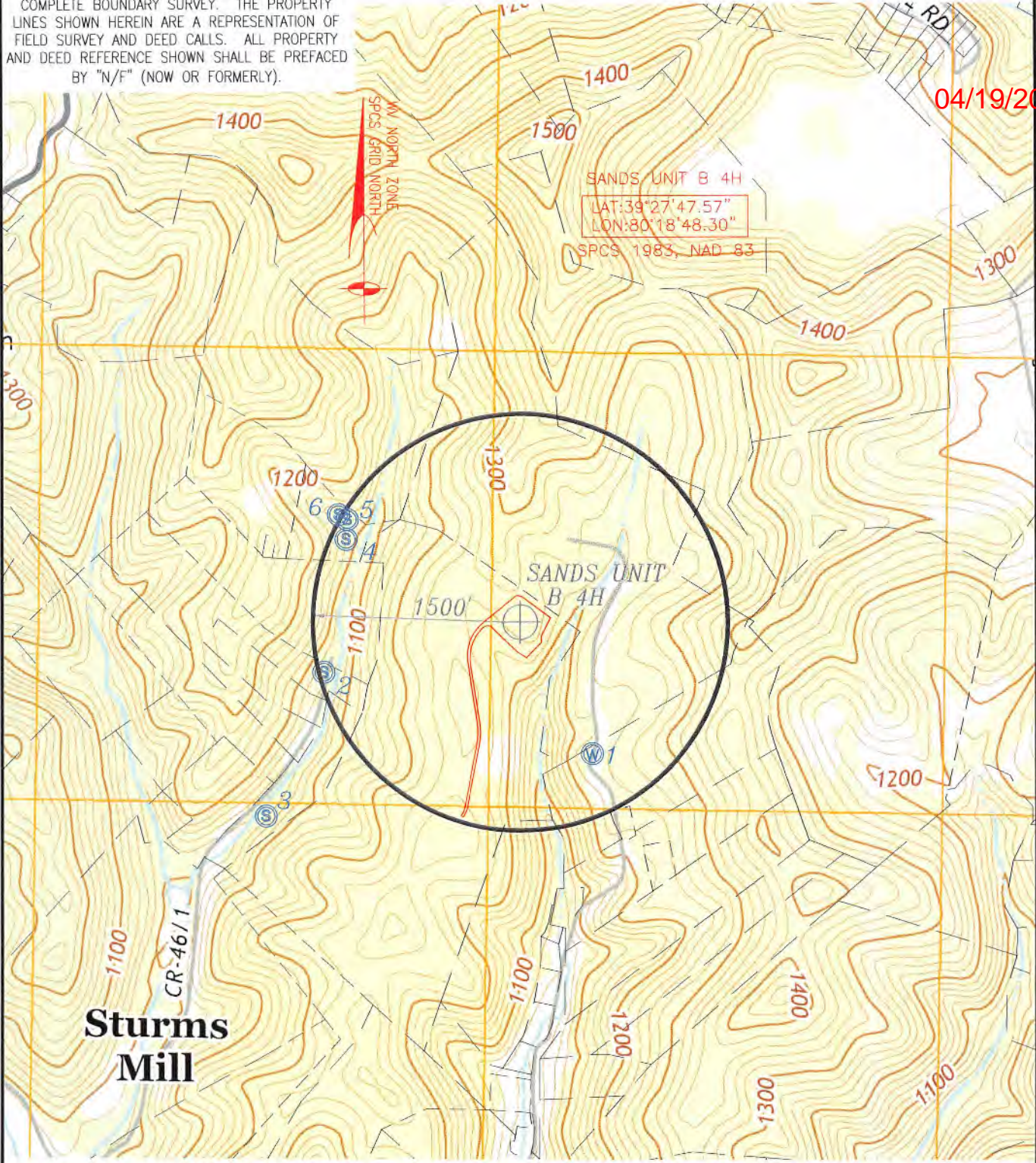
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FORM W-9

NOTE: THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY. THE PROPERTY LINES SHOWN HEREIN ARE A REPRESENTATION OF FIELD SURVEY AND DEED CALLS. ALL PROPERTY AND DEED REFERENCE SHOWN SHALL BE PREFACED BY "N/F" (NOW OR FORMERLY).

LEGEND

- WATER WELL
- SPRING/POND/STREAM
- SURFACE BOUNDARY



04/19/2019

POINT	NAME	ADDRESS	CITY	STATE	ZIP CODE	DISTANCE	BEARING	PARCEL I.D.
1	Ronald Weekly	263 Shaw Run Road	Worthington	WV	26591	1076'	S 28°55'25\" E	Tax Map 11-53, Parcel 28
2	Joanne Sharp	307 Sharpe Hollow Road	Worthington	WV	26591	1466'	S 75°48'35\" W	Tax Map 11-59, Parcel 46
3	Judy Richards	P.O. Box 41	Enterprise	WV	26568	2308'	S 52°48'17\" W	Tax Map 11-57, Parcel 13
4	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1394'	N 64°41'16\" W	Tax Map 11-59, Parcel 44.1
5	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1454'	N 59°26'31\" W	Tax Map 11-59, Parcel 44.1
6	Matthew Jones	539 Monroe Street	Fairmont	WV	26554	1526'	N 59°29'05\" W	Tax Map 11-59, Parcel 44.1

SANDS UNIT B 4H WATER OVERALL

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA | 10/30/2018 | JC2018-74 | SHEET 1 OF 2



2402 PENNSYLVANIA 66
DELMONT, PA 15626
(724) 757 - 2417
www.jonesconsultant.com

Shinnston Quad (2014)
Marion County, WV
Scale: 1" = 1000'



190 THORN HILL ROAD
WARRENDALE, PA 15086

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04/19/2019

WW-6A3
(1/12)Operator Well No. Sands Unit B 4H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 7/30/2018 **Date of Planned Entry:** 8/7/2018

Delivery method pursuant to West Virginia Code § 22-6A-10a

PERSONAL SERVICE REGISTERED MAIL METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: XTO Energy Inc.
Address: PO Box 1008
Jane Lew, WV 26378
Name: Christopher Halpenny
Address: 1250 Bingamon Rd
Worthington, WV 26591
Name: Douglas & Lillian Freeman
Address: 1146 Bingamon Rd
Worthington, WV 26591

COAL OWNER OR LESSEE

Name: See attached
Address: _____

MINERAL OWNER(s)

Name: See attached
Address: _____

*please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.462887, -80.313719</u>
County: <u>Marion</u>	Public Road Access: <u>Marion CR 4B (Little Bingamon-Bradley)</u>
District: <u>Lincoln</u>	Watershed: <u>0502000208 Lower West Fork River</u>
Quadrangle: <u>Shinnston</u>	Generally used farm name: <u>XTO Energy Inc.</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: <u>XTO Energy Inc.</u>	Address: <u>PO Box 1008</u>
Telephone: <u>304-884-6000</u>	<u>Jane Lew, WV 26378</u>
Email: _____	Facsimile: <u>304-884-6809</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Surface Owner

XTO Energy Inc.
PO Box 1008
Jane Lew, WV 26378

04/19/2019

Surface Owner - Access Road

Christopher Halpenny
1250 Bingamon Rd.
Worthington, WV 26591

Douglas & Lillian Freeman
1146 Bingamon Rd.
Worthington, WV 26591

Coal Owner or Lessee

Consolidation Coal Company
1000 Consol Energy Drive
Canonsburg, PA 15317

Rochester & Pittsburgh Coal Company
1000 Consol Energy Drive
Canonsburg, PA 15317

Mineral Owners

Waco Oil & Gas Company, Inc.
1595 US Highway 33E
Glenville, WV 26351

XTO Energy Inc.
PO Box 1008
Jane Lew, WV 26378

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WW-6A5
(1/12)Operator Well No. 04/19/2019

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 11/16/18 **Date Permit Application Filed:** 11/16/18

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: See attached

Name: _____

Address: _____

Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>559063.173</u>
County:	<u>Marion</u>		Northing:	<u>4368407.001</u>
District:	<u>Lincoln</u>	Public Road Access:	<u>Bingamon Road - Marion CR 48</u>	
Quadrangle:	<u>Shinnston</u>	Generally used farm name:	<u>XTO Energy Inc.</u>	
Watershed:	<u>Lower West Fork River (0502000206)</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: XTO Energy Inc.

Address: PO Box 1008

Telephone: 304-884-6000

Jane Lew, WV 26378

Email: _____

Facsimile: 304-884-6809

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Surface Owner

XTO Energy Inc.
PO Box 1008
Jane Lew, WV 26378

04/19/2019

Surface Owner - Access Road

Christopher Halpenny
1250 Bingamon Rd.
Worthington, WV 26591

Douglas & Lillian Freeman
1146 Bingamon Rd.
Worthington, WV 26591

04/19/2019



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

November 5, 2018

Jill M. Newman
Deputy Commissioner

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Sands Well Pad, Marion County
Sands Unit B 4H

Dear Mr. Martin,

This well site will be accessed from Permit #04-2180-1112 issued to XTO Energy, Inc. for access to the State Road for a well site located off of Marion County Route 48 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Tim Sands
XTO Energy, Inc.
CH, OM, D-4
File

E.E.O./AFFIRMATIVE ACTION EMPLOYER

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Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	XTO Energy/ExxonMobil	Carrier Fluid	Water	7732-18-5	100	90 3211	
FR-16	C&J Energy Services	Friction Reducer		Listed Below			
Sand	C&J Energy Services	Sand - Bulk - Penns		Listed Below			
CI-3	C&J Energy Services	Acid Corrosion Inhibitors		Listed Below			
BIO-CLEAR 2000	C&J Energy Services	Biocides		Listed Below			
HC-7.5	C&J Energy Services	Bulk Acid		Listed Below			
Sand	C&J Energy Services	Sand - Bulk - Penns		Listed Below			
SI-6	C&J Energy Services	Paraffin & Scale Additives		Listed Below			

Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.

			Crystalline Silica, quartz	14808-60-7	99.9	7.93235	
			Crystalline Silica, quartz	14808-60-7	99.9	0.96377	
			Water	7732-18-5	92.5	0.61264	
			Aluminum Oxide	1344-28-1	1.1	0.08734	
			Hydrochloric Acid	7647-01-0	7.5	0.04967	
			Water	7732-18-5	96	0.02312	
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	35	0.0191	
			Water	7732-18-5	30	0.01637	
			2-Propenoic acid, polymer with 2- propenamide, sodium salt	25987-30-8	30	0.01637	
			Polyethylene glycol	25322-68-3	50	0.01586	
			Aluminum Oxide	1344-28-1	1.1	0.01061	
			2,2-Dibromo-3-nitrilo- propionamide (DBNPA)	10222-01-2	30	0.00952	
			Water	7732-18-5	28.5	0.00904	
			Titanium Oxide	13463-67-7	0.1	0.00794	
			Iron Oxide	1309-37-1	0.1	0.00794	
			Ethylene Glycol	107-21-1	5	0.00273	
			Sodium Acetate	127-09-3	3	0.00164	
			Phosphonic Acid Salt	Proprietary	6	0.00145	
			Poly(oxy-1,2-ethandiyl), alpha-isodecyl-omega- hydroxy-phosphate	108818-88-8	2	0.00109	
			Sorbitan Monooleate	1338-43-8	2	0.00109	
			Alcohols, C12-15- branched and linear, ethoxylated propoxylated	120313-48-6	2	0.00109	
			Iron Oxide	1309-37-1	0.1	0.00097	
			Titanium Oxide	13463-67-7	0.1	0.00097	
			Ethoxylated Sorbitan	9005-65-6	1	0.00055	
			Ammonium Chloride	12125-02-9	2	0.00048	
			Monoethanolamine hydrochloride	2002-24-6	2	0.00048	
			Ethylene Glycol	107-21-1	40	0.00048	
			Water	7732-18-5	30	0.00036	
			Methanol	67-56-1	1	0.00024	
			Dimethylformamide	68-12-2	20	0.00024	
			Tar bases, quinoline derivs, benzyl chloride- quaternized	72480-70-7	15	0.00018	
			Cinnamaldehyde	104-55-2	15	0.00018	
			2-Butoxyethanol	111-76-2	15	0.00018	
			1-DECANOL	112-30-1	5	0.00006	
			Poly(oxy-1,2- ethanediyl),alpha-(4- nonylphenyl)-omega hydroxy-, branched	127087-87-0	5	0.00006	
			2-Propenamide as residual	79-06-1	0.1	0.00006	
			1-OCTANOL	111-87-5	2.5	0.00003	
			Isopropanol	67-63-0	2.5	0.00003	
			Triethyl Phosphate	78-40-0	2.5	0.00003	
			Tar Bases, Quinoline	68513-87-1	1	0.00001	

104902492
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 Office of Oil and Gas
 NOV 20 2018
 WV Department of Environmental Protection

PREPARED FOR:

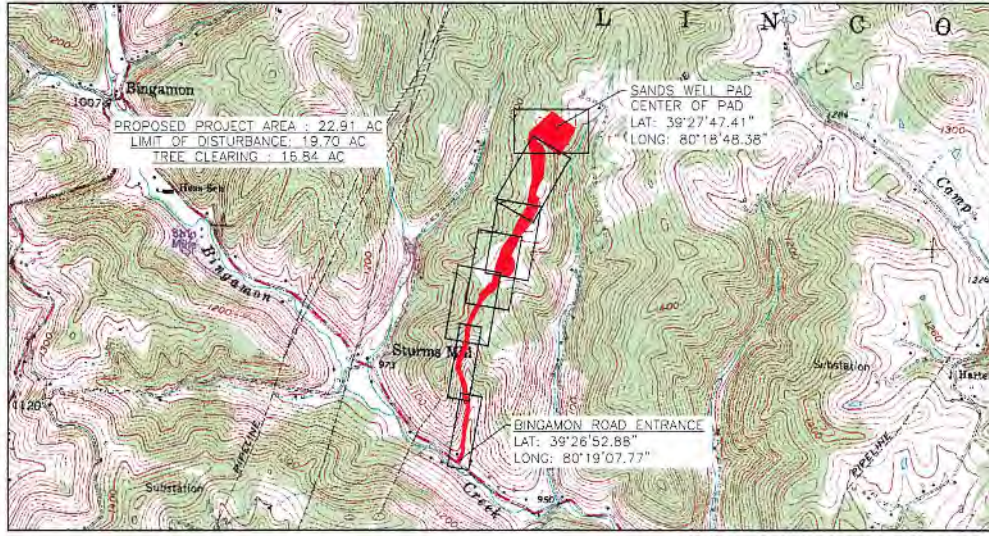


SANDS WELL PAD

LINCOLN DISTRICT, MARION COUNTY, WV



SHEET LIST TABLE	
SHEET NO	SHEET TITLE
1	E&S POLLUTION CONTROL PLAN - COVER SHEET
2	E&S POLLUTION CONTROL PLAN - EXISTING SITE CONDITIONS
3	E&S POLLUTION CONTROL PLAN - EXISTING SITE CONDITIONS
4	E&S POLLUTION CONTROL PLAN - EXISTING SITE CONDITIONS
5	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
6	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
7	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
8	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
9	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
10	E&S POLLUTION CONTROL PLAN - PROPOSED SITE CONDITIONS
11	E&S POLLUTION CONTROL PLAN - ACCESS ROAD PROFILE
12	E&S POLLUTION CONTROL PLAN - ACCESS ROAD PROFILE
13	E&S POLLUTION CONTROL PLAN - ACCESS ROAD PROFILE
14	E&S POLLUTION CONTROL PLAN - WELL PAD PROFILES
15	E&S POLLUTION CONTROL PLAN - ACCESS ROAD SECTIONS
16	E&S POLLUTION CONTROL PLAN - ACCESS ROAD SECTIONS
17	E&S POLLUTION CONTROL PLAN - STOCKPILE PROFILES
18	E&S POLLUTION CONTROL PLAN - EARTHWORK
19	E&S POLLUTION CONTROL PLAN - EARTHWORK
20	E&S POLLUTION CONTROL PLAN - EARTHWORK
21	E&S POLLUTION CONTROL PLAN - GENERAL NOTES
22	E&S POLLUTION CONTROL PLAN - E&S DETAILS
23	E&S POLLUTION CONTROL PLAN - E&S DETAILS
24	E&S POLLUTION CONTROL PLAN - E&S DETAILS
25	E&S POLLUTION CONTROL PLAN - E&S DETAILS
26	PCSM - RESTORATION PLAN
27	PCSM - RESTORATION PLAN
28	PCSM - RESTORATION PLAN
29	PCSM - RESTORATION PLAN
30	PCSM - RESTORATION PLAN
31	PCSM - RESTORATION PLAN



U.S.G.S. MAP SHINNISTON, WV 7.5 QUADRANGLE

DRAWING NOTES:

- ACTUAL FIELD LOCATIONS OF ALL E&S CONTROLS MAY NEED ADJUSTED BASED ON EXISTING FIELD CONDITIONS ENCOUNTERED DURING CONSTRUCTION. IF CHANGES ARE NECESSARY, THE ENGINEER MUST BE NOTIFIED IMMEDIATELY.
- FOR APPROVED E&S CONTROLS SEE THE WELL WORK RESULT, STORMWATER POLLUTION PREVENTION PLAN AND/OR SUBSEQUENT PERMIT REVISIONS.
- THE PROJECT AREA DISCHARGES TO AN UNNAMED TRIBUTARY TO LITTLE BINGAMON CREEK.
- EXISTING CONTOURS SHOWN WERE DEVELOPED FROM A COMBINATION OF FIELD SURVEYED LOCATIONS AND USGS CONTOURS.
- E&S PROVIDED BY GANNETT FLEMING, LLC.
- SURVEY, BASE MAPPING AND UTILITIES ONE CALL PROVIDED BY JONES CONSULTANTS, LLC.
- COORDINATES ARE BASED ON NAD 83 WEST VIRGINIA NORTH.
- ELEVATIONS ARE BASED ON NAVD 88.

PROPOSED PERMITS:

- WVDEP WELL WORK PERMIT
- NATIONWIDE PERMIT 14/WVDEP 421 WOC
- WVDEP WETLAND/PERENNIAL STREAM WALKER REQUEST
- WVDEP STREAM ACTIVITY APPLICATION

FEMA FLOODWAYS:

NO PORTION OF THE LIMIT OF DISTURBANCE IS INSIDE A FEMA FLOODWAY. PANEL NO. 540495D1800, EFFECTIVE DATE 6/19/2012

SITE INFORMATION:

NORTH OF BINGAMON ROAD, WEST OF WORTHINGTON, WV.

DISTURBANCE AREAS:

TOTAL AREA OF DISTURBANCE	19.70 AC
TOTAL AREA OF TREE CLEARING	16.84 AC
AREA OF WELL PAD	2.69 AC
AREA OF ACCESS ROAD	5.76 AC

DISTURBANCE PER PARCEL:

11-22-12, XTO ENERGY INC.	16.59 AC
11-57-2-3, CHRISTOPHER A. HALPENNY	0.81 AC
11-57-2-2, DOUG O. & LILLIAN L. FREEMAN	2.30 AC

SCHEDULE OF CONSTRUCTION:

COMMENCEMENT	APRIL 2019
COMPLETION	JUNE 2019

EROSION AND SEDIMENT POLLUTION CONTROL PLAN



THIS PLAN IS PREPARED FOR XTO ENERGY AND REGULATORY ENTITIES USE ONLY. REPRODUCTIONS OR USE BY ANYONE OTHER THAN XTO ENERGY OR REGULATORY ENTITIES MAY NOT BE RELIED UPON.

PLAN PREPARED FOR PERMITTING AND E&S/STORMWATER PURPOSES.

THIS DRAWING IS AND SHALL REMAIN THE PROPERTY OF GANNETT FLEMING, INC. ANY MISUSE, REUSE, ALTERATION, REPRODUCTION AND/OR DISSEMINATION OF THESE DRAWINGS OR PROJECT EXTENSIONS OR OTHER PROJECTS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO GANNETT FLEMING, INC. IN THE EVENT THAT A CONFLICT ARISES BETWEEN THE SEALED DRAWINGS AND THE ELECTRONIC FILES THE SEALED DRAWINGS WILL CONTROL.

THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES SHOWN HEREON. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA (OTHER A SERVICE OR UNKNOWN). THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE SHOWN AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.

ALTHOUGH THIS TO PROPERTY LINES HAVE BEEN MADE, THIS PLAN DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY.

REV. NO.	DESCRIPTION	DATE	BY

STOP - CALL BEFORE YOU DIG!
West Virginia One Call System, Inc.
1-800-245-4848

WEST VIRGINIA ONE CALL SYSTEM, INC. LOCATE REQUEST
TICKET NUMBER: 180845960

DATE OF NOTIFICATION: 5/11/18

NOTICE REGARDING UNDERGROUND UTILITIES: NO WARRANTY IS MADE THAT THIS PLAN SHOWS ALL EXISTING UNDERGROUND UTILITIES OR THAT THE LOCATIONS OF EXISTING UTILITIES SHOWN HEREON ARE THE CORRECT LOCATIONS. THE DEPICTION OF UTILITIES HEREIN DOES NOT RELIEVE THE CONTRACTOR(S) WHO WILL BE PERFORMING EXCAVATIONS FROM COMPLYING WITH WEST VIRGINIA LAW REGARDING EXCAVATIONS AND REQUIREMENTS CAN BE SATISFIED, IN PART, BY CONTACTING THE WEST VIRGINIA ONE CALL SYSTEM, INC. AT 1-800-245-4848.

207 SENATE AVENUE
CAMP HILL, PA 17011
www.gannettfleming.com

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2402 PENNSYLVANIA AVE
DELMONT, PA 15826
www.jonesconsultant.com

190 THORN HILL ROAD
WARRENDALE, PA 15086

GRAPHIC SCALE 1" = 1000'

XTO ENERGY INC.

SANDS WELL PAD

SCALE 1" = 1000'	COVER SHEET
DATE: 10/24/18	LINCOLN DISTRICT
NO. OF SHEETS: 31	MARION COUNTY, WEST VIRGINIA
ADIS: ADIS	SURVEY BY JONES CONSULTANTS, LLC
CREATED: 11/29/18	DATE: 12-28-18
BUR: PI	NO. OF SHEETS: 31

XTO ENERGY INC
 DBV #147, PAGE 311
 TAX PARCEL #11-52-12

JAMES B & JUDITH A WOODS
 DBV #17, PAGE 115
 TAX PARCEL #11-57-14

SUMPS

SUMP #	TOP ELEVATION	INLET INV. (FOOT)	INLET INV. (METER)	OUTLET INV. (FOOT)	OUTLET INV. (METER)	PROPOSED ELEVATION
1	1,227.80	1,224.00	1,224.00	1,230.00	1,230.00	1,227.00
2	1,237.10	1,232.04	1,231.11	1,230.00	1,230.00	
3	1,227.60	1,224.85	1,223.04	1,231.00	1,230.00	
4	1,227.80	1,225.03	1,224.51	1,234.00	1,233.50	1,228.50

LACERATION OUTLETS

OUTLET #	INV. EL. (FOOT)	INV. EL. (METER)	SLOPE (%)	SIZE (IN)	TYPE
1	1,232.00	1,216.00	87	15.0	4 PVC
2	1,230.00	1,214.70	84	18.0	4 PVC
3	1,231.00	1,216.50	82	17.0	4 PVC
4	1,225.50	1,211.70	224	12.0	4 PVC

RAD. LINES/STREMS

U.O. #	INV. EL. (FOOT)	INV. EL. (METER)	LENGTH (FEET)	SLOPE (%)	SIZE (IN)
1	1,226.41	1,224.00	236	1	6
2	1,235.80	1,234.30	158	1	6
3	1,235.80	1,235.04	100	1.75	6
4	1,238.80	1,238.80	98	1	6
5	1,233.80	1,232.00	191	2.5	6
6	1,235.80	1,235.00	100	1.75	6
7	1,235.80	1,235.20	100	1	6
8	1,238.80	1,233.11	151	1	6
9	1,236.62	1,234.97	165	1	6
10	1,235.80	1,234.28	152	1	6
11	1,238.80	1,235.00	180	1.95	6
12	1,229.50	1,223.54	130	2.64	6
13	1,229.50	1,225.80	88	1	6
14	1,228.80	1,228.00	100	1.75	6
15	1,235.80	1,232.31	129	1	2
16	1,235.41	1,234.80	103	1	2

APPROVED WVDEP OOG
 3/12/2016

CATCH BASINS

CATCH BASIN #	TOP ELEVATION	BOTTOM ELEVATION	SIZE (IN)
1	1,236.80	1,233.80	2'x3'
2	1,238.00	1,235.80	2'x2'

- COMPLETION NOTES**
- PROVIDE THE PLACEMENT OF FILL MATERIALS, THE AREA WILL BE PROTECTED BY CONTAINMENT AND COVERED BY A GEOTEXTILE AND AN APPROVED MATERIAL INCLUDING PROTECTIVE DRAPING, AND ANY OTHER DETERMINED MATERIALS.
 - PROTECTIVE DRAPING SHALL BE FORMED OVER A SLOPED BANK, WHICH IS OTHER THAN VERTICAL, TO PREVENT EROSION OF SOIL DURING THE CONSTRUCTION PERIOD.
 - THE GEOTEXTILES, COVERING SHALL, HOWEVER, THE COVERING OF THE MATERIALS SHALL BE FORMED OVER A SLOPED BANK, WHICH IS OTHER THAN VERTICAL, TO PREVENT EROSION OF SOIL DURING THE CONSTRUCTION PERIOD.
 - FILL MATERIALS SHALL BE CLEAN AND FREE OF NET WEIGHT, ORGANIC, AND OTHER HAZARDOUS MATERIALS. FILL CONSTRUCTION OF OVER 10 FEET OF HEIGHT SHALL BE PLACED IN 4' LAYERS AND SHALL BE PLACED IN LOTS NOT EXCEEDING 12 HOURS TO 24 HOURS. INTERMEDIATE COMPACTION SHALL BE PERFORMED AT AN APPROPRIATE INTERVAL, WHICH SHALL BE DETERMINED BY THE ENGINEER. THE AREA OF THE FILL SHALL BE PROTECTED BY A GEOTEXTILE AND COVERED BY A GEOTEXTILE AND AN APPROVED MATERIAL INCLUDING PROTECTIVE DRAPING, AND ANY OTHER DETERMINED MATERIALS.
 - ALL FILL AND FILL SPREADING SHALL FOLLOW THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL.

LEGEND

- CONTOUR: 2' INTERVAL
- CONTOUR: 10' INTERVAL
- EXISTING GAS LINE
- INTERNAL ELECTRIC LINE
- PROPERTY LINE
- FENCE LINE
- EDGE OF PAVEMENT
- EDGE OF DRIVE
- EXISTING WETLAND
- STREAM
- LIMIT OF PERFORMANCE
- PROPOSED AREA
- SOIL BOUNDARY
- ONE FOOT OF BANK
- ONE FOOT OF BANK
- 12" COMPOST FILTER SOCK
- 18" COMPOST FILTER SOCK
- 24" COMPOST FILTER SOCK
- EROSION CONTROL BLANKET
- ROCK PROTECTION DRAINAGE
- TEMPORARY EROSION CONTROL
- CONSTRUCTION FENCE
- 100% SLOTTED SANDWICH
- 4" SLOTTED SANDWICH
- 100% SLOTTED SANDWICH
- COLLECTION CHANNEL
- UNDERDRAIN
- OT AREA
- FILL AREA



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 DALLASTON, PA 15626
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XTO ENERGY
 190 THORN HILL ROAD
 WARRENDALE, PA 15086
 GRAPHIC SCALE 1" = 40'
 1" = 80' 2" = 160' 4" = 320'

XTO ENERGY INC.
SANDS WELL PAD
 SCALE 1" = 40'
 PROPOSED SITE CONDITIONS
 INDIAN DISTRICT
 WARREN COUNTY, WEST VIRGINIA
 SURVEY BY JONES CONSULTANTS, LLC
 SITE DESIGN BY GANNETT FLEMING, INC.
 DATE 11/29/15
 12.28.15 101129.234.110