



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Tuesday, February 28, 2017
WELL WORK PERMIT
Horizontal 6A / New Drill

XTO ENERGY, INC. (A)
810 HOUSTON STREET

FORT WORTH, TX 76102

Re: Permit approval for WORTHINGTON C 6H
47-049-02423-00-00

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: WORTHINGTON C 6H
Farm Name: XTO ENERGY INC.
U.S. WELL NUMBER: 47-049-02423-00-00
Horizontal 6A / New Drill
Date Issued: 2/28/2017

Promoting a healthy environment.

03/03/2017

PERMIT CONDITIONS

704902425

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 04902425

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

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

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.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: February 24, 2017
ORDER NO.: 2017-W-5

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, TX 76102
3. On September 21, 2016 and October 11, 2016, XTO submitted well work permit applications identified as API# 47-049-02420, 47-049-02422 and 47-049-02423. The proposed wells are to be located on the Worthington Pad in Lincoln District of Marion County, West Virginia.
4. On September 21, 2016, XTO requested a waiver for Wetland WL-11 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# 47-049-02420, 47-049-02422 and 47-049-02423.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “[i]n 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 “[n]o 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

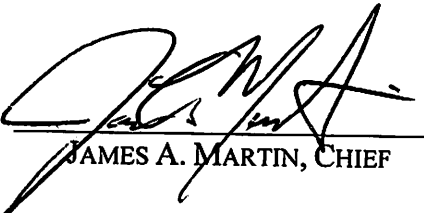
West Virginia Code §22-6A-12(b) requires, in part, that “[n]o well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for Wetland WL-11 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-049-02420, 47-049-02422 and 47-049-02423. The Office of Oil and Gas hereby **ORDERS** that XTO shall meet the following site construction and operational requirements for the Worthington Well Pad:

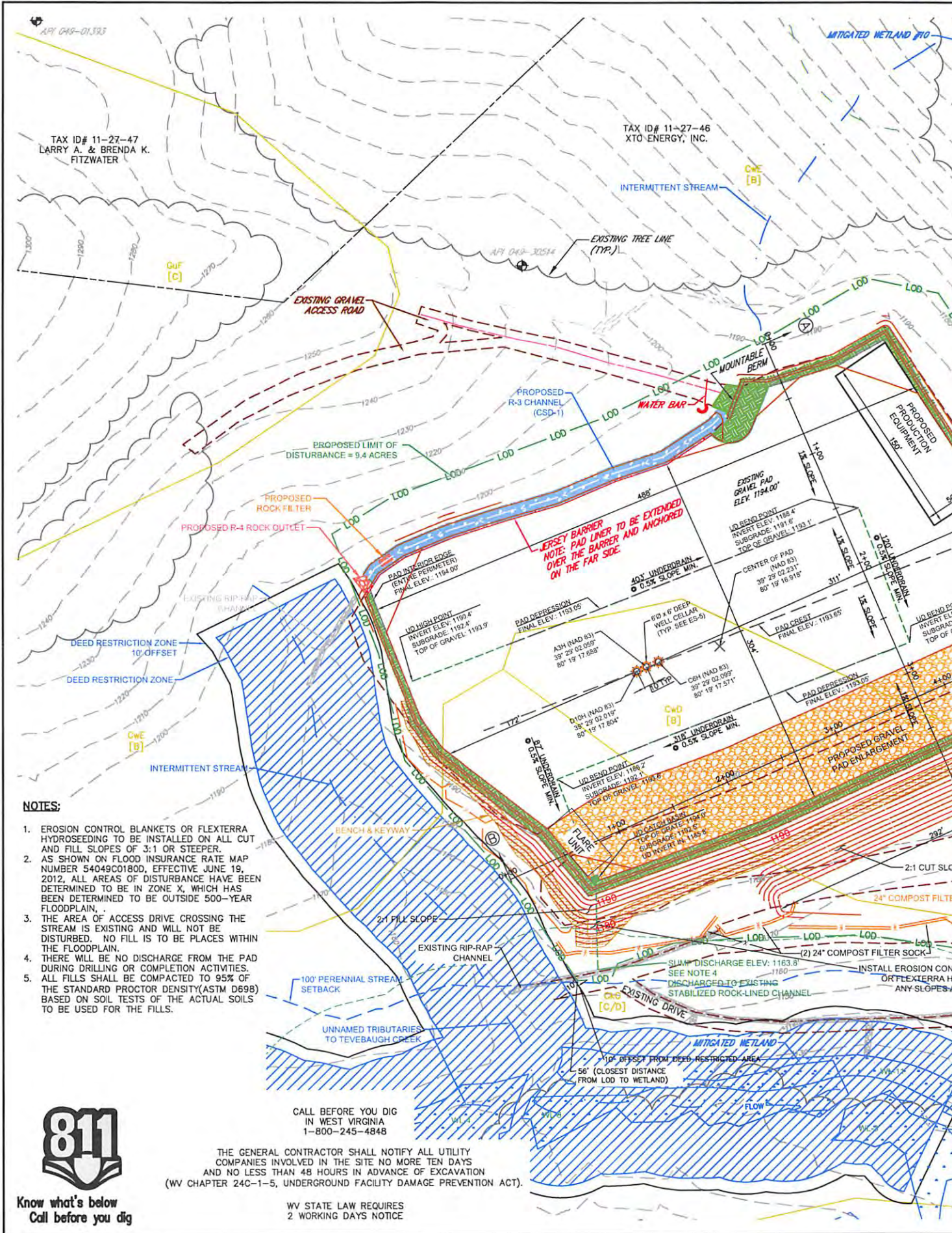
- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetland WL-11 shall have two layers of twenty-four-inch (24”) compost filter sock that will prevent any sediment from reaching the wetland.
- d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- i. 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;
- j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 24th day of February, 2017.

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



NOTES:

1. EROSION CONTROL BLANKETS OR FLEXITERRA HYDROSEEDING TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
2. AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 54049C0180D, EFFECTIVE JUNE 19, 2012, ALL AREAS OF DISTURBANCE HAVE BEEN DETERMINED TO BE IN ZONE X, WHICH HAS BEEN DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.
3. THE AREA OF ACCESS DRIVE CROSSING THE STREAM IS EXISTING AND WILL NOT BE DISTURBED. NO FILL IS TO BE PLACED WITHIN THE FLOODPLAIN.
4. THERE WILL BE NO DISCHARGE FROM THE PAD DURING DRILLING OR COMPLETION ACTIVITIES.
5. ALL FILLS SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL TESTS OF THE ACTUAL SOILS TO BE USED FOR THE FILLS.



Know what's below
Call before you dig

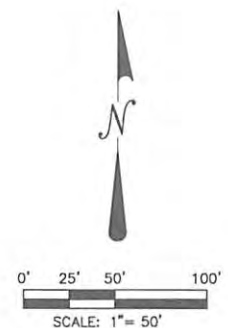
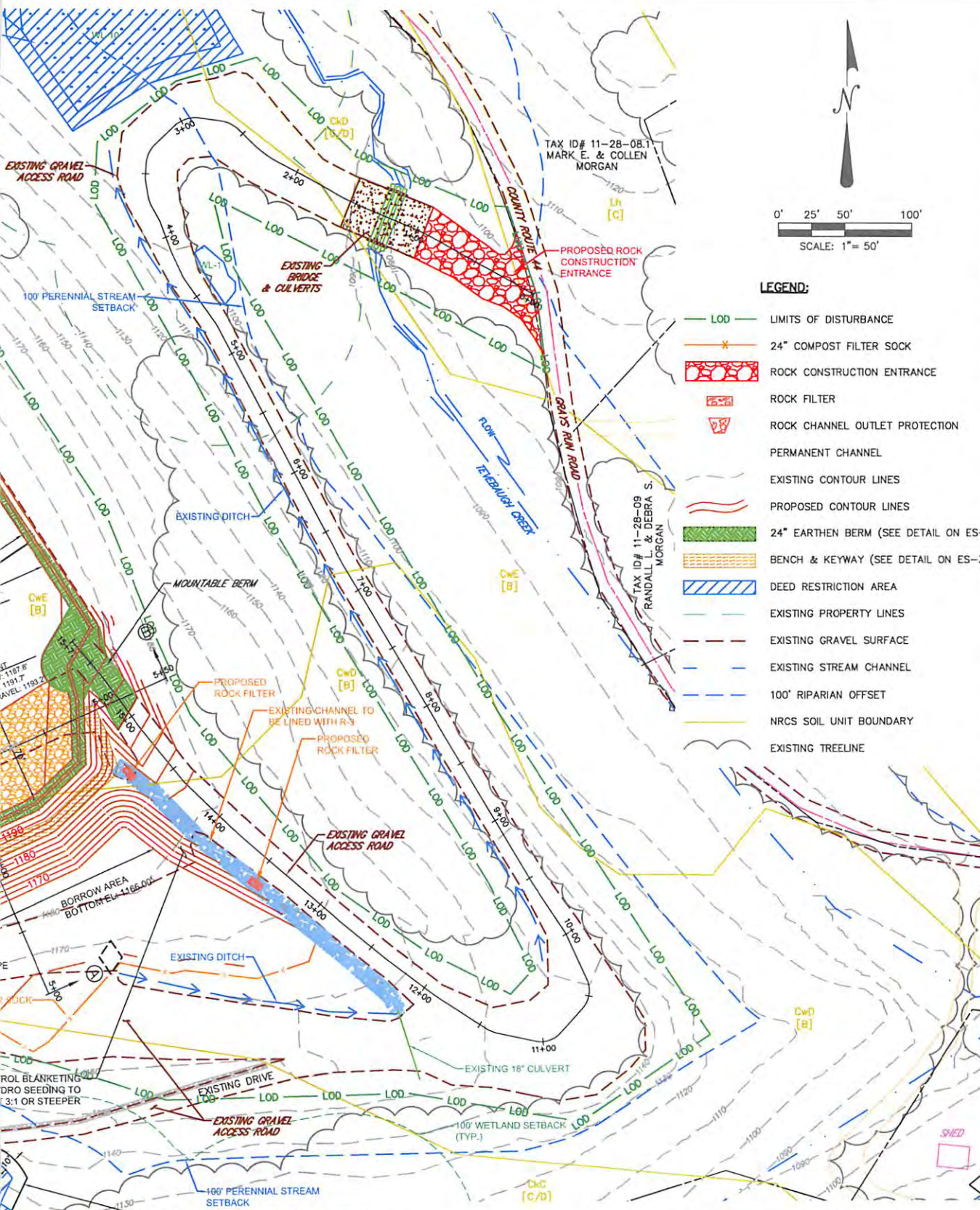
CALL BEFORE YOU DIG
IN WEST VIRGINIA
1-800-245-4848

THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION (WV CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT).

WV STATE LAW REQUIRES
2 WORKING DAYS NOTICE

03/03/2017

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Rev. 13, 2017 - 4:04pm - mgp/rtj



LEGEND:

- LOD LIMITS OF DISTURBANCE
- 24" COMPOST FILTER SOCK
- ROCK CONSTRUCTION ENTRANCE
- ROCK FILTER
- ROCK CHANNEL OUTLET PROTECTION
- PERMANENT CHANNEL
- EXISTING CONTOUR LINES
- PROPOSED CONTOUR LINES
- 24" EARTHEN BERM (SEE DETAIL ON ES-4)
- BENCH & KEYWAY (SEE DETAIL ON ES-3)
- DEED RESTRICTION AREA
- EXISTING PROPERTY LINES
- EXISTING GRAVEL SURFACE
- EXISTING STREAM CHANNEL
- 100' RIPARIAN OFFSET
- NRCS SOIL UNIT BOUNDARY
- EXISTING TREELINE

DATE: 12/13/16	DESCRIPTION: PER WDEP COMMENTS
REVISION BY: SRE	DATE: 2/13/17
REVISION BY: SRE	DATE: 2/13/17
REVISION BY: SRE	DATE: 2/13/17
REVISION BY: SRE	DATE: 2/13/17
REVISION BY: SRE	DATE: 2/13/17
DESIGNED BY: DRI	
REVIEWED BY: MAY	
DRAWN BY: DRI	
DATE: SEPT. 2016	
PROJ. NO.: 1537.195	
DRAWING NO.:	
SCALE: 1" = 50'	
<p>Morris Knowles & Associates, Inc. <i>Consulting Engineers and Land Surveyors</i> 443 Athena Drive Delmont, PA 15025 Telephone: (724) 468-4622 Fax: (724) 468-8850</p>	
<p>WORTHINGTON WELL SITE prepared for XTO ENERGY, INC. situated LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA EROSION AND SEDIMENT CONTROL PLAN</p>	
DRAWING NO.	
SHEET NO.	ES-3

THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY CHANGES IN DESIGN PLANS UNLESS WRITTEN CONSENT IS GIVEN BY THE ENGINEER. THE CONTRACTOR AND/OR THE OWNER WILL BE HELD RESPONSIBLE FOR ANY FIELD MODIFICATIONS MADE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER AND NECESSARY APPROVALS BY PERMITTING AGENCIES.

THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS AND OBSERVED EVIDENCE. THE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS, SIZES AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.



MORRIS KNOWLES & ASSOCIATES, INC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR MANIPULATED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT PERMISSION AND CONSENT OF MORRIS KNOWLES & ASSOCIATES, INC.

WW-6B
(04/15)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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: Worthington C 6H Well Pad Name: Worthington

3) Farm Name/Surface Owner: XTO Energy Inc. Public Road Access: County Route 44 (Gray's Run Rd.)

4) Elevation, current ground: 1,194' Elevation, proposed post-construction: 1,194'

5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow Deep _____
Horizontal _____

6) Existing Pad: Yes or No No

*SDW
10/5/16*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation: Marcellus, Depth 7,550, Anticipated Thickness: 150', Associated pressure: 4,650 psi

8) Proposed Total Vertical Depth: 7,550'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17,557'

11) Proposed Horizontal Leg Length: 8,457'

12) Approximate Fresh Water Strata Depths: 159', 210', 535'

13) Method to Determine Fresh Water Depths: Offsetting Reports

14) Approximate Saltwater Depths: None Listed

15) Approximate Coal Seam Depths: 84', 364', 484', 535'

16) Approximate Depth to Possible Void (coal mine, karst, other): 535'

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: _____

WW-6B
(04/15)

API NO. 47- _____
 OPERATOR WELL NO. Worthington C 6H
 Well Pad Name: Worthington

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	PE&B	95	40	40	59 cuft / CTS
Fresh Water	13.375	New	H40	48	585	585	528 cuft / CTS
Coal							
Intermediate	9.625	New	J55	36	3,200	3,200	1,303 cuft / CTS
Production	5.5	New	J55	20	17,557'	17,557'	4,106 Lead / 3,770 Tail
Tubing							
Liners							

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	.375	940	40	Standard	1.19
Fresh Water	13.375	17.5	.33	1730	480	Standard	1.19
Coal							
Intermediate	9.625	12.25	.352	3520	2600	Standard	1.19
Production	5.5	8.5	.361	12640	6130	SEE PACKING HEAD	1.13 / 1.18
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

WW-6B
(10/14)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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 antiscale 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): 7.8+/-

22) Area to be disturbed for well pad only, less access road (acres): 2.6+/-

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.

Worthington C 6H – 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 Worthington 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 535' TVD from GL. We plan to set 13 3/8" casing as a surface/coal protective string ~50' below the base of this void.

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 ~3,200'.

Morgan O'Brien
Drilling Engineer
XTO Appalachia
Cell: 724-272-8097
Morgan_OBrien@xtoenergy.com

RECEIVED
Oklahoma Natural Gas

OCT 11 2016

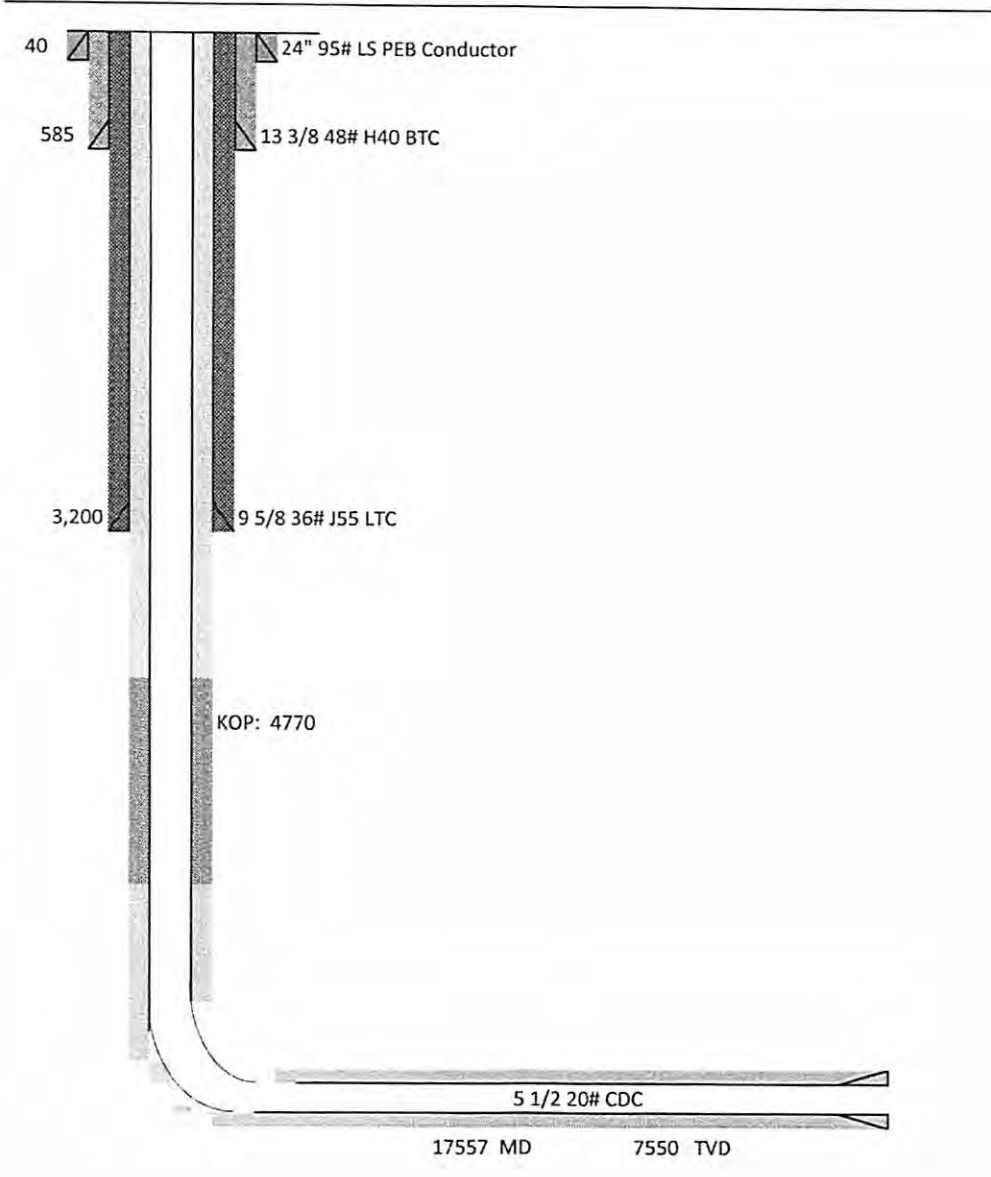
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E. Oklahoma Natural Gas

03/03/2017

Worthington C 6H

Operator	API	Elevation	Total Depth	Producing Zones	Perforated Depths	Producing Zone Depths	Producing Zones Not Perforated	Known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation?
XTO Energy Inc.	47-049-01369	1141	3983	Balltown, 5th Sand, Gordon, 30', 50', Big Town	1828-3881	1828-3881	NA	No
XTO Energy Inc.	47-049-01339	1127	3960	Balltown, 5th Sand, Gordon, 30', 50', Pocono, Big Injun	1824-3806	1769-3700	NA	No
XTO Energy Inc.	47-049-01620	1316	4200	Big Injun, Pocono, 50', Gordon, 5th Sand, Balltown	2028-3914	2010-3960	NA	No
XTO Energy Inc.	47-049-01804	1411	4745	Gordon, 5th Sand, Speechly, U Balltown, L Balltown	2980-4175	2980-4175	NA	No
XTO Energy Inc.	47-049-01402	1563	4458	Big Injun, Pocono, 50', 30', Gordon, 5th Sand, Ball Town	2298-4362	2240-4362	NA	No
XTO Energy Inc.	47-049-01780	1246	4600	Gordon, 5th Sand, Speechly, Balltown, Bradford	2826-4368	2826-4368	NA	No
Waco Oil & Gas	47-049-01605	1267	4512	BD, BT, FM, GN, Gordon Stray, 30', 50', BI. Perforated-(Bradford, Balltown, Speechly, 5th Sand, Gordon, 50', 30', Big Injun)	1989-4341	1989-4341	NA	No
Waco Oil & Gas	47-049-01603	1318	4545	BD, BT, FM, GN, Gordon Stray, 30', 50', BI (No fracture)	None - Natural		BD, BT, FM, GN, Gordon Strey, 30', 50', BI	No

Worthington C 6H
Marion County, West Virginia



WW-9
(4/16)

API Number 47 - _____ - _____
Operator's Well No. Worthington C 6H

**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.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 4707302523, 4705500319, 4708505151, 4708509721, 3416729577, 3412124037, 3405320968)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

*SDW
10/5/16*

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 Compliance Technician

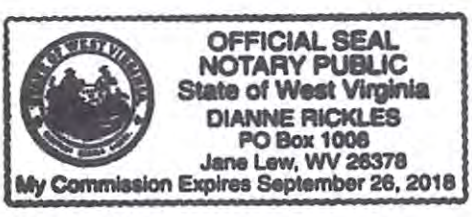
Subscribed and sworn before me this 27th day of September, 2016

Dianne Rickles Notary Public

My commission expires September 26, 2018

OCT 11 2016
Office of Oil and Gas
ENVIRONMENTAL PROTECTION

03/03/2017



XTO Energy Inc.

Proposed Revegetation Treatment: Acres Disturbed 7.8+/- Prevegetation pH _____

Lime 6 Tons/acre or to correct to pH _____

Fertilizer type 10-20-20

Fertilizer amount 1000 lbs/acre

Mulch 3 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
<u>Ryegrass</u>	<u>50</u>	<u>Timothy</u>	<u>50</u>

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: S P Dwan

Comments: Pre-seed mulch all disturbed areas as soon as reasonably possible per regulation. Upgrade EIS as needed Per WV DEP EIS manual -

Title: DOG Inspector

Date: 10/5/16

Field Reviewed? (X) Yes () No

RECEIVED
Office of Oil and Gas

OCT 11 2016

WV Department of
Environmental Protection

03/03/2017

Inventory of all materials on site for mixing of mud

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	

Handwritten signature

Wetland
Office of General Services

OCT 11 2016

Wetland
Environmental Division

03/03/2017

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

10/5/2013

OCT 11 2016

03/03/2017



Company: XTO Energy
 Site: Worthington
 Well: C 6H
 Project: Marion County, West Virginia (NAD 27)
 Rig: Nomac 79



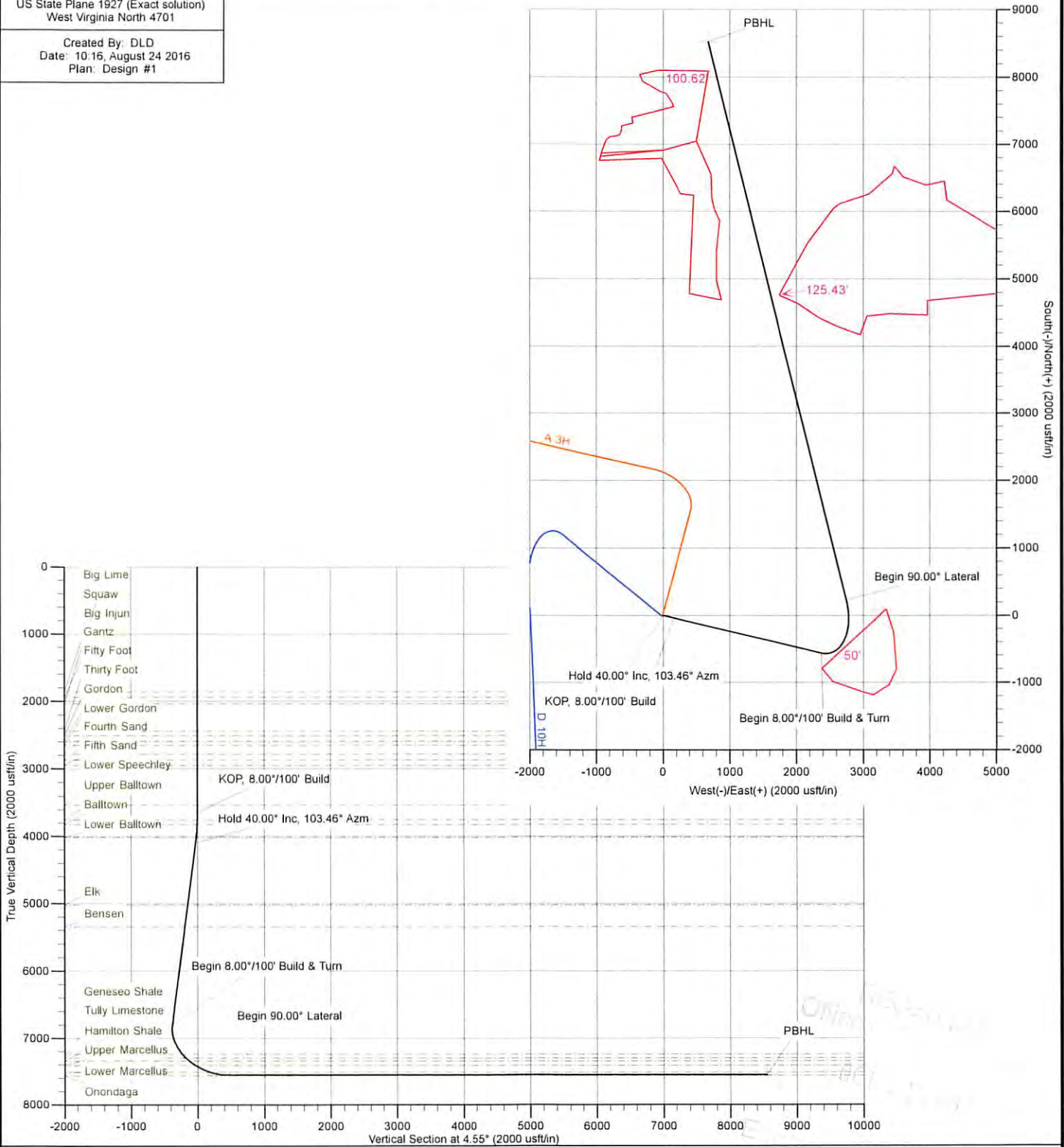
M T
 Azimuths to True North
 Magnetic North: -8.93°
 Magnetic Field
 Strength: 52111.9snT
 Dip Angle: 66.67°
 Date: 8/23/2016
 Model: BGGM2016

ANNOTATIONS

MD	Inc	Azi	TVD	+N-S	+E-W	Vsect	Departure	Annotation
3638.00	0.00	0.00	3638.00	0.00	0.00	0.00	0.00	KOP, 8.00°/100' Build
4138.05	40.00	103.46	4098.40	-39.02	162.98	-25.98	167.59	Hold 40.00° Inc, 103.46° Azm
7671.81	40.00	103.46	6805.26	-567.94	2372.20	-378.15	2439.24	Begin 8.00°/100' Build & Turn
9012.39	90.00	346.00	7550.00	229.90	2744.81	446.71	3484.38	Begin 90.00° Lateral
17557.39	90.00	346.00	7550.00	8521.08	677.59	8547.98	12029.38	PBHL

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

Created By: DLD
 Date: 10:16, August 24 2016
 Plan: Design #1



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 Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.

03/03/2017

WORTHINGTON C 6H

LATITUDE: 39°32'30"
SCALE: 1" = 3000'

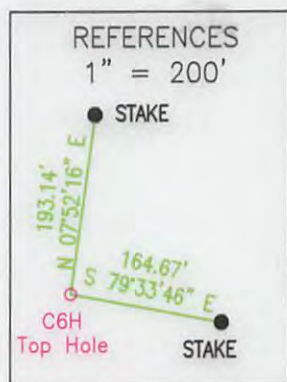
State Plane Coordinate
West Virginia North
Top Hole Location
NAD 27 Feet
N: 359392.650
E: 1768065.186
UTM Zone 17 (SPCS83) Meters
N: 4370699.207
E: 558346.378
NAD 27
N 39.4838320
W 080.3217395

Landing Point Location
NAD 27 Feet
N: 359682.630
E: 1770791.569
UTM Zone 17 (SPCS83) Meters
N: 4370801.402
E: 559175.548
NAD 27
N 39.4846962
W 080.3120898

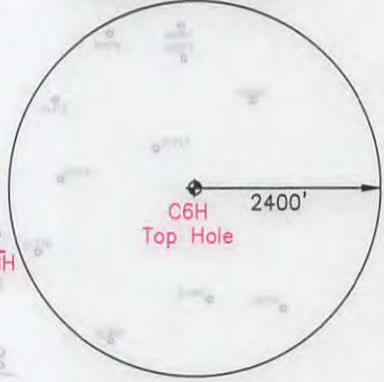
Bottom Hole Location
NAD 27 Feet
N: 367907.166
E: 1768820.687
UTM Zone 17 (SPCS83) Meters
N: 4373297.119
E: 558533.339
NAD 27
N 39.5072269
W 080.3193381

LINE LEGEND

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



SCALE: 1" = 2400'



NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
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 MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.



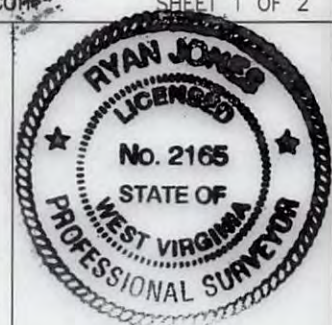
2402 PENNSYLVANIA 66 DELMONT, PA 15626
(724) 757 - 2417 www.jonesconsultant.com

SHEET 1 OF 2

FILE #: JC2016-37
DRAWING #: WORTHINGTON C 6H 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:
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: 09/26/2016
OPERATOR'S WELL #: WORTHINGTON C 6H
API WELL #: 47 049 02423
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: RADDISH, ET AL

ELEVATION: 1,194' (PROPOSED PAD FINISH GRADE)
QUADRANGLE: SHINNSTON 7.5'
ACREAGE: 104.40±
ACREAGE: 465±

03/03/2017

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: 7,550' (TVD), 17,557' (TMD)
WELL OPERATOR: XTO ENERGY INC. DESIGNATED AGENT: GARY BEALL
Address: 190 THORN HILL ROAD Address: P.O. BOX 1008
City: WARRENDALE State: PA Zip Code: 15086 City: JANE LEW State: WV Zip Code: 26378

WORTHINGTON C 6H

LINE LEGEND

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

LEASE	LESSOR	MINERAL ACREAGE
1)	JAMES RUDOLPH HEATER LIVING TRUST, ET AL	19.6598
2)	RICHARD BELL, ET AL	21.607
3)	SUSAN A. LILAVOIS, ET AL	21.613
4)	FERRARI VI OG, LLC, ET AL	2.035
5)	NATHAN BARNETT	2.181
6)	HERBERT B. BARNETT, ET AL	17.5
7)	FERRARI VI OG, LLC, ET AL	1.586
8)	H.T. ROBEY	39.36875
9)	H.T. ROBEY	61.83125
10)	DENNIS BOMBARDIERE, ET AL	30.3744
11)	A. ETHEL BROWN, ET AL	69.9
12)	FERRARI VI OG, LLC, ET AL	62.5
13)	WACO OIL AND GAS COMPANY, INC.	37.25
14)	MIKE ROSS, INC, ET AL	77.44

LINE	BEARING	DISTANCE
L55A	S 67°07'06" E	922.51'
L56	S 35°02'09" E	176.76'
L57	S 47°42'40" W	986.09'
L58	N 30°37'53" W	100.39'
L59	S 48°52'07" W	102.50'
L60	S 50°30'27" W	76.06'
L61	N 30°37'53" W	102.50'
L62	S 48°52'07" W	236.97'
L63	N 26°56'56" W	104.60'
L64	N 37°00'02" W	80.63'
L65	N 35°26'52" E	74.26'
L66	N 05°13'52" E	251.07'
L67	N 05°13'52" E	465.73'
L68	S 88°06'08" E	25.00'
L69	N 25°49'38" E	380.07'
L70	N 76°20'32" W	801.82'
L71	S 33°20'08" W	231.00'
L72	S 11°26'52" W	177.88'
L73	S 65°43'41" W	583.89'
L74	N 29°52'49" W	230.87'
L75	N 24°04'39" W	124.97'
L76	N 57°21'54" E	90.94'
L77	N 38°55'13" W	231.48'
L78	S 54°36'48" W	210.25'
L79	N 45°23'17" W	369.95'

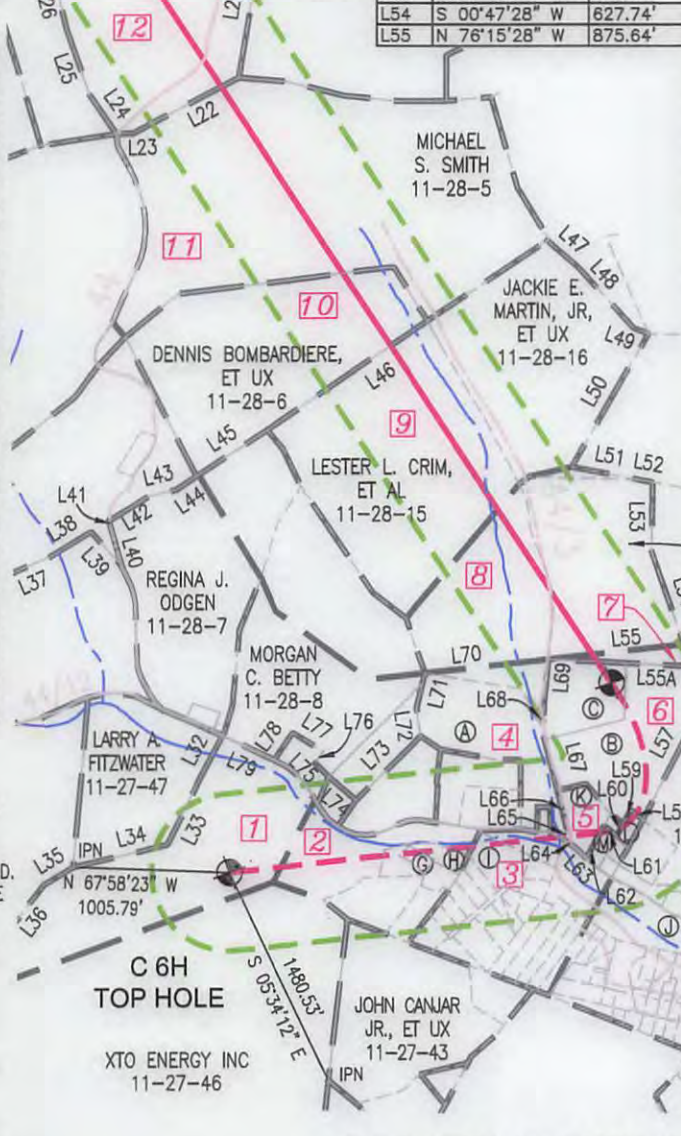
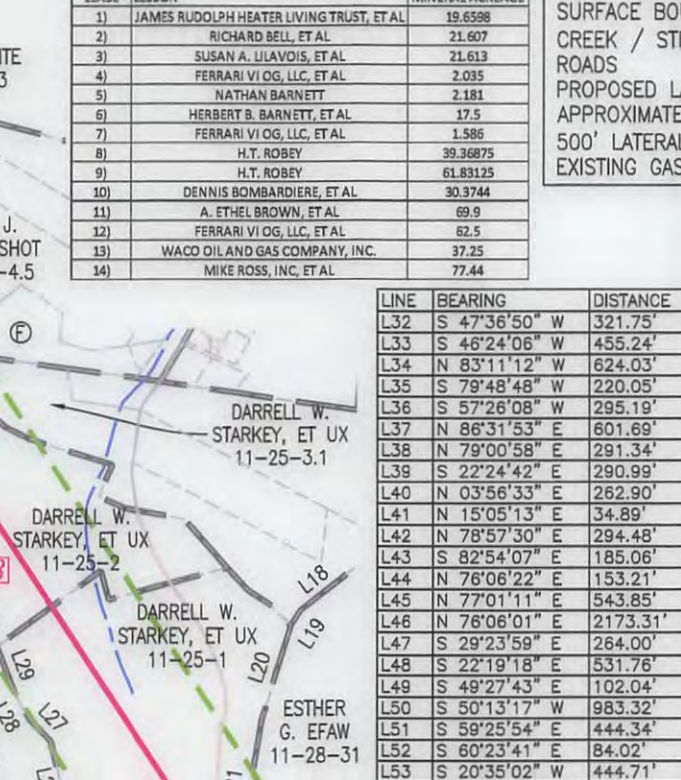
LINE	BEARING	DISTANCE
L32	S 47°36'50" W	321.75'
L33	S 46°24'06" W	455.24'
L34	N 83°11'12" W	624.03'
L35	S 79°48'48" W	220.05'
L36	S 57°26'08" W	295.19'
L37	N 86°31'53" E	601.69'
L38	N 79°00'58" E	291.34'
L39	S 22°24'42" E	290.99'
L40	N 03°56'33" E	262.90'
L41	N 15°05'13" E	34.89'
L42	N 78°57'30" E	294.48'
L43	S 82°54'07" E	185.06'
L44	N 76°06'22" E	153.21'
L45	N 77°01'11" E	543.85'
L46	N 76°06'01" E	2173.31'
L47	S 29°23'59" E	264.00'
L48	S 22°19'18" E	531.76'
L49	S 49°27'43" E	102.04'
L50	S 50°13'17" W	983.32'
L51	S 59°25'54" E	444.34'
L52	S 60°23'41" E	84.02'
L53	S 20°35'02" W	444.71'
L54	S 00°47'28" W	627.74'
L55	N 76°15'28" W	875.64'

LETTER	SURFACE OWNER	TAX PARCEL
A	ERNEST W. SMITH, ET AL	11-28-14
B	FEDERAL HOME LOAN MORTGAGE CORPORATION	11-28-18
C	FEDERAL HOME LOAN MORTGAGE CORPORATION	11-28-17
D	WACO OIL & GAS CO INC	12-69-3.2
E	ERNEST E. GLOVER, ET UX	12-69-3
F	ROBERT L. LEASURE, ET UX	11-25-4.2
G	DONALD L. EDWARDS	11-27-40
H	DONALD L. EDWARDS	11-27-39
I	STANISLAW R. BUBNOWSKI	11-56-3
J	ROCHESTER & PITTSBURGH COAL COMPANY	11-29-3
K	FOUR STATES TABERNACLE	11-28-19
L	RONDELL M. RADDISH	11-28-18.1
M	FEDERAL HOME LOAN MORTGAGE CORPORATION	11-28-20

LINE	BEARING	DISTANCE
L1	N 89°00'48" W	761.88'
L2	S 78°17'31" W	509.29'
L3	S 17°12'29" E	173.25'
L4	S 85°53'18" W	616.35'
L5	N 39°34'51" E	81.76'
L6	N 35°34'27" E	149.76'
L7	N 32°28'03" E	104.67'
L8	S 58°09'18" E	96.50'
L9	S 81°59'41" E	278.45'
L10	S 26°25'42" W	253.20'
L11	S 27°02'42" W	251.10'
L12	S 26°36'13" W	394.34'
L13	S 60°54'07" E	1022.22'
L14	N 14°54'51" E	517.07'
L15	N 09°58'08" E	501.85'
L16	N 24°18'12" E	435.47'
L17	N 28°01'59" E	891.52'
L18	S 72°18'47" W	465.76'
L19	S 52°55'21" W	115.56'
L20	S 37°32'45" W	627.00'
L21	S 29°32'45" W	891.00'
L22	S 82°13'27" W	762.19'
L23	N 72°02'57" W	115.50'
L24	N 14°28'47" W	297.00'
L25	N 00°31'13" E	445.50'
L26	N 06°31'13" E	445.50'
L27	N 23°58'47" W	198.00'
L28	N 10°58'47" W	165.00'
L29	N 01°36'29" W	343.25'
L30	N 22°58'14" W	544.50'
L31	N 10°08'50" E	1058.77'

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 WY 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 MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.



State Plane Coordinate West Virginia North Top Hole Location	
NAD 27 Feet	N: 359392.650 E: 1768065.186
UTM Zone 17 (SPCS83) Meters	
N: 4370699.207	E: 558346.378
NAD 27	
N 39.4838320	W 080.3217395
Landing Point Location	
NAD 27 Feet	N: 359682.630 E: 1770791.569
UTM Zone 17 (SPCS83) Meters	
N: 4370801.402	E: 559175.548
NAD 27	
N 39.4846962	W 080.3120898
Bottom Hole Location	
NAD 27 Feet	N: 367907.166 E: 1768820.687
UTM Zone 17 (SPCS83) Meters	
N: 4373297.119	E: 558533.339
NAD 27	
N 39.5072269	W 080.3193381

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

WORTHINGTON C 6H

Drawn By:	Date:	LINCOLN DISTRICT
JRV	09/26/16	MARION COUNTY, WEST VIRGINIA
Scale:	1" = 1200'	Sheet:
AFE #	1304380	File No.:
		SHEET 2 OF 2
		JC2016-37



190 THORN HILL ROAD
WARRENDALE, PA 15086

0' 1200'



09/03/2017

WW-6A1
(5/13)

Operator's Well No. Worthington C 6H

**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: *[Signature]*
 Its: Regulatory Compliance Technician

WORTHINGTON UNIT C 6H

Lease Ref.	Lessor	Lessee	Deed Book	Page	Royalty
1	The James Rudolph Heater Revocable Living Trust	XTO Energy	1194	379	Min. 1/8
1	Sara M. Lee	XTO Energy	1193	244	Min. 1/8
1	Carolyn R. and Richard K. Grover	XTO Energy	1136 1173 1049	820 99 547	Min. 1/8
1	Katherine F. Parnell	XTO Energy	1193	240	Min. 1/8
1	Sarah Jane Basler	XTO Energy	1193	221	Min. 1/8
1	Marion Jo Percy	XTO Energy	1193	242	Min. 1/8
1	Adonis Keith Raddish	XTO Energy	1193	682	Min. 1/8
1	Devon Thomas Raddish	XTO Energy	1193	675	Min. 1/8
1	Rondell Mark Raddish	XTO Energy	1193	975	Min. 1/8
1	Willa Grim	XTO Energy	1185	906	Min. 1/8
1	Michael D. Ice	XTO Energy	1185	898	Min. 1/8
1	Eugene S. Lieving II	XTO Energy	1185	914	Min. 1/8
1	Linda Whitehouse	XTO Energy	1186	857	Min. 1/8
1	David Barton Ayers	XTO Energy	1185	890	Min. 1/8
1	Valerie Jean Brown	XTO Energy	1185	436	Min. 1/8
1	Susan Ayers Lilavois, aka Susan Ayers Lilivois	XTO Energy	1193	689	Min. 1/8
1	Richard Bell	XTO Energy	1137	896	Min. 1/8

1	Jeff Bell	XTO Energy	1162	386	Min. 1/8
1	Linda Renee Fox Rowe	XTO Energy	1138	1	Min. 1/8
1	WV Minerals	XTO Energy	1054 1164	59 61	Min. 1/8
1	Jeffery Taylor, Special Commissioner on behalf of The Unknown Heirs of Letty L. Gerou, Richard Lantz Hupp, Francis Daye Hupp, Nina Helen Davis, Evelyn Davis, Densel R. Davis, Linda Vavrek, James Roberts, JoAnn Joy Davis Sanders Zagars, Nesbeth M. Robinson Smith, Norman Robinson, Wilda V. Robinson Hungate Balarinic, Sandra Lee Jennings, Shelia Ann Jordan and Rickey Jordan, Paul Clark Hawkins, and their Unknown Heirs and Beneficiaries, and the Unknown Heirs of Albana Barrett, Francis Schneider, Blanche E. Hawkins Matteis, Charlotte Marie Hawkins Doran, Charles C. Morgan, Jr., Charles Everett Hawkins, Catherine Hawkins Wilt, Virginia Hawkins Chepiga (Halbrick), Donald D. Nutt, Sr.	XTO Energy	1175	403	Min. 1/8
1	Jerome Krakowski	XTO Energy	1187	241	Min. 1/8
1	Valerie Krakowski	XTO Energy	1187	247	Min. 1/8
1	Victoria Krakowski	XTO Energy	1193	204	Min. 1/8
1	Ronald P. Roberts	XTO Energy	1185	804	Min. 1/8
1	Nancy Jean English aka Nancy Jean Vincent	XTO Energy	1190	140	Min. 1/8
1	Denise Neiderhiser	XTO Energy	1179	587	Min. 1/8
1	Edward R. Ferrick	XTO Energy	1155	237	Min. 1/8
1	Anna M Peagler	XTO Energy	1179	670	Min. 1/8

1	Thomas W. Visconti	XTO Energy	1178	170	Min. 1/8
1	Ernest Visconti	XTO Energy	1179	591	Min. 1/8
1	Mary C Gerau	XTO Energy	1139	526	Min. 1/8
1	Mary E. Talkington	XTO Energy	1190	152	Min. 1/8
1	James Howard Hupp	XTO Energy	1190	144	Min. 1/8
1	Michael W Hupp	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	1026	306	Min. 1/8
1	Virginia Parsons	XTO Energy	1191	523	Min. 1/8
1	Sally Hyre	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	1026	306	Min. 1/8
1	Mary Kertcher	XTO Energy	1159	463	Min. 1/8
1	Beverly Cummings	XTO Energy	1191	539	Min. 1/8
1	Herbert Clair Hupp	XTO Energy	1137	900	Min. 1/8
1	Eleanor Davis	XTO Energy	1183	841	Min. 1/8
1	Patricia V Sandy	XTO Energy	1137	916	Min. 1/8
1	Susie Shively aka Susie Hupp	XTO Energy	1190	132	Min. 1/8
1	Neil Jennings	XTO Energy	1139	505	Min. 1/8
1	Deborah Marie Gerau Smith	XTO Energy	1160	233	Min. 1/8
1	Barbara J Clark Gerau	XTO Energy	1157	856	Min. 1/8

1	Pressley Wade Gerau	XTO Energy	1159	177	Min. 1/8
1	Charles H Hupp	XTO Energy	1190	148	Min. 1/8
1	Lillian M Platt	XTO Energy	1138	21	Min. 1/8
1	Gail Paulaitis	XTO Energy	1138	9	Min. 1/8
1	Edwin C Morgan	XTO Energy	1139	518	Min. 1/8
1	Diana J Hepler	XTO Energy	1139	535	Min. 1/8
1	Kristina Gerau	XTO Energy	1154	904	Min. 1/8
1	Jonathan Paul Gerau	XTO Energy	1155	245	Min. 1/8
1	LBJ Energy Associates, LLC	XTO Energy	1193	224	Min. 1/8

2	Richard Bell and Yuncha Bell, his wife	XTO Energy Inc.	1150	277	Min. 1/8
2	Linda Renee Fox-Rowe, a married woman dealing in her sole and separate property	XTO Energy Inc.	1150	523	Min. 1/8
2	Jeff Bell, a single man	XTO Energy Inc.	1164	229	Min. 1/8
2	Jeffery Taylor, as Special Commissioner on behalf of Sheila Ann Jordan and Ricky Jordan, Paul Clark Hawkins, and their unknown heirs and beneficiaries.	XTO Energy Inc.	1177	423	Min. 1/8
2	Willa J. Grim, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	906	Min. 1/8
2	Michael D. Ice and Kathianne G. Ice, his wife	XTO Energy Inc.	1185	898	Min. 1/8
2	Eugene S. Lieving, II, and Janet L. Lieving, his wife	XTO Energy Inc.	1185	914	Min. 1/8
2	Linda Whitehouse and Robert D. Whitehouse, her husband	XTO Energy Inc.	1186	857	Min. 1/8
2	David Barton Ayers and Judith M. Ayers, his wife	XTO Energy Inc.	1185	890	Min. 1/8

2	Valerie Jean Brown, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	436	Min. 1/8
2	Adonis Keith Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	682	Min. 1/8
2	Devon Thomas Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	675	Min. 1/8
2	Rondell Mark Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	668	Min. 1/8
2	James E. Hawkins	XTO Energy Inc.	1054 1161 1164	47 836 59	Min. 1/8
2	I. L. Morris	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO at DB 1091-862	1091	862	Min. 1/8
2	Mike Ross, Inc.	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO at DB 1091-862	1091	862	Min. 1/8
2	Ferrari VI OG, LLC, a West Virginia limited liability company	XTO Energy Inc. 100 feet above the top of the Rhinestreet formation to 100 feet below the base of the Marcellus Shale formation	1193	230	Min. 1/8
2	Bradley W. Thomas	XTO Energy Inc. 100 feet above the top of the Rhinestreet formation to 100 feet below the base of the Marcellus Shale formation	1193	212	Min. 1/8
2	Virginia Exploration Inc.	XTO Energy Inc.	1194	376	Min. 1/8

2	Jacob G. Ford	XTO Energy Inc. 100 feet above the top of the Rhinestreet formation to 100 feet below the base of the Marcellus Shale formation	1193	215	Min. 1/8
2	Robert Horner	XTO Energy Inc. 100 feet above the top of the Rhinestreet formation to 100 feet below the base of the Marcellus Shale formation	1193	218	Min. 1/8
2	Susan Ayers Lilavois, a/k/a Susan Ayers Lilivois, a widow	XTO Energy Inc.	1193	689	Min. 1/8
3	Susan Ayers Lilavois, a/k/a Susan Ayers Lilivois, a widow	XTO Energy Inc.	1193	689	Min. 1/8
3	Willa J. Grim, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	906	Min. 1/8
3	Michael D. Ice and Kathianne G. Ice, his wife	XTO Energy Inc.	1185	898	Min. 1/8
3	Eugene S. Lieving, II, and Janet L. Lieving, his wife	XTO Energy Inc.	1185	914	Min. 1/8
3	Linda Whitehouse and Robert D. Whitehouse, her husband	XTO Energy Inc.	1186	857	Min. 1/8
3	David Barton Ayers and Judith M. Ayers, his wife	XTO Energy Inc.	1185	890	Min. 1/8
3	Valerie Jean Brown, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	436	Min. 1/8
3	Rondell Mark Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	668	Min. 1/8
3	I. L. Morris	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
3	Mike Ross, Inc.	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
3	James E. Hawkins and Carolyn Hawkins (Wife)	XTO Energy Inc.	1054 1161 1164	43 839 58	Min. 1/8
3	Ferrari VI OG, LLC, a West Virginia Limited Liability Company	XTO Energy Inc.	1157	186	Min. 1/8

3	Robert F. Horner, a married man dealing in his sole and separate property	XTO Energy Inc.	1157	183	Min. 1/8
3	Bradley W. Thomas, a married man dealing in his sole and separate property	XTO Energy Inc.	1157	194	Min. 1/8
3	Jacob Ford, a married man dealing in his sole and separate property	XTO Energy Inc.	1157	200	Min. 1/8
3	Richard Bell and Yuncha Bell, his wife	XTO Energy Inc.	1163	884	Min. 1/8
3	Linda Renee Fox-Rowe, a married woman dealing in her sole and separate property	XTO Energy Inc.	1163	904	Min. 1/8
3	Jeff Bell, a single man	XTO Energy Inc.	1162	561	Min. 1/8
3	Sheila Ann Jordan and Ricky Jordan, Paul Clark Hawkins, and their unknown heirs and beneficiaries.	XTO Energy Inc.	1193	661	Min. 1/8
3	Adonis Keith Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	682	Min. 1/8
3	Devon Thomas Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	675	Min. 1/8
4	Ferrari VI OG, LLC, a West Virginia Limited Liability Company	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1156	536	Min. 1/8
4	Robert F. Horner, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1156	534	Min. 1/8

4	Bradley W. Thomas, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1156	530	Min. 1/8
4	Jacob Ford, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1156	532	Min. 1/8
4	Richard Bell and Yuncha Bell, his wife	XTO Energy Inc.	1163	898	Min. 1/8
4	Linda Renee Fox-Rowe, a married woman dealing in her sole and separate property	XTO Energy Inc.	1163	918	Min. 1/8
4	Jeff Bell, a single man	XTO Energy Inc.	1162	380	Min. 1/8
4	Susan Ayers Lilavois, a/k/a Susan Ayers Lilivois, a widow	XTO Energy Inc.	1193	689	Min. 1/8
4	Willa J. Grim, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	906	Min. 1/8
4	Michael D. Ice and Kathianne G. Ice, his wife	XTO Energy Inc.	1185	898	Min. 1/8
4	Eugene S. Lieving, II, and Janet L. Lieving, his wife	XTO Energy Inc.	1185	914	Min. 1/8
4	Linda Whitehouse and Robert D. Whitehouse, her husband	XTO Energy Inc.	1186	857	Min. 1/8
4	David Barton Ayers and Judith M. Ayers, his wife	XTO Energy Inc.	11.85	890	Min. 1/8
4	Valerie Jean Brown, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	436	Min. 1/8
4	Adonis Keith Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	682	Min. 1/8
4	Devon Thomas Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	675	Min. 1/8
4	Rondell Mark Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	668	Min. 1/8

4	Jeffrey Taylor, as Special Commissioner on behalf of Shelia Ann Jordan and Ricky Jordan, and Paul Clark Hawkins, and their unknown heirs and beneficiaries	XTO Energy Inc.	1193	661	Min. 1/8
4	James E. Hawkins and Carolyn Hawkins (Wife)	XTO Energy Inc.	1054 1161 1164	43 839 58	Min. 1/8
4	I. L. Morris	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
4	Mike Ross, Inc.	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
5	Nathan Barnett, a single man	XTO Energy Inc.	1192	629	Min. 1/8
6	Herbert B. Barnett and Zenna Barnett, wife	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	973	1112	Min. 1/8
7	Ferrari VI OG, LLC, a West Virginia Limited Liability Company	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1157	180	Min. 1/8
7	Robert F. Horner, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1157	174	Min. 1/8

7	Bradley W. Thomas, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1157	176	Min. 1/8
7	Jacob Ford, a married man dealing in his sole and separate property	XTO Energy Inc. OGL only provides for those depths below the stratigraphic equivalent of the top of the Burkett/Geneseo Formation which occurs at a true vertical depth of 7,414' in well number 4704902070.	1157	178	Min. 1/8
7	Richard Bell and Yuncha Bell, his wife	XTO Energy Inc.	1163	898	Min. 1/8
7	Linda Renee Fox-Rowe, a married woman dealing in her sole and separate property	XTO Energy Inc.	1163	918	Min. 1/8
7	Jeff Bell, a single man	XTO Energy Inc.	1162	380	Min. 1/8
7	Susan Ayers Lilavois, a/k/a Susan Ayers Lilivois, a widow	XTO Energy Inc.	1193	689	Min. 1/8
7	Willa J. Grim, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	906	Min. 1/8
7	Michael D. Ice and Kathianne G. Ice, his wife	XTO Energy Inc.	1185	898	Min. 1/8
7	Eugene S. Lieving, II, and Janet L. Lieving, his wife	XTO Energy Inc.	1185	914	Min. 1/8
7	Linda Whitehouse and Robert D. Whitehouse, her husband	XTO Energy Inc.	1186	857	Min. 1/8
7	David Barton Ayers and Judith M. Ayers, his wife	XTO Energy Inc.	1185	890	Min. 1/8
7	Valerie Jean Brown, a married woman dealing in her sole and separate property	XTO Energy Inc.	1185	436	Min. 1/8
7	Adonis Keith Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	682	Min. 1/8
7	Devon Thomas Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	675	Min. 1/8
7	Rondell Mark Raddish, a married man dealing in his sole and separate property	XTO Energy Inc.	1193	668	Min. 1/8
7	Jeffrey Taylor, as Special Commissioner on behalf of Shelia Ann Jordan and Ricky Jordan, and Paul Clark Hawkins, and their unknown heirs and beneficiaries	XTO Energy Inc.	1193	661	Min. 1/8

7	James E. Hawkins and Carolyn Hawkins (Wife)	XTO Energy Inc.	1054 1161 1164	43 839 58	Min. 1/8
7	I. L. Morris	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
7	Mike Ross, Inc.	I. L. Morris and Mike Ross Inc. assign all depths below the stratigraphic equivalent of the Geneseo Burkett formation, which occurs at a true vertical depth of 7,414, to XTO Energy Inc. at DB 1095-93.	1095	93	Min. 1/8
8	H.T. Robey	Assignment from EQT dated November 19, 2015 at AB 49-813, conveys to XTO all interest 300' above the Top of the Tully Formation which, occurs at a true vertical depth of 7,289' (Well log 047-049-01993), down to 100' BELOW the TOP Onondaga Formation, which occurs at a true vertical depth of 7550' (Well log 047-049-01993)	111	358	Min. 1/8
9	H.T. Robey	Assignment from EQT dated November 19, 2015 at AB 49-813, conveys to XTO all interest 300' above the Top of the Tully Formation which, occurs at a true vertical depth of 7,289' (Well log 047-049-01993), down to 100' BELOW the TOP Onondaga Formation, which occurs at a true vertical depth of 7550' (Well log 047-049-01993)	111	358	Min. 1/8
10	Dennis Bombardiere and Pamela Bombardiere (Wife)	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	977	561	Min. 1/8
10	Louis A. Ferrari and Patricia V. Ferrari (Wife)	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	977	285	Min. 1/8

11	A. Ethel Brown (Widow)	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	977	225	Min. 1/8
11	Louis A. Ferrari and Patricia V. Ferrari (Wife)	Exploration Partners, LLC Leasehold assigned surface to the bottom of the uppermost member of the Onondaga Group to Linn Energy at 32-151 and to XTO Energy at 33-200.	977	285	Min. 1/8
13	Waco Oil and Gas Company Inc.	XTO Energy Inc. Waco assigns below the Geneseo to XTO at 46-804.	997	588	Min. 1/8
12	Ferrari VI OG, LLC, a West Virginia limited liability company	XTO Energy Inc. 6,000.00 feet below the surface to 100.00 feet below the top of the Onondaga Formation	1187	844	Min. 1/8
12	Virginia Exploration, Inc., a Virginia corporation	XTO Energy Inc. 6,000.00 feet below the surface to 100.00 feet below the top of the Onondaga Formation	1187	842	Min. 1/8
12	Jacob Ford, a married man dealing in his sole and separate property	XTO Energy Inc. 6,000.00 feet below the surface to 100.00 feet below the top of the Onondaga Formation	1187	840	Min. 1/8
12	Robert Horner, a married man dealing in his sole and separate property	XTO Energy Inc. 6,000.00 feet below the surface to 100.00 feet below the top of the Onondaga Formation	1187	838	Min. 1/8
12	Bradley W. Thomas, a married man dealing in his sole and separate property	XTO Energy Inc. 6,000.00 feet below the surface to 100.00 feet below the top of the Onondaga Formation	1187	836	Min. 1/8
14	Mike Ross, Inc.	XTO Energy Inc. Mike Ross, Inc. assigns all RTI below the top of the Geneseo Burkett Formation to XTO at AB 42-37. By DB 1149-288, Mike Ross, Inc. conveys XTO All RTI in all the Oil and Gas Estate below the top of the Geneseo Burkett Formation	999	915	Min. 1/8

14	Waco Oil and Gas Company Inc.	<p>XTO Energy Inc. Waco assigns all RTI below the top of the Geneseo Burkett Formation to XTO at AB 42-37. By DBy DB 1149-288, Waco conveys XTO All RTI in all the Oil and Gas Estate below the top of the Geneseo Burkett Formation</p>	997	732	Min. 1/8
14	I.L.Morris and Betty Sue Morris	<p>XTO Energy Inc. I.L. Morris assigns all RTI below the top of the Geneseo Burkett Formation to XTO at AB 42-37. By DB 1149-288, I.L. Morris conveys XTO All RTI in all the Oil and Gas Estate below the top of the Geneseo Burkett Formation</p>	997	796	Min. 1/8



Blake Hueske
XTO Energy Inc.
810 Houston Street
Fort Worth, TX 76102-6298
(817) 885-6609
(817) 885-1938 Fax
Blake_Hueske@xtoenergy.com

July 28, 2016

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

Re: Rights to Drill Under Road – Worthington Unit C 6H

To Whom It May Concern:

Based on extended research by XTO Energy's Land Department, and our contractors and third party title attorneys, we have all necessary mineral rights under Marion CR 44 x 2 and CR 44 / 3 x 2 in the location of our planned well bore for the Worthington Unit C 6H.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Hueske', written over a faint, illegible stamp.

Blake Hueske
Senior Staff Landman
XTO Energy, Inc.

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

Date of Notice Certification: 10/6/16

API No. 47- _____ - _____
Operator's Well No. Worthington C 6H
Well Pad Name: Worthington

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>558346.378</u>
County:	<u>Marion</u>		Northing:	<u>4370699.207</u>
District:	<u>Lincoln</u>	Public Road Access:	<u>County Route 44 (Gray's Run Rd.)</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: 40px;"><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>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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Required Attachments:

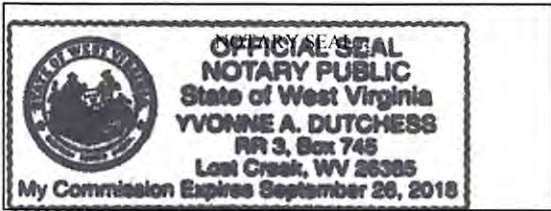
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

03/03/2017

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:	<u>XTO Energy Inc.</u>	Address:	<u>PO Box 1008</u>
By:	<u><i>Tim Sands</i></u>		<u>Jane Lew, WV 26378</u>
Its:	<u>Regulatory Compliance Technician</u>	Facsimile:	<u>304-884-6809</u>
Telephone:	<u>304-884-6000</u>	Email:	<u></u>



Subscribed and sworn before me this 6th day of October 2016
Yvonne A. Dutchess Notary Public
 My Commission Expires September 26, 2018

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.

WW-6A
(9-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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: 10/6/16 **Date Permit Application Filed:** 10/6/16

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: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Consol Mining Company LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OPERATOR
Name: Consolidation Coal Co. (c/o Murray Energy)
Address: 46226 National Road
St. Clairsville, OH 43950

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

03/03/2017

**Worthington C 6H
Water Well Owners**

Larry Fitzwater
11 Country Lane
Worthington, WV 26591

Shelvy J. Cunningham
2461 Grays Run Road
Worthington, WV 26591

Randall Morgan, et ux
2529 Grays Run Road
Worthington, WV 26591



OCT 24 2015

03/03/2017

WW-6A
(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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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API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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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API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

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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03/03/2017

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(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

Notice is hereby given by:

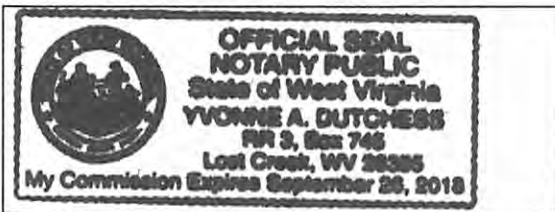
Well Operator: XTO Energy, Inc.
Telephone: 304-884-6000
Email: _____

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

Tim Sand - 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 6th day of October 2016
Yvonne A. Dutchess Notary Public
My Commission Expires September 26, 2018

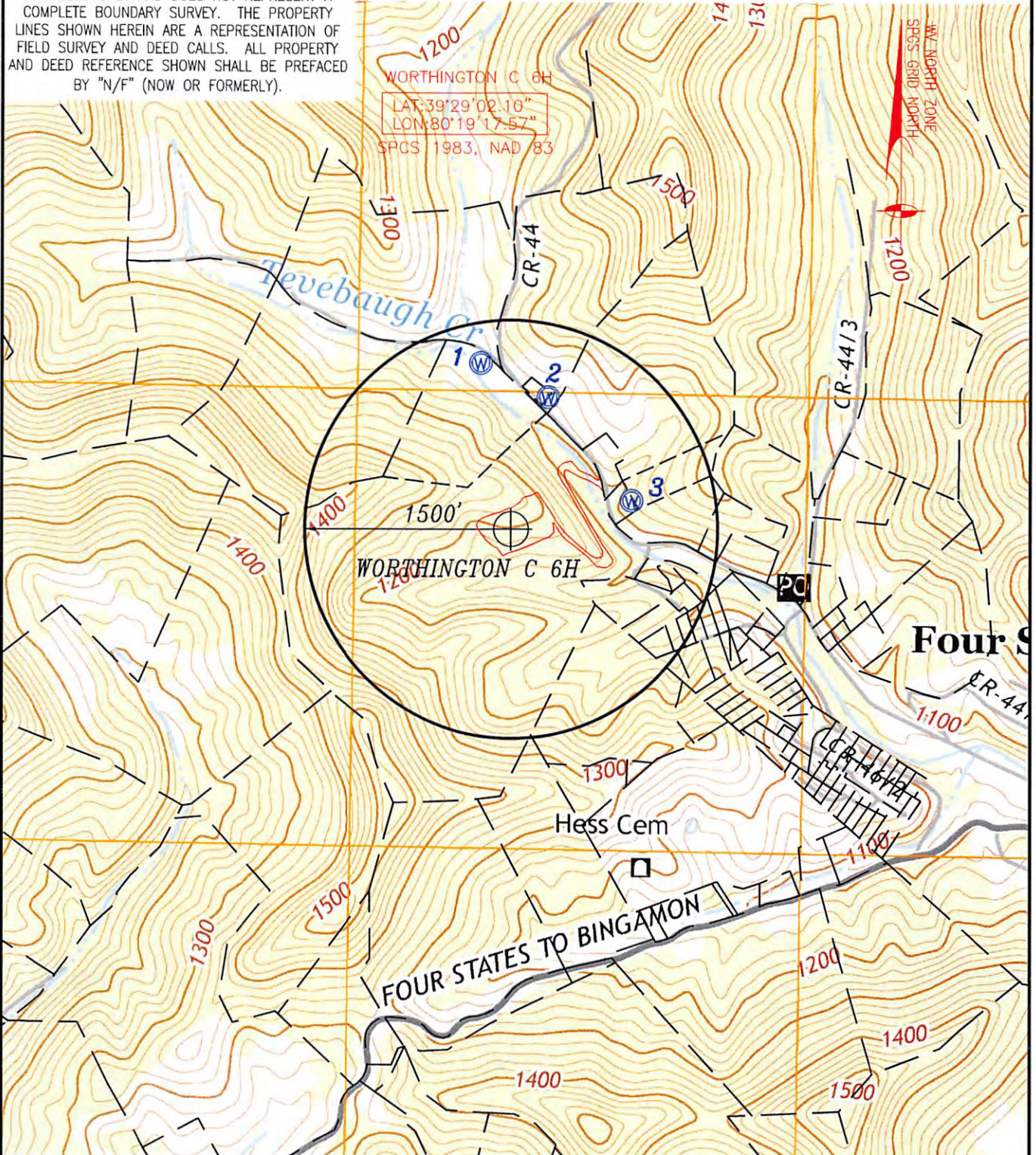
03/03/2017

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




POINT	NAME	ADDRESS	CITY	STATE	ZIP CODE	DISTANCE	BEARING	PARCEL I.D.
1	Larry A. Fitzwater	11 Country Lane	Worthington	WV	26591	1213'	N 10°30'30" W	Tax Map 11-27, Parcel 47
2	Shelvy J. Cunningham	2461 Grays Run Road	Worthington	WV	26591	987'	N 15°42'48" E	Tax Map 11-28, Parcel 7.1
3	Randall L. Morgan, et ux	2529 Grays Run Road	Worthington	WV	26591	900'	N 76°34'53" E	Tax Map 11-28, Parcel 9

WORTHINGTON C 6H UNIT WATER OVERALL

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA | 8/22/2016 | JC2016-37 | 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

03/03/2017

**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: 5/26/16 **Date of Planned Entry:** 6/9/16

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: _____
Address: _____
Name: _____
Address: _____

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>39.483954, -80.321108</u>
County: <u>Marion</u>	Public Road Access: <u>Marion County Route 44</u>
District: <u>Lincoln</u>	Watershed: <u>Tevebaugh Creek</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: _____

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.

OCT 15 2016

03/03/2017

Surface Owner

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

Coal Ownership

Consolidation Coal Company
c/o Murray Energy
46226 National Rd.
Saint Clairsville, OH 43950

CONSOL Mining Company LLC
1000 Consol Energy Dr.
Canonsburg, PA 15317

Mineral Owners

Unknown or Missing Heirs of Wilda V. Robinson Hungate Balarinic /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Edward R. Ferrick /
24799 Lake Shore Blvd., Apt. 108A
Euclid, OH 44123

Unknown or Missing Heirs of Norman Robinson /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of James Roberts /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Nesbeth M. Robinson Smith /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Ronald Roberts /
3013 Futuna Lane
Naples, FL 34119

Neil Jennings /
2709 Appaloosa Trail
Pinole, CA 94565

Jerome M. Krakowski /
3623 W. 155th Street
Cleveland, OH 44111

Unknown or Missing Heirs of Sandra Lee Jennings /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Victoria Krakowski /
3421 West 90th Street
Cleveland, OH 44102

LBJ Energy Associates, LLC /
P. O. Box 3265
Staunton, VA 24402

Valerie Krakowski /
5488 Dalewood Ave.
Maple Heights, OH 44137

Adonis Keith Raddish /
566 Saint Francis Way
Bridgeport, WV 26330-7637

Unknown or Missing Heirs of Nina Helen Davis /
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Anna M. Peagler
102 Glacier Drive
Latrobe, PA 15650

Thomas W. Visconti
617 Hunters Lane
Bradenville, PA 15620

Ernest E. Visconti
2621 Samuel Street
Pinole, CA 94564

Deborah Marie Gerau Smith

5572 Vintage View Blvd.
Lakeland, FL 33812

Pressley Wade Gerau
9377 SVL Box
Victorville, Ca 92395

Mary C. Gerau
203 Michael Dr.
Fairmont, WV 26554

Barbara J. Gerau
542 Washington Street
Seward, PA 15954

Stacy Dawn Gerau Bleigh
21 Lemen Court
Hedgesville, WV 15427

Jeffrey Richard Gerau
18063 Chase Street
Bowling Green, VA 22427

**Patricia V. Sandy, fka Patricia V. Hupp, fka
Patricia V. Ward**
1118 Fourth St.
Fairmont, WV 26554

Herbert Clair Hupp

1118 Fourth St.
Fairmont, WV 26554

Valerie Jean Brown
77 Levin Rd.
Rockland, MA 02370

Susan Ayers Lilavois
8318 Uxbridge Ct.
Springfield, VA 22151

**Unknown or Missing Heirs of Charles Everett
Hawkins**
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

**Unknown or Missing Heirs of Catherine Hawkins
Wilt**
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Albana Barrett
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Francis Schneider
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

**Unknown or Missing Heirs of Charlotte Marie
Hawkins Doran**
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Gail Paulaitis
5713 High Ridge Road
Millville, NJ 08332

Lillian M. Hawkins Platt
P. O. Box 268
Delmont, NJ 08314

Unknown or Missing Heirs of Donald D. Nutt, Sr.
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

03/03/2017

Devon Thomas Raddish
13049 Barrow St.
Spring Hill, FL 34609

Rondell Mark Raddish
c/o Devon Raddish
13049 Barrow St.
Spring Hill, FL 34609

Richard Bell
222 Briarcliff Ave.
Oak Ridge, TN 37830

Linda Renee Fox-Rowe
35 N. 3rd Street
Ashland, OR 97520

Jeff Bell
23 St. Andrews Drive
Washington, NJ 07882

WV Minerals, Inc.
P. O. Box 5044
Fairmont, WV 26555-5044

Unknown or Missing Heirs of Sheila Ann Hawkins Jordan
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Paul Clark Hawkins
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Letty L. Gerau
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Nancy Jean English
3759 Beulah Rd.
Columbus, OH 43224

Denise E. Neiderhiser
4103 Slope Hill Road
Mt Pleasant, PA 15000

Unknown or Missing Heirs of Densel R. Davis
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Joann Joy Davis Sanders Zagars
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Cora Horvat
c/o XTO K. E. Andrews
1900 Dalrock Rd.
Rowlett, TX 75088

Unknown or Missing Heirs of Evelyn Davis
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Eleanor Davis
2801 Belmont Drive
Brooklyn Heights, OH 44131

Willa J. Grim
P. O. Box 4041
Winchester, VA 22601

Michael D. Ice
550 Ocean Rd.
Narragansett, RI 02882

Peter Llewellyn Ice
2246 Roosevelt Blvd.
Winchester, VA 22601

Eugene S. Lieving, II
199 Broadview Ave.
Fairmont, WV 26554

Linda Whitehouse
1648 Ainsdale Dr.
Roseville, CA 95747

David Barton Ayers
105 Teal Dr.
Currituck, NC 17929

03/03/2017

Susie Shively
c/o Sue Hupp
108 Sabraton Ave.
Fairmont, WV 26554

Unknown or Missing Heirs of Francis Daye Hupp
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Mary Talkington
501 Birch View Dr.
Fairmont, WV 26554

James Howard Hupp
501 Birch View Dr.
Fairmont, WV 26554

Unknown or Missing Heirs of Richard Lantz Hupp
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Charles H. Hupp
501 Birch View Dr.
Fairmont, WV 26554

Michael William Hupp
5208 Falls of Neuse Rd. #C
Raleigh, NC 27609

Virginia Parsons
15167 Iona Lakes Dr.
Fort Myers, FL 33908

Sally C. Hyre
3507 Ingram Drive
Raleigh, NC 27604

Beverly Cummings
P. O. Box 608
Rivesville, WV 26588

Unknown or Missing Heirs of Charles C. Morgan, Jr.
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Diana J. Hepler
P. O. Box 228
Newfield, NJ 08344

Edwin C. Morgan
4 Talmar Lane
Franklinville, NJ 08322

Unknown or Missing Heirs of Blanche E. Hawkins Matteis
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Unknown or Missing Heirs of Virginia Hawkins Chepiga (Halbrick)
C/O General Receiver for Marion Co.
210 Phillips Avenue
Riversville, WV 26588-9716

Katharine H. Parnell
5150 Marshall Rd.
Dayton, OH 45429

Sarah Jane Basler
105 Cliffwood Ct.
Greer, SC 29650

Marion Jo Percy
6128 Brookhill Ct.
Orlando, FL 32810

Sara M. Lee
53 W. 21st St., Apt. 3N
New York, NY 10010

The James Rudolph Heater Revocable Living Trust
James Heater
565 Quaker Ln Unit 105
West Warwick, RI 02893

Carolyn R. Grover and Richard K. Grover, Trustees of the Carolyn R. Grover Trust
3604 E. Fulton St. 231
Grand Rapids, MI 49546

03/03/2017

WW-6A5
(1/12)

Operator Well No. Worthington C 6H

**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: 10/6/16 **Date Permit Application Filed:** 10/6/16

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

Name: _____
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>558346.378</u>
County:	<u>Marion</u>		Northing:	<u>4370699.207</u>
District:	<u>Lincoln</u>	Public Road Access:	<u>County Route 44 (Gray's Run Rd.)</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.
Telephone: 304-884-6000
Email: _____

Address: PO Box 1008
Jane Lew, WV 26378
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 or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

OCT 11 2016

03/03/2017

WW-6AW
(1-12)

API NO. 47- _____ - _____
OPERATOR WELL NO. Worthington C 6H
Well Pad Name: Worthington

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

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.

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided*, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, _____, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Eastings:	<u>558346.378</u>
County:	<u>Marion</u>		Northing:	<u>4370699.207</u>
District:	<u>Lincoln</u>	Public Road Access:	<u>County Route 44 (Gray's Run Rd.)</u>	
Quadrangle:	<u>Shinnston</u>	Generally used farm name:	<u>XTO Energy Inc.</u>	
Watershed:	<u>Lower West Fork River (0502000206)</u>			

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

<p>*Please check the box that applies</p> <p><input type="checkbox"/> SURFACE OWNER</p> <p><input type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: _____</p> <p>Print Name: _____</p> <p>Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: _____</p> <p>By: _____</p> <p>Its: _____</p> <p>Signature: _____</p> <p>Date: _____</p>
---	--

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.

03/03/2017



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

January 14, 2014

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 **Worthington Well Pad, Marion County**

Dear Dr. Martin,

This well site will be accessed from Permit #04-2013-0827 issued to XTO Energy, Inc. for access to the State Road for a well site located off of Marion County Route 44 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 cursive script 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

03/03/2017

Hydraulic Fracturing Fluid Product Component Information Disclosure

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	XTO	Carrier/Base Fluid	Water	7732-18-5	100.00%	88.35%	
Sand (Proppant)	Universal	Proppant	Silica Substrate		100.00%	11.20%	
Hydrochloric Acid (10%)	PPG Industries	Acidizing	Hydrochloric Acid	7647-01-0	10.00%	0.00%	
			Other - (non-hazardous)		85.00%	0.00%	
Hydrochloric Acid (7.5%)	PPG Industries	Acidizing	Hydrochloric Acid	7647-01-0	7.50%	0.03%	
			Other - (non-hazardous)		92.50%	0.34%	
Acid Inhibitor, Unihib G	GeoSafe	Acid Inhibitor	Proprietary Blend Surfactants		35.00%	0.00%	
			Short Chained Glycol Ether	112-34-5	50.00%	0.00%	
			Ethoxylated alcohol		35.00%	0.00%	
Biocide, EC6116A	Nalco	Biocide	Dibromoacetonitrile	3252-43-5	5.00%	0.00%	
			2,2-Dibromo-3-nitrilopropionamide	10222-01-2	30.00%	0.00%	
			Polyethylene Glycol	25322-68-3	60.00%	0.01%	
			Other - (non-hazardous)		5.00%	0.00%	
Clay Stabilizer, Cla-Chek G	Shrieve	Clay Stabilizer	Water	7732-18-5	15.00%	0.00%	
			Other - (non-hazardous)		85.00%	0.00%	
Friction Reducer, Unislick ST-50	CESI Chemical	Friction Reducer	Petroleum distillates, hydrotreated light	64742-47-8	30.00%	0.02%	
			Other - (non-hazardous)		70.00%	0.04%	
Scale Inhibitor, ScaleHib A	Nalco	Scale Inhibitor	Ethylene Glycol	107-21-1	30.00%	0.00%	
			Other - (non-hazardous)		70.00%	0.01%	
Gel Breaker, LEB-10X	Universal	Gel Breaker	Ethylene Glycol	107-21-1	40.00%	0.00%	
			Other - (non-hazardous)		60.00%	0.00%	
Unigel 5F	Universal	Gel	Guar Gum	9000-30-0	99.00%	0.00%	
			Other - (non-hazardous)		1.00%	0.00%	
Slurry Gel, WGA-7 SLR	Universal	Gel	Guar Gum	9000-30-0	50.00%	0.00%	
			Petroleum Distillate	64742-47-8	55.00%	0.00%	
			Clay		5.00%	0.00%	
			Surfactant		5.00%	0.00%	
			Buffer		5.00%	0.00%	

EROSION AND SEDIMENT CONTROL PLAN

WORTHINGTON WELL SITE

COUNTY ROUTE 44/GRAYS RUN ROAD, LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA

SEPT. 2016
REVISED: DEC. 2016

APPROVED
WVDEP OOG

12/21/2016

SITE STABILIZATION, INSTALLATION AND MAINTENANCE (TEMPORARY AND PERMANENT)

- FILL SOIL TO DEPTH OF 12" BEFORE ALL OBJECTS 2" OR LARGER.
- BLANK CONSTRUCTION FERTILIZER INTO THE SOIL TO A DEPTH OF 1" FERTILIZER MAY BE RELEASED DURING TILLING.
- SOIL REQUIRED MUST BE PLACED LAWFULLY ON THE DISTURBED AREA BY MEANS OF SEEDING, BROADCASTING, AND SEEDING OR ANY OTHER APPROPRIATE METHOD.
- IF SEEDING IS USED, SEEDS SHOULD BE PLACED TO A MINIMUM OF 10" BELOW SURFACE AND NOT MORE THAN 18" BELOW SURFACE.
- FOR PERMANENT SITE STABILIZATION AFTER SLOPE RELEASE THROUGH FERTILIZER TO THE SURFACE OF DISTURBED AREAS.
- PLANT WHICH IMMEDIATELY AFTER SEEDING OR WITHIN AN HOUR AFTER SEEDING IS COMPLETED PLACE MULCH OR STRAW UNIFORMLY IN A CONTINUOUS MANNER AT THE SURFACE AND DISTURBED AREAS. AN ACCEPTABLE MATERIAL SHOULD BE USED TO AVOID WIND-EROSION WHICH MAY CAUSE MULCH TO BE BLOWN AWAY OR TO BE COMPACTED.
- MAINTENANCE - MAINTENANCE PERSONNEL SHALL MAINTAIN SEEDING LIMITS WITH THE FRESH FERTILIZER. MULCH COMPOST WITH 25% FERTILIZER AND WHEN APPLIED TO SOIL, FERTILIZER AND MULCH MUST BE APPLIED TO THE SURFACE OF THE DISTURBED AREA. MULCH SHALL BE APPLIED TO THE SURFACE OF THE DISTURBED AREA. MULCH SHALL BE APPLIED TO THE SURFACE OF THE DISTURBED AREA. MULCH SHALL BE APPLIED TO THE SURFACE OF THE DISTURBED AREA.
- A SITE WILL BE CONSIDERED TO BE PERMANENTLY STABILIZED WHEN ALL DISTURBED AREAS HAVE BEEN SEEDING, MULCHING, AND FERTILIZING AND A UNIFORM VEGETATION COVER HAS BEEN ESTABLISHED TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RETAINING FERTILIZER WITHOUT BEING WASHED AWAY BY RAINFALL. FOR THIS PURPOSE, VEGETATION SHALL BE A UNIFORM COVER OF GRASS OR OTHER VEGETATION.
- THE CONTRACTOR SHALL MAINTAIN THE SITE FOR THE DURATION OF THIS PLAN UNTIL PERMANENT STABILIZATION IS ESTABLISHED.

PERMANENT STABILIZATION

- SEEDS: AMBER, RED, 80% AMBER, 20% RED.
- APPLICATOR RATE: 100 LBS/ACRE.
- FERTILIZER: 100 LBS/ACRE (N-P-K 10-20-20).
- SEEDING METHOD: BROADCASTING - 1000 LBS/ACRE.
- LAND RATE: 100 LBS/ACRE.
- MULCH: 2" STRAW.
- WALKING RATE: 3 TONS/ACRE.
- FOR EACH DISTURBED AREA, THE CONTRACTOR SHALL MAINTAIN A UNIFORM VEGETATION COVER TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RETAINING FERTILIZER WITHOUT BEING WASHED AWAY BY RAINFALL. FOR THIS PURPOSE, VEGETATION SHALL BE A UNIFORM COVER OF GRASS OR OTHER VEGETATION.

TEMPORARY STABILIZATION

- SEEDS: AMBER, RED, 80% AMBER, 20% RED.
- APPLICATOR RATE: 100 LBS/ACRE.
- FERTILIZER: 100 LBS/ACRE (N-P-K 10-20-20).
- SEEDING METHOD: BROADCASTING - 1000 LBS/ACRE.
- LAND RATE: 100 LBS/ACRE.
- MULCH: 2" STRAW.
- WALKING RATE: 3 TONS/ACRE.

PERMANENT-STEP SLOPE

- SEEDS: AMBER, RED, 80% AMBER, 20% RED.
- APPLICATOR RATE: 100 LBS/ACRE.
- FERTILIZER: 100 LBS/ACRE (N-P-K 10-20-20).
- SEEDING METHOD: BROADCASTING - 1000 LBS/ACRE.
- LAND RATE: 100 LBS/ACRE.
- MULCH: 2" STRAW.
- WALKING RATE: 3 TONS/ACRE.

GENERAL NOTES

- THE DESIGN CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PROVIDED A LIST OF ALL UTILITIES IN THE AREA AND A LIST OF ALL UTILITIES IN THE AREA. THE CONTRACTOR SHALL MAINTAIN THE LOCATION AND DEPTH OF ALL UTILITIES AND SHALL MAINTAIN THE LOCATION AND DEPTH OF ALL UTILITIES AND SHALL MAINTAIN THE LOCATION AND DEPTH OF ALL UTILITIES.
- THE CONTRACTOR SHALL MAINTAIN THE LOCATION AND DEPTH OF ALL UTILITIES AND SHALL MAINTAIN THE LOCATION AND DEPTH OF ALL UTILITIES.

GRAZING NOTES

- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.

EROSION CONTROL BLANKETING

- EROSION CONTROL BLANKETING TO BE INSTALLED ON ALL SLOPES OF 3:1 OR GREATER OR STEEPER IN ACCORDANCE WITH EROSION CONTROL BLANKETING DETAIL ON SHEET ES-3.
- PROPERLY PREPARE SOIL BEFORE INSTALLING BLANKETS.
- ANCHOR BLANKETS IN A TRENCH AT THE TOP OF SLOPE USING A ROW OF STAPLES/STAKES.
- BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- APPLY SEED TO COMPACTED SOIL AND FILL REMAINING 12" (300mm) PORTION OF BLANKET EACH OVER SEED AND COMPACTED SOIL.
- SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES ACROSS THE WIDTH OF THE BLANKET.
- ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE.
- OVERLAP PARALLEL BLANKETS.
- IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 12" (300mm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
- FLYDERRA HYDROSEEDING WITH MULCH CAN BE USED AS AN ALTERNATIVE TO BLANKETING.

VEGETATION

- THE CONTRACTOR SHALL INSPECT VEGETATED AREAS WEEKLY AND AFTER EACH STORM (WINDHIFT) EVENT.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.

EROSION AND SEDIMENTATION CONTROL PLAN NOTES

- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.
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- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL, LOGS, LIMBS, AND BRANCHES AND OTHER OBSTRUCTIVE MATERIAL.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, EXISTING AND PROPOSED, FROM DAMAGE DURING CONSTRUCTION AND MAINTENANCE.

ITEM	BID QUANTITIES ESTIMATE			
	UNITS	TOTAL QUANTITY	BID QUANTITY	UNIT PRICE
CLEANING & GRUBBING				
EROSION & SEDIMENT CONTROL				
ROCK CONSTRUCTION ENTRANCE	FA	1		
24" CONCRETE PERIMETER	LF	928		
PERIMETER CHANNEL	LF	963		
ROCK CHANNEL	CF	1,800		
ROCK FILTER	EA	3		
EROSION CONTROL BLANKET/MULCH/FLYDERRA HYDROSEEDING	SY	4,835		
TEMPORARY SEEDING	SY	22,864		
STAPLES	CY	1,400		
STAPLES	CY	8,000		
STAPLES	CY	783		
STAPLES	SY	8,000		
STAPLES	SY	16,000		

SITE INFO

SITE DESCRIPTION:
LOCATED NORTHWEST OF COUNTY ROUTE 44/GRAYS RUN ROAD

TOTAL AREA OF SITE: - 8.44 ACRES
AREA OF ACCESS ROAD: - 0.81 ACRES
AREA OF PAD: - 2.89 ACRES
AREA OF SITE TO UNDER GO EXCAVATION: - 1.61 ACRES

ROCK CONSTRUCTION ENTRANCE VOLUME: - 25,010 CF
POST-CONSTRUCTION RUNOFF VOLUME: - 22,911 CF

SCHEDULE OF MAJOR CONSTRUCTION COMPLETION: - SUMMER 2018

RECEIVING STREAM & SURFACE WATER: ON-SITE DRAINAGE DRAINAGE TO TELESAUGO CREEK



WORTHINGTON WELL SITE
1" = 200'

- SHEET NO. TITLE**
- ES-1 EROSION AND SEDIMENT CONTROL TITLE SHEET
 - ES-2 EROSION AND SEDIMENT CONTROL PLAN
 - ES-3 ENLARGED EROSION AND SEDIMENT CONTROL PLAN
 - ES-4 EROSION AND SEDIMENT CONTROL DETAILS
 - ES-5 EROSION AND SEDIMENT CONTROL DETAILS AND PROFILES
 - ES-6 EROSION AND SEDIMENT CONTROL DETAILS

PREPARED FOR:

XTO ENERGY, INC.
480 INDUSTRIAL PARK ROAD
JANE LEW, WV 26378
TELEPHONE: (304) 884-8042

PREPARED BY:

Morris Knowles & Associates, Inc.
443 ATHENA DRIVE DELMONT, PA 15628
TELEPHONE: (724) 468-4622 FAX: (724) 468-8940



WORTHINGTON WELL SITE
EROSION AND SEDIMENT CONTROL TITLE SHEET

Morris Knowles & Associates, Inc.
443 ATHENA DRIVE DELMONT, PA 15628
TELEPHONE: (724) 468-4622 FAX: (724) 468-8940

REVISIONS:

NO.	DATE	DESCRIPTION
1	12/21/2016	ISSUED FOR PERMIT
2		
3		
4		
5		
6		
7		
8		
9		
10		

SCALE: N/A

DRAWING NO.: ES-1

SHEET NO.: ES-1

**APPROVED
WVDEP OOG**

12/21/2016

TAX ID# 11-27-47
LARRY A. & BRIDA K.
FITZPATRICK

TAX ID# 11-27-46
XTO ENERGY, INC.

TAX ID# 11-28-0811
MARK E. & COLLEEN
MORGAN



LEGEND:

- LIMITS OF DISTURBANCE
- 24" COMPOST FILTER SOAK
- ROCK CONSTRUCTION ENTRANCE
- ROCK FILTER
- ROCK CHANNEL OUTLET PROTECTION
- PERMANENT CHANNEL
- EXISTING CONTOUR LINES
- PROPOSED CONTOUR LINES
- 24" EARTHEN BERM (SEE DETAIL ON ES-3)
- BENCH & KEYWAY (SEE DETAIL ON ES-3)
- DEED RESTRICTION AREA
- EXISTING PROPERTY LINES
- EXISTING GRAVEL SURFACE
- EXISTING STREAM CHANNEL
- 100' RIPARIAN OFFSET
- NRCS SOIL UNIT BOUNDARY
- EXISTING TREELINE

NOTES:

1. EROSION CONTROL BLANKETS OR FLEXITERIA HYDROSEEDING TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
2. AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 94048021000, EFFECTIVE JUNE 19, 2012. ALL AREAS OF DISTURBANCE HAVE BEEN DETERMINED TO BE IN ZONE S, WHICH HAS BEEN DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.
3. THE AREA OF ACCESS DRIVE CROSSING THE STREAM IS EXISTING AND WILL NOT BE DISTURBED. NO FILL IS TO BE PLACED WITHIN THE FLOODPLAIN.
4. THERE WILL BE NO DISCHARGE FROM THE PAD DURING DRILLING OR COMPLETION ACTIVITIES.
5. ALL FILLS SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL TESTS OF THE ACTUAL SOILS TO BE USED FOR THE FILLS.



CALL BEFORE YOU DIG
IN WEST VIRGINIA
1-800-245-4848

THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION (WV CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT).

WV STATE LAW REQUIRES
2 WORKING DAYS NOTICE

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THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS AND OBSERVED EVIDENCE. THE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS, SIZES AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.



REVISION		DATE	BY	DESCRIPTION

DESIGNED BY: DMS
REVIEWED BY: DMV
DATE: SEPT. 2016
PROJ. NO.: 1637195
DRAWING NO.:

SCALE:
1" = 50'

MORRIS KNOWLES
A PROFESSIONAL ENGINEER
LICENSE NO. 21798
STATE OF WEST VIRGINIA

WORTHINGTON WELL SITE
Prepared for:
XTO ENERGY, INC.
Marshall, WV

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA
EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.
ES-3

12-23-16

EROSION AND SEDIMENTATION CONTROL PLAN

COUNTY ROUTE 44/GRAYS RUN ROAD, LINCOLN COUNTY, VA
SECTION 1

SITE STABILIZATION INSTALLATION AND MAINTENANCE (TEMPORARY AND PERMANENT):

1. TILL SOIL TO DEPTH OF 2". REMOVE ALL OBJECTS 2" OR LARGER.
2. BLEND COMMERCIAL FERTILIZER INTO THE SOIL TO A DEPTH OF 2". FERTILIZER MAY BE BLENDED DURING TILLING.
3. SOW REQUIRED SEED MIXTURE UNIFORMLY ON THE PREPARED AREA BY HYDRAULIC SEEDING EQUIPMENT, HAND SEEDING, OR ANY OTHER APPROPRIATE METHOD.
4. AFTER SEEDING ROLL TOPSOILED AREAS THAT ARE TO BE MOWED. USE A ROLLER WEIGHING NOT MORE THAN 65 LBS./FT WIDTH.
5. FOR PERMANENT SITE STABILIZATION APPLY SLOW RELEASE NITROGEN FERTILIZER TO THE SURFACE OF SEEDED AREAS.
6. PLACE MULCH IMMEDIATELY AFTER SEEDING OR WITHIN 48 HOURS AFTER SEEDING IS COMPLETED. PLACE HAY & STRAW UNIFORMLY, IN A CONTINUOUS BLANKET AT THE MINIMUM RATE SPECIFIED ABOVE. AN ACCEPTABLE MECHANICAL BLOWER MAY BE USED TO APPLY MULCH. MACHINES WHICH CUT MULCH INTO SHORT PIECES WILL NOT BE PERMITTED.
7. MAINTENANCE - SATISFACTORILY MAINTAIN GRASS AREAS WITHIN GRADING LIMITS, UNTIL THE ENTIRE PROJECT HAS BEEN COMPLETED. MOW, AS INDICATED AND WHEN REQUESTED. CONTROL PROHIBITED AND NOXIOUS WEED GROWTH BY HERBICIDE SPRAYING OR CUTTING. AFTER THE SEEDING AND SOIL SUPPLEMENT WORK ON A SLOPE HAS BEEN SATISFACTORILY COMPLETED, IF A SLOPE FAILURE OCCURS, ONE WHICH REQUIRES REDRESSING, EXCAVATION, OR ESTABLISHMENT OF A NEW SLOPE, REPLY SOIL SUPPLEMENTS, THEN RESEED, AS SPECIFIED FOR THE ORIGINAL TREATMENT.
8. A SITE WILL BE CONSIDERED TO BE PERMANENTLY STABILIZED WHEN ALL PERMANENT CONTROL MEASURES AND FACILITIES HAVE BEEN COMPLETED AND ARE OPERATIONAL. TEMPORARY CONTROL MEASURES AND FACILITIES REMOVED, AND UNIFORM 70% PERENNIAL VEGETATION COVER IS ESTABLISHED TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RESISTING EROSION DURING RUNOFF EVENTS, THE STANDARD FOR THIS VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA.
9. THE CONTRACTOR SHALL MAINTAIN THE SITE PER THE PROVISIONS OF THIS PLAN UNTIL PERMANENT STABILIZATION IS ESTABLISHED.

PERMANENT STABILIZATION

SPECIES: TIMOTHY
% PURE LIVE SEED: 99%
APPLICATION RATE: 50 LBS/ACRE
FERTILIZER TYPE: COMMERCIAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE: COMMERCIAL - 1000 LBS/ACRE
LIMING RATE: 6 TONS/ACRE
MULCH TYPE: HAY & STRAW
MULCHING RATE: 3 TONS/ACRE
ANCHOR MATERIAL: RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE
ANCHORING METHOD: HYDRAULIC SEEDING EQUIPMENT
RATE OF ANCHOR MATERIAL APPLICATION: 310 LBS./1000 SQ. YD.
SEEDING SEASON DATES: MARCH 15 - JUNE 1, AUG. 1 - OCT. 15

TEMPORARY STABILIZATION:

SPECIES: ANNUAL RYEGRASS
% PURE LIVE SEED: 98%
APPLICATION RATE: 50 LBS/ACRE
FERTILIZER TYPE: COMMERCIAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE: 678 LBS/ACRE
LIMING RATE: 2 TONS/ACRE
MULCH TYPE: HAY & STRAW
MULCHING RATE: 3 TONS/ACRE

PERMANENT-STEEP SLOPE:

SPECIES: BIRDFOOT TROFOL AND TALL FESCUE MIX
% PURE LIVE SEED: 99%
APPLICATION RATE: 10 AND 50 LBS/ACRE, RESPECTIVELY
FERTILIZER TYPE: COMMERCIAL FERTILIZER 5-10-10
FERTILIZER APPL. RATE (PER TESTING) 30 LBS/ACRE
LIMING RATE: 6 TONS/ACRE
MULCH TYPE: HAY & STRAW
MULCHING RATE: 3 TONS/ACRE
ANCHOR MATERIAL: NON-ASPHALTIC MATERIAL
ANCHORING METHOD: SPRAY
RATE OF ANCHORING MATERIAL APPL.: 1000 GAL./SQ.YD.
SEEDING DATES: APRIL-SEPT.

GENERAL NOTES:

1. THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE THAN TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION EXCLUDING SATURDAY, SUNDAY, AND FEDERAL OR STATE HOLIDAYS (NY CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT).
2. TRAFFIC SHALL BE MAINTAINED ON ALL ADJOINING STREETS AND DRIVES AT ALL TIMES. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH WDOT'S REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY THE LOCATION AND INVERT ELEVATION OF ALL EXISTING UTILITIES WITH PROPOSED CONNECTIONS PRIOR TO CONSTRUCTION AND GRADING OF THE SITE.

EROSION CONTROL BLANKETING:

1. EROSION CONTROL BLANKETING TO BE INSTALLED ON ALL SLOPES OF 3:1 GRADING OR STEEPER IN ACCORDANCE WITH EROSION CONTROL BLANKETING DETAIL ON SHEET ES-3.
2. PROPERLY PREPARE SOIL BEFORE INSTALLING BLANKETS.
3. ANCHOR BLANKETS IN A TRENCH AT THE TOP OF SLOPE USING A ROW OF STAPLES/STAKES.
4. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
5. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL.
6. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES ACROSS THE WIDTH OF THE BLANKET.
7. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE.
8. OVERLAP PARALLEL BLANKETS.
9. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
10. FLEXITERRA HYDROSEEDING WITH MULCH CAN BE USED AS AN ALTERNATIVE TO BLANKETING.

GRADING NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
2. THE CONTRACTOR SHALL PROOF ROLL THE SITE TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER AND REMOVE ANY SOFT SPOTS PRIOR TO THE IMPORTING OF ANY FILL MATERIAL.
3. THE CONTRACTOR SHALL REPLACE ALL CURB SECTIONS, SIDEWALKS, AND PAVEMENT, WHICH HAS BEEN CUT AND DISTURBED WITHIN THE RIGHT-OF-WAY WITH WEST VIRGINIA DEPARTMENT OF TRANSPORTATION'S STANDARD MATERIALS.
4. THE CONTRACTOR SHALL ADJUST TO GRADE ALL WATER AND GAS VALVES.
5. THE CONTRACTOR SHALL COMPACT ALL FILL MATERIALS TO NOT LESS THAN 95% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL TESTS OF THE ACTUAL SOILS TO BE USED FOR THE FILLS.
6. ALL CUT AND FILL OPERATIONS SHALL FOLLOW THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
7. THE CONTRACTOR SHALL USE WEST VIRGINIA DIVISION OF HIGHWAY'S LATEST ROADWAY CONSTRUCTION STANDARDS.

EROSION AND SEDIMENTATION CONTROL PLAN NOTES:

1. ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO CHANNELS OF CONVEYANCE AS APPROPRIATE FOR GRADING AND ACQUIRING BORROW TO CONSTRUCT THOSE CONTROLS.
2. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN THE TRIBUTARY AREAS OF THOSE CONTROLS.
3. AFTER SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED.
4. STORMWATER INLETS WHICH DO NOT DISCHARGE TO SEDIMENT TRAPS OR BASINS, MUST BE PROTECTED UNTIL THE TRIBUTARY AREAS ARE STABILIZED.
5. SEDIMENT MUST BE REMOVED FROM INLET PROTECTION AFTER EACH STORM EVENT.
6. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
7. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN ONE YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.
8. STOCKPILES MUST BE STABILIZED IMMEDIATELY.
9. HAY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 3.0 TONS PER ACRE.
10. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS, ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING.
11. THE CONTRACTOR SHALL RECYCLE MATERIALS WHENEVER APPROPRIATE AND WHEN IN ACCORDANCE WITH LOCAL, STATE, & WVDPE REQUIREMENTS. ALL MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF PROPERLY IN A C&D LANDFILL IF CLEAN FILL MATERIAL IS REMOVED FROM THE SITE, IT SHALL BE TAKEN TO AN APPROVED C&D LANDFILL OR IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN AN APPROVED E&S PLAN IF OVER 5000 SQUARE FEET OF AREA IS DISTURBED.

EROSION AND SEDIMENT CONTROL PLAN

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.

ROCK CONSTRUCTION ENTRANCE:

1. THE ROCK CONSTRUCTION ENTRANCE SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE THICKNESS OF THE ROCK SHALL BE MAINTAINED AT 8" OR MORE.
3. A ROCK STOCKPILE IS TO BE MAINTAINED AT ALL TIMES AND SHALL BE REPAIRED IMMEDIATELY.

COMPOST FILTER SOCK:

1. COMPOST FILTER SOCKS MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE CONTRACTOR SHALL MAINTAIN THE SOCKS IN GOOD CONDITION AT ALL TIMES AND SHALL REPAIR OR REPLACE SOCKS AS NEEDED.
3. WHERE THE SOCK REQUIRES REPAIR, THE CONTRACTOR SHALL REMOVE THE SOCK AND REPLACE IT WITH A NEW ONE.
4. THE COMPOST FROM THE FILTER SOCKS SHALL BE RECYCLED OR DISPOSED OF PROPERLY.

VEGETATION:

1. THE CONTRACTOR SHALL INSPECT THE VEGETATION AT THE SITE AT THE END OF EACH WORKING DAY AND SHALL REPAIR OR REPLACE VEGETATION AS NEEDED.
2. THE CONTRACTOR SHALL INSPECT THE VEGETATION AT THE SITE AT THE END OF EACH WORKING DAY AND SHALL REPAIR OR REPLACE VEGETATION AS NEEDED.
3. THE REPAIRS SHALL BE MADE WITHIN 48 HOURS OF THE END OF EACH WORKING DAY.

TEMPORARY AND PERMANENT CHANNELS:

1. THE CONTRACTOR SHALL INSPECT THE CHANNELS AT THE SITE AT THE END OF EACH WORKING DAY AND SHALL REPAIR OR REPLACE CHANNELS AS NEEDED.
2. EROSION CONTROL MATS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
3. THE CONTRACTOR SHALL INSPECT THE CHANNELS AT THE SITE AT THE END OF EACH WORKING DAY AND SHALL REPAIR OR REPLACE CHANNELS AS NEEDED.
4. THE CONTRACTOR SHALL INSPECT THE CHANNELS AT THE SITE AT THE END OF EACH WORKING DAY AND SHALL REPAIR OR REPLACE CHANNELS AS NEEDED.
5. WHERE EXCESSIVE SEDIMENT DEFLECTS THE CHANNEL, THE CONTRACTOR SHALL REMOVE THE SEDIMENT AND REPAIR THE CHANNEL FOR OBSTRUCTIONS. THE CONTRACTOR SHALL THEN REPAIR THE CHANNEL.

03/03/2017

EROSION AND SEDIMENT CONTROL PLAN

FOR XTO ENERGY, INC. AT WORTHINGTON WELL SITE

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA

SEPTEMBER 2016

POST-CONSTRUCTION MAINTENANCE SCHEDULE:

ALL STRUCTURES SHALL BE MAINTAINED UNTIL A UNIFORM SURFACE IS ESTABLISHED.

ALL STRUCTURES SHALL BE INSPECTED AT THE END OF EACH RAINFALL EVENT.

CONSTRUCTION ENTRANCE SHALL BE MAINTAINED OPEN AND AVAILABLE ON THE SITE AT ALL TIMES.

ALL STRUCTURES SHALL BE AVAILABLE ON THE SITE AT ALL TIMES.

ALL STRUCTURES SHALL BE MAINTAINED AT LEVEL GRADE. BOTH ENDS SHALL BE MAINTAINED AT LEAST 10 FEET UPSLOPE AT 45 DEGREES.

ALL STRUCTURES SHALL BE MAINTAINED AT LEAST 10 FEET UPSLOPE AT 45 DEGREES.

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BID QUANTITIES ESTIMATE					
	UNITS	ESTIM. QUANTITY	BID QUANTITY	UNIT PRICE	TOTAL COST
CLEARING & GRUBBING					
CLEARING & GRUBBING	AC	0.0			
EROSION & SEDIMENT CONTROL					
ROCK CONSTRUCTION ENTRANCE	EA	1			
24" COMPOST FILTER SOCK	LF	855			
RIPRAP CHANNEL 9" RIPRAP LINING	LF	645			
ROCK CHANNEL OUTLET PROTECTION	CF	150			
ROCK FILTER	EA	3			
EROSION CONTROL BLANKETING/ FLEXITERRA HYDROSEEDING	SY	2,546			
TEMPORARY SEEDING	SY	30,710			
EARTHWORK					
TOPSOIL STRIPPED/STOCKPILED /RESPREAD	CY	2,367			
TOTAL CUT/FILL	CY	6,630			
KEYWAY/BENCH W/ DRAINAGE	LF	595			
ACCESS ROAD/PAD					
AGGREGATE ROAD SURFACING	SY	3,195			
ROCK PAD/TURNAROUND AREA	SY	3,220			



VICINITY MAP
1"=2,000'

SHEET NO.	TITLE
ES-1	EROSION AND SEDIMENT CONTROL TITLE SHEET
ES-2	EROSION AND SEDIMENT CONTROL PLAN
ES-3	ENLARGED EROSION AND SEDIMENT CONTROL PLAN
ES-4	EROSION AND SEDIMENT CONTROL DETAILS
ES-5	EROSION AND SEDIMENT CONTROL DETAILS AND PROFILES
ES-6	EROSION AND SEDIMENT CONTROL DETAILS

SITE INFO

SITE DESCRIPTION:
LOCATED SOUTHWEST OF COUNTY ROUTE 44/GRAYS RUN ROAD

TOTAL AREA OF SITE - 7.8± ACRES
 AREA OF ACCESS ROAD - 0.3± ACRES
 AREA OF PAD - 2.6± ACRES
 AREA OF SITE TO UNDER GO EXCAVATION - 1.6± ACRES

AREA OF DISTURBANCE PER PARCEL:
 11-27-46; XTO ENERGY, INC. - 7.8± ACRES

PRE-CONSTRUCTION RUNOFF VOLUME - 25,010 CF
 POST-CONSTRUCTION RUNOFF VOLUME - 22,991 CF

SCHEDULE OF MAJOR CONSTRUCTION
 COMMENCEMENT - SUMMER 2016
 COMPLETION - SUMMER 2018

RECEIVING STREAM & SURFACE WATER
 ON-SITE DRAINAGE FLOWS TO TEVEBAUGH CREEK

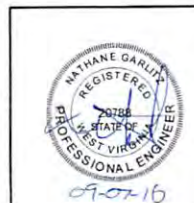
SDW
10/5/16

PREPARED FOR:
XTO ENERGY, INC.
 480 INDUSTRIAL PARK ROAD
 JANE LEW, WV 26378
 TELEPHONE: (304) 884-6042

PREPARED BY:
Morris Knowles & Associates, Inc.
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 443 ATHENA DRIVE DELMONT, PA 15626
 TELEPHONE: (724) 468-4622 FAX: (724) 468-8940

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DESCRIPTION: _____ DATE: _____

REVISION BY: _____ DATE: _____

DESIGNED BY: DRI
 REVIEWED BY: MMV
 DRAWN BY: DRI
 DATE: SEPT. 2016
 PROJ. NO.: 1637.195
 DRAWING NO.:

SCALE: N/A

MKA Morris Knowles & Associates, Inc.
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WORTHINGTON WELL SITE
 prepared for
 XTO ENERGY, INC.
 situated at
 LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA
 EROSION AND SEDIMENT CONTROL TITLE SHEET

DRAWING NO.
SHEET NO. ES-1

03/03/2017