



west virginia department of environmental protection

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

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

Friday, May 18, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

XTO ENERGY, INC.
810 HOUSTON STREET

FORT WORTH, TX 76102

Re: Permit approval for ICE SOUTH UNIT 10H
47-033-05913-00-00

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: ICE SOUTH UNIT 10H
Farm Name: XTO ENERGY INC
U.S. WELL NUMBER: 47-033-05913-00-00
Horizontal 6A New Drill
Date Issued: 5/18/2018

PERMIT CONDITIONS 4703305913

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 4703305913

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.

WW-6B
(04/15)

API NO. 47- _____ - _____
 OPERATOR WELL NO. Ice South Unit 10H
 Well Pad Name: Ice Pad

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

1) Well Operator: XTO Energy Inc.

| | | | |
|------------------|-----------------|-------------|------------------|
| <u>494487940</u> | <u>Harrison</u> | <u>Clay</u> | <u>Shinnston</u> |
|------------------|-----------------|-------------|------------------|

Operator ID County District Quadrangle

2) Operator's Well Number: Ice South Unit 10H Well Pad Name: Ice Pad

3) Farm Name/Surface Owner: XTO Energy Inc. Public Road Access: CR 8/6 (Nutter Run)

4) Elevation, current ground: 1,352' Elevation, proposed post-construction: 1,364'

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

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation: Marcellus, Depth 7,378'-7,517', Anticipated Thickness: 150', Associated pressure: 4,650 psi

8) Proposed Total Vertical Depth: 7,498'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17,914

11) Proposed Horizontal Leg Length: 10,021

12) Approximate Fresh Water Strata Depths: 115', 250'

13) Method to Determine Fresh Water Depths: Offsetting Reports

14) Approximate Saltwater Depths: 1200'

15) Approximate Coal Seam Depths: 390', 490'

16) Approximate Depth to Possible Void (coal mine, karst, other): 480'-490'

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

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



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Austin Caperton, Cabinet Secretary
dep.wv.gov

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

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

DATE: May 15, 2018
ORDER NO.: 2018-W-1

INTRODUCTION

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

FINDINGS OF THE CHIEF

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

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. XTO is a “person” as defined by W. Va. Code §22-6-1(n), with a corporate address as 810 Houston Street, Fort Worth, Texas 76102
3. On May 19, 2017, XTO submitted a well work permit application identified as API# 47-033-05898. Then on November 1, 2017 and January 10, 2018, XTO Energy, Inc. also submitted well work permit applications identified as API#s 47-033-05913 and 47-033-05919. The three proposed wells are to be located on the Ice Pad in Clay District of Harrison County, West Virginia.
4. On May 19, 2017, XTO requested a waiver for Wetlands A and B outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47-033-05898, 47-033-05913 and 47-033-05919.

CONCLUSIONS OF LAW

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

ORDER

West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for Wetlands A and B from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47-033-05898, 47-033-05913 and 47-033-05919. The Office of Oil and Gas hereby **ORDERS** that XTO shall meet the following site construction and operational requirements for the Ice Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetland A is not at risk sedimentation due to its location upslope of the well pad.
- d. Wetland B shall be protected by the berm constructed around the pad but due to its location across the slope from the pad it is unlikely to be at risk for sedimentation or impact. Extra care shall be provided during construction to ensure no impact to the wetland shall occur.
- e. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- f. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- g. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- h. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- i. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- j. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- k. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- l. All records from inspections shall be maintained on site for the life of the project and be available upon request.

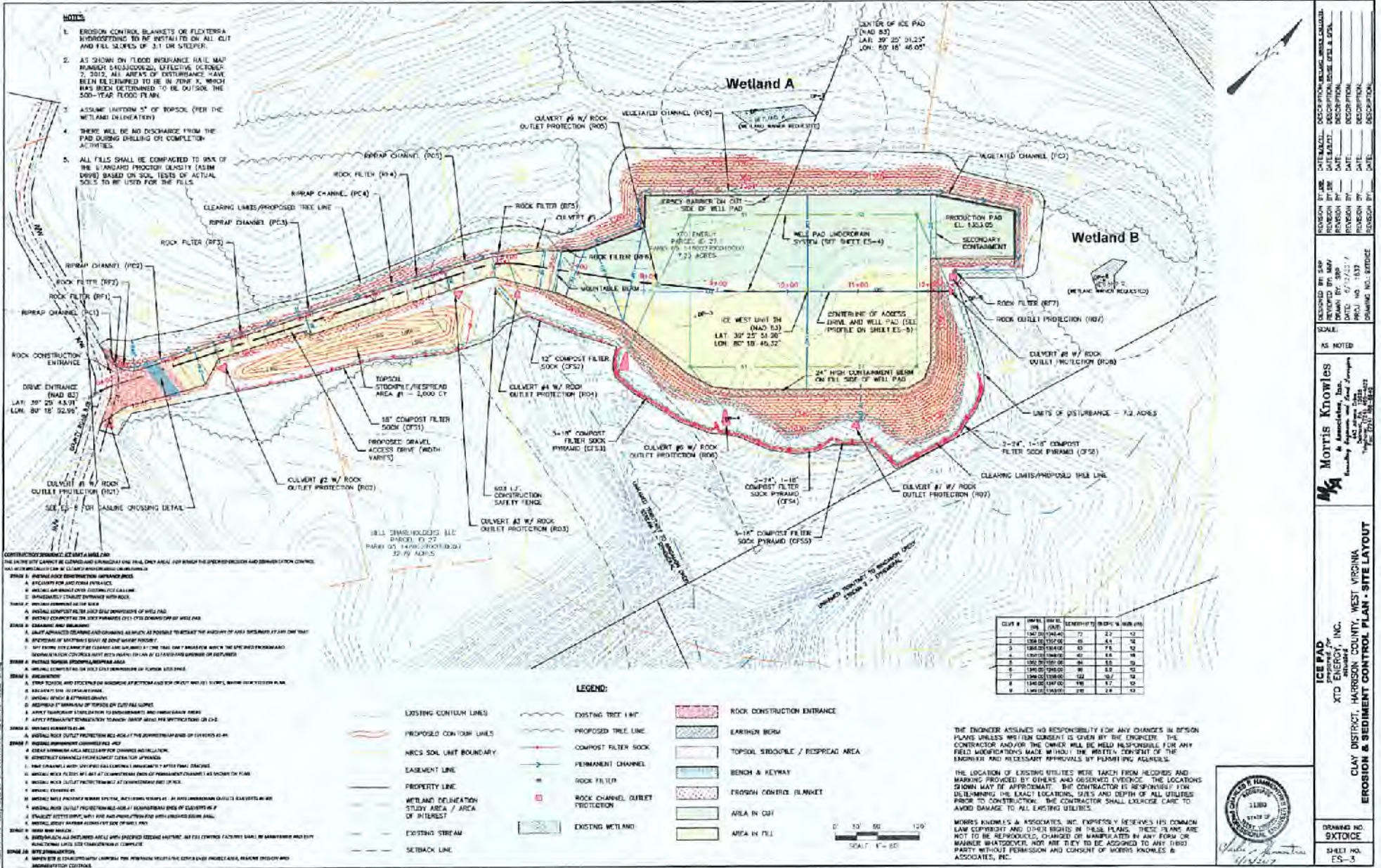
Thus ORDERED, the 15th day of May, 2018.

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

XTO Energy - Ice Pad Wetland Waiver Attachment 1



WW-6B
(04/15)

API NO. 47- _____ - _____
 OPERATOR WELL NO. Ice South Unit 10H
 Well Pad Name: Ice Pad

18)

CASING AND TUBING PROGRAM

| TYPE | Size (in) | New or Used | Grade | Weight per ft. (lb/ft) | FOOTAGE: For Drilling (ft) | INTERVALS: Left in Well (ft) | CEMENT: Fill-up (Cu. Ft.)/CTS |
|--------------|-----------|-------------|-------|------------------------|----------------------------|------------------------------|-------------------------------|
| Conductor | 24 | New | PE&B | 95 | 40 | 40 | 59 / CTS |
| Fresh Water | 13.375 | New | H40 | 48 | 550 | 550 | 515 / CTS |
| Coal | | | | | | | |
| Intermediate | 9.625 | New | J55 | 36 | 3,000 | 3,000 | 1,303 / CTS |
| Production | 5.5 | New | J55 | 20 | 17,914 | 17,914 | 3,601 / 5,823 |
| Tubing | | | | | | | |
| Liners | | | | | | | |

*SDW
10/30/2017*

| TYPE | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|-----------|------------------------|---------------------|----------------------|--|------------------------|--------------------------|
| Conductor | 24 | 28 | 0.375 | 940 | 40 | Standard | 1.19 |
| Fresh Water | 13.375 | 17.5 | 0.33 | 1,730 | 470 | Standard | 1.19 |
| Coal | | | | | | | |
| Intermediate | 9.625 | 12.25 | 0.352 | 3,520 | 2,600 | Standard | 1.19 |
| Production | 5.5 | 8.5 | 0.361 | 12,640 | 6,100 | 50.50 PCZ / CRES H T&T | 1.13 / 1.18 |
| Tubing | | | | | | | |
| Liners | | | | | | | |

PACKERS

| | | | | |
|-------------|--|--|--|--|
| Kind: | | | | |
| Sizes: | | | | |
| Depths Set: | | | | |

WW-6B
(10/14)

API NO. 47-_____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

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

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

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

1. Acid Stage - Typically 1500 gallons of 7.5% hydrochloric acid to clear the perforation path in the wellbore.
2. Sand / Proppant Stages - Several stages of pumping water combined with sand at a targeted 80 bpm rate. The highest pressure and rate anticipated is 9,500 psig and 100 bpm. The sand size may vary from 100 mesh to 30/50 mesh size. 12,500 bbls slick water with 220,000 lbs 40/70, 270,000 lbs 100 mesh sands and 2,200 gals FR 133, 1,500 gals Bioplex 301 and 1,190 gals 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): 10.4 +/-

22) Area to be disturbed for well pad only, less access road (acres): 3.4 +/-

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.

4703305913

Ice South Unit 10H – 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 Ice Pad in Harrison 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 480-490' 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 ~3,000 ft.

Jake Coykendall
XTO Energy
Drilling Engineer
724-766-6968
Jacob_coykendall@xtoenergy.com

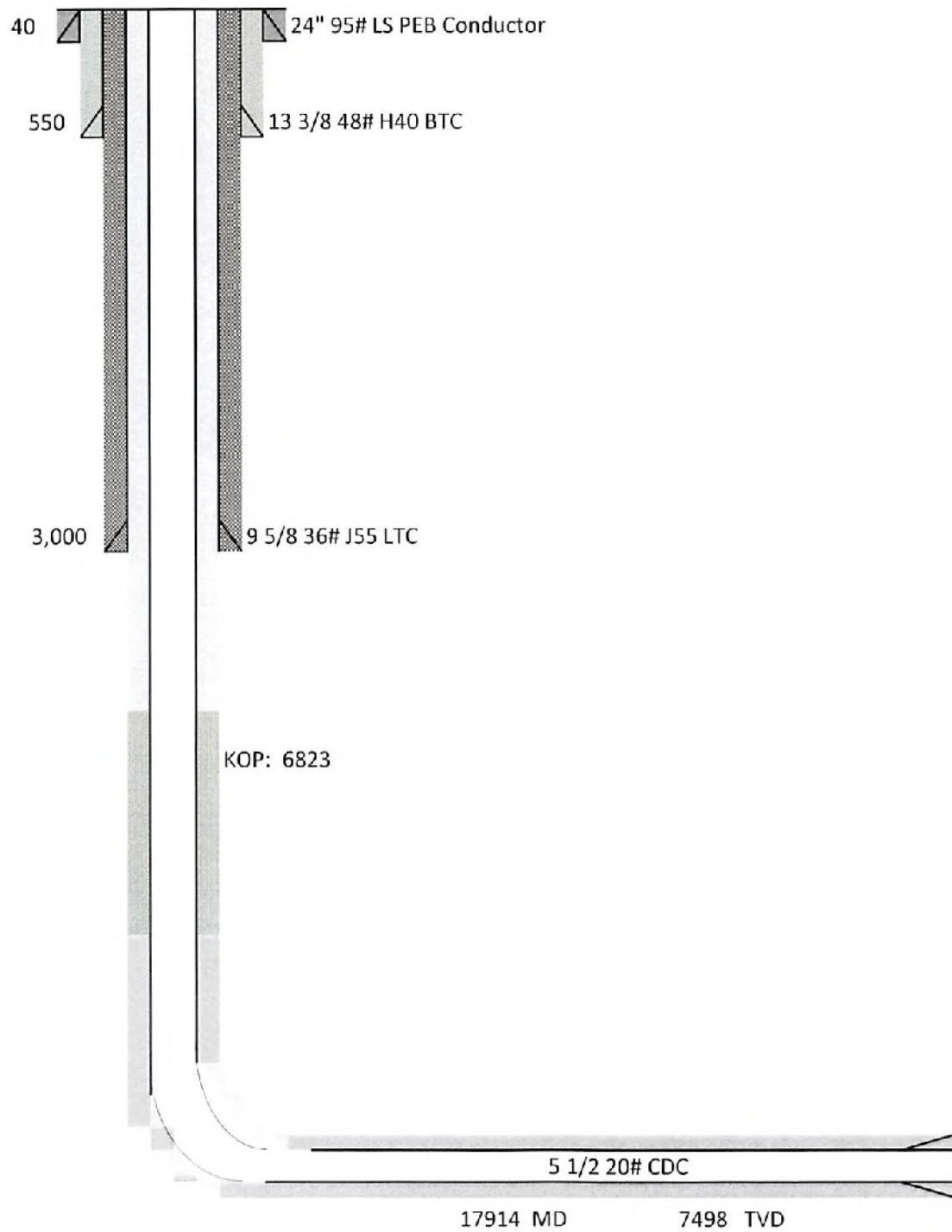
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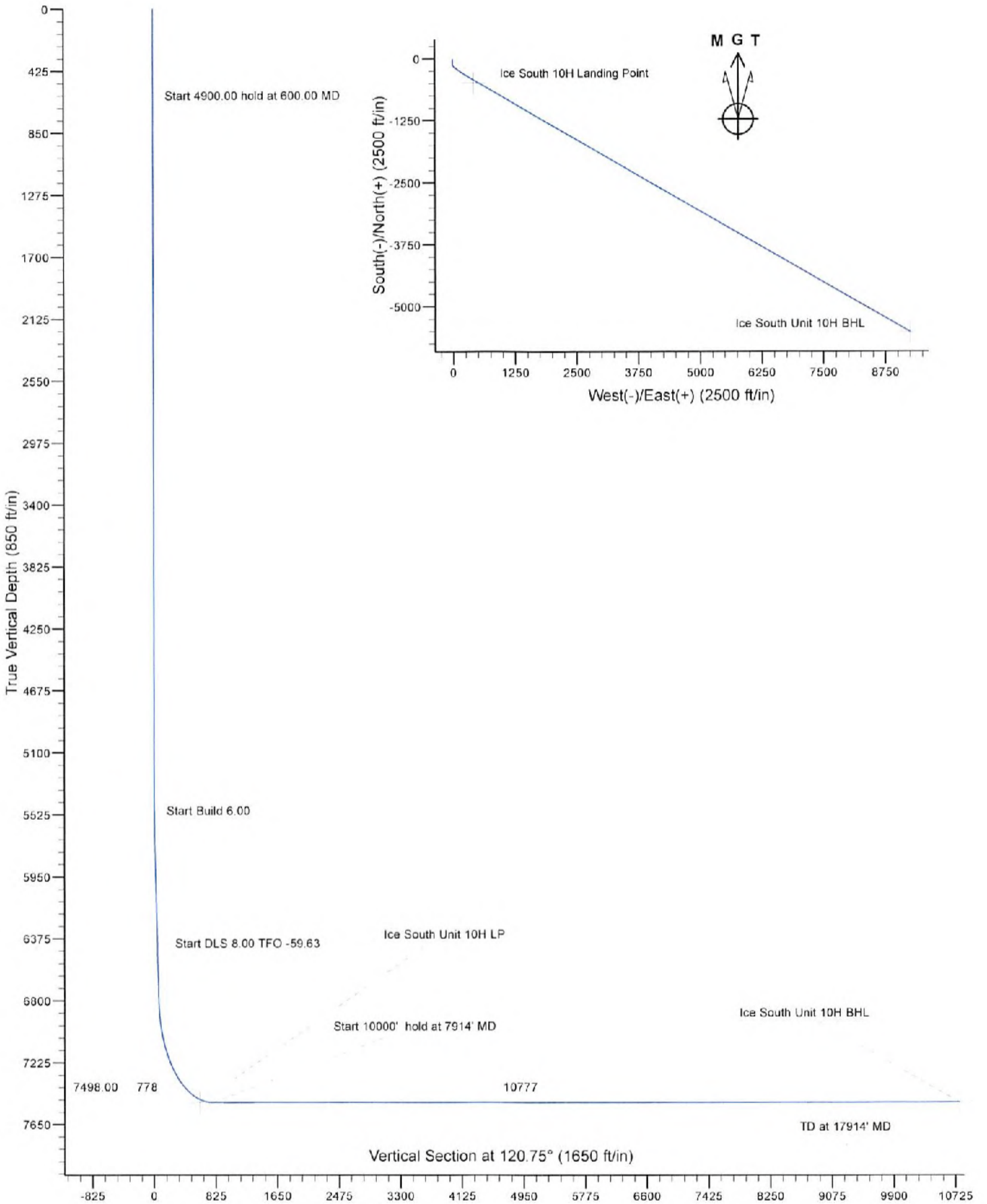
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Ice South 10H
Marion County, West Virginia



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Ice South Unit 10H

| 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? |
|------------------------|--------------|-----------|-------------|----------------------------------|-------------------|-----------------------|--------------------------------|---|
| Interstate Energy Inc. | 47-033-03784 | NA | NA | NA | NA | NA | NA | Never Drilled |
| Waco Oil & Gas Co Inc. | 47-033-04605 | 1300 | 4209 | BD, BT, SL, FM, FS, 30', 50', BI | 1901 - 4161 | 1901 - 4161 | NA | No |
| Waco Oil & Gas Co Inc. | 47-033-04663 | 1191 | 4100 | BF, BA, SL, 4S, 5S, TF & FF | 2120 - 4100 | 2120 - 4100 | NA | No |
| Waco Oil & Gas Co Inc. | 47-033-04653 | 1159 | 4172 | BF, BA, 4S, 5S, TF, FF, BI | 1661 - 4050 | 1661 - 4050 | NA | No |
| | | | | | | | | |
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| | | | | | | | | |

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Office of Oil and Gas
November 1 2017
Tennessee Department of
Environmental Protection

4703305913

4703305913

WW-9
(4/16)

API Number 47 - _____ - _____
Operator's Well No. Ice South Unit 10H

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 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 4703509721, 4708505151, 3416729577, 3412124086, 3412123995)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

*SDW
10/30/2017*

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 vert-i-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 *[Signature]*

Company Official (Typed Name) Gary Beall

Company Official Title Production Superintendent

Subscribed and sworn before me this 24th day of October, 2017

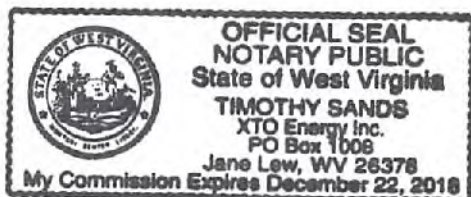
[Signature] Notary Public

My commission expires December 22, 2018

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WV Department of
Environmental Protection



4703305913

Form WW-9

Operator's Well No. Ice South Unit 10H

XTO Energy Inc.

Proposed Revegetation Treatment: Acres Disturbed 10.4 +/- Prevegetation pH _____

Lime 3 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

Per plans

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: S. P. Wood II

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

Title: BOG Inspector Date: 10/30/2017

Field Reviewed? () Yes () No

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XTO Drilling Additives

| 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 |
| Cl-300A | NA |
| Graphite | 7782-42-5 |
| | 14808-60-7 |
| GSX-602 Petrogel 100 | 14808-60-7 |
| | 67-63-0 |
| Lime | 1305-62-0 |
| | 1305-78-8 |
| | 7631-86-9 |
| | 1309-48-4 |
| Mica (F,C) | 12001-26-2 |
| | 14808-60-7 |
| Oil Dry | 12174-11-7 |
| | 14808-60-7 |
| Potassium Chloride (KCl) | 7447-40-7 |
| Salt | 7647-14-5 |
| Synthetic Based Mud | |
| Thunder Plug | |
| Walnut (F,M & C) | NA |
| Claytone II | |

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Environmental Protection

Revised (3/15)

Site Safety Plan Table of Contents

For H6A Well Work Permits and Deep Well Work Permits

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

1. Contacts, Schedules, and Meetings

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

2. Maps and Diagrams

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

3. Well Work

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

SDW
10/30/2017

4703305913

XTO Energy Inc.
Well Site Safety Plan

Well: Ice South Unit 10H

Pad: Ice
1284 Odells Knob Road
Shinnston, WV 26431

NAD 83 Coordinates
39.431064
-80.312613

RECEIVED
Office of Oil and Gas

NOV - 1 2017

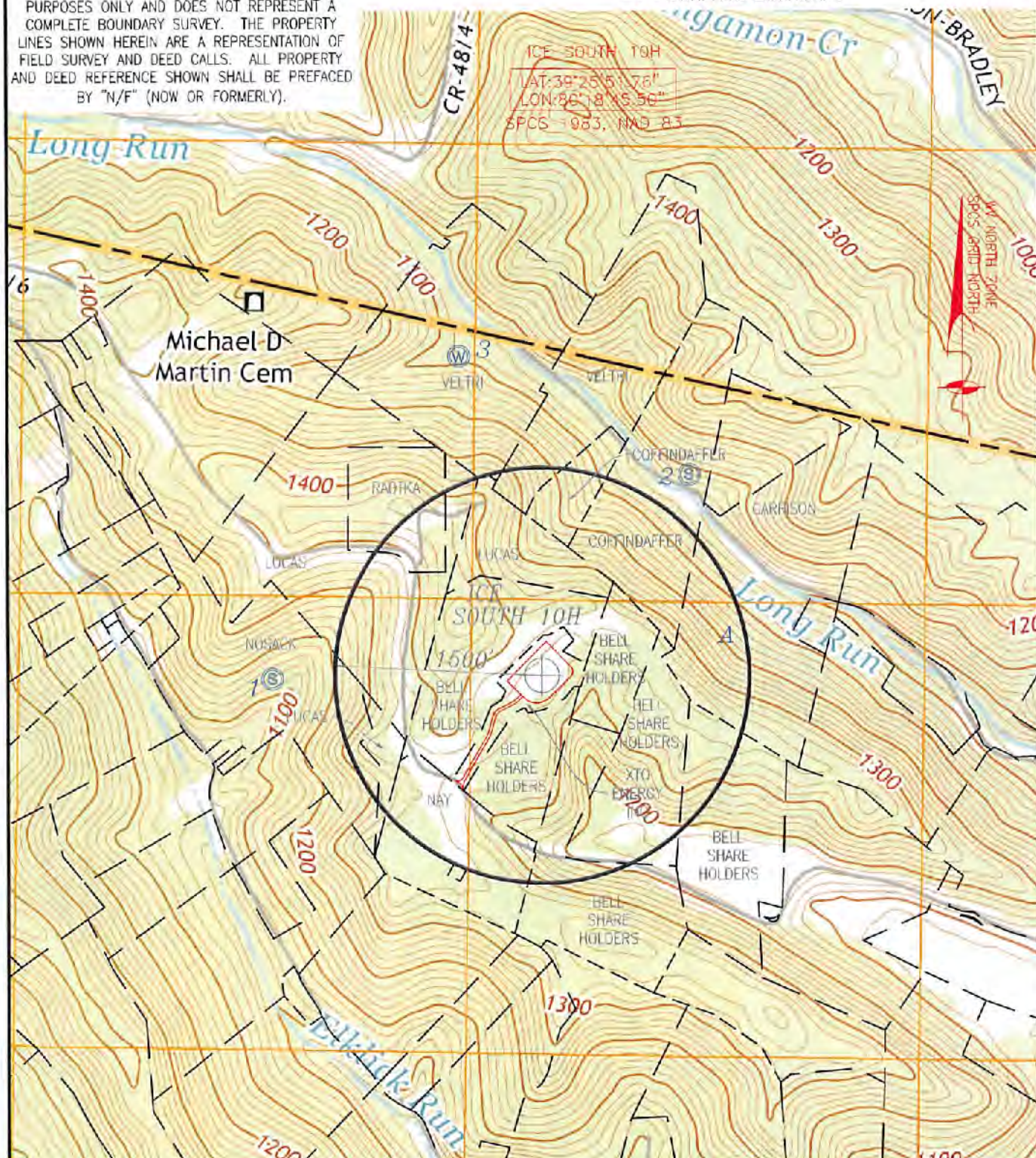
WV Department of
Environmental Protection

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



VERIFIED SOURCES

| POINT | NAME | ADDRESS | CITY | STATE | ZIP CODE | DISTANCE | BEARING | PARCEL I.D. |
|-------|------------------------------------|--------------------|------------|-------|----------|----------|---------------|--------------------------|
| 1 | Michael & Cynthia Nosack | 712 Bices Run Road | Shinnston | WV | 26431 | 1950' | S 89°23'04" W | Tax Map 5-147, Parcel 87 |
| 2 | Faris W. & Margaret J. Coffindafer | 24 Glenview Drive | Bridgeport | WV | 26330 | 1801' | N 36°26'58" E | Tax Map 5-148, Parcel 4 |
| 3 | Tina M. Veltri | 48 White Oak Drive | Bridgeport | WV | 26330 | 2382' | N 14°31'16" W | Tax Map 11-58, Parcel 37 |

PROPERTIES THAT POTENTIALLY HAVE WATER SOURCES WITHIN 1500 FEET

| POINT | NAME | ADDRESS | CITY | STATE | ZIP CODE | PARCEL I.D. |
|-------|--------------------|-------------|---------|-------|----------|-------------------------|
| A | Charlotte Garrison | P.O. Box 23 | Ida May | WV | 26576 | Tax Map 5-148, Parcel 6 |

ICE SOUTH UNIT 10H UNKNOWN SOURCES

CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA | 8/9/2017 | JC2017-28 | SHEET 1 OF 1



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

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



190 THORN HILL ROAD
WARRENDALE, PA 15086

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Office of Oil and Gas

NOV - 1 2017

WV Department of
Environmental Protection

BOTTOM HOLE ← TOP HOLE → 8375' 5916'

SCALE: 1" = 2400'

ICE SOUTH UNIT 10H

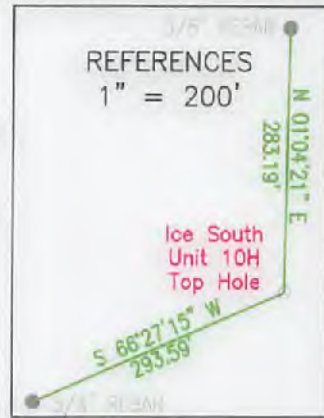
LATITUDE: 39°27'30" SCALE: 1" = 2000'
(USE FOR BOTH TOP AND BOTTOM HOLES)

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 HARRISON COUNTY IN OCTOBER 2017 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

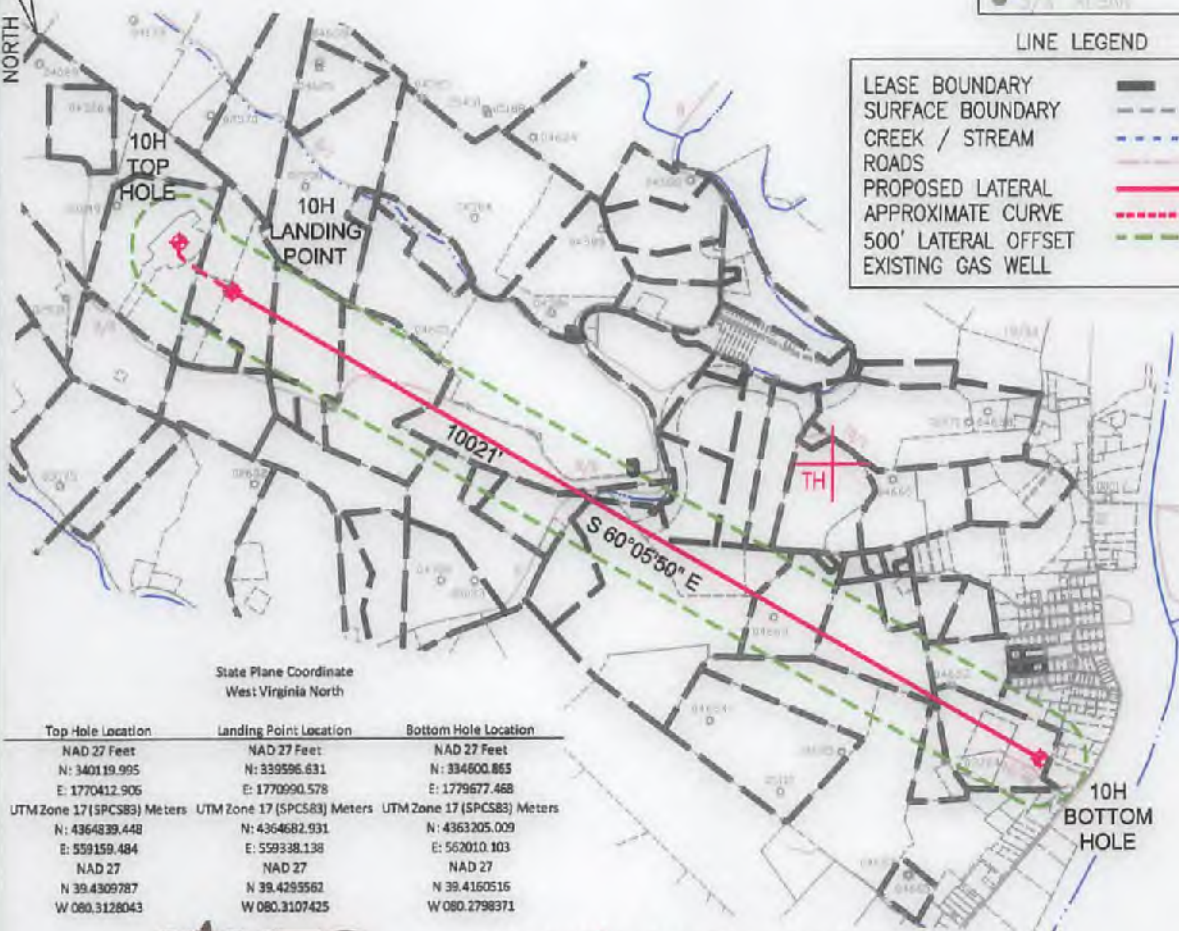
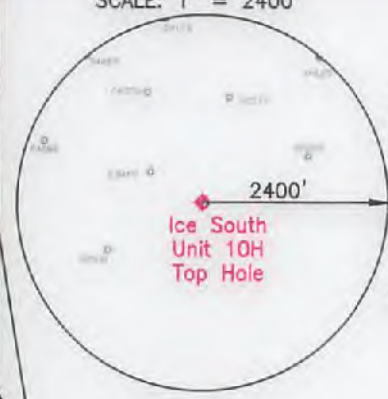
REFERENCES

1" = 200'



LINE LEGEND

| | |
|---------------------|-----------|
| LEASE BOUNDARY | — — — — — |
| SURFACE BOUNDARY | - - - - - |
| CREEK / STREAM | ~~~~~ |
| ROADS | — — — — — |
| PROPOSED LATERAL | — — — — — |
| APPROXIMATE CURVE | - - - - - |
| 500' LATERAL OFFSET | - - - - - |
| EXISTING GAS WELL | ☉ |



State Plane Coordinate
West Virginia North

| Top Hole Location | Landing Point Location | Bottom Hole Location |
|--|--|--|
| NAD 27 Feet N: 340119.995 E: 1770412.906 | NAD 27 Feet N: 339596.631 E: 1770990.578 | NAD 27 Feet N: 334600.865 E: 1779677.468 |
| UTM Zone 17 (SPCS83) Meters N: 4364839.448 E: 559159.484 | UTM Zone 17 (SPCS83) Meters N: 4364682.931 E: 559338.138 | UTM Zone 17 (SPCS83) Meters N: 4363205.029 E: 562010.103 |
| NAD 27 N 39.4309787 W 080.3128043 | NAD 27 N 39.4289562 W 080.3107425 | NAD 27 N 39.4160516 W 080.2798371 |



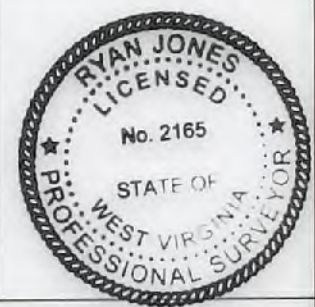
2402 PENNSYLVANIA 66 DELMONT, PA 15626
(724) 757-2417 BH www.jonesconsultant.com

SHEET 1 OF 2

FILE #: JC2017-28
DRAWING #: ICE SOUTH UNIT 10H
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1:2500
PROVEN SOURCE OF ELEVATION: RTK GPS

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

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



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



DATE: 5/3/2018
OPERATOR'S WELL #: ICE SOUTH UNIT 10H
API WELL #: 47 033
STATE COUNTY PERMIT

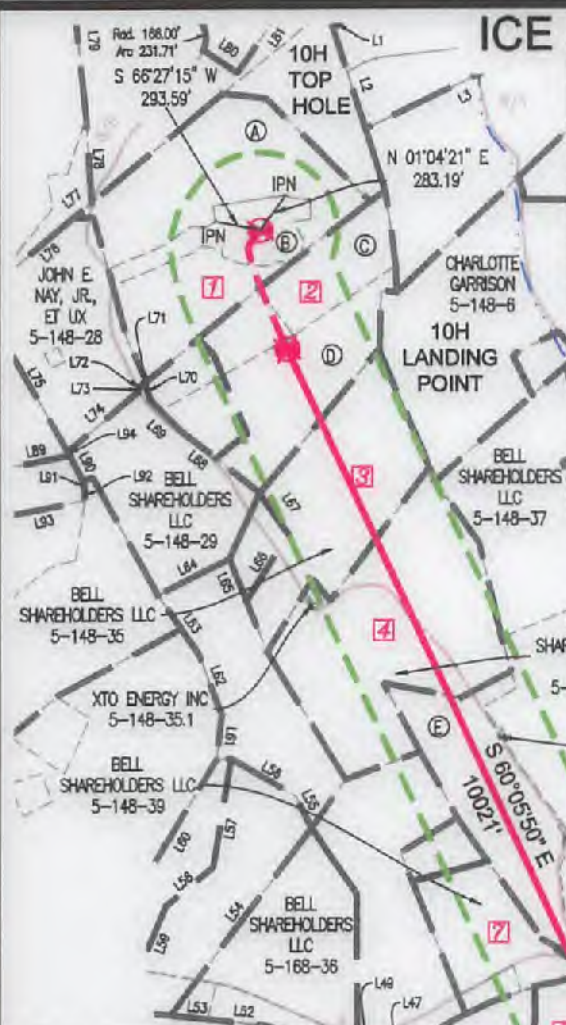
Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: LOWER WEST FORK RIVER (0502000206) ELEVATION: 1,364' (PROPOSED PAD FINISH GRADE)
COUNTY/DISTRICT: HARRISON / CLAY QUADRANGLE: SHINNSTON 7.5'
SURFACE OWNER: XTO ENERGY INC ACREAGE: 7.23±
OIL & GAS ROYALTY OWNER: JANICE M. BRENNAN, ET AL ACREAGE: 394.6±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,498' (TVD), 17,914' (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

ICE SOUTH UNIT 10H



| ICE SOUTH UNIT 10H | | |
|--------------------|------------------------------|-----------------|
| LEASE | LESSOR | MINERAL ACREAGE |
| 1) | JANICE M. BRENNAN, ET AL | 39.50 |
| 2) | ROBERT T. JOSEPH, ET AL | 27.81 |
| 3) | ROBERT T. JOSEPH, ET AL | 24.00 |
| 4) | DAVID J. HARMER, ET AL | 42.00 |
| 5) | CNX GAS COMPANY LLC | 95.16 |
| 6) | JEAN L. SHAVER, ET AL | 4.00 |
| 7) | FARIS W. COFFINDAFFER, ET UX | 13.025 |
| 8) | ROBERT EARL MCINTIRE, ET AL | 76.93 |
| 9) | DOROTHY A. GOFF | 19.32 |
| 10) | E. VIRGINIA ROCKWELL | 29.133 |
| 11) | KENRIC S. WADSWORTH, ET UX | 23.70 |

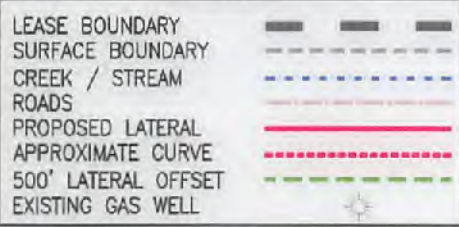
| | SURFACE OWNER | TAX PARCEL |
|---|-----------------------------|-------------|
| A | XTO ENERGY INC | 5-148-27 |
| B | XTO ENERGY INC | 5-148-27.1 |
| C | BELL SHAREHOLDERS LLC | 5-148-32 |
| D | BELL SHAREHOLDERS LLC | 5-148-33 |
| E | BELL SHAREHOLDERS LLC | 5-148-37 |
| F | BERNARD WILSON JR., ET UX | 5-148-37.1 |
| G | BELL SHAREHOLDERS LLC | 5-148-55 |
| H | BELL SHAREHOLDERS LLC | 5-168-38 |
| I | E. VIRGINIA ROCKWELL | 5-168-40 |
| J | RUSSELL E. HALL, ET UX | 5-168-45 |
| K | JAMES E. HYDE, ET UX | 5-168-46 |
| L | E. VIRGINIA ROCKWELL | 5-168-81.1 |
| M | MICHAELA A. KOVALICK, ET UX | 5-168-80 |
| N | ABANDONED RAILROAD | |
| O | E. VIRGINIA ROCKWELL | 5-168-79 |
| P | MICHAEL A. KOVALICK, ET UX | 5-0908-38.1 |
| Q | E. VIRGINIA ROCKWELL | 5-0908-36 |
| R | E. VIRGINIA ROCKWELL | 5-0908-34 |
| S | JANICE E. MCINTIRE | 5-0908-30 |
| T | JANICE E. MCINTIRE | 5-0908-30.1 |
| U | E. VIRGINIA ROCKWELL | 5-0908-29 |
| V | E. VIRGINIA ROCKWELL | 5-0908-82 |
| W | MCINTIRE CEMETERY | 5-0908-26 |
| X | RANDY MOORE, ET UX | 5-168-121 |

| LINE | BEARING | DISTANCE |
|------|---------------|----------|
| L1 | S 28°27'12" W | 64.90' |
| L2 | S 5°36'14" E | 685.76' |
| L3 | N 29°21'59" E | 2049.51' |
| L4 | S 41°35'28" W | 593.57' |
| L5 | N 87°47'26" W | 729.45' |
| L6 | S 71°14'56" W | 702.01' |
| L7 | S 07°52'37" E | 1147.85' |
| L8 | S 10°37'07" E | 1656.66' |
| L9 | S 08°45'00" E | 64.33' |
| L10 | N 88°11'32" E | 575.69' |
| L11 | S 64°24'01" E | 68.04' |
| L12 | S 67°58'42" E | 189.59' |
| L13 | S 09°17'27" E | 536.63' |
| L14 | N 84°51'44" E | 198.78' |
| L15 | S 05°32'13" E | 1141.84' |
| L16 | N 84°27'47" E | 1150.00' |
| L17 | S 05°32'13" E | 115.00' |
| L18 | N 84°27'47" E | 1225.00' |
| L19 | N 05°32'13" E | 120.00' |
| L20 | S 84°27'47" W | 375.00' |
| L21 | S 05°32'13" E | 30.00' |
| L22 | N 84°27'47" E | 375.00' |
| L23 | S 05°50'40" E | 1126.01' |
| L24 | S 85°22'47" W | 375.72' |
| L25 | S 24°48'12" W | 348.83' |
| L26 | S 67°07'13" E | 1740.08' |
| L27 | S 18°15'00" W | 106.91' |
| L28 | S 22°21'05" W | 150.54' |
| L29 | S 22°21'05" W | 74.00' |
| L30 | S 22°33'05" W | 192.64' |
| L31 | S 54°30'28" E | 231.50' |
| L32 | N 88°29'56" W | 435.56' |
| L33 | N 88°42'30" W | 570.94' |
| L34 | S 01°18'38" E | 1108.07' |
| L35 | S 86°57'50" W | 627.31' |
| L36 | N 13°34'02" E | 1083.06' |
| L37 | N 69°27'40" W | 597.18' |

| LINE | BEARING | DISTANCE |
|------|---------------|----------|
| L76 | N 14°55'27" W | 715.89' |
| L77 | N 15°35'56" W | 153.81' |
| L78 | N 38°22'07" W | 351.89' |
| L79 | N 40°56'23" W | 963.61' |
| L80 | N 89°39'12" E | 284.39' |
| L81 | N 00°12'26" W | 352.42' |
| L82 | N 86°35'26" E | 80.00' |
| L83 | S 03°24'34" E | 136.00' |
| L84 | S 86°35'26" W | 80.00' |
| L85 | N 03°24'34" W | 136.00' |
| L86 | N 57°26'24" W | 362.19' |
| L87 | N 32°24'25" E | 454.44' |
| L88 | S 50°34'48" E | 498.16' |
| L89 | N 43°40'38" E | 1489.73' |
| L90 | S 62°03'45" E | 186.73' |
| L91 | S 44°19'22" E | 86.00' |
| L92 | S 36°05'07" E | 57.73' |
| L93 | S 43°38'27" W | 1487.34' |
| L94 | N 82°03'45" W | 127.73' |

| LINE | BEARING | DISTANCE |
|------|---------------|-----------|
| L38 | N 69°37'58" W | 774.75' |
| L39 | N 89°12'85" W | 1120.57' |
| L40 | S 30°14'53" W | 1152.31' |
| L41 | S 66°57'39" E | 1189.750' |
| L42 | S 43°02'26" W | 1213.87' |
| L43 | N 52°57'13" W | 1645.82' |
| L44 | N 55°23'44" W | 1908.26' |
| L45 | N 42°18'46" W | 1726.82' |
| L46 | N 41°28'44" W | 407.14' |
| L47 | S 35°57'45" W | 73.21' |
| L48 | S 58°16'56" W | 97.77' |
| L49 | S 74°40'59" W | 89.90' |
| L50 | S 68°29'43" W | 266.40' |
| L51 | S 70°20'52" W | 334.80' |
| L52 | S 61°20'52" W | 391.34' |
| L53 | S 61°05'06" W | 240.15' |
| L54 | N 02°11'37" E | 1505.06' |
| L55 | N 62°00'00" W | 226.38' |
| L56 | S 85°04'57" W | 478.79' |
| L57 | S 25°51'47" E | 1701.25' |
| L58 | S 15°58'13" W | 396.00' |
| L59 | S 12°17'24" E | 742.73' |
| L60 | N 03°44'21" W | 1166.25' |
| L61 | N 28°51'34" W | 291.34' |
| L62 | N 55°33'45" W | 417.44' |
| L63 | N 70°17'27" W | 459.55' |
| L64 | N 28°43'55" E | 518.02' |
| L65 | S 57°07'15" E | 289.07' |
| L66 | N 02°55'20" W | 507.15' |
| L67 | N 70°46'31" W | 335.28' |
| L68 | N 88°39'00" W | 627.00' |
| L69 | N 79°39'00" W | 286.37' |
| L70 | N 52°54'00" W | 112.82' |
| L71 | S 17°15'13" W | 35.43' |
| L72 | S 13°14'17" W | 22.25' |
| L73 | S 18°19'18" E | 17.46' |
| L74 | S 14°50'40" W | 600.26' |
| L75 | N 65°06'33" W | 11036.02' |

LINE LEGEND



- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF HARRISON COUNTY IN OCTOBER 2017 AND FILES PROVIDED BY XTO ENERGY, INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

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

ICE SOUTH UNIT 10H

| | | |
|------------|--------------|--------------------------------|
| Drawn By: | Date: | CLAY DISTRICT |
| JRV | 5/3/18 | HARRISON COUNTY, WEST VIRGINIA |
| Scale: | Sheet: | File No.: |
| 1" = 1200' | SHEET 2 OF 2 | JC2017-28 |
| A/E # | 1208576 | |

WW-6A1
(5/13)

Operator's Well No. Ice South Unit 10H

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

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

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

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

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

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

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

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

Well Operator: XTO Energy Inc.

By: _____

Its: _____

Production Superintendent

Page 1 of ____

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Office of Oil and Gas

NOV - 1 2017

WV Department of
Environmental Protection

4703305913

| Lease Ref | Lessor | Lessee | Royalty | Book/Page |
|-----------|--|--|----------|-----------|
| 1 | Janice M. Brennan Trust A by Edward Patrick Brennan, a/k/a Edward P. Brennan and John Frank Brennan, a/k/a John F. Brennan Trustees. | XTO Energy, Inc. | Min. 1/8 | 1515-123 |
| 1 | Janice M. Brennan and John E. Brennan, husband | Jackson L. Smith Enterprises, dba WV Energies. Jackson L. Smith Enterprises, dba WV Energies to Sheldon & Assoc. - All Depths DB 1219-564. Sheldon & Assoc to Diversified Resources - Name Change DB 54-987. Diversified Resources to Bluestone Energy Partners - 350' Above top of Onondaga Limestone to Basement DB 1429-148. Bluestone to Antero - Merger DB 35-1236. Antero to XTO Energy - 100' above top of Rhinestreet to 100' below base Marcellus DB 1497-765. | Min. 1/8 | 1219-475 |
| 1 | Anita Lynn Beasley and Bryan Keith Beasley, husband | XTO Energy, Inc. | Min. 1/8 | 1517-89 |
| 1 | Richard Allen Harris | XTO Energy, Inc. | Min. 1/8 | 1517-736 |
| 1 | Dustin Scott Harris | XTO Energy, Inc. | Min. 1/8 | 1517-730 |
| 1 | Jason Paul Lee | XTO Energy, Inc. | Min. 1/8 | 1533-1113 |
| 1 | Joyce L. Harris | Jackson L. Smith Enterprises, dba WV Energies to Sheldon & Assoc. - All Depths DB 1220-528. Sheldon & Assoc to Diversified Resources - Name Change DB 54-987. Diversified Resources to M&R Investments - All Depths DB 1391-1166. M&R Investments to Bluestone Energy Partners - 350' Above top of Onondaga Limestone to Basement DB 1429-148. Bluestone to Antero - Merger DB 35-1236. Antero to XTO Energy - 100' above top of Rhinestreet to 100' below base Marcellus DB 1497-765. | Min. 1/8 | 1219-979 |
| 1 | Deborah C. Ryan f/k/a Deborah C. Rainey | XTO Energy, Inc. | Min. 1/8 | 1514-761 |
| 1 | Deborah C. Rainey, single | Jackson L. Smith Enterprises, dba WV Energies to Sheldon & Assoc. - All Depths DB 1220-528. Sheldon & Assoc to Diversified Resources - Name Change DB 54-987. Diversified Resources to M&R Investments - All Depths DB 1391-1166. M&R Investments to Bluestone Energy Partners - 350' Above top of Onondaga Limestone to Basement DB 1429-148. Bluestone to Antero - Merger DB 35-1236. Antero to XTO Energy - 100' above top of Rhinestreet to 100' below base Marcellus DB 1497-765. | Min. 1/8 | 1220-392 |
| 1 | Pamela A. and Richard L. Brooks | XTO Energy, Inc. | Min. 1/8 | 1514-753 |

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Office of Oil and Gas
NOV - 1 2017

WV Department of
Environmental Protection

4703305913

| Lease Ref | Lessor | Lessee | Royalty | Book/Page |
|-----------|--|--|----------|-----------|
| 1 | David J. and Melanie S. Decker | XTO Energy, Inc. | Min. 1/8 | 1514-757 |
| 1 | Mark E. and Julie A. Decker | XTO Energy, Inc. | Min. 1/8 | 1514-745 |
| 1 | Kristie L. and Eric S. Stinespring | XTO Energy, Inc. | Min. 1/8 | 1514-749 |
| 1 | Carolyn Decker, single | Jackson L. Smith Enterprises, dba WV Energies to Sheldon & Assoc. - All Depths DB 1220-528. Sheldon & Assoc to Diversified Resources - Name Change DB 54-987. Diversified Resources to M&R Investments - All Depths DB 1391-1166. M&R Investments to Bluestone Energy Partners - 350' Above top of Onondaga Limestone to Basement DB 1429-148. Bluestone to Antero - Merger DB 35-1236. Antero to XTO Energy - 100' above top of Rhinestreet to 100' below base Marcellus DB 1497-765. | Min. 1/8 | 1219-1240 |
| 1 | Dickie Harris, single | Jackson L. Smith Enterprises, dba WV Energies to Sheldon & Assoc. - All Depths DB 1220-528. Sheldon & Assoc to Diversified Resources - Name Change DB 54-987. Diversified Resources to M&R Investments - All Depths DB 1391-1166. M&R Investments to Bluestone Energy Partners - 350' Above top of Onondaga Limestone to Basement DB 1429-148. Bluestone to Antero - Merger DB 35-1236. Antero to XTO Energy - 100' above top of Rhinestreet to 100' below base Marcellus DB 1497-765. | Min. 1/8 | 1220-430 |
| 2 | Robert Thomas Joseph, a/k/a Robert Joseph, a married man dealing with his sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1477-358 |
| 2 | Alice Elizabeth Joseph Estate, by Robert Thomas Joseph, acting as Administrator debonis non cum testament annexo | XTO Energy, Inc. | Min. 1/8 | 1479-1299 |
| 2 | Brenda K. Joseph, by her Attorney-in-Fact, Robert Thomas Joseph, a/k/a Robert Joseph | XTO Energy, Inc. | Min. 1/8 | 1479-1127 |
| 2 | Dorothy T. Stauffer-Joseph, f/k/a Dorothy T. Joseph, single | XTO Energy, Inc. | Min. 1/8 | 1479-1134 |
| 3 | Robert Thomas Joseph, a/k/a Robert Joseph, a married man dealing with his sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1526-640 |
| 3 | Brenda Kay Joseph, a single woman, by her Attorney-in-Fact, Robert Thomas Joseph | XTO Energy, Inc. | Min. 1/8 | 1526-436 |
| 3 | Patrick Joseph Doyle, a married man dealing in his sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1528-166 |

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| 3 | Thomas Hastings Mayor, widower | XTO Energy, Inc. | Min. 1/8 | 1520-63 |
| 3 | The Mackenzie Doyle, Ciara Doyle, and Patrick David Doyle Trust, by Patrick Joseph Doyle, Trustee | XTO Energy, Inc. | Min. 1/8 | 1527-249 |
| 3 | Paul C. Espel, Jr. | XTO Energy, Inc. | Min. 1/8 | 1526-636 |
| 3 | Carolyn K. Capage, a married woman dealing in her sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1526-644 |
| 3 | David S. Joseph, a/k/a David Joseph, a single man | XTO Energy, Inc. | Min. 1/8 | 1526-648 |
| 3 | Deborah J. Locke, a/k/a Deborah Joseph Locke, a married woman dealing in her sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1525-732 |
| 4 | David J. Harmer; Elizabeth H. Rector; | Waco Oil & Gas Co. Waco Oil & Gas Co., Inc. to XTO Energy Inc. 1477-28. | Min. 1/8 | 1370-956 |
| 5 | CNX Gas Company LLC | XTO Energy, Inc. | Min. 1/8 | 1513-291 |
| 6 | Jean L. Shaver, widow | XTO Energy, Inc. | Min. 1/8 | 1513-190 |
| 6 | Donald M. and Joyce Fortney | XTO Energy, Inc. | Min. 1/8 | 1513-1261 |
| 6 | James M. and Diana Fortney | XTO Energy, Inc. | Min. 1/8 | 1513-1263 |
| 7 | Faris W. Coffindaffer and Margaret J. Coffindaffer, wife | XTO Energy, Inc. | Min. 1/8 | 1522-505 |
| 8 | Robert Earl McIntire, single man | XTO Energy, Inc. | Min. 1/8 | 1515-1314 |
| 8 | Lois Ann Ruckman | XTO Energy, Inc. | Min. 1/8 | 1515-1271 |
| 8 | Nancy L. McIntire, widower | XTO Energy, Inc. | Min. 1/8 | 1515-1325 |
| 8 | Virginia Minor, a/k/a Virginia L. Minor, widower | XTO Energy, Inc. | Min. 1/8 | 1516-382 |
| 8 | Anna Lee Matheny, widower | XTO Energy, Inc. | Min. 1/8 | 1516-392 |
| 8 | William C. Matheny, widower | XTO Energy, Inc. | Min. 1/8 | 1516-472 |

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| 8 | Alice Carolyn DeMars, a/k/a Alice Carolyn Demars, widow | XTO Energy, Inc. | Min. 1/8 | 1517-758 |
| 8 | Gary Riley Hall, a married man dealing in his sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1517-771 |
| 8 | Judith Marie Hall Fiber, single woman | XTO Energy, Inc. | Min. 1/8 | 1517-804 |
| 8 | Russell Earl Hall , single man | XTO Energy, Inc. | Min. 1/8 | 1517-782 |
| 8 | Betty L. Matheny, widower | XTO Energy, Inc. | Min. 1/8 | 1517-917 |
| 8 | Rozena Mae Yoder, a married woman dealing in her sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1518-345 |
| 8 | Anna Dell Van Fossen, a married woman dealing in her sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1518-349 |
| 8 | Brenda Kay Sciulli, a married woman dealing in her sole and separate property | XTO Energy, Inc. | Min. 1/8 | 1516-427 |
| 9 | Dorothy Ann Goff | Waco Oil & Gas Co. Waco Oil & Gas Co., Inc. to XTO Energy Inc. 1526-403. | Min. 1/8 | 1375-768 |
| 10 | Emily Virginia Rockwell, a/k/a E. Virginia Rockwell a/k/a Virginia Rockwell, a widow having never since remarried | XTO Energy, Inc. | Min. 1/8 | 1601-396 |
| 11 | Kenric S. Wadsworth and wife, Linda D. Wadsworth | XTO Energy, Inc. | Min. 1/8 | 1505-461 |

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XTO Energy Inc.
810 Houston Street
Fort Worth, TX 76102-6298
(817) 870-2800
(817) 870-1671 Fax

October 9, 2017

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

Re: Rights to Drill under Roads – Ice South Unit 10H

To Whom It May Concern:

Based on extensive research by XTO Energy's Land Department, our contractor's and 3rd party title attorneys, we have all necessary mineral rights under Harrison County Routes 8/6, (a/k/a Nutter Run); Harrison County Route 8, (a/k/a Williams Mine Road), in the location of our planned well-bores for the Ice South Unit.

Sincerely,

A handwritten signature in cursive script that reads 'Kaitlyn Lee'.

Kaitlyn Lee
Landman
XTO Energy Inc.
810 Houston Street
Fort Worth, TX 76102

An **ExxonMobil** Subsidiary

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WW-6AC
(1/12)

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

Date of Notice Certification: 10/30/17

API No. 47- _____ - _____
Operator's Well No. Ice South Unit 10H
Well Pad Name: Ice Pad

Notice has been given:

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

| | |
|---|--|
| State: <u>West Virginia</u> | UTM NAD 83 Easting: <u>559159.484</u> |
| County: <u>Harrison</u> | Northing: <u>4364839.448</u> |
| District: <u>Clay</u> | Public Road Access: <u>CR 8/6 (Nutter Run)</u> |
| Quadrangle: <u>Shinnston</u> | Generally used farm name: <u>XTO Energy Inc.</u> |
| Watershed: <u>Lower West Fork River</u> | |

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

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

Required Attachments:

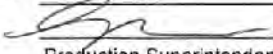
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

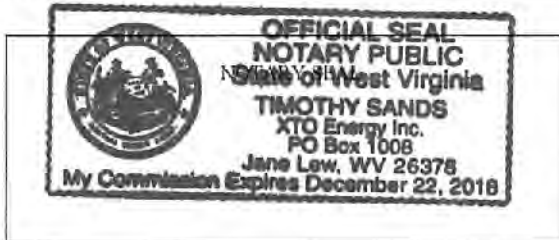
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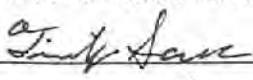
WW-6AC
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Certification of Notice is hereby given:

THEREFORE, I Gary Beall, 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>Jane Lew, WV 26378</u> |
| Its: | <u>Production Superintendent</u> | Facsimile: | <u>304-884-6809</u> |
| Telephone: | <u>304-884-6000</u> | Email: | <u></u> |



Subscribed and sworn before me this 30th day of October 2017.

 _____ Notary Public
 My Commission Expires December 22, 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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A
(9-13)

API NO. 47- _____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

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

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

Date of Notice: 10/30/17 Date Permit Application Filed: 10/30/17

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) 1
 Name: XTO Energy Inc.
 Address: PO Box 1008
Jane Lew, WV 26378
 Name: _____
 Address: _____

COAL OWNER OR LESSEE
 Name: See attached
 Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: _____
 Address: _____
 Name: _____
 Address: _____

COAL OPERATOR
 Name: _____
 Address: _____

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

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s) 1
 Name: Charlotte Garrison
 Address: PO Box 23
Idamay, WV 26576

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

*Please attach additional forms if necessary

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WW-6A
(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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NOV - 1 2017
WV Department of
Environmental Protection

4703305913

WW-6A
(8-13)

API NO. 47- _____ - _____
OPERATOR WELL NO. Ice South Unit 10H
Well Pad Name: Ice Pad

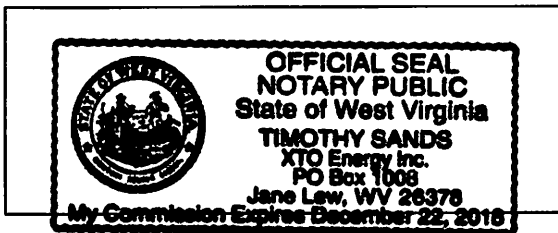
Notice is hereby given by:

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

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

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 30th day of Oct., 2017.

Timothy Sands Notary Public

My Commission Expires December 22, 2018

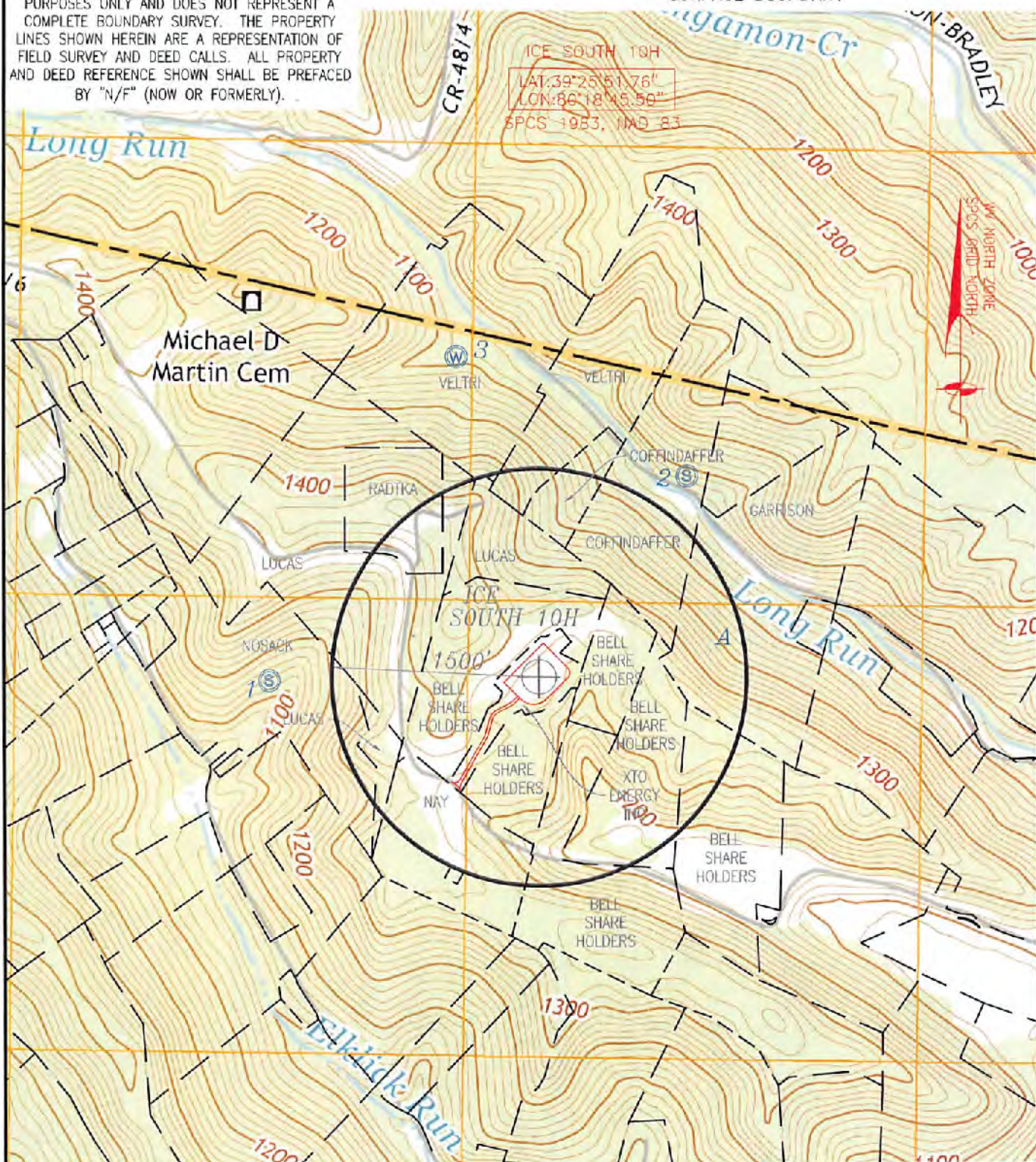
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FORM W-9

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

LEGEND

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



VERIFIED SOURCES

| POINT | NAME | ADDRESS | CITY | STATE | ZIP CODE | DISTANCE | BEARING | PARCEL I.D. |
|-------|------------------------------------|--------------------|------------|-------|----------|----------|---------------|--------------------------|
| 1 | Michael & Cynthia Nosack | 712 Bices Run Road | Shinnston | WV | 26431 | 1950' | S 89°23'04" W | Tax Map 5-147, Parcel 87 |
| 2 | Faris W. & Margaret J. Coffindafer | 24 Glenview Drive | Bridgeport | WV | 26330 | 1801' | N 36°26'58" E | Tax Map 5-148, Parcel 4 |
| 3 | Tina M. Veltri | 48 White Oak Drive | Bridgeport | WV | 26330 | 2382' | N 14°31'16" W | Tax Map 11-58, Parcel 37 |

PROPERTIES THAT POTENTIALLY HAVE WATER SOURCES WITHIN 1500 FEET

| POINT | NAME | ADDRESS | CITY | STATE | ZIP CODE | PARCEL I.D. |
|-------|--------------------|-------------|---------|-------|----------|-------------------------|
| A | Charlotte Garrison | P.O. Box 23 | Ida May | WV | 26576 | Tax Map 5-148, Parcel 6 |

ICE SOUTH UNIT 10H UNKNOWN SOURCES

CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA | 8/9/2017 | JC2017-28 | SHEET 1 OF 1



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

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



190 THORN HILL ROAD
WARRENDALE, PA 15086

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Office of Oil and Gas

NOV - 1 2017

4703305913

WW-6A3
(1/12)

Operator Well No. Ice South Unit 10H

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: 2/27/2017 Date of Planned Entry: 3/15/2017

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: Bell Shareholders LLC
 Address: 200 Chapel Brook Dr.
Bridgeport, WV 26330
 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>39.431258, -80.312379</u> |
| County: <u>Harrison</u> | Public Road Access: <u>CR 3/6 (Nutter Run)</u> |
| District: <u>Clay</u> | Watershed: <u>Lower West Fork River</u> |
| Quadrangle: <u>Shinnston</u> | Generally used farm name: <u>XTO Energy Inc.</u> |

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

Notice is hereby given by:

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

Oil and Gas Privacy Notice:

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

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WV Department of
Environmental Protection

Surface Owner

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

Bell Shareholders LLC
200 Chapel Brook Dr.
Bridgeport, WV 26330

Coal Owner or Lessee

Bell Shareholders LLC
200 Chapel Brook Dr.
Bridgeport, WV 26330

Consol Mining Company, LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

Mineral Owners

Janice M. Brennan Trust A
PO Box 98
Shinnston, WV 26431

Helen M. Burton
8086 Powell Avenue
Stonewood, WV 26301

Deborah C. Ryan
5 Debbie Lane
Conway, AR 72032

Dickie Harris
3 Debbie Lane
Conway, AR 72032

David J. & Melanie S. Decker
181 Randolph Lane
Steubenville, OH 43952

Anita L. Beasley
22 Bradley Drive
Cabot, AR 72023

Mark E. & Julie A. Decker
856 Township Road 375
Toronto, OH 43964

Richard A. Harris
83 Highway 319
Vilonia, AR 72173

Richard L. & Pamela A. Brooks
2876 State Route 213
Steubenville, OH 43952

Dustin S. Harris
704 5th St.
Conway, AR 72032

Eric S. & Kristie L. Stinespring
2888 State Rout 213
Steubenville, OH 43952

Jason P. Lee
17 Thorn Cemetary Road
Greenbrier, AR 72058

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WV Department of
Environmental Protection

4703305913

WW-6A5
(1/12)

Operator Well No. Ice South Unit 10H

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: 10/30/17 **Date Permit Application Filed:** 10/30/17

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>559159.484</u> |
| County: | <u>Harrison</u> | Northing: | <u>4364839.448</u> |
| District: | <u>Clay</u> | Public Road Access: | <u>CR 8/6 (Nutter Run)</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.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
Governor

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

August 1, 2017

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 Ice Well Pad, Harrison County
Ice South Unit 10H

Dear Mr. Martin,

This well site will be accessed from Permit #04-2017-0076 issued to XTO Energy, Inc. for access to the State Road for a well site located off of Harrison County Route 8/6 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,

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

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

E.E.O./AFFIRMATIVE ACTION EMPLOYER

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WV Department of
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

4703305913

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 | Dibromoacetone | 3252-43-5 | 5.00% | 0.00% | |
| | | | 2,2-Dibromo-3-nitropropionamide | 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% | |

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 MN Department of
 Environmental Protection

EROSION & SEDIMENT CONTROL PLAN

ICE PAD

CR 8/6, CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA
JANUARY, 2017

APPROVED
WVDEP OOG
Modification
10/27/2017



SITE INFO

SITE DESCRIPTION:
LOCATED SOUTHWEST OF COUNTY ROUTE 44 (DRAYS RUN ROAD)
TOTAL AREA OF 5.1 - 10.44 ACRES
AREA OF ACCESS ROAD - 0.56 ACRES
AREA OF PAD - 3.44 ACRES
AREA OF SITE TO UNDER GO EXCAVATION - 5.44 ACRES
AREA OF DISTURBANCE (FT. PARTS):
XTO ENERGY - 10.44 ACRES

SCHEDULE OF MAJOR CONSTRUCTION:
COMPLETION - SUMMER 2019

REDUCING STREAM & SURFACE WATER:
ON-SITE DRAINAGE FLUES TO ENT TO BRANSON CREEK

PRE-CONSTRUCTION RUNOFF VOLUME - 36,102 CF
POST-CONSTRUCTION RUNOFF VOLUME - 35,989 CF

SHEET NO. TITLE

- ES-1 EROSION AND SEDIMENT CONTROL - TITLE SHEET
- ES-2 EROSION AND SEDIMENT PLAN - EXISTING CONDITIONS
- ES-3 EROSION AND SEDIMENT PLAN - PROPOSED SITE LAYOUT
- ES-4 EROSION AND SEDIMENT CONTROL - WELL PAD
- ES-5 EROSION AND SEDIMENT CONTROL - DETAILS
- ES-6 EROSION AND SEDIMENT CONTROL - DETAILS
- ES-7 EROSION AND SEDIMENT CONTROL - DETAILS
- ES-8 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.
Consulting Engineers & Land Surveyors
443 ATHENA DRIVE DELMONT, PA 15626
TELEPHONE: (724) 468-4622 FAX: (724) 468-8940

Charles F. Hamantree 9/28/17
CHARLES F. HAMANTREE, REGISTERED PROFESSIONAL ENGINEER DATE

NOTES:
- 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.
- 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 APPROVAL BY PERMITTING AGENCIES.
- THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS AND DEPARTMENTS. THE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS, DEPTHS AND BOTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.



DRAWING NO. BXT010E
SHEET NO. ES-1

SITE STABILIZATION, INSTALLATION AND MAINTENANCE (TEMPORARY AND PERMANENT)

1. FILL SOIL TO DEPTH OF 3" REMOVE ALL OBJECTS 2" OR LARGER
2. BROADCAST COMMERICAL FERTILIZER INTO THE SOIL TO A DEPTH OF 2" FERTILIZER MAY BE BROADCAST DURING TILLING
3. SOIL REQUIRED SEED MIXTURE UNIFORM ON THE PREPARED AREA BY MEANS OF SEEDING EQUIPMENT HAVING SEEDING AND FERTILIZER DELIVERY MECHANISMS
4. AFTER GRADING ROLL TOPSOIL AREAS THAT ARE TO BE MOWED. USE A ROLLER WEIGHING NOT MORE THAN 45 LBS/FT² WIDTH
5. FOR PERMANENT SITE STABILIZATION APPLY SLOW RELEASE NITROGEN FERTILIZER TO THE SURFACE OF SALICED AREAS
6. PLACE MULCH IMMEDIATELY AFTER SEEDING OR WITHIN 48 HOURS AFTER SEEDING IS COMPLETED. PLANT MAY BE STORM PROTECTED 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 UNIFORM GRASS AREAS WITHIN GRADING LIMITS UNTIL THE ENTIRE PROJECT HAS BEEN COMPLETED. MOW AS INDICATED AND WHEN DIRECTED CONTROL FRAGMENTED AND MOBILE WEED GROWTH BY MEANS OF SPRAYING OR CUTTING. AFTER THE SEEDING AND SOIL SUPPLEMENTATION WORK HAS BEEN SATISFACTORILY COMPLETED IF A SHARP FALLING OCCURS, ONE WHICH REQUIRES RETROGRADING, EXCAVATION, OR ESTABLISHMENT OF A NEW SLOPE WHICH REQUIRES REPAIRS, THEN REELED, 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 TOE PERMANENT VEGETATION COVER IS ESTABLISHED TO THE POINT WHERE THE STANDARD FOR THE VEGETATION COVER WILL BE A UNIFORM COVERAGE OF DENSITY OF 70% ACROSS THE DISTURBED AREA
9. THE CONTRACTOR SHALL MAINTAIN THE SITE FOR THE PROVISIONS OF THIS PLAN UNTIL PERMANENT STABILIZATION IS ESTABLISHED

PERMANENT STABILIZATION
SPECIES: KY30/NOY BLENDED/RYE/STYR/PERFORATED FIBER
R FINE LIME SEED 80%
APPLICATION RATE: 20 LBS/A/C, 3 LBS/A/C, AND 10 LBS/A/C, RESPECTIVELY
FERTILIZER TYPE: COMMERICAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE: COMMERICAL - 1000 LBS/A/C
LIMING RATE: 3 TONS/A/C
MULCH TYPE: HW & STRAW
MULCHING RATE: 3 TONS/A/C
ANCHOR MATERIAL: RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE
ANCHORING METHOD: HYBRIDIZED SEEDING EQUIPMENT
RATE OF ANCHOR MATERIAL APPLICATION: 330 LBS/1000 SQ. YD.
SEEDING SEASON DATES: YEAR AROUND

TEMPORARY STABILIZATION
SPECIES: ANNUAL RYEGRASS
R FINE LIME SEED 80%
APPLICATION RATE: 40 LBS/A/C
FERTILIZER TYPE: COMMERICAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE: 1000 LBS/A/C
LIMING RATE: 3 TONS/A/C
MULCH TYPE: HW & STRAW
MULCHING RATE: 3 TONS/A/C

PERMANENT-STEP SLOPE
SPECIES: KY30/NOY BLENDED/RYE/STYR/PERFORATED FIBER
R FINE LIME SEED 80%
APPLICATION RATE: 20 LBS/A/C, 3 LBS/A/C, 6 LBS/A/C, AND 10 LBS/A/C, RESPECTIVELY
FERTILIZER TYPE: COMMERICAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE: COMMERICAL - 1000 LBS/A/C
LIMING RATE: 3 TONS/A/C
MULCH TYPE: HW & STRAW
MULCHING RATE: 3 TONS/A/C
ANCHOR MATERIAL: RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE
ANCHORING METHOD: HYBRIDIZED SEEDING EQUIPMENT
RATE OF ANCHOR MATERIAL APPLICATION: 330 LBS/1000 SQ. YD.
SEEDING SEASON DATES: YEAR AROUND

- ### GENERAL NOTES:
1. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE JOB AND MARK THEM PER THE 800-488-8822 THAT 48 HOURS IN ADVANCE OF EXCAVATION CHALLENGE SURVEY, SURVEY, AND FEDERAL OR STATE REQUIREMENTS (BY CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT)
 2. TRAFFIC SHALL BE MAINTAINED ON ALL ADJACENT STREETS AND DRIVES AT ALL TIMES. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH WVOT'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 OR MORE. IF STEEPER IN ACCORDANCE WITH EROSION CONTROL BLANKETING DETAIL ON PAGE ES-4.
2. PROTECTIVE STRIPS SHALL BE INSTALLED BEFORE INSTALLING BLANKETS.
3. WANCHER STRIPS IN A TRENCH AT THE TOP OF SLOPE USING A ROW OF STAPLES/STAKES
4. BACKFILL AND COMPACT THE TRENCH AFTER STAKING
5. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 1/2 (50%) 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 UNABLE TO EXCEED 12" (30CM) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS
10. FLECKED HYDROSEEDING WITH MULCH CAN BE USED AS AN ALTERNATIVE TO BLANKETING

GRADING NOTES:

1. THE CONTRACTOR SHALL PROTECT ROLL THE SITE TO THE SATISFACTION OF THE SUPERVISOR. ENGINEER AND REMOVE ALL SOFT SPOTS PRIOR TO THE IMPORTING OF ANY FILL MATERIAL
2. ALL FILLS SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY (ASTM D998) BASED ON SOIL TESTS OF ACTUAL FILLS TO BE USED FOR THE FILL
3. FILL WILL BE FREE OF OBSTRUCTIVE MATERIAL, INCLUDING LARGER THAN 6" WASTON 12" MAXIMUM LENGTH, INCLUDING PROXIMITY TO 200 NET TON FILL. FILLS WILL BE NO GREATER THAN 3'
4. THE CONTRACTOR SHALL USE BEST PRACTICE EROSION AND SEDIMENT CONTROL FIELD MANUAL
5. ALL CUT AND FILL OPERATIONS SHALL FOLLOW THE "BEST PRACTICE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL"

EROSION AND SEDIMENTATION CONTROL PLAN NOTES

1. ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO CHANNELS OF CONFORMANCE AS APPROPRIATE FOR GRADING AND ACCORDING HERETOIN TO CONSTRUCT THESE CONTROLS
2. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN THE TRIBUTARY AREAS OF THESE 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. SEDIMENTATION BASINS WHICH DO NOT DISCHARGE TO SEDIMENT TRAPS OR PITS, MUST BE PROTECTED UNDER THE TEMPORARY AREAS ARE STABILIZED
5. SEDIMENT MUST BE REMOVED FROM BASIN PROTECTION AFTER EACH STORM EVENT
6. STOOPPILE HEIGHTS MUST NOT EXCEED 30 FEET. STOOPPILE SLOPES MUST BE 2:1 OR FLATTER
7. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 30 DAYS MUST BE STABILIZED IMMEDIATELY USING NON-CONTAMINATING MATERIALS. MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FURNISHED GRADE AND WHICH WILL BE RECONSTRUCTED WITHIN ONE YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE COVERED AT FURNISHED GRADE OR WILL NOT BE RECONSTRUCTED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS
8. STOOPPILES MUST BE STABILIZED IMMEDIATELY
9. HWY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 2.0 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 SIGNIFICANT EVENT AND ON A REGULAR BASIS. ALL PREVENTIVE AND MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RECONSTRUCTION, RESEEDING, AND RESETTING
11. THE CONTRACTOR SHALL RECYCLE MATERIALS WHENEVER APPROPRIATE AND WHEN IN ACCORDANCE WITH LOCAL, STATE, & FEDERAL REQUIREMENTS. ALL MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF PROPERLY IN A CDD LANDFILL. IF CLEAN FILL MATERIAL IS RECOVERED FROM THE SITE, IT SHALL BE TAKEN TO AN APPROVED CDD LANDFILL OR IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AN APPROVED EAS PLAN IF OVER 5000 SQUARE FEET OF AREA IS OBTAINED

ROCK CONSTRUCTION ENTRANCES

1. THE ROCK CONSTRUCTION ENTRANCES ARE TO BE INSPECTED AT THE END OF EACH WORKING DAY AND REPAIRED IMMEDIATELY
2. THE THROUGHNESS OF THE ROCK CONSTRUCTION ENTRANCE SHALL BE CONSISTENTLY MAINTAINED AT 8"
3. A ROCK STOCKPILE IS TO BE READY AVAILABLE ON THE SITE AT ALL TIMES FOR IMMEDIATE REPAIR
4. DETENTILE FABRIC SHALL BE PLACED OVER ENTIRE AREA PRIOR TO FILLMENT OF STONE

COMPOST FILTER SOCKS

1. COMPOST FILTER SOCKS MUST BE INSTALLED AT LEVEL GRACE BOTH ENDS OF EACH TEMPORARY FILTER SOCK. SECTION MUST EXTEND AT LEAST 10 FEET UPHILLSIDE AT 45 DEGREES TO THE MAIN ANCHOR FILTER SOCK ADJACENT
2. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTER SOCK IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE IMMEDIATELY REPAIRED
3. WHERE THE SOCK REQUIRES REPAIR, IT WILL BE IMMEDIATELY REPAIRED
4. THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SOCK WHEN REACHES 3/4 OF THE FURNISHED HEIGHT OF THE SOCK OR IS DIRECTED BY THE ENGINEER
5. THE COMPOST FROM THE FILTER SOCKS WILL BE DEPOSITED ON THE SOIL WHEN SITE REACHES FOR VEGETATION COVER

VEGETATION

1. THE CONTRACTOR SHALL PROTECT VEGETATED AREAS EXISTING AND AFTER EACH STORM (SHORT) EVENT
2. THE CONTRACTOR SHALL INSPECT THE SITE FOR FILLS OR GRADERS ON CUT OR FILL SLOPES. THE CONTRACTOR SHALL FILL FILLS AND GRADERS BEFORE DISTURBED AREAS TO PROVIDE A UNIFORM SLOPE. THESE RESEED/MULCH AND REPAIR/REPLACE WAYS TO ORIGINAL SPECIFICATIONS
3. THE REPAIRS SHALL BE MADE WITHIN 2 DAYS OF DISCOVERING PROBLEM

TEMPORARY AND PERMANENT CHANNELS

1. THE CONTRACTOR SHALL INSPECT CHANNELS WEEKLY AND AFTER EACH STORM (SHORT) EVENT AND REPAIR IMMEDIATELY
2. EROSION CONTROL MATS SHALL BE INSPECTED FOR ANY TEARS OR HOLES. THE CONTRACTOR SHALL INSPECT ADDITIONAL SLOPES AS REQUIRED, TO ENSURE THAT THE MAT IS SECURELY ANCHORED TO THE CHANNEL
3. THE CONTRACTOR SHALL RESEED, MULCH AND REPAIR ANY BARE AREAS
4. THE CONTRACTOR SHALL MONITOR CHANNELS WHERE CHANNEL FLOW CAPACITY HAS BEEN REDUCED BY EXCESSIVE VEGETATIVE GROWTH
5. WHILE EXCESSIVE SEDIMENT DEPOSITS OCCUR IN SEDIMENT CHANNELS, THE CONTRACTOR SHALL REMOVE THE SEDIMENT DEPOSITS, INSPECT THE CHANNEL, FOR OBSTRUCTIONS, THEN REMOVE SAID OBSTRUCTIONS, AND THE CONTRACTOR SHALL THEN RESEED, RESEED, MULCH AND REPAIR THE CHANNEL

| SO QUANTITIES ESTIMATE | | | | |
|--|-------|-----------|------------|------------|
| ITEMS | UNITS | EST. QTY. | UNIT PRICE | TOTAL COST |
| Clearing & Grubbing | | | | |
| Clearing & Grubbing (1/4" max) | AC | 10 | | |
| Tree Clearing | AC | 5 | | |
| Erosion & Sediment Control | | | | |
| Rock Construction Entrance | EA | 1 | | |
| 18" Composite Filter Sock | LF | 1,540 | | |
| 24" Composite Filter Sock | LF | 1,081 | | |
| 16" High Channels, F-4 | LF | 1,534 | | |
| Rock Check Protection, F-4 | CV | 32 | | |
| Rock Filter | EA | 8 | | |
| Erosion Control Blanketing | SV | 14,178 | | |
| Seeding & Mulching | SV | 28,941 | | |
| Construction Safety Fence | LF | 600 | | |
| Construction | | | | |
| Topsoil Stripped (Stockpile Fill/Spread) | CV | 3,960 | | |
| Total Cut & Fill | CV | 81,220 | | |
| Ky30/Noy Blend | LF | 1,180 | | |
| Ky30/Noy Blend | LF | 1,875 | | |
| Pad & Access Road | | | | |
| Approach Road Surface | SV | 2,040 | | |
| Rock Check Mat | SV | 10,890 | | |
| 12" Culvert | LF | 470 | | |
| 18" DCP 20 Perforated Underdrain | LF | 1,610 | | |
| Pump Outlet Structure | EA | 4 | | |

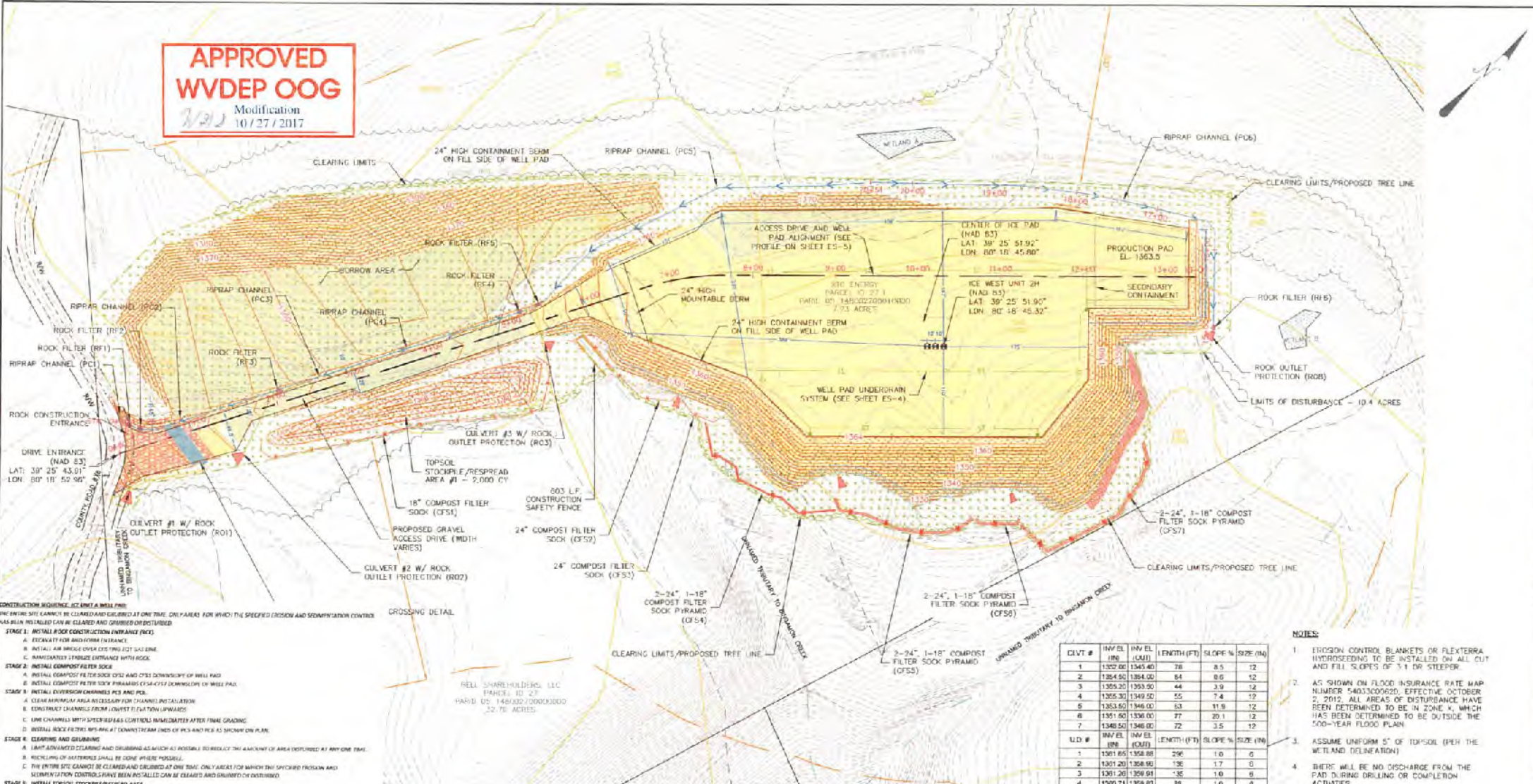
NOV - 1 2017

WV Department of Environmental Protection

Morris Knowles & Associates, Inc.
Consulting Engineers & Land Surveyors
443 ATHENA DRIVE DELMONT, PA 15626
TELEPHONE: (724) 468-4622 FAX: (724) 468-8940

ICE PAD prepared for XTO ENERGY, INC. CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA EROSION AND SEDIMENT CONTROL - TITLE SHEET

APPROVED WVDEP OOG
Modification
10/27/2017



- CONSTRUCTION SEQUENCE, EROSION & SEDIMENT CONTROL**
THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED.
- STAGE 1: INSTALL #00F CONSTRUCTION ENTRANCE (NCS)**
- STAKEOUT FOR AND FORM ENTRANCE
 - INSTALL AIR WEDGE OVER THE PROPOSED ENTRANCE
 - MANUALLY STABILIZE ENTRANCE WITH ROCK
- STAGE 2: INSTALL COMPOST FILTER SOCKS**
- INSTALL COMPOST FILTER SOCKS OVER AND OVER DOWNSTREAM OF WELL PAD
 - INSTALL COMPOST FILTER SOCKS PERMANENTLY OVER AND OVER DOWNSTREAM OF WELL PAD
- STAGE 3: INSTALL DIVERSION CHANNELS PCS AND POC**
- CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION
 - CONSTRUCT CHANNELS FROM LOWEST ELEVATION UPWARDS
 - LINE CHANNELS WITH SPECIFIED EROSION CONTROL IMMEDIATELY AFTER FINAL GRADING
 - INSTALL ROCK FILTER SOCKS AT DOWNSTREAM ENDS OF PCS AND POC AS SHOWN ON PLAN
- STAGE 4: CLEARING AND GRUBBING**
- LIMIT ADVANCED CLEARING AND GRUBBING AS MUCH AS POSSIBLE TO REDUCE THE AMOUNT OF AREA DISTURBED AT ANYONE TIME
 - RECYCLING OF MATERIALS SHALL BE DONE WHERE POSSIBLE
 - THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED
- STAGE 5: INSTALL TOPSOIL STOCKPILE/RESPREAD AREA**
- INSTALL COMPOST FILTER SOCKS OVER AND OVER DOWNSTREAM OF TOPSOIL STOCKPILE
- STAGE 6: UNDERDRAIN**
- STAKEOUT AND STAKEOUT OF UNDERDRAIN AT BOTTOM AND TOP OF CUT AND FILL SLOPES AND BORROW AREA
 - CONSTRUCT UNDERDRAIN CHANNELS
 - INSTALL BENCH AND KEYWAY
 - RESPREAD 3" MINIMUM OF TOPSOIL ON CUT/FILL SLOPES INCLUDING BORROW AREA
 - APPLY PERMANENT STABILIZATION TO UNDERDRAIN CHANNELS AND FURNISH GRASS SEED
- STAGE 7: INSTALL CULVERTS #1-3**
- INSTALL ROCK OUTLET PROTECTION (RO1-RO3) AT THE DOWNSTREAM ENDS OF CULVERTS #1-3
- STAGE 8: INSTALL PERMANENT CHANNELS PCS AND POC**
- CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION
 - CONSTRUCT CHANNELS FROM LOWEST ELEVATION UPWARDS
 - LINE CHANNELS WITH SPECIFIED EROSION CONTROL IMMEDIATELY AFTER FINAL GRADING
 - INSTALL ROCK FILTER SOCKS AT DOWNSTREAM ENDS OF PERMANENT CHANNELS AS SHOWN ON PLAN
 - INSTALL WELL PROTECTION AT THE DOWNSTREAM ENDS OF PERMANENT CHANNELS (WELL PROTECTORS #1-3)
 - INSTALL ROCK OUTLET PROTECTION (RO1-RO3) AT THE DOWNSTREAM ENDS OF CULVERTS #1-3
 - STAKEOUT TO BOTTOM OF SLOPE
 - STAKEOUT ACCESS DRIVE, WELL PAD AND PRODUCTION PAD WITH FINISHED ELEVATION
- STAGE 9: SEED AND MAINT.**
- SEED ALL DISTURBED AREAS WITH SPECIFIED SEEDING MIXTURE. ALL FILL CONTROL FACILITIES SHALL BE MAINTAINED AND LEFT FUNCTIONAL UNTIL SOY TOMATOES ARE HARVESTED
- STAGE 10: SITE STABILIZATION**
- WHEN 20% OF STABILIZED WITH UNIFORM JOINT PERMANENT VEGETATIVE COVER OVER PROPERTY AREA, REMOVE EROSION AND SEDIMENTATION CONTROLS



WELL SHAREHOLDERS, LLC
PARCEL ID: 1481002700000000
22.76 ACRES

LEGEND:

- EXISTING CONTOUR LINES
- PROPOSED CONTOUR LINES
- NEPS SOIL UNIT BOUNDARY
- EASEMENT LINE
- PROPERTY LINE
- WETLAND DELINEATION STUDY AREA / AREA OF INTEREST
- EXISTING STREAM
- SETBACK LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- COMPOST FILTER SOCK
- PERMANENT CHANNEL
- ROCK FILTER
- ROCK CHANNEL OUTLET PROTECTION
- EXISTING WETLAND
- ROCK CONSTRUCTION ENTRANCE
- EARTHEN BERM
- TOPSOIL STOCKPILE / RESPREAD AREA
- BENCH & KEYWAY
- EROSION CONTROL BLANKET
- AREA IN CUT
- AREA IN FILL

| CULV # | INVEL (IN) | OUTVEL (FT) | LENGTH (FT) | SLOPE % | SIZE (IN) |
|--------|------------|-------------|-------------|---------|-----------|
| 1 | 1322.00 | 1345.40 | 76 | 8.5 | 12 |
| 2 | 1354.00 | 1354.00 | 64 | 0.0 | 12 |
| 3 | 1355.20 | 1393.00 | 44 | 3.9 | 12 |
| 4 | 1355.30 | 1349.00 | 55 | 7.4 | 12 |
| 5 | 1353.50 | 1346.00 | 63 | 11.9 | 12 |
| 6 | 1351.00 | 1336.00 | 77 | 20.1 | 12 |
| 7 | 1348.50 | 1346.00 | 72 | 3.5 | 12 |

| ULD # | INVEL (IN) | OUTVEL (FT) | LENGTH (FT) | SLOPE % | SIZE (IN) |
|-------|------------|-------------|-------------|---------|-----------|
| 1 | 1301.00 | 1308.00 | 296 | 1.0 | 6 |
| 2 | 1301.20 | 1306.00 | 136 | 1.7 | 6 |
| 3 | 1301.20 | 1309.00 | 136 | 1.0 | 6 |
| 4 | 1300.71 | 1309.00 | 98 | 1.0 | 6 |
| 5 | 1302.00 | 1309.00 | 240 | 1.0 | 6 |
| 6 | 1302.00 | 1308.30 | 364 | 1.0 | 6 |
| 7 | 1309.00 | 1308.41 | 128 | 1.0 | 6 |
| 8 | 1301.04 | 1309.11 | 273 | 1.0 | 6 |

NOTES:

- EROSION CONTROL BLANKETS OR FLEXTERRA HYDROSEEDING TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER
- AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 5403300620, EFFECTIVE OCTOBER 2, 2012, ALL AREAS OF DISTURBANCE HAVE BEEN DETERMINED TO BE IN ZONE K, WHICH HAS BEEN DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN
- ASSUME UNIFORM 5" OF TOPSOIL (PER THE WETLAND DELINEATION)
- THERE WILL BE NO DISCHARGE FROM THE PAD DURING DRILLING OR COMPLETION ACTIVITIES
- ALL FILLS SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL TESTS OF ACTUAL SOILS TO BE USED FOR THE FILLS

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.

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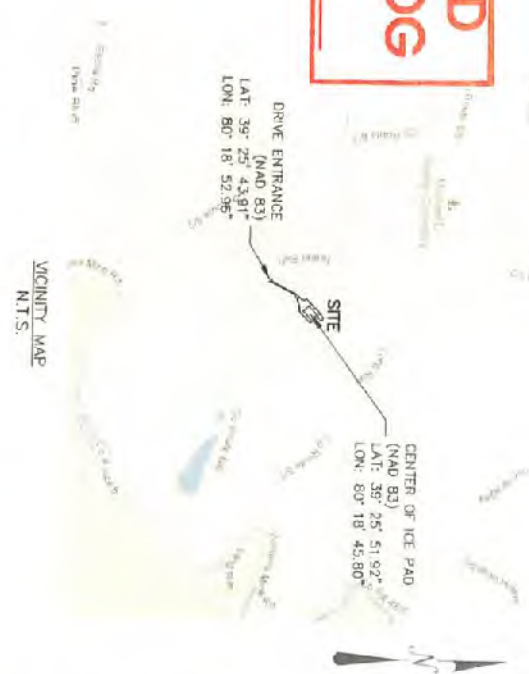
ICE PAD
prepared for
XTO ENERGY, INC.
attested
MORRIS KNOWLES & ASSOCIATES, INC.
CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA
EROSION & SEDIMENT CONTROL PLAN - SITE LAYOUT

DRAWING NO. **9XTOICE**
SHEET NO. **ES-3**

| DESIGNED BY: SPB | DATE: 9/27/2017 | REVISION BY: SPB | DATE: 10/27/2017 |
|---|-----------------|------------------|------------------|
| REVIEWED BY: MUY <td>DATE: 9/27/2017</td> <td>REVISION BY: SPB</td> <td>DATE: 10/27/2017</td> | DATE: 9/27/2017 | REVISION BY: SPB | DATE: 10/27/2017 |
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EROSION CONTROL PLAN

APPROVED
WVDEP OOG
 Modification
WVDEP
 10/27/2017



SITE INFO

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

TOTAL AREA OF SITE: - 10.4± ACRES
AREA OF ACCESS ROAD: - 0.2± ACRES
AREA OF PAD: - 3.4± ACRES
AREA OF SITE TO UNDER GO EXCAVATION: - 6.8± ACRES

AREA OF DISTURBANCE PER PARCEL:
 XTO ENERGY - 10.4± ACRES

PRE-CONSTRUCTION RUNOFF VOLUME: - 38,103 CF
POST-CONSTRUCTION RUNOFF VOLUME: - 35,989 CF

SCHEDULE OF MAJOR CONSTRUCTION COMPLETION:
 - SUMMER 2017
 - SUMMER 2019

RECEIVING STREAM & SURFACE WATER:
 ON-SITE DRAINAGE TOWNS TO DRAIN TO BRACKMAN CREEK

| SHEET NO. | TITLE |
|-----------|--|
| ES-1 | EROSION AND SEDIMENT CONTROL - TITLE SHEET |
| ES-2 | EROSION AND SEDIMENT PLAN - EXISTING CONDITIONS |
| ES-3 | EROSION AND SEDIMENT PLAN - PROPOSED SITE LAYOUT |
| ES-4 | EROSION AND SEDIMENT CONTROL - WELL PAD |
| ES-5 | EROSION AND SEDIMENT CONTROL - DETAILS |
| ES-6 | EROSION AND SEDIMENT CONTROL - DETAILS |
| ES-7 | EROSION AND SEDIMENT CONTROL - DETAILS |
| ES-8 | EROSION AND SEDIMENT CONTROL - DETAILS |

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

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

Charles F. Hammontree
 CHARLES F. HAMMONTREE, REGISTERED PROFESSIONAL ENGINEER DATE: 9/26/17

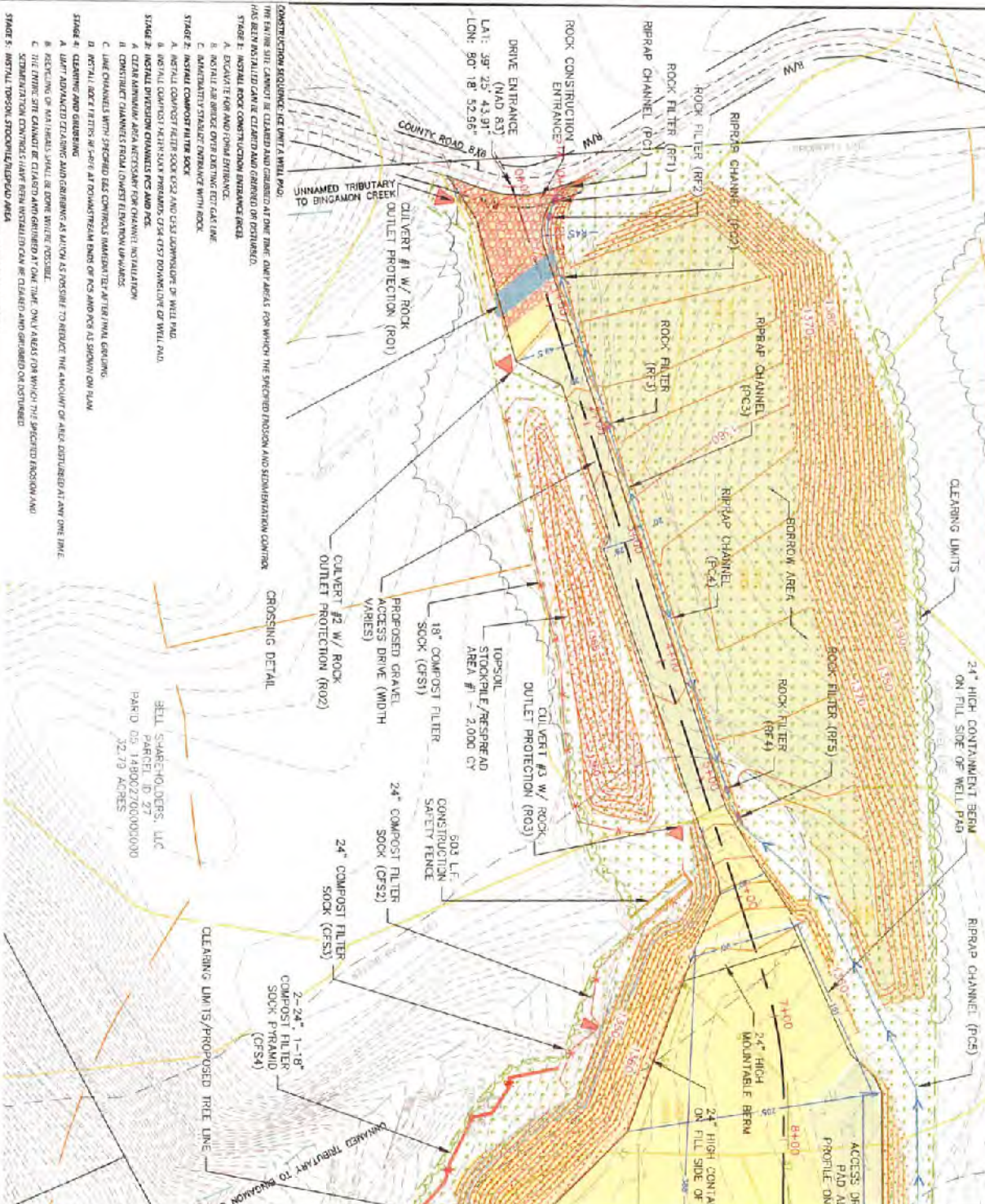
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 - THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY CHANGES IN DESIGN PLANS UNLESS HE/HIS CONSULTANT IS GIVEN BY THE ENGINEER. THE CONTRACTOR AND/OR THE OWNER WILL BE HELD RESPONSIBLE FOR ANY CHANGES TO THESE PLANS MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER AND NECESSARY APPROVALS OF PERTINENT AGENCIES.
 - THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS. ALL OPERATIONS IN THESE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING EXISTING UTILITIES, SIZES AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.

| ESTIMATE | BID QTY. | UNIT PRICE | TOTAL COST |
|----------|----------|------------|------------|
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| DRAWING NO. 9XTOICE SHEET NO. ES-1 | ICE PAD prepared for XTO ENERGY, INC. situated CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA EROSION AND SEDIMENT CONTROL - TITLE SHEET | Morris Knowles & Associates, Inc. <i>Consulting Engineers and Land Surveyors</i> 443 Athena Drive Delmont, PA 15626 Telephone: (724) 468-4622 Fax: (724) 468-8940 | DESIGNED BY: SRP REVIEWED BY: MMV DRAWN BY: SRP DATE: 9/26/2017 PROJ. NO.: 1637 DRAWING NO.: 9XTOICE | SCALE: N/A | REVISION BY: SRP DATE: 8/12/12 DESCRIPTION: UPDATE QFS QUANTITIES REVISION BY: SRP DATE: 9/13/17 DESCRIPTION: ADDED BEDROCK QUANTITY REVISION BY: SRP DATE: 9/26/17 DESCRIPTION: UPDATE QUANTITIES REVISION BY: DATE: DESCRIPTION: REVISION BY: DATE: DESCRIPTION: REVISION BY: DATE: DESCRIPTION: |
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APPROVED
WVDEP OOG
 Modification
 10/27/2017



- CONSTRUCTION REQUIREMENTS FOR A WELL PAD:**
 THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED.
- STAGE 1:** INSTALL ROCK CONSTRUCTION ENTRANCE RINGS
 A. EXCAVATE FOR AND FORM ENTRANCE.
 B. INSTALL FAB BRIDGE OVER DISTINGUISHING GAS LINE.
 C. ALTERNATIVELY STABILIZE ENTRANCE WITH ROCK.
- STAGE 2:** INSTALL COMPOST FILTER SOCK
 A. INSTALL COMPOST FILTER SOCK CFS2 AND CASE DRAINAGE OF WELL PAD.
 B. INSTALL COMPOST FILTER SOCK CFS1 PRELIMINARY FOR CHANNEL INSTALLATION.
 C. CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION.
 D. CONSTRUCT CHANNELS FROM LOWEST ELEVATION UPWARDS.
- STAGE 3:** LINE CHANNELS WITH SPECIFIED EROSION MANAGEMENT AFTER FINAL GRADING.
 A. INSTALL ROCK FILTERS AT EACH AT DOWNSTREAM END OF PCS AND PCS AS SHOWN ON PLAN.
 B. LIMIT ADVANCED GRUBBING AND GRUBBING AS MUCH AS POSSIBLE TO REDUCE THE AMOUNT OF AERIAL DISTURBANCE AT ANY ONE TIME.
 C. RECLADDING OF MAIN CHANNEL SHOULD BE DONE WHILE POSSIBLE.
 D. THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED.
- STAGE 4:** INSTALL TOPSOIL STOCKPILE/RESERVED AREA
 A. INSTALL COMPOST FILTER SOCK CFS3 DEPOSITIVE OF TOPSOIL STOCKPILE.
- STAGE 5:** RECLAIMMENT
 A. STAKE TOPOGRAPHY SURVEIL OR MONITOR AT BOTTOM AND TOP OF CUT AND FILL SLOPES, AND BERMING AREAS.
 B. RECLAIM SLOPE TO DESIGN GRADE.
 C. RECLAIM BERM & LEAVING SOAKS.
 D. RECLAIMMENT OF TOPSOIL OR FILL SLOPES INCLUDING BERMING AREA.
 E. APPLY TERRACING STABILIZATION TO BARRIERS AND FINISH GRADE AREAS.
 F. APPLY PERMANENT STABILIZATION TO FINISH GRADE AREAS FOR SPECIFICATIONS ON 6.2.
 G. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.
- STAGE 6:** INSTALL PERMANENT CHANNEL PCS AND PCS
 A. CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION.
 B. CONSTRUCT CHANNELS FROM LOWEST ELEVATION UPWARDS.
 C. LINE CHANNELS WITH SPECIFIED EROSION MANAGEMENT AFTER FINAL GRADING.
 D. INSTALL ROCK FILTERS AT EACH AT DOWNSTREAM END OF PERMANENT CHANNELS AS SHOWN ON PLAN.
 E. RECLAIM SLOPE TO DESIGN GRADE.
 F. RECLAIM BERM & LEAVING SOAKS.
 G. APPLY TERRACING STABILIZATION TO BARRIERS AND FINISH GRADE AREAS.
 H. APPLY PERMANENT STABILIZATION TO FINISH GRADE AREAS FOR SPECIFICATIONS ON 6.2.
 I. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.
- STAGE 7:** INSTALL COVERTS #1-3
 A. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.
- STAGE 8:** CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION
 A. CONSTRUCT CHANNELS FROM LOWEST ELEVATION UPWARDS.
 B. LINE CHANNELS WITH SPECIFIED EROSION MANAGEMENT AFTER FINAL GRADING.
 C. RECLAIM SLOPE TO DESIGN GRADE.
 D. RECLAIM BERM & LEAVING SOAKS.
 E. APPLY TERRACING STABILIZATION TO BARRIERS AND FINISH GRADE AREAS.
 F. APPLY PERMANENT STABILIZATION TO FINISH GRADE AREAS FOR SPECIFICATIONS ON 6.2.
 G. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.
- STAGE 9:** RECLAIMMENT
 A. STAKE TOPOGRAPHY SURVEIL OR MONITOR AT BOTTOM AND TOP OF CUT AND FILL SLOPES, AND BERMING AREAS.
 B. RECLAIM SLOPE TO DESIGN GRADE.
 C. RECLAIM BERM & LEAVING SOAKS.
 D. RECLAIMMENT OF TOPSOIL OR FILL SLOPES INCLUDING BERMING AREA.
 E. APPLY TERRACING STABILIZATION TO BARRIERS AND FINISH GRADE AREAS.
 F. APPLY PERMANENT STABILIZATION TO FINISH GRADE AREAS FOR SPECIFICATIONS ON 6.2.
 G. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.
- STAGE 10:** SITE STABILIZATION/RECLAIMMENT
 A. STAKE TOPOGRAPHY SURVEIL OR MONITOR AT BOTTOM AND TOP OF CUT AND FILL SLOPES, AND BERMING AREAS.
 B. RECLAIM SLOPE TO DESIGN GRADE.
 C. RECLAIM BERM & LEAVING SOAKS.
 D. RECLAIMMENT OF TOPSOIL OR FILL SLOPES INCLUDING BERMING AREA.
 E. APPLY TERRACING STABILIZATION TO BARRIERS AND FINISH GRADE AREAS.
 F. APPLY PERMANENT STABILIZATION TO FINISH GRADE AREAS FOR SPECIFICATIONS ON 6.2.
 G. INSTALL ROCK OUTLET PROTECTION FOR ROAD AT THE DOWNSTREAM END OF CULVERTS #1-3.

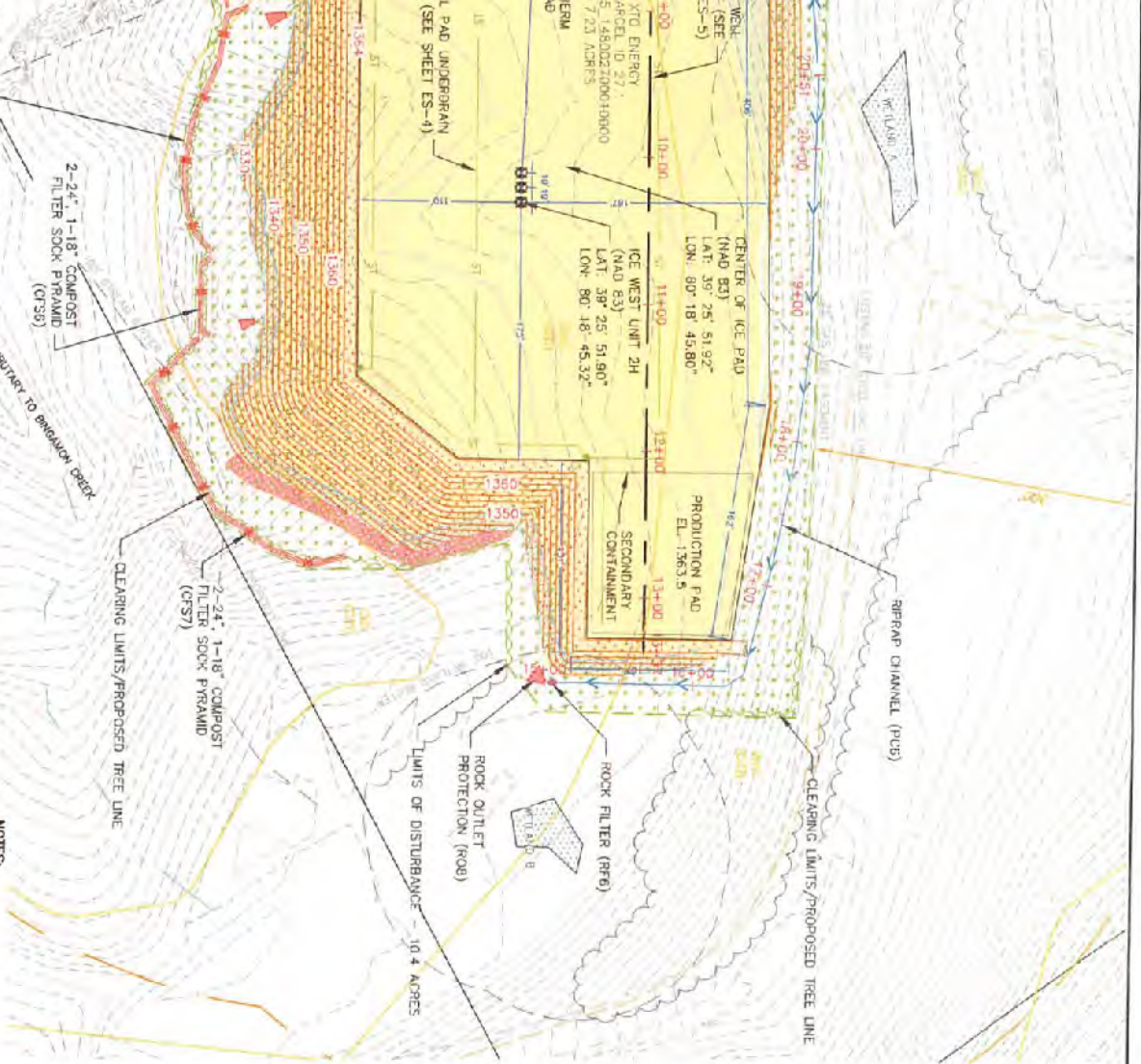
LEGEND:

| | | | |
|--|---|--|--------------------------------|
| | EXISTING CONTOUR LINES | | EXISTING TREE LINE |
| | PROPOSED CONTOUR LINES | | PROPOSED TREE LINE |
| | NRCS SOIL UNIT BOUNDARY | | COMPOST FILTER SOCK |
| | EASEMENT LINE | | PERMANENT CHANNEL |
| | PROPERTY LINE | | ROCK FILTER |
| | WETLAND DELINEATION STUDY AREA / AREA OF INTEREST | | ROCK CHANNEL OUTLET PROTECTION |
| | EXISTING STREAM | | EXISTING WETLAND |
| | SETBACK LINE | | |

BELL SHARE-HOLDERS, LLC
 PARCEL ID: 27
 PARID: 05 149002700000000
 32.79 ACRES

NOV - 1 2017

WV Department of Environmental Protection



| CUT # | INV EL. (IN) | INV EL. (CUT) | LENGTH (FT) | SLOPE % | SIZE (IN) |
|-------|--------------|---------------|-------------|---------|-----------|
| 1 | 1382.00 | 1345.40 | 78 | 0.5 | 12 |
| 2 | 1354.50 | 1354.00 | 44 | 0.6 | 12 |
| 3 | 1385.20 | 1353.50 | 44 | 3.9 | 12 |
| 4 | 1385.30 | 1348.50 | 55 | 7.4 | 12 |
| 5 | 1383.90 | 1326.00 | 63 | 11.9 | 12 |
| 6 | 1381.50 | 1326.00 | 77 | 20.1 | 12 |
| 7 | 1340.50 | 1346.00 | 72 | 3.5 | 12 |
| U/D # | INV EL. (IN) | COUL. (IN) | LENGTH (FT) | SLOPE % | SIZE (IN) |
| 1 | 1361.65 | 1368.90 | 290 | 1.0 | 6 |
| 2 | 1361.25 | 1368.50 | 135 | 1.7 | 6 |
| 3 | 1361.25 | 1359.01 | 135 | 1.0 | 6 |
| 4 | 1360.71 | 1359.03 | 88 | 1.0 | 6 |
| 5 | 1362.00 | 1359.09 | 240 | 1.0 | 6 |
| 6 | 1362.00 | 1358.35 | 354 | 1.0 | 6 |
| 7 | 1359.69 | 1358.41 | 128 | 1.0 | 6 |
| 8 | 1361.64 | 1358.11 | 273 | 1.0 | 6 |

- NOTES**
- EROSION CONTROL BLANKETS OR FLEXITERA HYDROSEEDING TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
 - AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 5403300662D EFFECTIVE OCTOBER 2, 2012, ALL AREAS OF DISTURBANCE HAVE BEEN DETERMINED TO BE IN ZONE X, WHICH HAS BEEN DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
 - ASSUME UNIFORM 5" OF TOPSOIL (PER THE WETLAND DELINEATION).
 - THERE WILL BE NO DISCHARGE FROM THE PAD DURING DRILLING OR COMPLETION ACTIVITIES.
 - ALL FILLS SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL TESTS OF ACTUAL SOILS TO BE USED FOR THE FILLS.

- ROCK CONSTRUCTION ENTRANCE
- EARTHEN BERM
- TOPSOIL STOCKPILE / RESPREAD AREA
- BENCH & KEYWAY
- EROSION CONTROL BLANKET
- AREA IN CUT
- AREA IN FILL



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 RESERVE'S ITS COMMON LAW COPYRIGHT AND OTHER RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, PHOTOCOPIED, OR REPRODUCED 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.



ICE PAD
prepared for
XTO ENERGY, INC.
situated

CLAY DISTRICT, HARRISON COUNTY, WEST VIRGINIA
EROSION & SEDIMENT CONTROL PLAN - SITE LAYOUT

MKA **Morris Knowles & Associates, Inc.**
Consulting Engineers and Land Surveyors
443 Athens Drive
Delmont, PA 15026
Telephone: (724) 468-4822
Fax: (724) 468-8940

AS NOTED

SCALE: _____

DESIGNED BY: SRP
REVIEWED BY: MMV
DRAWN BY: SRP
DATE: 9/26/2017
PROJ. NO.: 1637
DRAWING NO.: 9XTOICE

| REVISION BY: | DATE: | DESCRIPTION: |
|--------------|-------------|-------------------------------------|
| BY: SRP | 8/8/17 | WETLAND WAIVER CALLOUTS. |
| BY: SRP | 8/8/17 | REVISE CFS3 & CFS4. |
| BY: SRP | 9/22/17 | DESCRIPTION: WELL PAD RAISED/BORROW |
| BY: _____ | DATE: _____ | DESCRIPTION: _____ |
| BY: _____ | DATE: _____ | DESCRIPTION: _____ |
| BY: _____ | DATE: _____ | DESCRIPTION: _____ |

DRAWING NO. **9XTOICE**
SHEET NO. **ES-3**