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west virginia department of environmental protection

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

Jim Justice , Governor  
Austin Caperton , Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, February 17, 2017  
WELL WORK PERMIT  
Horizontal 6A / New Drill

XTO ENERGY, INC. (A)  
810 HOUSTON STREET

FORT WORTH, TX 76102

Re: Permit approval for SNIDER 15H  
47-049-02432-00-00

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: SNIDER 15H  
Farm Name: BOWER, RICHARD & JOCELYN  
U.S. WELL NUMBER: 47-049-02432-00-00  
Horizontal 6A / New Drill  
Date Issued: 2/16/2017

Promoting a healthy environment.

02/17/2017

# PERMIT CONDITIONS

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

## CONDITIONS

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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.

API Number: \_\_\_\_\_

## PERMIT CONDITIONS

6000002072

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](mailto:DEPOOGNotify@wv.gov).

02/17/2017

4704902432

WW-6B  
(04/15)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

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

1) Well Operator: XTO Energy Inc.

494487940	Marion	Lincoln	Mannington
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Operator ID County District Quadrangle

2) Operator's Well Number: Snider 15H Well Pad Name: Brennan

3) Farm Name/Surface Owner: Richard & Jocelyn Bower Public Road Access: Parrish Run - CR 50/1

4) Elevation, current ground: 1,251' Elevation, proposed post-construction: 1,251'

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_  
Horizontal  SDW  
12/21/2016

6) Existing Pad: Yes or No \_\_\_\_\_

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation: Marcellus, Depth 7,672', Anticipated Thickness: 150', Associated pressure: 4,650 psi

8) Proposed Total Vertical Depth: 7,672'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19,316'

11) Proposed Horizontal Leg Length: 10,516'

12) Approximate Fresh Water Strata Depths: 65'

13) Method to Determine Fresh Water Depths: Offsetting Reports

14) Approximate Saltwater Depths: None Listed

15) Approximate Coal Seam Depths: 140', 451', 571'

16) Approximate Depth to Possible Void (coal mine, karst, other): 571'

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: \_\_\_\_\_

Office of Oil and Gas  
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470000-1-2

WW-6B  
(04/15)

API NO. 47- -  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

18) CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	24	New	PE&B	95	40	40	59 CTS
Fresh Water	13.375	New	H-40	48	630	630	569 CTS
Coal							
Intermediate	9.625	New	J-55	36	3,150	3,150	1,283 CTS
Production	5.5	New	J-55	20	19,316	19,316	4,424 Lead / 4,483 Tail
Tubing							
Liners							

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	24	28	0.375	940	40	Standard	1.19
Fresh Water	13.375	17.5	0.33	1730	520	Standard	1.19
Coal							
Intermediate	9.625	12.25	0.352	3520	2560	Standard	1.19
Production	5.5	8.5	0.361	12640	6230	32.53 PIG, 2000 N.T.M	1.13 / 1.18
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

470600112

WW-6B  
(10/14)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

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. 1500 gals 15% HCl acid. 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 1,500 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): No additional

22) Area to be disturbed for well pad only, less access road (acres): No additional

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

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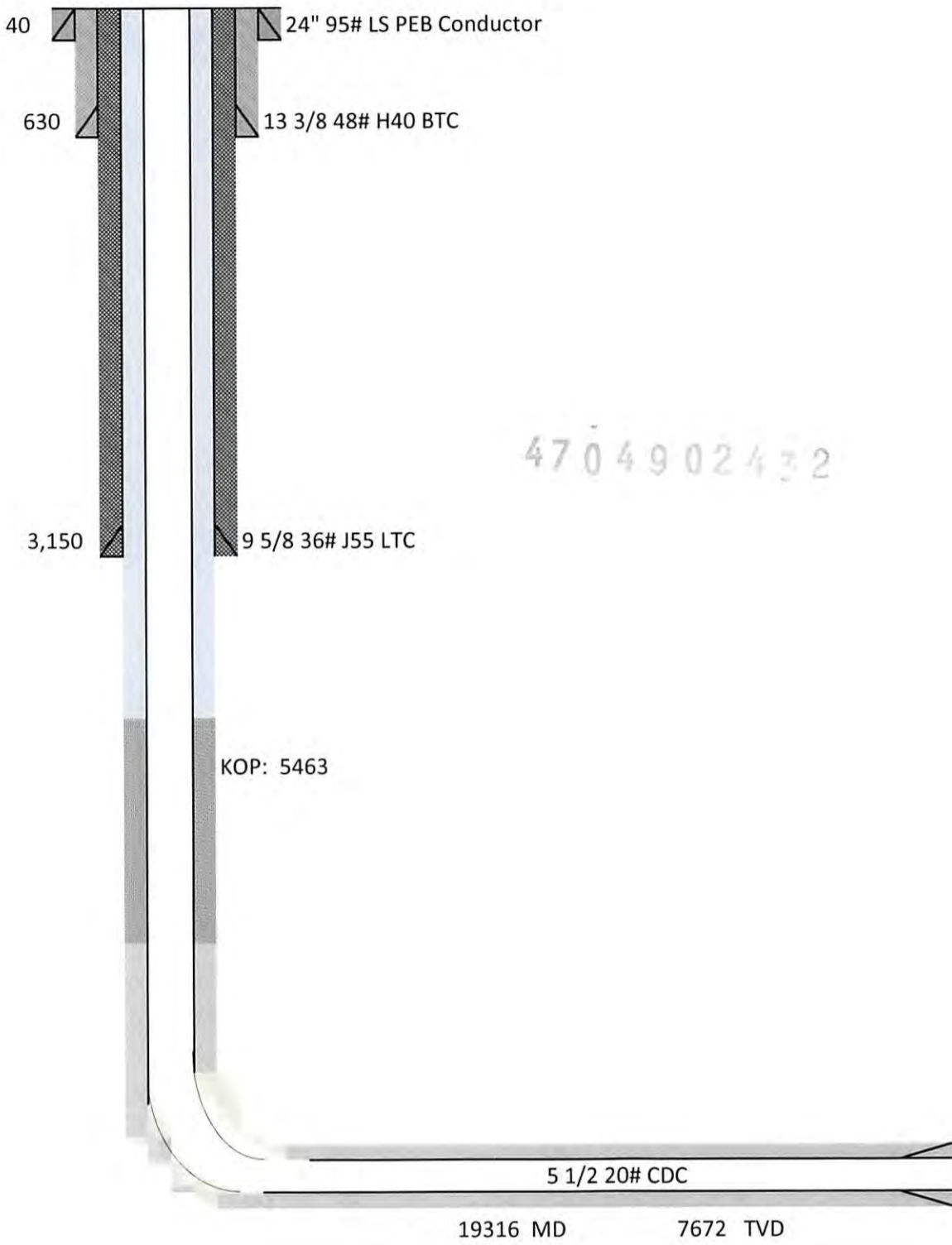
25) Proposed borehole conditioning procedures:

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.

WV Department of  
Environmental Protection

\*Note: Attach additional sheets as needed.

Snider 15H  
Marion County, West Virginia



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**Snider 15H – 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 Brennan/Snider Pad in Marion County, WV. In preparation for drilling through a mine void, we will nipple up an annular preventer to be able to handle any flow should the void actually be encountered. We expect it to come in around 590' 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 ~3,150'.

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

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**Snider 15H**

Operator	API	Elevation	Total Depth	Producing Zones	Perforated Depths	Producing Zone Depths	Producing Zones Not Perforated	Known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation?
XTO Energy Inc.	4704902161	1256	7655	Marcellus	7530 - 7670	7530 - 7670	NA	Well will be shut-in
XTO Energy Inc.	4704902162	1256	7662	Marcellus	7535-7670	7535-7670	NA	Well will be shut-in
XTO Energy Inc.	4704902166	1256	7667	Marcellus	7535-7670	7535-7670	NA	Well will be shut-in
XTO Energy Inc.	4704902209	1256	7588	Marcellus	7535-7655	7535-7655	NA	Well will be shut-in
XTO Energy Inc.	4704902210	1256	7626	Marcellus	7520-7655	7520-7655	NA	Well will be shut-in
XTO Energy Inc.	4704901383	1203	3994	Big Injun, Pocono, Gantz, 50', Gordon, 5th Sand, Balltown	1885-3830	1885-3830	NA	No penetration

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4704902161

XTO Energy Inc.

Proposed Revegetation Treatment: Acres Disturbed No additional Prevegetation pH \_\_\_\_\_

Lime 6+/- Tons/acre or to correct to pH \_\_\_\_\_

Fertilizer type 10-20-20

Fertilizer amount 1000 lbs/acre

Mulch 3 Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type \_\_\_\_\_ lbs/acre

Seed Type \_\_\_\_\_ lbs/acre

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 J DeWard

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: OOB Inspector

Date: 12/21/2016

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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 02/17/2017

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## 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 H<sub>2</sub>S 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 H<sub>2</sub>S, 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)

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12/21/2016 02/17/2017

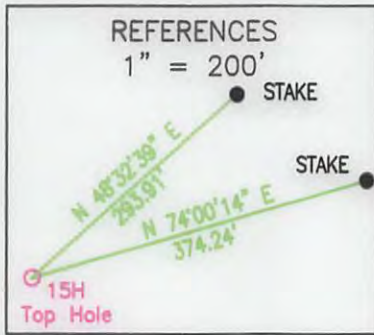
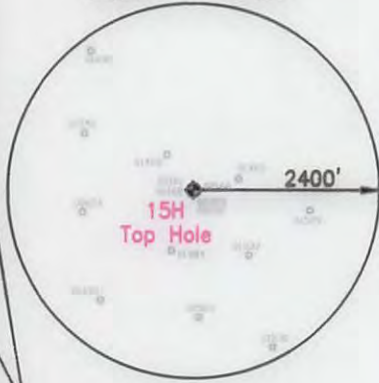
# SNIDER 15H

LATITUDE: 39°32'30"  
SCALE 1" = 2000'

SCALE: 1" = 2400'

LINE LEGEND

SCALE 1" = 2000'  
LONGITUDE: 80°15'00"



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

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
4. WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.

NORTH



State Plane Coordinates West Virginia North		
Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 805346.581	N: 366692.503	N: 366389.986
E: 1775468.693	E: 1777747.131	E: 1788258.513
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4372590.767	N: 4372972.400	N: 4372927.537
E: 560571.782	E: 561259.108	E: 564463.249
NAD 27	NAD 27	NAD 27
N 39.5003610	N 39.5041113	N 39.5034729
W 080.2956973	W 080.2876652	W 080.2904050



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

SHEET 1 OF 2

FILE #: JC2016-41  
DRAWING #: SNIDER 15H WELL  
SCALE: 1" = 2000'  
MINIMUM DEGREE OF ACCURACY: 1:2500  
PROVEN SOURCE OF ELEVATION: RTK GPS

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

Signed: *Brian Jones*  
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: 12/12/2016

OPERATOR'S WELL #: SNIDER 15H

API WELL #: 47 049 02432 HCA  
STATE COUNTY PERMIT

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

WATERSHED: BUFFALO CREEK 0502000301  
COUNTY/DISTRICT: MARION / LINCOLN  
SURFACE OWNER: RICHARD & JOCELYN BOWER  
OIL & GAS ROYALTY OWNER: JOHN E. BRENNAN, ET AL

ELEVATION: 1.251' (PROPOSED PAD FINISHED GRADE)  
QUADRANGLE: MANNINGTON 7.5'  
ACREAGE: 94.5±  
ACREAGE: 727±

02/17/2017

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7.672' (TVD) 19.316' (TMD)

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

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

# SNIDER 15H

LINE	BEARING	DISTANCE
L1	S 68°55'38" E	742.38'
L2	S 69°28'39" E	90.86'
L3	S 07°08'17" W	17.15'
L4	S 70°58'28" E	97.88'
L5	S 21°19'04" W	48.81'
L6	S 60°28'41" E	369.15'
L7	S 34°57'44" W	1008.49'
L8	S 14°51'13" E	103.39'
L9	S 11°43'40" W	81.74'
L10	S 37°05'11" W	68.75'
L11	N 77°21'13" W	128.74'
L12	S 56°06'28" W	227.51'
L13	S 24°20'44" E	123.38'
L14	N 80°38'21" E	190.79'
L15	N 72°37'12" E	29.85'
L16	N 52°29'17" E	25.43'
L17	N 37°03'58" E	68.71'
L18	S 38°25'00" E	360.89'
L19	S 05°42'00" E	428.39'
L20	S 07°38'00" W	570.86'
L21	S 88°04'13" E	1349.33'
L22	N 11°54'25" E	401.83'
L23	N 10°19'57" E	274.59'
L24	N 82°08'57" E	274.74'
L25	N 70°04'57" E	520.25'
L26	N 83°57'57" E	200.15'
L27	N 15°32'27" E	891.78'
L28	N 89°18'57" E	618.03'
L29	N 81°01'43" E	399.71'
L30	N 07°58'33" W	485.04'
L31	S 06°55'03" E	512.68'
L32	S 85°45'57" W	580.13'
L33	S 14°12'03" E	526.70'
L34	S 62°58'55" E	681.26'
L35	S 89°12'28" E	225.24'
L36	N 74°29'32" E	499.36'
L37	N 17°03'41" E	71.77'
L38	N 03°39'28" E	30.84'
L39	N 07°17'56" W	191.53'
L40	N 02°08'33" E	274.02'
L41	N 09°01'44" E	214.73'
L42	N 14°23'21" E	141.68'
L43	S 51°44'55" E	32.34'
L44	S 21°44'55" E	358.00'
L45	N 54°00'05" E	545.31'
L46	S 07°18'55" E	665.80'
L47	S 76°14'55" E	425.57'
L48	N 02°59'23" W	313.36'
L49	S 76°12'50" E	1248.41'
L50	S 12°23'42" W	95.84'
L51	S 04°54'37" W	201.42'
L52	S 01°01'44" E	32.06'
L53	S 07°11'05" W	77.36'
L54	S 13°09'33" W	46.29'
L55	S 17°32'13" W	433.94'

LINE	BEARING	DISTANCE
L56	S 15°43'06" W	86.99'
L57	S 10°42'06" W	9.81'
L58	S 68°25'27" E	324.50'
L59	S 48°50'37" E	141.48'
L60	S 37°08'37" E	192.35'
L61	S 73°14'37" E	267.72'
L62	S 21°01'54" W	292.29'
L63	S 64°39'08" W	386.10'
L64	S 65°05'33" W	119.10'
L65	S 12°55'33" W	40.08'
L66	S 68°40'33" W	62.08'
L67	N 02°49'29" W	45.32'
L68	N 07°00'17" E	22.36'
L69	N 20°07'29" E	34.42'
L70	N 32°08'31" E	20.97'
L71	N 31°18'10" E	79.31'
L72	N 24°19'21" E	60.95'
L73	S 52°05'27" E	87.80'
L74	N 24°31'33" E	217.00'
L75	N 85°32'27" W	41.95'
L76	N 12°09'27" W	299.40'
L77	N 35°58'27" W	92.00'
L78	S 50°03'33" W	108.28'
L79	S 33°07'40" E	62.15'
L80	S 20°41'23" E	16.47'
L81	S 13°57'06" E	124.20'

### State Plane Coordinate

Top Hole Location	West Virginia North Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 395346.581	N: 395992.903	N: 395992.985
E: 1775498.698	E: 1777747.131	E: 1788298.513
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 437289.767	N: 437292.400	N: 437292.587
E: 980571.762	E: 981299.108	E: 984463.249
NAD 27	NAD 27	NAD 27
N 39.5009810	N 39.5041113	N 39.5094729
W 080.2996973	W 080.2876632	W 080.2904050

### 15H BOTTOM HOLE

### NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
4. WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WDPEP.

SNIDER 15H		
LEASE	LESSOR	MINERAL ACREAGE
1)	JOHN E. BRENNAN	94.5000
2)	E.T. WOOD, ET AL	110
3)	ROBERT F. HORNER, ET AL	361.59
4)	JULIA CINALLI, ET AL	4.51
5)	ROBERT F. HORNER, ET AL	361.59
6)	PAULA A. WILLIAMS, ET AL	39.82
7)	PAUL KORSH, ET AL	3.26
8)	RONALD J. MERRILL, ET UX	1.0875
9)	KAREN JOHNSON, ET AL	36.125
10)	YVONNE GIBBONS, ET AL	75.75

LINE	BEARING	DISTANCE
L82	S 12°48'18" E	103.22'
L83	N 73°50'06" W	877.15'
L84	N 58°07'24" E	90.37'
L85	N 51°39'47" W	280.44'
L86	S 44°51'53" W	230.89'
L87	S 52°43'49" E	225.72'
L88	S 57°15'43" W	686.79'
L89	N 06°28'23" W	503.22'
L90	N 76°17'29" W	280.98'
L91	N 71°23'35" W	117.73'
L92	N 85°30'30" W	48.95'
L93	S 77°21'31" W	165.15'
L94	S 81°24'57" W	18.47'
L95	N 11°27'00" W	166.03'
L96	S 86°25'00" W	143.44'
L97	N 75°04'51" W	358.82'
L103	S 02°37'28" E	87.68'
L104	S 36°34'24" W	339.03'
L105	S 86°34'24" W	148.50'
L106	S 56°34'24" W	349.80'
L107	S 16°25'36" E	462.00'
L108	S 04°19'24" W	140.25'
L109	S 87°37'49" W	1848.56'
L110	S 38°39'35" E	503.25'
L111	S 05°20'25" W	808.50'

LETTER	SURFACE OWNER	TAX PARCEL
A	GARY L. KING, ET AL	11-31-16
B	NORMA L. DAVIS	11-31-17
C	NORMA L. DAVIS	11-31-23
D	THOMAS R. BURGESS, ET UX	11-31-22
E	GEORGE W. TENNANT, SR., ET UX	11-31-22.1
F	PAUL KORSH, ET UX	11-30-41
G	PAUL KORSH, ET UX	11-30-41.1
H	RICHARD A. WADDELL, ET AL	11-30-37
I	PETER J. ALASKY, III, ET UX	11-44-42.2
J	ANTHONY P. BURNSIDE, ET AL	11-44-42.4
K	THREE A'S INC	11-44-25
L	JOHN JONES	11-44-48
M	DONALD G. MORGAN, ET UX	11-44-46
N	PRIMEACRE LAND CORPORATION	11-44-21
O	RONALD J. MERRILL, ET UX	11-44-43

### LINE LEGEND

- LEASE BOUNDARY (Solid line)
- SURFACE BOUNDARY (Dashed line)
- CREEK / STREAM (Blue wavy line)
- ROADS (Double line)
- PROPOSED LATERAL (Dotted line)
- APPROXIMATE CURVE (Dashed line with arrows)
- 500' LATERAL OFFSET (Dotted line with arrows)
- EXISTING GAS WELL (Circle with cross)

## JONES CONSULTANTS, LLC

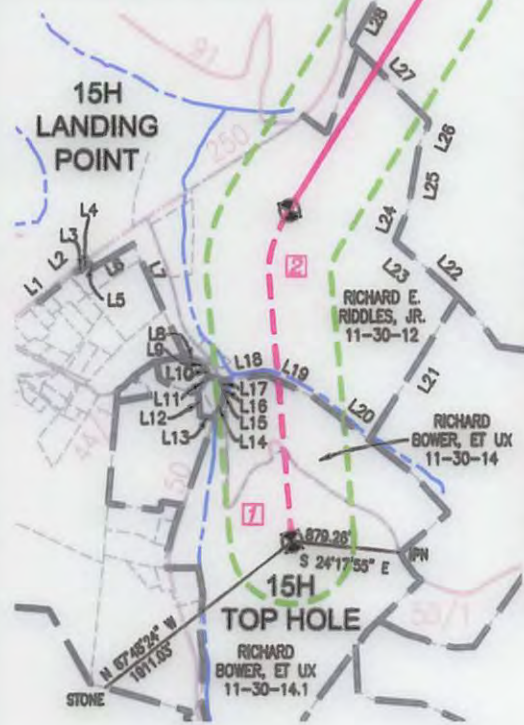
SURVEYING • MAPPING • LAND • GAS WELL • PIPELINE  
2402 PENNSYLVANIA 66 DELMONT, PA 15628  
(724) 757-2417 [www.jonesconsultant.com](http://www.jonesconsultant.com)

### SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT

#### SNIDER 15H

Drawn By:	Date:	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA
JRV	12/12/16	
Scale:	SCALE 1" = 1500'	Sheet: File No.:
AFE #	808945	SHEET 2 OF 2 JC2016-41

02/17/2017



190 THORN HILL ROAD  
WARRENDALE, PA 15086



WW-6A1  
(5/13)

Operator's Well No. Snider 15H

**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				

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OFFICE OF OIL AND GAS

**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. DEC 27 2016  
 By: *[Signature]*  
 Its: Regulatory Compliance Technician WV Department of  
Environmental Protection

## Snider 15H

Lease Ref.	Lessor	Lessee	Deed Book	Page	Royalty	
1	John E. Brennan, a widower	Exploration Partners, LLC assigns surface to the top of the uppermost member of the Onondoga to Linn Energy at AB 32, Page 151. Linn Energy assigns the same depths to XTO Energy at AB 33, Page 200.	965	17	Min. 1/8	RECEIVED Office of Oil and Gas
2	E.T. Wood and Caroline V. Wood	Hope Natural Gas Co. -->Consolidated Gas Supply Corp (DB 680/35)--> Consolidated Gas Transmission Corp. (AB 9/912) --> CNG Transmission Corp. (AOI 46/654) --->Eastern States Oil & Gas Inc. (AB 16/993) --> Blazer Energy Corp.(AOI 53/91) --> Eastern States Oil and Gas Inc. (AOI 53/96) --> EQT Production Company (AOI 61/558) ---> XTO Energy (AB 45/444)	140	284	Min. 1/8	
2	George E. Riser and Ella L. Riser	XTO Energy (Amendment of Original Lease)	1059	442	Min. 1/8	
2	Max E. Whitlatch and Miriam T. Whitlatch	XTO Energy (Amendment of Original Lease)	1059	445	Min. 1/8	
2	Ronald Donald Riser and Wilma Blanche Riser	XTO Energy (Amendment of Original Lease)	1059	448	Min. 1/8	
2	Roger Eugene Duckworth and Sharon Grace Menear Duckworth	XTO Energy (Amendment of Original Lease)	1063	553	Min. 1/8	
2	John W. Whitlatch, Jr.	XTO Energy (Amendment of Original Lease)	1091	589	Min. 1/8	
2	Donald W. Riser and Mary Mae Book	XTO Energy (Amendment of Original Lease)	1063	845	Min. 1/8	
2	Okey W. Conaway, Jr. and Cheryl Conaway	XTO Energy (Amendment of Original Lease)	1063	848	Min. 1/8	
2	Connie Sue Perkins	XTO Energy (Amendment of Original Lease)	1063	851	Min. 1/8	
2	Kenneth Lee Abbott and Clara May Abbott	XTO Energy (Amendment of Original Lease)	1063	950	Min. 1/8	
2	Douglas W. Rumer and Margaret Phyllis Rumer	XTO Energy (Amendment of Original Lease)	1063	953	Min. 1/8	

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2	Roland L. Cook, Jr	XTO Energy (Amendment of Original Lease)	1162	364	Min. 1/8	
2	Mary Beth Caplan	XTO Energy (Amendment of Original Lease)	1158	905	Min. 1/8	
2	John P. Alberico	XTO Energy (Amendment of Original Lease)	1166	587	Min. 1/8	
2	The David Alberico Special Needs Trust of the John C. Alberico Trust	XTO Energy (Amendment of Original Lease)	1166	538	Min. 1/8	
2	James Dean Hay	XTO Energy (Amendment of Original Lease)	1167	512	Min. 1/8	
3	Robert F. Horner and Naomi Horner	Exploration Partners (Assignments: Exploration Partners -->Linn Energy (AB 32 PG 151) -->XTO Energy (AB33 PG 200) )	972	1007	Min. 1/8	
3	Samuel Harrold, Special Commissioner as appointed for Shirley Sue Lewis, a/k/a Shirley Kaplan and/or the unknown heirs, successors or assigns	Exploration Partners (Assignments: Exploration Partners -->Linn Energy (AB 32 PG 151) -->XTO Energy (AB33 PG 200) )	1007	55	Min. 1/8	
4	Julia Cinalli	XTO Energy Inc.	1198	889	Min. 1/8	
4	Richard A. Carlone	XTO Energy Inc.	1197	931	Min. 1/8	
4	WV Minerals Inc.	XTO Energy Inc.	1199	41	Min. 1/8	
5	Robert F. Horner and Naomi Horner	Exploration Partners (Assignments: Exploration Partners -->Linn Energy (AB 32 PG 151) -->XTO Energy (AB33 PG 200) )	972	1007	Min. 1/8	
5	Samuel Harrold, Special Commissioner as apponted for Shirley Sue Lewis, a/k/a Shirley Kaplan and/or the unknown heirs, successors or aaisngs	Exploration Partners (Assignments: Exploration Partners -->Linn Energy (AB 32 PG 151) -->XTO Energy (AB33 PG 200) )	1007	55	Min. 1/8	
6	Paula A. Williams	XTO Energy Inc.	1066 Ext. 1174	860 Ext. 148	Min. 1/8	
6	Barbara Sue Jessup, a/k/a Bobbie Jessup and William F. Jessup	XTO Energy Inc.	1099	423	Min. 1/8	

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6	Diane K. Wolfe and Dwight C. Wolfe	XTO Energy Inc.	1185	452	Min. 1/8	
6	Sally J. Plum, a/k/a Sally Jane Webner	XTO Energy Inc.	1185	454	Min. 1/8	
7	Paul Korsh and Barbara Korsh	XTO Energy Inc.	1071 Ext. 1177 1071 Ext. 1177 1071 Ext. 1177 1071 Ext. 1177	594 Ext. 270 595 Ext. 269 598 Ext. 267 937 Ext. 268	Min. 1/8	
8	Ronald J. Merrill and Nettie D. Merrill	XTO Energy Inc.	1072 Ext. 1177	410 Ext. 265	Min. 1/8	
9	Karen Johnson	XTO Energy Inc.	1200	614	Min. 1/8	
9	Helen Boyer	XTO Energy Inc.	1199	682	Min. 1/8	
9	Sharon Gray	XTO Energy Inc.	1199	662	Min. 1/8	
10	Yvonne Gibbons	XTO Energy inc.	1119	592	Min. 1/8	

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10	Agnes Davis	XTO Energy inc.	1069 1132 1173	125 22 820	Min. 1/8	
10	Norma Lee Myers	XTO Energy inc.	1187	574	Min. 1/8	
10	Carrie Lee Brilla	XTO Energy inc.	1068 1132 1173	306 20 821	Min. 1/8	
10	Betty Jones	XTO Energy inc.	1187 Rat. 1195	234 Rat. 148	Min. 1/8	
10	James R. Jones	XTO Energy inc.	1191	519	Min. 1/8	
10	Randall Jones	XTO Energy inc.	1191	531	Min. 1/8	
10	Linda Glendenning	XTO Energy inc.	1187 Rat. 1195	224 Rat. 150	Min. 1/8	
10	Donna Jones	XTO Energy inc.	1191	535	Min. 1/8	
10	Meredith Banick	XTO Energy inc.	1072 Ext. 1177	55 Ext. 266	Min. 1/8	
10	James Ayers	XTO Energy inc.	1199	658	Min. 1/8	

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4704002678



November 9, 2016

Office of Oil & Gas  
WVDEP  
601 57<sup>th</sup> Street  
Charleston, WV 25304

4700961002

Re: Rights to Drill under Roads – Snider 15H

To Whom It May Concern:

Based on extensive research by XTO Energy’s Land Department, our contractor’s and 3<sup>rd</sup> party title attorneys, we have all necessary mineral rights under Marion County Road 50/1, Marion County Road 15/2, (South Farmington Road), Marion County Road 15/11, (Bessie Ann Hill Road) and Marion County State Route 218 in the location of our planned well-bores for the Snider 15H.

Sincerely,

Forrest Haymond  
Senior Landman  
480 Industrial Park Road  
P.O. Box 1008  
Jane Lew, WV 26378

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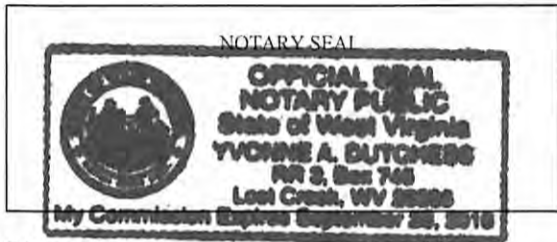
WV Department of Environmental Protection  
02/17/2017



**Certification of Notice is hereby given:**

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

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



Subscribed and sworn before me this 22<sup>nd</sup> day of December 2016  
*Yvonne A. Butcher* Notary Public  
 My Commission Expires September 26, 2018

**Oil and Gas Privacy Notice:**

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

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02/17/2017

WW-6A  
(9-13)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

**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:** 12/22/16 **Date Permit Application Filed:** 12/22/16

**Notice of:**

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

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

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

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

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

SURFACE OWNER(s)  
Name: Richard & Jocelyn Bower  
Address: 519 Dewey St.  
Fairmont, WV 26554

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: See attached  
Address: \_\_\_\_\_

COAL OPERATOR  
Name: 7704901132  
Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
Name: Owen Handley  
Address: 1000 Parish Run Road  
Farmington, WV 26571

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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Environmental Protection



WW-6A  
(8-13)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

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

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API NO. 47-\_\_\_\_\_-\_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

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 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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

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API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

**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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API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Snider 15H  
Well Pad Name: Brennan

**Notice is hereby given by:**

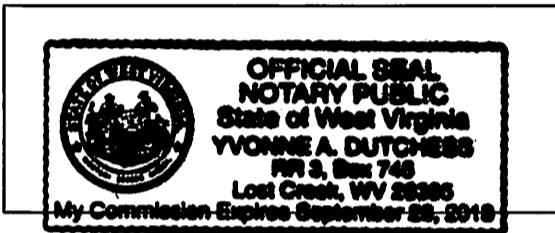
Well Operator: XTO Energy, Inc.  
Telephone: 304-884-6000  
Email: \_\_\_\_\_

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

*Tim Sands - Tim Sands*

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 22<sup>nd</sup> day of December 2016  
Yvonne A. Dutchess Notary Public  
My Commission Expires September 26, 2018




47-0-69-000-172

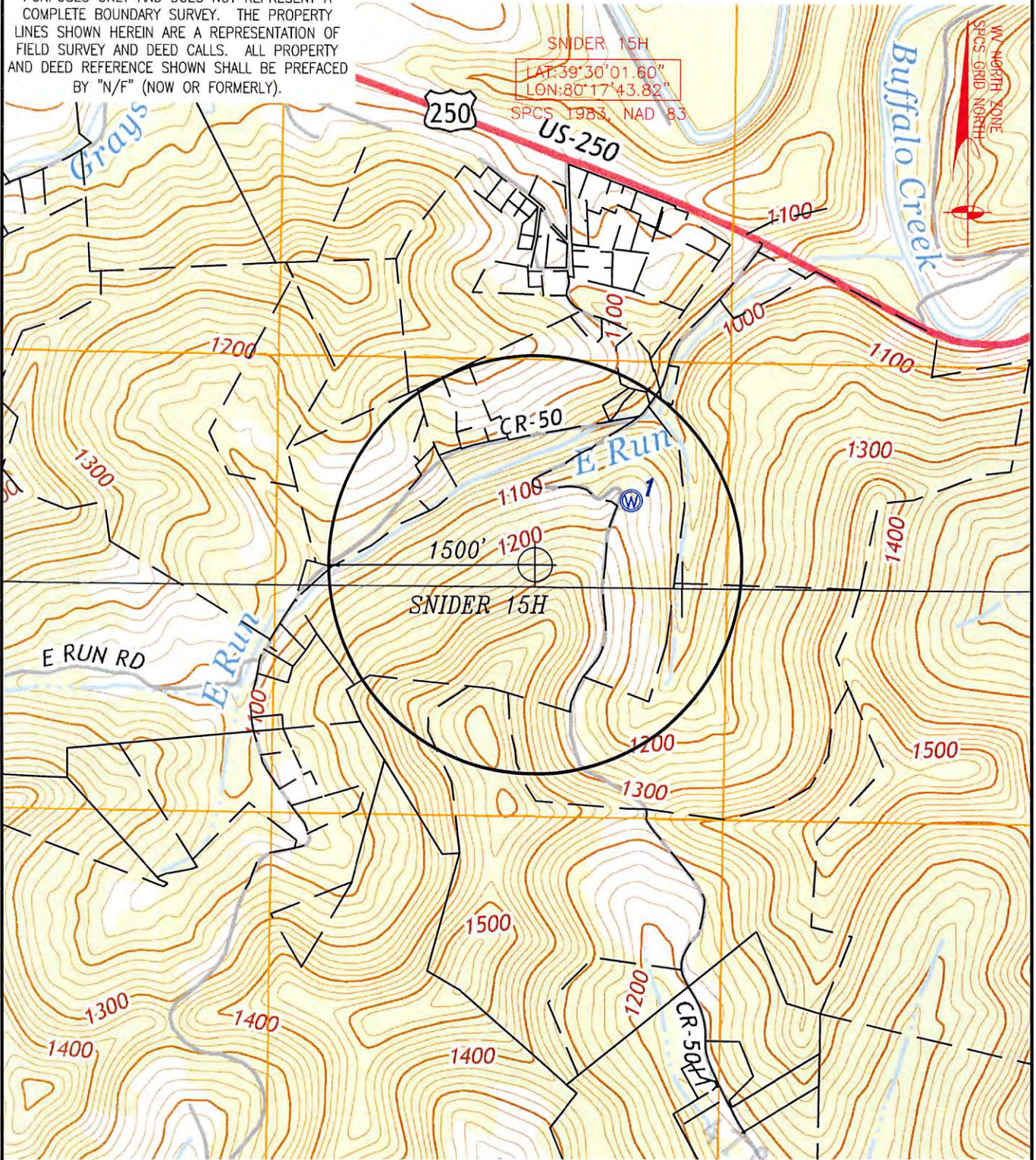
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FORM W-9

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




POINT	NAME	ADDRESS	CITY	STATE	ZIP CODE	DISTANCE	BEARING	PARCEL I.D.
1	OWEN HANDLEY, ET UX (TENANT) RICHARD BOWER, ET UX (OWNER)	1000 PARRISH RUN ROAD	FARMINGTON	WV	26571	839'	N 56°23'54" E	11-30-14

SNIDER 15H UNIT WATER OVERALL

LINCOLN DISTRICT, MARION COUNTY, WEST VIRGINIA | 8/22/2016 | JC2016-41 | SHEET 1 OF 2

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

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


**XTO**  
ENERGY  
190 THORN HILL ROAD  
WARRENDALE, PA 15086  
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Department of Environmental Protection

Coal Ownership

Eastern Associated Coal Corp ✓  
PO Box 1233  
Charleston, WV 25324

George Enterprises, Inc. ✓  
512 Princeton Ave.  
Morgantown, WV 26505

Sheila Lightfoot ✓  
1220 Havenhurst Drive  
West Hollywood, CA 90046

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

Tina M. Fischer ✓  
1220 Havenhurst Drive  
West Hollywood, CA 90046

Elwood P. Glover ✓  
112 Stiff Road  
Addison, PA 15411

Bass Coals, LLC ✓  
4584 Hileman Road  
Bruceton Mills, WV 26525

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

47048 02172

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**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:** June 1, 2016      **Date of Planned Entry:** June 9, 2016

**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: Richard & Jocelyn Bower

Address: 519 Dewey St.  
Fairmont, WV 26554

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: See attached

Address: \_\_\_\_\_

MINERAL OWNER(s)

Name: See attached

Address: \_\_\_\_\_

\*please attach additional forms if necessary

**Notice is hereby given:**

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.500504, -80.295249</u>
County: <u>Marion</u>	Public Road Access: <u>Marion County Rt. 50/1 - East Run/Parrish Run</u>
District: <u>Lincoln</u>	Watershed: <u>East Run</u>
Quadrangle: <u>Mannington</u>	Generally used farm name: <u>Richard &amp; Jocelyn Bower</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 57<sup>th</sup> 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](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

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

**Oil and Gas Privacy Notice:**

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

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Surface Owner

Richard & Jocelyn Bower  
519 Dewey St.  
Fairmont, WV 26554 ✓

Coal Ownership

Eastern Associated Coal Corp  
PO Box 1233  
Charleston, WV 25324

Tina M. Fischer  
1220 Havenhurst Drive  
West Hollywood, CA 90046

George Enterprises, Inc.  
512 Priceton Ave.  
Morgantown, WV 26505 ✓

Elwood P. Glover  
112 Stiff Road  
Addison, PA 15411 ✓

Sheila Lightfoot  
1220 Havenhurst Drive  
West Hollywood, CA 90046

Bass Coals, LLC  
4584 Hileman Road  
Bruceeton Mills, WV 26525 ✓

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

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

Mineral Owners

Jake Ford  
115 Oak Terrace  
Staunton, VA 22401

Robert F. Horner  
153 Haywood Road  
Shinnston, WV 26431 ✓

Bradley W. Thomas  
4115 Cove Point Drive  
Morgantown, WV 26508 ✓

Louis A. Ferrari  
c/o Gaddy Engineering Company  
303 Washington Street West  
Charleston, WV 25304

Thomas A. Dingleline  
c/o Virginia Exploration Inc.  
PO Box 8336  
Charlottesville, VA 22906

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Operator Well No. Snider 15H

**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:** 12/22/16      **Date Permit Application Filed:** 12/22/16

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

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

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

**Notice is hereby provided to the SURFACE OWNER(s)**  
(at the address listed in the records of the sheriff at the time of notice):

Name: Richard & Jocelyn Bower  
Address: 519 Dewey St.  
Fairmont, WV 26554

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>560571.762</u>
County:	<u>Marion</u>		Northing:	<u>4372550.767</u>
District:	<u>Lincoln</u>	Public Road Access:	<u>Parrish Run - CR 50/1</u>	
Quadrangle:	<u>Mannington</u>	Generally used farm name:	<u>Bower, Richard &amp; Jocelyn</u>	
Watershed:	<u>Buffalo Creek (0502000301)</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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: XTO Energy Inc.  
Telephone: 304-884-6000  
Email: \_\_\_\_\_

Address: PO Box 1008      9704000152  
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](mailto: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

Earl Ray Tomblin  
Governor

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

January 8, 2014

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

Subject: DOH Permit for the Brennan A Well Pad, Marion County

Dear Dr. Martin,

This well site will be accessed from Permit #04-11-0304 issued to XTO Energy, Inc. for access to the State Road for a well site located off of Marion County Route 50/1 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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# Hydraulic Fracturing Fluid Product Component Information Disclosure

## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	XTO	Carrier/Base Fluid	Water	7732-18-5	100.00%	88.35%	RECEIVED Office of Oil and Gas DEC 27 2006 WV Department of Environmental Protection
Sand (Proppant)	Universal	Proppant	Silica Substrate		100.00%	11.20%	
Hydrochloric Acid (10%)	PPG Industries	Acidizing	Hydrochloric Acid	7647-01-0	10.00%	0.00%	
			Other - (non-hazardous)		85.00%	0.00%	
Hydrochloric Acid (7.5%)	PPG Industries	Acidizing	Hydrochloric Acid	7647-01-0	7.50%	0.03%	
			Other - (non-hazardous)		92.50%	0.34%	
Acid Inhibitor, Unihib G	GeoSafe	Acid Inhibitor	Proprietary Blend Surfactants		35.00%	0.00%	
			Short Chained Glycol Ether	112-34-5	50.00%	0.00%	
			Ethoxylated alcohol		35.00%	0.00%	
Biocide, EC6116A	Nalco	Biocide	Dibromoacetonitrile	3252-43-5	5.00%	0.00%	
			2,2-Dibromo-3-nitrilopropionamide	10222-01-2	30.00%	0.00%	
			Polyethylene Glycol	25322-68-3	60.00%	0.01%	
			Other - (non-hazardous)		5.00%	0.00%	
Clay Stabilizer, Cla-Chek G	Shrieve	Clay Stabilizer	Water	7732-18-5	15.00%	0.00%	
			Other - (non-hazardous)		85.00%	0.00%	
Friction Reducer, Unislick ST-50	CESI Chemical	Friction Reducer	Petroleum distillates, hydrotreated light	64742-47-8	30.00%	0.02%	
			Other - (non-hazardous)		70.00%	0.04%	
Scale Inhibitor, ScaleHib A	Nalco	Scale Inhibitor	Ethylene Glycol	107-21-1	30.00%	0.00%	
			Other - (non-hazardous)		70.00%	0.01%	
Gel Breaker, LEB-10X	Universal	Gel Breaker	Ethylene Glycol	107-21-1	40.00%	0.00%	
			Other - (non-hazardous)		60.00%	0.00%	
Unigel 5F	Universal	Gel	Guar Gum	9000-30-0	99.00%	0.00%	
			Other - (non-hazardous)		1.00%	0.00%	
Slurry Gel, WGA-7 SLR	Universal	Gel	Guar Gum	9000-30-0	50.00%	0.00%	
			Petroleum Distillate	64742-47-8	55.00%	0.00%	
			Clay		5.00%	0.00%	
			Surfactant		5.00%	0.00%	
			Buffer		5.00%	0.00%	

470600-432



**CONSTRUCTION SEQUENCE, BRENNAN UNIT A:**

**STAGE 1: INSTALL ROCK CONSTRUCTION ENTRANCE ENSURING ALL TRAFFIC MUST CROSS TO ENTER AND EXIT THE SITE.**

- A. CLEAR MINIMUM AREA NECESSARY FOR ENTRANCE INSTALLATION.
- B. EXCAVATE FOR, AND FORM ENTRANCE.
- C. IMMEDIATELY STABILIZE ENTRANCE WITH ROCK.

**STAGE 2: INSTALL 18" AND 12" COMPOST FILTER SOCK AS SHOWN ON PLAN.**

- STAGE 3: INSTALL DIVERSION CHANNELS PC1, PC2 AND PC3**
  - A. CLEAR MINIMUM AREA NECESSARY FOR CHANNEL INSTALLATION.
  - B. CONSTRUCT CHANNELS FROM LOWEST FIFITATION UPWARDS.
  - C. LINE CHANNELS WITH SPROFFED E&S CONTROLS IMMEDIATELY.
  - D. INSTALL ROCK FILTERS #F1, #F2 & #F3 AT THE DOWNSTREAM END OF PC1, PC2 & PC3, RESPECTIVELY.
  - E. INSTALL ROCK OUTLET PROTECTION RO2, RO3, & RO4 AT DOWNSTREAM ENDS OF PC1, PC2 & PC3, AS SHOWN ON PLAN.

- STAGE 4: EXCAVATION**
  - A. EXCAVATE SITE TO DESIGN GRADE. USE SOIL FROM STOCKPILES AS FILL FOR THE BERMS AND SLP REPAIR.
  - B. INSTALL PERFORATED UNDERDRAINS, SUMPS AND OUTLET CULVERTS #1 AND #2 AS INDICATED ON THE PLANS.
  - C. INSTALL BENCH AND KEYWAY DRAINS.
  - D. INSTALL RIPRAP APRONS RO1 AND RO2.
  - E. RESTORE AREA OF PAD INDICATED.
  - F. RESPIREAD TOPSOIL ON CUT/FILL SLOPES.
  - G. APPLY TEMPORARY STABILIZATION.

**STAGE 5: INSTALL GRAVEL PARKING AREA**

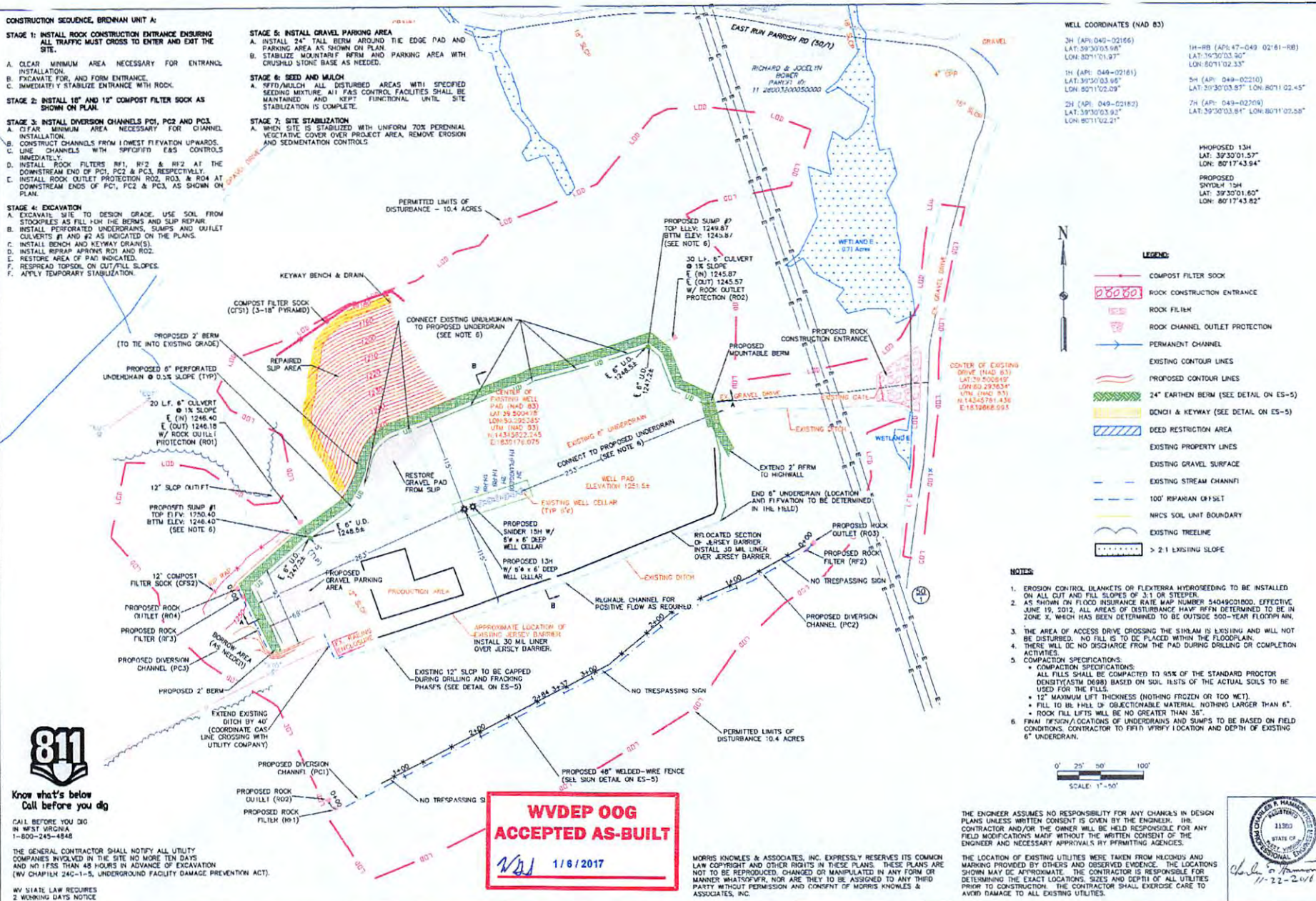
- A. INSTALL 24" TALL BERM AROUND THE EDGE PAD AND PARKING AREA AS SHOWN ON PLAN.
- B. STABILIZE MOUNTAIN FRM AND PARKING AREA WITH CRUSHED STONE BASE AS NEEDED.

**STAGE 6: SEED AND MULCH**

- A. SEED/MULCH ALL DISTURBED AREAS WITH SPECIFIED SEEDING MIXTURE. ALL F&S CONTROL FACILITIES SHALL BE MAINTAINED AND KEPT FUNCTIONAL UNTIL SITE STABILIZATION IS COMPLETE.

**STAGE 7: SITE STABILIZATION**

- A. WHEN SITE IS STABILIZED WITH UNIFORM 70% PERENNIAL VEGETATIVE COVER OVER PROJECT AREA, REMOVE EROSION AND SEDIMENTATION CONTROLS.



**WELL COORDINATES (NAD 83)**

3H (API: 049-02166) LAT: 39°30'03.96" LON: 80°17'01.97"	1H-RB (API: 049-02161-RR) LAT: 39°30'03.90" LON: 80°17'02.33"
1H (API: 049-02161) LAT: 39°30'03.96" LON: 80°17'02.09"	5H (API: 049-02210) LAT: 39°30'03.97" LON: 80°17'02.45"
2H (API: 049-02182) LAT: 39°30'03.92" LON: 80°17'02.21"	7H (API: 049-02209) LAT: 39°30'03.81" LON: 80°17'02.58"

PROPOSED 13H  
LAT: 39°30'01.57"  
LON: 80°17'43.94"

PROPOSED 391004-13H  
LAT: 39°30'01.60"  
LON: 80°17'43.82"

- LEGEND:**
- COMPOST FILTER SOCK
  - ROCK CONSTRUCTION ENTRANCE
  - ROCK FILTER
  - ROCK CHANNEL OUTLET PROTECTION
  - PERMANENT CHANNEL
  - EXISTING CONTOUR LINES
  - PROPOSED CONTOUR LINES
  - 24" EARTHEN BERM (SEE DETAIL ON ES-5)
  - DEED RESTRICTION AREA
  - EXISTING PROPERTY LINES
  - EXISTING GRAVEL SURFACE
  - EXISTING STREAM CHANNEL
  - 100' RIPRAP APRON
  - MCS SOIL UNIT BOUNDARY
  - EXISTING TREELINE
  - > 2:1 EXISTING SLOPE

- NOTES:**
- EROSION CONTROL BLANKETS OR FLEXITERRA HYDROSEEDING TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
  - AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 54049C0100D, EFFECTIVE JUNE 19, 2012, ALL AREAS OF DISTURBANCE HAVE BEEN DETERMINED TO BE IN ZONE X, WHICH HAS BEEN DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.
  - THE AREA OF ACCESS DRIVE CROSSING THE SHIMM IS EXISTING AND WILL NOT BE DISTURBED. NO FILL IS TO BE PLACED WITHIN THE FLOODPLAIN.
  - THERE WILL BE NO DISCHARGE FROM THE PAD DURING DRILLING OR COMPLETION ACTIVITIES.
  - COMPACTION SPECIFICATIONS:
    - ALL FILLS SHALL BE COMPACTED TO 45% OF THE STANDARD PROCTOR DENSITY (ASTM D698) BASED ON SOIL 1/3ETS OF THE ACTUAL SOILS TO BE USED FOR THE FILLS.
    - 12" MAXIMUM LIFT THICKNESS (NOTHING FROZEN OR TOO WET).
    - FILL TO BE FREE OF OBJECTIONABLE MATERIAL NOTHING LARGER THAN 6".
    - ROCK FILL LIFTS WILL BE NO GREATER THAN 36".
  - FROM THE POSITION/LOCATIONS OF UNDERDRAINS AND SUMPS TO BE BASED ON FIELD CONDITIONS. CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING 6" UNDERDRAIN.

**811**  
Know what's below  
Call before you dig

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

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

WV STATE LAW REQUIRES  
2 WORKING DAYS NOTICE

**WVDEP OOG  
ACCEPTED AS-BUILT**

*WV* 1/6/2017

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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 DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.



**MORRIS KNOWLES & ASSOCIATES, INC.**  
A HOMEOWNERS COMPANY

ENGINEERS, PLANNERS, SURVEYORS  
413 ARDEN DRIVE, DEERFIELD, VA 22641  
P.O. BOX 507, LINCOLN ESTATES  
MARIETTA, VIRGINIA 22972

PROJECT: BRENNAN UNIT A  
DATE: 1/6/2017

DESIGNER: [Signature]  
DATE: 1/6/2017

SCALE: 1" = 50'

ES-3

# EROSION AND SEDIMENT CONTROL

## BRENNAN

C.R. 50/1, LINCOLN DISTRICT, MAINTENANCE  
OCTOBER, 2017

### SITE STABILIZATION INSTALLATION AND MAINTENANCE (TEMPORARY AND PERMANENT):

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

### PERMANENT STABILIZATION

SPECIES: TIMOTHY  
% PURE LIVE SEED: 98%  
APPLICATION RATE: 50 LBS./ACRE  
FERTILIZER TYPE: COMMERCIAL FERTILIZER 10-20-20  
FERTILIZER APPL. RATE: COMMERCIAL - 1000 LBS./ACRE  
LIMING RATE: 8 TONS/ACRE  
MULCH TYPE: HAY & STRAW  
MULCHING RATE: 3 TONS/ACRE  
ANCHOR MATERIAL: RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE  
ANCHORING METHOD: HYDRAULIC SEEDING EQUIPMENT  
RATE OF ANCHOR MATERIAL APPLICATION: 310 LBS./1000 SQ. YD.  
SEEDING SEASON DATES: MARCH 15 - JUNE 1, Aug. 1-OCT. 15

### TEMPORARY STABILIZATION:

SPECIES: ANNUAL REGRASS  
% PURE LIVE SEED: 82%  
APPLICATION RATE: 50 LBS./ACRE  
FERTILIZER TYPE: COMMERCIAL FERTILIZER 10-20-20  
FERTILIZER APPL. RATE: 678 LBS./ACRE  
LIMING RATE: 2 TONS/ACRE  
MULCH TYPE: HAY & STRAW  
MULCHING RATE: 3 TONS/ACRE

### PERMANENT--STEEP SLOPE:

SPECIES: BIRDFOOT TREFOIL AND TALL FESCUE MIX  
% PURE LIVE SEED: 99%  
APPLICATION RATE: 10 AND 50 LBS./ACRE, RESPECTIVELY  
FERTILIZER TYPE: COMMERCIAL FERTILIZER 5-10-10  
FERTILIZER APPL. RATE: (PER TESTING) 30 LBS./ACRE  
LIMING RATE: 8 TONS/ACRE  
MULCH TYPE: HAY & STRAW  
MULCHING RATE: 3 TONS/ACRE  
ANCHORING MATERIAL: NONASPHALTIC MATERIAL  
ANCHORING METHOD: SPRAY  
RATE OF ANCHORING MATERIAL APPL.: 1000 GAL./SQ.YD.  
SEEDING DATES: APRIL-SEPT.

### GENERAL NOTES:

- THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE THAN TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION EXCLUDING SATURDAY, SUNDAY, AND FEDERAL OR STATE HOLIDAYS. (WV CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT).
- TRAFFIC SHALL BE MAINTAINED ON ALL ADJOINING STREETS AND DRIVES AT ALL TIMES. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH WOOD'S REQUIREMENTS.
- 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:

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

### GRADING NOTES:

- THE CONTRACTOR SHALL REMOVE ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- THE CONTRACTOR SHALL PROOF ROLL THE SITE TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER AND REMOVE ANY SOFT SPOTS PRIOR TO THE IMPORTING OF ANY FILL MATERIAL.
- THE CONTRACTOR SHALL REPLACE ALL CURB SECTIONS, SIDEWALKS, AND PAVEMENT, WHICH HAS BEEN CUT AND DISTURBED WITHIN THE RIGHT-OF-WAY WITH WEST VIRGINIA DEPARTMENT OF TRANSPORTATION'S STANDARD MATERIALS.
- THE CONTRACTOR SHALL ADJUST TO GRADE ALL WATER AND GAS VALVES.
- THE CONTRACTOR SHALL COMPACT ALL FILL MATERIALS TO NOT LESS THAN 95% OF THE STANDARD PROCTOR DENSITY (ASTM D998) BASED ON SOIL TESTS OF THE ACTUAL SOILS TO BE USED FOR THE FILLS.
- ALL CUT AND FILL OPERATIONS SHALL FOLLOW THE "WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL."
- THE CONTRACTOR SHALL USE WEST VIRGINIA DIVISION OF HIGHWAYS LATEST ROADWAY CONSTRUCTION STANDARDS.

### EROSION AND SEDIMENTATION CONTROL PLAN NOTES:

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

### EROSION AND SEDIMENT CONTROL FACILITIES MAINTENANCE

- ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED TO THE 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

### ROCK CONSTRUCTION ENTRANCE:

- THE ROCK CONSTRUCTION ENTRANCES ARE TO BE MAINTAINED IN GOOD WORKING ORDER AND REPAIRED IMMEDIATELY.
- THE THICKNESS OF THE ROCK CONSTRUCTION SHALL BE CONSTANTLY MAINTAINED AT 6".
- A ROCK STOCKPILE IS TO BE READILY AVAILABLE FOR IMMEDIATE REPAIR.

### COMPOST FILTER SOCK:

- COMPOST FILTER SOCKS MUST BE INSTALLED AT 1 DEGREE TO THE MAIN FENCE ALIGNMENT.
- THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTER SOCK CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED.
- WHERE THE SOCK REQUIRES REPAIR, IT WILL BE REPAIRED IMMEDIATELY.
- THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED IN THE SOCK WHEN IT REACHES 1/3 OF THE EXPOSED HEIGHT DIRECTED BY THE ENGINEER.
- THE COMPOST FROM THE FILTER SOCK WILL BE DISPOSED OF AT THE 70% VEGETATIVE COVER.

### VEGETATION:

- THE CONTRACTOR SHALL INSPECT VEGETATED AREAS (RUNOFF) EVENT.
- THE CONTRACTOR SHALL INSPECT THE SITE FOR RILLS ON SLOPES. THE CONTRACTOR SHALL FILL RILLS DISTURBED AREAS TO PROVIDE A UNIFORM SLOPE. 1 REPAIR/REPLACE MATS TO ORIGINAL SPECIFICATIONS.
- THE REPAIRS SHALL BE MADE WITHIN 2 DAYS OF DISCOVERY.

### TEMPORARY AND PERMANENT CHANNELS:

- THE CONTRACTOR SHALL INSPECT CHANNELS WELL BEFORE (RUNOFF) EVENT AND REPAIRED IMMEDIATELY.
- EROSION CONTROL MATS SHALL BE DISPECTED IMMEDIATELY. THE CONTRACTOR SHALL INSTALL AND MAINTAIN, TO ENSURE THAT THE MAT IS SECURELY FASTENED TO THE CHANNEL.
- THE CONTRACTOR SHALL RESEED, MULCH AND REPAIR CHANNELS IMMEDIATELY.
- THE CONTRACTOR SHALL MOW CHANNELS WHERE CUT GRASS HAS BEEN REDUCED BY EXCESSIVE VEGETATIVE GROWTH.
- WHERE EXCESSIVE SEDIMENT DEPOSITS OCCUR IN SE CHANNELS, THE CONTRACTOR SHALL REMOVE THE SEDIMENT BY HAND OR BY MACHINERY. THEN REMOVE SOIL. THE CONTRACTOR SHALL THEN REGRADE, RESEED, MULCH AND REPAIR CHANNELS.

### BID QUANTITIES ESTIMATE

	UNITS	EST. QTY
Clearing & Grubbing		
Clearing & Grubbing (Total LOD)	AC	1
Erosion & Sediment Control		
Rock Construction Entrance	EA	1
RipRap Apron	CY	19
Rock Filter	EA	3
Erosion Control Blanketing	SY	3,883
Seeding & Mulching	SY	3,883
Sump/Outlet Structure	EA	2
6" SDR Perforated Underdrain	LF	1,182
No Trespassing Signs	EA	3
Keyway Bench & Drain	LF	290
18" Compost Filter Sock	LF	447
18" RipRap Channel (6")	LF	147
Vegetated Channel	LF	55
Earthwork		
Ex Stockpiles (Regraded)	CY	8,911
Strip Retention Earth (6")	CY	12,55
Pad & Access Road		
Aggregate Road Surface	SY	33
Rock/Gravel Pad (6") (6") (6")	SY	1,176

WV Department of Environmental Protection  
Indicates well pad surface removed and replaced

02/17/2017

# EROSION CONTROL PLAN UNIT A

MARION COUNTY, WEST VIRGINIA

2016

**SCHEDULE:**

CONSTRUCTION SHALL BE MAINTAINED UNTIL A UNIFORM VEGETATION COVER IS ESTABLISHED AT THE END OF EACH YEAR.

CONSTRUCTION SHALL BE MAINTAINED UNTIL A UNIFORM VEGETATION COVER IS ESTABLISHED AT THE END OF EACH YEAR.

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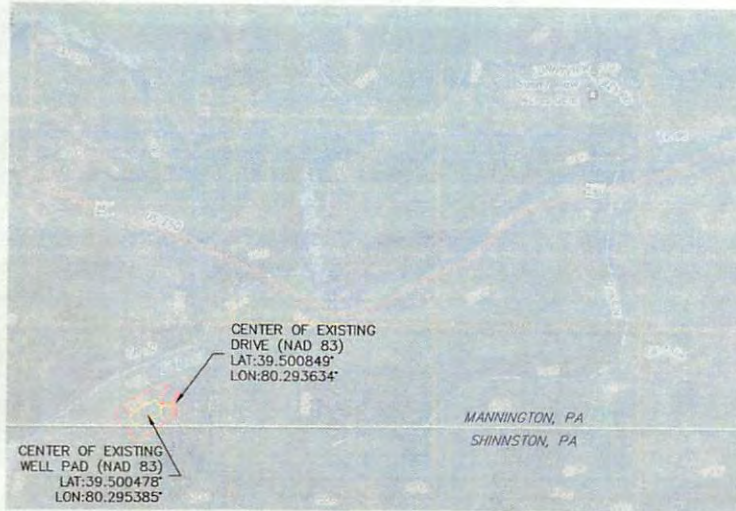
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VICINITY MAP  
N.T.S.

AREA OF DISTURBANCE PER PARCEL:  
PARCEL ID: 11 28003200050000  
RICHARD & JOCELYN BOWER - 10.4 ACRES

SHEET NO.	TITLE
ES-1	EROSION AND SEDIMENT CONTROL TITLE SHEET
ES-2	EROSION AND SEDIMENT CONTROL PLAN - EXISTING CONDITIONS
ES-3	ENLARGED EROSION AND SEDIMENT CONTROL PLAN
ES-4	EROSION AND SEDIMENT CONTROL DETAILS
ES-5	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 & Land Surveyors*  
443 ATHENA DRIVE DELMONT, PA 15626  
TELEPHONE: (724) 468-4622 FAX: (724) 468-8940

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Charles F. Hammon  
11-22-2016

**MORRIS KNOWLES & ASSOCIATES, INC.**  
A HAMMOND TREE COMPANY  
PA  
ENGINEERS, PLANNERS, SURVEYORS  
443 ATHENA DRIVE DELMONT, PA 15626  
PHN: (724) 468-4622 FAX: (724) 468-8940  
www.morrisknowles.com



REV. BY:	DATE:	DESC.:

DESIGN BY:	DATE:
SRP	10/3/15
DRWN BY:	
RVWD BY:	
FLD BK:	
BK PG:	

SCALES:  
HORIZ:  
VERT:  
CONTOUR INT:

EROSION & SEDIMENT CONTROL PLAN - TITLE SHEET  
**BRENNAN UNIT A**  
FOR: XTO ENERGY, INC  
C.R. 50/1, LINCOLN DISTRICT  
MARION COUNTY, WEST VIRGINIA

ES-1

02/17/2017