west virginia department of environmental protection

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

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

December 10, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-900168, issued to SWN PRODUCTION COMPANY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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

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

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

James Martin
Chief

Operator's Well No: BROOKE COUNTY PARKS 10H
Farm Name: BROOKE CO. PARKS COMMISSI
API Well Number: 47-900168
Permit Type: Horizontal 6A Well
Date Issued: 12/10/2015

Promoting a healthy environment.

API Number: 47-0 9 0 0 1 6 8

PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (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. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

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

WW-6B
(10/14)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

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

1) Well Operator: SWN Production Co., LLC

Operator ID	County	District	Quadrangle
494512924	Brooke	1-Buffalo	620 - Steubenville

2) Operator's Well Number: Brooke County Parks BRK 10H Well Pad Name: Brooke County Parks PAD

3) Farm Name/Surface Owner: Brooke County Parks Public Road Access: Pierce Run Road CH 20

4) Elevation, current ground: 1214' Elevation, proposed post-construction: 1214'

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

6) Existing Pad: Yes or No yes

10.14.15

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 5932', Target Base TVD- 5976' Anticipated Thickness- 44', Associated Pressure- 3570

8) Proposed Total Vertical Depth: 5976'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,040'

11) Proposed Horizontal Leg Length: ~~14,040'~~ 7666.43'

12) Approximate Fresh Water Strata Depths: 250'

13) Method to Determine Fresh Water Depths: from nearby water wells

14) Approximate Saltwater Depths: 1126'

15) Approximate Coal Seam Depths: 320'

16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.

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

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

WW-6B
(10/14)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	350'	350'	331 sx/CTS
Coal	9 5/8"	New	J-55	40#	1682'	1682'	647 sx/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	14,040'	14,040'	Lead 943 sx tail 1807 sx/100' inside inter
Tubing	2 3/8'	New	P-110	4.7#	Approx. 5976'	Approx. 5976'	
Liners							

10.14.15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

4700900168

PACKERS

Kind:	10K Arrowset AS1-X		
Sizes:	5 1/2"		
Depths Set:			

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WW-6B
(10/14)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

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

Drill and stimulate any potential zones between and including the Benson to Marcellus. **If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50'-70' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-70' below and cts.)

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

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production unites, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 80 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 14.37

22) Area to be disturbed for well pad only, less access road (acres): 8.71

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

4700900 16

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

See Attachment ***

25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

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*Note: Attach additional sheets as needed.

Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Surface	S001	accelerator	calcium chloride	10043-52-4
Intermediate	S001	accelerator	calcium chloride	10043-52-4
Kick Off Plug	D080	dispersant	sodium polynaphthalene sulfonate	9008-63-3
	D801	retarder	aromatic polymer derivative	propriatary
	D047	antifoam	polypropylene glycol	25322-69-4
Production-Lead	D167	fluid loss	aliphatic amide polymer	propriatary
	D154	extender	non-crystalline silica	7631-86-9
	D400	gas migration	boric acid	10043-35-3
	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgite)	8031-18-3
	D201	retarder	chrystalline silica	14808-60-7
			metal oxide	propriatary
	D202	dispersant	sulphonated synthetic polymer	propriatary
			formaldehyde (impurity)	propriatary
Production-Tail	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgite)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	propriatary
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrystalline silica	14808-60-7
			metal oxide	propriatary
	D153	anti-settling	chrystalline silica	14808-60-7

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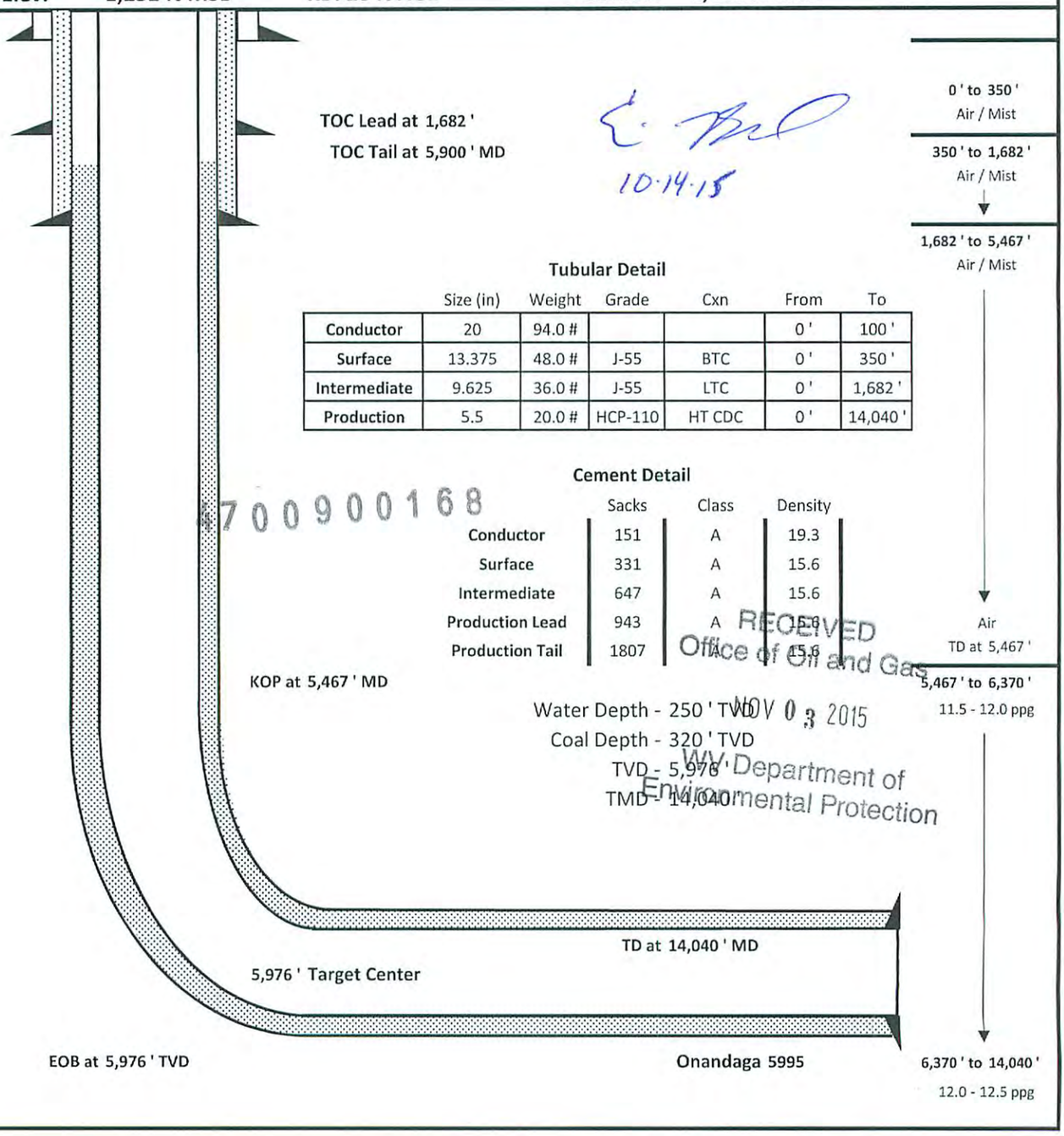
Southwestern Energy Company	Proposed Drilling Program

Well:	BROOKE COUNTY PARKS BRK 10	Re-entry Rig:	0
Field:	PANHANDLE FIELD	Prospect:	PANHANDLE
County:	BROOKE	State:	WV
SHL:	40.260403 Latitude -80.547777 Longitude		
BHL:	40.239721 Latitude -80.5360357 Longitude		
KB Elev:	1,232 ft MSL KB: 26 ft AGL	GL Elev:	1,202 ft MSL



Tubular Detail

	Size (in)	Weight	Grade	Cxn	From	To
Conductor	20	94.0 #			0 '	100 '
Surface	13.375	48.0 #	J-55	BTC	0 '	350 '
Intermediate	9.625	36.0 #	J-55	LTC	0 '	1,682 '
Production	5.5	20.0 #	HCP-110	HT CDC	0 '	14,040 '

Cement Detail

	Sacks	Class	Density
Conductor	151	A	19.3
Surface	331	A	15.6
Intermediate	647	A	15.6
Production Lead	943	A	15.6
Production Tail	1807	A	15.6

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WW-9
(9/13)

API Number 47 - 09 -
Operator's Well No. Brooke County Parks BRK 10H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 494512924

Watershed (HUC 10) Buffalp Creek Quadrangle Steubenville East

Elevation 1214' County Brooke District Buffalo

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

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: closed loop system in place at this time- cuttings will be taken to a permitted landfill.

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

Proposed Disposal Method For Treated Pit Wastes:

- ____ Land Application
- ■ Underground Injection (UIC Permit Number 2D0072539/ 2D0413175/ 2D0610306/ 2D0610317)
- ■ Reuse (at API Number at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum.)
- ____ Off Site Disposal (Supply form WW-9 for disposal location)
- ■ Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility.

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air drill to KOP, Fluid drill with SOBM from KOP to TD

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

00900168

Additives to be used in drilling medium? see attached sheets

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

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

-Landfill or offsite name/permit number? meadow SWF- 1032, SS Grading SWF- 4902, Northwestern SWF- 1025, Short Creek 1034/WV0109517/CID28726, Carbon Limestone 28726/CID28726
Arden Landfill 100172, American 02-12954, Country Wide 38390/CID38390, Pine Grove 13688

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

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

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Environmental Protection

Company Official Signature

Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Supervisor

Subscribed and sworn before me this 12th day of October, 20 15

Brittany R Woody Notary Public

My commission expires 11/27/15

OFFICIAL SEAL
Notary Public, State of West Virginia
BRITTANY R WOODY
3302 Old Elkins Road
Buckhannon, WV 26201
My commission expires November 27, 2022

Form WW-9

Operator's Well No. Brooke County Parks BRK 10H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 14.37 Prevegetation pH _____

Lime as determined by pH test min. 2 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
White Grove	15	White Grove	15
Red Top	15	Red Top	15
Orchard Grass	20	Orchard Grass	20

Attach:
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [signature] 10-14-15

Comments:

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Title: Oil and Gas Inspector Date: 10-14-15

Field Reviewed? (✓) Yes ( ) No

Marcellus Well Drilling Procedures
And Site Safety Plan

SWN Production Co., LLC

47 - 009 -
Well name: Brooke County Parks BRK 10H
Steubenville, Quad
Buffalo, District
Brooke County, West Virginia

Submitted by:

Dee Southall Date: 10/12/2015

Title Regulatory Supervisor SWN Production Co., LLC

Approved by:

Date: 10-19-15

Title: Oil + Gas Inspector

Approved by:

Date:

Title:

4700900169

SWN Production Co., LLC – Confidential

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THRASHER

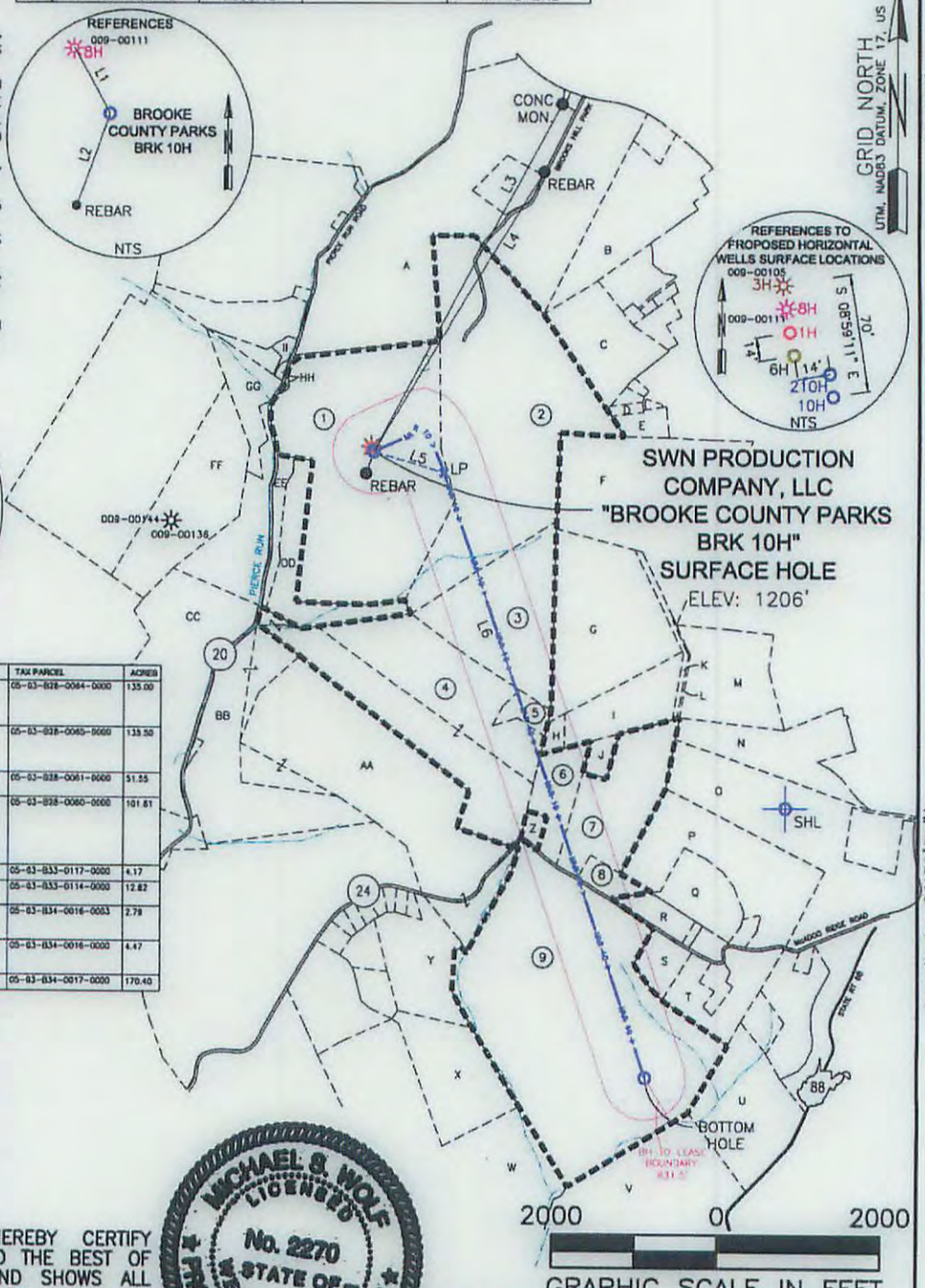
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 28°53'26" W	59.40'	SHL TO REF. PNT.	BRK 8H #009-00111
L2	S 20°08'42" W	280.98'	SHL TO REF. PNT.	REBAR SET
L3	N 28°30'27" E	4764.11'	SHL TO LANDMARK	CONC. MONUMENT
L4	N 31°23'01" E	3949.43'	SHL TO LANDMARK	REBAR FOUND

LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L5	S 73°46'09" E	892.81'		SHL TO PC
L6	S 18°41'20" E	7666.43'		LP TO BHL

NOTES ON SURVEY

1. COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.



TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	(S)BROOKE COUNTY PARK COMMISSION (R)RICHARD P. GIST (R)VIRGINIA GIST ABBLITT (R)ANN GIST LEVIN	05-03-028-0064-0000	135.00
2	(S)COUNTY COURT OF BROOKE COUNTY (R)RICHARD P. GIST (R)VIRGINIA GIST ABBLITT (R)ANN GIST LEVIN	05-03-028-0065-0000	135.50
3	(S)THE COUNTY COURT OF BROOKE COUNTY (R)BROOKE COUNTY PARK & RECREATION COMMISSION	05-03-028-0061-0000	51.55
4	(S/R)BROOKE COUNTY PARK AND RECREATION COMMISSION (R)JAMES ROBERT HERVEY & KAREN L. HERVEY (R)WILLIAM JUDSON HERVEY III & TERESA J. HERVEY (R)FRED L. HERVEY & CATHY JO HERVEY (R)MARY KATHERYN HERVEY DEGARMO AND ALAN H DEGARMO (R)RUSSELL D. HERVEY & LISA K. HERVEY	05-03-028-0060-0000	101.61
5	(S/R)BROOKE COUNTY PARK & RECREATION COMMISSION	05-03-033-0117-0000	4.17
6	(S)KEITH R. SMITH & KATHY J. SMITH (R)DSY INC	05-03-033-0114-0000	12.82
7	(S)KEITH SMITH & KATHY SMITH (R)LAURA C. INMAN & JAMES C INMAN JR,KAREN G. YOUNKINS & TERRY D. YOUNKINS	05-03-034-0016-0003	2.79
8	(S)DAVID RAGAN (R)LAURA C. INMAN & JAMES C. INMAN, JR. (R)KAREN G. YOUNKINS & TERRY D. YOUNKINS	05-03-034-0016-0000	4.47
9	(S/R)JOHN C. WALES SR, & BARBARA A. WALES	05-03-034-0017-0000	170.40

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,456,758.139
EASTING: 538,454.658

LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,456,682.076
EASTING: 538,715.942

BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,454,468.553
EASTING: 539,464.694

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 10/28/15

MICHAEL S. WOLF LICENSED No. 2270 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

COMPANY: SWN Production Company, LLC — SWN Production Company™

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

OPERATOR'S WELL #: BROOKE COUNTY PARKS BRK 10H

API WELL #: 47 (STATE) 009 (COUNTY) 00168 HGM (PERMIT)

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS ☒ LIQUID INJECTION STORAGE SHALLOW ☒
WATERSHED: BUFFALO CREEK
DISTRICT: BUFFALO COUNTY: BROOKE
ELEVATION: 1206'
QUADRANGLE: STEUBENVILLE EAST & BETHANY
SURFACE OWNER: BROOKE COUNTY PARKS COMMISION ACREAGE: ±135.00
OIL & GAS ROYALTY OWNER: RICHARD P. GIST, VIRGINIA GIST ABBLITT, ANN GIST LEVIN. ACREAGE: ±618.31
DRILL ☒ DRILL DEEPER REDRILL FRACTURE OR STIMULATE ☒ PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)
TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: 5,976' TVD 14,040' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- LEASE BOUNDARY
- 500' DHP BUFFER
- MAR 10> MARCELLUS DHP
- ABANDONED PATH

REVISIONS:

DATE:	10-28-2015
SHEET	1 OF 2
DRAWN BY:	E. LYTLE
SCALE:	1" = 2000'
DRAWING NO:	050-5525
WELL LOCATION PLAT	

L:\050-5525-BROOKE COUNTY PARKS-SOUTHWESTERN ENERGY-\SURVEY\BROOKE COUNTY PARKS BRK 10H 10-27-2015.DWG
WEDNESDAY OCTOBER 28 2015 02:45PM

PROPERTY NUMBER 2501165395
PAD ID 3001156583

47-009-00168

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

TRACT	ADJOINER	PARCEL
A	COUNTY COURT OF BROOKE COUNTY	05-03-B34-0049-0000
B	JOHN PAUL POTTER, PENNY POTTER SUAVE, JAY M POTTER II	05-03-B33-0108-0000
C	JOHN G. RADVANSKY & BARBARA J RADVANSKY	05-03-B33-0109-0000
D	GEORGE GIPALO & RHONDA GIPALO	05-03-B33-0110-0000
E	GEORGE GIPALO & RHONDA GIPALO	05-03-B33-0114-0001
F	COUNTY COURT OF BROOKE COUNTY	05-03-B33-0113-0000
G	KEITH SMITH & KATHY SMITH	05-03-B33-0026-0000
H	KEITH SMITH & KATHY SMITH	05-03-B33-0025-0000
I	KEITH SMITH & KATHY SMITH	05-03-B28-0045-0000
J	KEITH R SMITH & KATHY J SMITH	05-03-B28-0063-0000
K	DAVID L. RAGAN	05-03-B28-0062-0000
L	DAVID L. RAGAN	05-03-B28-0059-0000
M	WILLOW SPRINGS INC	05-03-B28-0058-0000
N	WILLIAM CURTIS HUNT & SUSAN L HUNT	05-03-B28-0057-0001
O	DELORES JEANNE BUYAN, SARAH LYNN LYCANS STENGER, JUDITH LEE BRINKLEY	05-03-B28-0066-0000
P	NANCY J AMBROSE	05-03-B29E-0001-0000
Q	NANCY J AMBROSE	05-03-B29J-0007-0000
R	DAVID RAGAN	05-03-B29J-0024-0000
S	CARMAN FANASE	05-03-B29J-0025-0000
T	JAMES L & LAURA INMAN	05-03-B29-0014-0000
U	BRIAN E & JENNIFER B PLANTS	05-03-B34-0001-0000
V	MARK OWEN WEAVER & VIRGINIA BEALL KREUTZ	05-03-B34-0016-0001
W	DENZIL & MARY LOU CONLEY	05-03-B34-0016-0002
X	MARLENE K. HUKILL	05-03-B34-0016-0005
Y	JOHN C WALES & BARBARA A WALES	05-03-B34-0001-0001
Z	BRIAN SMITH	05-03-B34-0016-0004
AA	PHOENIX-GREENLAWN PARTNERS	05-03-B34-0010-0002
BB	STARVAGGI INDUSTRIES INC.	05-03-B34-0007-0000
CC	STARVAGGI INDUSTRIES INC.	05-03-B34-0010-0000
DD	RUSSELL D HERVEY	05-03-B34-0011-0000
EE	STARVAGGI INDUSTRIES INC.	05-03-B34-0014-0000
FF	STARVAGGI INDUSTRIES INC.	05-03-B34-0015-0000
GG	BERNARD J KNORR III & NICOLE C KNORR	05-03-B34-0018-0000
HH	RUBY FAYE KNORR & BERNARD JOHN KNORR JR	05-03-B34-0019-0000
II	BERNARD J KNORR JR & RUBY F KNORR	05-03-B34-0048-0000

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COMPANY:
SWN Production Company, LLC
SWN Production Company™

REVISIONS:	DATE: 10-28-2015
	SHEET 2 OF 2
	DRAWN BY: E. LYTLE
	SCALE: 1" = 2000'
	DRAWING NO: 050-5525
	WELL LOCATION PLAT

L:\050-5525-BROOKE COUNTY PARKS-SOUTHWESTERN ENERGY-\SURVEY\BROOKE COUNTY PARKS BRK 10H 10-27-2015.DWG
WEDNESDAY OCTOBER 28 2015 02:46PM

PROPERTY NUMBER 2501165395
PAD ID 3001156583

Brooke County Parks BRK 10H

Tract #	Surface Owner	Lease #	Lessor	Lessee	Royalty	BK/PG
1)	Brooke County Park Commission	1-324062-001	Richard P Gist	Fortuna Energy, Inc	12.50%	10/061
	Richard P Gist		Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
	Virginia Gist Abblitt		Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
	Ann Gist Levin		Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
		1-324062-002	Virginia Gist Abblitt	Fortuna Energy, Inc	12.50%	10/067
			Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
			Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
		1-324062-003	Ann Gist Levin	Fortuna Energy, Inc	12.50%	10/069
			Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
			Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
2)	County Court of Brooke County	1-324062-001	Richard P Gist	Fortuna Energy, Inc	12.50%	10/061
	Richard P Gist		Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
	Virginia Gist Abblitt		Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
	Ann Gist Levin		Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
		1-324062-002	Virginia Gist Abblitt	Fortuna Energy, Inc	12.50%	10/067
			Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
			Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
		1-324062-003	Ann Gist Levin	Fortuna Energy, Inc	12.50%	10/069
			Fortuna Energy Inc	Range Resources-Appalachia LLC		10/226
			Range Resources-Appalachia LLC	Chesapeake Appalachia LLC		10/522
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
3)	The County Court of Brooke County	1-329491-000	Brooke County Park and Recreation Commission	Chesapeake Appalachia LLC	18%	13/43
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/408
4)	Brooke County Park and Recreation Commission	1-329491-000	Brooke County Parks and Recreation Commission	Chesapeake Appalachia LLC	18%	13/43
	James Robert Hervey and Karen L Hervey	1-357894-001	James Robert Hervey and Karen L Hervey	Chesapeake Appalachia LLC	18%	20/191
	William Judson Hervey III and Teresa J Hervey	1-357894-002	William Judson Hervey III and Teresa J Hervey	Chesapeake Appalachia LLC	18%	20/186
	Fred L Hervey and Cathy Jo Hervey	1-357894-003	Fred L Hervey and Cathy Jo Hervey	Chesapeake Appalachia LLC	18%	20/522
	Mary Katheryn Hervey DeGarmo and Alan H DeGarmo	1-357894-004	Mary Katheryn Hervey DeGarmo and Alan H DeGarmo	Chesapeake Appalachia LLC	18%	20/527
	Russell D Hervey and Lisa K Hervey	1-357894-005	Russell D Hervey and Lisa K Hervey	Chesapeake Appalachia LLC	18%	20/532
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480

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5)	Brooke County Park and Recreation Commission		Brooke County Park and Recreation Commission	SWN Production Company LLC	18%	31/275
6)	Keith R Smith and Kathy J Smith	1-382588-001	GIY Inc	Chesapeake Appalachia LLC	18%	27/44
	Laura G Inman and James C Inman Jr; Karen G Younkins and Terry D Younkins		Chesapeake Appalachia LLC	SWN Production Company LLC		30/408
7)	Keith Smith and Kathy Smith	1-384446-001	Laura G Inman and James C Inman Jr; Karen G Younkins and Terry D Younkins	Tri Energy Holdings LLC	18%	10/607
	Laura G Inman and James C Inman Jr; Karen G Younkins and Terry D Younkins		Tri Energy Holdings LLC	NPAR LLC		16/547
			NPAR LLC	Chevron USA Inc		20/448
			Chevron USA Inc	Chesapeake Appalachia LLC		28/664
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
8)	David Ragan	1-382640-001	Laura G. Inman and James C. Inman, Jr.	Chesapeake Appalachia LLC	18%	28/141
	Laura G. Inman and James C. Inman		Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
	Karen G. Younkins and Terry D. Younkins	1-385017-001	Karen G. Younkins and Terry D. Younkins	Tri Energy Holdings LLC	18%	10/605
			Tri Energy Holdings LLC	NPAR LLC		16/547
			NPAR LLC	Chevron USA Inc		20/448
			Chevron USA Inc	Chesapeake Appalachia LLC		28/664
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
9)	John C Wales Sr and Barbara A Wales	1-384445-000	John C Wales Sr and Barbara A Wales	Tri Energy Holdings LLC	18%	10/601
			Tri Energy Holdings LLC	NPAR LLC		16/547
			NPAR LLC	Chevron USA Inc		20/448
			Chevron USA Inc	Chesapeake Appalachia LLC		28/664
			Chesapeake Appalachia LLC	SWN Production Company LLC		30/480
			ADJOINING TRACTS			
A)	Mark Owen Weaver & Virginia Beall Kreutz					
B)	Denzil and Mary Lou Conley					
C)	Marlene K. Hukill					
D)	John C Wales Sr and Barbara A Wales					
E)	Brian Smith					
F)	Phoenix-Greenlawn Partners					
G)	Starvaggi Industries					
H)	Starvaggi Industries Inc					
I)	Russell D Hervey					
J)	Starvaggi Industries					

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K)	Starvaggi Industries Inc
L)	Bernard J Knorr III and Nicole C Knorr
M)	Ruby Faye Knorr and Bernard John Knorr Jr
N)	Bernard J Knorr Jr and Ruby F Knorr
O)	County Court of Brooke County
P)	John Paul Potter; Penny Potter Suave; Jay M Potter II
Q)	John G Radvansky and Barbara J Radvansky
R)	George Gipalo and Rhoda Gipalo
S)	George Gipalo and Rhoda Gipalo
T)	County Court of Brooke County
U)	Keith Smith and Kathy Smith
V)	Keith Smith and Kathy Smith
W)	Keith Smith and Kathy Smith
X)	Keith R Smith and Kathy J Smith
Y)	David L. Ragan
Z)	David L. Ragan
AA)	Willow Springs Inc.
BB)	William Curtis Hunt and Susan L Hunt
CC)	Delores Jeanne Buyan; Sarah Lynn Lycans Stenger; Judith Lee Brinkley
DD)	Nancy J Ambrose
EE)	Nancy J Ambrose
FF)	
GG)	Carman Fanase
HH)	James L. and Laura Inman
II)	Brian E. and Jennifer B. Plants

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SWN
Southwestern Energy
PO Box 1300
Jane Lew, WV 26378
PHONE: (832) 796-1610

47 0 0 9 0 0 1 6

November 2, 2015

Ms. Laura Adkins
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed Brooke County Parks BRK 6H and Brooke County Parks BRK 10H in Brooke County, West Virginia, Drilling under McAdoo Ridge Road.

Dear Ms. Adkins:

SWN Production Company, LLC ("SWN") is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to SWN's right to drill under McAdoo Ridge Road. Please be advised that SWN has leased all mineral owners under said route as it relates to the above-referenced well and unit.

Thank you.

Sincerely,

Jerry L. Bridgens, CPL
Staff Landman
SWN Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

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The Right People doing the Right Things, wisely Investing the cash flow from our underlying Assets, will create Value+

WW-6AC
(1/12)

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

Date of Notice Certification: 11/2/15

API No. 47- 09 -
Operator's Well No. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

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

State:	WV	UTM NAD 83	Easting:	538454
County:	Brooke		Northing:	4456758
District:	Buffalo	Public Road Access:		Pierce Run Road CH 20
Quadrangle:	Steubenville East	Generally used farm name:		Brooke County Parks
Watershed:	Buffalp Creek			

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

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

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

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WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I _____, 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:	SWN Production Co., LLC	Address:	P.O. Box 1300
By:	Dee Southall		Jane Lew, WV 26378
Its:	Regulatory Supervisor	Facsimile:	304-471-2497
Telephone:	304-884-1610	Email:	Dee_Southall@swn.com

OFFICIAL SEAL
NOTARY SEAL State of West Virginia
BRITTANY R WOODY
3302 Old Elkins Road
Buckhannon, WV 26201
My commission expires November 27, 2022

Subscribed and sworn before me this 12th day of October 2015

Brittany R Woody Notary Public

My Commission Expires 11/27/22

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

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WW-6A
(9-13)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

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

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

Date of Notice: 11/2/15 **Date Permit Application Filed:** 11/2/15

Notice of:

☑ PERMIT FOR ANY WELL WORK

☐ CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

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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: Brooke County Park Commission
Address: 100 Court House Square
Wellsburg, WV 26070
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: Starvaggi Industries Inc.
Address: 401 Pennsylvania Avenue
Weirton, WV 26062

☐ COAL OPERATOR
Name:
Address:

☐ SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: None
Address:

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

*Please attach additional forms if necessary

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WW-6A
(8-13)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

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

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

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

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

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

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

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

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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.

4700900108

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

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

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

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Office of Oil and Gas
NOV 03 2015

WV Department of
Environmental Protection

WW-6A
(8-13)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 10H
Well Pad Name: Brooke County Parks PAD

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

4700900168

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WV Department of
Environmental Protection

WW-6A
(8-13)

API NO. 47- 09 -
OPERATOR WELL NO. Brooke County Parks BRK 1CH
Well Pad Name: Brooke County Parks PAD

Notice is hereby given by:

Well Operator: SWN Production Co., LLC
Telephone: 304-884-1610
Email: Dee_Southall@swn.com

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: 304-471-2497

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 deppriv acyofficer@wv.gov.

OFFICIAL SEAL
Notary Public, State of West Virginia
BRITTANY R WOODY
3302 Old Elkins Road
Buckhannon, WV 26201
My commission expires November 27, 2022

Subscribed and sworn before me this 12th day of October 2015

Brittany R Woody Notary Public

My Commission Expires 11/27/22

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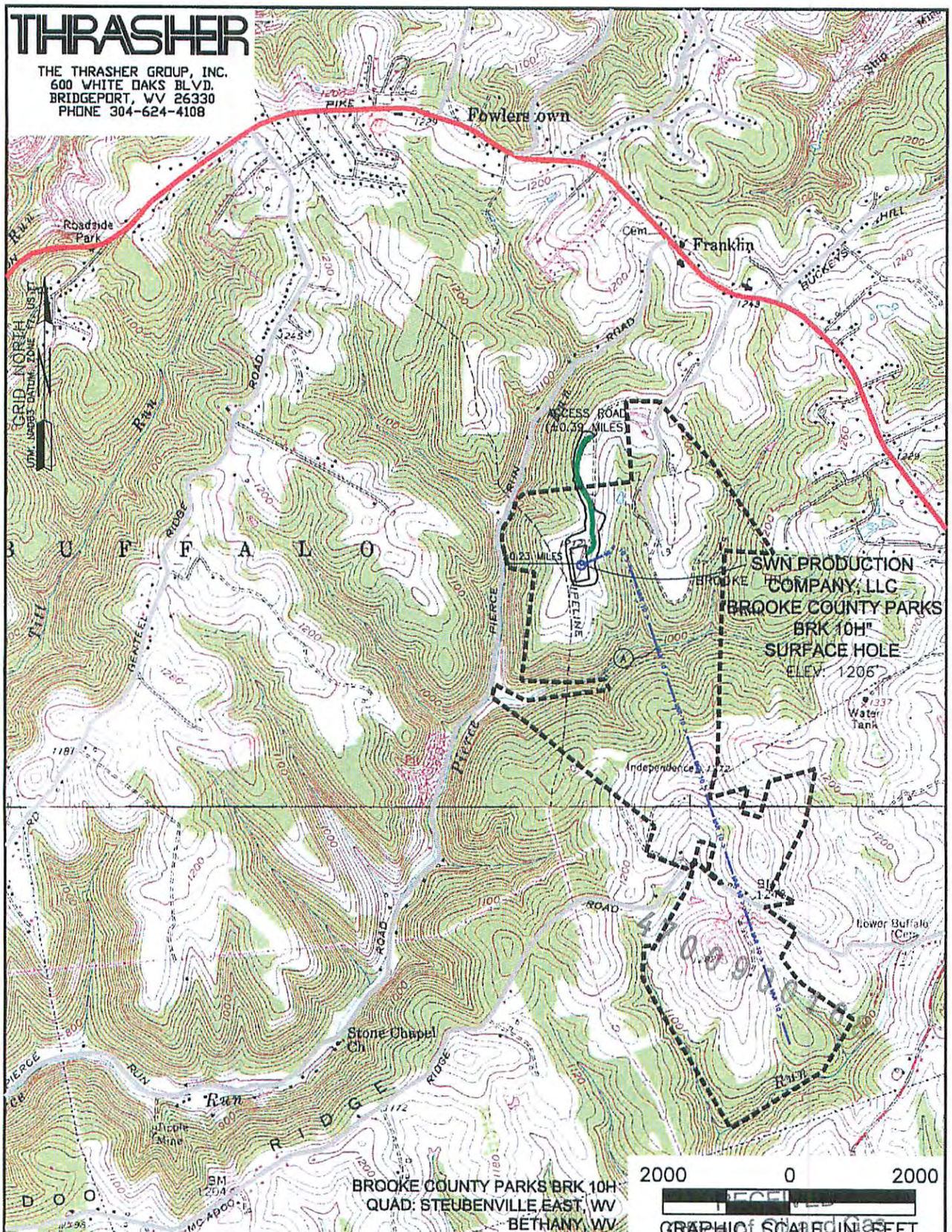
NOV 03 2015

WV Department of
Environmental Protection



NAME AND DISTANCE TO THE NEAREST STREAM:	STREAM CROSSING COORDINATES (NAD 83):
PIERCE RUN IS LOCATED ±0.23 MILES WEST OF THE CENTER OF THE DRILL PAD.	A. LAT: 40.256922° / LONG: -80.543501°

WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET
WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET
CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET
CENTER OF PAD TO AGRICULTURAL BUILDINGS LAGER THAN 2500 SQ FT: >625 FEET

FEMA FLOOD INFORMATION:

NO FLOOD ZONES.

COMPANY: SWN Production Company, LLC — SWN Production Company™

OPERATOR'S WELL #: BROOKE COUNTY PARKS BRK 10H

LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.260403°
LONGITUDE: -80.547777°

BOTTOM HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.239729°
LONGITUDE: -80.536040°

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- EXISTING SPRING
- EXISTING WATER WELL
- ACCESS ROAD
- ACCESS ROAD TO PREV. SITE
- HIGHWAY/INTERSTATE
- COUNTY ROAD

REVISIONS:

DATE: 10-28-2015
DRAWN BY: E. LYTLE
SCALE: 1" = 2000'
DRAWING NO: 050-5525
TOPOGRAPHIC MAP

L:\050-5525-BROOKE COUNTY PARKS-SOUTHWESTERN ENERGY-\SURVEY\BROOKE COUNTY PARKS BRK 10H 10-27-2015.DWG
WEDNESDAY OCTOBER 28 2015 02:45PM

PROPERTY NUMBER 2501165395
PAD ID 3001156583

RECEIVED Office of Oil and Gas NOV 03 2015 WV Department of Environmental Protection

WW-6A4
(1/12)

Operator Well No. Brooke County Parks BRK 10H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.
Date of Notice: 10/13/2015 **Date Permit Application Filed:** 11/2/15

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

☐ HAND DELIVERY ☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided,* That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however,* That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Brooke County Park Commission ✓
Address: 140 Gist Dr.
Wellsburg, WV 26070

Name:
Address:

Notice is hereby given:

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

State: West Virginia
County: Brooke
District: Buffalo
Quadrangle: Steubenville East
Watershed: Buffalo Creek

UTM NAD 83 Easting: 538,454.658
Northing: 4,456,758.139
Public Road Access: Pierce Run Road
Generally used farm name:

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

4700900168

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1672
Email: Steve_Teel@SWN.com
Facsimile:

Authorized Representative: Danielle Southall
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1614
Email: Dee_Southall@SWN.com
Facsimile:

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Office of Oil and Gas
NOV 03 2015
WV Department of
Environmental Protection

Oil and Gas Privacy Notice:

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

WW-6A5
(1/12)

Operator Well No. Brooke County Parks BRK 101

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

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**
Date of Notice: 10/13/2015 **Date Permit Application Filed:** 11/2/15

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

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND 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: Brooke County Park Commission
Address: 140 Gist Dr.
Wellsburg, WV 26070

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: West Virginia
County: Brooke
District: Buffalo Creek
Quadrangle: Steubenville East
Watershed: Buffalo Creek

UTM NAD 83 Easting: 538,454.658
Northing: 4,456,758.139
Public Road Access: Pierce Run Road
Generally used farm name:

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

Well Operator: SWN Production Company, LLC
Telephone: 304-884-1614
Email: Dee_Southall@SWN.com

Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Facsimile: 304-472-4225

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.

4709900168

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Office of Oil and Gas
NOV 03 2015
WV Department of
Environmental Protection

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

October 27, 2015

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

Subject: DOH Permit for the Brooke County Park Brooke County Park Pad, Brooke County

Brooke County Park BRK 1H	Brooke County Park BRK 6H
Brooke County Park BRK 10H	Brooke County Park BRK 210H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2011-0442 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Brooke County route 27/12.

The operator has signed an 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.

47 00900168

Very Truly Yours,

Gary K. Clayton

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office Oil &Gas Coordinator

Cc: Dee Southall
Southwestern Energy
CH, OM, D-6
File

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NOV 03 2015
WV Department of
Environmental Protection

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
BAKER HUGHES	ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
			Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compound	068424-85-1
			Water	007732-18-5
	BF-7L	Buffer	Potassium Carbonate	000584-08-7
	ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
			Water	007732-18-5
	Enzyme G-I	Breaker	No Hazardous Components	NONE
	ENZYME G-NE	Breaker	No Hazardous Components	NONE
	FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
	GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
			Polysaccharide Blend	N/A-021
	SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
			Ethylene Glycol	000107-21-1
	XLW-32	Crosslinker	Boric Acid	010043-35-3
			Methanol (Methyl Alcohol)	000067-56-1
FRAC TECH SERVICES	APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
	B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
	BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
	FRW-200	Friction Reducer	No Hazardous Components	NONE
	HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
	KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
	LTB-1	Breaker	Ammonium Persulfate	N/A

47-009-00168

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NOV 03 2015
WV Department of
Environmental Protection

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
NALCO ONESOURCE	EC6110A	Biocide	Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compounds	N/A-063
	EC6629A	Biocide	No Hazardous Components	NONE
WEATHERFORD	WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
	WBK-134	Breaker	Ammonium Persulfate	007727-54-0
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
	WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
			Water	007732-18-5
	WFR-55LA	Friction Reducer	No Hazardous Components	NONE
	WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
	WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
			Potassium Hydroxide	001310-58-3
	WXL-101LE	Corsslinker	No Hazardous Components	NONE
	WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
	WXL-105L	Crosslinker	Water	007732-18-5
			Ethylene Glycol	000107-21-1
			Boric Acid	010043-35-3
			Ethanolamine	000141-43-5
SCHLUMBERGER	B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
	L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
	Breaker J218	Breaker	Diammonium Peroxidisulphate	7727-54-0
	EB-Clean* J475 Breaker		Diammonium Peroxidisulphate	7727-54-0
	Friction Reducer B315	Friction Reducer	Distillates (petroleum), Hydrotreated light Aliphatic Alcohol Glycol Ether	64742-47-8 Proprietary
	Friction Reducer J609		Ammonium Sulfate	7783-20-2
Supplier Name	Product Name	Product Use	Chemical Name	CAS Number

4700900160

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SCHLUMBERGER	Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
	Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7601-54-9 107-21-1
	Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303-96-4
	Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310-58-3

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SOUTHWESTERN ENERGY

AS-BUILT PLANS FOR THE

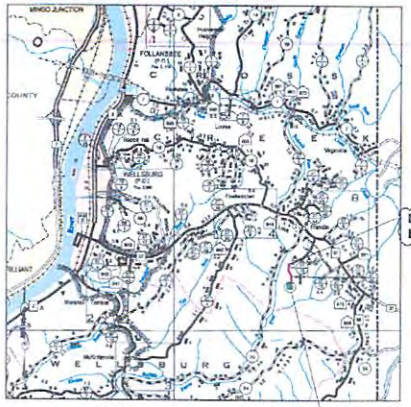
BROOKE COUNTY PARKS PAD "A"

BROOKE COUNTY, WV

SEPTEMBER 2015

SOUTHWESTERN ENERGY
179 Chesapeake Drive
Jane Lew, WV 26378
(304) 884-1610

BROOKE COUNTY, WV HIGHWAY MAP



HIGHWAY MAP SCALE

WVDEP OOG
ACCEPTED AS-BUILT
12 / 7 / 2015

STEUBENVILLE EAST OHIO QUAD MAP

VICINITY MAP SCALE

AS-BUILT ACCESS ROAD BEGINNING
NAD83 Latitude = N 40.266668°
NAD83 Longitude = W 80.543420°
UTM 83-17 Northing = 14624168.2817 ft.
UTM 83-17 Easting = 1767783.7480 ft.

AS-BUILT CENTER OF WELL PAD
NAD83 Latitude = N 40.260556°
NAD83 Longitude = W 80.547917°
UTM 83-17 Northing = 14621936.156 ft.
UTM 83-17 Easting = 1766540.636 ft.

THRASHER

SHEET INDEX

SHEET	DESCRIPTION
1	TITLE SHEET
2-3	EVACUATION ROUTE/PREVAILING WIND
4	AS-BUILT OVERVIEW
5-6	AS-BUILT ACCESS ROAD PLAN
7	AS-BUILT WELL PAD PLAN
8	AS-BUILT ACCESS ROAD PROFILE
9	AS-BUILT WELL PAD PROFILE
10	DETAILS
11	RECLAMATION PLAN
12	RECLAMATION GENERAL NOTES
13	RECLAMATION DETAILS

BROOKE COUNTY PARKS PAD "A" WELLS

EXISTING WELL 3H: API# 47-009-00105
EXISTING WELL 8H: API# 47-009-00111

NOTES

1. PORTIONS OF THE ORIGINAL AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOORD BENCHECK & ASSOCIATES, INC (BBA) TO CHESAPEAKE ENERGY IN JUNE 2013 HAVE BEEN INCORPORATED INTO THESE PLANS. THE BBA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SOUTHWESTERN ENERGY IN JUNE 2015 INCLUDING CONTOURS, PROPERTY LINES, ENVIRONMENTAL FEATURES, ROADS, BUILDINGS, TREELINES, ETC.
2. EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT AND ABOVE GROUND PIPING, AND EROSION & SEDIMENT CONTROL FEATURES WERE VERIFIED AND AS-BUILT BY THRASHER JUNE 2015.
3. THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, US FOOT, CENTRAL MERIDIAN 81dW.

RUSSELL B. MERSINGER
REGISTERED
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER
12/04/15

TOTAL DISTURBANCE SUMMARY

ACCESS ROAD LOD	5.66 AC
WELL PAD LOD	8.71 AC
TOTAL DISTURBANCE AREA	14.37 AC

NOTE: BASED ON PROJECT BOUNDARY PROVIDED BY BOORD BENCHECK & ASSOCIATES

REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION
1	1-13	JFW	12/04/15	ADDRESSED AS-BUILT COMMENTS PER WVDEP OFFICE OF OIL & GAS; ADDED AS-BUILT ACCESS ROAD PROFILE, RECLAMATION PLAN, PE SEAL AND WELL & CELLAR INFORMATION

ONE CALL UTILITY SYSTEM CONTACT INFO

WEST VIRGINIA 811

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THE THRASHER GROUP, INC.
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330
PHONE (304) 624-4108 • FAX (304) 624-7831

WVDEP OOG
ACCEPTED AS-BUILT
12 / 7 / 2015

PLAN LEGEND

- PRE-CONSTRUCTION CONTOURS
- EXISTING ROAD
- EXISTING TREE LINE
- EXISTING GAS LINE
- EXISTING PROPERTY LINE
- BRA AS-BUILT 18" CMP/OUTLET PROTECTION
- BRA AS-BUILT 2' CONTOURS
- BRA AS-BUILT PROJECT BOUNDARY
- BRA AS-BUILT ROCK LINED CHANNEL
- TTG AS-BUILT ROAD EDGE
- TTG AS-BUILT PAD EDGE
- TTG AS-BUILT EDGE OF PAVEMENT
- TTG AS-BUILT FENCE
- TTG AS-BUILT DITCH
- TTG AS-BUILT CONTAINMENT AREA
- TTG AS-BUILT PRODUCTION EQUIPMENT
- AS-BUILT TTG AS-BUILT TEXT
- AS-BUILT BRA AS-BUILT TEXT

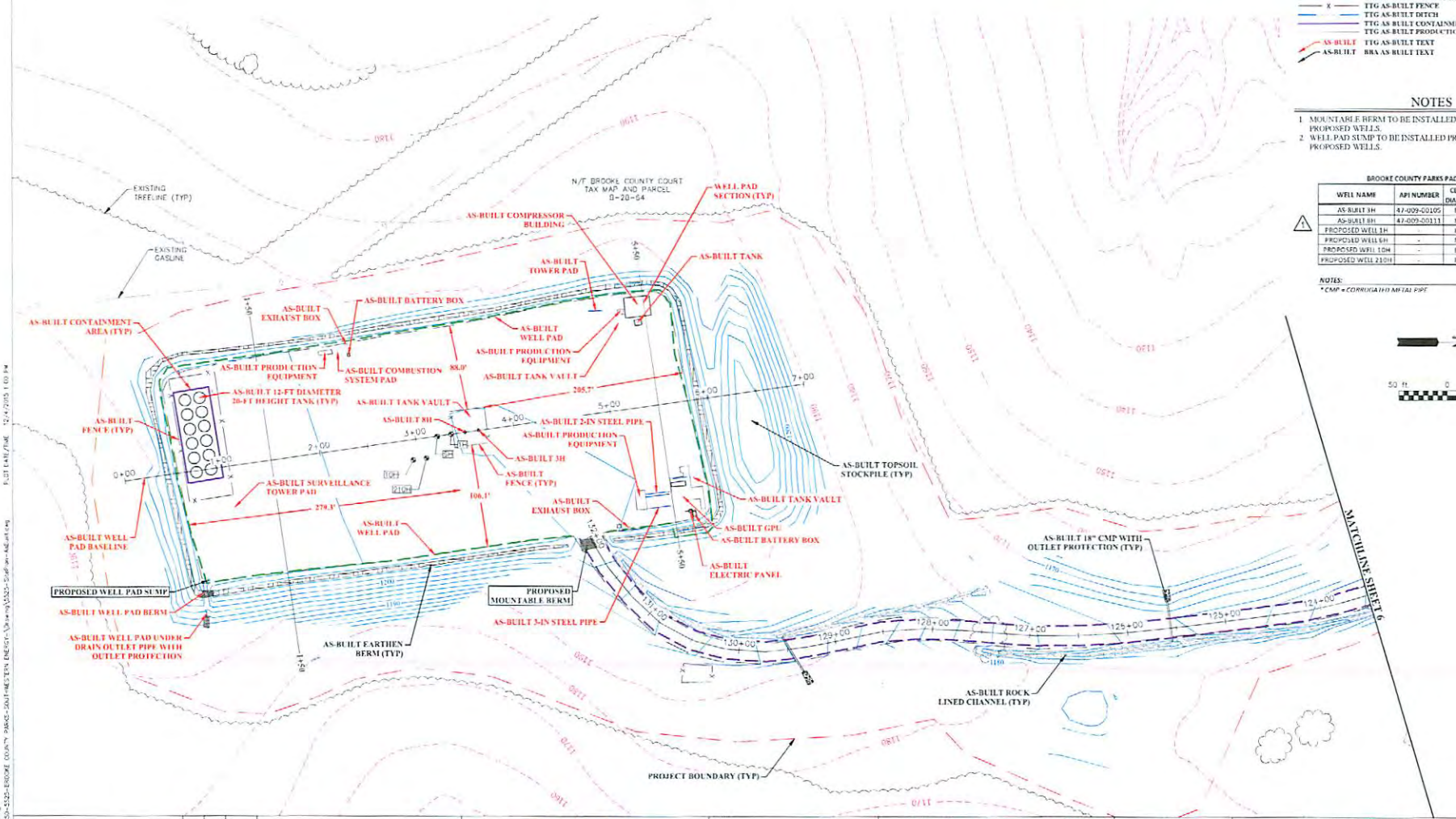
NOTES

1. MOUNTABLE BERM TO BE INSTALLED PRIOR TO DRILLING OF PROPOSED WELLS.
2. WELL PAD SUMP TO BE INSTALLED PRIOR TO DRILLING OF PROPOSED WELLS.

BROOKE COUNTY PARKS PAD "A" WELLS

WELL NAME	API NUMBER	CELLAR DIAMETER	CELLAR DEPTH	CELLAR MATERIAL
AS-BUILT 3H	47-009-00105	8-FT	8-FT	CMP*
AS-BUILT 8H	47-009-00111	8-FT	8-FT	CMP*
PROPOSED WELL 1H		8-FT	8-FT	CMP*
PROPOSED WELL 5H	-	8-FT	8-FT	CMP*
PROPOSED WELL 10H	-	8-FT	8-FT	CMP*
PROPOSED WELL 210H	-	8-FT	8-FT	CMP*

NOTES:
** CMP = CORRUGATED METAL PIPE*



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NO.	BY	DATE	DESCRIPTION
1	JKW	12/04/15	ADDRESSED AS-BUILT COMMENTS PER WVDEP OFFICE OF OIL & GAS

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DRAWN DATE
CHECKED DATE
APPROVED DATE
SURVEY DATE
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FIELD BOOK No.

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THE THRASHER GROUP, INC.
500 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330
PHONE (304) 624-4108 FAX (304) 624-7831

PHASE No.
CONTRACT No.
PROJECT No. 101-050-5525

SOUTHWESTERN ENERGY
AS-BUILT PLANS FOR THE
BROOKE COUNTY PARKS BRK PAD "A"
BROOKE COUNTY, WV
AS-BUILT WELL PAD PLAN

SHEET No. 7

LAYOUT TAB: 07-WP
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SOUTHWE

AS-BUIL

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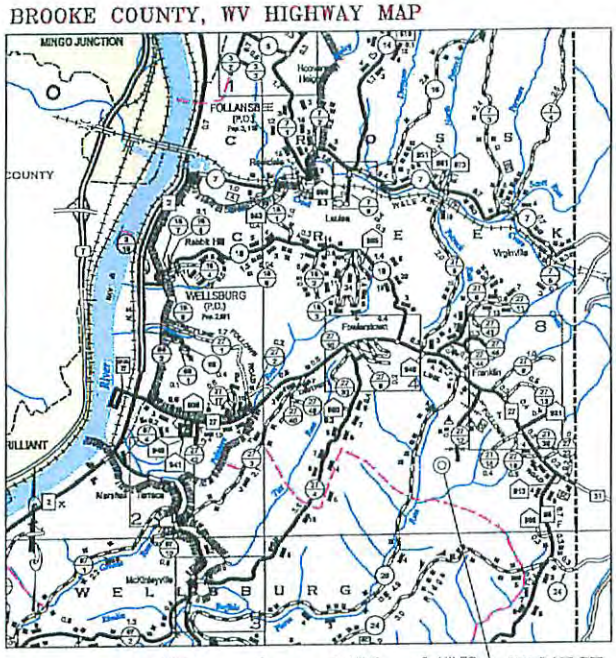
BROOKE COUNTY, WV HIGHWAY MAP



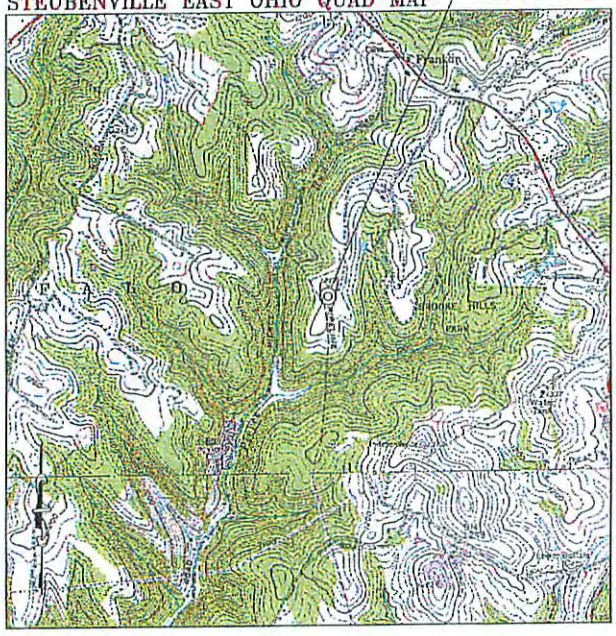
1 MILE 0 1 MILE 2 MILES

HIGHWAY MAP SCALE

PROJECT LOCATION

STEUBENVILLE EAST OHIO QUAD MAP

PROJECT LOCATION



2000' 0 2000' 4000'

VICINITY MAP SCALE

AS-BUILT ACCESS ROAD BEGINNING
NAD83 Latitude = N 40.265944°
NAD83 Longitude = W 80.547056°
UTM 83-17 Northing = 14623899.470 ft.
UTM 83-17 Easting = 1766770.817 ft.

AS-BUILT CENTER OF WELL PAD
NAD83 Latitude = N 40.260556°
NAD83 Longitude = W 80.547917°
UTM 83-17 Northing = 14621936.156 ft.
UTM 83-17 Easting = 1766540.636 ft.

PROJECT LOCATION

ONE CALL UTILITY SYSTEM CONTACT INFO

WEST VIRGINIA 811

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STERN ENERGY

T PLANS FOR THE

NTY PARKS PAD "A"

KE COUNTY, WV

TEMBER 2015

Southwestern Energy®

SOUTHWESTERN ENERGY
179 Chesapeake Drive
Jane Lew, WV 26378
(304) 884-1610

4700900168

SHEET INDEX

SHEET	DESCRIPTION
1	TITLE SHEET
2-3	EVACUATION ROUTE/PREVAILING WIND
4	AS-BUILT OVERVIEW
5	AS-BUILT ACCESS ROAD PLAN
6	AS-BUILT WELL PAD PLAN

NOTES

1. PORTIONS OF THE ORIGINAL AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOORD BENCHECK & ASSOCIATES, INC (BBA) TO CHESAPEAKE ENERGY IN JUNE 2013 HAVE BEEN INCORPORATED INTO THESE PLANS. THE BBA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SOUTHWESTERN ENERGY IN JUNE 2015 INCLUDING CONTOURS, PROPERTY LINES, ENVIRONMENTAL FEATURES, ROADS, BUILDINGS, TREELINES, ETC.
2. EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT AND ABOVE GROUND PIPING, AND EROSION & SEDIMENT CONTROL FEATURES WERE VERIFIED AND AS-BUILT BY THRASHER JUNE 2015.
3. THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, US FOOT; CENTRAL MERIDIAN 81dW.

TOTAL DISTURBANCE SUMMARY

ACCESS ROAD LOD	5.66 AC
WELL PAD LOD	8.71 AC
TOTAL DISTURBANCE AREA	14.37 AC

NOTE: BASED ON PROJECT BOUNDARY PROVIDED BY BOORD BENCHECK & ASSOCIATES.

10-14-15

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Office of Oil and Gas
OCT 15 2015
WV Department of
Environmental Protection

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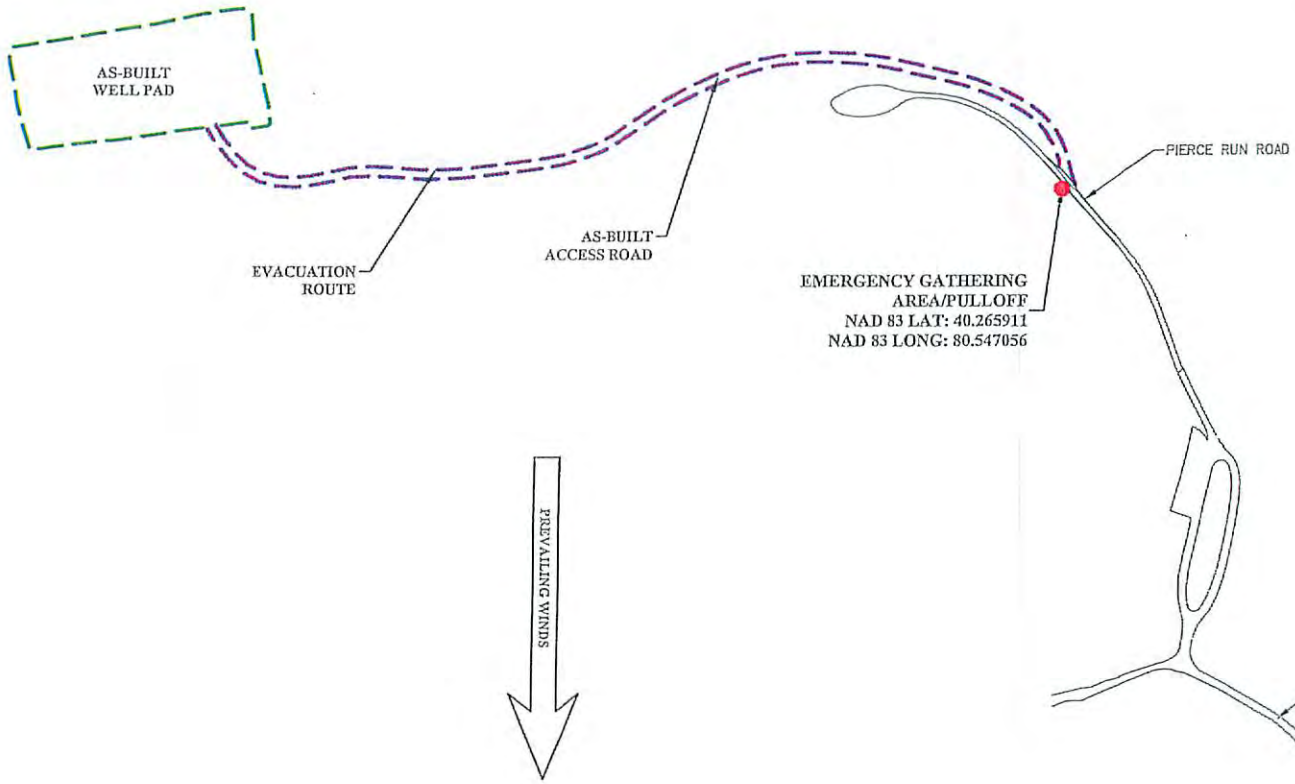

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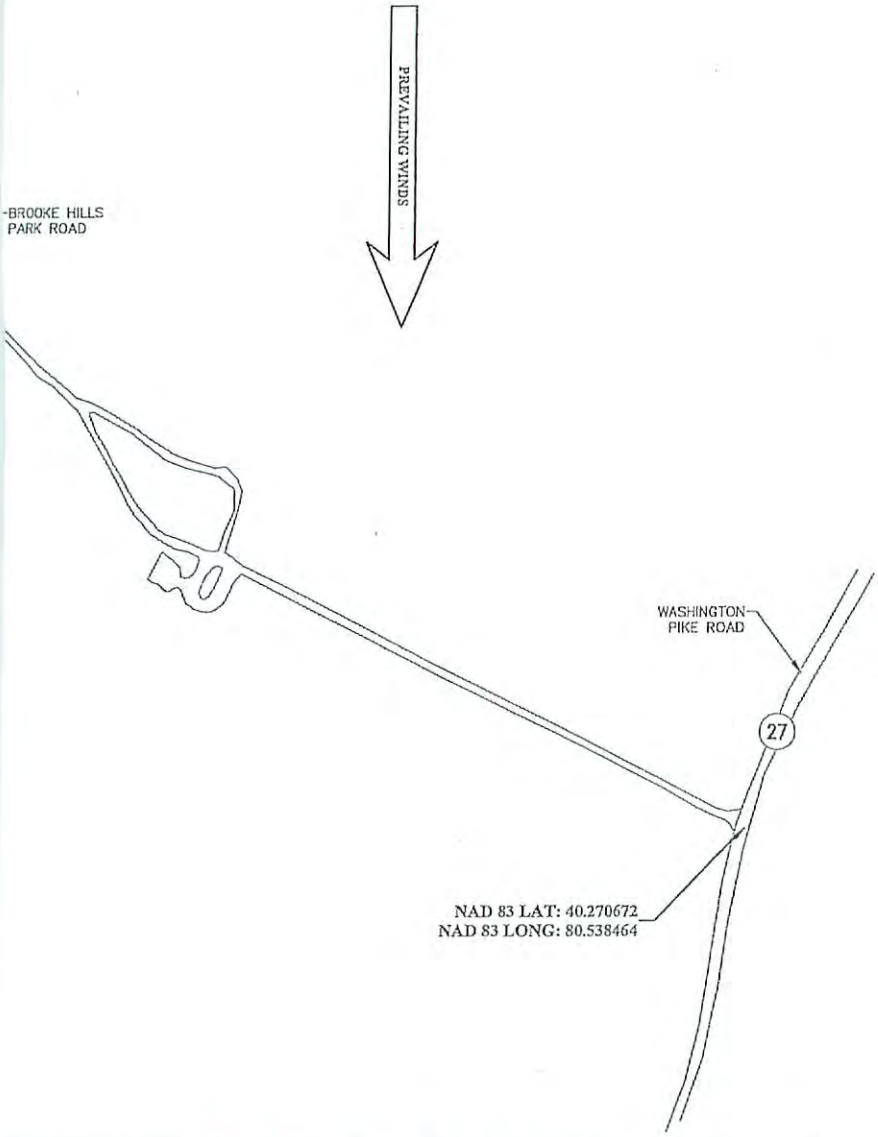
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

EVACUATION ROUTE PLAN LEGEND

- TTG AS-BUILT ROAD EDGE
- TTG AS-BUILT PAD EDGE
- TTG AS-BUILT EDGE OF PAVEMENT



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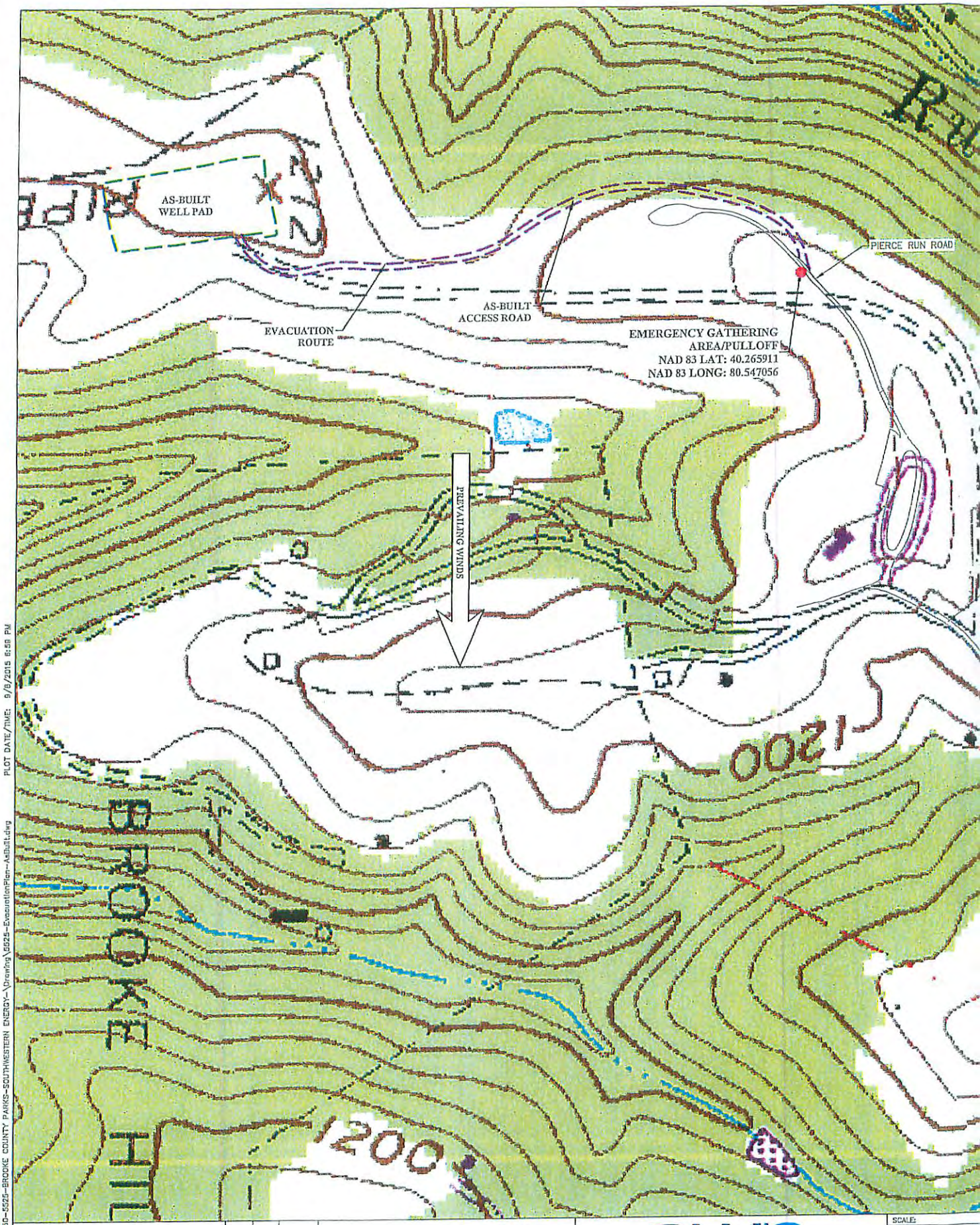
THRASHER THE THRASHER GROUP, INC. 600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330 PHONE (304) 624-4108 FAX (304) 624-7831	PHASE No. CONTRACT No. PROJECT No. 101-050-5525	SOUTHWESTERN ENERGY AS-BUILT PLANS FOR THE BROOKE COUNTY PARKS BRK PAD "A" BROOKE COUNTY, WV EVACUATION ROUTE/PREVAILING WINDS	SHEET No. 2



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APPROVED:	DA
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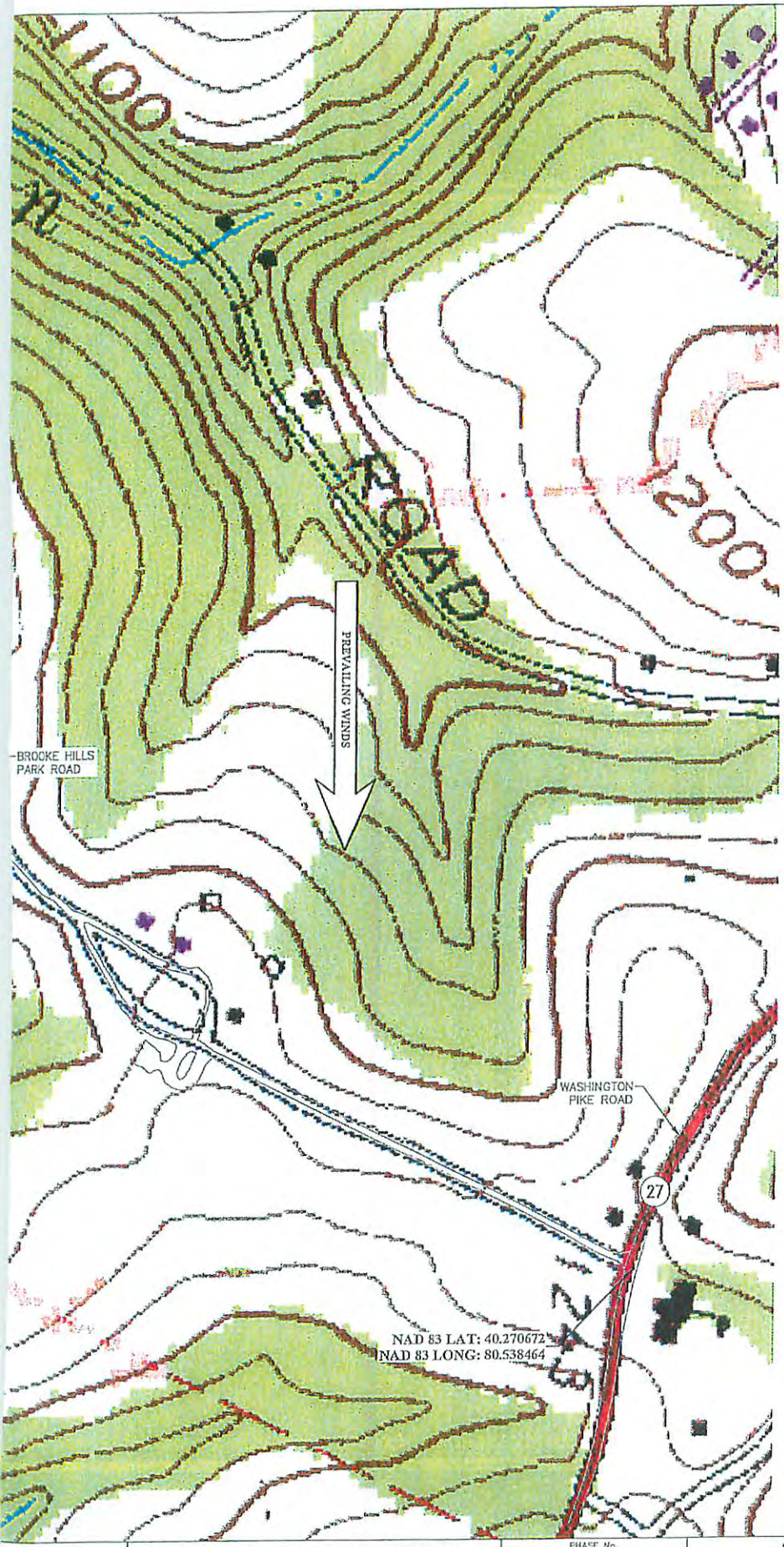
SURVEY BY:	
FIELD BOOK No.:	



EVACUATION ROUTE PLAN LEGEND

- TTG AS-BUILT ROAD EDGE
- TTG AS-BUILT PAD EDGE
- TTG AS-BUILT EDGE OF PAVEMENT

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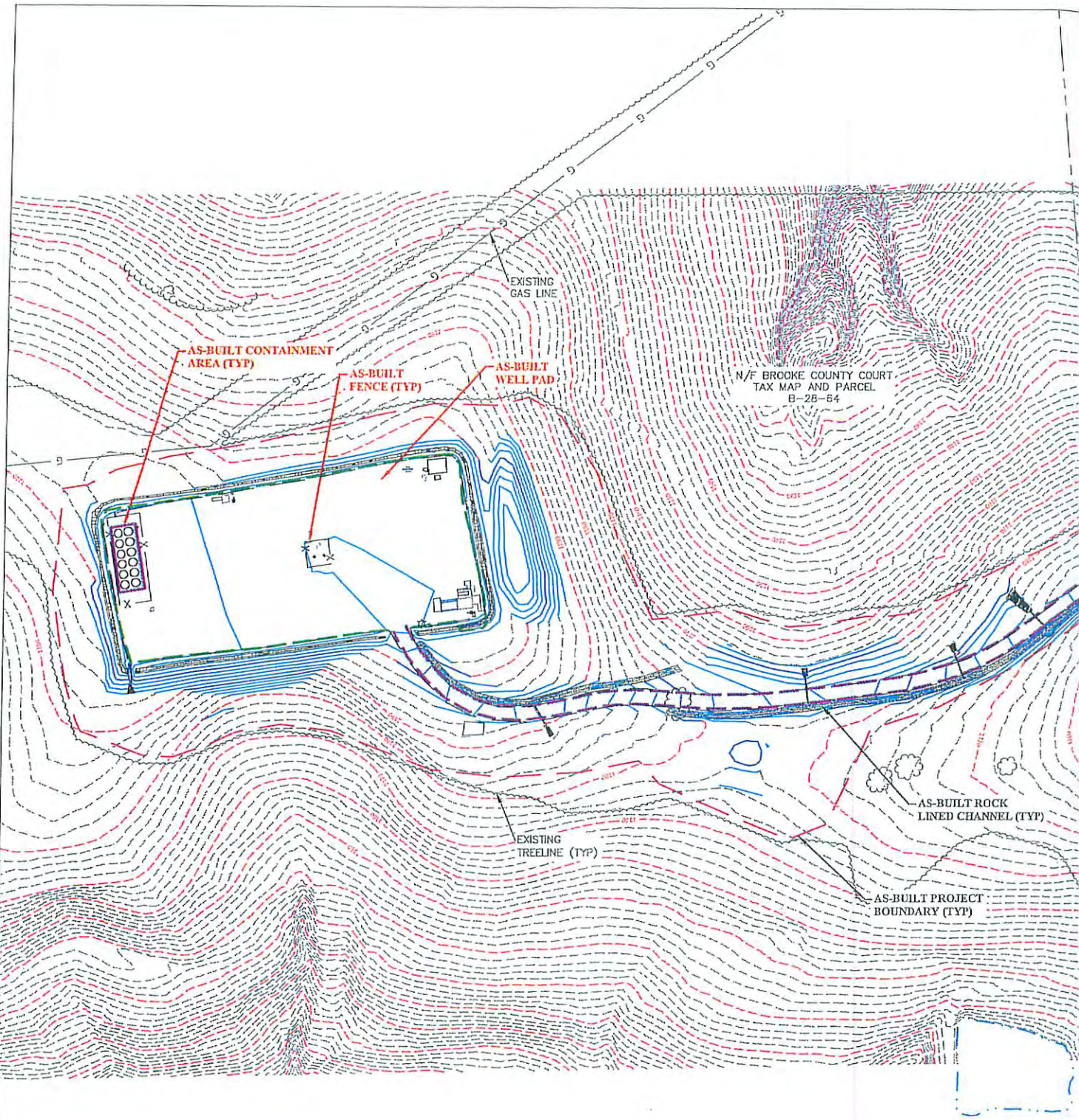
200 ft. 0 200 ft. 400 ft.

THRASHER THE THRASHER GROUP, INC. 600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330 PHONE (304) 624-4108 FAX (304) 624-7831	PHASE No. CONTRACT No. PROJECT No. 101-050-5525	SOUTHWESTERN ENERGY AS-BUILT PLANS FOR THE BROOKE COUNTY PARKS BRK PAD "A" BROOKE COUNTY, WV EVACUATION ROUTE/PREVAILING WINDS	SHEET No. 3



LAYOUT TAB: 04-Overview
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PLAN LEGEND

- PRE-CONSTRUCTION CONTOURS
- EXISTING ROAD
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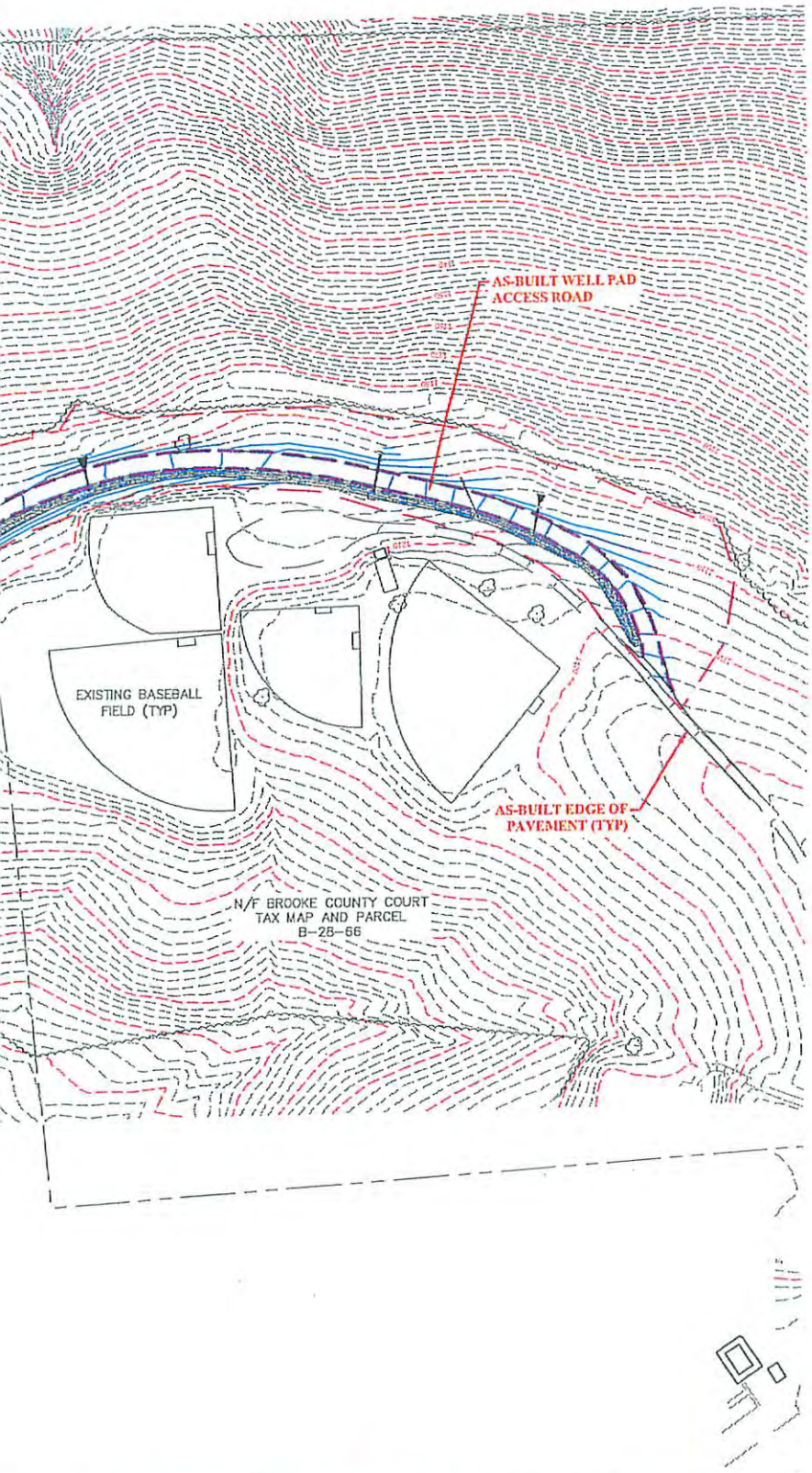
- TTG AS-BUILT CONTAINMENT AREA
- TTG AS-BUILT PRODUCTION EQUIPMENT
- AS-BUILT — TTG AS-BUILT TEXT
- AS-BUILT — BBA AS-BUILT TEXT



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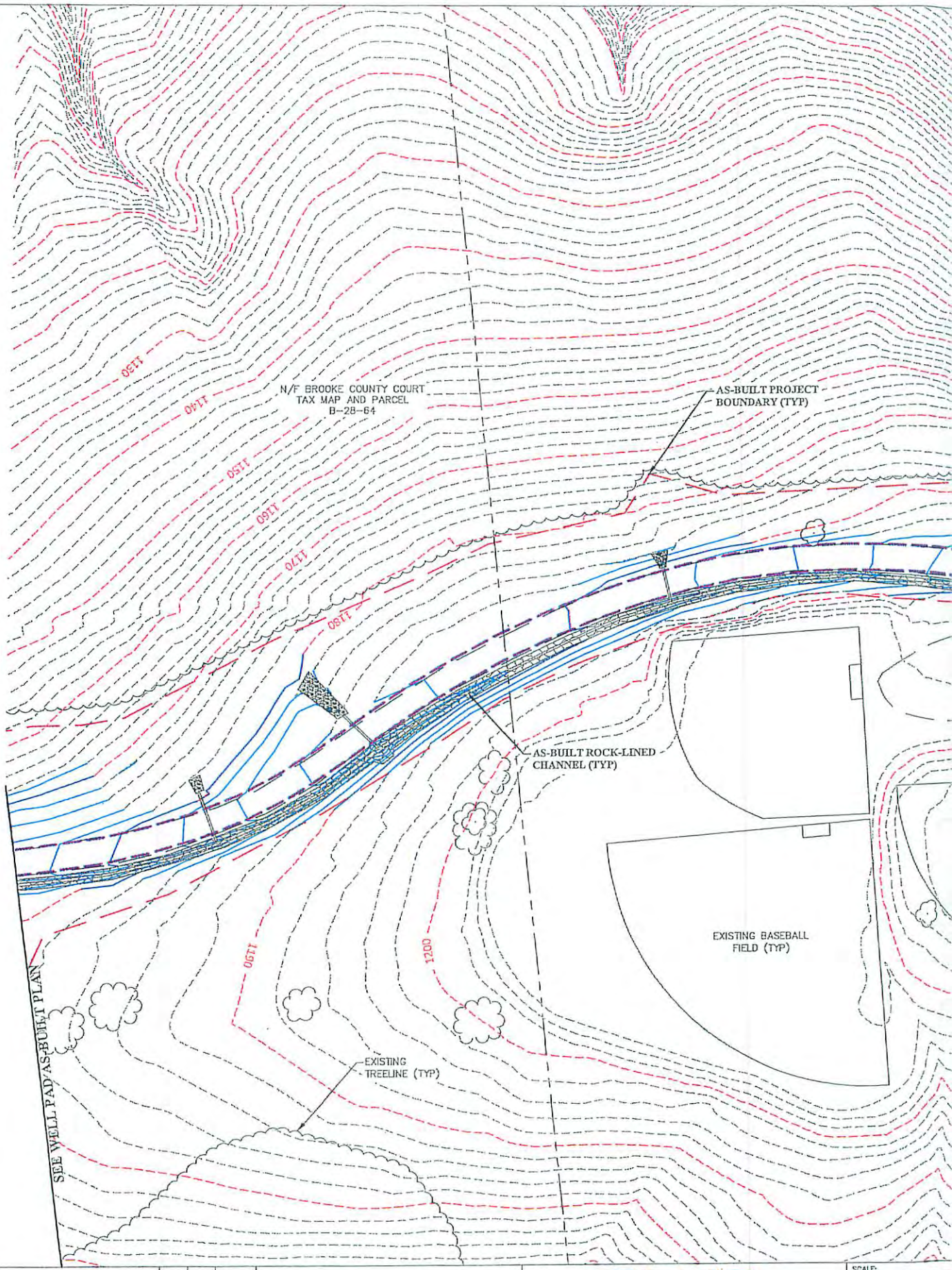
100 ft. 0 100 ft. 200 ft.

THRASHER
THE THRASHER GROUP, INC.
800 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330
PHONE (304) 624-4108 FAX (304) 624-7831

PHASE No.	SOUTHWESTERN ENERGY AS-BUILT PLANS FOR THE BROOKE COUNTY PARKS BRK PAD "A" BROOKE COUNTY, WV AS-BUILT OVERVIEW	SHEET No.
CONTRACT No.		4
PROJECT No. 101-050-5525		



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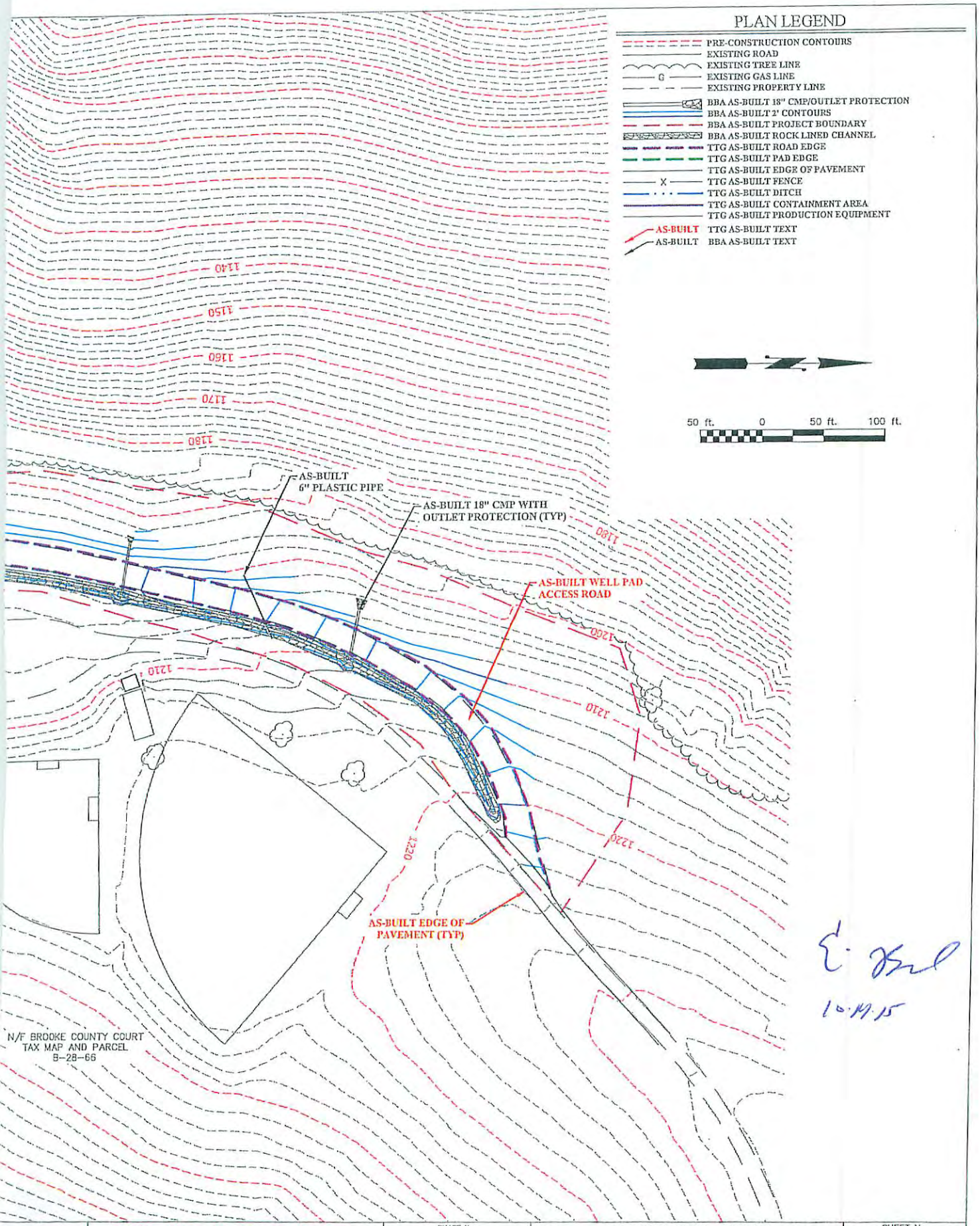

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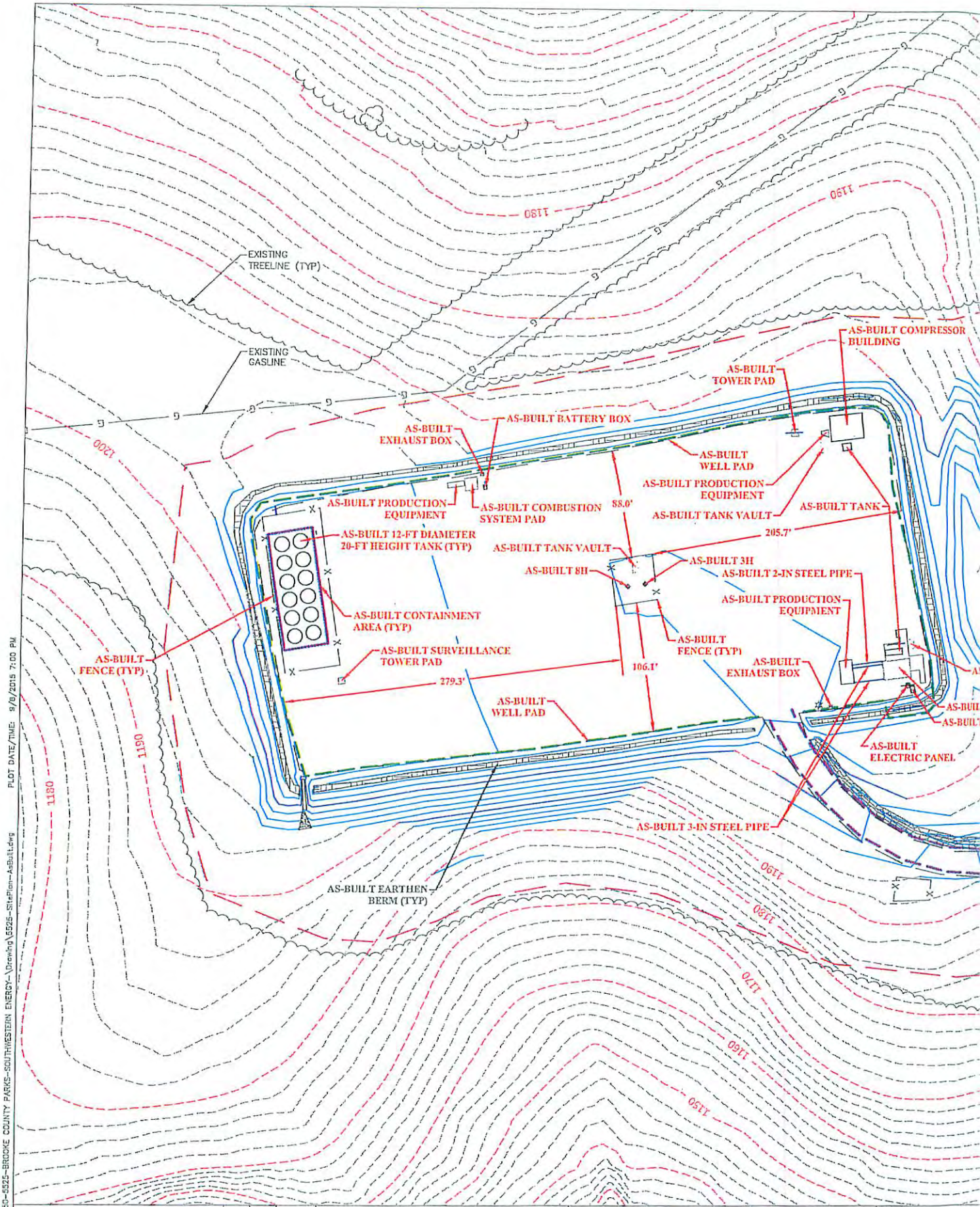
THRASHER THE THRASHER GROUP, INC. 800 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330 PHONE (304) 624-4108 FAX (304) 624-7831	PHASE No. CONTRACT No. PROJECT No. 101-050-5525	SOUTHWESTERN ENERGY AS-BUILT PLANS FOR THE BROOKE COUNTY PARKS BRK PAD "A" BROOKE COUNTY, WV AS-BUILT ACCESS ROAD PLAN	SHEET No. 5



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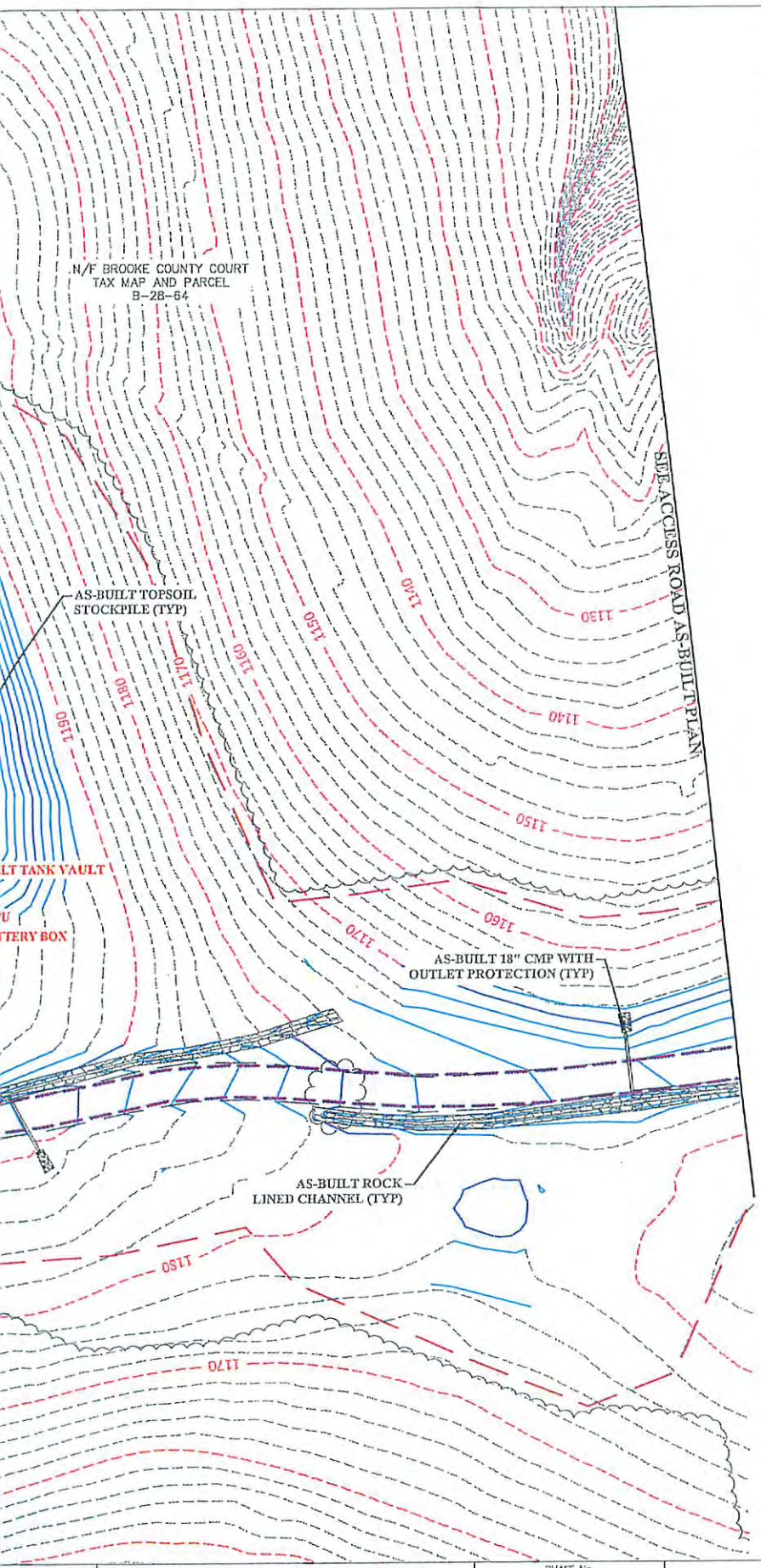

PLAN LEGEND

- PRE-CONSTRUCTION CONTOURS
- EXISTING ROAD
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- TTG AS-BUILT CONTAINMENT AREA
- TTG AS-BUILT PRODUCTION EQUIPMENT
- AS-BUILT TTG AS-BUILT TEXT
- AS-BUILT BBA AS-BUILT TEXT

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50 ft. 0 50 ft. 100 ft.

THRASHER THE THRASHER GROUP, INC. 600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330 PHONE (304) 624-4108 FAX (304) 624-7831	PHASE No. CONTRACT No. PROJECT No. 101-050-5525	SOUTHWESTERN ENERGY AS-BUILT PLANS FOR THE BROOKE COUNTY PARKS BRK PAD "A" BROOKE COUNTY, WV AS-BUILT WELL PAD PLAN	SHEET No. 6