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west virginia department of environmental protection

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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](http://www.dep.wv.gov)

## PERMIT MODIFICATION APPROVAL

April 08, 2015

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359  
SPRING, TX 77391

Re: Permit Modification Approval for API Number 6900187 , Well #: ALICE EDGE OHI 210H  
**Modify casing for directional work**

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas

69-0018 TMD



April 8, 2015

Ms. Laura Adkins  
Office of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

RE: Modification to Alice Edge OHI 6H, and Alice Edge OHI 210H

Dear Laura:

Enclosed please find modification requests for the above captioned wells. We would like to modify the casing for directional work only. We will not be crossing any additional leases. These wells are situated on the Edge's property, in Liberty District, Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1614

Thank you.

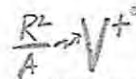
Sincerely,

Dee Southall  
Regulatory Supervisor  
Southwestern Energy Production Company, LLC  
PO Box 1300  
Jane Lew, WV 26378

Received

APR - 8 2015

Office of Oil and Gas  
WV Dept. of Environmental Protection



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

04/10/2015

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

1) Well Operator: SWN Production Co., LLC 494512924 69- Ohio 3- Liberty 648- Valley Grove  
Operator ID County District Quadrangle

2) Operator's Well Number: Alice Edge OHI 210H Well Pad Name: Alice Edge OHI Pad

3) Farm Name/Surface Owner: Alice Mae Edge Public Road Access: State Route 40

4) Elevation, current ground: 1198' Elevation, proposed post-construction: 1198'

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Target Formation- Marcellus, Target Top TVD- 6407', Target Base TVD- 6468', Anticipated Thickness- 61, Associated Pressure- 4176'

8) Proposed Total Vertical Depth: 6390'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,900'

11) Proposed Horizontal Leg Length: 11,210'

12) Approximate Fresh Water Strata Depths: 425'

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

14) Approximate Saltwater Depths: 1050'

15) Approximate Coal Seam Depths: 580'

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

Received

(a) If Yes, provide Mine Info: Name: Tunnel Ridge APR - 8 2015

Depth: 558'

Seam: Pittsburgh #8

Owner: Tunnel Ridge

Office of Oil and Gas  
WV Dept. of Environmental Protection

WRH  
4-7-15




4706900187 *MDD*

WW-6B  
(10/14)

API NO. 47- 69 -  
OPERATOR WELL NO. Alice Edge OHI 210H  
Well Pad Name: Alice Edge OHI 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	F-25	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	630'	630'	580 sx/CTS
Coal	9 5/8"	New	J-55	40#	2116'	2116'	630 sx/CTS
Intermediate	7"	New	HCP-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	18,900'	18,900'	Lead 1250sx 1250 tall sx/100' inside 
Tubing	2 3/8"	New	P-110	4.7#	Approx. 7253'	Approx. 7253'	
Liners							


*WRH  
4-2-15*

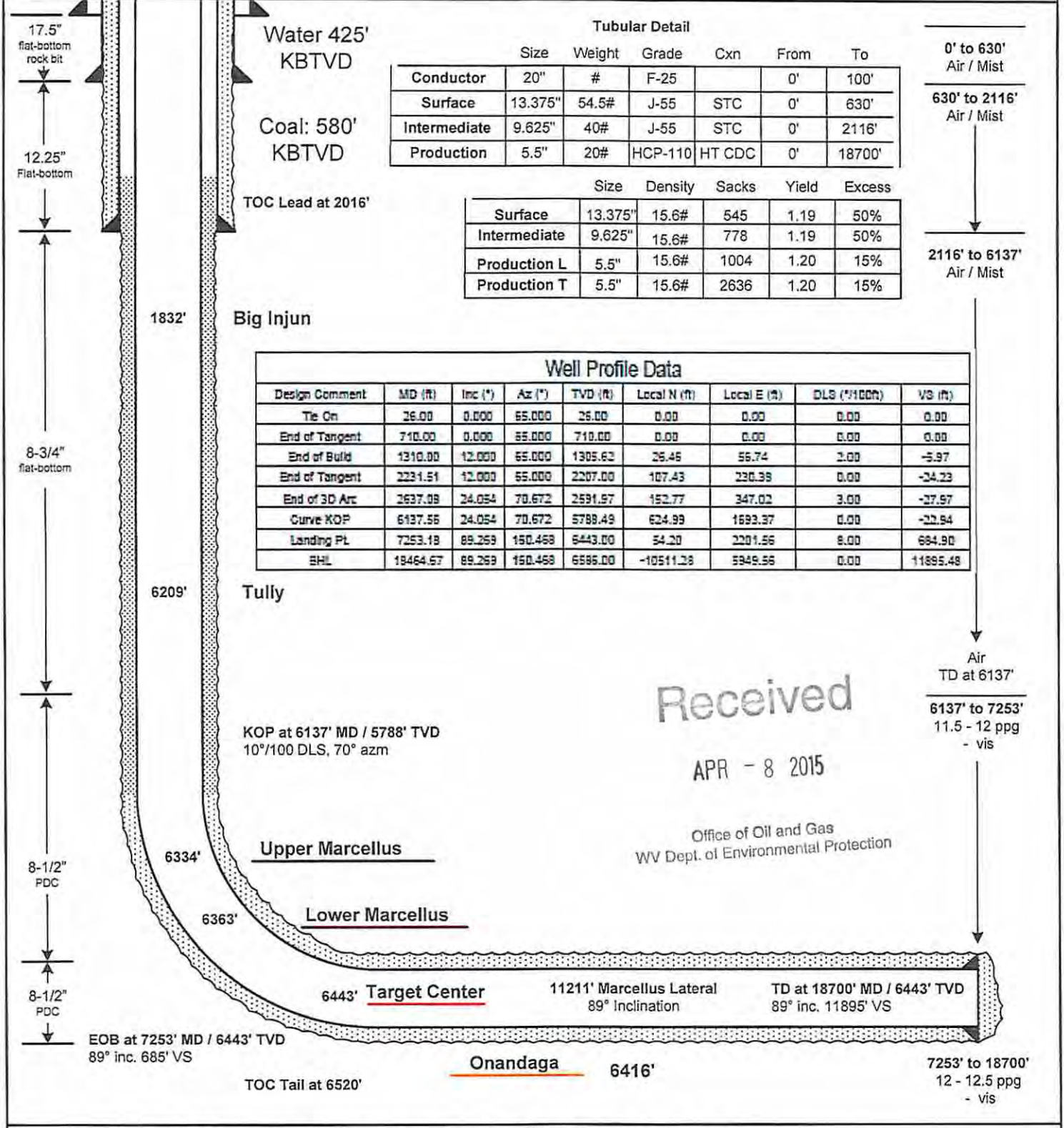
TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	0.020	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	0.020	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	0.020	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	0.020	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	0.020	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Received

Kind:	10K Arrowset AS1-X			APR - 8 2015
Sizes:	5 1/2"			
Depths Set:				Office of Oil and Gas WV Dept. of Environmental Protection

Southwestern Energy Company		Proposed Drilling Program	
Well	: ALICE EDGE OHI 210H	Re-entry Rig	: SDC 40
Field	: PANHANDLE FIELD	Prospect	: PANHANDLE
County	: OHIO	State	: WV
SHL	: 40.099955 Latitude -80.560394 Longitude		
BHL	: 40.071294 Latitude -80.538693 Longitude		
KB Elev	: 1224 ft MSL		
	KB : 26 ft AGL	GL Elev	: 1198 ft MSL



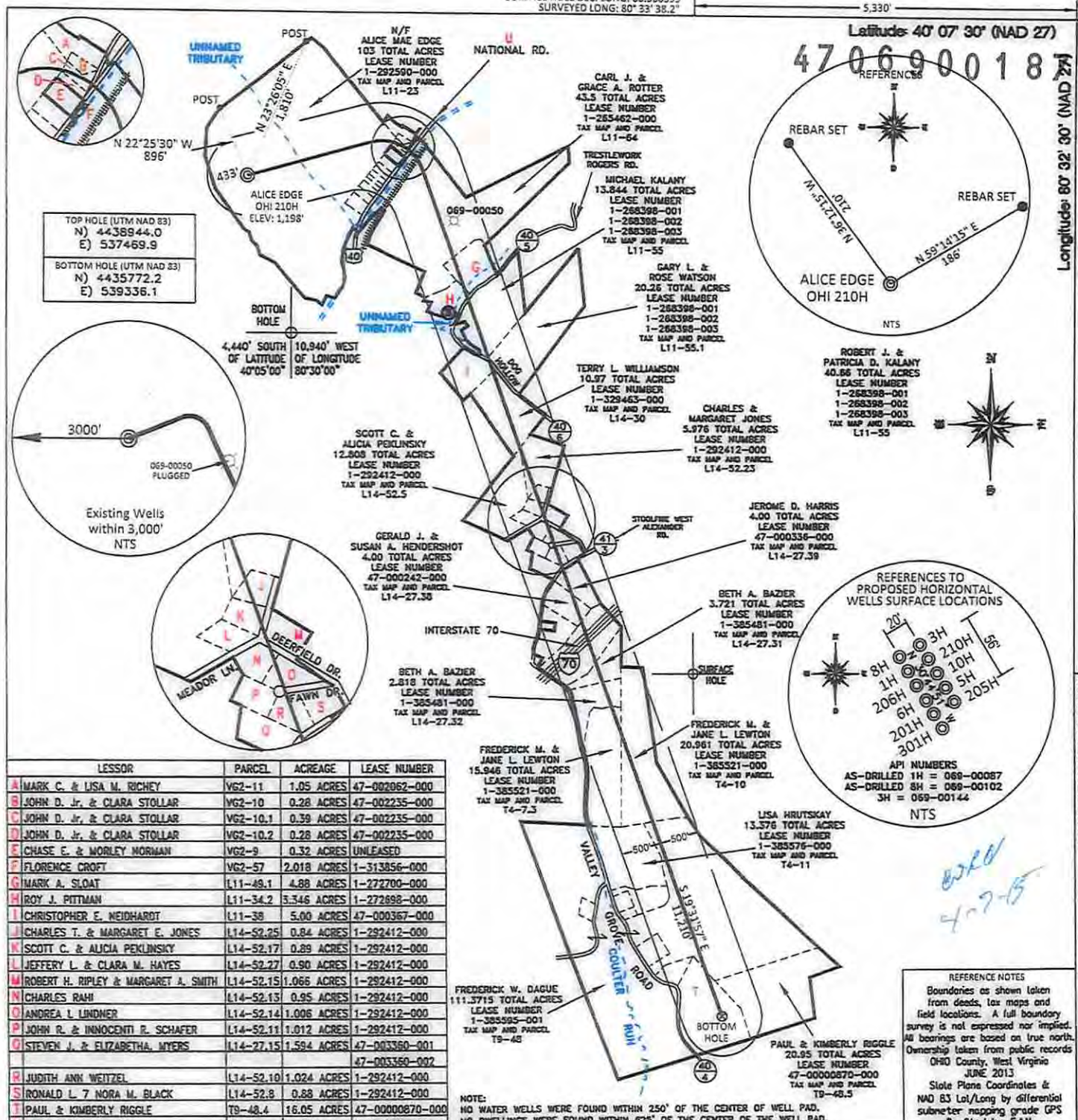
Data source: C:\Local Files\Drilling\West Virginia\Wells(5) Alice Edge OHI 6H\Alice Edge OHI 6H WBD.xlsm

NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plot are referenced to Reentry Rig RKB.

04/10/2015

WRH  
4-7-15





LESSOR	PARCEL	ACREAGE	LEASE NUMBER
A MARK C. & LISA M. RICHEY	V62-11	1.05 ACRES	47-002062-000
B JOHN D. JR. & CLARA STOLLAR	V62-10	0.28 ACRES	47-002235-000
C JOHN D. JR. & CLARA STOLLAR	V62-10.1	0.39 ACRES	47-002235-000
D JOHN D. JR. & CLARA STOLLAR	V62-10.2	0.28 ACRES	47-002235-000
E CHASE E. & MORLEY NORMAN	V62-9	0.32 ACRES	UNLEASED
F FLORENCE CROFT	V62-57	2.018 ACRES	1-313856-000
G MARK A. SLOAT	L11-48.1	4.88 ACRES	1-272700-000
H ROY J. PITTMAN	L11-34.2	5.346 ACRES	1-272698-000
I CHRISTOPHER E. NEIDHARDT	L11-38	5.00 ACRES	47-000367-000
J CHARLES T. & MARGARET E. JONES	L14-52.25	0.84 ACRES	1-292412-000
K SCOTT C. & ALICIA PEKUNSKY	L14-52.17	0.89 ACRES	1-292412-000
L JEFFERY L. & CLARA M. HAYES	L14-52.27	0.90 ACRES	1-292412-000
M ROBERT H. RIPLEY & MARGARET A. SMITH	L14-52.15	1.066 ACRES	1-292412-000
N CHARLES RAHI	L14-52.13	0.95 ACRES	1-292412-000
O ANDREA L LINDNER	L14-52.14	1.006 ACRES	1-292412-000
P JOHN R. & INNOCENTI R. SCHAFER	L14-52.11	1.012 ACRES	1-292412-000
Q STEVEN J. & ELIZABETHA. MYERS	L14-27.15	1.594 ACRES	47-003360-001
			47-003360-002
R JUDITH ANN WEITZEL	L14-52.10	1.024 ACRES	1-292412-000
S RONALD L. & NORA W. BLACK	L14-52.8	0.88 ACRES	1-292412-000
T PAUL & KIMBERLY RIGGLE	T9-48.4	16.05 ACRES	47-00000870-000
U WEST VIRGINIA D.O.H.	RT. 40	N/A	1-357838-000

NOTE:  
NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD.  
NO DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF THE WELL PAD.

REFERENCE NOTES  
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records OHIO County, West Virginia JUNE 2013  
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
Drafted by: EAM

FILE #: CHE 036  
DRAWING #: 2277  
SCALE: Plat: 1" = 1800'  
TICK MARK: 1" = 2000'  
MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
Signed: Ernest J. Benchek III  
L.L.S. #2124



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304  
Well Type:  Oil  Waste Diposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow  
WATERSHED: UPPER OHIO SOUTH  
COUNTY/DISTRICT: OHIO / LIBERTY  
SURFACE OWNER: ALICE MAE EDGE  
OIL & GAS ROYALTY OWNER: ALICE MAE EDGE  
LEASE NUMBERS:  
DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY):  
TARGET FORMATION: MARCELLUS  
WELL OPERATOR: SWN Production Co., LLC.  
ADDRESS: PO BOX 1300  
CITY: Jane Lew STATE: WV ZIP CODE: 26378  
APR - 8 2015 DATE: APRIL 1, 2015  
Office of Oil and Gas WV Dept. of Environmental Protection  
OPERATOR'S WELL #: ALICE EDGE OHI 210H  
API WELL #: 47 69 00187 MOD  
STATE COUNTY PERMIT  
ELEVATION: 1,198'  
QUADRANGLE: VALLEY GROVE, WV  
ACREAGE: 103 +/-  
ACREAGE: 451.2775 04/10/2015  
ESTIMATED DEPTH: TVD: 6,390' TMD: 18,464'  
DESIGNATED AGENT: Dee Southall  
ADDRESS: PO BOX 1300  
CITY: Jane Lew STATE: WV ZIP CODE: 26378