



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

June 18, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101845, 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: B & W EDGE MSH, 5H
Farm Name: EDGE, WILLIAM F. JR. & BARBA

API Well Number: 47-5101845

Permit Type: Horizontal 6A Well

Date Issued: 06/18/2015

Promoting a healthy environment.

06/19/2015

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 fifty (50) 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. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.



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June 17, 2015

Jeremy M. McGraw
1358 National Road
Wheeling, WV 26003

Re: Surface Comments from Barbara Ann Edge, William F. Edge, Jr., David Edge regarding API #'s 4705101843 and 4705101845.

Dear Mr. McGraw:

The Office of Oil and Gas (OOG) has completed its review of the above referenced permit application submitted by SWN Production Company, LLC. The Marshall County oil and gas inspector examined the site to ensure compliance with all applicable requirements of Article 6, Chapter 22 of the West Virginia Code and Legislative Rule Title 35, Series 4. Also, your comments were sent to the applicant to ensure it was aware of your concerns. The applicant's response is enclosed for your records.

After considering your comments, the applicant's response, and the inspector's findings, the OOG has determined that the application meets the requirements set forth in the above statute and legislative rule. Consequently, the OOG is issuing the permits today. For your information and convenience, I am including with this letter a copy of the permits as issued.

As you may know, surface owners are entitled to compensation for damages to their property resulting from oil and gas drilling activity. Absent an agreement by the parties, such damage compensation may be addressed pursuant to Article 7, Chapter 22 of the West Virginia Code. Please contact Gene Smith at (304) 926-0499, extension 1652 if you have questions.

Sincerely,

Laura L. Adkins
Environmental Resource Specialist
WVDEP Office of Oil and Gas
601 57th Street, SE
Charleston, WV 25304
304-926-0499 ext. 1495



SPILMAN THOMAS & BATTLE, PLLC

ATTORNEYS AT LAW

4705101845

June 10, 2015

AMENDED RESPONSE OF SWN PRODUCTION COMPANY, LLC TO COMMENTS ON APPLICATION FOR WELL WORK PERMIT FILED BY BARBARA ANN EDGE, WILLIAM F. EDGE and DAVID EDGE

Applicant Name: SWN Production Company, LLC
Address: P. O. Box 1300, Jane Lew, West Virginia 26378
Phone: (832) 796-1610
To: Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th Street East
Charleston, WV 25304

Well Operator Name: SWN Production Company, LLC

API Well Number: 47-051-01843

Well Location: Sand Hill District, Marshall County, West Virginia

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I. Surface Owners' Comments Fail to Identify Any Facts to Support Denial of the Well Work Permit Sought by SWN Production Company, LLC

On or about May 13, 2015, Barbara Ann Edge, William F. Edge and David Edge as surface owners of property on which SWN Production Company, LLC (SWN) proposes to conduct surface operations for the development of the B&W Edge MSH 205H well (the "Edge Well"), filed comments objecting to SWN's well work application filed on or about April 13, 2015 (the "Edge Comments"). The surface owners are residents of Ohio and do not live at the property on which the well work is proposed. The Edge Comments contain no factual or legal allegations concerning SWN's past or present conduct regarding the development of a horizontal natural gas well in West Virginia nor any factual or legal allegations that the proposed location of the Edge Well will constitute a hazard to the safety of persons or fails to protect fresh water sources or supplies as required under W. Va. Code § 22-6A-8(d)(1) and (4). In addition, the Department of Environmental Protection's Office of Oil and Gas lacks authority to deny SWN a

well work permit on the basis of allegations that the proposed well work is not “fairly necessary” or “reasonably necessary” for the extraction of minerals as alleged by the Surface Owners. ⁴⁷⁻⁰⁵¹⁻¹⁸⁴³

Accordingly, SWN respectfully requests that the comments of Surface Owners be rejected and that the well work permit for the Edge Well be issued immediately.

II. West Virginia Public Policy Favors Development of Natural Gas

The Legislature of the State of West Virginia has declared as a public policy of the State that “[a]llowing the responsible development of our state’s natural gas resources will enhance the economy of our state and the quality of life for our citizens while assuring the long term protection of the environment.” W. Va. Code § 22-6A-2(a)(8). Consistent with that declared public policy, it is SWN’s responsibility and objective to develop natural gas and related hydrocarbons in a responsible and safe manner in compliance with the laws and regulations governing the exploration, development and production of natural gas in the State of West Virginia, including the protection of human health and the environment.

III. SWN’s Well Work Application Complies With the Requirements of W. Va. Code § 22-6A-7 and the Rules Governing Horizontal Well Development - 35 CSR 8

W. Va. Code § 22-6A “Horizontal Well Act” establishes the statutory requirements for drilling horizontal natural gas wells in West Virginia, as supplemented by the Rules Governing Horizontal Well Development. For example, SWN’s well work permit application fulfills the requirements set forth in W. Va. Code § 22-6A-7 and 35 C.S.R. 8, § 5. More particularly, the proposed well complies with all of the well location restrictions established in W. Va. Code § 22-6A-12, and SWN will comply with all performance standards and operational requirements set forth in W. Va. Code § 22-6A-8(g) and 35 C.S.R. 8, § 9. These statutory and regulatory requirements have been determined by the West Virginia Legislature and West Virginia Department of Environmental Protection to be adequately protective of the safety of persons and fresh water sources or supplies.

IV. The Well Work Proposed by SWN More Than Adequately Protects Fresh Water Sources and Supplies

The Edge Comments rely exclusively on “[n]ews organizations from small local newspapers to large national sources, such as USA Today” as evidence that a “large amount of water contamination has been caused by well pad work similar to proposed API Well Number 47-051-1843. [sic]” The newspaper articles attached to the Edge Comments relate almost exclusively to allegations occurring in states other than West Virginia and have no specific relevance to the subject application. Office of Oil and Gas

The 18 Acre Wheeling Creek Watershed is not at significant risk of contamination from the Edge Well because SWN’s well work application is based on utilization of a closed-loop system to contain and re-use fluids in the well drilling process. Moreover, the flow back fluids will be stored in steel tanks for re-use or delivered to permitted disposal facilities such as underground injection wells. No open pits will be used in the drilling or completion of the Edge

Well and the required sediment and erosion controls in accordance with the Office of Oil and Gas' guidelines will be utilized. Moreover, Wheeling Creek is located approximately 3,000 feet from the edge of the proposed well pad and the nearest tributary of Wheeling Creek is located approximately 1,500 feet from the edge of the proposed well pad. SWN's well work plan exceeds the requirements associated with protecting fresh water sources and supplies as required by the Horizontal Well Act and the Rules Governing Horizontal Well Development. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

V. The Well Work Proposed by SWN Does Not Constitute a Hazard to the Safety of Persons

SWN has taken into consideration the location of the electrical substation on adjoining property in selecting the location for the proposed Edge Well. The Edge Comments do not reference any safety issues or incidents involving electric transmission substations. The proposed location of the Edge Well complies with the operational requirements to protect persons and the environment from unreasonable risks as imposed by **W. Va. Code § 22-6A-12**. The proposed well pad will be located approximately 500 feet from the outer edge of the substation and otherwise provides the maximum distance from residences and populated buildings as is reasonably possible. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

VI. The West Virginia Department of Environmental Protection and its Office of Oil and Gas Do Not Have Jurisdiction Over Whether Activities Are "Fairly Necessary" or "Reasonably Necessary"

The West Virginia Legislature has established a remedy for surface owner compensation through the Oil and Gas Horizontal Well Production Damage Compensation Act, **W. Va. Code § 22-6B-1, et seq.** which remedy is without the involvement of the West Virginia Department of Environmental Protection. Whether the proposed well work is "fairly necessary" or "reasonably necessary" and the issue of the adequacy of compensation to a surface owner is therefore outside the scope of the jurisdiction of the West Virginia Department of Environmental Protection and its Office of Oil and Gas. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

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Environmental Protection

SWN respectfully submits that all of the statutory and regulatory requirements for a well work permit have been satisfied and requests that the well work permit for the Edge Well be immediately issued without qualification based on the Edge Comments. The undersigned is available to answer questions or provide additional information to the Office of Oil and Gas as may be required.

Respectfully Submitted,

SWN Production Company, LLC

By: Spilman Thomas & Battle PLLC



Mark D. Clark
David L. Yaussy
P.O. Box 273
Charleston, WV 25325
(304) 340-3800

cc: James G. Bordas
Jeremy M. McGraw
Bordas and Bordas Attorneys, PLLC
1358 National Road
Wheeling, WV 26003

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WV Department of
Economic Development

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1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

106 East Main Street
St. Clairsville, OH 43950
t 740-695-8141
f 740-695-6999

526 7th Street
Moundsville, WV 26041
t 304-845-5600
f 304-845-5604

bordaslaw.com

May 13, 2015

Via Facsimile (304-926-0452) and Regular U.S. Mail

James Martin, Chief
601 57th Street, SE
Charleston, WV 25304

Re: My Clients: William Edge, Barbara Edge and David Edge
SWN Production Company Well Permit Application
API 47-051-1843

Dear Chief Martin:

Our firm has been retained to represent William, Barbara and David Edge with regard to a proposed SWN Production Co. LLC well site to be placed on the surface of property that the Edges own in Marshall County, WV. Please find attached to this letter comments that the Edges submit in response to the permit application referenced above. Thank you very much for your attention to this matter.

Very truly yours,


JEREMY M. MCGRAW

JMM

Cc: William, Barbara & David Edge

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**SURFACE OWNERS' COMMENTS ON APPLICATION
FOR WELL WORK PERMIT**

Name: Barbara Ann Edge, William F. Edge, Jr., David Edge

Address: 116 Virginia St., Martins Ferry, OH 43935

Phone: 740-633-6932

To: Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304

Well Operator Name: SWN Production Co., LLC

API Well Number: 47-051-1843

Well Location: 531,798.3 E / 4,428,557.0 N - Sand Hill District,
Marshall County, West Virginia

The surface owners of the property located at 531,798.3 E / 4,428,557.0 N, Sand Hill District, Marshall County, West Virginia, Barbara Ann Edge and William F. Edge, Jr., submit these comments to the Department of Environmental Protection requesting that SWN Production Co., LLC's ("SWN") permit for API Well Number 47-051-1843 not be issued due to its failure to protect fresh water sources and supplies, the hazard that would be created to the safety of persons, and the fact that the surface of the Edge property is not fairly or reasonably necessary for the extraction of minerals.

A. **The proposed well work fails to protect fresh water sources and supplies.**

News organizations from small local newspapers to large national sources, such as the USA Today, have all documented the large amount of water contamination that has been caused by well pad work similar to proposed API Well Number 47-051-1843. See e.g. Exhibit #1, Water Contamination News Articles. The water



1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

106 East Main Street
St. Clairsville, OH 43950
t 740-695-8141
f 740-695-6999

526 7th Street
Moundsville, WV 26041
t 304-845-5600
f 304-845-5604

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contamination problem caused by this type of well work is exactly why the legislature explicitly decided that a well work permit may not be issued if it is determined that the proposed well work fails to protect fresh water sources or supplies. See W. Va. Code § 22-6A-8(d)(4).

SWN's proposed well pad is a perfect example of the type of situation the legislature was envisioning when W. Va. Code § 22-6A-8(d) was drafted. SWN's proposed well work is located on a hill that runs down into the 18 Acre Wheeling Creek Watershed. As demonstrated in the previous articles, there is little question or debate that well pad work, such as API Well Number 47-051-1843 proposed by SWN, can and has caused serious damage to this region's fresh water supply. The extent of water pollution changes depending on the source, but there is little question that hundreds of complaints have been filed, in the Ohio Valley alone, regarding the water pollution that has been caused by fracking operations.

While all water supplies are important, the Department of Environmental Protection must take into consideration the large amount of water that could be affected by API Well Number 47-051-1843. This comment is not discussing an individual property owner's well that will solely be used by one family or neighborhood and, instead, this comment was written in an effort to notify the Department of Environmental Protection that the proposed well pad will fail to protect an 18 acre watershed, which via the Ohio River is a part of the watershed of the Mississippi River. Proposed API Well Number 47-051-1843 could have a significant impact on water sources and supplies.



1356 National Road
Wheeling, WV 26003
T 304-242-8410
F 304-242-3936

106 East Main Street
St. Clairsville, OH 43950
T 740-695-8141
F 740-695-8999

526 7th Street
Moundsville, WV 26041
T 304-845-5600
F 304-845-5604

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Therefore, the well work permit for API Well Number 47-051-1843 should be denied due to its failure to protect fresh water sources and supplies.

B. The proposed well work constitutes a hazard to the safety of persons.

We are greatly concerned that constructing the proposed well site extremely close to the existing AEP substation, located on the adjoining property, would result in a serious hazard to our safety and the safety of other individuals living in the area. As previously discussed, the proposed well pad has the potential to cause serious harm to the water supply, which, in turn, constitutes a serious hazard to the safety of the people living in this region.

However, our water is not only safety hazard proposed API Well Number 47-051-1843 poses. An AEP substation, on the adjoining property, is located approximately 400 to 500 feet from the proposed well site. Moreover, the pipelines that will be needed for the well pad will likely come even closer to the AEP substation than the well pad. This would not be the first time that an operation of this kind has caused a serious hazard to the safety of people, as explosions and fires resulting from similar situations have been well documented in this region. *See e.g.* Exhibit #2, Explosion and Fire News Articles.

A brief internet search provides information regarding oil and gas explosions and fires, in this region and others, that have destroyed people's property, ruined their sense of security and taken many lives. It would be a safety hazard for SWN to place API Well Number 47-051-1843 in such a close proximity to AEP's substation.

Allowing API Well Number 47-051-1843 to be built would directly violate W. Va.



1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

106 East Main Street
St. Clairsville, OH 43950
t 740-695-8141
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Code § 22-6A-8(d), due to the safety hazard that would be created as a result of the increased risk of a fire or explosion and the pollution of fresh water sources and supplies.

Therefore, the well work permit for API Well Number 47-051-1843 should be denied due to the hazardous conditions it would create, which would greatly reduce the safety of people living near the well pad.

C. SWN is not engaging in activities which are "fairly necessary" or "reasonably necessary" for the extraction of minerals, as required by West Virginia Law.

In addition to the previously mentioned reasons, the well work permit should be denied due to Chesapeake's, and now SWN's, failure to consider the true value of the property they are taking, the unreasonably low compensation offered for the land, and the fact that entry onto the Edge property is not "fairly necessary" or "reasonably necessary" for the extraction of minerals, as required by West Virginia law. *See e.g. Thornsbury v. Cabot Oil & Gas Corp.*, 231 W.Va. 676, 680-82, 749 S.E.2d 569, 574-75 (2013).

Under West Virginia law, owners of a mineral estate have, "as incident to this ownership, the right to use the surface in such a manner and with such means as would be fairly necessary for the enjoyment of the mineral estate." Syl. Pt. 1, *Squires v. Lafferty*, 95 W.Va. 307, 121 S.E. 90 (1921); *see also Thornsbury*, 231 W.Va. at 682; 121 S.E.2d at 575; Syl. Pt. 2, *Buffalo Mining Co. v. Martin*, 165 W.Va. 10, 267 S.E.2d



1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

105 East Main Street
St. Clairsville, OH 43950
t 740-695-8141
f 740-695-6999

526 7th Street
Moundsville, WV 26041
t 304-845-5600
f 304-845-5604

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721 (1980) (owner of mineral estate may use overlying surface estate for purpose "reasonably necessary" to the extraction of minerals); *Whiteman v. Chesapeake Appalachia, LLC*, 729 F.3d 381, 387 (4th Cir. 2013) ("[I]n West Virginia, a mineral estate owner that enters upon a surface estate owner's land does so without lawful authority only if, under the 'reasonable necessity' standard, the mineral estate owner 'exceed[s] its rights . . . thereby invading the rights' of the surface estate owner.").

Barbara Ann Edge and William F. Edge, Jr. are the current owners of the surface rights of the property located at 531,798.3 E / 4,428,557.0 N, Sand Hill District, Marshall County, West Virginia. Moreover, SWN does not have the right to use the surface of the Edge property to access and produce oil and/or gas, as API Well Number 47-051-1843 is not fairly necessary or reasonably necessary for the extraction of the minerals located on the Edge property.

As a result, SWN's permit for API Well Number 47-051-1843 should not be issued due to the unreasonably low compensation offered for the land and the fact that the proposed well pad work is not fairly necessary or reasonably necessary for the extraction of the minerals located on the Edge property.

CONCLUSION

The surface owners, Barbara Ann Edge and William F. Edge, Jr., respectfully submit the foregoing comments and request that the Department of Environmental Protection deny SWN's permit for proposed API Well Number 47-051-1843. Proposed API Well Number 47-051-1843 would violate W. Va. Code § 22-6A-8(d),



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1 304-242-3936

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1 304-845-5604

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due to its failure to protect fresh water sources and supplies, the hazard it would create to the safety of people, and SWN's unreasonably low compensation offered for the land and the fact that the proposed well pad is not fairly or reasonably necessary for the extraction of minerals.

Respectfully Submitted,

William Edge, Barbara Edge, David Edge

By: James G. Bordas, Jr.
Jeremy M. McGraw
Bordas & Bordas, PLLC
1358 National Road
Wheeling, WV 26003



1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

106 East Main Street
St. Clairsville, OH 43950
t 740-695-8141
f 740-695-6999

526 7th Street
Mcumdsville, WV 26041
t 304-845-5600
f 304-845-5604

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EXHIBIT #1

06/19/2015

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4 states confirm water pollution from drilling

Kevin Hegos, AP 5:20 p.m. EST January 5, 2014

Associated Press review of complaints casts doubt on industry view that it rarely happens.



(Photo: John Heller, AP)

PITTSBURGH (AP) — In at least four states that have nurtured the nation's energy boom, hundreds of complaints have been made about well-water contamination from oil or gas drilling, and pollution was confirmed in a number of them, according to a review that casts doubt on industry suggestions that such problems rarely happen.

The Associated Press requested data on drilling-related complaints in Pennsylvania, Ohio, West Virginia and Texas and found major differences in how the states report such problems. Texas provided the most detail, while the other states provided only general outlines. And while the confirmed problems represent only a tiny portion of the thousands of oil and gas wells drilled each year in the U.S., the lack of detail in some state reports could help fuel public confusion and mistrust.

The AP found that Pennsylvania received 398 complaints in 2013 alleging that oil or natural gas drilling polluted or otherwise affected private water wells, compared with 499 in 2012. The Pennsylvania complaints can include allegations of short-term diminished water flow, as well as pollution from stray gas or other substances. More than 100 cases of pollution were confirmed over the past five years.

Just hearing the total number of complaints shocked Heather McMicken, an eastern Pennsylvania homeowner who complained about water-well contamination that state officials eventually confirmed.

"Wow, I'm very surprised," said McMicken, recalling that she and her husband never knew how many other people made similar complaints, since the main source of information "was just through the grapevine."

The McMickens were one of three families that eventually reached a \$1.6 million settlement with a drilling company. Heather McMicken said the state should be forthcoming with details.

Over the past 10 years, hydraulic fracturing, or fracking, has led to a boom in oil and natural gas production around the nation. It has reduced imports and led to hundreds of billions of dollars in revenue for companies and landowners, but also created pollution fears.

Extracting fuel from shale formations requires pumping hundreds of thousands of gallons of water, sand and chemicals into the ground to break apart rock and free the gas. Some of that water, along with large quantities of existing underground water, returns to the surface, and it can contain high levels of salt, drilling chemicals, heavy metals and naturally occurring low-level radiation.

But some conventional oil and gas wells are still drilled, so the complaints about water contamination can come from them, too. Experts say the most common type of pollution involves methane, not chemicals from the drilling process.

Some people who rely on well water near drilling operations have complained about pollution, but there's been considerable confusion over how widespread such problems are. For example, starting in 2011, the Pennsylvania Department of Environmental Protection aggressively fought efforts by the AP and other news organizations to obtain information about complaints related to drilling. The department has argued in court filings that it does not count how many contamination "determination letters" it issues or track where they are kept in its files.

Steve Forde, a spokesman for the Marcellus Shale Coalition, the leading industry group in Pennsylvania, said in a statement that "transparency and making data available to the public is critical to getting this historic opportunity right and maintaining the public's trust."

When the state Environmental Department determines natural gas development has caused problems, Forde said, "our member companies work collaboratively with the homeowner and regulators to find a speedy resolution."

Among the findings in the AP's review:

— Pennsylvania has confirmed at least 106 water-well contamination cases since 2005, out of more than 5,000 new wells. There were five confirmed cases of water-well contamination in the first nine months of 2012, 16 in all of 2011 and 29 in 2010. The Environmental Department said more complete data may be available in several months.

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— Ohio had 37 complaints in 2010 and no confirmed contamination of water supplies; 54 complaints in 2011 and two confirmed cases of contamination; 69 complaints in 2012 and two confirmed contaminations; and 40 complaints for the first 11 months of 2013, with two confirmed contaminations and 14 still under investigation, Department of Natural Resources spokesman Mark Bruce said in an email. None of the six confirmed cases of contamination was related to fracking, Bruce said.

— West Virginia has had about 122 complaints that drilling contaminated water wells over the past four years, and in four cases the evidence was strong enough that the driller agreed to take corrective action, officials said.

— A Texas spreadsheet contains more than 2,000 complaints, and 62 of those allege possible well-water contamination from oil and gas activity, said Ramona Nye, a spokeswoman for the Railroad Commission of Texas, which oversees drilling. Texas regulators haven't confirmed a single case of drilling-related water-well contamination in the past 10 years, she said.

In Pennsylvania, the number of confirmed instances of water pollution in the eastern part of the state "dropped quite substantially" in 2013, compared with previous years, Department of Environmental Protection spokeswoman Lisa Kasianowitz wrote in an email. Two instances of drilling affecting water wells were confirmed there last year, she said, and a final decision hasn't been made in three other cases. But she couldn't say how many of the other statewide complaints have been resolved or were found to be from natural causes.

Releasing comprehensive information about gas drilling problems is important because the debate is no longer about just science but trust, said Irina Feygina, a social psychologist who studies environmental policy issues. Losing public trust is "a surefire way to harm" the reputation of any business, Feygina said.

Experts and regulators agree that investigating complaints of water-well contamination is particularly difficult, in part because some regions also have natural methane gas pollution or other problems unrelated to drilling. A 2011 Penn State study found that about 40% of water wells tested prior to gas drilling failed at least one federal drinking water standard. Pennsylvania is one of only a few states that don't have private water-well construction standards.

But other experts say people who are trying to understand the benefits and harms from the drilling boom need comprehensive details about complaints, even if some cases are from natural causes.

In Pennsylvania, the raw number of complaints "doesn't tell you anything," said Rob Jackson, a Duke University scientist who has studied gas drilling and water contamination issues. Jackson said he doesn't think providing more details is asking for too much.

"Right or wrong, many people in the public feel like DEP is stonewalling some of these investigations," Jackson said of the situation in Pennsylvania.

In contrast with the limited information provided by Pennsylvania, Texas officials supplied a detailed 04-page spreadsheet almost immediately, listing all types of oil and gas related complaints over much of the past two years. The Texas data include the date of the complaint, the landowner, the drilling company and a brief summary of the alleged problems. Many complaints involve other issues, such as odors or abandoned equipment.

Scott Anderson, an expert on oil and gas drilling with the Environmental Defense Fund, a national nonprofit based in Austin, notes that Texas regulators started keeping more data on complaints in the 1900s. New legislation in 2011 and 2013 led to more detailed reports and provided funds for a new information technology system, he said.

Anderson agreed that a lack of transparency fuels mistrust.

"If the industry has nothing to hide, then they should be willing to let the facts speak for themselves," he said. "The same goes for regulatory agencies."

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Wednesday, January 14, 2015

Study finds contaminants in natural gas wastewater

by Ken Ward Jr., Staff writer

Scientists from Duke University and two other institutions have discovered high levels of two potentially hazardous contaminants in wastewater discharged or spilled into streams and rivers from oil and gas operations in West Virginia and Pennsylvania.

In a paper published Wednesday, the Duke scientists said they found ammonium and iodide in wastewater from treatment sites in Pennsylvania and from a spill from a storage tank at a site in West Virginia.

"This discovery raises new concerns about the environmental and human health impacts of oil and gas wastewater in areas where it is discharged or leaked directly into the environment," said Avner Vengosh, professor of geochemistry and water quality at Duke's Nicholas School of the Environment, and one of six experts from Duke, Dartmouth College and Stanford University who worked on the study.

The peer-reviewed study, published in the journal *Environmental Science & Technology*, is the first to document the presence of high levels of ammonium and iodide in oil and gas wastewater.

When dissolved in water, ammonium can convert to ammonia, which is highly toxic to aquatic life. Elevated iodide in surface water can promote the formation of highly toxic byproducts in drinking water when it mixes with

5/13/2015

The Charleston Gazette | Study finds contaminants in natural gas wastewater

the chlorine used to disinfect the water and municipal treatment plants.

The Duke researchers said that their work shows that oil and gas wastewater discharges and accidental spills to waterways "pose risks to both human health and the environment."

"The relatively high frequency of spills associated with the intensity of shale-gas development and reports of an overall increase in salinity in watersheds associated with hydraulic fracturing activities, combined with data presented in this study, suggest that the release of [oil and gas wastewater] to the environment is one of the major risks associated with the development of hydraulic fracturing," the study says. "The data presented in this study contribute to the growing body of information that shows there are significant environmental and ecosystem impacts of current [oil and gas wastewater] disposal practices in the U.S. and that regulatory action is needed to address these concerns."

Previous studies have shown that fluids from natural gas production activities — including hydraulic fracturing or "fracking" — contain high levels of salts, barium and radioactive elements, in addition to man-made chemicals added in the process of hydraulic fracturing.

While public concern for water contamination has focused on the impact of fracking fluids from shale-gas reserves like those in West Virginia's Marcellus Shale region, the new study found that wastewater from conventional oil and gas operations contains levels of ammonium and iodide that are just as high.

To conduct their study, the researchers collected and analyzed 44 samples of waters produced from conventional oil and gas wells in New York and Pennsylvania, and 31 samples from flowback waters from fracked shale-gas sites in Pennsylvania and Arkansas. They also collected and analyzed oil and gas effluents that were being discharged directly into streams at three disposal sites in Pennsylvania.

As part of their study, the Duke researchers examined material that was collected after a January 2014 incident in Tyler County, West Virginia, in which a tank at a natural gas site exploded and released fluids. These fluids migrated beyond the well pad containment and into the adjacent stream, Big Run Creek.

During the legislative session that started Wednesday, lawmakers are expected to consider proposals that would exempt some or all oil and gas industry above-ground storage tanks from the provisions of a new state tank safety law passed after last year's Freedom Industries chemical spill.

Reach Ken Ward Jr. at kward@wvgazette.com, 304-348-1702 or follow @kenwardjr on Twitter.

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Energy & Sustainability » The Daily Climate

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Fracking Brings Ammonium and Iodide to Local Waterways

Researchers find alarming levels of these new contaminants in wastewater released into Pennsylvania and West Virginia streams

By Marianne Laveite and The Daily Climate | January 14, 2015

Two hazardous chemicals never before known as oil and gas industry pollutants—ammonium and iodide—are being released and spilled into Pennsylvania and West Virginia waterways from the booming energy operations of the Marcellus shale, a new study shows.



The findings have major implications for whether stronger regulations are needed to curb water pollution from fracking and other oil and gas industry operations. Credit: Jeff Turner/Flickr

The toxic substances, which can have a devastating impact on fish, ecosystems, and potentially, human health, are extracted from geological formations along with natural gas and oil during both hydraulic fracturing and conventional drilling operations, said Duke University scientists in a study published today in the journal *Environmental Science & Technology*.

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two naturally occurring, oil and gas wastewater.

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"We are releasing this wastewater into the environment and it is causing direct contamination and human health risks," said study co-author Avner Vengosh, professor of water quality and geochemistry at Duke's Nicholas School of the Environment. "It should be regulated and it should be stopped. That's not even science; it's common sense."

Industry sources did not respond immediately to word of the new study.

When dissolved in water, ammonium can turn to ammonia, highly toxic to aquatic life. The Duke team found ammonium levels in streams and rivers from energy industry wastewater outflows at levels 50 times higher than the U.S. Environmental Protection Agency's water-quality threshold. Under a loophole created by Congress in a 2005 energy law, fracking wastewater isn't regulated under the U.S. Safe Drinking Water Act.

Meanwhile, the Duke scientists found that the iodide contamination from energy operations - while not toxic by itself - promotes the production of disinfection byproducts when it comes in contact with the chlorine that is used to treat most drinking water systems. Previous studies have shown that such disinfection byproducts have toxic and carcinogenic properties, but only a few are regulated.

"As far as we are aware, iodide and ammonium are not regulated, nor monitored in any of the [oil and gas] operations in the United States," the researchers said in their paper.

Terrence Collins, director of the Institute for Green Science at Pittsburgh's Carnegie Mellon University, was not involved in the study but said findings of iodide contamination are particularly worrisome, especially if stream or river water is extracted downstream for drinking water.

"Widely practiced chemical treatments to kill pathogens are likely to cause the iodide to become incorporated into organic matter in the drinking water, and I am concerned that this could result in increased incidences of cancer," he said in an email.

The recent boom in U.S. oil and gas production has been accompanied by a surge in wastewater production. Fracked wells produce about 1 million to 2 million gallons of wastewater per well. For conventional wells, the volume is less but the risk of contamination with ammonium and iodide is the same. "The method doesn't matter," said Vengosh.

"Fracking fluids are not much different from conventional oil and gas wastes," said Jennifer Harkness, lead author of the study and a doctoral student at Duke.

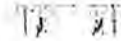
The researchers collected and analyzed 44 samples of wastewater produced from conventional oil and gas wells in New York and Pennsylvania and 31 samples of "flowback"—the highly saline and polluted fluid that flows back to the surface during and after fracking—from shale gas wells in Pennsylvania and Arkansas. They also collected and analyzed oil and gas effluents being directly discharged into streams, rivers and surface waters at three disposal sites in Pennsylvania and a spill site in West Virginia.

In states like Texas and Oklahoma, with long histories of conventional drilling, oil and

<http://www.sciencemag.com/article/fracking-brings-ammonium-and-iodide-to-local-waterways/>

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gas wastewater is disposed by injection in deep underground wells. But in Pennsylvania, a hotbed of fracking, there are few such sites. Some oil and gas wastewater is discharged to waterways after treatment at commercially operated industrial brine treatment plants, which were not designed to remove ammonium or iodide.

There also have been wastewater spills, including seeps from illegal disposal, leaking from surface impoundments, and truck tanker accidents. Some states even have purposely spread the salty oil and gas wastewater on roads to suppress dust or for de-icing.

The estimated volume of oil and gas industry wastewater generated in the U.S. is now more than 837 billion gallons (3.18 billion cubic meters) per year. For comparison, that's nearly three times the volume of all the oil and gasoline that the United States consumes each year (291 billion gallons).

The researchers said their study adds to a growing body of evidence that government action is needed. "There are significant environmental and ecosystem impacts of current [oil and gas wastewater] disposal practices in the U.S.," they wrote, "Regulatory action is needed to address these concerns."

Marianne Lavelle is a staff writer for The Daily Climate. Follow her on Twitter @nlavelle. The Daily Climate is a nonprofit news site covering energy, the environment and climate change.

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bigbadwuff January 14, 2015, 9:03 PM

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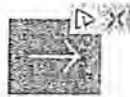
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Sunday, July 7, 2013

Doddridge County gas fracking explosion injures at least 7

David Gutman

CHARLESTON, W.Va. – At least seven people were injured, four of them very seriously, after an explosion at a hydraulic fracturing operation at a gas well drilling pad in Doddridge County early Sunday morning, according to emergency officials.

Pat Heaster, the Doddridge County director of emergency services, said that four workers had potentially life-threatening burns. Those four were transferred to United Hospital Center in Bridgeport and then flown to West Penn Burn Center in Pittsburgh.

Heaster said that at least three, and possibly four, others were taken to area hospitals in private vehicles.

Kevin Kilstrom, an executive with Antero Resources, which owns the well, said that a total of five workers were eventually flown to the burn center in Pittsburgh.

A Doddridge County 911 dispatcher had earlier said that a total of eight people were injured in the explosion.

The names and conditions of the injured workers have not been released.

Randy Trent, the chief of the Bancs Volunteer Fire Department, said that

<http://www.wvgazette.com/News/201307070002>

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| Doddridge County gas fracking explosion injures at least 7

as they rushed to the scene Sunday morning they met victims being rushed to the hospital in private vehicles.

"We were probably five to six miles from the well site," Trent said. "On W.Va. Route 18, they were transporting people by personal vehicle to meet us."

The five workers flown to West Penn Burn Center did not work for Antero, but worked for three different contractors, Kilstrom said. Kilstrom would not release the names of the contractors. Heaster said that he saw Nabors Industries trucks on the scene, indicating that they were one of the contractors.

The explosion happened just before 4 a.m. Sunday at the Hinterer 2H well on the Ruddy Alt pad on Brushy Fork in New Milton, Kilstrom said. Kilstrom said there are three wells on the pad.

The explosion did not happen at the drilling rig itself, which wasn't damaged, but at a nearby operation, Heaster said.

"They were fracking a well and something exploded, either in the pump or around the pump," Heaster said.

Heaster said that they were pumping water down a well, part of the hydraulic fracturing process for recovering gas trapped in shale rock. He said that the tanks that recover the water and other materials after they return to the surface are what exploded.

"The holding tanks that they were pumping into, that's what exploded," Heaster said. "It was a supplementary operation to the drilling process, the wellhead was not involved."

Trent said that the fire was about 50 yards from the wellhead.

"Once we were on the scene the flames were never more than six to eight feet high," Trent said.

Kilstrom said they did not yet know the cause of the explosion.

"We just started the investigation this morning," he said. "Within the next couple days we should get to the facts, but you never know."

The explosion caused a residual fire. The Bancs Volunteer Fire Department, the Smithsburg Volunteer Fire Department and the West Union Volunteer Fire Department were all on the scene from about 4 a.m. until about 7 a.m. Sunday.

Kathy Cosco, a spokeswoman for the West Virginia Department of Environmental Protection, said that two inspectors with DEP's Office of Oil and Gas were at the site. A representative of the federal Occupational Safety and Health Administration was also on the site Sunday evening.

"It appears that what exploded was a tank at the site," Cosco said in an email.

Messages left with Antero Resources corporate headquarters and their West Virginia offices were not returned Sunday.

Antero Resources owns at least 399 wells in Doddridge, Harrison, Ritchie, Tyler and Upshur Counties, according to a 2012 DEP database. The database lists 141 of those wells as being actively drilled, although, because the database is incomplete, that number is likely higher.

Antero has had safety problems in the past. Last August a spark at an

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| Doddridge County gas fracking explosion injures at least 7

Antero-owned well in Harrison County ignited methane gas several hundred feet underground, causing a fireball and a fire that burned for about an hour. Three workers were injured in that fire.

DEP cited Antero for failure to maintain well control for that incident.

DEP has cited Antero for 17 violations of state code in the past three years. Those have been primarily environmental violations -- for things like failing to prevent waste runoff, failure to report discharges and contaminating waterways.

One violation, from January 4, 2013, warned, "Imminent danger water supplys [sic] threatened by allowing pollutants to escape and flow into the waters of the state."

In June of last year Antero was drilling using water in Harrison County when they accidentally repressurized some old water wells, causing several geysers, one about 10 feet high, that flooded one nearby home and several garages.

In March 2011, state regulators shut down an Antero gas well in Harrison County after mud contaminated with drilling chemicals spilled into a nearby stream.

Reach David Gutman at david.gutman@wvgazette.com or 304-348-5119.

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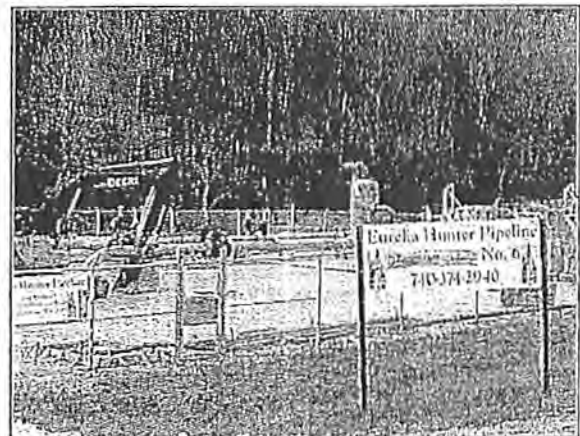
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One person remains hospitalized and two are deceased following the Thursday evening flash fire at Triad Hunter's Eureka Hunter Pipeline on Twin Hickory Road just outside of Wick in Tyler County. The fire was reported at about 7 p.m. and safely extinguished between 11 and 11:30 p.m.

Bruce Phipps, 56, of Marietta, Ohio, passed away the following evening, April 12, due to injuries suffered. Raymond Miller, 43, of Jeanette, Pa., passed away the evening of April 15 due to injuries suffered.

The injured workers were flown to the West Pennsylvania Burn Center in Pittsburgh to be treated for severe burns. Two of them were flown from the scene, while one was transported to Sistersville General Hospital before being airlifted. A fourth person was reportedly taken to the hospital by ambulance, checked for injuries, and then released.

Article Photos



Days after the tragic flash fire which claimed two lives, the...

The fire was initially thought to be an explosion at a gas well compression station, but it was later revealed to be a flash fire at a cleaning station.

Tyler County Sheriff Bob Kendle said two tanks and an excavator had caught fire. He stated they are still investigating the cause.

"From my understanding, the Occupational Safety and Health Administration believes it was totally accidental," said Sheriff Kendle.

Something was believed to have gone wrong during a routine cleaning of the pipeline by utilizing "pigs". "Pigs" are devices run through the pipelines for varying maintenance needs. The pigs in use at the time of the incident were meant to remove moisture from the line.

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Fire departments from Middlebourne, Sistersville, Shirley, Alma, Pleasants County, and St. Marys arrived at the scene, as well as Tyler County Sheriff Deputies and other first responders. Emergency Management volunteers also assisted.

"We took water and ice and went into standby at the staging area in case additional resources were needed," said Emergency Management Director Tom Cooper. "We stayed out there until they were coming out.

Cooper mentioned that Triad Hunter was very proactive when they began operations in Tyler County over a year ago.

"They brought in trainers from Wild Well Control in Texas to teach our responders how to react to these events," he said.

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By Ashfa Hardway (10)

One fire out, second still burning at Chevron natural gas well blast in Greene County

Cameron International worker still identified by officials as missing

UPDATED 6:11 PM EST Feb 13, 2014



By Matt Belanger (10)

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DUNKARD TOWNSHIP, Pa. — State environmental officials and expert firefighters brought in by Chevron are taking the first steps in a plan to extinguish flames at a burning Marcellus Shale natural gas well in southwestern Pennsylvania.

PHOTOS: GAS WELL EXPLOSION, FIRE IN GREENE COUNTY

Chevron



spokesman Trip Oliver says the fire was reported at about 6:45 a.m. at the Lanco 7H well in Dunkard Township, near Bobtown.

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Raw video: See the gas well fire burn (from u local)

Thursday, officials revealed there were actually two fires at the well site. They say the larger fire extinguished itself as water spewing from the ground along with the natural gas doused the flames. Specially-trained crews have also slowly started removing vehicles and equipment from around the second fire. Then, they say firefighters with the Houston-based Wild Well Control Team, who specialize in dealing with natural gas well fires, will move in closer to remove debris that's been aggravating the remaining fire. Then both well heads can be capped.

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One fire out, second still burning at Chevron natural gas well blast in Greene County | Local News - WTAE Home

WELL EXPLOSION

A DEP spokesman says this is the first serious Marcellus Shale well blowout in western Pennsylvania. The fire is still blazing after an explosion at a gas well site.

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The well site is about 50 miles south of Pittsburgh in Dunkard Township. It erupted into flames shortly before 7 a.m. Tuesday, injuring one worker and leaving one still unaccounted for Thursday evening. The missing worker is employed by Houston-based Cameron International, a spokesman confirmed. More information about the missing person may become available as crews are able to move closer to the well.

Video: Watch Matt Belanger's report

At first, details were slow to be released from corporations involved.

"Clearly we're aware of the incident in Pennsylvania. We're working with our customer, Chevron, to establish the facts. Our primary concern is the safety and security of our personnel. Beyond that, we have no comment to make because we know no more," Adam Nighthale said.

Video: Watch Ashlie Hardway's report

In a late afternoon update Wednesday, Chevron spokeswoman LeAnn Wainwright said they are developing their strategy for extinguishing the blaze.

"Our plans include efforts to control the well by shutting off the flow of natural gas and taking all appropriate procedures to protect the other wells on the pad. We are closely monitoring the status of the adjacent two wells and are developing contingency plans for those wells if necessary," Wainwright said. "Out of an abundance of caution, we have begun to monitor the air, surface waters and noise in the area for any signs of impact. At this point we have no indications that this incident has created any safety risk."

DEP spokesman Jon Polster said experts from Wild Well Control arrived on the site Tuesday evening to begin working out a plan to extinguish the fire. State Department of Environmental Protection officials said they've started to implement that plan Thursday.

Photos: Gas well explosion, fire in Greene County

Polster said the well was in a rural area where there were no homes or schools close enough to the well site to be dangerous. He said a DEP team at the site found no signs of threats to public health, noting that the fire was burning off volatile organic compounds in the gas.

"I do know the well is out of control and they're trying to get crews here to get the well back under control," said Todd Toland of Pacific Process Systems. "No immediate danger to the community. It's contained to that location. It's built in a location that's away from the community."

"There's been training. Actually, Wild Well's even come to the county to give training," said Greg Leathers of Greene County Emergency Management. "With the magnitude of the situation, local responders just aren't equipped to fight the fire itself. So they are told the basics of the fire. Then our job is to assess the situation, if any first aid can be rendered immediately without putting anyone else in harm's way, we do that."

"They knew, basically from the get-go, it wasn't going to be something they could extinguish," Trooper Stefani Plume said. "At that point, their training basically tells them to get out as safely as possible and set up a perimeter."

Polster said Chevron had previously completed drilling and hydraulically fracturing, or fracking, the well and was in the final stages of using steel pipe to hook it up to a pipeline distribution network for production.

"We want to find out how this happened and why," Polster said, adding that the explosion was the first serious Marcellus Shale well blowout in western Pennsylvania.

Scott C'One was working about one-half mile away from the 7H well pad when he heard the

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5/13/2015

One fire out, second still burning at Chevron natural gas well blast in Greene County | Local News - WTAE Home

explosion.

"Basically it was like a sonic boom. You could feel a little bit of vibration in the ground, and the loud hissing sound. I knew exactly what it was," C'One said. "We were probably anywhere from 600-800 yards away down over the hill. You could just literally, it felt like warm air, spring air, coming down over the hillside. It's very, very hot."

C'One has worked in the energy industry for six years and said typically, safety is a top priority in the industry. "Nothing is conducted with, 'OK, let's do this job.' Every single morning when you report for your shift, you have what's called a JSA meeting. It's a standard. You have a roll call, everybody signs in on that sheet so in case there is an accident of this magnitude, you are to report to a muster point. At that point, there's a roll call," he said. "I did hear there was a large propane truck that was parked near the actual well, which would have been a no-no. That initial boom was probably that propane truck that exploded. From that point on, that percussion could have annihilated the well head."

The Marcellus Shale formation lies under large parts of Pennsylvania, West Virginia, Ohio and other neighboring states; it's currently the country's most productive natural gas field.

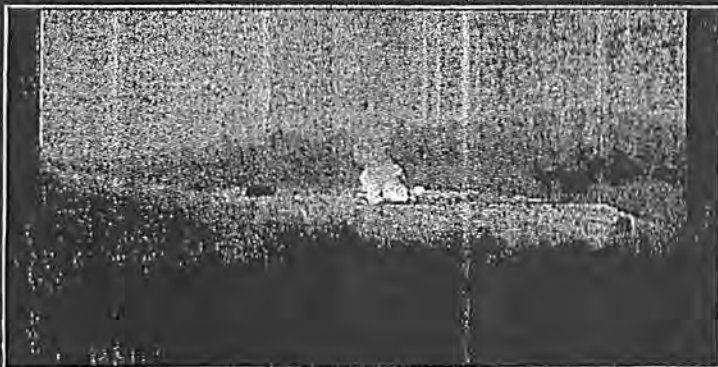
"Ironically, the best thing to do is to let it burn, because you know where the gas is. If the fire were to go out, the gas would find another ignition source somewhere," Leathers said.

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PHOTOS: GAS WELL EXPLOSION, FIRE IN GREENE COUNTY



1 of 11

Local John Squibb Jr.



Facebook 3.6k Twitter 11 Google+ 10 LinkedIn 6

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TAGS Chevron) Dunkard Township)

Comments

Print

06/19/2015



June 10, 2015

**AMENDED RESPONSE OF SWN PRODUCTION COMPANY, LLC
TO COMMENTS ON APPLICATION FOR WELL WORK PERMIT
FILED BY BARBARA ANN EDGE, WILLIAM F. EDGE and DAVID EDGE**

Applicant Name: SWN Production Company, LLC

Address: P. O. Box 1300, Jane Lew, West Virginia 26378

Phone: (832) 796-1610

To: Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th Street East
Charleston, WV 25304

Well Operator Name: SWN Production Company, LLC

API Well Number: 47-051-01843

Well Location: Sand Hill District, Marshall County, West Virginia

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I. Surface Owners' Comments Fail to Identify Any Facts to Support Denial of the Well Work Permit Sought by SWN Production Company, LLC

On or about May 13, 2015, Barbara Ann Edge, William F. Edge and David Edge, as surface owners of property on which SWN Production Company, LLC ("SWN") proposes to conduct surface operations for the development of the B&W Edge MSH 205H well (the "Edge Well"), filed comments objecting to SWN's well work application filed on or about April 13, 2015 (the "Edge Comments"). The surface owners are residents of Ohio and do not live at the property on which the well work is proposed. The Edge Comments contain no factual or legal allegations concerning SWN's past or present conduct regarding the development of a horizontal natural gas well in West Virginia nor any factual or legal allegations that the proposed location of the Edge Well will constitute a hazard to the safety of persons or fails to protect fresh water sources or supplies as required under W. Va. Code § 22-6A-8(d)(1) and (4). In addition, the Department of Environmental Protection's Office of Oil and Gas lacks authority to deny SWN a

well work permit on the basis of allegations that the proposed well work is not “fairly necessary” or “reasonably necessary” for the extraction of minerals as alleged by the Surface Owners.

Accordingly, SWN respectfully requests that the comments of Surface Owners be rejected and that the well work permit for the Edge Well be issued immediately.

II. West Virginia Public Policy Favors Development of Natural Gas

The Legislature of the State of West Virginia has declared as a public policy of the State that “[a]llowing the responsible development of our state’s natural gas resources will enhance the economy of our state and the quality of life for our citizens while assuring the long term protection of the environment.” W. Va. Code § 22-6A-2(a)(8). Consistent with that declared public policy, it is SWN’s responsibility and objective to develop natural gas and related hydrocarbons in a responsible and safe manner in compliance with the laws and regulations governing the exploration, development and production of natural gas in the State of West Virginia, including the protection of human health and the environment.

III. SWN’s Well Work Application Complies With the Requirements of W. Va. Code § 22-6A-7 and the Rules Governing Horizontal Well Development - 35 CSR 8

W. Va. Code § 22-6A “Horizontal Well Act” establishes the statutory requirements for drilling horizontal natural gas wells in West Virginia, as supplemented by the Rules Governing Horizontal Well Development. For example, SWN’s well work permit application fulfills the requirements set forth in W. Va. Code § 22-6A-7 and 35 C.S.R. 8, § 5. More particularly, the proposed well complies with all of the well location restrictions established in W. Va. Code § 22-6A-12, and SWN will comply with all performance standards and operational requirements set forth in W. Va. Code § 22-6A-8(g) and 35 C.S.R. 8, § 9. These statutory and regulatory requirements have been determined by the West Virginia Legislature and West Virginia Department of Environmental Protection to be adequately protective of the safety of persons and fresh water sources or supplies.

IV. The Well Work Proposed by SWN More Than Adequately Protects Fresh Water Sources and Supplies

The Edge Comments rely exclusively on “[n]ews organizations from small local newspapers to large national sources, such as USA Today” as evidence that a “large amount of water contamination has been caused by well pad work similar to proposed API Well Number 47-051-1843. [sic]” The newspaper articles attached to the Edge Comments relate almost exclusively to allegations occurring in states other than West Virginia and have no specific relevance to the subject application.

The 18 Acre Wheeling Creek Watershed is not at significant risk of contamination from the Edge Well because SWN’s well work application is based on utilization of a closed-loop system to contain and re-use fluids in the well drilling process. Moreover, the flow back fluids will be stored in steel tanks for re-use or delivered to permitted disposal facilities such as underground injection wells. No open pits will be used in the drilling or completion of the Edge

Well and the required sediment and erosion controls in accordance with the Office of Oil and Gas' guidelines will be utilized. Moreover, Wheeling Creek is located approximately 3,000 feet from the edge of the proposed well pad and the nearest tributary of Wheeling Creek is located approximately 1,500 feet from the edge of the proposed well pad. SWN's well work plan exceeds the requirements associated with protecting fresh water sources and supplies as required by the Horizontal Well Act and the Rules Governing Horizontal Well Development. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

V. The Well Work Proposed by SWN Does Not Constitute a Hazard to the Safety of Persons

SWN has taken into consideration the location of the electrical substation on adjoining property in selecting the location for the proposed Edge Well. The Edge Comments do not reference any safety issues or incidents involving electric transmission substations. The proposed location of the Edge Well complies with the operational requirements to protect persons and the environment from unreasonable risks as imposed by W. Va. Code § 22-6A-12. The proposed well pad will be located approximately 500 feet from the outer edge of the substation and otherwise provides the maximum distance from residences and populated buildings as is reasonably possible. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

VI. The West Virginia Department of Environmental Protection and its Office of Oil and Gas Do Not Have Jurisdiction Over Whether Activities Are "Fairly Necessary" or "Reasonably Necessary"

The West Virginia Legislature has established a remedy for surface owner compensation through the Oil and Gas Horizontal Well Production Damage Compensation Act, W. Va. Code § 22-6B-1, *et seq.* which remedy is without the involvement of the West Virginia Department of Environmental Protection. Whether the proposed well work is "fairly necessary" or "reasonably necessary" and the issue of the adequacy of compensation to a surface owner is therefore outside the scope of the jurisdiction of the West Virginia Department of Environmental Protection and its Office of Oil and Gas. Accordingly, there is no basis to deny or condition the well work permit for the Edge Well and the permit should be immediately issued.

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SWN respectfully submits that all of the statutory and regulatory requirements for a well work permit have been satisfied and requests that the well work permit for the Edge Well be immediately issued without qualification based on the Edge Comments. The undersigned is available to answer questions or provide additional information to the Office of Oil and Gas as may be required.

Respectfully Submitted,

SWN Production Company, LLC

By: Spilman Thomas & Battle PLLC



Mark D. Clark
David L. Yaussy
P.O. Box 273
Charleston, WV 25325
(304) 340-3800

cc: James G. Bordas
Jeremy M. McGraw
Bordas and Bordas Attorneys, PLLC
1358 National Road
Wheeling, WV 26003

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05101843



1358 National Road
Wheeling, WV 26003
t 304-242-8410
f 304-242-3936

106 E. Main Street
St. Clairsville, OH 43950
t 740-695-8141
f 740-695-6999

526 7th Street
Moundsville, WV 26041
t 304-845-5600
f 304-242-3936

One Gateway Center
18th Floor, West Wing
Pittsburgh, PA 15222
t 412-502-5000
f 412-235-7190

bordaslaw.com

Fax

To:
Fax: 13049260452
Phone:

From: Jodi Cunningham
Pages: 25
Date: 5/13/2015

Comments: Please see attached. If you have any questions, please do not hesitate to contact me.

Very truly yours,

Jodi K. Cunningham

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06/19/2015

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
Office of Oil & Gas WELL WORK PERMIT APPLICATION

- 1) Well Operator: SWN Production Co., LLC 494512924 51-Marshall 6-3 1647 Wheeling
Operator ID County District Quadrangle
- 2) Operator's Well Name: B & W Edge MSH 5H Well Pad Name: B & W Edge MSH Pad
- 3) Farm Name/Surface Owner: William F. Jr., & Barbara Edge Public Road Access: Walnut Grove Road
- 4) Elevation, current ground: 1276' Elevation, proposed post-construction: 1253'
- 5) Well Type (a) Gas Oil Underground Storage
Other _____
(b) If Gas Shallow Deep
Horizontal
- 6) Existing Pad: Yes or No No
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 6285', Target Base TVD- 6369', Anticipated Thickness- 84', Associated Pressure- 4160
- 8) Proposed Total Vertical Depth: 6358'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: ~~15,700'~~ 15,519'
- 11) Proposed Horizontal Leg Length: 8,712'
- 12) Approximate Fresh Water Strata Depths: 300'
- 13) Method to Determine Fresh Water Depths: from nearby water wells
- 14) Approximate Saltwater Depths: 950'
- 15) Approximate Coal Seam Depths: 742'
- 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
- (a) If Yes, provide Mine Info: Name: Shoemaker
Depth: 669'
Seam: Pittsburgh Seam
Owner: Shoemaker

WW-6B
(10/14)

API NO. 47- 69

OPERATOR WELL NO. B & W Edge MSH 5H

Well Pad Name B & W Edge MSH Pad

1705101845

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#	125'	125'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	450'	450'	388 sx/CTS
Coal	9 5/8"	New	J-55	40#	2200'	2200'	828 sx/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	15,700'	15,700'	Lead 614 sx 2345 tail sx/100' inside
Tubing	2 3/8"	New	P-110	4.7#	Approx. 6867'	Approx. 6867'	
Liners							

Handwritten signature and date: 4/22/15

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							

PACKERS

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

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WW-6B
(10/14)

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WV Department of
Environmental Protection

API NO. 47- 69 -

OPERATOR WELL NO. B & W Edge MSH 5H

Well Pad Name: B & W Edge MSH Pad

205701845

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 50' below void nor more than 100' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' 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 units, 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): 13.5

22) Area to be disturbed for well pad only, less access road (acres): 6.2

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.

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.

*Note: Attach additional sheets as needed.

WW-9
(9/13)

API Number 47 - 69
Operator's Well No. B & W Edge MSH 5H

4705101845

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 49447757

Watershed (HUC 10) Upper Ohio South Quadrangle 647- Wheeling

Elevation 1253' County 51-Marshall District 9- Sand Hill

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 and salt saturate mud

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

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, Northwest SWF- 1025, Short Creek 1034/WV0109517/CID28726, Carbon Limestone 28726/CID28726
Arden Landfill 10072, American UZ-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.

Company Official Signature [Signature]

Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Supervisor

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Subscribed and sworn before me this 28th day of January, 2015

Brittany R Woody

Notary



My commission expires 11/27/22

Operator's Well No. 4705101845 B & W Edge MSH 5H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 13.5 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: James [Signature]


Comments: _____

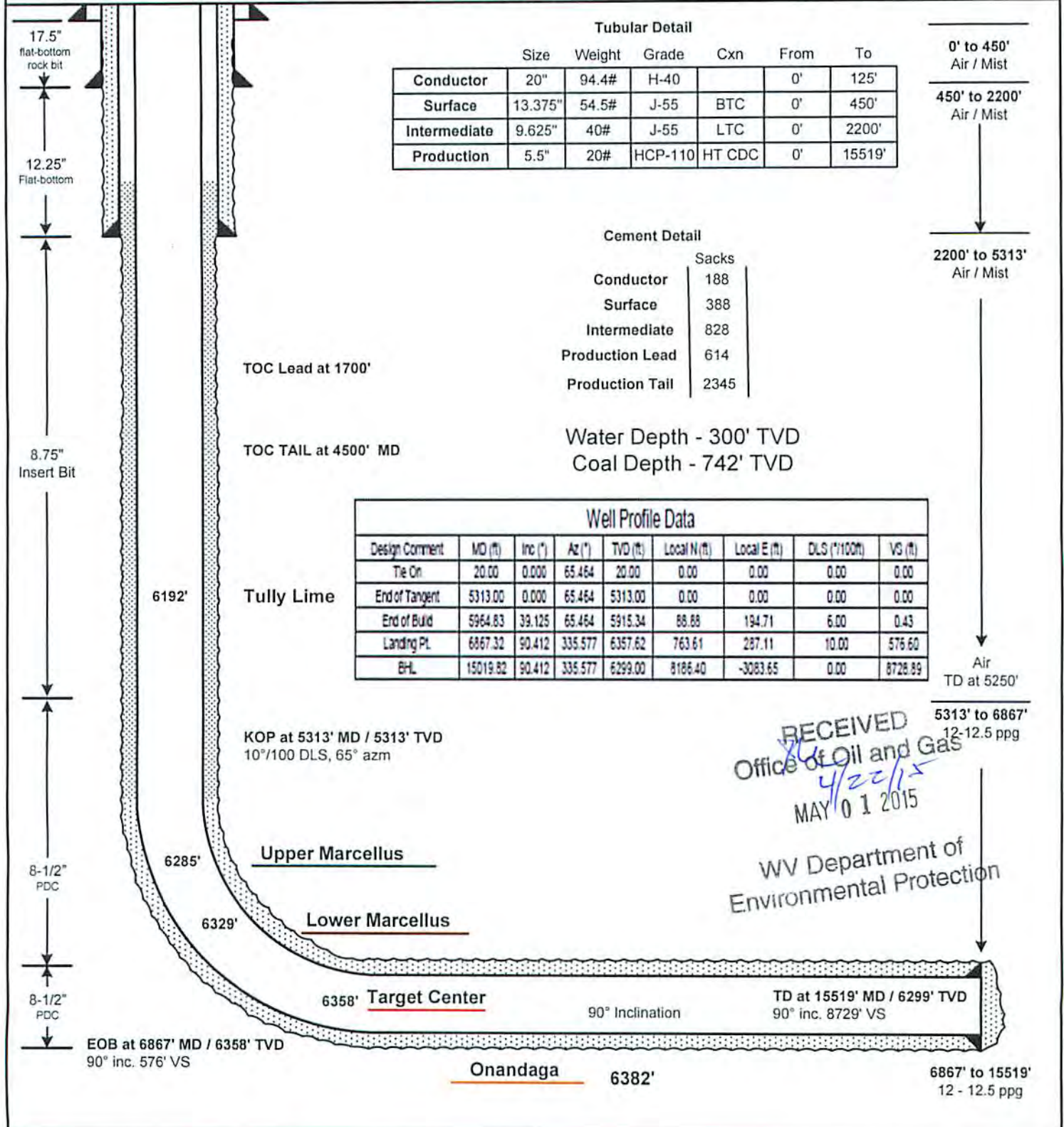
Title: Oil and Gas Inspector Date: 4/22/15

Field Reviewed? () Yes () No

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Southwestern Energy Company		Proposed Drilling Program	
Well	: B W EDGE MSH 5H	Re-entry Rig	: TBD
Field	: PANHANDLE FIELD	Prospect	: PANHANDLE
County	: MARSHALL	State	: WV
SHL	: 40.006578 Latitude -80.627476 Longitude		
BHL	: 40.029085 Latitude -80.638365 Longitude		
KB Elev	: 1276 ft MSL	KB	: 22 ft AGL
		GL Elev	: 1254 ft MSL



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Data source: K:\EandPWVD\Team Data\Drilling\Wells\BW Edge MSH 205H\Drilling Program\Master SWN Well Input Sheet v E-0-1.xlsm 06/19/2015

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

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4705101845

SLB Cement Additives

***Ref: 2013-78

No More than 3% CaCl
will be used in Surface
String

	Product Name	Product Use	Chemical Name	CAS Number
Surface	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3
			Polypropylene glycol	25322-69-4
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	S001	calcium chloride	calcium chloride	10043-52-4
	SPACER			
	D020	bentonite extender	bentonite	1302-78-9
Intermediate	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3
			Polypropylene glycol	25322-69-4
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	D044	granulated salt	sodium chloride	7647-14-5
	D153	Anti-Settling Agent	chrystalline silica	14808-60-7
	SPACER			
	D020	bentonite extender	bentonite	1302-78-9
Kick Off Plug	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9
	D080	cement liquid dispersant	product classified as non-hazardous.	
	D801	mid-temp retarder	product classified as non-hazardous	
	D047	antifoam agent	polypropylene glycol	25322-69-4
	SPACER			
	B389	MUDPUSH* Express	Carbohydrate	proprietary
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary
	D031	barite	barium sulfate	7727-43-7
			fatty acid amine	proprietary
			ethoxylated alcohol	proprietary
B220	surfactant	glycerol	56-81-5	
		2,2'-Iminodlethanol	111-42-2	
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary

4705101845

Production - Lead	D154	low-temperature extender	non-crystalline silica	7631-86-9
	D400	EasyBLOK	boric acid	10043-35-3
	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
	D201	basic cements enabler	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D202	low-temperature solid dispersant	sulphonated synthetic polymer	proprietary
			formaldehyde (Impurity)	50-00-0
	D046	antifoam	Fuller's earth (attapulgite)	8031-18-3
			Polypropylene glycol	25322-69-4
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary
	D065	TIC* Dispersant	Sodium Polynaphthalene Sulfonate	9008-63-3
			Sodium Sulfate	7757-82-6
	D201	basic cements enabler	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D153	Anti-Settling Agent	chrystalline silica	14808-60-7
		SPACER		
	B389	MUDPUSH* Express	Carbohydrate	proprietary
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary
D031	barite	barium sulfate	7727-43-7	
		fatty acid amine	proprietary	
B220	surfactant	ethoxylated alcohol	proprietary	
		glycerol	56-81-5	
		2,2'-Iminodiethanol	111-42-2	

4705101845

% Concentration Used
0.2% BWOC
0.125 lb/sk
2% BWOC
1 lb/bbl
20 lb/bbl
0.2% BWOC
0.125 lb/sk
10% BWOW
0.15% BWOC
20 lb/bbl
1 lb/bbl
0.05 gal/sk
0.01 gal/sk
0.02 gal/sk
1 lb/bbl
0.1 gal/bbl
310 lb/bbl
1 gal/bbl
0.35% BWOC

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6% BWOC
0.8% BWOC
0.2% BWOC
0.2% BWOC
0.3% BWOC
0.2% BWOC
0.35% BWOC
0.25% BWOC
0.2% BWOC
0.2% BWOC
proprietary
proprietary
7727-43-7
proprietary
proprietary
56-81-5
111-42-2

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**Marcellus Well Drilling Procedures
And Site Safety Plan**

SWN Production Co., LLC

47 - 051 -
Well name: B & W Edge MSH 5H
Wheeling, Quad
Sand Hill, District
Marshall County, West Virginia

Submitted by:


Danielle Southall

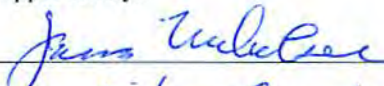
1/28/2015

Date:

Title Regulatory Supervisor

SWN Production Co., LLC

Approved by:


Title: Oil + Gas Inspector

Date:

4/22/15

Approved by:

Date:

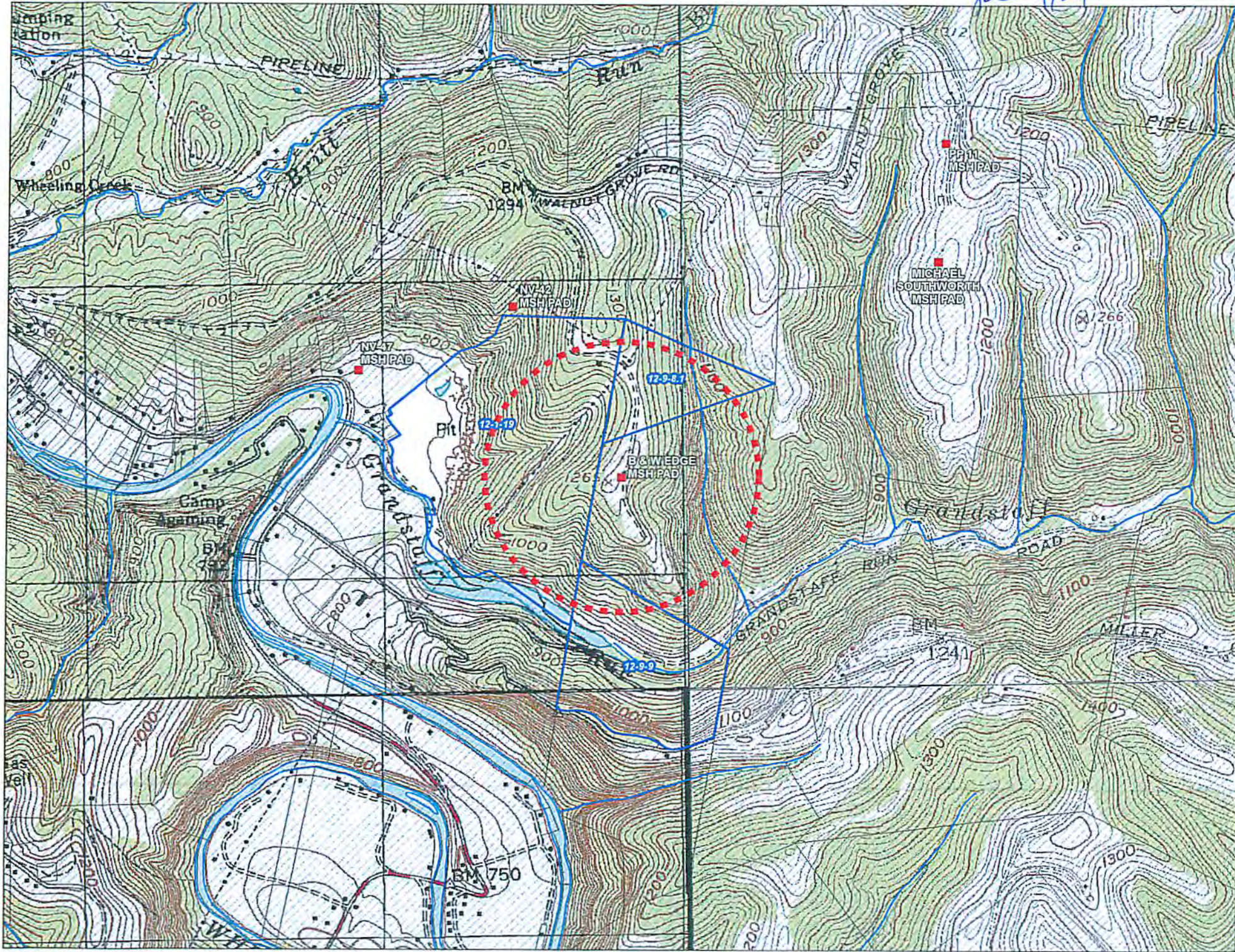
Title:

SWN Production Co., LLC – Confidential

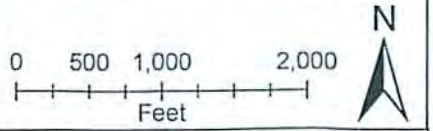
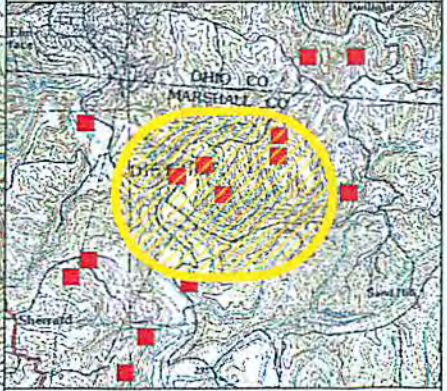
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06/19/2015

4/22/12



- CHK Site of Interest
- Streams
- Parcels With Water Sources (1500' of Source)
- Other Parcels
- 1,500' Buffer Around Wells



WV Water Purveyor Map
B & W EDGE MSH PAD
 923955
MARSHALL COUNTY
 Lat: 40.006419/Long: -80.627531
 Date: 9/8/2014
 Projection: WGS 1984 UTM Zone 17N
 Scale: 1 inch = 1,000 feet

Latitude: N 40°02'30"

Longitude: W 80°37'30"

LEGEND

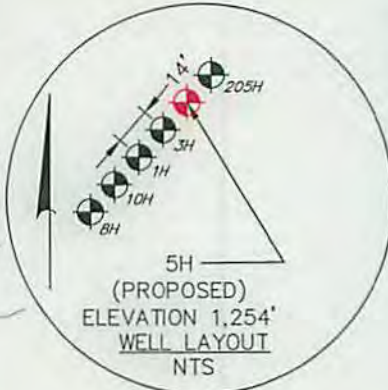
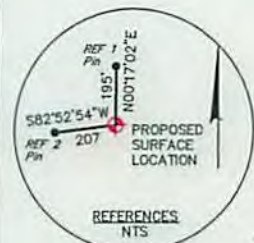
- PROPOSED GAS WELL
- PROPOSED BOTTOM HOLE
- PROPOSED BORE
- EXTERNAL LEASE LINE
- BUFFER LINE
- GAS WELL
- PLUGGED WELL
- TIE LINE

TRACT	N/F PROPERTY OWNER	PARCEL NUMBER
1	EDGE, WILLIAM F. JR. & BARBARA	12-09-008
2	WHEELING POWER COMPANY	12-09-008.1
3	SCHELLHASE, MARK A. ET UX	12-01-018
4	NORMAN, JOSEPHINE GRACE	12-01-018.3
5	FOLMAR, EDITH ADELL	12-01-019
6	CAPPONE, RAYMOND A. & KAREN	06-T17-015
7	COFFIELD MICHAEL L. TYLENE R.	12-01-013
8	HARTMAN, WALTER L. ET UX	12-01-010.1
9	BARTOLOVICH, STEPHEN M.	12-01-018.4
10	BARTOLOVICH, STEHEN M., ET AL.	12-01-011

GRID NORTH
NAD 83

REFERENCE LINES

L1	S19°27'43"W	1,111'
L2	N18°03'21"W	330'
L3	S62°48'26"W	329'
L4	S60°58'54"E	344'

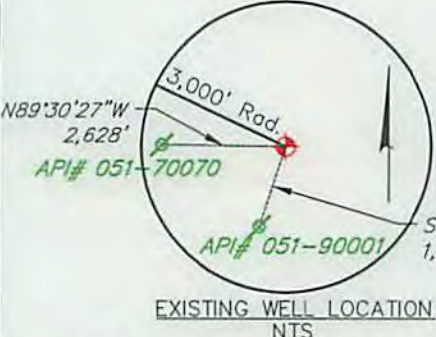


TRIADELPHIA DISTRICT
SAND HILL DISTRICT

OHIO COUNTY
MARSHALL CO.

BRITT RUN RD.

WALNUT GROVE RD.



EXISTING WELL LOCATION
NTS

PROPOSED SURFACE LOCATION

GENERAL NOTES:

- THE BOUNDARY LINES SHOWN HEREON ARE BASED ON RECORD DEED, PLATS, AND TAX MAPS BEST FIT TO FOUND FIELD EVIDENCE AND AERIAL PHOTOS.
- THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
- THERE ARE NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
- THERE ARE NO EXISTING OCCUPIED DWELLINGS OR BUILDINGS WITHIN 625' OF PROPOSED WELL.
- THE PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR OR LAKE.
- THERE ARE NO NATIVE TROUT STREAMS WITHIN 300' OF PROPOSED WELL.

TOP HOLE UTM (NAD 83)	TP UTM (NAD 83)	BOTTOM HOLE UTM(NAD83)
N) 4,428,553.8m E) 531,795.5m	N) 4,428,732.3m E) 531,908.7m	N) 4,431,048.0m E) 530,856.0m

TRACT	LESSOR	PARCEL NUMBER	ACREAGE	LEASE NUMBER
1	FLETCHER, JOSEPHINE	12-09-008	87.8±	1-385106-000
2	FLETCHER, JOSEPHINE	12-09-008.1	28.0±	1-385106-000
3	SCHELLHASE, MARK A. & ANDREA K.	12-01-018	93.8±	1-312549-000
4	MILLER, VIOLET S.	12-01-018.3	8.0±	1-385139-000
5	FOLMAR, GWAIN R. & EDITH	12-01-019	112.6±	1-385118-000
6	CAPPONE, RAYMOND A. & KAREN	06-T17-015	22.3±	1-325796-000
7	COFFIELD MICHAEL L. TYLENE R.	12-01-013	71.6±	1-297037-000
8	HARTMAN, WALTER LEWIS & GLORIA LOUISE	12-01-010.1	47.8±	1-286493-000
9	BARTOLOVICH, STEPHEN M.	12-01-018.4	7.5±	15-030515
10	BARTOLOVICH, STEPHEN M.	12-01-011	48.5±	15-030515

FILE #: 087569005

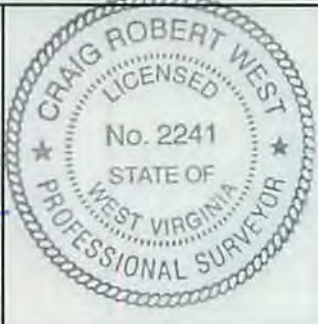
DRAWING #: 087596005-Well Plat

SCALE: 1" = 1,600'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING SURVEY GPS

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



SIGNED: [Signature]

R.P.E.: _____ L.L.S.: 2241

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



DATE: APRIL 22, 2015

OPERATOR'S WELL #: B&W EDGE MSH 5H

API WELL #: 47 051 01845 HGA

STATE: _____ COUNTY: _____ PERMIT: _____

WELL TYPE: OIL GAS WASTE DISPOSAL LIQUID INJECTION PRODUCTION STORAGE DEEP SHALLOW

WATERSHED: UPPER OHIO SOUTH

COUNTY/DISTRICT: MARSHALL / SAND HILL

SURFACE OWNER: EDGE, WILLIAM F. JR. & BARBARA

OIL & GAS ROYALTY OWNER: FLETCHER, JOSEPHINE

CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PERFORATE NEW FORMATION PLUG & ABANDON

DRILL PLUG OFF OLD FORMATION CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS

WELL OPERATOR: SWN PRODUCTION CO., LLC

ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378

ESTIMATED DEPTH: TVD: 6,358' TMD: 15,519'

DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378

06/19/2015

12.782'

PROPOSED SURFACE LOCATION LAT. N 40°00'23.4" (NAD 27)

4705101845

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

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

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

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

SEE EXHIBIT "A"

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

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

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

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Environmental Protection

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

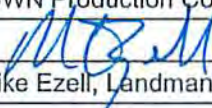
Well Operator: SWN Production Company LLC
 By: 
 Its: Mike Ezell, Landman

Exhibit "A"

Attached hereto and made part of the State of West Virginia Oil and Gas Permit Form WW-6A1 by SWN Production Company, LLC, Operator

B&W Edge MSH 5H

Marshall & Ohio Counties, West Virginia

14705701845

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
1)	12-9-8	1-385106-000	Josephine Fletcher NPAR L.L.C. Chevron USA, Inc. Chesapeake Appalachia L.L.C.	NPAR L.L.C Chevron Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	20%	707/584 756/332 30/532 33/110
2)	12-9-8.1	1-385106-000	Josephine Fletcher NPAR L.L.C. Chevron USA, Inc. Chesapeake Appalachia L.L.C.	NPAR L.L.C Chevron Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	20%	707/584 756/332 30/532 33/110
3)	12-1-18	1-312549-000	Mark A. Schellhase and Andrea K. Schellhase Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	721/468 33/110
4)	12-1-18.3	1-385139-000	Violet S. Miller Tri Energy Holdings L.L.C. NPAR L.L.C. Chevron Chesapeake Appalachia L.L.C.	Tri Energy Holdings L.L.C. NPAR L.L.C Chevron USA, Inc. Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	16%	699/11 24/180 756/332 30/532 33/110
5)	12-1-19	1-385118-000	Gwain R. Folmar and Edith Folmar Tri Energy Inc. AB Resources L.L.C Chevron USA, Inc. Chesapeake Appalachia L.L.C.	Tri Energy Inc. AB Resources L.L.C. Chevron USA, Inc. Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	12.50%	656/637 19/623 756/397 30/532 33/110
6)	6-T17-15	1-325796-000	Raymond A. Cappone and Karen Cappone Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	812/584 883/228
7)	12-1-13	1-297037-000	Michael L. Coffield and Tylene R. Coffield Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18.75%	700/211 33/110
8)	12-1-10.1	1-286493-000	Walter Lewis Hartman and Gloria Louise Hartman Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	12.50%	688/622 33/110
9)	12-1-18.4	15-030515	Stephen M. Bartolovich	SWN Production Company L.L.C.	18%	Pending*
10)	12-1-11	15-030515	Stephen M. Bartolovich	SWN Production Company L.L.C.	18%	Pending*

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WV Department of Environmental Protection

*See attached

4705101845

MEMORANDUM OF OIL AND GAS LEASE

1/15 WV

This Memorandum of Oil and Gas Lease made this 11 day of March, 2015 by and between Stephen M. Bartolovich, a single man, of 451 Main St, Benwood, WV 26031-1105, hereinafter collectively called "Lessor," and SWN Production Company, L.L.C., a Texas limited liability company, 10000 Energy Drive, Spring, Texas 77389, hereinafter called "Lessee."

WITNESSETH

For and in consideration of the sum of Ten Dollars (\$10.00) cash in hand paid, and other good and valuable consideration, Lessor did make and execute in favor of Lessee an Oil and Gas Lease dated 11 March, 2015, and made effective 11 March, 2015, which provides for a five (5) year primary term and an option to renew for an additional five (5) year primary term covering Lessor's interest in the following described lands:

Tax Map No: 12-0001-0011-0000

and is bounded formerly or currently as follows:

- On the North by Parcel: 12-0001-0010-0001
- On the East by Parcel: 12-0001-0013-0000
- On the South by Parcel: 12-0001-0030-0000
- On the West by Parcel: 12-0001-0010-0000

Tax Map No: 12-0001-0018-0004

and is bounded formerly or currently as follows:

- On the North by Parcel: 12-0001-0011-0000
- On the East by Parcel: 12-0001-0018-0003
- On the South by Parcel: 12-0001-0018-0000
- On the West by Parcel: 12-0001-0030-0000

Containing 58.46 acres and located in the Township/District of Sand Hill, Marshall County, State of West Virginia, for the purpose of drilling, operating for, producing and removing oil and gas and all the constituents thereof. Said lands were conveyed to Lessor by virtue of Deed dated August 10, 1973 and recorded in said County and State in Book 439, Page 300, and by Deed dated June 27, 2000 and recorded in said County and State in Book 615, Page 477. This Lease may be extended beyond the primary term by certain activities including, without limitation, conducting operations, producing oil or gas, or making prescribed payments. This Lease also grants to Lessee a Right of First Refusal to match any offer to top lease the leased premises, which right may be exercised by Lessee within fifteen (15) days after receipt of proper notice from Lessor.

This Memorandum of Oil and Gas Lease is being made and filed for the purpose of giving third parties notice of the existence of the Lease described above. The execution, delivery and recordation of this Memorandum of Oil and Gas Lease shall have no effect upon, and is not intended as an amendment of the terms and conditions of the Lease. It is the intent of the Lessor to lease all of Lessor's interest in and to the properties described herein, whether or not the tracts recited herein are properly described, and further it is understood this lease includes all rights owned by the Lessor in the properties described herein.

IN WITNESS WHEREOF this Memorandum of Oil and Gas Lease is executed as of the date first above written.

WITNESS:

[Signature]

LESSOR:

[Signature]
Stephen M. Bartolovich

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WITNESS:

SWN Production Company, L.L.C.
A Texas limited liability company

MAY 01 2015

Stephen M. Guidry
Vice President - Land

WV Department of
Environmental Protection

06/19/2015

4705101845

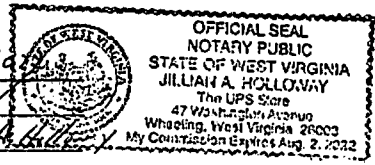
ACKNOWLEDGMENT
(Lessor)

STATE OF WEST VIRGINIA)
) SS
COUNTY OF Ohio)

On this the 17th day of MARCH, 2015, before me, a notary public, the undersigned authority, personally appeared Stephen M. Bartolovich, a single man, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: August 2, 2022
Signature/Notary Public: [Signature]
Name/Notary Public (print): Jill A. Holloway



(SEAL)

CORPORATE ACKNOWLEDGMENT

STATE OF TEXAS)
) SS:
COUNTY OF HARRIS)

On this the _____ day of _____, 2015, before me the undersigned Notary Public, personally appeared Stephen M. Guidry, who acknowledged himself to be the Vice-President - Land of SWN Production Company, L.L.C., a Texas limited liability company, and that he as such officer, being authorized to do so, executed foregoing instrument for the purpose therein contained by signing the name of the corporation by himself as Vice-President - Land.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: _____
Signature/Notary Public: _____
Name/Notary Public (print): _____

(SEAL)

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MAY 01 2015

Document prepared by: T.S. Dudley Land Co., Inc., 375 Southpointe Blvd, Suite 210, Canonsville, OH 43021

Recorder: Return to: T.S. Dudley Land Co., Inc., 375 Southpointe Blvd, Suite 210, Canonsville, OH 43021

WV Department of
Environmental Protection

06/19/2015

SWN 4705101845

Southwestern Energy®

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

March 26, 2015

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


RE: SWN's proposed B & W Edge MSH 5H in Marshall County, West Virginia, Drilling under Walnut Grove 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 Walnut Grove 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,



Mike Ezell
Senior Staff Landman
SWN Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

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MAY 01 2015
R2 V+
The Right People doing the Right Things,
WV Department of
Environmental Protection
Wise investments of the cash flow from
our underlying Assets, will create Value+

06/19/2015

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

Date of Notice Certification: 4/30/15

- 4705101845
API No. 47- 69 -
Operator's Well No. B & W Edge MSH 5H
Well Pad Name: B & W Edge MSH Pad

Notice has been given:

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

State: <u>WV</u>	UTM NAD 83 Easting: <u>531795.5</u>
County: <u>51-Marshall</u>	Northing: <u>4428553.7</u>
District: <u>9- Sand Hill</u>	Public Road Access: <u>Walnut Grove Road</u>
Quadrangle: <u>647- Wheeling</u>	Generally used farm name: <u>B & W Edge</u>
Watershed: <u>Upper Ohio South</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p align="center">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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MAY 01 2015

Required Attachments:

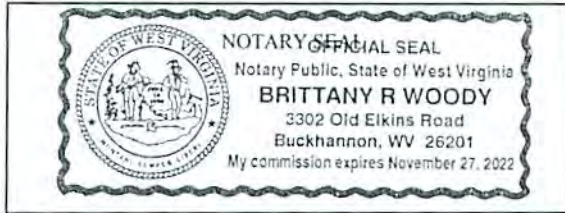
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

201505101845

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:	<u>SWN Production Co., LLC</u>	Address:	<u>P.O. Box 1300</u>
By:	<u>Dee Southall</u>		<u>Jane Lew, WV 26378</u>
Its:	<u>Regulatory Supervisor</u>	Facsimile:	_____
Telephone:	<u>304-884-1614</u>	Email:	<u>Dee_Southall@swn.com</u>



Subscribed and sworn before me this 28th day of January 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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 MAY 01 2015
 WV Department of
 Environmental Protection

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

47-69-101845

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

Date of Notice: 4/30/15 Date Permit Application Filed: 4/30/15

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
Name: Barbara Ann & William F. Edge, Jr. ET AL ✓
Address: 1116 Virginia Street
Martins Ferry, OH 43935

Name: Mark. A. Schellhase, ET UX ✓
Address: 1886 Walnut Grove Road
Wheeling, WV 26003

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: Murray American Energy, INC. C/O Alex P. O'Neill ✓
Address: 6126 Energy Road
Moundsville, WV 26041

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: *** See Attachment #1
Address: _____

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

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Office of Oil and Gas
MAY 01 2015

*Please attach additional forms if necessary
WV Department of Environmental Protection

WW-6A
(9-13)

API NO. 47- 69
OPERATOR WELL NO. B & W Edge MSH
Well Pad Name: B & W Edge MSH Pad

2705101845

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: 4/30/15 Date Permit Application Filed: 4/30/15

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
Name: Wheeling Power Company

Address: 1 Riverside PL
Columbus, OH 43215

Name: Edith Adell Folmar

Address: RR 6 Box 317
Wheeling, WV 26003

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: _____

Address: _____

COAL OPERATOR
Name: _____

Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

06/19/2015

4705101845

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 semi-circular 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.

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.**

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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API NO. 47-69
OPERATOR WELL NO. B & W Edge MSH 5H
Well Pad Name: B & W Edge MSH Pad

Notice is hereby given by:

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

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: _____

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 28th day of January 2015
Brittany R Woody Notary Public
My Commission Expires 11/27/22

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06/19/2015

WATER PURVEYORS

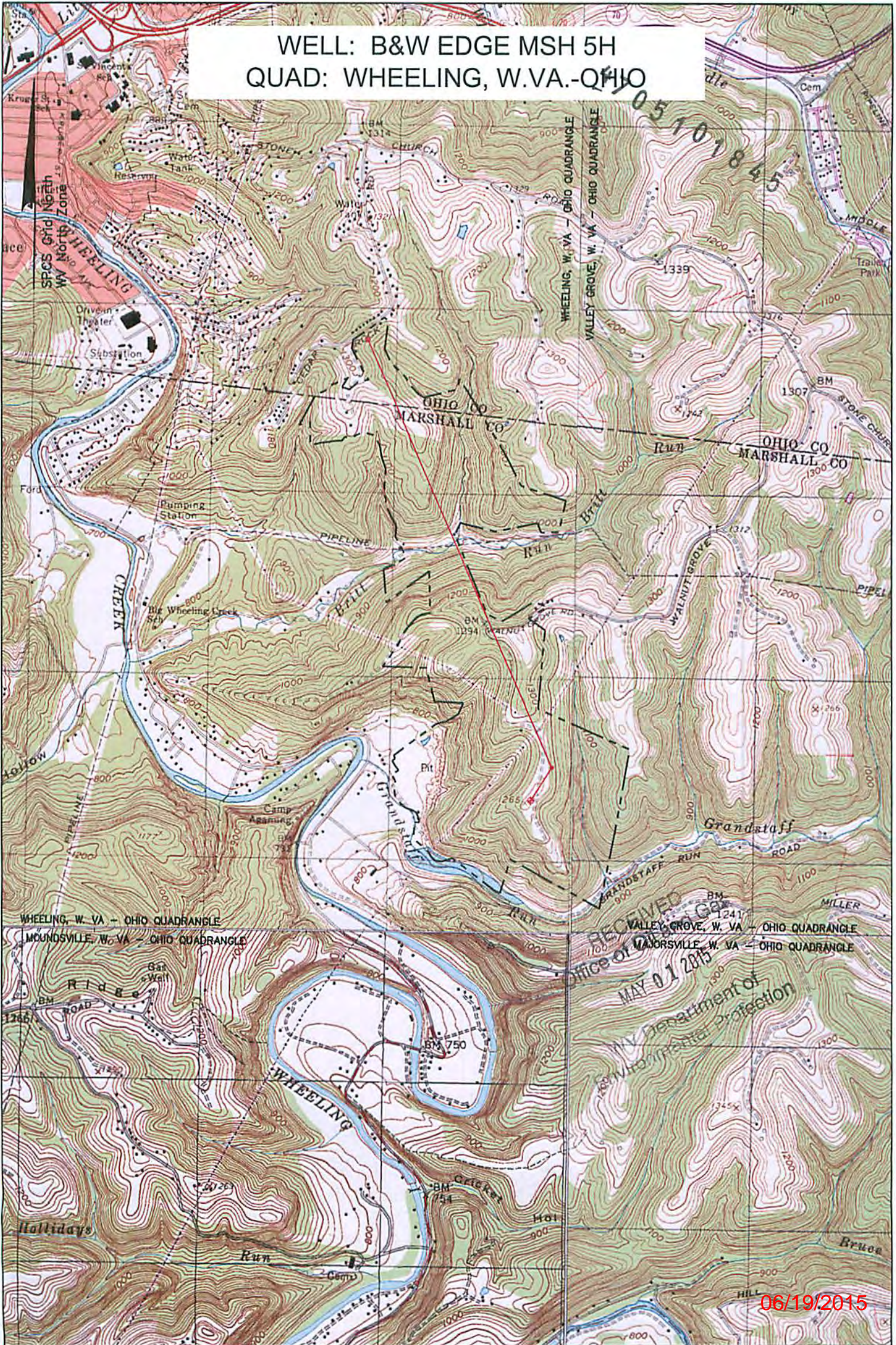
Date	Pad No.	Pad Name	Parcel No.	Property Owner(s)	Owner Address	City	State	Zip	Owner Phone No.	Assumed/known Water Source
										Present (Y/N)?
9/8/2014	923955	B & W EDGE MSH PAD	12-1-19	FOLMAR EDITH ✓	RR 6 BOX 317	WHEELING	WV	26003	304-242-7208	Y
9/8/2014	923955	B & W EDGE MSH PAD	12-9-9	ISALY ROBERT A SR EST ✓	635 STONE CHURCH RD	WHEELING	WV	26003		Y
9/8/2014	923955	B & W EDGE MSH PAD	12-9-8.1	WHEELING POWER COMPANY ✓	1 RIVERSIDE PL	COLUMBUS	OH	43215		Y

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WELL: B&W EDGE MSH 5H
 QUAD: WHEELING, W.VA.-OHIO



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NOTE:
 THE PURPOSE OF THIS PLAT IS FOR THE LOCATION OF PROPOSED GAS
 WELLS AND DOES NOT REPRESENT A CLOSED BOUNDARY SURVEY.
 PROPERTY LINES AND OWNERS WERE OBTAINED FROM VARIOUS FIELD
 EVIDENCE, TAX RECORDS AND AERIAL MAPPING.

LEGEND

-  PROPOSED GAS WELL
-  PROPOSED BORE
-  EXTERNAL LEASE LINE

Applicant / Well Operator Name SWN PRODUCTION CO., LLC	Well(Farm) Name B&W EDGE MSH	Well # 5H	Serial #
Address PO BOX 1300 JANE LEW, WV 26378	County - Code MARSHALL - 051	District SAND HILL	
Surface Landowner / Lessor EDGE, WILLIAM F. JR. & BARBARA	USGS 71/2 Quadrangle Map Name WHEELING, W.VA.-OHIO		

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: 01/30/2015 **Date Permit Application Filed:** 4/30/15

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: Wheeling Power Company
Address: 1 Riverside PL
Columbus, OH 43215

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:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>531,795.5</u>
County:	<u>Marshall</u>		Northing:	<u>4,428,553.7</u>
District:	<u>Sand Hill</u>	Public Road Access:	<u>Walnut Grove Rd.</u>	
Quadrangle:	<u>Wheeling</u>	Generally used farm name:	_____	
Watershed:	<u>Upper Ohio South</u>			

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/page/default.aspx.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300
Jane Lew, WV 26378
Telephone: 1-304-884-1611
Email: micah_feather@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall
Address: PO Box 1300
Jane Lew, WV 26378
Telephone: 1-304-884-1614
Email: danielle_southall@swn.com
Facsimile: _____

Oil and Gas Privacy Notice:

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

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

4705

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: 01/30/2015 **Date Permit Application Filed:** 4/30/15

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: Edith Adell Folmar
Address: RR 6 Box 317
Wheeling, WV 26003

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 UTM NAD 83 Easting: 531,795.5
County: Marshall Northing: 4,428,553.7
District: Sand Hill Public Road Access: Walnut Grove Rd.
Quadrangle: Wheeling Generally used farm name: _____
Watershed: Upper Ohio South

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.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300
Jane Lew, WV 26378
Telephone: 1-304-884-1611
Email: micah_feather@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall
Address: _____
Telephone: _____
Email: _____
Facsimile: _____

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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.

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

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4/30/15

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: 01/30/2015 **Date Permit Application Filed:** 4/30/15

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: Mark A Schellhase ET UX
Address: 1886 Walnut Grove Rd
Wheeling, WV 26003

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 UTMNAD 83 Easting: 531,795.5
County: Marshall Northing: 4,428,553.7
District: Sand Hill Public Road Access: Walnut Grove Rd.
Quadrangle: Wheeling Generally used farm name: _____
Watershed: Upper Ohio South

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.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300
Jane Lew, WV 26378
Telephone: 1-304-884-1611
Email: micah_feather@swn.com
Facsimile: _____

Authorized Representative: _____
Address: _____
Telephone: _____
Email: _____
Facsimile: _____

RECEIVED
Office of Oil and Gas
MAY 01 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.

470510184

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: 01/30/2015 Date Permit Application Filed: 4/30/15

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: Barbara Ann & William F. Edge Jr ET AL Name: _____
Address: 1116 Virginia St Address: _____
Martins Ferry, OH 43935

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 UTM NAD 83 Easting: 531,795.5
County: Marshall Northing: 4,428,553.7
District: Sand Hill Public Road Access: Walnut Grove Rd.
Quadrangle: Wheeling Generally used farm name: _____
Watershed: Upper Ohio South

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.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC Authorized Representative: Danielle Southall
Address: PO Box 1300 Address: PO Box 1300
Jane Lew, WV 26378 Jane Lew, WV 26378
Telephone: 1-304-884-1611 Telephone: 1-304-884-1614
Email: micah_feather@swn.com Email: danielle_southall@swn.com
Facsimile: _____ Facsimile: _____

Oil and Gas Privacy Notice:

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

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WV Department of Environmental Protection

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

470576
MAY 1 2015

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

Date of Notice: 04/09/2015 **Date Permit Application Filed:** 4/30/15

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: <u>Barbara Ann & William F. Edge Jr ET AL</u>	Name: _____
Address: <u>1116 Virginia St</u>	Address: _____
<u>Martins Ferry, OH 43935</u>	_____

Notice is hereby given:

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

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>531,795.5</u>
County: <u>Marshall</u>	Northing: <u>4,428,553.7</u>
District: <u>Sand Hill</u>	Public Road Access: <u>Walnut Grove Rd.</u>
Quadrangle: <u>Wheeling</u>	Generally used farm name: _____
Watershed: <u>Upper Ohio South</u>	_____

This Notice Shall Include:

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

Well Operator: SWN Production Company, LLC

Telephone: 1-304-884-1611

Email: michal_feather@swn.com

Address: PO Box 1300

Jane Lew, WV 26378

Facsimile: _____

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Environmental Protection

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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)

4705701843
Operator Well No. B&W Edge MSH 5H

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: 04/09/2015 Date Permit Application Filed: 4/30/15

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: Edith Adell Folmar Address: RR 6 Box 317 Wheeling, WV 26003
Name: Address:
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 UTM NAD 83 Easting: 531,795.5
County: Marshall Northing: 4,428,553.7
District: Sand Hill Public Road Access: Walnut Grove Rd.
Quadrangle: Wheeling Generally used farm name:
Watershed: Upper Ohio South

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 Address: PO Box 1300
Telephone: 1-304-884-1611 Jane Lew, WV 26378
Email: micah_feather@swn.com Facsimile:

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Oil and Gas Privacy Notice:

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WV Department of Environmental Protection

WW-6A5
(1/12)

Operator Well No. B&W Edge MSH 5H
470510184

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: 04/09/2015 **Date Permit Application Filed:** 4/30/15

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: <u>Wheeling Power Company</u>	Name: _____
Address: <u>1 Riverside PL</u>	Address: _____
<u>Columbus, OH 43215</u>	

Notice is hereby given:

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

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>531,795.5</u>
County: <u>Marshall</u>	Northing: <u>4,428,553.7</u>
District: <u>Sand Hill</u>	Public Road Access: <u>Walnut Grove Rd.</u>
Quadrangle: <u>Wheeling</u>	Generally used farm name: _____
Watershed: <u>Upper Ohio South</u>	

This Notice Shall Include:

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

Well Operator: <u>SWN Production Company, LLC</u>	Address: <u>PO Box 1300</u>
Telephone: <u>1-304-884-1611</u>	<u>Jane Lew, WV 26378</u>
Email: <u>micah_feather@swn.com</u>	Facsimile: _____

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WV Department of
Environmental Protection

06/19/2015



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

4705107043

April 10, 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 B & W Edge Pad, Marshall County

B & W Edge MSH 5H

Dear Mr. Martin,

The West Virginia Division of Highways has assigned Permit #06-2015-0140 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Marshall County Route 5/1 SLS.

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.

Very Truly Yours,

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

Cc: Brittany Woody
Southwestern Energy
CH, OM, D-6
File

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WV Department of
Environmental Protection

06/19/2015

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

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
	Friction Reducer J609		Ammonium Sulfate	7783-20-2
Supplier Name	Product Name	Product Use	Chemical Name	CAS Number

WV Department of
Environmental Protection

06/19/2015

1705101043

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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Environmental Protection

06/19/2015

Legend
ShoemakerMineCAD20111003



MARSHALL

B & W Edge Pad

WEST VIRGINIA

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Office of Oil and Gas
MAY 01 2015
Environmental Protection
WV Department of

250 500 1,000 1,500 2,000
Feet

Coal / Marcellus South

B & W Edge Pad

Location	Approved
Date	1/20/15
Author	John Smith
Reviewer	John Smith

47051018

EROSION AND SEDIMENT CONTROL PLAN FOR

B&W EDGE MSH PAD

SAND HILL DISTRICT, MARSHALL COUNTY, WEST VIRGINIA



GENERAL NOTES

- THE BOUNDARY AND TOPOGRAPHIC SURVEY FOR THE PROJECT AREA WERE PERFORMED BY RETIEW ASSOCIATES IN AUGUST 2014.
- PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS DATA.
- EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
- THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
- THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88) WHICH ORIGINATES FROM FIELD RUN TOPOGRAPHIC SURVEY.
- A WETLANDS SURVEY WAS PERFORMED BY RETIEW ASSOCIATES IN AUGUST 2014.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING PRIOR TO CONSTRUCTION ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING ALL SAFETY REQUIREMENTS.
- SWN PRODUCTION CO., LLC RESERVES THE RIGHT TO ACCEPT OR REJECT ANY AND ALL BIDS AT ITS DISCRETION. ALL WORK WILL BE PERFORMED UPON AND SUBJECT TO THE TERMS AND CONDITIONS OF SWN PRODUCTION CO., LLC'S MASTER SERVICE AGREEMENT EXECUTED BETWEEN THE COMPANIES. THIS IS A LUMP SUM BID. SHOULD CONTRACTOR UNDERESTIMATE, CONTRACTOR SHALL PROVIDE ADDITIONAL LABOR AND MATERIALS TO COMPLETE THE WORK AT NO COST TO SWN PRODUCTION CO., LLC. ALL MEASUREMENTS ARE ESTIMATES GIVEN FOR PLANNING PURPOSES. CONTRACTOR IS RESPONSIBLE TO BID ON THE BASIS OF THE SITE PLAN DRAWINGS PROVIDED.
- THE CONSTRUCTION START DEADLINE IS BEING PROVIDED AS THE DATE SWN PRODUCTION CO., LLC MAY LOSE ITS RIGHTS TO COMMENCE WORK UNDER THIS BID AND DRILL THE PROPOSED WELL. IF THE WORK PROVIDED FOR UNDER THIS BID IS NOT TIMELY COMMENCED, BY SUBMITTING THIS BID, CONTRACTOR IS AGREEING TO COMMENCE THE WORK PRIOR TO THE DEADLINE PROVIDED HEREIN. FAILURE TO TIMELY COMMENCE THE WORK PROVIDED FOR HEREIN MAY CAUSE DAMAGES TO SWN PRODUCTION CO., LLC FOR WHICH CONTRACTOR SHALL BE HELD RESPONSIBLE.
- THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL PROJECT BONDING REQUIREMENTS WHEN CONSTRUCTING PUBLIC INFRASTRUCTURE. ALL PRIVATE CONSTRUCTION FOR SWN PRODUCTION CO., LLC SHALL INCLUDE A MINIMUM 1-YEAR WARRANTY OF PERFORMANCE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PREVENT ANY DAMAGE TO PRIVATE PROPERTY, PROVIDE ACCESS TO ALL DRIVES DURING CONSTRUCTION, NOTIFY UTILITY COMPANIES AND VERIFY LOCATION OF ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION, AND PROTECT ALL UTILITIES TO REMAIN IN SERVICE.
- BARRICADE AND TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). TRAFFIC FLOW AND ACCESS SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC SAFETY MEASURES FOR WORK ON THE PROJECT.
- THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS GOVERNING EXCAVATION. THE CONTRACTOR SHALL PROVIDE DETAILED PLANS AND SPECIFICATIONS FOR TRENCH SAFETY SYSTEMS THAT COMPLY WITH APPLICABLE LAWS GOVERNING EXCAVATION WHEN APPLICABLE TO THE PROJECT. THESE PLANS SHALL BE SEALED BY AN ENGINEER EXPERIENCED IN THE DESIGN OF TRENCH SAFETY SYSTEMS AND LICENSED BY THE STATE IN WHICH THE WORK IS OCCURRING. CONTRACTOR SHALL SUBMIT THE PLAN TO SWN PRODUCTION CO., LLC PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS FOR WORK RELATED TO EXCAVATION.
- ANY DAMAGES THAT MAY OCCUR TO PROPERTY OR EXISTING IMPROVEMENTS SHALL BE RESTORED BY THE CONTRACTOR TO AT LEAST THE SAME CONDITION THAT THE PROPERTY OR IMPROVEMENTS WERE IN PRIOR TO THE DAMAGES. IN THE EVENT OF SUCH DAMAGE, CONTRACTOR SHALL NOTIFY SWN PRODUCTION CO., LLC IMMEDIATELY PRIOR TO THE RESTORATION. THIS RESTORATION SHALL BE SUBJECT TO THE OWNER'S APPROVAL; HOWEVER, THIS RESTORATION SHALL NOT BE A BASIS FOR ADDITIONAL COMPENSATION TO THE CONTRACTOR.
- THE MAXIMUM ALLOWABLE SLOPE FOR EARTHEN AREAS IS 2-TO-1 HORIZONTAL-TO-VERTICAL.
- PRIOR TO FILL PLACEMENT, EXISTING SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6" MOISTURE ADJUSTED TO OPTIMUM, AND RE-COMPACTED TO THE SAME DENSITY AND MOISTURE CONTENT AS THE PROPOSED FILL.
- IMPORTED SELECT FILL IS DEFINED AS UNIFORMLY BLENDED SANDY CLAY TO CLAYEY SAND WITH A LIQUID LIMIT (LL) OF LESS THAN 35 PERCENT AND A PLASTICITY INDEX (PI) OF BETWEEN 6 AND 15. FILL MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES IN LOOSE THICKNESS.
- FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT MAXIMUM STANDARD PROCTOR DRY DENSITY (ASTM D 698). IN CONJUNCTION WITH THE COMPACTING OPERATION, FILL MATERIAL SHALL BE BROUGHT TO OPTIMUM MOISTURE CONTENT.
- STORM DRAINAGE PIPING SHALL BE CONSTRUCTED OF A MINIMUM OF CLASS III REINFORCED CONCRETE PIPE (RCP), CORRUGATED METAL PIPE (CMP), OR HIGH-DENSITY POLYETHYLENE (HDPE) PIPE. A MINIMUM OF 1.0' OR 1/2D OF COVER SHALL BE MAINTAINED WHEN USING CMP OR HDPE PIPE. MINIMUM CMP WALL THICKNESS SHALL BE 0.064" OR 16 GAUGE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE CONSTRUCTION SITE CLEAR OF ALL TRASH AND DEBRIS.
- PRIOR TO ANY EARTHWORK EXCAVATION OR TOPSOIL REMOVAL, ADEQUATE EROSION CONTROL MEASURES SHALL BE PROPERLY INSTALLED.
- THE CONTRACTOR SHALL INSPECT STABILIZATION AND EROSION CONTROL MEASURES AT A MINIMUM OF ONCE EVERY 7 DAYS OR WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES DURING CONSTRUCTION.
- SILT FENCE AND SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETELY ESTABLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS UNTIL PROJECT COMPLETION.
- DISTURBED AREAS THAT ARE SEEDED OR SODDED SHALL BE CHECKED PERIODICALLY TO SEE THAT GRASS COVERAGE IS PROPERLY MAINTAINED UNTIL THE CONTRACTOR IS RELEASED FROM THE JOB SITE. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RESEEDED OR RE-SODDED, IF NECESSARY.
- ALL FILL MATERIAL SHOULD BE FREE OF OBJECTIONABLE MATERIAL GREATER THAN 6".
- ALL ROCK FILL LIFTS SHALL BE NO GREATER THAN 36".



7.5 MIN. QUADRANGLE MAP: MOUNDSVILLE, WV, WHEELING, WV, MAJORSVILLE, WV-PA AND VALLEY GROVE, WV-PA
LOCATION MAP
SCALE = 1"=2000'

STAKING FLAG LEGEND

- TOP OF CUTS (YELLOW)
- GRADE AT TOP OF PAD/POND/PIT (YELLOW & ORANGE)
- TOES OF FILL (ORANGE)
- TOP HOLE LOCATION (PINK)
- VERTICAL CUT & FILL AT PAD/POND/PIT CORNER OR EDGE (PINK & BLACK STRIPE)
- LIMITS OF DISTURBANCE (BLUE & WHITE STRIPE)
- VERTICAL CUT & FILL AT CENTERLINE OR EDGE OF ACCESS DRIVE (ORANGE & BLACK STRIPE)
- EROSION & SEDIMENT CONTROL STRUCTURES (PINK & WHITE STRIPE)
- TOPSOIL STOCKPILE LOCATIONS (ORANGE & WHITE STRIPE)
- CENTERLINE OF DITCH & BOTTOM OF SEDIMENT TRAPS (BLUE)



OPERATOR

SWN PRODUCTION CO., LLC
PO BOX 1300
JANE LEW, WV 26378
(832) 796-1610

06/19/2015

LIMIT OF DISTURBANCE

- ROAD = 7.76 ACRES
PAD = 5.70 ACRES
TOTAL = 13.46 ACRES
- SCHELLHASE, MARK, ET UX. = 2.54 ACRES
FOLMAR, GWAIN R, ET UX. = 2.12 ACRES
WHEELING POWER COMPANY = 2.09 ACRES
EDGE, WILLIAM F. JR. & BARBARA
EDGE, DAVID WAYNE & EDGE, THERESA T. = 6.71 ACRES
TOTAL = 13.46 ACRES

SOILS CLASSIFICATION

- CsC: CHAGRIN SILT LOAM, 0 TO 3% SLOPES, PROTECTED (PREDOMINANTLY NON-HYDRIC)
- CmD: CULLEOKA-DORMONT COMPLEX, 15 TO 25% SLOPES
- DsD: DORMONT SILT LOAM, 15 TO 25% SLOPES
- DtE: DORMONT-CULLEOKA COMPLEX, 25 TO 35% SLOPES
- DsE: DORMONT-CULLEOKA COMPLEX, 35 TO 70% SLOPES, VERY STONY
- OmB: OMULGA SILT LOAM, 3 TO 8% SLOPES (PREDOMINANTLY NON-HYDRIC)
- OmC: OMULGA SILT LOAM, 8 TO 15% SLOPES (PREDOMINANTLY NON-HYDRIC)

CUT & FILL

	PAD SITE	DRIVE	SITE
CUT (SOIL)	+16,934 CY	+ 864 CY	+17,798 CY
10% COMPACTION (SOIL)	- 1,693 CY	- 86 CY	- 1,779 CY
CUT (GRAVEL)	+ 1,667 CY	+ 0 CY	+ 1,667 CY
CUT (ROCK)	+ 207 CY	+ 0 CY	+ 207 CY
15% SWELL (ROCK)	+ 31 CY	+ 0 CY	+ 31 CY
FILL	-10,335 CY	- 5,814 CY	-16,149 CY
NET	+ 6,811 CY	- 5,036 CY	= 1,775 CY
STONE	+ 4,005 CY	+ 2,769 CY	= 6,774 CY
TOPSOIL	+ 3,113 CY	+ 174 CY	= 3,287 CY

NOTES:

- THE TOP SOIL DEPTH FOR THE ACCESS DRIVE IS 1" (ASSUMED). THE TOP SOIL DEPTH FOR THE PAD IS 6".
- THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.
- FOR CUT/FILL CALCULATIONS, 16" OF STONE WAS USED AND FOR PLAN PURPOSES 14" WAS USED DUE TO STONE COMPACTION WHEN INSTALLED.

LIST OF DRAWINGS

- 1 OF 40 COVER SHEET & GENERAL NOTES
- 2 OF 40 OVERALL SITE PLAN
- 3 OF 40 ENLARGED LAYOUT PLAN
- 4 OF 40 ENLARGED LAYOUT PLAN
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- 15 OF 40 ACCESS DRIVE PROFILE
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- 33 OF 40 RECLAMATION PLAN
- 34 OF 40 RECLAMATION PLAN
- 35 OF 40 RECLAMATION PLAN
- 36 OF 40 RECLAMATION PLAN
- 37 OF 40 EVACUATION ROUTE PLAN
- 38 OF 40 EVACUATION ROUTE PLAN - USGS
- 39 OF 40 E&S NOTES & DETAILS
- 40 OF 40 E&S DETAILS

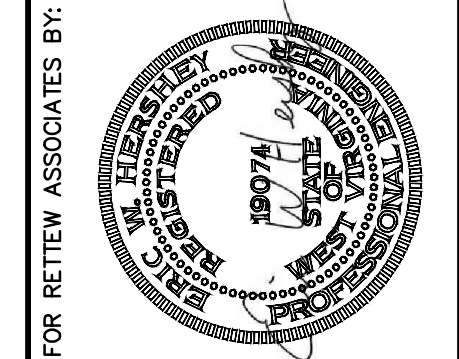


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Miss Utility of West Virginia

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-245-4848.

DATE: 08/06/2014 TICKET# 1421854952

NO.	DATE	REVISION



FOR RETIEW ASSOCIATES BY:	DESIGN BY: MEB	CHKD BY: MEB	DATE: 6/16/2015
MANAGER: PCD	DRWN BY: MEB	CHKD BY: MEB	DATE: 6/16/2015
	SURV. CHIEF:	FELDBOOK NO.:	DATA COLLECTOR:

CLIENT: SWN PRODUCTION CO., LLC
PO BOX 1300
JANE LEW, WV 26378
(832) 796-1610

RETIEW ASSOCIATES, INC.
One Robinson Plaza, 600 Steubenville Pike, Suite 200
Pittsburgh, PA 15205-1738 • Fax (412) 446-1733
Email: retiew@retiew.com
Website: www.retiew.com

Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

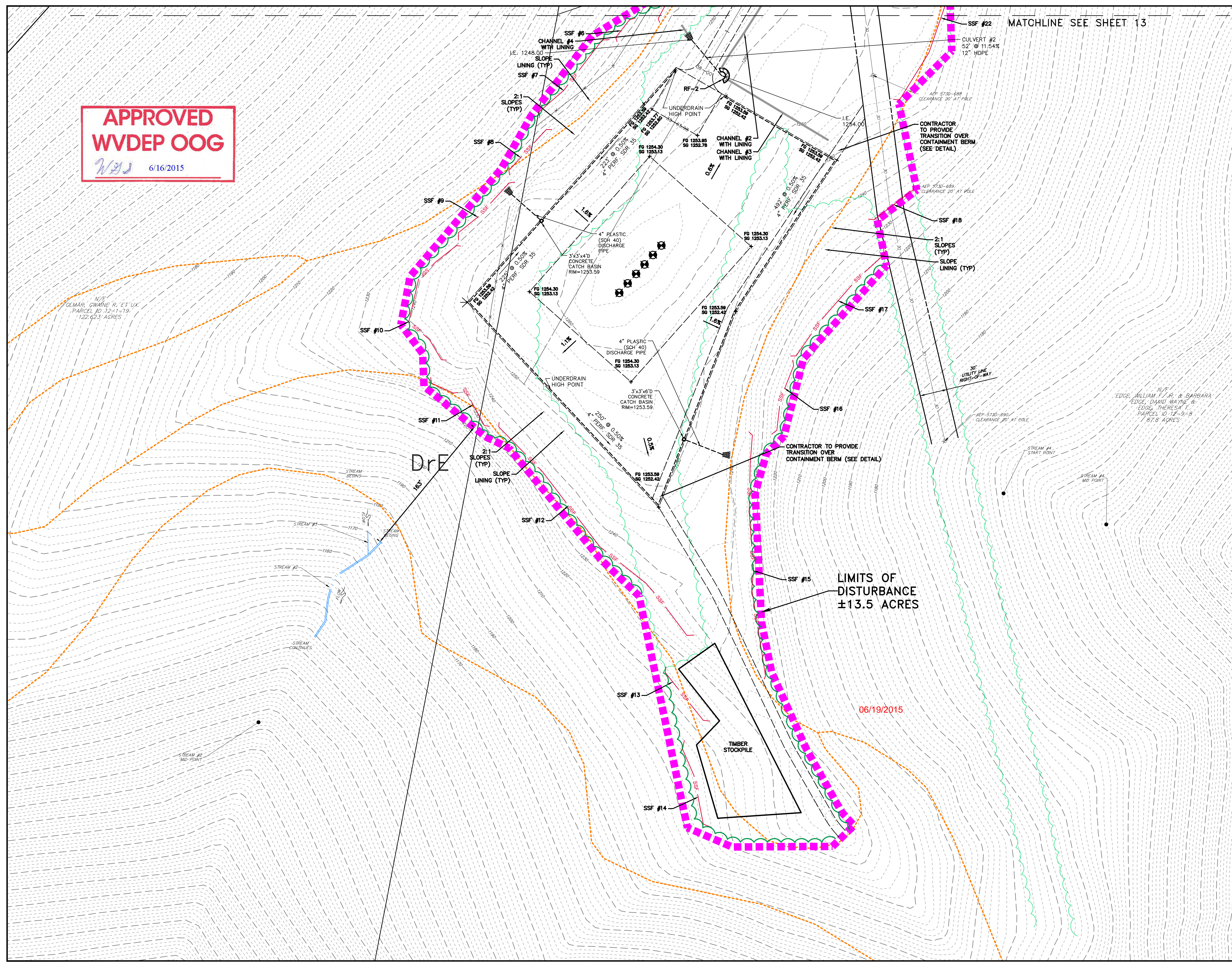
COVER SHEET & GENERAL NOTES FOR B&W EDGE MSH PAD
SAND HILL DISTRICT MARSHALL COUNTY, WV

DATE:	06/15/2015
SHEET NO.	1 OF 40
DWG. NO.	087569005

NOT FOR CONSTRUCTION/NOT FOR BIDDING

APPROVED
WV DEP OOG
WJS 6/16/2015

MATCHLINE SEE SHEET 13



LEGEND

EXISTING PROPERTY LINE	---
EXISTING FARM LANE	---
PROPOSED SUPER SILT FENCE	SSF
PROPOSED GRAVEL	---
EXISTING PAVEMENT	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
EXISTING CONTOUR LINE	---
PROPOSED MAJOR CONTOUR LINE	---
PROPOSED MINOR CONTOUR LINE	---
LIMITS OF DISTURBANCE	---
PROPOSED CONTAINMENT BERM	---
ROCK CONSTRUCTION ENTRANCE	---
SLOPE LINING	---
PROPOSED TOE BENCH	---
PROPOSED CHECK DAM	---
CHANNEL LINING	---
SOIL TYPE BOUNDARY LINE	---
SOIL TYPE DESIGNATION	WhB
PROPOSED WELL HEAD	---
EXISTING WETLAND	---
EXISTING STREAM	---
EXISTING UTILITY POLE	---
EXISTING OVERHEAD ELECTRIC LINE	---
POSSIBLE INDIANA BAT TREE	---
EXISTING GAS LINE	---
EXISTING UTILITY RIGHT-OF-WAY	---
PROPOSED CONSTRUCTION FENCE	---
PROPOSED FENCE (TO BE INSTALLED BY OTHERS)	---
PROPOSED FINISHED GRADE ELEVATION	FG 1172.81
PROPOSED SUBSURFACE GRADE ELEVATION	SG 1171.81



- NOTES:**
- CONTRACTOR SHALL FIELD LOCATE ALL PROPERTY LINES, AND SHALL NOT CROSS EXCEPT WHERE SHOWN.
 - REFER TO SHEET 39 AND 40 FOR EROSION CONTROLS.
 - CONTRACTOR SHALL PROTECT ALL TREES TO REMAIN.

FOR REVIEW ASSOCIATES BY: WRES-087569005-1B-224-24
087569005-1B-224-24
087569005-1B-224-24
087569005-1B-224-24

NO. DATE REVISION

MANAGER: PCD
DESIGN BY: MEB
DRAWN BY: MEB
SURV. CHIEF: MEB

CHKD BY: PCD
CHKD BY: PCD
FIELDBOOK NO.:
DATA COLLECTOR:

CLIENT: SWM PRODUCTION CO., LLC
P.O. BOX 1300
JANE LEW, WV 26378
(832) 796-1610

SCALE: 1"=50'
0' 25' 50' 100' 150'

RETTEW
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

RETTEW Associates, Inc.
One Robinson Plaza, 6600 Steubenville Pike, Suite 200
Pittsburgh, PA 15205 • Fax (412) 446-1733
Email: rettelaw@rettelaw.com
Website: www.rettew.com

WV DEP - E&S PLAN FOR B&W EDGE MSH PAD

DATE: 06/15/2015
SHEET NO. 14 OF 40
DWG. NO. 087569005

SAND HILL DISTRICT MARSHALL COUNTY, WV

NOT FOR CONSTRUCTION/NOT FOR BIDDING

NT CONTROL PLAN

MSH PAD L COUNTY, WEST VIRGINIA

4705101845



SOILS CLASSIFICATION

- CmD:** CHAGRIN SILT LOAM, 0 TO 3% SLOPES, PROTECTED (PREDOMINANTLY NON-HYDRIC)
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- DmE:** DORMONT-CULLEOKA COMPLEX, 35 TO 70% SLOPES, VERY STONY
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- DmC:** OMULGA SILT LOAM, 8 TO 15% SLOPES (PREDOMINANTLY NON-HYDRIC)

CUT & FILL

	PAD SITE	DRIVE	SITE
CUT (SOIL)	+10,444 CY	+ 916 CY	+17,360 CY
10% COMPACTION (SOIL)	- 1,644 CY	- 92 CY	- 1,736 CY
CUT (GRAVEL)	+ 1,560 CY	+ 0 CY	+ 1,560 CY
CUT (ROCK)	+ 170 CY	+ 0 CY	+ 170 CY
15% SWELL (ROCK)	+ 26 CY	+ 0 CY	+ 26 CY
FILL	-11,568 CY	- 5,842 CY	-17,210 CY
NET	+ 5,168 CY	- 5,018 CY	= 170 CY
STONE	+ 3,433 CY	+ 2,305 CY	= 5,738 CY
TOPSOIL	+ 3,113 CY	+ 174 CY	= 3,287 CY

NOTES:

1. THE TOP SOIL DEPTH FOR THE ACCESS DRIVE IS 1' (ASSUMED). THE TOP SOIL DEPTH FOR THE PAD IS 6".
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LIST OF DRAWINGS

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DATE: 02/02/2014 TICKET# 14218549252



MANAGER:	DESIGN BY:	CHKD BY:	DRWN BY:	SURV. CHIEF:	FIELDBOOK NO.
PCD	MEB	PCD	MEB		
					DATA COLLECTOR

CLIENT
SWN PRODUCTION CO., LLC
 PO BOX 1300
 JANE LEW, WV 26378
 (832) 796-1610

SCALE

RETTEW
 RETTEW Associates, Inc.
 One Robinson Plaza, 6600 Steadenville Pk., Suite 200
 Pittsburgh, PA 15220-1728 • Fax (412) 440-1733
 Email: rettew@rettew.com
 Website: www.rettew.com
 Engineers • Planners • Surveyors • Landscape Architects
 Environmental Consultants

COVER SHEET & GENERAL NOTES
 FOR
B&W EDGE MSH PAD
 SAND HILL DISTRICT MARSHALL COUNTY, WV

DATE:	03/02/2015
SHEET NO.	1 OF 40

DATE: 06/19/2015

EROSION AND SEDIMENT FOR B&W EDGE SAND HILL DISTRICT, MARSHALL

GENERAL NOTES

1. THE BOUNDARY AND TOPOGRAPHIC SURVEY FOR THE PROJECT AREA WERE PERFORMED BY RETIEW ASSOCIATES IN AUGUST 2014.
2. PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS DATA.
3. EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88) WHICH ORIGINATES FROM FIELD RUN TOPOGRAPHIC SURVEY.
6. A WETLANDS SURVEY WAS PERFORMED BY RETIEW ASSOCIATES IN AUGUST 2014.
7. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING PRIOR TO CONSTRUCTION ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING ALL SAFETY REQUIREMENTS.
9. SWN PRODUCTION CO., LLC RESERVES THE RIGHT TO ACCEPT OR REJECT ANY AND ALL BIDS AT ITS DISCRETION. ALL WORK WILL BE PERFORMED UPON AND SUBJECT TO THE TERMS AND CONDITIONS OF SWN PRODUCTION CO., LLC'S MASTER SERVICE AGREEMENT EXECUTED BETWEEN THE COMPANIES. THIS IS A LUMP SUM BID. SHOULD CONTRACTOR UNDERESTIMATE, CONTRACTOR SHALL PROVIDE ADDITIONAL LABOR AND MATERIALS TO COMPLETE THE WORK AT NO COST TO SWN PRODUCTION CO., LLC. ALL MEASUREMENTS ARE ESTIMATES GIVEN FOR PLANNING PURPOSES. CONTRACTOR IS RESPONSIBLE TO BID ON THE BASIS OF THE SITE PLAN DRAWINGS PROVIDED.
10. THE CONSTRUCTION START DEADLINE IS BEING PROVIDED AS THE DATE SWN PRODUCTION CO., LLC MAY LOSE ITS RIGHTS TO COMMENCE WORK UNDER THIS BID AND DRILL THE PROPOSED WELL. IF THE WORK PROVIDED FOR UNDER THIS BID IS NOT TIMELY COMMENCED, BY SUBMITTING THIS BID, CONTRACTOR IS AGREEING TO COMMENCE THE WORK PRIOR TO THE DEADLINE PROVIDED HEREIN. FAILURE TO TIMELY COMMENCE THE WORK PROVIDED FOR HEREIN MAY CAUSE DAMAGES TO SWN PRODUCTION CO., LLC FOR WHICH CONTRACTOR SHALL BE HELD RESPONSIBLE.
11. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL PROJECT BONDING REQUIREMENTS WHEN CONSTRUCTING PUBLIC INFRASTRUCTURE. ALL PRIVATE CONSTRUCTION FOR SWN PRODUCTION CO., LLC SHALL INCLUDE A MINIMUM 1-YEAR WARRANTY OF PERFORMANCE.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PREVENT ANY DAMAGE TO PRIVATE PROPERTY, PROVIDE ACCESS TO ALL DRIVES DURING CONSTRUCTION, NOTIFY UTILITY COMPANIES AND VERIFY LOCATION OF ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION, AND PROTECT ALL UTILITIES TO REMAIN IN SERVICE.
13. BARRICADING AND TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). TRAFFIC FLOW AND ACCESS SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC SAFETY MEASURES FOR WORK ON THE PROJECT.
14. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS GOVERNING EXCAVATION. THE CONTRACTOR SHALL PROVIDE DETAILED PLANS AND SPECIFICATIONS FOR TRENCH SAFETY SYSTEMS THAT COMPLY WITH APPLICABLE LAWS GOVERNING EXCAVATION WHEN APPLICABLE TO THE PROJECT. THESE PLANS SHALL BE SEALED BY AN ENGINEER EXPERIENCED IN THE DESIGN OF TRENCH SAFETY SYSTEMS AND LICENSED BY THE STATE IN WHICH THE WORK IS OCCURRING. CONTRACTOR SHALL SUBMIT THE PLAN TO SWN PRODUCTION CO., LLC PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS FOR WORK RELATED TO EXCAVATION.
15. ANY DAMAGES THAT MAY OCCUR TO PROPERTY OR EXISTING IMPROVEMENTS SHALL BE RESTORED BY THE CONTRACTOR TO AT LEAST THE SAME CONDITION THAT THE PROPERTY OR IMPROVEMENTS WERE IN PRIOR TO THE DAMAGES. IN THE EVENT OF SUCH DAMAGE, CONTRACTOR SHALL NOTIFY SWN PRODUCTION CO., LLC IMMEDIATELY PRIOR TO THE RESTORATION. THIS RESTORATION SHALL BE SUBJECT TO THE OWNER'S APPROVAL. MOREOVER, THIS RESTORATION SHALL NOT BE A BASIS FOR ADDITIONAL COMPENSATION TO THE CONTRACTOR.
16. THE MAXIMUM ALLOWABLE SLOPE FOR EARTHEN AREAS IS 3-TO-1 HORIZONTAL-TO-VERTICAL, UNLESS SPECIFIED OTHERWISE IN A SITE-SPECIFIC GEOTECHNICAL REPORT.
17. PRIOR TO FILL PLACEMENT, EXISTING SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6", MOISTURE ADJUSTED TO OPTIMUM, AND RE-COMPACTED TO THE SAME DENSITY AND MOISTURE CONTENT AS THE PROPOSED FILL.
18. IMPORTED SELECT FILL IS DEFINED AS UNIFORMLY BLENDED SANDY CLAY TO CLAYEY SAND WITH A LIQUID LIMIT (LL) OF LESS THEN 35 PERCENT AND A PLASTICITY INDEX (PI) OF BETWEEN 6 AND 16. FILL MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES IN LOOSE THICKNESS.
19. FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT MAXIMUM STANDARD PROCTOR DRY DENSITY (ASTM D 698) IN CONJUNCTION WITH THE COMPACTING OPERATION. FILL MATERIAL SHALL BE BROUGHT TO OPTIMUM MOISTURE CONTENT.
20. STORM DRAINAGE PIPING SHALL BE CONSTRUCTED OF A MINIMUM OF CLASS II REINFORCED CONCRETE PIPE (RCP), CORRUGATED METAL PIPE (CMP), OR HIGH-DENSITY POLYETHYLENE (HDPE) PIPE. A MINIMUM OF 1.0' OR 1/20 OF COVER SHALL BE MAINTAINED WHEN USING CMP OR HDPE PIPE. MINIMUM CMP WALL THICKNESS SHALL BE 0.084" OR 16 GAUGE.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE CONSTRUCTION SITE CLEAR OF ALL TRASH AND DEBRIS.
22. PRIOR TO ANY EARTHWORK EXCAVATION OR TOPSOIL REMOVAL, ADEQUATE EROSION CONTROL MEASURES SHALL BE PROPERLY INSTALLED.
23. THE CONTRACTOR SHALL INSPECT STABILIZATION AND EROSION CONTROL MEASURES AT A MINIMUM OF ONCE EVERY 7 DAYS OR WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES DURING CONSTRUCTION.
24. SILT FENCE AND SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETELY ESTABLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS UNTIL PROJECT COMPLETION.
25. DISTURBED AREAS THAT ARE SEEDED OR SOODED SHALL BE CHECKED PERIODICALLY TO SEE THAT GRASS COVERAGE IS PROPERLY MAINTAINED UNTIL THE CONTRACTOR IS RELEASED FROM THE JOB SITE. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RESEEDED OR RE-SOODED, IF NECESSARY.



7.5 MIN. QUADRANGLE MAP: MOUNDSVILLE, WV, WHEELING, MAJORSVILLE, WV-PA AND VA

LOCATION MAP
SCALE - 1"=200'

STAKING FLAG LEGEND

TOP OF CUTS (YELLOW)	
GRADE AT TOP OF PAD/POND/PIT (YELLOW & ORANGE)	
TIES OF FILL (ORANGE)	
TOP HOLE LOCATION (PINK)	
VERTICAL CUT & FILL AT PAD/POND/PIT CORNER OR EDGE (PINK & BLACK STRIPE)	
LIMITS OF DISTURBANCE (BLUE & WHITE STRIPE)	
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TOPSOIL STOCKPILE LOCATIONS (ORANGE & WHITE STRIPE)	
CENTERLINE OF DITCH & BOTTOM OF SEDIMENT TRAPS (BLUE)	

swn
Southwestern Energy

06/19/2015

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Office of Oil and Gas

MAY 01 2015

WV Department of
Environmental Protection

06/19/2015