



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

PERMIT MODIFICATION APPROVAL

May 19, 2011

NORTHEAST NATURAL ENERGY LLC
707 VIRGINIA STREET EAST, SUITE 1400
CHARLESTON, WV 25301

Re: Permit Modification Approval for API Number 6101624 , Well #: MIP 6H
Modified Permit for Closed Loop and attached Provisions Agreed Upon with MUB

Oil and Gas Operator:

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

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

Sincerely,

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

61-01624H
JWD



May 17, 2011

WV DEP, Office of Oil and Gas
Attn: Laura Adkins
601 57th Street SE
Charleston, WV 25304

RE: Revised WW-9 and Attachments

Dear Ms. Adkins:

We wish to modify permit numbers 47-061-01622 and 47-061-01624 due to operational changes, specifically the decision to utilize a closed loop drilling process for both the air drilled and fluid drilled portions of the above referenced wells. An earthen pit will still be located on the well pad and utilized in the event of an incident that would require a secondary containment structure. Please find enclosed revised WW-9 Forms as well as their Attachments for both permits referenced above. Please feel free to contact me with any questions at bloflin@nne-llc.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brett Loflin', is written over the typed name.

Brett Loflin
Vice President - Regulatory

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Northeast Natural Energy LLC OP Code 494498281

Watershed Dunkard Quadrangle Morgantown South

Elevation 1130' County Monongalia District Grant

Description of anticipated Pit Waste: No anticipated Pit Waste. Pit will only be utilized for secondary containment purposes.

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

Will a synthetic liner be used in the pit? Yes . If so, what mil.? 20 mil drilling pit, 30 mil flow back

Proposed Disposal Method For Treated Pit Wastes:

- Land Application - No Flowback to be land applied
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain See attachment A)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air- vertical section, KCL polymer mud for the horizontal
-If oil based, what type? Synthetic, petroleum, etc.

Additives to be used? Xanthum gum polymer, NaCl, KCl, Aldehyde (Biocide)

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? Short Creek Landfill, Permit # SWF-1034/WV0109517

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 *Brett Loflin*

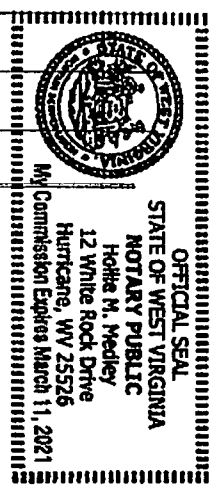
Company Official (Typed Name) Brett Loflin

Company Official Title Vice President, Regulatory Affairs

Subscribed and sworn before me this 17th day of MAY, 20 11

Hollis M Medley Notary Public

My commission expires 3-11-2021



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Attachment A to WW-9

Initial plans are to drill two horizontal wells Marcellus Shale wells on the same pad; the Morgantown Industrial Park #4H (MIP#4H) and the Morgantown Industrial Park #6H (MIP #6H). If successful, four more horizontal Marcellus wells will be drilled from the existing pad. The cuttings from the MIP #4H will be treated and solidified for removal and transport to the landfill listed on the WW-9. The drill cuttings from the MIP #6H will also be treated and solidified for removal and transport to the landfill. Some flow-back fluids from the completion operations on the MIP #4H may be treated and re-used in the MIP# 6H. Drilling fluids will be recycled/re-used in the drilling of subsequent wells. A closed loop system will be used for both the air portion and the fluid portion of the drilling process of both the MIP #4H and the MIP #6H.



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May 18, 2011

Timothy L. Ball, General Manager
Morganton Utility Board
PO Box 852
278 Green Bag Road
Morgantown, WV 26507-0852

Dear Tim,

We appreciate having had the opportunity to meet with you at the Morgantown Industrial Park site where Northeast Natural Energy LLC ("NNE") is preparing to drill two horizontal Marcellus wells. I am sure you gathered from our discussions that NNE is committed to protecting the groundwater and surface waters of the State of West Virginia. The protective measures NNE routinely incorporates in its operations design are best management practices required by state laws and regulations including the West Virginia Department of Environmental Protection. NNE appreciates the input and suggestions of Morgantown Utility Board, and we believe that our agreements have evidenced NNE's dedication to operating in a safe and environmentally sound manner. Toward that end, the following provides details of some of the practices NNE will employ in its drilling of the Morgantown Industrial Park site.

Spill Containment – Drilling operations:

1. NNE will utilize a closed loop system during fluid drilling operations for maximum control of drilling fluid / mud.
2. An interior containment structure will surround the drilling equipment to provide primary containment during the drilling operation. The structure will be a silt sock or similar item. A liner will be provided to cover the area defined by the sock, and will wrap from the floor of the confined area over the sock to create an impermeable barrier. The liner will divert any captured liquid to the lined waste pit. All liner will be fused to create a single continuous barrier.
3. The permanent earthen berm around the well pad will provide a third level of containment.
4. The area where the access road meets the containment structures will be designed in a manner that will prevent the flow of any spilled materials from leaving the containment area.
5. The volume of the lined waste pit will exceed the entire combined maximum volume of drilling fluids and tailings/mud present on site at any time.

Spill Containment – Fracking operations:

1. The well pad liner will be expanded to cover the entire area encompassed by the earthen berm at the perimeter of the well pad, including the sumps located at

each corner. The liner will divert any captured liquid to the lined waste pit. All liner will be fused to create a single continuous barrier.

2. The area where the access road meets the containment structures will be designed in a manner that will prevent the flow of any spilled materials from leaving the containment area.
3. The perimeter of the well pad will be protected by a 2.5 ft. berm completely surrounding the 300 ft. X 600 ft. well pad. If the combined volume of all fluids on site at any time exceeds 2.5 million gallons, the containment area defined by the berm will be enlarged proportionally.

Spill Prevention – Fracking operations:

1. NNE will utilize a closed loop system for maximum control of fracking fluid.
2. A second automatically activated Blow Out Preventer (BOP) will be provided to maximize control of fracking fluids.
3. One manually operated isolation valve will be installed to provide additional redundancy for control of fluids from the main stem of the wellhead.

Well Integrity:

1. NNE corrected MUB regarding the maximum allowable pressure of the three non-production casings, which are not designed to withstand fracking pressure.
2. NNE will encase (with cement/grout) the full length of the production casing
3. NNE will confirm the integrity of the production casing by an attenuation test which will verify proper adherence of the casing cement/grout to the steel casing pipe. The surface casing and intermediate casing strings will be tested utilizing a hydrostatic pressure test to a pressure that is 10% greater than hydrostatic pressure or 10% greater than the anticipated pressure on that casing. The full vertical length of each casing will be so tested. All such testing will be conducted prior to the fracking process, and results thereof recorded. Fracking will not begin unless/until acceptable test results are achieved.
4. Each batch of casing cement/grout will be sampled and tested for appropriate strength. Fracking will not begin until acceptable strength test results are obtained.
5. NNE will ensure that non-production casings are not subjected to fracking pressures by observing pressure in the annular spaces and aborting fracking if pressure increases in the annular spaces are observed. In such cases, the breach of the production casing will be located and repaired before fracking resumes.
6. NNE will hydrostatically test the production casing to a pressure of 10,000 psi which far exceeds the hydraulic fracturing pressure that will be employed. The full vertical length of the casing will be so tested. All such hydrostatic testing will be conducted prior to the fracking process, and results thereof recorded. Fracking will not begin unless/until acceptable test results are achieved.
7. Similarly, NNE will hydrostatically test the production casing after fracking has been completed (prior to placing the well into production). Testing pressure will be at least as high as the expected operating pressure. The full vertical length of the casing will be so tested, and results thereof recorded. Any breach of the

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production casing will be located and repaired as quickly as possible, and before production begins. Production will not begin unless/until acceptable test results are achieved.

8. Casing pipe which extends through a void area (such as a mined "room"), will be specially grouted at the points where they enter and exit the voided strata in a manner that meets the requirements of WV Code §22-6-20.

Waste Disposal:

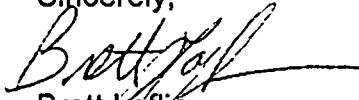
1. NNE will dispose of all drilling residuals and fracking fluids off site at appropriate land fill and/or injection well.
2. NNE will utilize manifest procedures to document such off- site disposal. The manifests will record the complete chain of custody from the retrieval at the well site to the ultimate disposal location, for all volumes/units of waste generated and removed from the site.

Miscellaneous:

1. Drill cuttings / fluid will NOT be mixed with fracking fluids.
2. Drilling fluids will be water based.

As we discussed, you have an open invitation to make return visits to the site so that you may observe the work, but we ask that you arrange a time with us in advance. NNE will provide any records of a public nature, but may be restricted in providing information of a proprietary nature, but in any event will disclose any relevant test results directly to you as representative of the Morgantown Utility Board.

Sincerely,



Brett Loflin

Vice President, Regulatory Affairs
Voice: 304.414.7063
Email: bloflin@nne-llc.com