

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

September 22, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-3305826, issued to CNX GAS 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: KST3CHS

Farm Name: DALLAS, WILLIAM R. & EDITH J

API Well Number: 47-3305826

Permit Type: Horizontal 6A Well

Date Issued: 09/22/2014

API Number: 33-05826

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. <u>Failure to adhere to the specified permit conditions may result in enforcement action.</u>

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.

WW-6B (9/13)

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

| | | | - | | | |
|--|--|--|----------------------|------------------|-------------|----------------|
| 1) Well Operator: C | NX Gas Con | npany LLC | 494458046 | Harrison | Union | West Milford |
| | | | Operator ID | County | District | Quadrangle |
| 2) Operator's Well N | umber: KST30 | CHS | Well P | ad Name: KST | 3HS | |
| 3) Farm Name/Surfac | ce Owner: Wi | lliam & Edith | Dallas Public Ro | ad Access: Co | . Rt. 19/18 | |
| 4) Elevation, current | ground: 122 | 20' E | Elevation, proposed | l post-construct | ion: 1220 | |
| 5) Well Type (a) G Other | | Oil | Un | derground Stora | ige | |
| (b)If | Gas Shallov | W | Deep | | | |
| | Horizo | ntal 🔳 | | | | SDW GIGIZON |
| 6) Existing Pad: Yes | The Contract of the Contract o | | | - | | |
| 7) Proposed Target Fo | | the second second second second second | | and Associated | Pressure(s |): |
| Target - Marcellus, I | Jeptn - 7005°, 11 | nickness - 95', | Pressure - 2500# | | | |
| 8) Proposed Total Ve | rtical Depth: | 7135' | | | | |
| 9) Formation at Total | Vertical Dept | h: Oriskany | Sand | | | |
| 10) Proposed Total M | leasured Deptl | n: 17064' | | | | |
| 11) Proposed Horizon | ntal Leg Lengt | h: 9170' | | | | |
| 12) Approximate Free | sh Water Strat | a Depths: | 40',881' | | | |
| 13) Method to Determ | nine Fresh Wa | ter Depths: | Offset Well Informa | tion | | |
| 14) Approximate Salt | water Depths: | 1490', 1750 |)' | | | |
| 15) Approximate Coa | l Seam Depth | s; 881' | | | | |
| 16) Approximate Dep | oth to Possible | Void (coal m | nine, karst, other): | None Anticipate | d | / |
| 17) Does Proposed w directly overlying or | | | Yes | N | o 🗸 | |
| (a) If Yes, provide I | Mine Info: N | ame: | | | | |
| | D | epth: | | | | ECEIVED |
| | S | eam: | | | Office | of Oil and Gas |
| | O | wner: | | | ال | 1 1 2014 |
| | | | | | | |

WW-6B (9/13)

18)

CASING AND TUBING PROGRAM

| TYPE | Size | New or Used | Grade | Weight per ft. (lb/ft) | FOOTAGE: For Drilling | INTERVALS: Left in Well | CEMENT: Fill-up (Cu. Ft.) |
|--------------|---------|-------------------|-------|------------------------|-----------------------|----------------------------|---|
| Conductor | 20" | N | J-55 | 94# | 100' | 100' | Grout to auction of Diless A type commit |
| Fresh Water | 13 3/8" | N | J-55 | 54.5# | 940' | 940' | CTS w/ Class A Type Cement |
| Coal | | | - | | | | |
| Intermediate | 9 5/8" | N | J-55 | 36# | 1820' | 1820' | CTS w/ Class A Type Cement |
| Production | 5 1/2" | N | P-110 | 20# | 17064' | 17064' | 2200 cu. ft. w/ fk/lio POZ Lead & Class / |
| Tubing | 2 3/8" | N | J-55 | 4.7# | 7500' | 7500' | |
| Liners | | | | | N | | |

SDW 611612014

| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield (cu. ft./k) |
|--------------|---------|----------------------|-------------------|----------------|--------------|-----------------------------|
| Conductor | 20" | 26" | 0.438 | 2110 | Class A Type | 1.18 |
| Fresh Water | 13 3/8" | 17 1/2" | 0.380 | 2730 | Class A Type | 1.39 |
| Coal | | | | | | |
| Intermediate | 9 5/8" | 12 1/4" | 0.352 | 3520 | Class A Type | 1.18 |
| Production | 5 1/2" | 8 3/4" & 8 1/2" | 0.361 | 12640 | Class A Type | 1.26 |
| Tubing | 2 3/8" | 5 1/2" Csg | 0.190 | 7700 | | nerenne |
| Liners | | | | | | |

PACKERS

| Kind: | None | |
|-------------|------|--------------------------------|
| Sizes: | None | |
| Depths Set: | None | RECEIVED Office of Oil and Gae |

JUL 1 1 2014

WW-6B (9/13)

*Note: Attach additional sheets as needed.

| | 19) Describe proposed well work, including the drilling and plugging back of any pilot hole: |
|---|--|
| / | Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 17064'. Well to be drilled to a TVD of 7135', formation at TVD - Oriskany Sand. Well will be plugged back to an approximate depth of 6800' (approximate due to exact kick off point being unknown). Plugging back will be done using the displacement method and Class A Type cement. A solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement. There will not be any production, perforation, or stimulation of any formations below the target formation. |
| | 20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate: |
| | The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. Max Pressure - 9500 psi. Max Rate - 100 bbl/min. |
| | 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.2 Acres |
| | 22) Area to be disturbed for well pad only, less access road (acres): 18.9 Acres |
| | 23) Describe centralizer placement for each casing string: |
| | Conductor - No centralizers used. Fresh Water & Coal - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. Intermediate - Bow spring centralizers one on the first two joints and every forth joint until inside surface casing. Production - Rigid spiral centralizer on first joint then every casing joint (free floating) through the lateral. Every other joint though the curve/vertical (Note: cementing the 5 1/2" casing completely in lateral, curve, and into the intermediate casing.) |
| / | 24) Describe all cement additives associated with each cement type: |
| J | Conductor - 2% CaCl2. Fresh Water/Coal - 2% CaCl2. Intermediate - 2% CaCl2. Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer |
| | 25) Proposed borehole conditioning procedures: |
| | Conductor - The hole is drilled w/ air and casing ran in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Coal - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. Intermediate via phole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared from the prior to cementing. (Note: Drilling soap may be utilized if the hole gets wet/damp during the drilling of all air holes with the exception of the conductor). Production - The hole will be drilled with synthetic oil base mud and once at TD the hole is circulated at a drilling pump rate until the hole is clean. Once casing is ran the hole is circulated for a minimum of one hole volume prior to pumping cement. |

Cement Additives



- Conductor 2% CaCl2
- Freshwater/Coal 2% CaCl2
- Intermediate 2% CaCI2
- Production
 - o 2.6% Cement extender
 - o 0.7% Fluid Loss Additive
 - o 0.5% High Temperature Retarder
 - o 0.2% Friction Reducer

RECEIVED
Office of Oil and Gas

JUL 1 1 2014

API Number 47 - 033 OS 82.6
Operator's Well No. KST3CHS

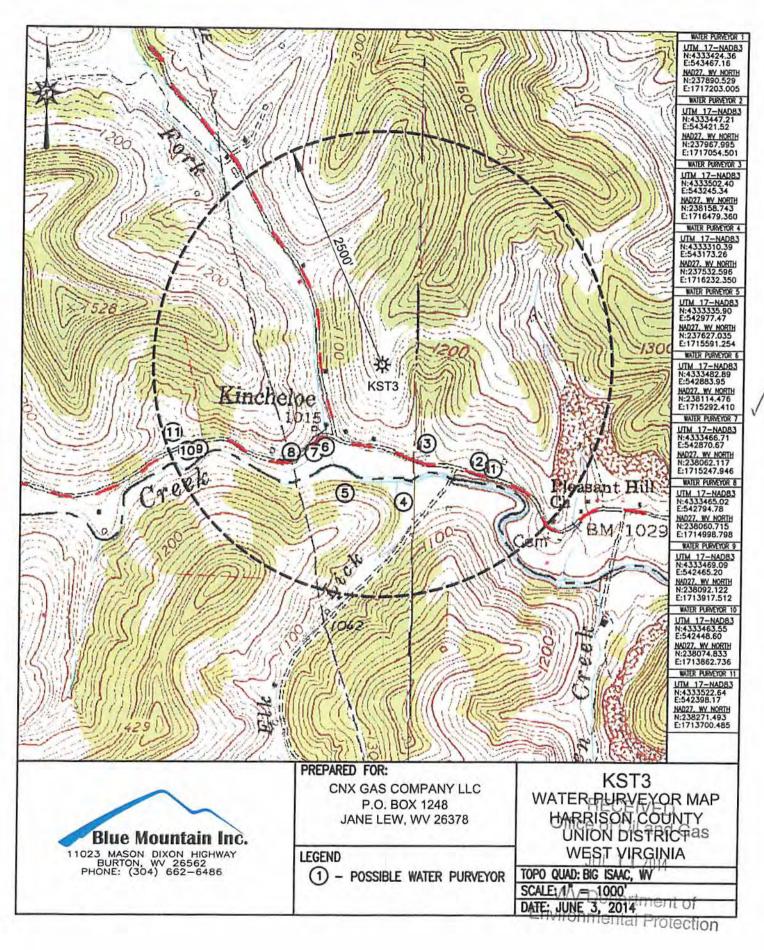
STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OFFICE OF OIL AND GAS

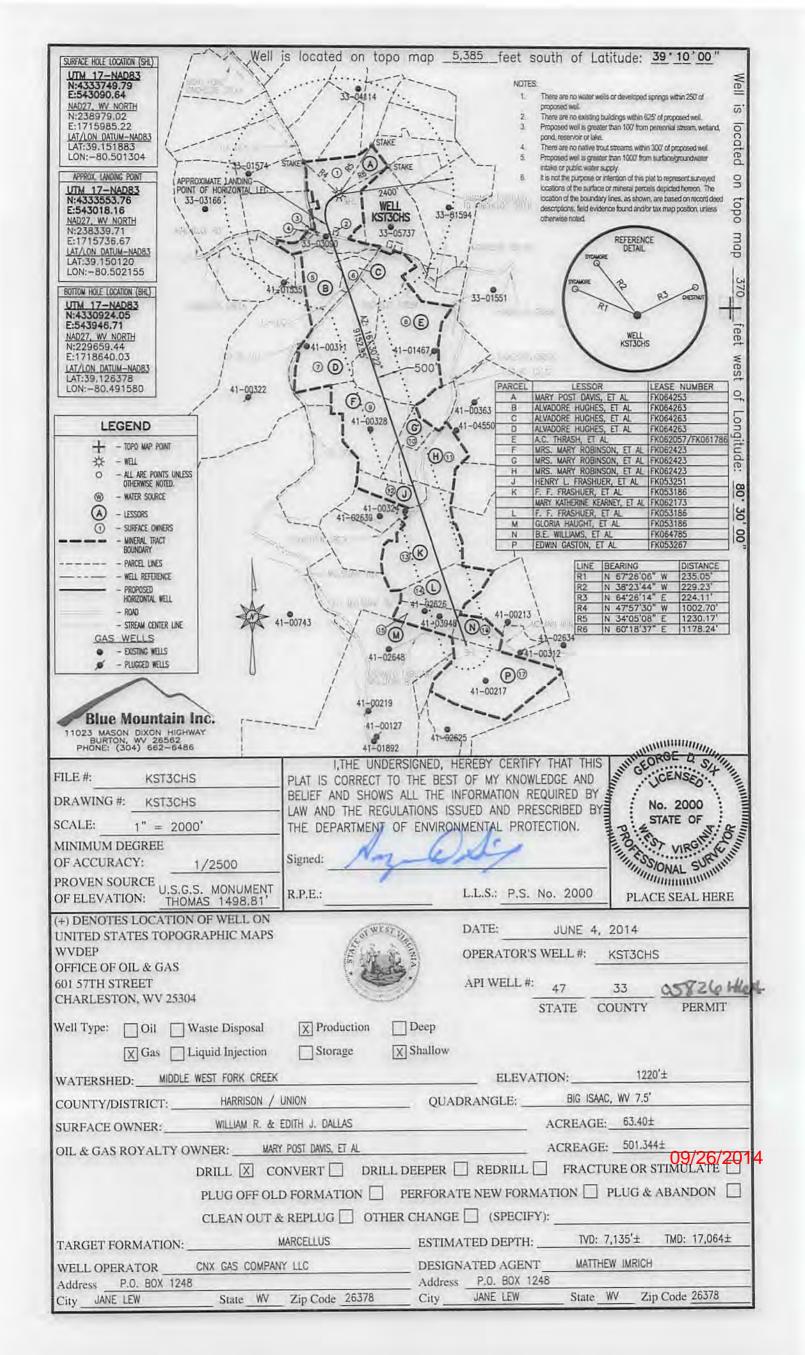
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

| Operator Name CNX Gas Company LLC | | OP Code 494458046 | |
|--|---|--|---|
| Watershed (HUC 10) Middle West Fork | Creek (| Quadrangle Big Isaac | |
| Elevation 1220 | County_Harrison | District_ Union | |
| Do you anticipate using more than 5,000 li Will a pit be used? Yes No | | ne proposed well work? Yes Vo No | _ |
| If so, please describe anticipated | | | |
| Will a synthetic liner be used in t | he pit? Yes No_ | ✓ If so, what ml.? N/A | |
| Proposed Disposal Method For T | reated Pit Wastes: | | |
| Reuse (at API Off Site Dispos | njection (UIC Permit Numb | r disposal location) |) |
| Will closed loop system be used? If so, do | escribe: Yes, cuttings/fluid separated with | th the use of a centrifuge/shaker liquids recycled solids disposed offsite at approved | d landfill |
| | | Air, freshwater, oil based, etc. Air and oil based mud | |
| -If oil based, what type? Synthet | ic, petroleum, etc. Synthetic | | |
| Additives to be used in drilling medium?_ | Gactericide, Polymers, and Weig | ghting Agents | |
| Drill cuttings disposal method? Leave in p | oit, landfill, removed offsite | e, etc. Landfill | |
| -If left in pit and plan to solidify | | | |
| | | tern Landfill, Max Environmental Yukon Landfill and Bulger La | andfill |
| on August 1, 2005, by the Office of Oil an provisions of the permit are enforceable be law or regulation can lead to enforcement a I certify under penalty of law the application form and all attachments the | d Gas of the West Virginia land and I have personally examinereto and that, based on in the information is true, ac | ions of the GENERAL WATER POLLUTION PER Department of Environmental Protection. I underst term or condition of the general permit and/or othe mined and am familiar with the information submi my inquiry of those individuals immediately resp ccurate, and complete. I am aware that there are fine or imprisonment. | tand that the er applicable itted on this ponsible for |
| Company Official Signature 400 | ly Eddy | | |
| Company Official (Typed Name) Matthew | v Imrich | | |
| Company Official Title Designated Agent | - District Operations Superinte | tendent, WV Gas Operations | |
| Subscribed and sworn before me this // | 8th day of Je | ovach North | EAL BLIC |
| My commission expires | 9/26/202 | State of West St | Virginia |

Operator's Well No KST3CHS

| | nent: Acres Disturbed 20. | Prevegetation | Prevegetation pH 6.5 | | |
|----------------------------|---------------------------------|-------------------------|----------------------|--|--|
| Lime according to pH | test Tons/acre or to correct to | _{pH} 7.0 | | | |
| Fertilizer type10-20 | 0-20 or equivalent | | | | |
| Fertilizer amount 5 | 00 | lbs/acre | | | |
| Mulch_ Hay or S | Straw @ 2 | ns/acre | | | |
| | <u>s</u> | eed Mixtures | | | |
| Ten | aporary | Pe | rmanent | | |
| Seed Type Orchard Grass | lbs/acre 25 | Seed Type Orchard Grass | lbs/acre 25 | | |
| Birdsfoot Trefoil | 15 | Birdsfoot Trefoil | 15 | | |
| Ladino Clover | 10 | Ladino Clover | 10 | | |
| Plan Approved by: | | ed areas as soon | | | |
| possible per reg | julation. Opgrac | Te Et 2 as Deeple | per WU DEP | | |
| | julation. Opgrac | TE EAZ OS DEEXES | (per WV DEP | | |
| possible per reg | julation. Opgrac | TE EAZ OS DEEXE | RECEIVED | | |
| possible per reg | | Date: 6/16/2014 | | | |





KST3CHS PAGE 2 OF 2

| | SURFACE OWNER | DIST-TM/PAR |
|----|---|-------------|
| 1 | WILLIAM R. & EDITH J. DALLAS | 20-443/8 |
| 2 | WILLIAM R. & EDITH J. DALLAS | 20-443/19 |
| 3 | GLENVILLE N. POTTS ET UX | 20-443/18 |
| 4 | WILLIAM R. & EDITH J. DALLAS | 20-443/8.1 |
| 5 | MARK D. & BETTY ROLES | 3-6B/21.2 |
| 6 | SIDNEY D. & MARGARET E. ROLES | 3-6B/21.3 |
| 7 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/21.1 |
| 8 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/22 |
| 9 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/25 |
| 10 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/24 |
| 11 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/36 |
| 12 | TERRI LYNNE BRINCEFIELD TRUST | 3-6B/26 |
| 13 | TERRI LYNNE BRINGEFIELD TRUST | 3-6B/33 |
| | TRIO PETROLEUM CORP, WACO OIL & GAS AND MIKE ROSS | |
| | MIKE ROSS INC. | |
| | I. L. MORRIS | |
| 14 | MANN FAMILY TRUST | 3-6B/32 |
| 15 | MANN FAMILY TRUST | 3-6B/31 |
| 16 | THEODORE E. & MARY C. ELDRIDGE | 3-6B/30.1 |
| 17 | MANN FAMILY TRUST | 3-6B/29 |

47- 33-05824 HUA

09/26/2014



4 JUNE 2014