



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

November 20, 2015

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-10902763, issued to NEW RIVER ENERGY CORPORATION, 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.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalties being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: PC-004E
Farm Name: HEARTWOOD FORESTLAND
API Well Number: 47-10902763
Permit Type: Plugging
Date Issued: 11/20/2015

Promoting a healthy environment.

11/20/2015

PERMIT CONDITIONS

West Virginia Code §22-6-11 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. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

1) Date _____, 2015
2) Operator's
Well No. PC-004E
3) API Well No. 47-109 - 02763

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil ____ / Gas X / Liquid injection ____ / Waste disposal ____ /
(If "Gas, Production X or Underground storage ____) Deep ____ / Shallow X
- 5) Location: Elevation 2149.80' Watershed Rich Branch of Guyandotte River
District Center County Wyoming Quadrangle Pineville, WV
- 6) Well Operator New River Energy Corporation 7) Designated Agent _____
Address P.O. Box 1020 Address _____
Waynesburg, PA 15370
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor
Name Brian Ferguson Name Ultra Production Company, LLC
Address Box 124 Big Trace Fork Road Address PO Box 289
Hart, WV 25524 Cedar Bluff, VA

10) Work Order: The work order for the manner of plugging this well is as follows:
 To facilitate coal mining operations, the horizontal CBM well PC-004E is intended to be plugged in a 3 stage process. The first stage will be the infusion of approximately 90,000 gallons of water into the Pocahontas 3 coal seam. The second stage will be the injection of a 2% bentonite solution in 33,000 gallons of water at an approximate rate of 100 gallons per minute. The third stage will be the injection of approximately 190,000 gallons of water. The vertical portion of this well will remain open for additional treatment or for other purposes as required by the mining company; however, when deemed necessary, the vertical portion of the well will be plugged using cement throughout the total vertical section to the surface.

Notification must be given to the district oil and gas inspector _____ 24 hours before permitted work can commence.

Work order approved by inspector _____

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Rev. 2

1. Date _____, 2015
2. Operator's
Well No. PC-004E
3. API Well No. 47-109 - 02763

NOV 13 2015

WV Department of Environmental Protection
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil ____ / Gas X / Liquid Injection ____ / Waste disposal ____ /
(If "Gas, Production X or Underground Storage ____) Deep ____ / Shallow X
- 5) Location: Elevation 2149.80' Watershed Rich Branch of Guyandotte River
District Center County Wyoming Quadrangle Pineville, WV
- 6) Well Operator New River Energy Corporation 7) Designated Agent _____
Address P.O. Box 1020 Address _____
Waynesburg, PA 15370
- 8) Oil and Gas Inspector to be notified Name Brian Ferguson 9) Plugging Contractor Name Ultra Production Company, LLC
Address Box 124 Big Trace Fork Road 708 MAJOR DRIVE Address PO Box 289
Hart, WV 25524 BECKLEY, WV 25801 Cedar Bluff, VA

10) Work Order: The work order for the manner of plugging this well is as follows:
 To facilitate coal mining operations, the horizontal CBM well PC-004E is intended to be plugged in a 3 stage process. The first stage will be the infusion of approximately 90,000 gallons of water into the Pocahontas 3 coal seam. The second stage will be the injection of a 2% bentonite solution in 33,000 gallons of water at an approximate rate of 100 gallons per minute. The third stage will be the injection of approximately 190,000 gallons of water. The vertical portion of this well will remain open for additional treatment or for other purposes as required by the mining company; however, when deemed necessary, the vertical portion of the well will be plugged using cement throughout the total vertical section to the surface.

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Brian Ferguson Date 10/9/2015

REVISED MAY 11, 2010
ADDENDUM TO VENTILATION PLAN
SPARTAN MINING COMPANY
ROAD FORK #51 MINE
MSHA ID# 46-01544
WVOMHST PERMIT # U-4001-05

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PROCEDURE FOR MINING THROUGH HORIZONTAL COALBED METHANE WELLS

Background:

It is anticipated that the in-seam methane in some of the Mine #51 reserve areas will be reduced prior to mining by development of both horizontal and vertical coalbed methane wells, with horizontal wells being the predominant methodology. It is anticipated that the horizontal wells will be multi-lateral and of pinnate pattern, similar to the CDX Gas, Inc. wells drilled in adjacent reserve areas. The surface wellheads for the horizontal wells will typically be 800' or more above the pavement of the coal seam. Each lateral wellbore in the coal seam will be 4" to 6" in diameter, and may be up to 3,000' in length in-seam.

Mine #51 will employ the continuous mining room-and-pillar method of mining. It is anticipated that each lateral wellbore will be mined through at least once.

A factor of major importance to be considered for the case of Road Fork #51 Mine to mine through horizontal coalbed methane wells is that the mine is ventilated via a predominantly positive pressure ventilation system. This blowing type fan system greatly enhances the proposed procedures and safety procedures outlined through this addendum in that positive pressure is constantly applied against any intersected wellbore. A 9 ft diameter return shaft with exhausting fan is within the system and does assist the system is a push/pull scenario, but the positive pressure effect far overpowers the negative pressure effect leaving the exhausting fan to act primarily as a helper fan. With the open atmosphere vertical well bore, ventilation air at the intersection of the lateral well bore will effectively seek to vent itself to the open atmosphere through the well bore and vertical well, the path of least resistance. Any gas accumulating in the lateral bores will have to build to a pressure exceeding the ventilation pressure of the fan before it will vent to the mine void. This is in the direct opposite of exhaust fan systems which are the norm in the industry and have a negative pressure effect.

Wells to be encountered or intersected at this time.

Be advised that each coal bed methane well system consists of two vertical wellbores with a common set of horizontal production wellbores or branch line system. The first vertical well drilled is the well or bore from which all horizontal legs and branches are developed. The second vertical well drilled is the actual production well. This second vertical well is the conduit by which the gas is brought to the surface as well as any water or impurities that accumulate at the bottom of the vertical well during the extraction process. No vertical wells are currently proposed for cut through. See Attachment - Cross-Section of Typical Well System.

~~Well no. PC-002A was drilled prior to PC-002B and was used to drill or establish the horizontal branch system. Its API No. is 47-109-02724. The well was then intersected by the production well PC-002B. Well PC-002A is a non-producing well.~~

Well no. PC-002B was drilled and began initial production on 12/12/06. Its API No. is 47-109-02725. The horizontal bore diameter is 4 5/8" diameter. The vertical well is cased with 7" diameter casing.

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cemented in place, to a depth of 726' or 87' above the coal seam. The well's maximum horizontal depth is 3,414 ft. The horizontal legs are completely within the Pocahontas No. 3 coal seam. The well is not yet abandoned but will be abandoned shortly after issuance of this revision. The current average production pressure is -3 p.s.i. (gauge) as the well is operated on vacuum. Current average production is 72 MCF/day. Maximum average production of 618 MCF/day occurred in January, 2007. The well has produced a total of 324,573 MCF through the end of 2009. A summary of the well's production history, taken from the WVDEP Office of Oil & Gas website, is attached. Peak well pressure would have occurred prior to initial production in December, 2006 and is estimated to have been 352 p.s.i. or less, based on 813' of seam cover. Average well life is estimated at 5 years.

Well no. PC-003A was drilled prior to PC-003B and was used to drill or establish the horizontal branch system. Its API No. is 47-109-02768. The well was then intersected by the production well PC-003B. Well PC-002A is a non-producing well.

Well no. PC-003B was drilled and began initial production on 12/21/06. Its API No. is 47-109-02769. The horizontal bore diameter is 4 5/8" diameter. The vertical well is cased with 7" diameter casing, cemented in place, to a depth of 909', or 184' above the coal seam. The well's maximum horizontal depth is 3,944 ft. The horizontal legs are completely within the Pocahontas No. 3 coal seam. The well is not yet abandoned but will be abandoned shortly after issuance of this revision. The current average production pressure is -1 p.s.i. (gauge) as the well is operated on vacuum. Current average production is 87 MCF/day. Maximum average production of 895 MCF/day occurred in April, 2007. The well has produced a total of 361959 MCF through the end of 2009. A summary of the well's production history, taken from the WVDEP Office of Oil & Gas website, is attached. Peak well pressure would have occurred prior to initial production in December, 2006 and is estimated to have been 473 p.s.i. or less, based on 1,093' of seam cover. Average well life is estimated at 5 years.

Equipment used to drill the well and borings was not immediately available from the well operator. The accuracy of the machine was reported from the operator as a maximum deviation of 25 feet in 3,000 feet of boring. That equates to an accuracy of +/- 0.48 degrees or 0 degrees 28 minutes and 39 seconds. We propose an accuracy factor over double that or +/- 1 degree plus an addition static barrier of 50 feet.

Procedure for Mining Within 50' + 1 Degree Factor of A Horizontal Wellbore:

Prior to mining within 50' + 1 degree deviation or accuracy factor (tangent of 1 degree multiplied by the length of the horizontal wellbore at the anticipated cut-through point) of a horizontal wellbore, Spartan Mining Company ("Spartan") will verify that the following procedures have been performed on the well:

1. Prior to the mining unit entering the minimum barrier zone established for the CBM well and/or well bores or set of intersections, a notice from a professional engineer will be submitted to the District Manager noting that a review of the proposed method(s) to prepare coal bed methane wells for intersection has been completed and that the applicability of the proposed system or procedures in regard to the mine specific conditions is appropriate. A section financing seven

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 ADDENDUM TO VENTILATION PLAN
 SPARTAN MINING COMPANY
 ROAD FORK #51 MINE
 MSHA ID# 46-01544
 WVOMHST PERMIT # U-4001-05

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entries, all entries intersecting a single well bore would be deemed a set of intersections and one would be deemed

2. The well will be vented to outside atmospheric pressure for at least 8 hours.
3. A volume of fresh water sufficient to fill the horizontal (lateral) wellbores, plus 25%, will be injected into the well. Fresh water will be injected at an approximate flow rate of 2,500 gph. Fresh water only injection will be gravity fed, not pressure injected. A daily record of water quantities pumped and pumping times will be recorded and maintained.
4. A volume of gel, sufficient to fill the horizontal wellbores plus 25% excess, will be injected into the well. Gel formulation will be a simple mixture of made up of 2% to 4% bentonite and fresh water with no other additives. The bentonite and water formulation will be pumped at an approximate flow rate of 2,500 gph and with either (a) sufficient pressure to attain a bottom hole pressure of approximately 500 p.s.i., or (b) sufficient volume to equal or exceed 200% of the volume of the horizontal wellbores. Because no gel has yet been pumped or injected, no background data has been gathered or obtained for this area or these strata and therefore no gel infiltration and permeability reduction data are yet available. A daily record of gel quantities pumped and pumping times will be recorded and maintained.
5. The well bore will be filled to the surface with fresh water, if possible, and allowed to stand for at least 72 hours, with the water level being supplemented as required. In the alternative, water will be injected into the wellbore for 72 hours at an average rate of 2 gallons per minute or more.
6. A record will be prepared, maintained and signed by the drill/pump operator outlining the procedures of all well or hole preparations. Specifics to be recorded shall at a minimum be as follows: 1. Time of well or hole opening for venting purposes and duration. 2. Any test results showing levels of venting gases and times. 3. Water injection showing quantities, times, pumping pressure and flow rates. 4. Gel formulation. 5. Gel quantity. 6. Pumping pressures. 7. Pumping times. 8. Quantities, flow rates and pumping times for well evacuations or bailing shall be documented as well.

Procedure for Mining Through A Horizontal Wellbore (Initial Minethrough):

Prior to mining through the first lateral wellbore of a horizontal coalbed methane well, Spartan will verify that the following procedures have been performed on the well:

- a. The water will be bailed from the vertical section of the wellbore, as close to the coal seam elevation as practical using normal bailing equipment.
- b. The surface wellhead will be maintained open, so as to bring the vertical section of the wellbore to outside atmospheric pressure.

In addition, Spartan will:

- c. Notify the MSHA District Manager and the appropriate WVOMHST representative at least 72 hours prior to the anticipated minethrough time.

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SPARTAN MINING COMPANY
ROAD FORK #51 MINE
MSHA ID# 46-01544
WVOMHST PERMIT # U-4001-05

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- d. Drivage sites or site lines shall be installed prior to mining within 80 ft. of the projected well cut-through. Drivage sites or site lines set in excess of 100 ft. prior to well bore intersection will not be deemed to comply with this requirement.
- e. A mobile sled or trailer will be stocked and maintained with equipment and supplies as outlined herein on the working section at all times. The sled or trailer will be positioned at or near (not to exceed 500 feet outby) the last open crosscut near the projected mine through immediately upon reaching the minimum barrier distance. The trailer or sled will be labled as "Firefighting Equipment and Emergency Supplies for CBM Minethroughs" to distinguish it from general supply or stationary equipment stores. Equipment or supplies required on this sled or trailer are:
 - 1. Firefighting equipment to include a minimum of two 10-pound fire extinguishers, 240 pounds of rock dust, fire hose of sufficient length to reach the working face and capable of delivering at least 50 gallons per minute of water at a minimum pressure of 50 psi.. The fire hose shall be located in the last open crosscut and shall be connected and ready for use but shall not be required being charged with water during the cut-through.
 - 2. Roof support supplies sufficient to handle emergency or unplanned roof control situations associated with the well mine through.
 - 3. Ventilation supplies sufficient to handle emergency or unplanned ventilation situations associated with the well mine through.
 - 4. An emergency plug or plugs to plug the mined through well bore in the event such measures are required or become necessary.
- f. An airflow quantity of at least 9,000 CFM and mean air velocity of 60 fpm shall be supplied at the mine face. This quantity shall be required beginning at the minimum barrier distance line and shall continue until mining has progressed 20 ft. past the initial mine through point. In no circumstances shall the quantity be less than that approved in the current ventilation plan if greater.
- g. Cut depths will be limited to 20 ft. from the end of the line curtain beginning at the minimum barrier distance line and continue until mining has progressed 20 ft. past the initial mine through point.
- h. MMU's to be performing mine throughs in areas shown as part of this revision will maintain stoppings between intake and return air courses up to and including the third connecting crosscut outby the working face.
- i. Service all equipment to be used in the immediate area of the mine through and assure it's permissibility, prior to use , once every 24 hours during which the mine through is anticipated or is occurring.
- j. Calibrate the continuous miner methane monitor, prior to use, once every 24 hours during which the mine through is anticipated or is occurring.
- k. When mining, tests for methane with a hand held methane detector at least every 10 minutes from the time mining commences at the minimum barrier distance line or within thirty feet of the wellbore, whichever is greater and continue until such time as the well is intersected. Tests for methane with a hand held detector will be made immediately prior to mining through the wellbore regardless of timing.

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ADDENDUM TO VENTILATION PLAN
SPARTAN MINING COMPANY
ROAD FORK #51 MINE
MSHA ID# 46-01544
WVOMHST PERMIT # U-4001-05

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- l. De-energize all equipment and thoroughly examine the area when the wellbore is intersected. The area will be determined safe by a certified person before mining is resumed.
- m. Once the wellbore is intersected and the area is determined safe, mining may resume. Hand held methane detector tests, however, will continue at least every 10 minutes while mining, until mining has progressed 20 feet past the initial mine through point.
- n. Once the wellbore is intersected and the area has been determined safe, mining shall continue a sufficient distance to permit adequate ventilation in or around the area of the well.
- o. No open flame shall be permitted in the area until adequate ventilation has been established around the wellbore.
- p. During the actual cutting process, no individuals shall be allowed on the return side until the well bore has been intercepted and the area has been examined by a certified person and declared safe.
- q. All workplace examinations shall be conducted on the return side of the continuous miner while the continuous miner is idle.
- r. The working place shall be free from accumulations of coal dust and coal spillage. Rock dust shall be placed on the roof, rib and floor to within 20 feet of the face when mining through the wellbore.
- s. No person shall be permitted in the area of the mine through operation except those actually engaged in the operation, including company personnel, representatives of the miners, personnel from MSHA and personnel from the appropriate State agency.
- t. Alert all personnel in the mine to the planned intersection of the well prior to their going underground if the planned intersection is to occur during their shift. This warning shall be repeated for all shifts until the well has been mined through.
- u. The mine through operation shall be under the direct supervision of a certified individual. Instructions concerning the mine through operations shall be issued only by the certified individual in charge.

Procedure for Mining Through A Horizontal Wellbore (Subsequent Minethroughs):

Prior to mining through a lateral wellbore of a coalbed methane well which has already had at least one lateral wellbore mined through, Spartan will verify that the following procedures have been performed on the well:

- a. The water will be bailed from the vertical section of the wellbore, as close to the coal seam elevation as practical using normal bailing equipment.
- b. The surface wellhead will be maintained open, so as to bring the vertical section of the wellbore to outside atmospheric pressure.

In addition, Spartan will:

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ADDENDUM TO VENTILATION PLAN
SPARTAN MINING COMPANY
ROAD FORK #51 MINE
MSHA ID# 46-01544
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- c. Prior to the mining unit entering the minimum barrier zone of subsequent intersections or sets of intersections, a notice from a professional engineer will be submitted to the District Manager noting that a review of the proposed method(s) to prepare coal bed methane wells for intersection has been completed and that the applicability of the proposed system or procedures in regard to the mine specific conditions is still appropriate.
- d. Drivage sites or site lines shall be installed prior to mining within 80 ft. of the projected well cut-through. Drivage sites or site lines set in excess of 100 ft. prior to well bore intersection will not be deemed to comply with this requirement.
- e. A mobile sled or trailer will be stocked and maintained with equipment and supplies as outlined herein on the working section at all times. The sled or trailer will be positioned at or near (not to exceed 500 feet outby) the last open crosscut near the projected mine through immediately upon reaching the minimum barrier distance. The trailer or sled will be labled as "Firefighting Equipment and Emergency Supplies for CBM Minethroughs" to distinguish it from general supply or stationary equipment stores. Equipment or supplies required on this sled or trailer are:
 - 1. Firefighting equipment to include a minimum of two 10-pound fire extinguishers, 240 pounds of rock dust, fire hose of sufficient length to reach the working face and capable of delivering at least 50 gallons per minute of water at a minimum pressure of 50 psi.. The fire hose shall be located in the last open crosscut and shall be connected and ready for use but shall not be required being charged with water during the cut-through.
 - 2. Roof support supplies sufficient to handle emergency or unplanned roof control situations associated with the well mine through.
 - 3. Ventilation supplies sufficient to handle emergency or unplanned ventilation situations associated with the well mine through.
 - 4. An emergency plug or plugs to plug the mined through well bore in the event such measures are required or become necessary.
- f. An airflow quantity of at least 9,000 CFM and mean air velocity of 60 fpm shall be supplied at the mine face. This quantity shall be required beginning at the minimum barrier distance line and shall continue until mining has progressed 20 ft. past the initial mine through point. In no circumstances shall the quantity be less than that approved in the current ventilation plan if greater.
- g. Cut depths will be limited to 20 ft. from the end of the line curtain beginning at the minimum barrier distance line and continue until mining has progressed 20 ft. past the initial mine through point.
- h. MMU's to be performing mine throughs in areas shown as part of this revision will maintain stoppings between intake and return air courses up to and including the third connecting crosscut outby the working face.
- i. Service all equipment to be used in the immediate area of the mine through and assure it's permissibility, prior to use , once every 24 hours during which the mine through is anticipated or is occurring.
- j. Calibrate the continuous miner methane monitor, prior to use, once every 24 hours during which the mine through is anticipated or is occurring.

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- k. When mining, tests for methane with a hand held methane detector at least every 10 minutes from the time mining commences at the minimum barrier distance line or within thirty feet of the wellbore, whichever is greater and continue until such time as the well is intersected. Tests for methane with a hand held detector will be made immediately prior to mining through the wellbore regardless of timing.
- l. De-energize all equipment and thoroughly examine the area when the wellbore is intersected. The area will be determined safe by a certified person before mining is resumed.
- m. Once the wellbore is intersected and the area is determined safe, mining may resume. Hand held methane detector tests, however, will continue at least every 10 minutes while mining, until mining has progressed 20 feet past the initial mine through point.
- n. Once the wellbore is intersected and the area has been determined safe, mining shall continue a sufficient distance to permit adequate ventilation in or around the area of the well.
- o. No open flame shall be permitted in the area until adequate ventilation has been established around the wellbore.
- p. During the actual cutting process, no individuals shall be allowed on the return side until the wellbore has been intercepted and the area has been examined by a certified person and declared safe.
- q. All workplace examinations shall be conducted on the return side of the continuous miner while the continuous miner is idle.
- r. The working place shall be free from accumulations of coal dust and coal spillage. Rock dust shall be placed on the roof, rib and floor to within 20 feet of the face when mining through the wellbore.
- s. No person shall be permitted in the area of the mine through operation except those actually engaged in the operation, including company personnel, representatives of the miners, personnel from MSHA and personnel from the appropriate State agency.
- t. Alert all personnel in the mine to the planned intersection of the well prior to their going underground if the planned intersection is to occur during their shift. This warning shall be repeated for all shifts until the well has been mined through.
- u. The mine through operation shall be under the direct supervision of a certified individual. Instructions concerning the mine through operations shall be issued only by the certified individual in charge.

Other Plan Specifics

Mining with a Parallel Wellbore

When mining parallel with a horizontal wellbore, every attempt will be made to adjust the wellbore to intersect the wellbore in the crosscuts as opposed to continuously in the advancing entry. However, should mining be conducted such that it advances parallel and continuously cutting the wellbore, the following modifications will be made to the procedures. All other requirements and precautions listed herein shall apply.

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1. Cut depths will be limited to 20 ft. from the end of the line curtain.
2. Upon completion of the cut, the workplace shall be thoroughly examined by a certified person and declared safe.
3. No person(s) shall be allowed on the return side until the cut has been completed and the area declared safe by a certified person.
4. Tests for methane with a hand-held methane detector at least every 10 minutes from the time mining commences while mining and while bolting until the cut-through is completed.

Over Drilling

No vertical wells are currently proposed for cut-through.

Separation of airways connected by horizontal bores

Should a wellbore be intersected multiple times and subsequently provide an open wellbore or conduit between different or uncommon splits of air, the hole will be plugged with a minimum of a temporary plug as soon as all required safety precautions are met and it is declared safe to do so by a certified person. A permanent plug will be installed as soon as practical but shall not be required until the section has advanced a full line of crosscuts in by the wellbore intersection or 120 ft. Permanent plugging may consist of: 1.) the wellbore will be completely filled with cement for a length of at least 3 feet or its equivalent or 2.) manufactured plugs or casings cemented into place that are typically used in conjunction with drivable horizontal long hole drilling machines with a sampling port and that use cement and or epoxy compounds. Wellbore connections between common or like air splits will not require any plugs.

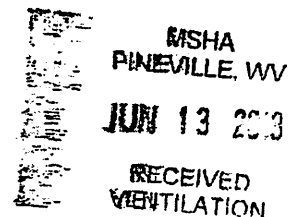
Plugging A Wellbore or Leg

Should a wellbore be intersected and should it then be determined by mine management that the wellbore or leg will not be intersected again or subsequently for reasons as determined by mine management, it may be permanently plugged. The hole may be left open as in the normal sequence outlined herein and then plugged, it may be first temporarily plugged as soon as all required safety precautions are met and it is declared safe to do so by a certified person or it may be immediately permanently plugged. A permanent plug may be installed at the determination of mine and can be installed as soon as all required safety precautions are met and it is declared safe to do so by a certified person. Permanent plugging may consist of: 1.) the wellbore will be completely filled with cement for a length of at least 3 feet or its equivalent or 2.) manufactured plugs or casings cemented into place that are typically used in conjunction with drivable horizontal long hole drilling machines with a sampling port and that use cement and or epoxy compounds. In the event a wellbore is permanently plugged, its location will be located by survey within 1 week of the installation of such permanent plug and such information posted to the permanent maps.

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 WV Department of
 Environmental Protection
 JUN 26 2013
 11/20/2015

REVISED MAY 11, 2010
 ADDENDUM TO VENTILATION PLAN
 SPARTAN MINING COMPANY
 ROAD FORK #51 MINE
 MSHA ID# 46-01544
 WVOMHST PERMIT # U-4001-05



Intersection Map to Be Kept On the Mining Section

A map shall be kept on the section showing all projected mining, all CBM gas wells with the vertical holes and their horizontal bores or legs for that area, outlines of minimum safety barrier to each bore for that area and anticipated intersections with those bores. The section map will be updated at a minimum of once per shift and preferably at the ending of each shift. Updating will consist of the

progression of mining, all hole intersections, the date holes were intersected, the number of the intersection and how far from the anticipated intersection the actually was. Such information will then be transferred to the wall map or 1200 map outside at the mine office in a like manner. Connections or intersections with the wellbores will be located by survey within 1 week of their connection and such information posted to the permanent maps. Any large discrepancies in actual location verses anticipated location will be reported to mine management and adequately evaluated for need of corrective action. Large discrepancy will be considered "outside of the probable error of 1 degree.

Specific times when actions are to be taken.

Specific times when checks or tests are made, supplies and/or emergency equipment are delivered and positioned or driveage sights are outlined throughout these guidelines. However, unless otherwise stated they are required upon reaching the minimum required barrier.

Equipment List

List all equipment to be used to prepare and pump the water and gel: Equipment used to prepare and pump the water and gel will include a truck-mounted triplex pump and mixing vat of the type used to mix and pump cement in gas well applications. We will likely use BJ Services or Schlumberger on these holes so we can get a computer printout of the weight and volume of the gel mix. The exact make and model of the pump and vat used by the contractor will not be known until the day we use it. Fresh water only injection will be gravity feed not pressure injected.

MSDS and PPE

See attached, MSDS sheets for bentonite clay. Bentonite is the only component to be injected into the wells other than fresh water.

No special personal protective equipment (PPE) is required in using bentonite compounds. Normal PPE is required at all times on the active site such as metatarsal hard toe boots, eye protection, noise protection, reflective high visibility clothing, gloves and hard hat.

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ADDENDUM TO VENTILATION PLAN
SPARTAN MINING COMPANY
ROAD FORK #51 MINE
MSHA ID# 46-01544
WVOMHST PERMIT # U-4001-05

MSHA
PINEVILLE, WV
JUN 13 2013
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VENTILATION

Minimum Air quantities.

A quantity of at least 9,000 CFM, but no less than the approved ventilation plan amount, of intake air shall be supplied at the mine face. A minimum quantity of 15,000 cfm shall be maintained in the LOB when mining within the minimum required barrier.

Ongoing Examinations

- a. All intersections with wells, legs, horizontal bores or branches that are in the intake air courses shall be examined as part of the preshift examinations required under 75.360.
- b. All other intersections with wells, legs, horizontal bores or branches shall be examined as part of the weekly examinations required under 75.364.
- c. All examinations shall be recorded in the appropriate record book and shall be specific to the hole, leg, and intersection number with location.

Mine Map Requirements

The mine map shall show all wells in the current and projected areas of the mine as per 75.372(a)(14) and shall include:

- a. Identify CBM wells (i.e. API hole # or equivalent)
- b. Date gas production began.
- c. Seams intersected.
- d. All vertical holes and all horizontal segments with an outline of minimum barriers.
- e. Dates holes were intersected and the distance of variance.

Review By Responsible Person

The responsible person required per 30 CFR 75.1501 is responsible for well intersection emergencies. The well intersection procedures shall be reviewed by the responsible person prior to any planned well intersection or cut-through.

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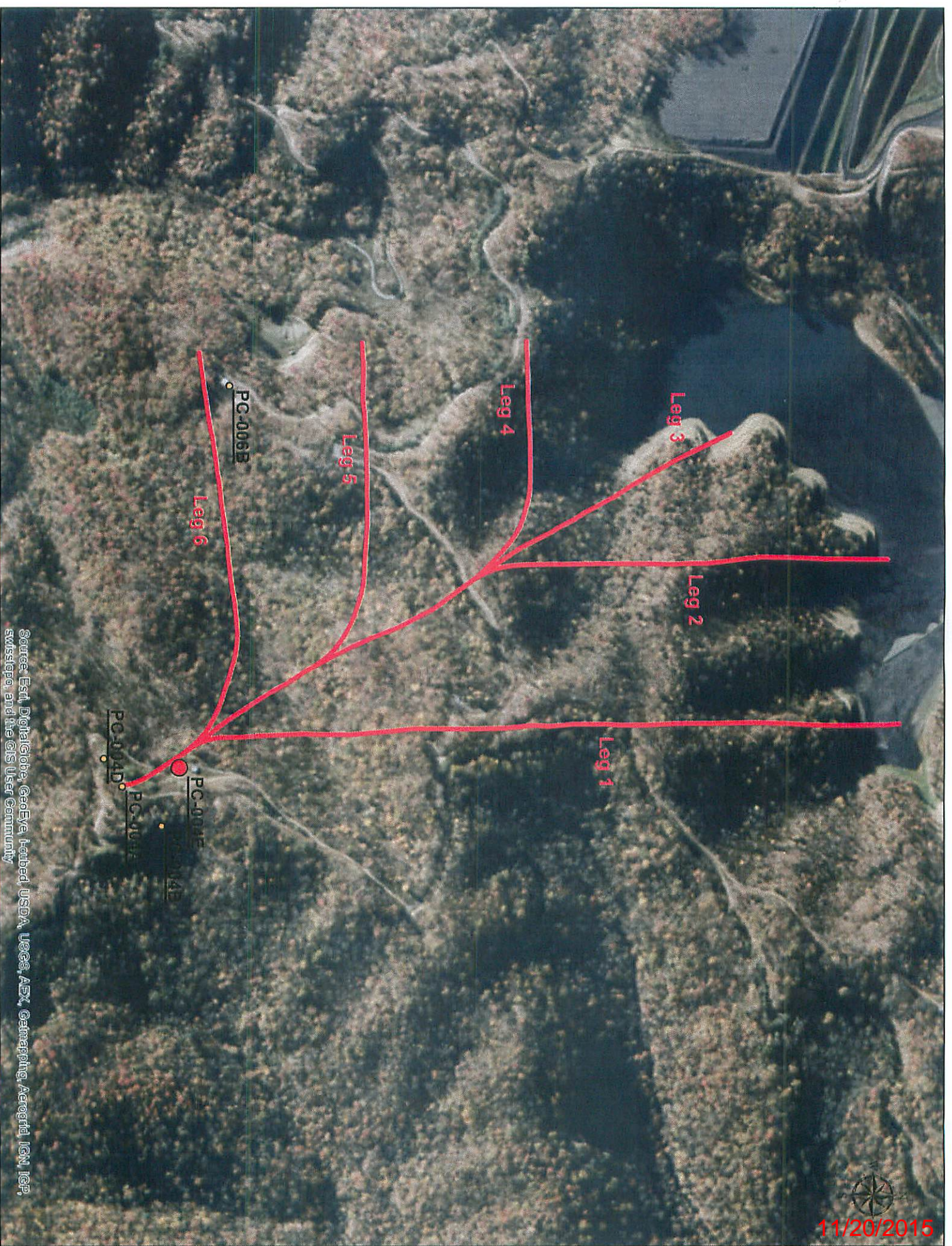
Ultra Production Company, LLC
Plugging Volumes
PC-004E

	Footage	Diameter (in)	Volume (CuFt)	Beginning X Coord	Beginning Y Coord	Ending X Coord	Ending Y Coord
PC-004E	1,301	7	347.70	450442.758	4157172.736	-	-
Leg 1	3,497	4.5	386.27	450436.675	4157190.908	450403.134	4158251.583
Leg 2	2,028	4.5	224.01	450183.900	4157621.100	450158.295	4158234.658
Leg 3	3,478	4.5	384.13	450452.829	4157166.714	449969.176	4158002.408
Leg 4	1,280	4.5	141.40	450189.248	4157612.917	449832.252	4157700.549
Leg 5	1,692	4.5	186.82	450318.220	4157371.871	449832.979	4157454.484
Leg 6	2,049	4.5	226.31	450442.200	4157182.874	449847.237	4157213.184

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Environmental Protection
11/20/2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar (USA), Airphoto, Geomatics Aero, IGN, IGN, swisstopo, and the GIS User Community



State of West Virginia
Division of Environmental Protection
Section of Oil & Gas
Well Operator's Report of Well Work

Farm name: Heartwood Forestland Fund

Operator Well No: PC-004E

Location: Elevation: 2149.80'

Quadrangle: Pineville

District: Center I

County: Wyoming

Latitude: 8450 Feet South of 37 Deg. 35 Min. 00 Sec.
Longitude: 5687 Feet West of 81 Deg. 32 Min. 30 Sec.

Company: CDX Gas, LLC
P.O. Box 609
Pineville, WV 24874

Agent: Michael McCown
Inspector: Terry Urbine
Permit Issued: 08/24/06
Well Work commenced: 03/19/07
Well Work completed: 4/23/07

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill up Cu.ft.
13 3/8"	31	31	21.5
9 5/8"	737	737	52
7"	1096	1096	165
2 7/8"	1251	1251	Hanging

Verbal plugging
Permission granted on:
Rotary x Cable _____ Rig
Total depth (ft) 1301'
Fresh water depths (ft) N/A
Salt water depths (ft) N/A
Is coal being mined in the area (Y/N)? Y
Coal depths (ft): 1251'

OPEN FLOW DATA

Producing formation (Pocahontas 3) Pay zone depth (ft) 1251'
Gas: Initial open flow N/A Mcf/d Oil: Initial open flow _____ Bbl/d
Final open flow N/A Mcf/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests: _____ hours
Static rock pressure _____ psig (surface pressure) after _____ hours

Second Producing formation _____ Pay zone depth _____ (ft)
Gas: Initial open flow _____ Mcf/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ Mcf/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests: _____ hours
Static rock pressure _____ psig (surface pressure) after _____ hours

Third Producing formation _____ Pay zone depth _____ (ft)
Gas: Initial open flow _____ Mcf/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ Mcf/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests: _____ hours
Static rock pressure _____ psig (surface pressure) after _____ hours

Note: ON BACK OF THIS FORM, PUT THE FOLLOWING: 1) DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2) THE WELL LOG WHICH IS A SYSTEMATICK DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Charles T. Akers
For: CDX Gas, LLC
By: [Signature]
Date: 11/7/2015
NOV 05 2015

WV Department of Environmental Protection
11/20/2015

Operator: PC-004E

API No. 47-109-02763

Location: Wyoming County

Details of Perforated Intervals, Fracturing or Stimulation, Physical Change, Etc. - N/A

Well Log & Geologic Record - Depths from G.L.

Lithology	Depth in feet	
	Top	Bottom
Casing	0	30
Shale	30	60
Sandy Shale	60	65
Shale	65	165
Sandy Shale	165	180
Shale	180	215
Sandy Shale	215	270
Shale	270	327
Sandy Shale	327	385
Shale	385	445
Sandy Shale	445	505
Shale	505	560
Sandy Shale	560	640
Shale	640	660
Sandy Shale	660	725
Shale	725	780
Sandy Shale	780	880
Shale	880	890
Sandy Shale	890	925
Shale	925	985
Sandy Shale	985	1010
Shale	1010	1045
Sandy Shale	1045	1065
Shale	1065	1072
Sandy Shale	1072	1145
Shale	1145	1215
Sandy Shale	1215	1225
Shale	1225	1251
Coal (cavity)	1251	1255
Shale	1255	1301
TD	1301	

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11/20/2015

WW-4A
Revised 6-07

1) Date: _____
2) Operator's Well Number
PC-004E

3) API Well No.: 47 - 109 - 02763

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL**

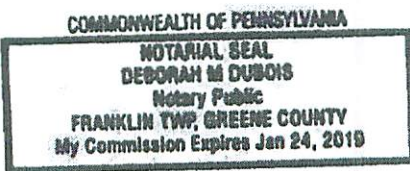
<p>4) Surface Owner(s) to be served: ✓</p> <p>(a) Name Heartwood Forest Land Fund ✓ Address 19045 Stone Mountain Road Abingdon, VA 24210</p> <p>(b) Name _____ Address _____</p> <p>(c) Name _____ Address _____</p> <p>6) Inspector Brian Ferguson ✓ Address Box 124 Big Trace Fork Road Harts, WV 25524 Telephone 304-550-6265</p>	<p>5) (a) Coal Operator</p> <p>Name Spartan Mining Co. ✓ Address 208 Business Street Beckley, WV 25801</p> <p>(b) Coal Owner(s) with Declaration ✓</p> <p>Name Western Pocahontas Properties, LLC ✓ Address 5260 Irwin Road Huntington, WV 25705</p> <p>(c) Coal Lessee with Declaration</p> <p>Name Spartan Mining Co. ✓ Address 208 Business Street Beckley, WV 25801</p>
--	---

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.



Well Operator New River Energy Corp.
By: *[Signature]*
Its: President
Address 158 Portal Road / P.O. Box 1020
Waynesburg, PA 15370
Telephone 724-627-4511

Subscribed and sworn before me this 30th day of October 2015
Deborah M. Dubois Notary Public
My Commission Expires January 24, 2019

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a 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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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11/20/2015

WW-4B

API No.	<u>47-109-02763</u>
Farm Name	<u>Heartwood Forest Land</u>
Well No.	<u>PC-004E</u>

**INSTRUCTIONS TO COAL OPERATORS
OWNERS AND LESSEE**

The well operator named on the obverse side of WW-4 (B) is about to abandon the well described in the enclosed materials and will commence the work of plugging and abandoning said well on the date the inspector is notified. Which date shall not be less then five days after the day on which this notice and application so mailed is received, or in due course should be received by the Department of Environmental Protection Office of Oil & Gas.

This notice and application is given to you in order that your respective representatives may be present at the plugging and filling of said well. You are further notified that whether you are represented or not the operator will proceed to plug and fill said well in the manner required by Section 24, Article 6, Chapter 22 of the Code and given in detail on obverse side of this application.

NOTE: If you wish this well to be plugged according to 22-6-24(d) then as per Regulation 35CSR4-13.9 you must complete and return to this office on form OB-16 "Request by Coal Operator, Owner, or Lessee for plugging" prior to the issuance of this plugging permit.

WAIVER

The undersigned coal operator ____/ owner ____/ lessee ____/ of the coal under this well location has examined this proposed plugging work order. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: _____

By: _____

Its _____

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 WV Department of
 Environmental Protection

SURFACE OWNER WAIVER

Operator's Well
Number

PC-004E

INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW4-A

The well operator named on page WW-4A is applying for a permit from the State to plug and abandon a well. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.
WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

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

Time Limits and methods for filing comments. The law requires these materials to be served on or before the date the operator files his Application. You have **FIVE (5) 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.

Comments must be in writing. Your comments must 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.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation..."

If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.

VOLUNTARY STATEMENT OF NO OBJECTION

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application For A Permit To Plug And Abandon on Forms WW-4A and WW-4B, and a survey plat.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON
ETC.

FOR EXECUTION BY A CORPORATION,

_____	Date _____	Name _____
Signature		By _____
		Its _____
		Date _____

Signature

Date
11/20/2015

WW-9
Rev. 5/08

Page _____ of _____
API Number 47 - 109 - 02763
Operator's Well No. PC-004E

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 New River Energy Corporation OP Code 309919

Watershed Rich Branch of Guyandotte River Quadrangle Pineville, WV

Elevation 2,149.80' County Wyoming District Center

Description of anticipated Pit Waste: No pit will be required for this operation

Will a synthetic liner be used in the pit? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Proposed Work For Which Pit Will Be Used:

- Drilling
- Workover
- Other (Explain _____)
- Swabbing
- Plugging

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 _____

Company Official (Typed Name) JAMES A. CAPPUCCI

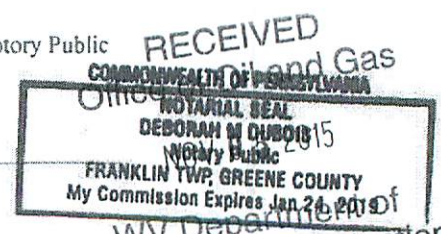
Company Official Title President

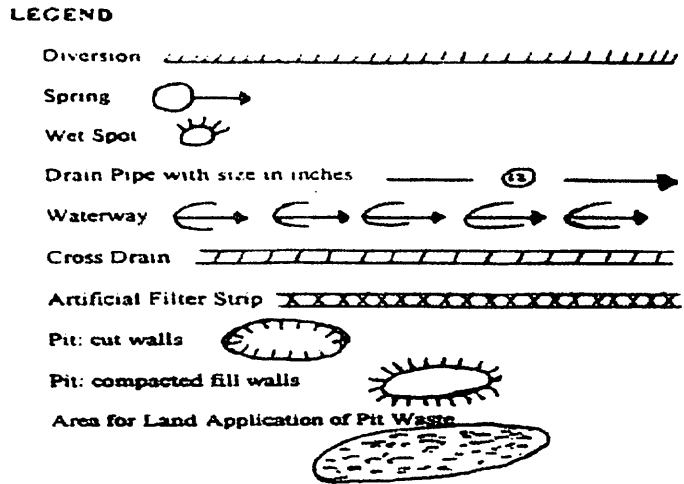
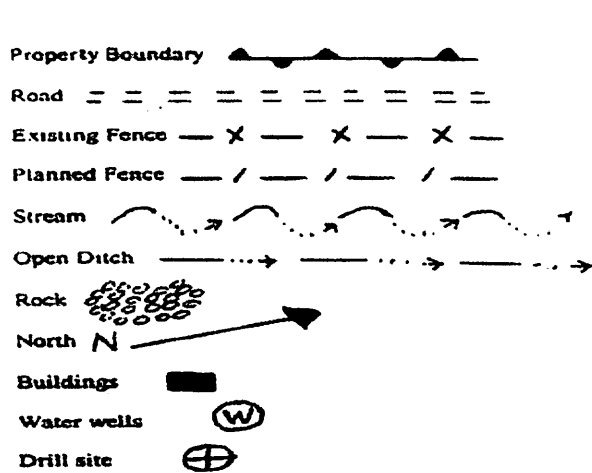
Subscribed and sworn before me this 30th day of October, 20 15

Deborah M. Dubois

Notary Public

My commission expires January 24, 2019





Proposed Revegetation Treatment: Acres Disturbed 0.5 Prevegetation pH _____

Lime 2 Tons/acre or to correct to pH 6.0

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch Fiber Mulch 0.5 Tons/acre

Seed Mixtures

Seed Type	Area I lbs/acre	Seed Type	Area II lbs/acre
Tall Fescue	40	Tall Fescue	40
Orchard Grass	6	Orchard Grass	6
Perennial Rye Grass	39	Perennial Rye Grass	39
Red Clover	17	Red Clover	17

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: _____

Title: ODG Inspector

Date: 10/19/15

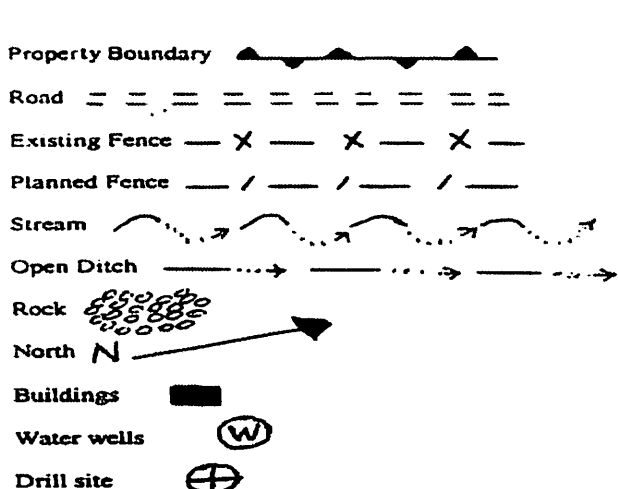
Field Reviewed? () Yes () No

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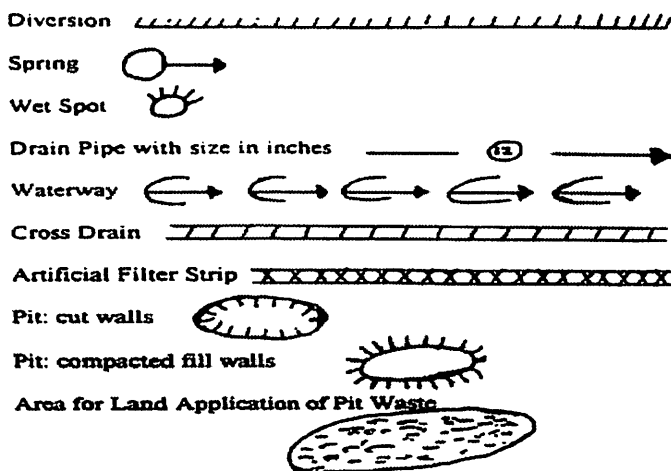
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Environmental Protection

11/20/2015



LEGEND



Proposed Revegetation Treatment: Acres Disturbed 0.5 Prevegetation pH _____
 Lime 2 Tons/acre or to correct to pH 6.0
 Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)
 Mulch Fiber Mulch 0.5 Tons/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Orchard Grass	6	Orchard Grass	6
Perennial Rye Grass	39	Perennial Rye Grass	39
Red Clover	17	Red Clover	17

Attach:
 Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: _____

Title: _____

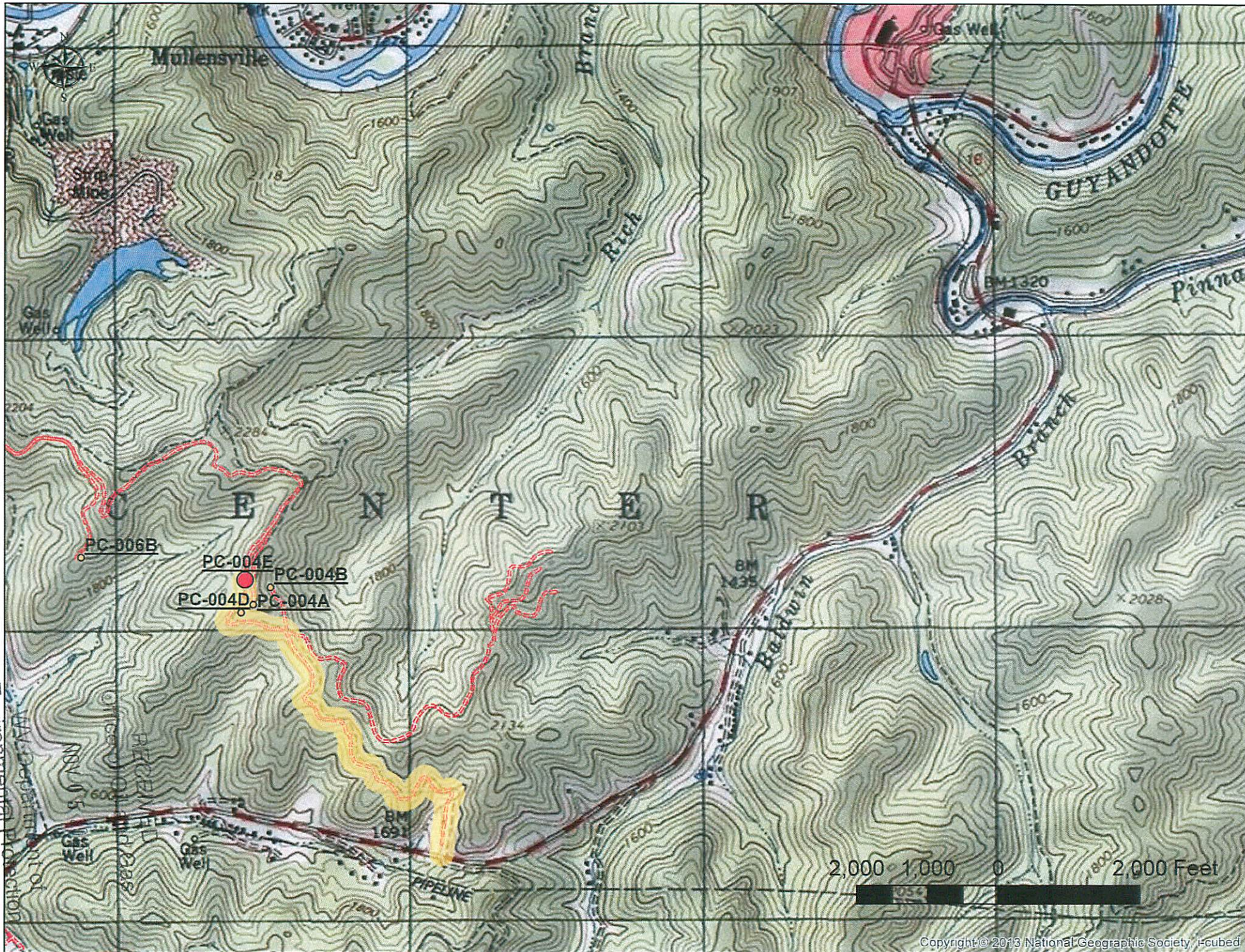
Date: _____

Field Reviewed? () Yes () No

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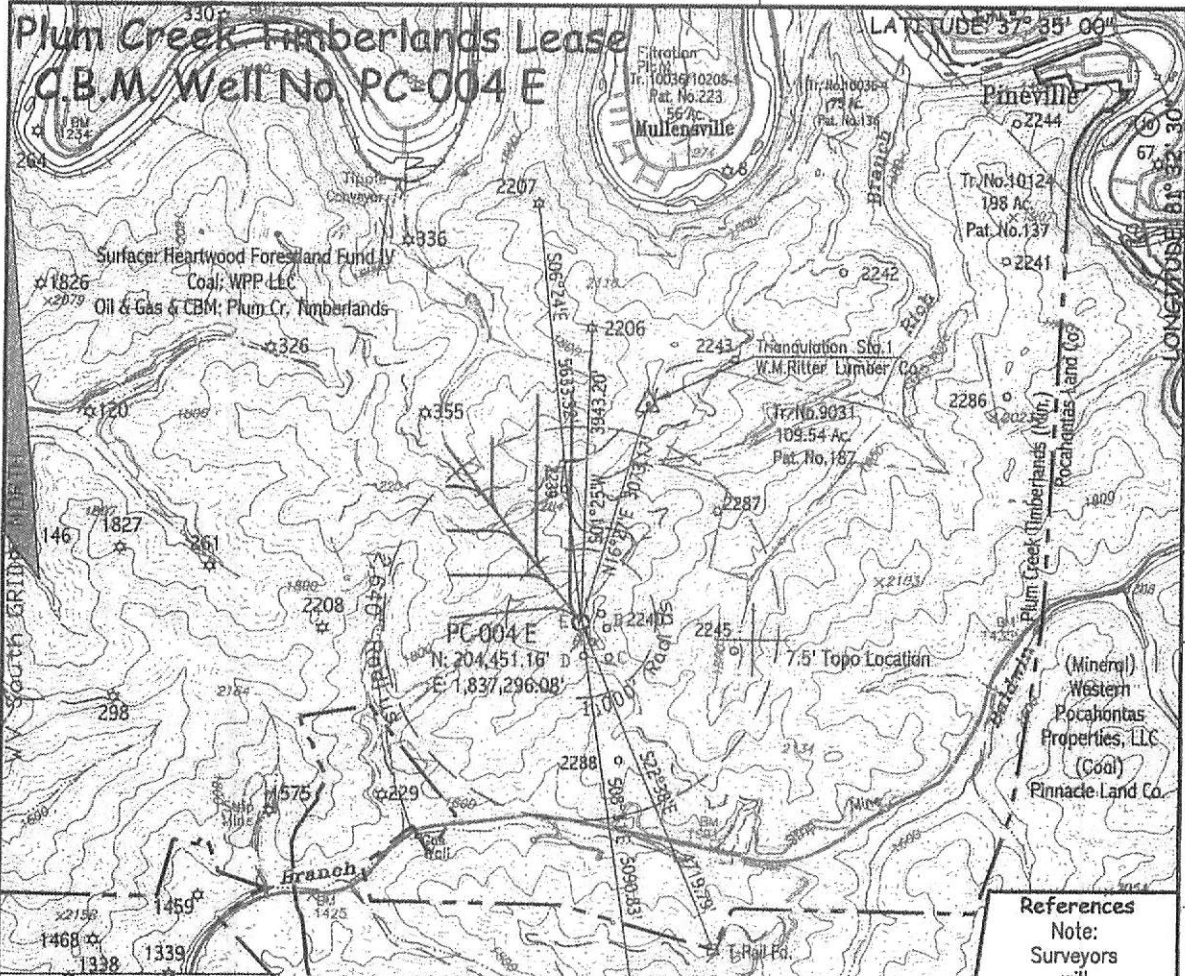
NOV 05 2015

WV Department of
 Environmental Protection
 11/20/2015



Environmental
Department of
NOVA

10902763P



1. TIES TO WELLS OR CORNERS ARE BASED ON W.V. STATE PLANE NAD 27 ZONE SOUTH.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM D.B. 421 PAGE NO. 01 OF RECORD IN WYOMING COUNTY C.H.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS.
4. WELL LAT./LONG. ESTABLISHED BY DGPS(RTK-SURVEY GRADE).

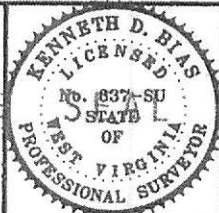
(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
NO KNOWN WATER WELLS WITHIN 1,000' OF THIS LOCATION.

References
Note:
Surveyors will re-stake prior to drilling.
SCALE: 1" = 100'

Benchmark Surveying, Inc.
Suite 4 50 Caney Branch Road
Chapmanville, W.V. 25508
304-855-7646
304-855-7647 Fax

FILE NO. CDX GAS
DRAWING NO. 2006-088
SCALE 1" = 2,000'
MINIMUM DEGREE OF ACCURACY 1:2,500'
PROVEN SOURCE OF ELEVATION Keapart H.A.R.N. Sta. via Survey Grade GPS/RTK

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
(SIGNED) Kenneth D. Bias
P.S. 837-SU



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

DATE: July 12th 2006
OPERATOR'S WELL NO. PC-004 E
API WELL NO. _____

WELL TYPE: OIL X GAS X LIQUID INJECTION _____ WASTE DISPOSAL _____
(IF "GAS,") PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X CBM X

LOCATION: ELEVATION 2,155.29' WATER SHED Wolfpen Branch of Indian Creek of Guyandotte River
DISTRICT Center COUNTY Wyoming
QUADRANGLE Pineville

SURFACE OWNER Heartwood Forestland Fund IV, L.P. ACREAGE 109.54
OIL & GAS ROYALTY OWNER Plum Creek Timberland LEASE ACREAGE 63.000

PROPOSED WORK: DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____
TARGET FORMATION Pocahontas No. 3d Perm Coal ESTIMATED DEPTH 1,315'
WELL OPERATOR CDX GAS, L.L.C. DESIGNATED AGENT Joseph A. Zupanick
ADDRESS P.O. Box 609 Pineville, W.V. 24874 ADDRESS P.O. Box 609 Pineville, W.V. 24874

