



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Tuesday, September 19, 2017
WELL WORK PERMIT
Vertical / Plugging

ENERGY CORPORATION OF AMERICA
500 CORPORATE LANDING

CHARLESTON, WV 25311

Re: Permit approval for J1232
47-091-00515-00-00

This well work permit 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 any additional specific 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 of 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.

Per 35 CSR 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- 0450.



James A. Martin
Chief

Operator's Well Number: J1232
Farm Name: ROSIER, ROBERT
U.S. WELL NUMBER: 47-091-00515-00-00
Vertical / Plugging
Date Issued: 9/19/2017

Promoting a healthy environment.

09/22/2017

I

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.

9100575P

WW-4B
Rev. 2/01

1) Date 8/28, 2017
2) Operator's
Well No. J-1232
3) APT Well No. 47-001 - 00515

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 1,568 Watershed Swamp Run
District Knottsville County Taylor Quadrangle Thornton

6) Well Operator Energy Corporation of America 7) Designated Agent Donald C. Supcoe, III
Address 500 Corporate Landing Address 500 Corporate Landing
Charleston, WV 25311 Charleston, WV 25311

8) Oil and Gas Inspector to be notified Name Kenneth Greynolds
Address 613 Broad Run Road
Jane Lew, WV 26378
9) Plugging Contractor Name Coastal Drilling East
Address 130 Meadow Ridge Road
Mt. Morris PA, 15349

10) Work Order: The work order for the manner of plugging this well is as follows:

See Attached Procedure

Exhibit "A"

MSHA 101C

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ICG Tygart Valley, LLC 47-09-00515
Leer Mine (MSHA ID# 46-09192)
MSHA 101-C Docket No. M-2012-065-C

Approximate coal seam top ~ 633.8'
Approximate coal seam bottom ~ 638.6'

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

Work order approved by inspector Kenneth L. Greynolds Date 9-14-17

09/22/2017



Coastal Drilling East LLC • 130 Meadow Ridge Road, Mt. Morris, PA 15349

Phone 304-296-1120 Fax 304-413-0061

A Shaft Drillers International Company

09/11/2017

Ms. Lindsey Smith
 Production Engineer
 Energy Corporation of America
 500 Corporate Landing
 Charleston, WV 25311

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WV Department of
Environmental Protection

RE: Plugging Plan – Well #J-1232

Ms. Smith,

Coastal Drilling East, LLC. (CDE) is pleased to provide you and your company with a plugging plan to complete Well #J-1232 near Grafton, WV. Please keep in mind this plugging plan is based on the information taken from the Well Operator's Report of Well Work. If the information provided on the report is not correct it could change the plugging plan for the well. Also, if well conditions are different than expected it could change the plugging plan as well.

Plugging Plan

- Pump water down annulus to kill any gas that may be present
- Move to site, rig up, mix mud and drill rathole
- Pull 1 ½" tubing from the surface to 5,082'
- Attempt to clean out well to original total depth (TD) at 5,980' - CLEAN TO PBTD, ≈ 5190' gwm
- Run cement bond log on 4 ½" casing to determine the top of cement
- Set bottom hole plug as required by the WV DEP from attainable (TD) to top of cement determined by the bond log
- Tag top of bottom hole plug to insure plug is at correct depth. Re-cement if necessary
- Cut and pull 4 ½" casing at top of cement determined by the cement bond log
- Clean out wellbore to top of remaining 4 ½" casing
- Run suite of logs to verify casing size, placement of casing collars, bottom of casing, depth of coal seams, deviation of wellbore and cement bond to casing

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- Set intermediate cement plug from top of bottom hole plug to a depth within 25' of the bottom of the 8 5/8" casing
- If necessary, cut and pull any un-cemented 8 5/8" casing
- Perforate, cut, rip or mill any remaining 8 5/8" casing at depths determined by MSHA's 101C Petition for the Leer Mine
- Cement hole from top of intermediate plug to surface using cement required by MSHA's 101C Petition for Leer Mine

The plugging plan above is a direct reflection of the standards required by the State of WV and the Mine Safety and Health Administration to plug a well for mine through.

In closing, I would like to thank you for giving Coastal Drilling East, LLC the opportunity to submit a plugging plan to plug Well #J-1232 for the Energy Corporation of America.

Respectfully submitted,

Coastal Drilling East, LLC.

Kevin Wright

Kevin Wright
Well Service Division Manager

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09/22/2017

face area will be available. The fire hose will be located near the working face.

(5) Sufficient supplies of roof support and ventilation materials will be available and located near the working face. In addition, an emergency plug and/or plugs will be available within the immediate area of the well intersection.

(6) Equipment involved in mining through the well will be checked for permissibility and serviced on the maintenance shift prior to mining through the well. The methane monitor on the continuous mining machine involved in mining through the well will also be calibrated on the maintenance shift prior to mining through the well.

(7) When mining is in progress, tests for methane will be made with a handheld methane detector at least every 10 minutes, from the time that mining with the continuous mining machine is within 30 feet of the well until the well is intersected, and immediately prior to mining through. During the actual cutting-through process, no individual will be allowed on the return side until mining-through has been completed and the area has been examined and declared safe.

(8) The working area will be free from accumulations of coal dust and coal spillages, and rock dust will be placed on the roof, rib, and floor to within 20 feet of the face when mining through the well.

(9) When the well is intersected, all equipment will be deenergized and the place thoroughly examined and determined safe before mining is resumed.

(10) Any casing will be removed and no open flame will be permitted in the area until adequate ventilation has been established around the well.

(11) After a well has been intersected and the working place determined safe, mining will continue by the well at a distance sufficient to permit adequate ventilation around the area of the well.

(12) No person will be permitted in the area of the mining-through operation except those actually engaged in the operation, company personnel, personnel from MSHA, and personnel from the Kentucky OMSL.

(13) The mining-through operation will be under the direct supervision of a certified individual. Instructions concerning the mining-through operation will be issued only by the certified individual in charge. MSHA personnel may interrupt or halt the mining through operation when necessary for the safety of the miners.

(14) Within 30 days after this Order becomes final, the petitioner will submit

proposed revisions for its approved mine emergency evacuation and firefighting plan required by 30 CFR 75.1501. The petitioner will revise the plans to include the hazards and evacuation procedures to be used for well intersections.

The petitioner further states that this petition will apply to all types of mining (conventional, continuous, and longwall) and asserts that the proposed alternative method will at all times provide a measure of protection no less than that of the existing standard.

Docket Number: M-2012-064-C.

Petitioner: Lone Mountain Processing, Inc., Drawer C, St. Charles, Virginia 24282.

Mine: Mine No. 1, MSHA I.D. No. 15-18734, Route 636 Benedict Road, St. Charles, Virginia 24282, located in Harlan County, Kentucky.

Regulation Affected: 30 CFR 75.208 (Warning devices).

Modification Request: The petitioner requests a modification of the existing standard to permit a readily visible warning to be posted at the second row of permanent roof support outby unsupported roof or a physical barrier to be installed to impede travel beyond permanent support, except during the installation of roof supports. The petitioner states that:

(1) The Kentucky Office of Mine Safety and Licensing requires "a warning device to be installed on the second row of permanent roof support outby unsupported roof."

(2) MSHA's approved Precautions for Remote Control Operation of Continuous Mining Machines states that "While using remote controls, the continuous mining machine operator and all other persons will position themselves no closer than the second 'full row' of installed roof bolts outby the face."

(3) This petition is necessary to improve safety and to attain commonality between State and Federal regulations.

(4) Safety increases when the distance an employee keeps from unsupported roof increases.

The petitioner asserts that the proposed alternative method will at all times guarantee no less than the same measure of protection afforded by the existing standard.

Docket Number: M-2012-065-C.

Petitioner: ICC Tygart Valley, LLC, 1200 Tygart Drive, Grafton, West Virginia 26354.

Mine: Tygart #1 Mine, MSHA I.D. No. 46-09192, located in Taylor County, West Virginia.

Regulation Affected: 30 CFR 75.1700 (Oil and gas wells).

Modification Request: The petitioner requests a modification of the existing standard requiring that barriers be established and maintained around oil and gas wells penetrating coalbeds or underground areas of coal mines to permit an alternative method of compliance. The petitioner states that:

(1) The mine is projected to encounter vertical in-seam boreholes, typical to oil and natural gas wells, as mine development progresses.

(2) The active development section is approaching these boreholes, and is projected to encounter additional boreholes in the future as mining operations continue.

(3) The procedure presented in this petition will be used to ensure that mining through these boreholes is accomplished safely and, as an alternative to compliance with 30 CFR 75.1700, will provide no less than the same measure of protection to the miners, as required by the MSIA standard.

The petitioner proposes to use the following procedures when plugging oil or gas wells:

(1) Prior to plugging an oil or gas well, a diligent effort will be made to clean the borehole to the original total depth. If this depth cannot be reached, the borehole will be cleaned out to a depth that would permit the placement of at least 200 feet of expanding cement below the base of the lowest minable coal bed.

(2) When cleaning the borehole, a diligent effort will be made to remove all of the casing in the borehole. If it is not possible to remove all of the casing, the casing that remains will be perforated or ripped at intervals spaced close enough to permit expanding cement slurry to infiltrate the annulus between the casing and the borehole wall for a distance of at least 200 feet below the base of the lowest minable coal bed.

(3) If the cleaned-out borehole produces gas, a mechanical bridge plug will be placed in the borehole in a competent stratum at least 200 feet below the base of the lowest minable coal bed, but above the top of the uppermost hydrocarbon-producing stratum. If it is not possible to set a mechanical bridge plug, a substantial brush plug may be used in its place.

The District Manager may allow the use of other effective methods of stopping any and all gas flow emitting from the wellbore before placement of cement through the minable coal seam(s). Such approval will be documented in a written response to the operators' submittal of a detailed explanation of the method to be used

and an engineering evaluation of the relative effectiveness of the alternative.

(4) A suite of logs will be made, consisting of a caliper survey, directional deviation survey, and log(s) suitable for determining the top and bottom of the lowest minable coal bed and potential hydrocarbon-producing strata and the location for the bridge plug.

(5) If the uppermost hydrocarbon-producing stratum is within 200 feet of the base of the lowest minable coal bed, properly placed mechanical bridge plugs or a suitable brush plug described in paragraph (3) above will be used to isolate the hydrocarbon-producing stratum from the expanding cement plug. Nevertheless, a minimum of 200 feet of expanding cement will be placed below the lowest minable coal bed.

(6) The wellbore will be completely filled and circulated with a gel that inhibits any flow of gas, supports the walls of the borehole, and increases the density of the expanding cement. This gel will be pumped through open-end tubing run to a point approximately 20 feet above the bottom of the cleaned out area of the borehole or bridge plug.

The petitioner proposes to use the following procedures when plugging gas and oil wells to the surface:

(1) A cement plug will be set in the wellbore by pumping expanding cement slurry down the tubing to displace the gel and fill the borehole to the surface. As an alternative, the cement slurry may be pumped down the tubing so that the borehole is filled. There will be at least 200 feet of expanding cement below the base of the lowest minable coal bed.

(2) A marker conforming to the requirements of the state regulatory authority will be installed at the borehole, or a small quantity of steel turnings or other small magnetic particles will be embedded in the top of the cement near the surface. The method used will be suitable to serve as a permanent magnetic monument of the borehole.

The following procedures will be used for the vent pipe method for plugging oil and gas wells:

(1) A 4½-inch or larger pipe will be run into the wellbore to a depth of 100 feet below the lowest minable coal bed and wedged to a smaller diameter pipe that, if desired, will extend to a point approximately 20 feet above the bottom of the cleaned-out area of the borehole or bridge plug.

(2) A cement plug will be set in the wellbore by pumping expanding cement slurry, Portland cement, or a Portland cement-fly ash mixture down the tubing to displace the gel so that the borehole is filled with cement. The borehole and

the vent pipe will be filled with expanding cement for a minimum of 200 feet below the base of the lowest minable coal bed. The top of the expanding cement will extend upward to a point approximately 100 feet above the top of the lowest minable coal bed.

(3) All fluid will be evacuated from the vent pipe to facilitate testing for gases. During the evacuation of fluid, the expanding cement will not be disturbed.

(4) The top of the vent pipe will be protected to prevent liquids or solids from entering the wellbore, but permit ready access to the full internal diameter of the vent pipe when necessary.

The petitioner proposes to use the following procedures when plugging oil or gas wells for subsequent use as degasification boreholes:

(1) A cement plug will be set in the wellbore by pumping expanding cement slurry down the tubing to displace the gel and provide at least 200 feet of expanding cement below the lowest minable coal bed. The top of the expanding cement will extend upward to a point above the top of the coal bed being mined. This distance will be based on the average height of the roof strata breakage for the mine.

(2) To facilitate methane drainage, degasification casing of suitable diameter, slotted or perforated throughout its lower 150 to 200 feet, will be set in the borehole to a point 10 to 30 feet above the top of the expanding cement.

(3) The annulus between the degasification casing and the borehole wall will be cemented from a point immediately above the slots or perforations to the surface.

(4) The degasification casing will be cleaned out for its total length.

(5) The top of the degasification casing will be fitted with a wellhead equipped as required by the District Manager. Such equipment may include check valves, shut-in valves, sampling port, flame arrestor equipment, and security fencing.

The following alternative procedures for preparing and plugging oil and gas wells will apply to wells that the petitioner and the District Manager agree cannot be completely cleaned out due to damage to the well caused by subsidence, caving, or other factors; as determined by the petitioner and agreed to by the District Manager. These provisions will apply unless alternative measures are agreed upon and based upon a plan submitted to the District Manager:

(1) The petitioner will drill a hole adjacent and parallel to the well to a

depth of at least 200 feet below the lowest minable coal seam.

(2) The petitioner will use a geophysical sensing device to locate any casing that may remain in the well.

(3) If the well contains casing(s), the petitioner will drill into the well from the parallel hole. From 10 feet below the coal seam to 10 feet above the coal seam, the petitioner will perforate or rip all casings at intervals of at least 5 feet. Beyond this distance, the petitioner will perforate or rip at least every 50 feet from at least 200 feet below the base of the lowest minable coal seam up to 100 feet above the seam being mined. The petitioner will fill the annulus between the casing, and between the casings and the well wall with expanding cement (minimum 0.5 percent expansion upon setting), and will ensure that these areas contain no voids. If the petitioner, using a casing bond log, can demonstrate to the satisfaction of the District Manager that the annulus of the well is adequately sealed with cement, then the petitioner will not be required to perforate or rip the casing for that particular well or fill these areas with cement. When multiple casing and tubing strings are present in the coal horizon(s), any casing that remains will be ripped or perforated and filled with expanding cement as indicated above. An acceptable casing bond log for each casing and tubing string is needed if used in lieu of ripping or perforating multiple strings.

(4) Where the petitioner determines and the District Manager agrees that there is insufficient casing in the well to allow the method outlined in paragraph (3) above to be used, then the petitioner will use a horizontal hydraulic fracturing technique to intercept the original well. From at least 200 feet below the base of the lowest minable coal seam to a point at least 50 feet above the seam being mined, the petitioner will fracture at least six places at intervals to be agreed upon by the petitioner and the District Manager after considering the geological strata and the pressure within the well. The petitioner will then pump expanding cement into the fractured well in sufficient quantities and in a manner that fills all intercepted voids.

(5) The petitioner will prepare down-hole logs for each well. The logs will consist of a caliper survey and log(s) suitable for determining the top, bottom, and thickness of all coal seams and potential hydrocarbon-producing strata and the location for the bridge plug. The petitioner may obtain the logs from the adjacent hole rather than the well if the condition of the well makes it impractical to insert the equipment

necessary to obtain the log. The District Manager may approve the use of a down-hole camera survey in lieu of down-hole logs if, in his or her judgment, such logs would not be suitable for obtaining the data or are impractical to obtain due to the condition of the drill hole. A journal will be maintained describing the length and type material used to plug the well; the length of casing(s) removed, perforated, or ripped or left in place; and other pertinent information concerning sealing the well.

(6) After the petitioner has plugged the well, the petitioner will plug the open portions of both holes from the bottom to the surface with Portland cement or a lightweight cement mixture. The petitioner will embed steel turnings or other small magnetic particles in the top of the cement near the surface to serve as a permanent magnetic monument of the well. In the alternative, a 4½-inch or larger casing set in cement will extend at least 36 inches above the ground level. A combination of the methods outlined in paragraph (3) and (4) above may have to be used in a single well, depending upon the conditions of the hole and the presence of casings. The petitioner and the District Manager may discuss the nature of each hole and the District Manager may require the use of more than one method.

The petitioner proposes to use the following cut-through procedures whenever the safety barrier diameter is reduced to a distance less than the District Manager would approve pursuant to § 75.1700 or the petitioner proceeds with an intent to cut through a plugged well:

(1) Prior to reducing the safety barrier to a distance less than the District Manager would approve or proceeding with intent to cut through a plugged well, the petitioner will notify the District Manager.

(2) Mining in close proximity to or through a plugged well will be done on a shift approved by the District Manager.

(3) The District Manager, a representative of the miners, and the appropriate States agency will be notified by the operator in sufficient time prior to the mining-through operation to provide an opportunity for them to have a representative present.

(4) When using continuous mining equipment, dridge sights will be installed at the last open crosscut near the place to be mined to ensure intersection of the well. The dridge sights will not be more than 50 feet from the well. When using longwall mining methods, dridge sights will be installed

on 10-foot centers for a distance of 50 feet in advance of the well bore. The dridge sights will be installed in the headgate and tailgate.

(5) Firefighting equipment, including fire extinguishers, rock dust, and sufficient fire hose to reach the working face area of the mining-through will be available when either the conventional or continuous mining method is used. The fire hose will be located in the last open crosscut of the entry or room. All fire hoses will be ready for operation during the mining-through.

(6) Sufficient supplies of roof support and ventilation materials will be available and located at the last open crosscut. In addition, an emergency plug and/or plugs will be available in the immediate area of the cut-through.

(7) The quantity of air required by the approved mine ventilation plan, but not less than 6,000 cubic feet per minute (cfm) of air for scrubber-equipped continuous miners or not less than 9,000 cfm for continuous minor sections using auxiliary fans or line brattice only, will be used to ventilate the working face during the mining-through operation. The quantity of air required by the ventilation plan, but not less than 30,000 cfm, will reach the working face of each longwall during the mining-through operation.

(8) Equipment will be checked for permissibility and serviced on the shift prior to mining-through the well. The methane monitors on the continuous mining machine or the longwall shear and face will be calibrated on the shift prior to mining through the well.

(9) When mining is in progress, tests for methane will be made with a hand-held methane detector at least every 10 minutes from the time that mining with the continuous mining machine is within 30 feet of the well until the well is intersected and immediately prior to mining through. When mining with longwall mining equipment, tests for methane will be made at least every 10 minutes when the longwall face is within 10 feet of the well. During the actual cutting-through process, no individual will be allowed on the return side until mining through has been completed and the area has been examined and declared safe.

(10) When using continuous mining methods, the working area will be free from accumulations of coal dust and coal spillages, and rock dust will be placed on the roof, rib, and floor to within 20 feet of the face when mining through or near the well on the shift or shifts during which the cut-through will occur. On longwall sections, rock-dusting will be conducted and placed

on the roof, rib, and floor up to both headgate and tailgate gob.

(11) When the wellbore is intersected, all equipment will be deenergized and the area thoroughly examined and determined safe before mining is resumed. Any well casing will be removed and no open flame will be permitted in the area until adequate ventilation has been established around the wellbore.

(12) After a well has been intersected and the working area determined safe, mining will continue in the well at a distance sufficient to permit adequate ventilation around the area of the wellbore.

(13) No person will be permitted in the area of the mining-through operation except those actually engaged in the operation, company personnel, representatives of the miners, personnel from MSHA, and personnel from the appropriate State agency.

(14) The mining-through operation will be under the direct supervision of a certified official. Instructions concerning the mining-through operation will be issued only by the certified official in charge. MSHA personnel may interrupt or halt the mining-through operation when necessary for the safety of the miners.

(15) The petitioner will file a plugging affidavit setting forth the persons who participated in the work, a description of the plugging work, and a certification by the petitioner that the well has been plugged as described.

(16) Within 60 days after the Proposed Decision and Order (PDO) becomes final, the petitioner will submit proposed revisions for its approved 30 CFR Part 48 training plan to the District Manager. The provisions will include initial and refresher training regarding compliance with the terms and conditions stated in the PDO.

The petitioner asserts that the proposed alternative method will at all times guarantee miners no less than the same measure of protection as afforded by the existing standard.

Docket Number: M-2012-002-M.

Petitioner: Hecla Greens Creek Mining Company, P.O. Box 32199, Juneau, Alaska 99803.

Mine: Greens Creek Mine, MSHA I.D. No. 50-01267, located in Juneau County, Alaska.

Regulation Affected: 30 CFR 57.14130 (Roll-over protective structures (ROPS) and seat belts for surface equipment).

Modification Request: The petitioner requests a modification of the existing standard to permit employees to be transported 1,600 feet to and from the surface dry facility to work sites underground using underground mine

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7-35
WV 8-81)

RECEIVED
DEPARTMENT OF ENERGY
OIL AND GAS

State of West Virginia
Department of Mines
Oil and Gas Division

Date January 8, 1986
Operator's
Well No. J-1232
Farm Rosier
API No. 47 - 091 - 0515

JAN 9 1986

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Environmental Protection

WELL OPERATOR'S REPORT
OF

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil / Gas x / Liquid Injection / Waste Disposal /
(If "Gas," Production x / Underground Storage / Deep / Shallow x /)

LOCATION: Elevation: 1568 Watershed Swamp Run
District: Knottsville County Taylor Quadrangle Thornton

COMPANY J&J Enterprises, Inc.
ADDRESS P.O. Box 48, Buckhannon, WV 26201
DESIGNATED AGENT Richard Reddecliff
ADDRESS P.O. Box 48, Buckhannon, WV 26201
SURFACE OWNER Robert & Shirley Rosier
ADDRESS Rt. # 1, Grafton, WV 26354
MINERAL RIGHTS OWNER Same as surface
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Donald Ellis
ADDRESS 2604 Crab Apple Lane Fairmont, WV 26554
PERMIT ISSUED 8/13/85
DRILLING COMMENCED 12/16/85
DRILLING COMPLETED 12/21/85
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"	31	0	0 sks.
9 5/8			
8 5/8	1178.75	1178.75	280 sks.
7			
5 1/2			
4 1/2	5232.50	5232.50	315 sks.
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Haverty Depth 5600-90 feet
Depth of completed well 5990 feet Rotary x / Cable Tools
Water strata depth: Fresh 50,550,1040 feet; Salt 0 feet
Coal seam depths: 535-40,620-23 Is coal being mined in the area? No

OPEN FLOW DATA

Producing formation Benson Pay zone depth 4477-80 feet
Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d
Combined Final open flow 947 Mcf/d Final open flow Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1700 psig (surface measurement) after 96 hours shut in
(If applicable due to multiple completion--)
Second producing formation 3rd Elk, & Riley Pay zone depth 5100-03 feet
Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d
Final open flow Mcf/d Oil: Final open flow Bbl/d
Time of open flow between initial and final tests hours
Static rock pressure psig (surface measurement) after hours shut in

(Continue on reverse side)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Benson: Perforations: 4477-80 (12 holes)
 Fracturing: 400 sks. 20/40 sand: 500 gal. acid: 375 Bbls. fluid.
 3rd Elk: Perforations: 5100-03 (12 holes)
 Fracturing: 380 sks. 20/40 sand: 500 gal. acid: 481 Bbls. fluid.
 Riley: Perforations: 4263-65 (8 holes) 4270-71 (4 holes)
 Fracturing: 300 sks. 20/40 sand: 500 gal. acid: 335 Bbls. fluid.

BOTTOM HOLE PRESSURE Pf=PweXGLS

$$t=60 + (5232 \times 0.0075) + 459.7=559 \quad x=\frac{1}{53.34} = \frac{1}{53.34(559)} = \frac{1}{29817} = 0.0000335 \quad Pf=(1700)(2.72)$$

$$(0.0000335)(0.670)(4683)(0.9) Pf=(1700)(2.72)(0.0946) = (1700)(1.099)$$

Pf=1869 psi

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fr and salt water, coal, oil and
KB & Ground Level			0	10	
Soil & shale			10	30	1/2" @ 50'
Sand & shale			30	320	
White sand & shale			320	415	1/2" @ 550'
Sand & shale			415	535	
Coal			535	540	1/2" @ 1010'
White sand & shale			540	620	
Coal			620	623	Gas ck @ 1735 No show
Sand & shale			623	690	
Sand & shale			690	850	Gas ck @ 3286 No show
Shale & sand			850	1000	
Sand, shale & red rock			1000	1285	Gas ck @ 3445 No show
Sand & shale			1285	1370	Gas ck @ 3917 NO show
Little Lime			1370	1400	
Sand & shale			1400	1410	Gas ck @ 4330 4/10-1" w/water
Big Lime			1410	1500	21.06 cu.ft.
Injun			1500	1600	
Sand & shale			1600	3140	Gas ck @ 4549 48/10-1" w/water
Sand & shale			3140	4263	73.03 cu.ft.
Riley			4263	4271	
Sand & shale			4271	4477	Gas ck @ 4738 50/10-1" w/water
Benson			4477	4480	74.53 cu.ft.
Sand & shale			4480	4655	
1st Elk			4655	4690	Gas ck @ 5022 20/10-1" w/water
Sand & shale			4690	4855	47.13 cu.ft.
2nd Elk			4855	5000	
Sand & shale			5000	5100	Gas ck @ 5496 20/10-1" w/water
3rd Elk			5100	5103	47.13 cu.ft.
Sand & shale			5103	5600	
Haverty			5600	5690	Gas ck @ drill collars 16/10-1"
Sand & shale			5690	5990	w/water
				T.D.	42.16 cu.ft.

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(Attach separate sheets as necessary)

J&J Enterprises, Inc.

Well Operator

By: Daniel F. Stark 09/22/2017

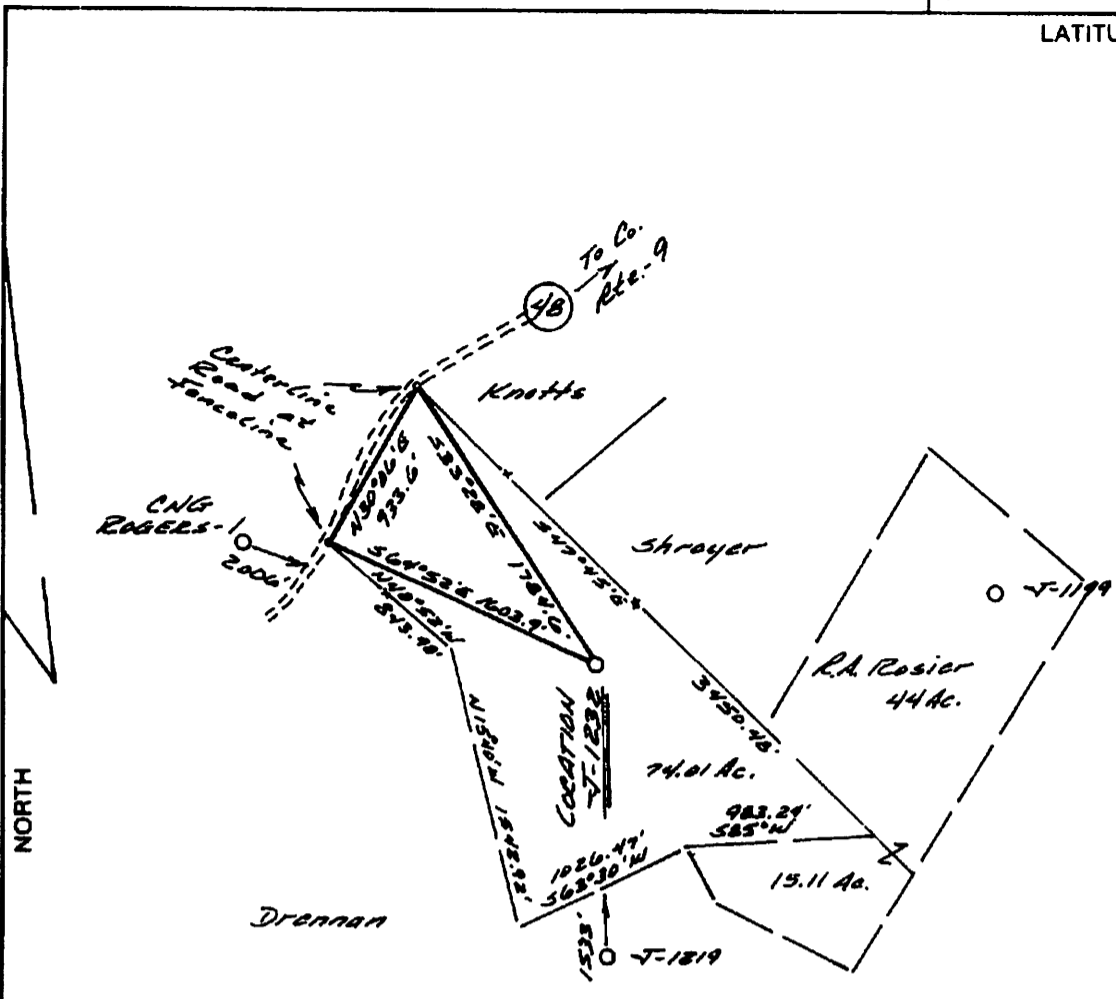
Date: 1/8/85 Daniel F. Stark-Geologist

Note: Regulation 2.02(i) provides as follows:
 "The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including sand, encountered in the drilling of a well."

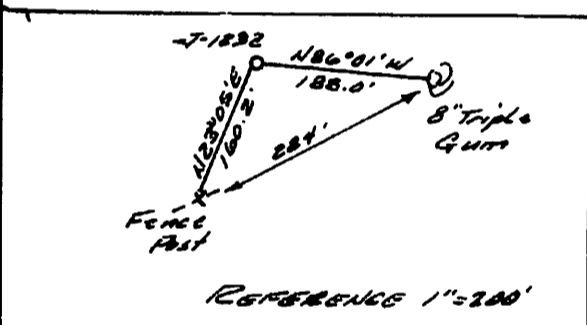
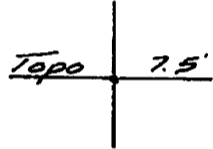
9100515P

LATITUDE 39°20'00"

LONGITUDE 79°57'30"



NORTH



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(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO. 346.01
DRAWING NO. 85-37
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION Spot Elev. 1625'
NW of Location.

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 MINES
(SIGNED) Richard J. Reddecliff
R.P.E. _____ L.L.S. 555
Buckhannon, WV



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION



DATE 22 July 19 85
OPERATOR'S WELL NO. T-1832
API WELL NO. _____

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF "GAS,") PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION 1568' WATER SHED Sulamp Run
DISTRICT Knottsville COUNTY Taylor
QUADRANGLE Thornton

47 - 091 - 0515
STATE COUNTY PERMIT

SURFACE OWNER Robert A. and Shirley A. Rosier ACREAGE 74.01
OIL & GAS ROYALTY OWNER E.A. & S.A. Rosier LEASE ACREAGE 134
LEASE NO. 5F-1907

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

09/22/2017

PLUG AND ABANDON CLEAN OUT AND REPLUG
TARGET FORMATION Haverly ESTIMATED DEPTH 5900'
WELL OPERATOR J&J ENTERPRISES, INC. DESIGNATED AGENT Richard Reddecliff
ADDRESS P.O. Box 48 ADDRESS P.O. Box 48
Buckhannon, WV 26201 Buckhannon, WV 26201

FJHM IV-6 (8-7/8)

H.T. HALL

COUNTY NAME

PERMIT

9100515P

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WW-4A
Revised 6-07

SEP 15 2017

1) Date: 8/28/2017
2) Operator's Well Number
J-1232

WV Department of
Environmental Protection

3) API Well No.: 47 - 091 - 00515

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

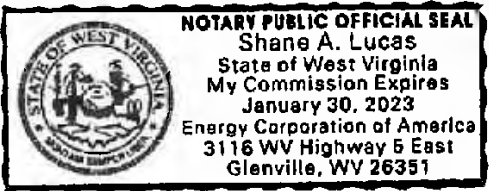
4) Surface Owner(s) to be served:	5) (a) Coal Operator
(a) Name <u>Robert A. Rosier</u>	Name <u>CoalQuest Development, LLC</u>
Address <u>1360 Ludwig Road</u>	Address <u>100 Tygart Drive</u>
<u>Grafton, WV 26354</u>	<u>Grafton, WV 26354</u>
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name <u>CoalQuest Development, LLC</u>
	Address <u>100 Tygart Drive</u>
	<u>Grafton, WV 26354</u>
(c) Name _____	Name _____
Address _____	Address _____
6) Inspector <u>Kenneth Graynolds</u>	(c) Coal Lessee with Declaration
Address <u>613 Broad Run Road</u>	Name _____
<u>Jane Lew, WV 26378</u>	Address _____
Telephone <u>304-206-6613</u>	

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 Energy Corporation of America
 By: Donald C. Supcoe, III
 Title: Director of Land Operations and Permitting
 Address 500 Corporate Landing
Charleston, WV 25311
 Telephone 304-406-4247

Subscribed and sworn before me this 11 day of SEPTEMBER
 Shane A. Lucas _____ Notary Public
 My Commission Expires January 30, 2023

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.

09/22/2017

SURFACE OWNER WAIVER

SEP 18 2017

Operator's Well
Number

J-1232

WV Department of
Environmental Protection

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,

X Robert A. Davis Date 9-13-17 Name
Signature By

Date

Signature

Date

9100515A

WW-4B

API No. 47-091-00515

Farm Name Robert Rosier

Well No. J-1232

**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 than 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 X / 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: 9/14/17

CoalQuest Development, LLC
By: Greg Nair
Its Power of Attorney

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SEP 15 2017
West Virginia
Environmental Protection
09/22/2017

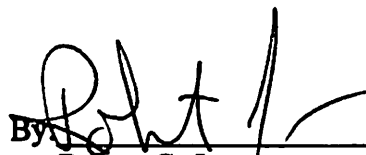
POWER OF ATTORNEY**COALQUEST DEVELOPMENT LLC
TO
GREG NAIR****Dated: January 1, 2017****Expires: December 31, 2017**

KNOW ALL MEN BY THESE PRESENTS: That CoalQuest Development LLC, a limited liability company formed under the laws of the State of Delaware (the "Company"), acting by and through Robert G. Jones, its duly authorized Secretary, has and does hereby appoint Greg Nair its true and lawful Attorney-in-Fact with power and authority, for and on behalf, and in the name of the Company, during the period herein specified, and subject to the restrictions and limitations set forth in this Power, to execute, acknowledge and deliver in the ordinary and regular course of the Company's business, applications for mining, environmental, safety, and health permits, permit transfers, or permit bond releases or bond adjustments, amendments, supplements or modifications to such permits, certificates, gas well plugging applications, shallow well drilling permit applications, or other instruments directly related to such amendments, supplements or modifications, monthly production reports, air quality, water quality or other environmental reports, quarterly discharge monitoring reports and any other like or similar reports required to be filed with any local, state or federal governmental agency.

The Attorney herein appointed shall be authorized to act pursuant to this Power from the date hereof only so long as such Attorney shall remain an employee of Arch Coal, Inc. or any subsidiary thereof, or until December 31, 2017, or until such earlier time as this instrument has been revoked, annulled, rescinded or set aside by an instrument of revocation filed with the Secretary of the Company, whichever first occurs.

IN WITNESS WHEREOF, the Company has caused this Power of Attorney to be executed on its behalf, and its seal to be hereunto affixed as of the day and year first above written, by the undersigned, Robert G. Jones, duly authorized Secretary of the Company.

COALQUEST DEVELOPMENT LLC

By 
Robert G. Jones
Secretary

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WV Department of
Environmental Protection

09/22/2017

STATE OF MISSOURI)
) ss
COUNTY OF ST. LOUIS)

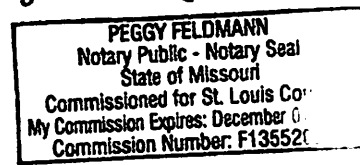
On this 2d day of January, 2017, before me, the undersigned notary public, personally appeared Robert G. Jones, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

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

Peggy Feldmann

Notary Public

My Commission Expires: December 1, 2017



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SEP 15 2017

WV Department of
Environmental Protection

09/22/2017

WW-9
(5/16)

SEP 16 2017

WV Department of
Environmental Protection

API Number 47 - 091 - 00515
Operator's Well No. J-1232

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Energy Corporation of America OP Code 306345

Watershed (HUC 10) Swamp Run Quadrangle Thomton

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: N/A

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Tanks- See attached letter)

Will closed loop system be used? If so, describe: Yes, return tanks to tanks

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Freshwater

-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used in drilling medium? _____

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed offsite

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? Will be removed offsite to a WVDEP approved facility.

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

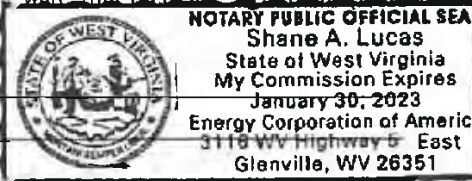
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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) Donald C. Supcoe II

Company Official Title Director of Land Operations and Permitting



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

Shane A. Lucas Notary Public

My commission expires JANUARY 30, 2023

[Signature]

Proposed Revegetation Treatment: Acres Disturbed 1.5 to 2.0 Prevegetation pH

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay Bales Tons/acre

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WV Department of Environmental Protection

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	12	Orchard Grass	12
Landino Clover	3	Landino Clover	3
Timothy	10	Timothy	10

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: RECLAIM, RESEED, AND MULCH AREA

Title: OIL & GAS INSPECTOR Date: 9-14-17

Field Reviewed? () Yes (✓) No

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

Operator Name: Energy Corporation of America
Watershed (HUC 10): Swamp Run Quad: Thornton
Farm Name: J-1232

- 1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

NA- Not Discharging Fluids

- 2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

"Closed Loop System" All returns will be taken to tanks and hauled to a WVDEP approved facility. No cuttings or fluids will be discharged on site.

- 3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

NA- Not discharging fluids.

- 4. Summarize all activities at your facility that are already regulated for groundwater protection.

NA

- 5. Discuss any existing groundwater quality data for your facility or an adjacent property.

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WV Department of Environmental Protection
09/22/2017

NA

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

ECA will not use waste material for de-icing or fill material on the property. All material will be disposed of at an approved facility.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

"Closed Loop System" All returns will be taken to tanks and hauled to a WVDEP approved facility. No cuttings or fluids will be discharged on site.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

Daily inspections of equipment will be conducted.

Signature: 

Date: 09/11/2017

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SEP 15 2017
WV Department of
Environmental Protection 09/22/2017

9100515P

Form WW-9

47-091-00515

Page of

J.1232 BM

9

1493

1520

1625

48

ACCESS ROAD



47-091-00515

J-1232



NO PITS OR LAND APPLICATION WILL BE USED

NOT TO SCALE



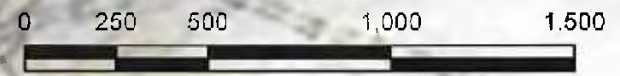
Energy Corporation of America

500 Corporate Landing Charleston, WV 25311
304-925-6100 - www.eca.com

Date: 08/31/17

Knottsville-Wesleyan

1 inch = 500 feet



ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRIES AT COUNTY/STATE ROADS SHALL BE MAINTAINED WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY D.O.T.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY CEVIATION FROM THIS PLAN

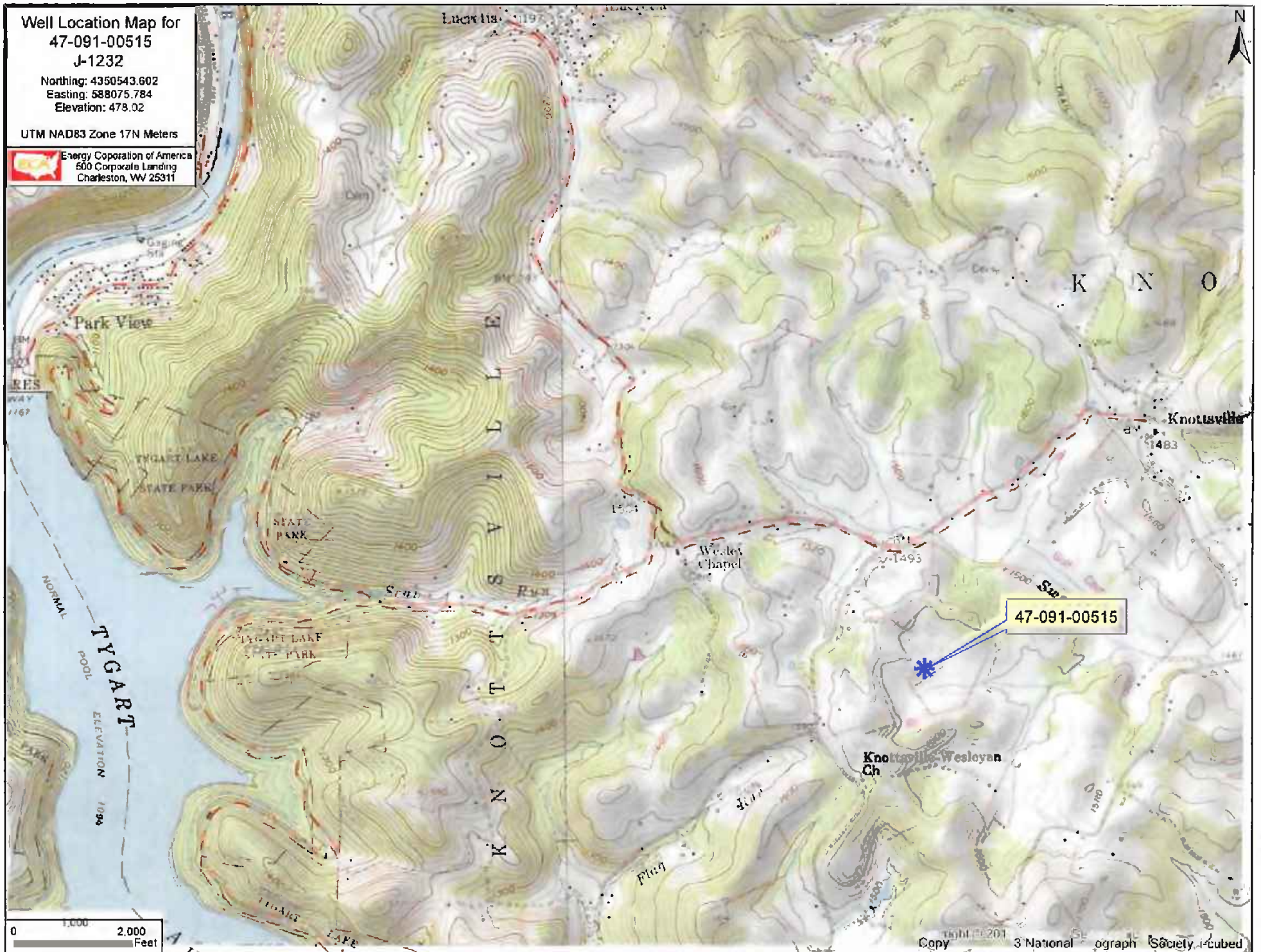
TOPO SECTION OF USGS THORNTON 7.5' QUADRANGLE

09/22/2017

Well Location Map for
47-091-00515
J-1232

Northing: 4350543.602
Easting: 588075.784
Elevation: 479.02

UTM NAD83 Zone 17N Meters



47-091-00515

9100515.P

9100515 P

WW-7
8-30-06



West Virginia Department of Environmental Protection
Office of Oil and Gas
WELL LOCATION FORM: GPS

API: 47-091-00515 WELL NO.: J-1232

FARM NAME: Rosier

RESPONSIBLE PARTY NAME: Energy Corporation of America

COUNTY: Taylor DISTRICT: Knottsville

QUADRANGLE: Thornton

SURFACE OWNER: Robert Rosier

ROYALTY OWNER: Robert Rosier

UTM GPS NORTHING: 4350543.602

UTM GPS EASTING: 588075.784 GPS ELEVATION: 478.02m (1568')

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS : Post Processed Differential _____
Real-Time Differential

Mapping Grade GPS _____ : Post Processed Differential _____
Real-Time Differential _____

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WV Department of
Environmental Protection

4. Letter size copy of the topography map showing the well location.
I the undersigned, hereby certify this data 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 Office of Oil and Gas.

Signature

Director of Land Operations and Permitting
Title

09/11/2017
Date

09/22/2017