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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, October 21, 2019

WELL WORK PLUGGING PERMIT
Vertical Plugging

ICG TYGART VALLEY, LLC
100 TYGART DR

GRAFTON, WV 26354

Re: Permit approval for J-1221
47-091-00506-00-00

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.

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. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, 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: J-1221
Farm Name: DARRELL & KATHRYN LOU[illegible]
U.S. WELL NUMBER: 47-091-00506-00-00
Vertical Plugging
Date Issued: 10/21/2019

I

47-091-00506P

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.

47-091-00506P

WW-4B
Rev. 2/01

1) Date October 9, 2019
2) Operator's Well No. J-1221
3) API Well No. 47- 91 - 00506 P

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 _____/ Liquid injection _____/ Waste disposal _____/
(If "Gas, Production ____ or Underground storage ____) Deep ____/ Shallow X

5) Location: Elevation 1510' Watershed Swamp Run
District Knottsville County Taylor Quadrangle Thornton (638)

6) Well Operator ICG Tygart Valley, LLC
Address 100 Tygart Drive
Grafton, WV 26354

7) Designated Agent Charles E. Duckworth
Address 100 Tygart Drive
Grafton, WV 26354

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, LLC
Address 130 Meadows Ridge Road
Mt. Morris, PA 15349

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

See Exhibit Nos. 1 and 2 and MSHA 101-C Exemption

ICG Tygart Valley, LLC (47-091-01089)

Leer Mine (MSHA ID# 46-09192

MSHA 101-C Docket No. M-2012-065-C

RECEIVED
Office of Oil and Gas
OCT 15 2019
WV Department of
Environmental Protection

Appropriate coal seam top = 339.30'

Approximate coal seam bottom = 345.30'

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 10-11-19

47-091-00506 P

EXHIBIT NO. 1

From the experience and technology developed since 1970 in plugging oil and gas wells for mining through, ICG Tygart Valley, LLC will utilize the following method to plug all future wells.

SOLID PLUG METHOD

a) If active well: clean out to total depth and plug back according to state regulations to a minimum of 200 feet below lowest minable coal seam.
b) ~~If abandoned well~~: clean out to first plug 200 feet below lowest minable coal seam.
c) Circulate through tubing or drill steel an expanding cement plug from a minimum of 200 feet below minable coal seam to a point 100 feet above minable coal.

Circulate through tubing or drill steel from 100 feet above coal seam to surface.

A monument will be installed with API No. and stating "solid plug".

47-091-00506P

EXHIBIT No. 2

COASTAL DRILLING EAST

"A Shaft Drillers International Company"

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

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

05/26/2016

Mr. Chuck Duckworth
Gas Well & Property Manager
Arch Coal, Inc. – Leer Mine Complex
100 Tygart Drive
Grafton, WV 26354

Mr. Duckworth,

Below is the proposed plugging plan we discussed that can be used on wells similar to the wells we have been plugging for the last few years.

Plugging Plan

- Move to site, rig up, mix mud, drill rathole PBTD ≈ 5020'
- ~~Attempt to~~ Clean out well to original total depth ~~(TD).~~
- Run cement bond log on 4 ½" casing to determine top of cement
- Set bottom hole cement plug as required by the WV DEP from 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 from the free point determined by the bond log.
- Clean out wellbore to top of remaining 4 ½" casing
- Run suite of logs to determine casing size, bottom of casing, depth of coal seams, deviation of wellbore and cement bond to casing.
- Cement hole 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 free casing.
- Perforate, cut, rip or mill any remaining casing at depths determined by MSHA's 101C Petition.

47-091-00506P

- Cement hole from top of intermediate plug to surface using cement required by MSHA's 101C Petition.
- Rig down and set monument as required by WV DEP.

COASTAL DRILLING - EAST

MSHA 101 C EXEMPTION

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 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. 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 inby 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: ICG 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 MSHA 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 cameral 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, drivage sights will be installed at the last open crosscut near the place to be mined to ensure intersection of the well. The drivage sights will not be more that 50 feet from the well. When using longwall mining methods, drivage sights will be installed on 10-foot centers for a distance of 50 feet in advance of the well bore. The drivage 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 miner 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 inby 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

47-091-00506P

IV-35
(Rev 8-81)

OCT 04 1985

Date October 3, 1985
Operator's
Well No. J-1221
Farm Mable Boyles
API No. 47 - 091 - 0506

State of West Virginia
Department of Mines
Oil and Gas Division

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: 1510 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 Mabel Boyles and others
ADDRESS Rt. # 1, Box 270 Thornton, WV 26440
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 6/3/85
DRILLING COMMENCED 7/22/85
DRILLING COMPLETED 7/22/85
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"	30	0	0
9 5/8			
8 5/8	966.25	966.25	265 sks.
7			
5 1/2			
4 1/2	5123.15	5123.15	410 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Hayerty Depth 5450-5500 feet
Depth of completed well 5750 feet Rotary x / Cable Tools ___
Water strata depth: Fresh 70, 250, 465 feet; Salt 0 feet
Coal seam depths: 47-48 Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation 4th ELk Pay zone depth 4951-5020 feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow 0 Bbl/d
Combined Final open flow 231 Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1200 psig (surface measurement) after 96 hours shut in
(If applicable due to multiple completion--)
Second producing formation 3rd ELk, 1st & 2nd Riley Pay zone depth 4716-20, 3916-32, 3786-89 feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow 0 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)

RECEIVED
Office of Oil and Gas
OCT 15 2019
WV Department of
Environmental Protection

MAY 0506

FORM IV-35
(REVERSE)

47-091-00506P

RECD 4 OCT 85

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

4th ELk: Perforations: 4951-53 (8 holes) 5013-13.5 (3 holes) 5019-20 (4 holes)
Fracturing: 300 sks. 20/40 sand: 511 Bbls. fluid. Foam frac.
3rd. ELk: Perforations: 4716-20 (12 Holes):
Fracturing: 300 sks. 20/40 sand: 500 gal. acid: 509 Bbls. fluid.
1st. Riley: Perforations: 3916-18 (7 holes) 3930-32 (7 holes)
Fracturing: 275 sks. 20/40 sand: 500 gal. acid: 433 Bbls. fluid.
2nd Riley: PErforations: 3786-89 (12 holes)
Fracturing: 300 sks. 20/40 sand: 500 gal. acid: 431 Bbls. fluid.

BOTTOM HOLE PRESSURE $Pf = Pwe^{XG}$ $\frac{1}{S}$ $\frac{1}{T}$

$t = 60 + (0.0075 \times 5123) + 459.7 = 558$ $X = 5.35 \times 558 = 29776$ $= 0.000034$ $Pf = 1200 \times 2.72^{(0.000034)}$

$(0.620)(4400)(0.9) = 1200 \times 2.72^{0.08} = 1200 \times 1.08$

Pf= 1296 psi

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
K.B. & Ground Level			0	10	
Sand			10	47	½" strema @ 70'
Coal			47	48	½" stream @ 250'
Sand & shale			48	290	
Sand, shale & white sand			290	650	1" stream @ 465'
Sand, shale & red rock			650	910	
Sand & shale			910	1145	Gas ck @ 1386 40/10-½" w/water 400,000 cu.ft.
Big LIme & INjun			1145	1350	
Shale & red rock			1350	1410	
Sand			1410	2085	Gas ck @ 1514 40/10-½" w/water 400,000 cu.ft.
Sand, shale & red rock			2085	2395	
Sand & shale			2395	2940	
Sand & shale			2940	3010	Gas ck @ 2305 40/10-½" w/water 400,000 cu.ft.
Sand & shale			3010	3786	
2nd RIley			3786	3789	
Sand & shale			3789	3916	Gas ck @ 3033 28/10-½" w/water 328,000 cu.ft.
1st RIley			3916	3932	
Sand & shale			3932	4080	
Benson			4080	4090	Gas ck @ 3442 28/10-½" w/water 328 cu.ft.
Sand & shale			4090	4716	
3rd ELk			4716	4720	
Sand & shale			4720	4951	Gas ck @ 3920 14/10-½" w/water 233,000 cu.ft.
4th ELk			4951	5020	
Sand & shale			5020	5210	
Brown sand			5210	5230	Gas ck @ 4143 20/10-½" w/water 277,000 cu.ft.
Sand & shale			5210	5450	
Haverty			5450	5510	
Sand & shale			5510	5750	Gas ck @ 4868 22/10-½" w/water 291,000 cu.ft.
				T.D.	
					Gas ck @ 5089 20/10-½" w/water 277,000 cu.ft.
					Gas ck @ 5564 28/10-½" w/water 328,000 cu.ft.
					Gas ck @ drill collars 16/10-½" w/water 248,000 cu.ft.

(Attach separate sheets as necessary)

J&J Enterprises, Inc.
Well Operator

By: Robert Dahlin-Geologist

Date: 10/3/85

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 coal, encountered in the drilling of a well."

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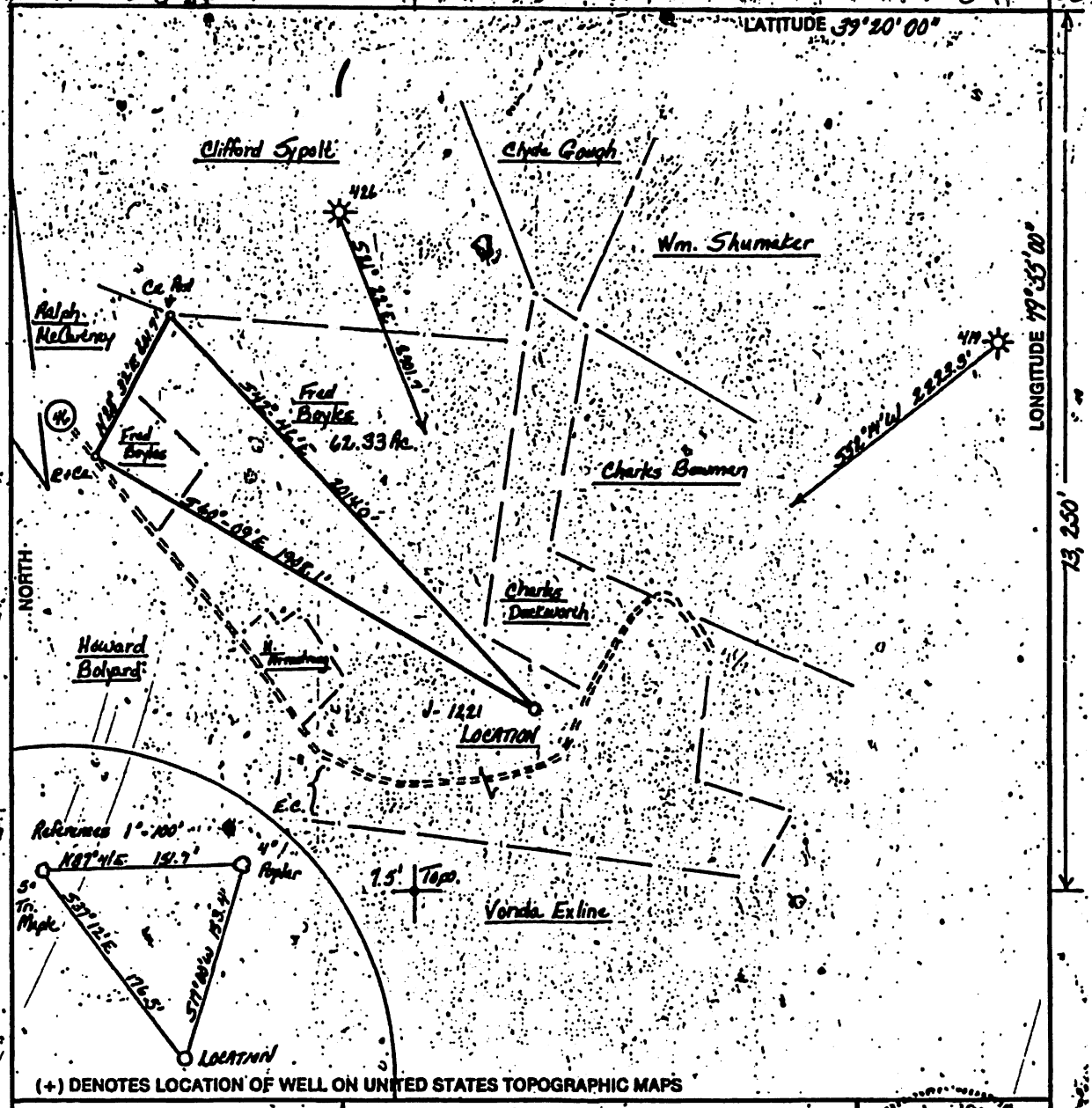
MN 6-3-85 — 4,000 — 47-091-00506P



FILE NO. 346-01
DRAWING NO. MS-380
SCALE 1" = 400'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION USGS BM Knottsville 1485' USGS Thornton Quad.

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) Rexford L. Ostrander
R.P.E. ____ L.L.S. 555
Buckhannon, W. Va.

REXFORD L. OSTRANDER — No. 555 — STATE OF WEST VIRGINIA — LAND SURVEYOR — PLACE SEAL HERE

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES.
OIL AND GAS DIVISION

DATE May 17, 19 85
OPERATOR'S WELL NO. J 1221
API WELL NO. 47 - 091 - 0506
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS ✓ LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION ✓ STORAGE ___ DEEP ___ SHALLOW ✓
LOCATION: ELEVATION 1510' WATER SHED Tygart Run
DISTRICT Knottsville COUNTY Taylor
QUADRANGLE Thornton
SURFACE OWNER Mabel L. Bayles et al ACREAGE 62.33
OIL & GAS ROYALTY OWNER Mark D. Bayles and others LEASE ACREAGE 79
LEASE NO. J1 1952
PROPOSED WORK: DRILL ✓ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ✓ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) ___
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
TARGET FORMATION Havery ESTIMATED DEPTH 5700'
WELL OPERATOR J&J Enterprises Inc. DESIGNATED AGENT Richard Robertshaw
ADDRESS PO Box 48, Buckhannon W. Va. 26201 ADDRESS PO Box 48, Buckhannon W. Va. 26201

COUNTY NAME: TAY
PERMIT: 0506

FORM IV-6 (6-78)
R.T. HALL

47-091-00506 P

WW-4A
Revised 6-07

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1) Date: October 9, 2019
2) Operator's Well Number
J-1221
3) API Well No.: 47 - 91 - 00506 P

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE 0F APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:
(a) Name: Darrell & Kathryn Loughry
Address: 153 Pruntytown Pike
Grafton, West Virginia 26354
(b) Name:
Address:
(c) Name:
Address:

5) (a) Coal Operator
Name: CoalQuest Development, LLC
Address: 100 Tygart Drive
Grafton, West Virginia 26354
(b) Coal Owner(s) with Declaration
Name:
Address:
Name:
Address:
(c) Coal Lessee with Declaration
Name:
Address:

6) Inspector: Kenneth Greynolds
Address: 613 Broad Run Road
Jane Lew, WV 26378
Telephone: (304) 206-6613

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: ICG Tygart Valley, LLC
By: Charles E. Duckworth
Its: Designated Agent
Address: 100 Tygart Drive
Grafton, West Virginia 26354
Telephone: (304) 265-9704

Subscribed and sworn before me this 9th day of October, 2019

Notary Public

Official Seal
Notary Public
State of West Virginia
Thomas Gregory Nair
329 Webster Avenue, Morgantown, WV 26501
My Commission Expires December 22, 2019

My Commission Expires December 22, 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 depprivacyoffier@wv.gov.

47-091-00506P

A Subsidiary of

ArchCoal

ICG TYGART VALLEY, LLC

100 Tygart Drive, Grafton, West Virginia 26354

October 9, 2019

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Darrell L. & Kathryn A. Loughry
153 Pruntytown Pike
Grafton, West Virginia 26354

Re: Plugging Permit – API # 47-91-00506 – Well No. J-1221

Dear Mr. & Mrs. Loughry:

As required by the permit process of the WV Department of Environmental Protection – Office of Oil and Gas enclosed please find a copy of the plugging permit application for the above referenced well that ICG Tygart Valley, LLC plans to submit to the WV Department of Environmental Protection, Office of Oil and Gas.

If you have no objection to the plugging, permit application, please sign the page, titled Surface Owner Waiver and return in the enclosed self-addressed stamped envelope.

If you should have any questions concerning this application, please feel free to contact Charles Duckworth at (304) 265-9704 or me at (304) 265-9778 or via email at gnair@archcoal.com.

Sincerely,

Greg Nair
Manager Surface Mine Planning

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Environmental Protection

Enclosures

CERTIFIED MAIL NO. 7018 1830 0002 2850 5736
RETURN RECEIPT REQUESTED

WW-4B

API No. 47-091-00506 P
Farm Name Mable Boyles
Well No. J-1221

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 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: 10/9/19

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

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47-091-00506P

POWER OF ATTORNEY

COALQUEST DEVELOPMENT LLC
TO
GREG NAIR

Dated: January 1, 2019

Expires: December 31, 2019

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, 2019, 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

47-091-00506P

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

On this 18th day of December, 2018, 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 - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: December 01, 2021
Commission Number: F13552693

Peggy Feldmann
Notary Public

My Commission Expires: December 1, 2021

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OCT 15 2019
WV Department of
Environmental Protection

47-091-00506P

WW-9
Rev. 5/08

Page _____ of _____
API Number 47 - 91 - 00506
Operator's Well No. J-1221

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 ICG Tygart Valley, LLC OP Code _____

Watershed Swamp Run Quadrangle Thornton (638)

Elevation 1510' County Taylor District Knottsville

Description of anticipated Pit Waste: N/A

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 Dispposal (Supply form WW-9 for disposal location)
X Other (Explain Tanks - See attached letter

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Proposed Work For Which Pit Will Be Used:

_____ Drilling _____ Swabbing
_____ Workover X Plugging
_____ Other (Explain _____

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) Charles E. Duckworth

Company Official Title Designated Agent

Subscribed and sworn before me this 9 day of October, 2019

_____ Official Notary Public

My commission expires December 22, 2019

STATE OF WEST VIRGINIA
Notary Public
State of West Virginia
Thomas Gregory Nair
329 Webster Avenue, Morgantown, WV 26501
My Commission Expires December 22, 2019

47-091-00506P

Form WW-9

Operator's Well No. J-1221

LEGEND

Property Boundary
Road
Existing Fence
Planned Fence
Stream
Open Ditch
Rock
North N
Buildings
Water wells
Drill site
Diversion
Spring
Wet Spot
Drain Pipe with size in inches (12)
Waterway
Cross Drain
Artificial Filter Strip
Pit: cut walls
Pit: compacted fill walls
Area for Land Application of Pit Waste

Proposed Revegetation Treatment: Acres Disturbed 1.50/2.0 Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH 6.5

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

Mulch Hay Bales Tons/acre

Seed Mixtures

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

Photocopied section of involved 7.5' topographic sheet.

See attached

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Plan Approved by: Thomas D. Skeppstrom

Comments: RECLAIM, RESEED AND MULCH ASAP

Title: OIL & GAS INSPECTOR Date: 10-11-19

Field Reviewed? ( ) Yes (✓) No

47-091-00506P

A Subsidiary of

ArchCoal

ICG TYGART VALLEY, LLC

100 Tygart Drive, Grafton, West Virginia 26354

October 9, 2019

WV Department of Environmental Protection
Office of Oil and Gas
601 – 57th Street, S.E.
Charleston, West Virginia 25304

To Whom It May Concern:

As per the WV Department of Environmental Protection, Office of Oil and Gas request, ICG Tygart Valley, LLC, submits the following procedures utilizing pit waste.

Upon submitting a well work application (without a general permit for Oil and Gas Pit Waste Discharge Application), ICG Tygart Valley, LLC, will construct no pits, but instead will use mud tanks to contain all drilling muds.

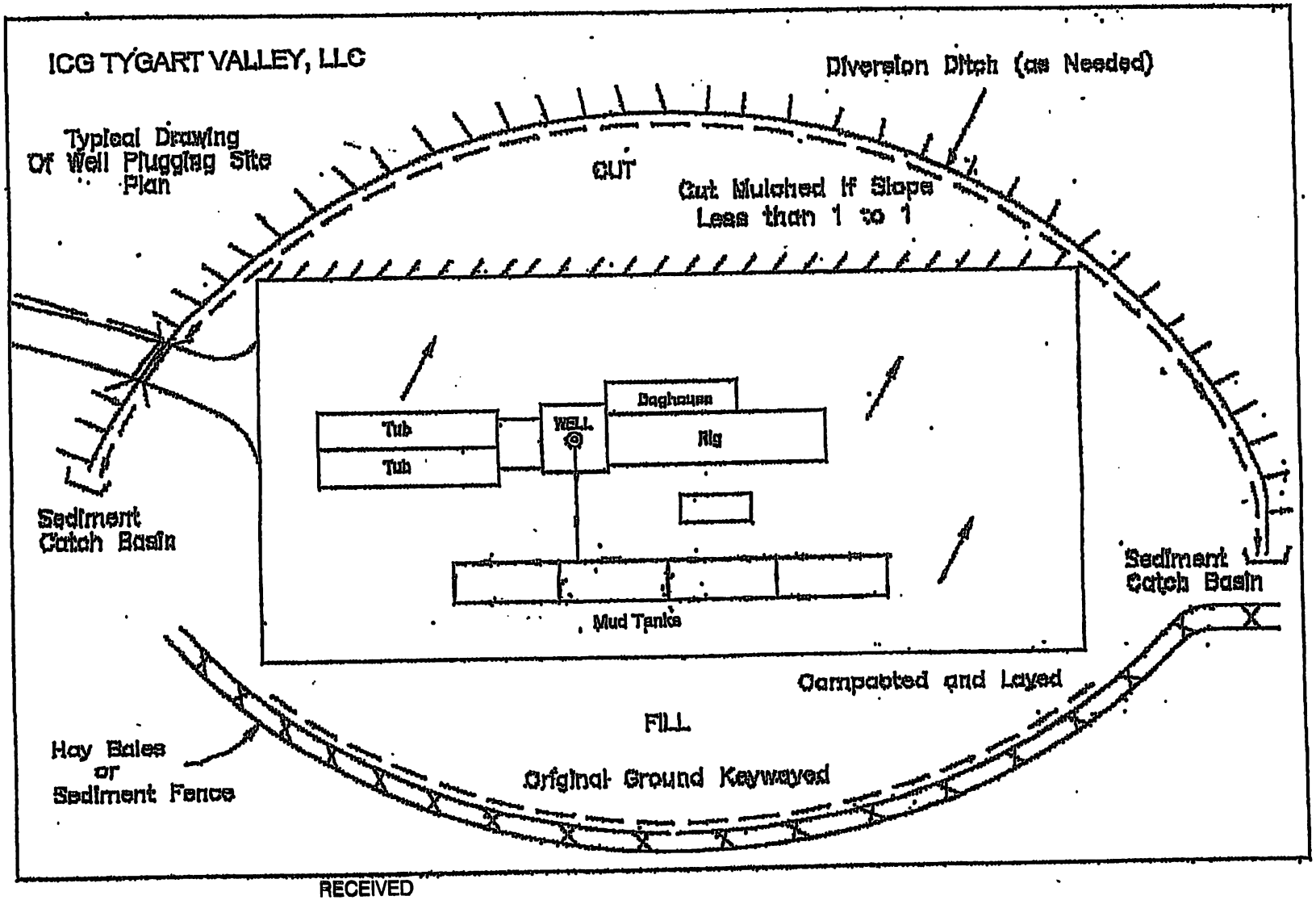
Once the well is completed, that material (minus the cave material) will be trucked to the next well to be plugged or to DEP impoundment facilities O-2017-06 or to an approved facility that can handle the material.

Sincerely,

Charles E. Duckworth
Designated Agent

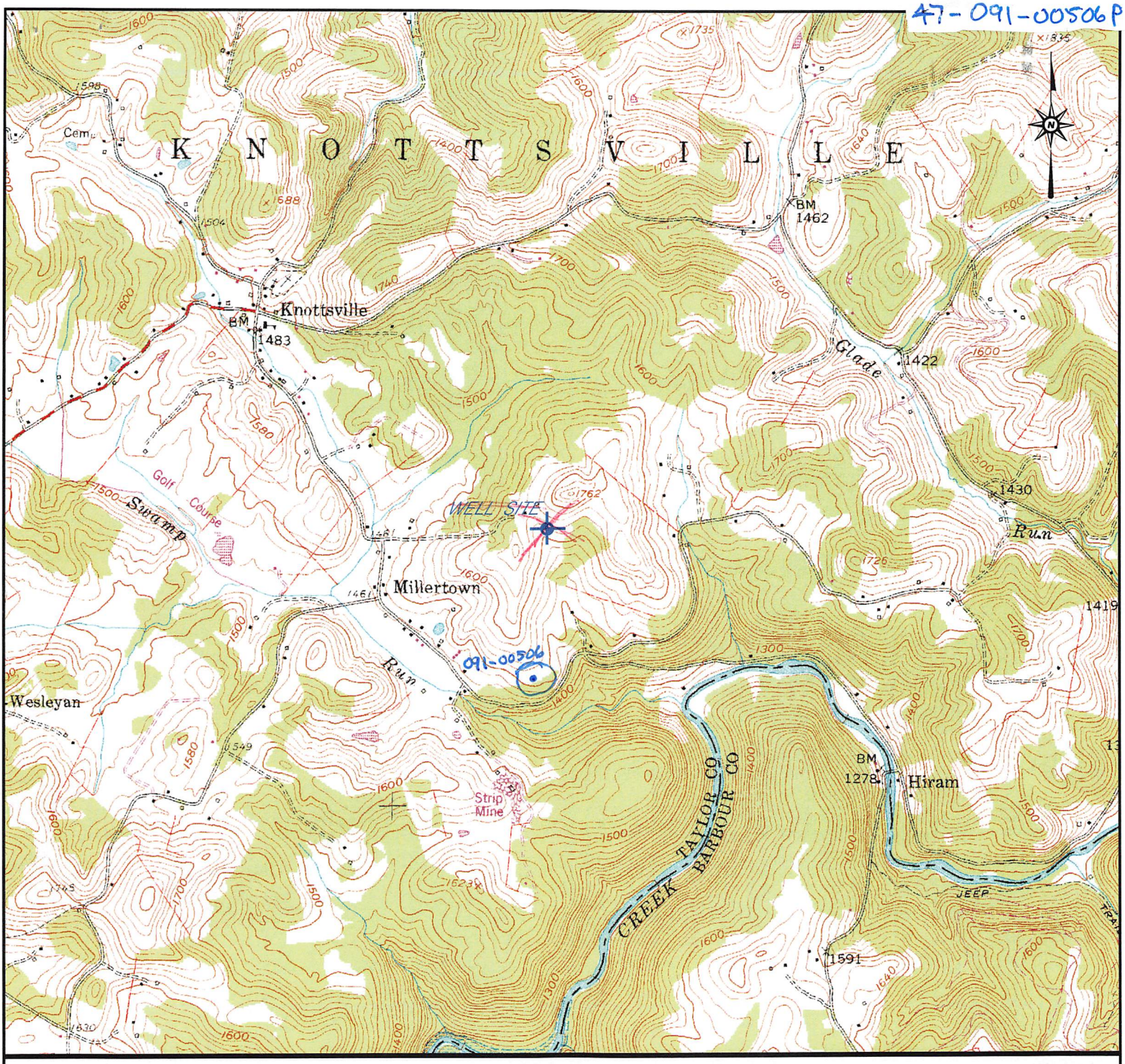
ICG TYGART VALLEY, LLC

Typical Drawing
Of Well Plugging Site
Plan



47-091-00502P

47-091-00506P



LATITUDE: 39° 17' 47.668"
LONGITUDE: 79° 57' 04.391"
NEAREST WATERCOURSE: Swamp Run
NEAREST TOWN: Knottsville

OPERATOR'S WELL NO. J-1221
API WELL NO.
47 — 091 — 0506
STATE COUNTY PERMIT

WELL TYPE: OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____
(IF "GAS") PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X
LOCATION: ELEVATION 1510 WATERSHED Swamp Run
DISTRICT Knottsville COUNTY Taylor
QUADRANGLE Thornton 7 1/2'
SURFACE OWNER: Darrell & Kathryn Loughery ACREAGE 60.33
OIL & GAS ROYALTY OWNER Darrell & Kathryn Loughery LEASE ACREAGE 79
LEASE NO. JJ-1952
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 Haverly ESTIMATED DEPTH 5700'
WELL OPERATOR ICG Tygart Valley, LLC DESIGNATED AGENT Charles E. Duckworth
ADDRESS 2708 Cranberry Square, Morgantown, WV 26508 ADDRESS 1200 Tygart Drive, Grafton, WV 26508

REVISED BY:	DATE:	API WELL NO. 47-091-0506 J-1221	
		ICG TYGART VALLEY, LLC	
		DRAWN BY: Jerry A. Muir	SCALE: 1" = 2000'
		DIRECTORY: DWG/TYG/TYG #1/ WV OIL & GAS PERMIT MAPS/	DATE ORIGINATED: JUNE, 2013
		DRAWING NO.: 47-091-0506 J-1221.dgn	PLOTTING DATES

PREPARED BY:
ArchCoal
Appalachia - Northern Region
2708 Cranberry Square, Morgantown, WV 26508
Phone: 304-594-1616 Fax: 304-594-3708

47-091-00506P

WW-7
8-30-06

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

API: 47-091-00506 **WELL NO.:** J-1221

FARM NAME: Mable Boyles

RESPONSIBLE PARTY NAME: ICG Tygart Valley, LLC

COUNTY: Taylor **DISTRICT:** Knottsville

QUADRANGLE: Thornton

SURFACE OWNER: Darrell & Kathryn Loughry

ROYALTY OWNER: Darrell & Kathryn Loughry

UTM GPS NORTHING: 4350219.939

UTM GPS EASTING: 590455.552 **GPS ELEVATION:** 1510.42

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 _x_: Post Processed Differential _____

Real-Time Differential _x_

Mapping Grade GPS ____: Post Processed Differential _____

Real-Time Differential _____

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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	Power of Attorney	October 9, 2019
	Title	Date