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west virginia department of environmental protection

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

Earl Ray Tomblin , Governor  
Randy C. Huffman , Cabinet Secretary  
www.dep.wv.gov

Wednesday, September 14, 2016  
WELL WORK PERMIT  
Vertical / Plugging

CABOT OIL & GAS CORPORATION  
2000 PARK LANE, SUITE 300

PITTSBURGH, PA 15275

Re: Permit approval for 20-643  
47-039-02905-00-00

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: 20-643  
Farm Name: BOWERS, WILLIAM  
U.S. WELL NUMBER: 47-039-02905-00-00  
Vertical / Plugging  
Date Issued: 9/14/2016

Promoting a healthy environment.

## 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.

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### CONDITIONS

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

1) Date August 8, 2016  
2) Operator's  
Well No. William Bower #18  
3) API Well No. 47-039 - 02905

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 1,380.17' Watershed Unnamed Tributary of Mile Branch  
District Cabin Creek County Kanawha Quadrangle Cedar Grove

6) Well Operator Cabot Oil & Gas Corporation 7) Designated Agent Phillip Hill - Cabot Oil & Gas Corporation  
Address 2000 Park Lane, Suite 300 Address 900 Lee Street East, Suite 1500  
Pittsburgh, PA 15275 Charleston, WV 25301

8) Oil and Gas Inspector to be notified 9) Plugging Contractor  
Name Terry Urban Name Contractor Services, Inc.  
Address P.O. Box 1207 Address 929 Charleston, Road  
Clendenin, WV 25045 Spencer, WV 25276

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

See Attached Sheet

*See Attachments*

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

Work order approved by inspector *[Signature]* Date 8-15-16

**Bowers #20**  
**API # 47 - 039 - 02905**  
**PLUGGING PROCEDURE**

**Current Configuration**

DTD @ 2564'  
 10" casing @ 705'  
 8-1/4" casing @ 1800'  
 6-5/8" casing @ 2126'  
 2" tubing @ 2564' with anchor packer set @ unknown depth  
 No water reported  
 Coal @ 75' - 79' & 680' - 685'  
 Weir @ 2360' to 2549' with gas shows @ 2375' & 2425'  
 Injun @ 2310' - 2340' with no show  
 Big Lime @ 2141' - 2310' with no show  
 1<sup>st</sup> Salt Sand @ 1200' - 1315'

Elev. 1380'

**PROCEDURE**

1. Contact Glasgow Office a minimum of 48 hours prior to starting work.
2. Contact State Inspector a minimum of 24 hours prior to starting work.
3. Lay 2" line from wellhead to pit/tank and stake down securely.
4. MIRU service rig and blow down well. Have vacuum truck available to catch any fluids circulated from well.
5. Unpack wellhead.
6. Pull 2" tubing.
7. If unable to pull tubing, run freepoint, cut above freepoint, and POOH.
8. TIH with 2-3/8" work string to TD.
9. MIRU Cement Company and pump 20 bbls 6% Gel followed by 50 sks of Class A cement for plug 1 from TD to 2300'.
10. Displace w/ 9 bbls of 6% Gel.
11. TOOH with work string.
12. Pull 6-5/8" casing string.
13. TIH with work string to 1950' and pump 20 bbls 6% Gel followed by 55 sks of Class A cement for plug 2 from 1950' to 1750'.
14. Displace w/ 7 bbls of 6% Gel.
15. TOOH with work string.
16. Pull 8-1/4" casing, 10" casing, and 13" conductor.
17. TIH with work string to 1450' and pump 30 bbls 6% Gel followed by 75 sks of Class A cement for plug 3 from 1450' to 1250'.
18. Displace w/ 5 bbls of 6% Gel.
19. Pull work string up to 735' and pump 50 bbls 6% Gel followed 50 cubic feet of expanding cement (45 sacks Class A cement with 10 % salt added) for plug 4 from 735' to 635'.
20. Displace w/ 2 1/2 bbl of 6% Gel.
21. Pull work string up to 150' and pump 130 cubic feet of expanding cement (110 sacks Class A cement with 10 % salt added) for plug 5 from 150' to surface.
22. TOOH with work string and lay down.
23. RDMO Cementing Company.
24. Place monument as required by law on top of well bore.
25. Reclaim well site.

*August Miller*  
 8-15-16

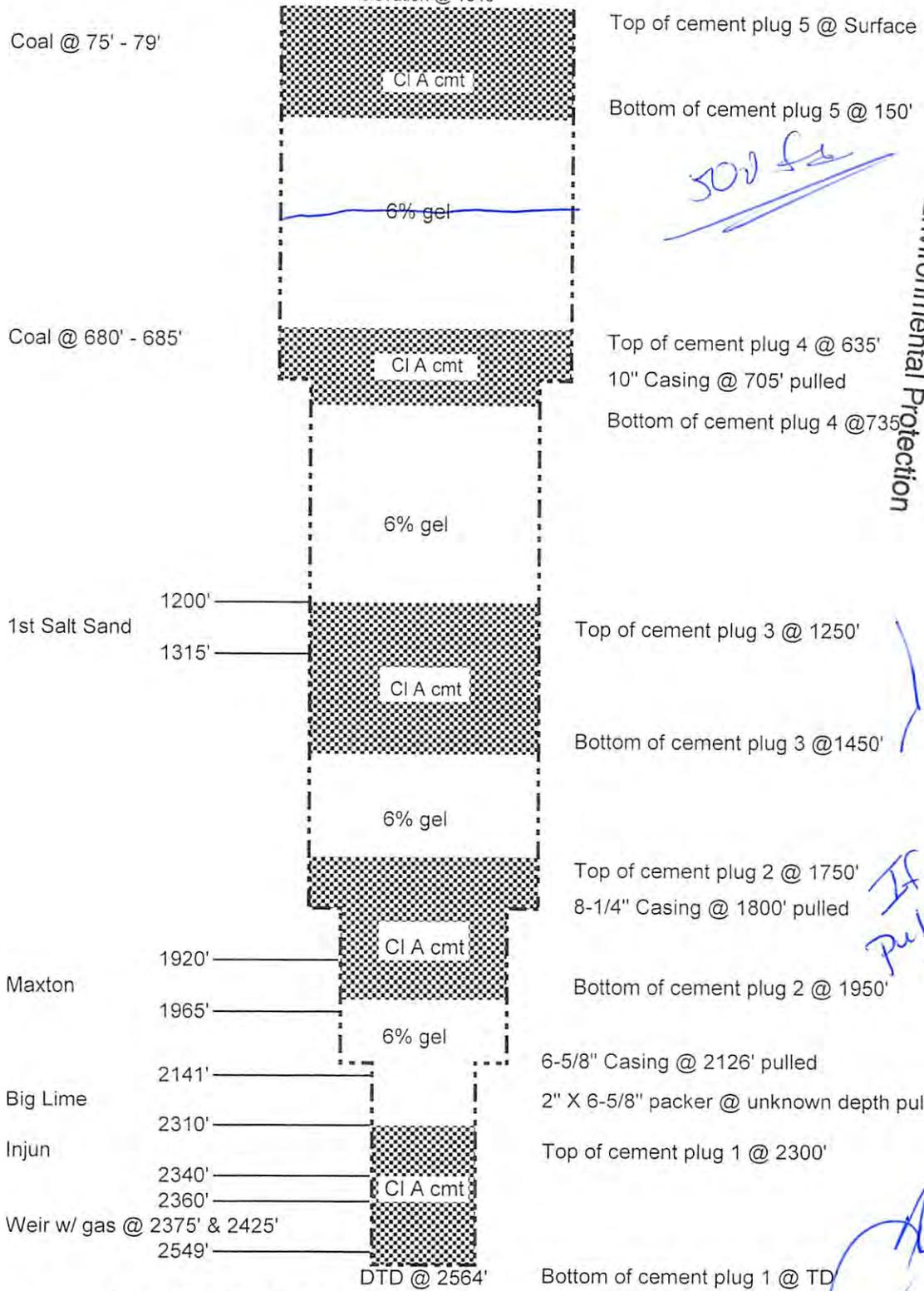
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**BOWERS #20**  
API 47-039-02905  
PROPOSED CONFIGURATION

elevation @ 1340'



*500 ft*

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*Elevation OK*

*If tubing is pulled with expand both plug*

*[Signature]*  
8-15/16

Schematic is not to scale

T. Ott 12/09/14

039-2905

# 643

RECORD OF LOGS WELL NUMBER 20

Contractor-Plant & Prother Co. Well completed Feb. 7, 1921.

Well # 643 Elev. 1340' 500' 000'

Formation	Top	Bottom
Coal	75	79
Coal	680	685
Gas Sand	1000	1100
First Salt Sand	1200	1515
Slate	1315	1330
Second Salt Sand	1339	1350
Slate	1350	1365
Third Salt Sand	1365	1495
Line Shells	1495	1555
Fourth Salt Sand	1555	1630
Line Shale	1630	1685
Sand	1685	1748
Red Rock	1748	1789
Line	1789	1800
Sand	1800	1850
Slate	1850	1865
Sand	1865	1920
Maxon Sand	1920	1965
Slate & Shale	1965	2048
Little Line	2048	2078
Pencil Cave	2078	2113
Line	2113	2121
Black Line	2121	2141
Big Line	2141	2310
Big Injun	2310	2340
Slate & Shale	2340	2360
Weir Sand	2360	2549 (First Gas 2375)
Slate	2549	2564 (Gas at 2425 & 2455)
Total Depth	2564	

Elevations

227' { 199' }

CASING PUT IN WELL

10 Inch	703 Ft.
8-1/4"	1600 "
6-5/8"	2126 "
2" Casing	2564 "

$$\begin{array}{r} 2141 \\ - 1340 \\ \hline 801 \end{array}$$

$$\begin{array}{r} 2310 \\ - 1340 \\ \hline 970 \end{array}$$

$$\begin{array}{r} 2360 \\ - 1340 \\ \hline 1020 \end{array} \quad (199')$$

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3902905P

WW-4A  
Revised 6-07

1) Date: August 8, 2016  
2) Operator's Well Number  
William Bowers #20  
3) API Well No.: 47 - 039 - 02905

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

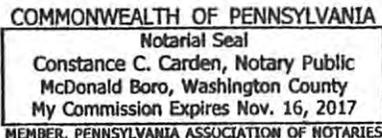
4) Surface Owner(s) to be served:	5) (a) <input checked="" type="checkbox"/> Coal Operator
(a) Name <u>Blackhawk Land &amp; Resources, LLC</u>	Name <u>See Attached Exhibit "A"</u>
Address <u>3228 Summit Square Place, Suite 180</u>	Address _____
<u>Lexington, KY 40509</u>	_____
(b) Name _____	(b) Coal Owner(s) with Declaration <input checked="" type="checkbox"/>
Address _____	Name <u>Blackhawk Land &amp; Resources, LLC</u>
_____	Address <u>3228 Summit Square Place, Suite 180</u>
_____	<u>Lexington, KY 40509</u>
(c) Name _____	Name _____
Address _____	Address _____
_____	_____
6) Inspector <u>Terry Urban</u>	(c) Coal Lessee with Declaration
Address <u>P.O. Box 1207</u>	Name <u>None of Record</u>
<u>Clendenin, WV 25045</u>	Address _____
Telephone <u>(304) 549-5915</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 Cabot Oil & Gas Corporation  
 By: Kenneth L. Marcum *Kenneth L. Marcum*  
 Its: Regulatory Supervisor  
 Address 2000 Park Lane, Suite 300  
Pittsburgh, PA 15275  
 Telephone (412) 249-3850

Subscribed and sworn before me this 8th day of August, 2016  
*Constance C. Carden* Notary Public  
 My Commission Expires November 16, 2017

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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](mailto:depprivacyoffier@wv.gov).

EXHIBIT "A"

COAL OPERATOR(S)

WILLIAM BOWERS #20

47-039-02905

Coyote Coal Company, LLC ✓  
63 Corporate Center  
Scott Depot, WV 25560

Midland Trail Energy, LLC ✓  
P.O. Box 366  
Tad, WV 25201

Panther Creek Mining, LLC ✓  
3228 Summit Sq. Place, Suite 180  
Lexington, KY 40509

Mammoth Coal Company ✓  
P.O. Box 150  
Cannelton, WV 25036

Pritchard Mining Co., Inc. ✓  
P.O. Box 3311  
Charleston, WV 25333

Administration Services, Inc. ✓  
4200 Shamblin Run Road  
Given, WV 25245

WWMV, LLC ✓  
315 70<sup>th</sup> Street, SE  
Charleston, WV 25304

Upper Kanawha Valley Development Corp. ✓  
400 Patterson Ln. #200  
Charleston, WV 25311

ERP Environmental Fund ✓  
P.O. Box 87  
Natural Bridge, VA 24578

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WW-9  
(2/15)

API Number 47 - 039 - 02905  
Operator's Well No. William Bower #20

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Cabot Oil & Gas Corporation OP Code 08145

Watershed (HUC 10) Unnamed Tributary of Mile Branch Quadrangle Cedar Grove

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: \_\_\_\_\_

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain No treated pit wastes will be produced

*Handwritten note:* TU 8-15-16

*Handwritten note:* ANY WELL EFFLUENT WILL BE DISPOSED OFF-SITE. gmm

Will closed loop system be used? If so, describe: N/A

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. no drilling proposed

-If oil based, what type? Synthetic, petroleum, etc. \_\_\_\_\_

Additives to be used in drilling medium? N/A

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. No cuttings produced during plugging operation

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

-Landfill or offsite name/permit number? \_\_\_\_\_

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 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 Kenneth L. Marcum

Company Official (Typed Name) Kenneth L. Marcum

Company Official Title Regulatory Supervisor

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Environmental Protection

Subscribed and sworn before me this 8th day of August, 2016

Constance C. Carden

My commission expires 11/16/2017

COMMONWEALTH OF PENNSYLVANIA  
Notary Public/Notarial Seal  
Constance C. Carden, Notary Public  
McDonald Boro, Washington County  
My Commission Expires Nov. 16, 2017  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Cabot Oil & Gas Corporation

Proposed Revegetation Treatment: Acres Disturbed 2.5 Prevegetation pH 6.5

Lime 2 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20/20 or equivalent

Fertilizer amount 500 lbs/acre

Mulch Pulp Fiber at 1000 to 1500 lbs. Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type	lbs/acre
(Grain Rye - 100) (Red Clover - 5) (Fescue - 40)	
(Annual Rye - 20) (White Clover - 5)	
(Perennial Rye - 10) (Alta Sweet Clover - 5)	
(Yellow Clover - 5) (Birdsfoot Trefoil - 10)	

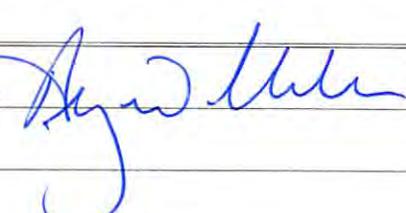
Seed Type	lbs/acre
(Grain Rye - 100) (Red Clover - 5) (Fescue - 40)	
(Annual Rye - 20) (White Clover - 5)	
(Perennial Rye - 10) (Alta Sweet Clover - 5)	
(Yellow Clover - 5) (Birdsfoot Trefoil - 10)	

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by:



Comments:

Title:



Date:

8-15-16

Field Reviewed?

Yes

No

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**GENERAL NOTES:**

THIS DRAWING REPRESENTS A SCHEMATIC REPRESENTATION OF THE PROPOSED WELL SITE AND ACCESS ROAD. PROPOSED STRUCTURES SUCH AS THE DRILLING PIT, ROADWAY, CULVERTS, SEDIMENT BARRIERS, ETC. ARE SHOWN IN THEIR APPROXIMATE PREPLANNING CONFIGURATION. GIVEN UNFORESEEN CIRCUMSTANCES, THE AS-BUILT LOCATION OF THESE STRUCTURES MAY VARY SLIGHTLY FROM THE LOCATION SHOWN ON THE ATTACHED DRAWINGS.

ALL ROADS SHOWN THEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH GUIDELINES AND REQUIREMENTS OF WEST VIRGINIA DEPARTMENT OF OIL AND GAS EROSION AND SEDIMENT CONTROL MANUAL.

ALL CULVERTS SHOWN ON THIS DRAWING ARE PROPOSED AND WILL BE A MINIMUM OF 15" IN DIAMETER UNLESS OTHERWISE NOTED.

DITCH LINES AND CULVERTS WILL BE INSTALLED WHENEVER PRACTICAL. HOWEVER PORTIONS OF THE EXISTING/PROPOSED ROADS WHICH ARE LOCATED IN SOLID ROCK SHALL NOT REQUIRE DITCHES OR CROSS DRAINS, UNLESS OTHERWISE WARRANTED BY FIELD CIRCUMSTANCES.

SUPPLEMENTAL DRAINAGE AND/OR SEDIMENT CONTROL STRUCTURES MEASURES IN ADDITION TO THOSE SHOWN ON THE ATTACHED DRAWINGS WILL BE INSTALLED WHEN AND WHERE DEEMED NECESSARY. SUCH ADDITIONAL MEASURES MAY CONSIST OF EITHER STRAW BALES, SILT FENCES OR OTHER MEASURES OUTLINED IN THE WEST VIRGINIA DEPARTMENT OF OIL AND GAS EROSION AND SEDIMENT CONTROL FIELD MANUAL.

SEDIMENT BASINS (TRAPS) WILL BE CONSTRUCTED AT ALL CULVERTS AND CROSS DRAINS INLETS AS REQUIRED IN THE WEST VIRGINIA DEPARTMENT OF OIL AND GAS EROSION AND SEDIMENT CONTROL MANUAL. FIELD CONDITIONS SUCH AS ROCK OUTCROPS AND BEDROCK MAY PROHIBIT INLET TRAPS BEING INSTALLED WHEN THESE CONDITIONS EXIST. ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

A SEDIMENT BARRIERS OF EITHER BRUSH, STRAW BALES, FILTER FENCE, ETC. WILL BE INSTALLED AND MAINTAINED BELOW THE OUT FALL OF ALL PROPOSED CULVERTS AND AT ALL OTHER STORM WATER DRAINAGE POINTS FROM EITHER THE ROADWAY OR THE LOCATION.

ALL NECESSARY TIMBER OR BRUSH WILL BE REMOVED FROM ROUTE OF THE ROADWAY AND LOCATION BY CLEANING AND GRUBBING ACTIVITIES. ANY SALVAGEABLE TIMBER WILL BE CUT AND STACKED TO THE SIDE OF THE ROADWAY OR REMOVED TO A STOCKPILE AREA. THE REMAINING TIMBER OR BRUSH WILL BE CUTUP AND WIND ROWED BELOW THE OUTSLOPE OF THE CONSTRUCTION AREAS TO BE UTILIZED AS A SEDIMENT BARRIER.

SEPARATE PERMITS WILL BE OBTAINED FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION FOR ALL POINTS OF INGRESS AND EGRESS FROM COUNTY AND STATE ROADS. THESE INGRESS AND EGRESS POINTS WILL BE MAINTAINED IN ACCORDANCE WITH CURRENT WEST VIRGINIA DEPARTMENT OF TRANSPORTATION REGULATIONS. A STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF 8" OF CRUSHED STONE WILL BE CONSTRUCTED FOR A MINIMUM DISTANCE OF 50' FROM THE INGRESS AND EGRESS POINTS OF ALL PUBLIC ROADWAYS IN ACCORDANCE WITH CURRENT WEST VIRGINIA DEPARTMENT OF TRANSPORTATION REGULATIONS.

ALL CULVERTS SHOWN ON THE ATTACHED DRAWINGS ARE TO BE CONSIDERED PERMANENT AND WILL REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION ACTIVITIES UNLESS NOTED OTHERWISE. A STABILIZED OUTLET CONTROL DEVICE SUCH AS RIP RAP, NATURAL STONE, BRUSH, ETC. WILL BE INSTALLED BELOW THE OUT FALL OF ANY ROADWAY CULVERT(S) WHICH ARE NOT LOCATED IN A STREAM OR CREEK.

PERMANENT CROSS DRAINS OR WATER BARS WILL BE INSTALLED AS AN INTEGRAL PART OF THE RECLAMATION PROCESS AND SHALL BE SPACED IN ACCORDANCE WITH AS-BUILT ROADWAY SLOPES AND TABLE 11-4 OF THE WEST VIRGINIA DEPARTMENT OF OIL AND GAS EROSION AND SEDIMENT CONTROL FIELD MANUAL.

TEMPORARY SEEDING AND MULCHING WILL BE UTILIZED TO PROVIDE A VEGETATIVE COVER ON ALL DISTURBED AREAS I.E. ROADWAYS, LOCATION, ROAD/LOCATION SLOPES AND ANY OTHER AREAS THAT ARE DISTURBED BY CONSTRUCTION ACTIVITIES.

THE LOCATION OF DRILLING PIT(S) MAY BE ADJUSTED TO THE MOST ENVIRONMENTAL SAFE SITE TO MEET THE REQUIREMENTS OF THE WVDEP.

**CONTRACTORS NOTE:**

IT IS THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND CONDITION OF ALL UNDERGROUND UTILITIES, SANITARY SEWERS, STORM SEWERS, ETC. PRIOR TO THE COMMENCEMENT OF ANY/OR CONSTRUCTION ACTIVITIES. DIG WITH C.A.R.E. CALL MISS UTILITY 1-800-245-4848.

ROAD GRADE (%)	DISTANCE (FT)
1	400
2	250
5	135
10	80
15	60
20	45

ROAD GRADE (%)	DISTANCE (FT)
2-5	500-300
6-10	300-200
11-15	200-100
16-20	100



1-800-245-4848

**DRAWING LEGEND**

- PROPOSED ROAD -----
- EXISTING ROAD \_\_\_\_\_
- STRAW BALES [Symbol]
- SILT FENCE [Symbol]
- BRUSH BARRIER [Symbol]
- TREE LINE [Symbol]
- ROCK RIP RAP [Symbol]
- CROSS DRAIN [Symbol]
- CULVERT [Symbol]
- DRILLING PIT [Symbol]
- ROAD DITCH [Symbol]
- GAS LINE [Symbol]
- FENCE LINE [Symbol]
- ROCK OUTCROP [Symbol]
- WATER WELL [Symbol]
- HOUSE/STRUCTURE [Symbol]
- UTILITY POLE [Symbol]
- SPRING [Symbol]
- WET SPOT [Symbol]
- PIT WASTE APP. AREA [Symbol]

**DRIVING DIRECTIONS FOR WILLIAM BOWERS 20**

- 1.) FROM CHARLESTON, WV, GO EAST ON U.S. RT. 60 FOR APPROXIMATELY 13.5± MILES TO SECONDARY ROUTE 81, IN CEDAR GROVE.
- 2.) TURN SLIGHT RIGHT ONTO SECONDARY ROUTE 81 AND GO APPROXIMATELY 0.5± MILE TO SECONDARY ROUTE 81/1.
- 3.) TURN LEFT ONTO SECONDARY ROUTE 81/1 AND GO APPROXIMATELY 1.1± MILES TO THE BEGINNING OF THE ACCESS ROAD LOCATED ON THE LEFT-HAND SIDE OF THE ROAD.
- 4.) FROM THE AFOREMENTIONED SITE, FOLLOW THE EXISTING ROAD FOR APPROXIMATELY 1.8± MILES TO THE EXISTING WELL SITE AS SHOWN ON THE "CONSTRUCTION AND RECLAMATION PLAN".

3902905P

MATCH LINE SHEET 2

15" C.P.P. 15" C.P.P.

EXISTING ROAD  
+6% TO +9%  
375'±

15" C.P.P.

EXISTING ROAD  
+6% TO +9%  
380'±

15" C.P.P.

15" C.P.P.

EXISTING ROAD  
+10% TO +13%  
500'±

EXISTING ROAD  
+10% TO +13%  
295'±

15" C.P.P.

15" C.P.P.

EXISTING ROAD  
+9% TO +12%  
250'±

15" C.P.P.

Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

EXISTING ROAD  
+17% TO +20%  
330'±

15" C.P.P.

15" C.P.P.

15" C.P.P.

15" C.P.P.

EXISTING ROAD  
+10% TO +13%  
285'±

15" C.P.P.

15" C.P.P.

80  
1

15" C.P.P.

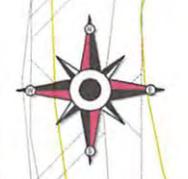
RECEIVED  
Office of Oil and Gas

APPLY CULVERTS  
AS NEEDED

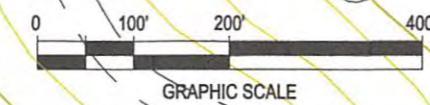
0001  
AUG 15 2014

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Environmental Protection

TM 22, TP 3



DRAWING LEGEND		
PROPOSED ROAD	--- (dashed line)	ROAD DITCH
EXISTING ROAD	— (solid line)	GAS LINE
STRAW BALES	(vertical bars)	FENCE LINE
SILT FENCE	— (dashed line)	ROCK OUTCROP
BRUSH BARRIER	— (dashed line)	WATER WELL
TREE LINE	— (dashed line)	HOUSE/STRUCTURE
ROCK RIP RAP	— (dashed line)	UTILITY POLE
CROSS DRAIN	— (dashed line)	SPRING
CULVERT	— (dashed line)	WET SPOT
DRILLING PIT	— (dashed line)	PIT WASTE APP. AREA



**Cabot Oil & Gas Corporation**

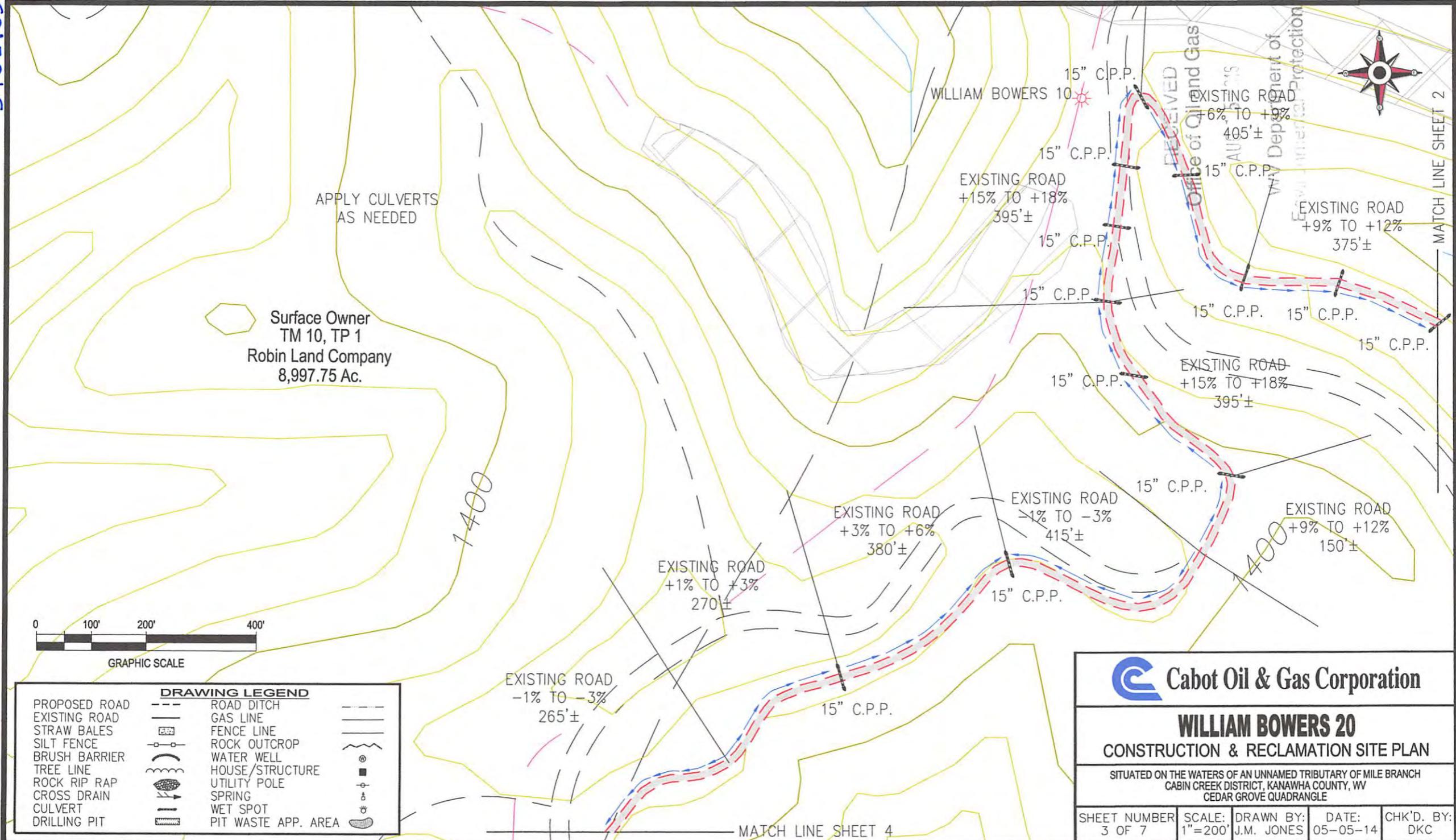
**WILLIAM BOWERS 20**  
CONSTRUCTION & RECLAMATION SITE PLAN

SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE QUADRANGLE

SHEET NUMBER 1 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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3902905P

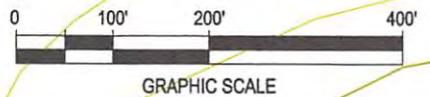


APPLY CULVERTS AS NEEDED

Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

RECEIVED  
Office of Oil and Gas  
AU 0015  
WV Department of  
Environmental Protection

MATCH LINE SHEET 2



DRAWING LEGEND		
PROPOSED ROAD	ROAD DITCH	
EXISTING ROAD	GAS LINE	
STRAW BALES	FENCE LINE	
SILT FENCE	ROCK OUTCROP	
BRUSH BARRIER	WATER WELL	
TREE LINE	HOUSE/STRUCTURE	
ROCK RIP RAP	UTILITY POLE	
CROSS DRAIN	SPRING	
CULVERT	WET SPOT	
DRILLING PIT	PIT WASTE APP. AREA	

EXISTING ROAD  
-1% TO -3%  
265'±

EXISTING ROAD  
+1% TO +3%  
270'±

EXISTING ROAD  
+3% TO +6%  
380'±

EXISTING ROAD  
-1% TO -3%  
415'±

EXISTING ROAD  
+15% TO +18%  
395'±

EXISTING ROAD  
+15% TO +18%  
395'±

EXISTING ROAD  
+9% TO +12%  
150'±

EXISTING ROAD  
+9% TO +12%  
375'±

EXISTING ROAD  
+6% TO +8%  
405'±

15" C.P.P.

WILLIAM BOWERS 10

MATCH LINE SHEET 4

Cabot Oil & Gas Corporation

**WILLIAM BOWERS 20**  
CONSTRUCTION & RECLAMATION SITE PLAN

SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE QUADRANGLE

SHEET NUMBER 3 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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3902905P



Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

MATCH LINE SHEET 3

DRAWING LEGEND	
PROPOSED ROAD	ROAD-DITCH
EXISTING ROAD	GAS LINE
STRAW BALES	FENCE LINE
SILT FENCE	ROCK OUTCROP
BRUSH BARRIER	WATER WELL
TREE LINE	HOUSE/STRUCTURE
ROCK RIP RAP	UTILITY POLE
CROSS DRAIN	SPRING
CULVERT	WET SPOT
DRILLING PIT	PIT WASTE APP. AREA



EXISTING ROAD  
-5% TO +8%  
480'±

15" C.P.P.

EXISTING ROAD  
-5% TO -8%  
435'±

15" C.P.P.

15" C.P.P.

EXISTING ROAD  
+2% TO +5%  
270'±

WILLIAM BOWERS 30

EXISTING ROAD  
+6% TO +9%  
470'±

APPLY CULVERTS  
AS NEEDED

EXISTING ROAD  
-1% TO -3%  
320'±

15" C.P.P.

EXISTING ROAD  
+2% TO +5%  
205'±

EXISTING ROAD  
-1% TO -3%  
200'±

15" C.P.P.

15" C.P.P.

MATCH LINE SHEET 5

 Cabot Oil & Gas Corporation

**WILLIAM BOWERS 20**  
CONSTRUCTION & RECLAMATION SITE PLAN

SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE QUADRANGLE

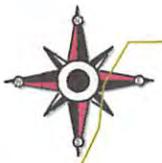
SHEET NUMBER 4 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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390290SP

1200

MATCH LINE SHEET 4

RECEIVED  
Office of Oil and Gas  
AUG 16 2015  
WV Department of  
Environmental Protection



APPLY CULVERTS  
AS NEEDED

EXISTING ROAD  
+1% TO +3%  
430'±

EXISTING ROAD  
-3% TO -6%  
300'±

WILLIAM BOWERS 17

Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

EXISTING ROAD  
-6% TO 9%  
350'±

EXISTING ROAD  
-1% TO -3%  
335'±

1400

WILLIAM BOWERS 21

EXISTING ROAD  
-1% TO -3%  
215'±

EXISTING ROAD  
-3% TO -6%  
370'±

EXISTING ROAD  
-1% TO -3%  
200'±

15" C.P.P.

MATCH LINE SHEET 6



GRAPHIC SCALE

DRAWING LEGEND		
PROPOSED ROAD	---	ROAD DITCH
EXISTING ROAD	---	GAS LINE
STRAW BALES		FENCE LINE
SILT FENCE		ROCK OUTCROP
BRUSH BARRIER		WATER WELL
TREE LINE		HOUSE/STRUCTURE
ROCK RIP RAP		UTILITY POLE
CROSS DRAIN		SPRING
CULVERT		WET SPOT
DRILLING PIT		PIT WASTE APP. AREA

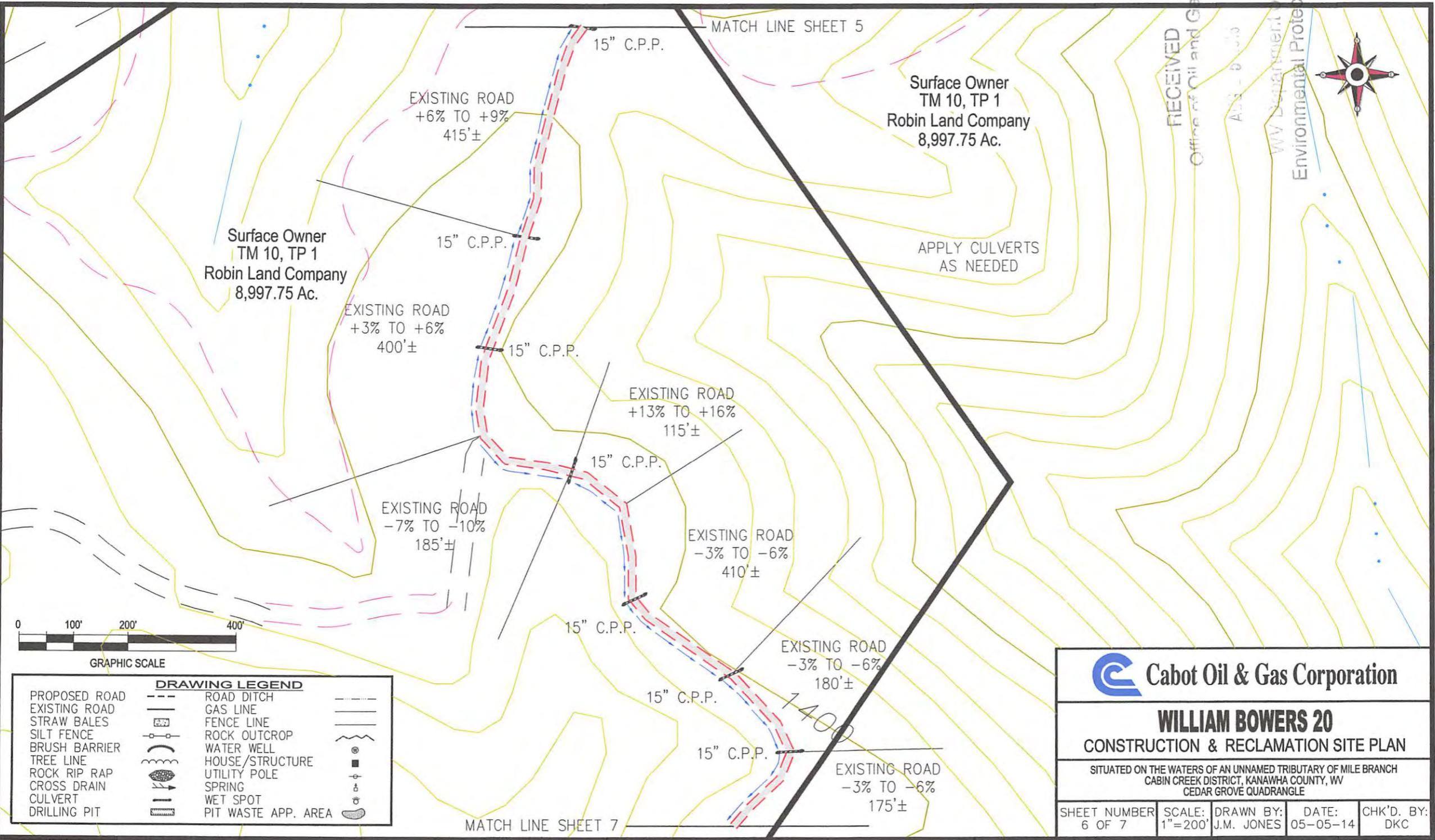
**Cabot Oil & Gas Corporation**

**WILLIAM BOWERS 20**  
CONSTRUCTION & RECLAMATION SITE PLAN

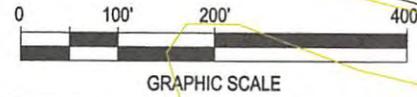
SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE QUADRANGLE

SHEET NUMBER 5 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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 Office of Oil and Gas  
 AUG - 6 - 13  
 WV Department of Environmental Protection



DRAWING LEGEND		
PROPOSED ROAD	ROAD DITCH	
EXISTING ROAD	GAS LINE	
STRAW BALES	FENCE LINE	
SILT FENCE	ROCK OUTCROP	
BRUSH BARRIER	WATER WELL	
TREE LINE	HOUSE/STRUCTURE	
ROCK RIP RAP	UTILITY POLE	
CROSS DRAIN	SPRING	
CULVERT	WET SPOT	
DRILLING PIT	PIT WASTE APP. AREA	

**Cabot Oil & Gas Corporation**

**WILLIAM BOWERS 20**  
 CONSTRUCTION & RECLAMATION SITE PLAN

SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
 CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
 CEDAR GROVE QUADRANGLE

SHEET NUMBER 6 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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MATCH LINE SHEET 5

MATCH LINE SHEET 7

Surface Owner  
 TM 10, TP 1  
 Robin Land Company  
 8,997.75 Ac.

Surface Owner  
 TM 10, TP 1  
 Robin Land Company  
 8,997.75 Ac.

APPLY CULVERTS  
 AS NEEDED

Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

Surface Owner  
TM 10, TP 1  
Robin Land Company  
8,997.75 Ac.

TM 27  
TP 5

MATCH LINE SHEET 6

EXISTING ROAD  
-5% TO -8%  
155'±

EXISTING ROAD  
+3% TO +6%  
170'±

EXISTING ROAD  
-1% TO -3%  
365'±

EXISTING ROAD  
+2% TO +5%  
205'±

EXISTING ROAD  
-6% TO -9%  
180'±

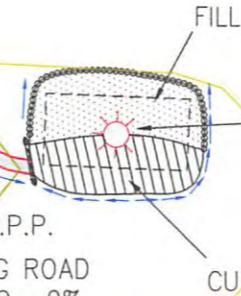
15" C.P.P.

15" C.P.P.

15" C.P.P.

15" C.P.P.

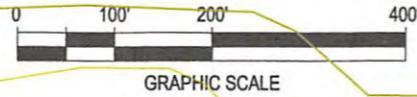
APPLY CULVERTS  
AS NEEDED



RECEIVED  
Office of Oil and Gas  
AUG 15 2016  
WV Department of  
Environmental Protection

Note:  
Tanks will be used instead of drilling pit(s),  
and may be adjusted to the most  
environmental safe site to meet the  
requirements of the WVDEP.

DRAWING LEGEND	
PROPOSED ROAD	ROAD DITCH
EXISTING ROAD	GAS LINE
STRAW BALES	FENCE LINE
SILT FENCE	ROCK OUTCROP
BRUSH BARRIER	WATER WELL
TREE LINE	HOUSE/STRUCTURE
ROCK RIP RAP	UTILITY POLE
CROSS DRAIN	SPRING
CULVERT	WET SPOT
DRILLING PIT	PIT WASTE APP. AREA

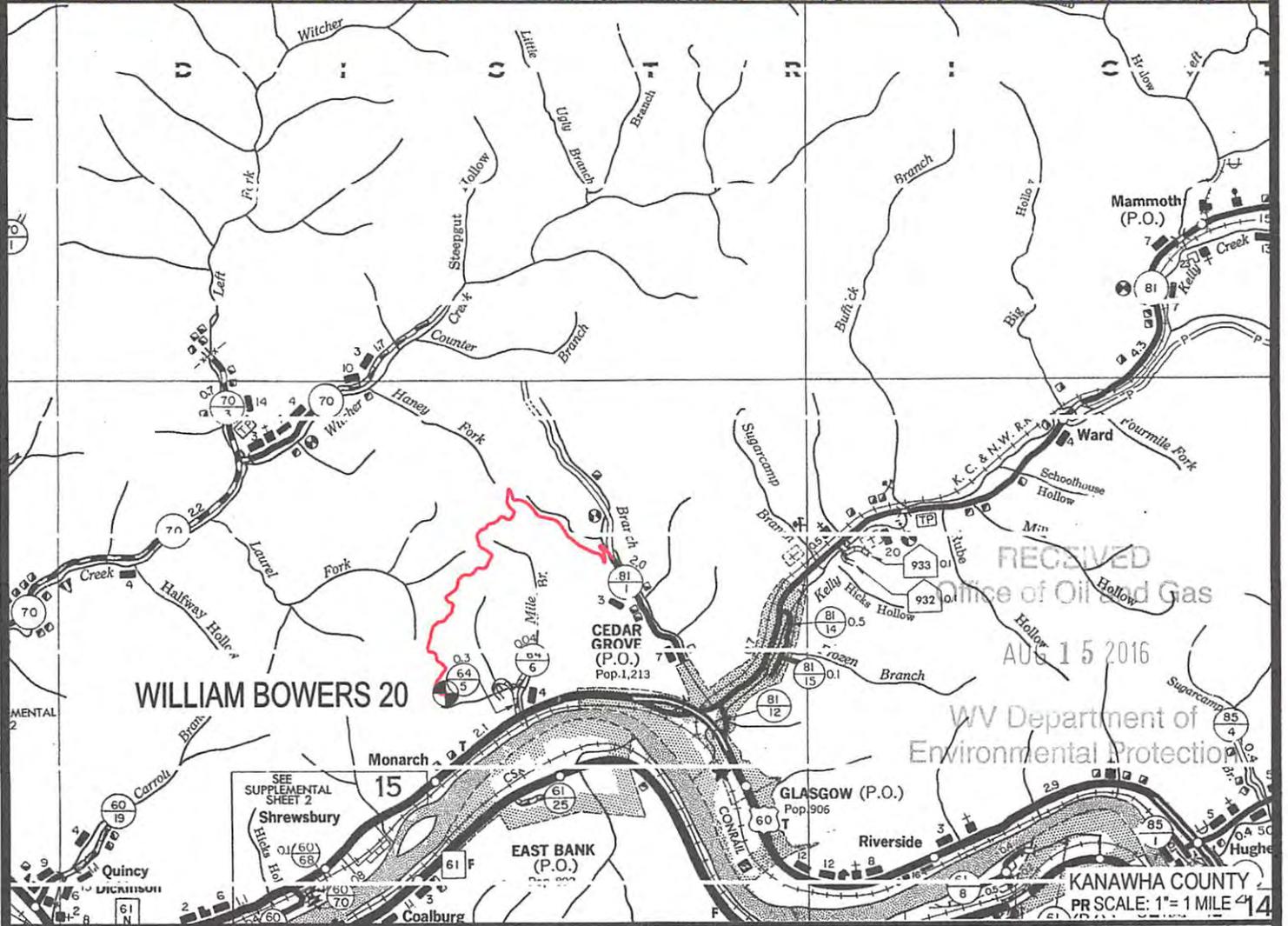
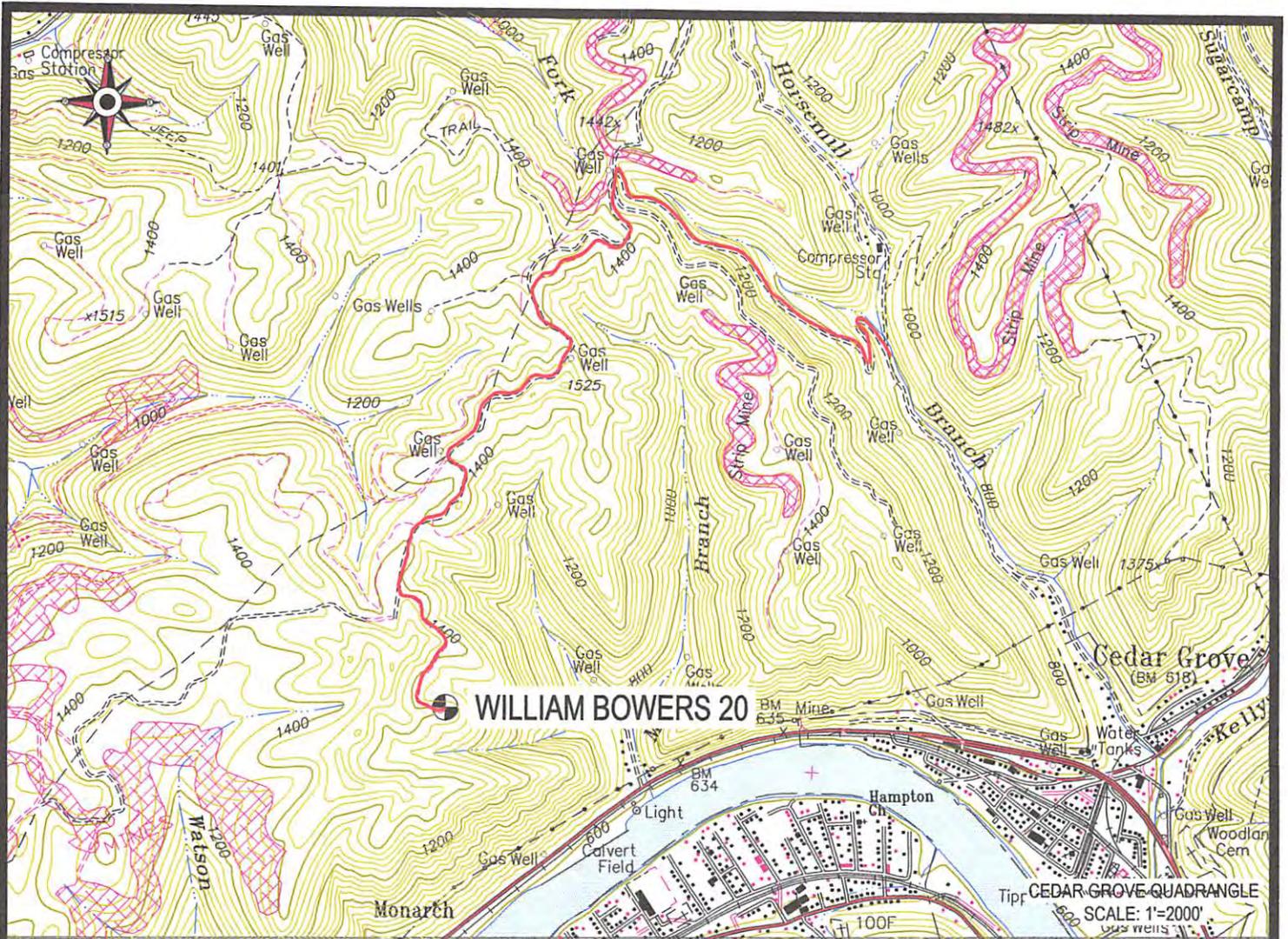


Cabot Oil & Gas Corporation

**WILLIAM BOWERS 20**  
CONSTRUCTION & RECLAMATION SITE PLAN

SITUATED ON THE WATERS OF AN UNNAMED TRIBUTARY OF MILE BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE QUADRANGLE

SHEET NUMBER 7 OF 7	SCALE: 1"=200'	DRAWN BY: J.M. JONES	DATE: 05-05-14	CHK'D. BY: DKC
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 Cabot Oil & Gas Corporation

**WILLIAM BOWERS 20**  
LOCATION MAP



**CUNNINGHAM**

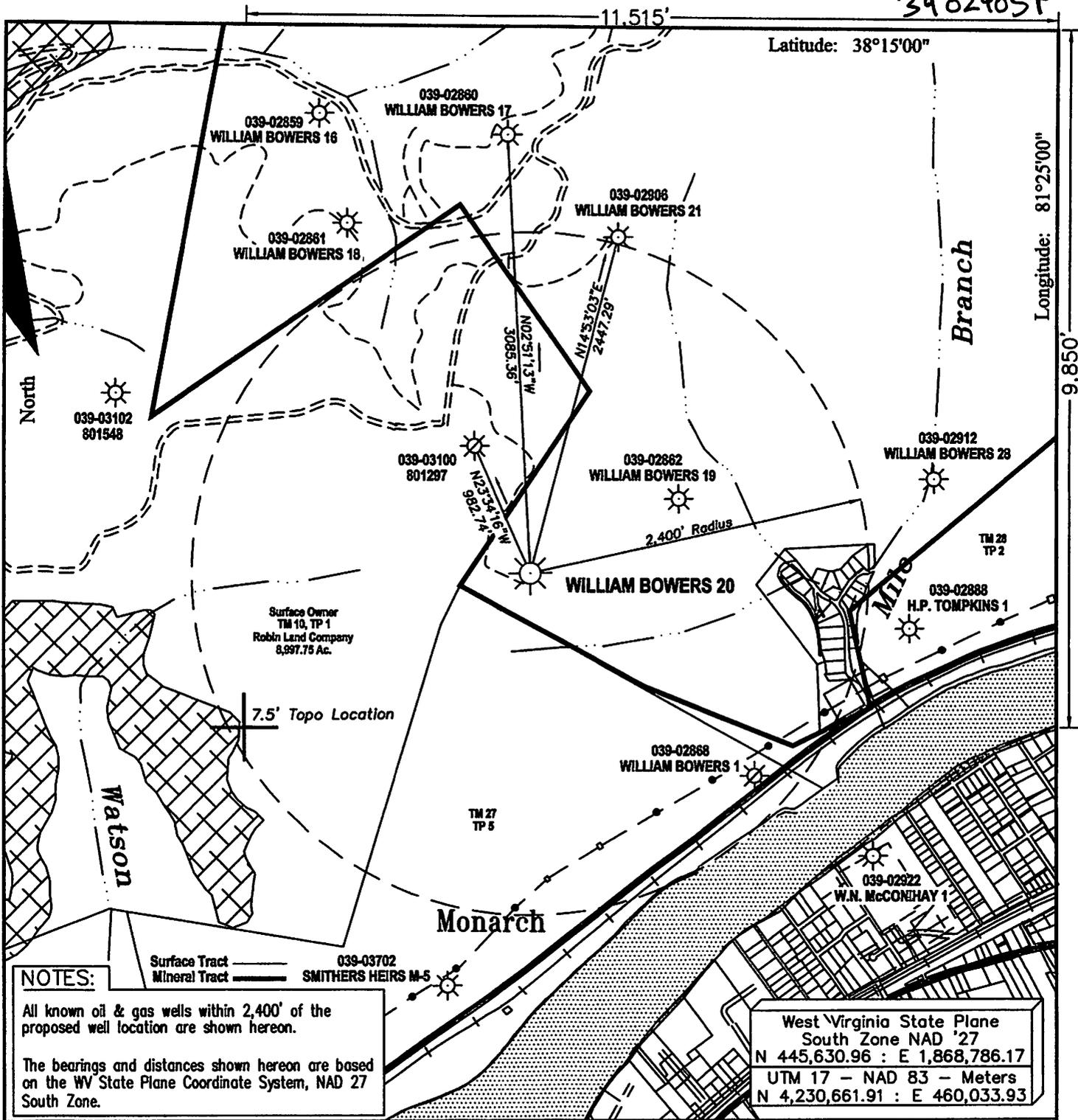
LAND SURVEYING & MAPPING SERVICES, LLC

• 5213 STEPHEN WAY •  
• CROSS LANES, WEST VIRGINIA 25313 •  
• VOICE (304) 561-4129 • FAX (304) 776-0703 •  
• E-MAIL ADDRESS • DKCUNNINGHAM@SUDDENLINK.NET •

LOCATED ON THE WATERS OF AN UNNAMED TRIBUTARY  
OF MILES BRANCH  
CABIN CREEK DISTRICT, KANAWHA COUNTY, WV  
CEDAR GROVE 7.5' QUADRANGLE

PROJECT NO. CABOT	DWG. BOWERS 20 LOC
DATE: 05-05-14	SCALE: AS NOTED
DRAWN BY: J. JONES	CHK'D BY: D.K.C.
FILE: C:\PROJECT FOLDER\CABOT	

3902905P



**NOTES:**

All known oil & gas wells within 2,400' of the proposed well location are shown hereon.

The bearings and distances shown hereon are based on the WV State Plane Coordinate System, NAD 27 South Zone.

West Virginia State Plane  
 South Zone NAD '27  
 N 445,630.96 : E 1,868,786.17  
 UTM 17 - NAD 83 - Meters  
 N 4,230,661.91 : E 460,033.93

FILE #:

DRAWING #: Bowers 20. dwg

SCALE: 1" = 1000'

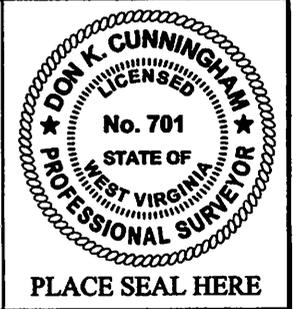
MINIMUM DEGREE OF ACCURACY: 1 : 12,729

PROVEN SOURCE OF ELEVATION: Global Positioning System (GPS)

**I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.**

Signed: Don K. Cunningham

R.P.E.: \_\_\_\_\_ L.L.S.: 701



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: Unnamed Tributary of Mile Branch ELEVATION: 1,380.17'

COUNTY/DISTRICT: Kanawha / Cabin Creek QUADRANGLE: Cedar Grove

SURFACE OWNER: Robin Land Company ACREAGE: 8,997.75

OIL & GAS ROYALTY OWNER: William Bowers Estate ACREAGE: 1,532.16

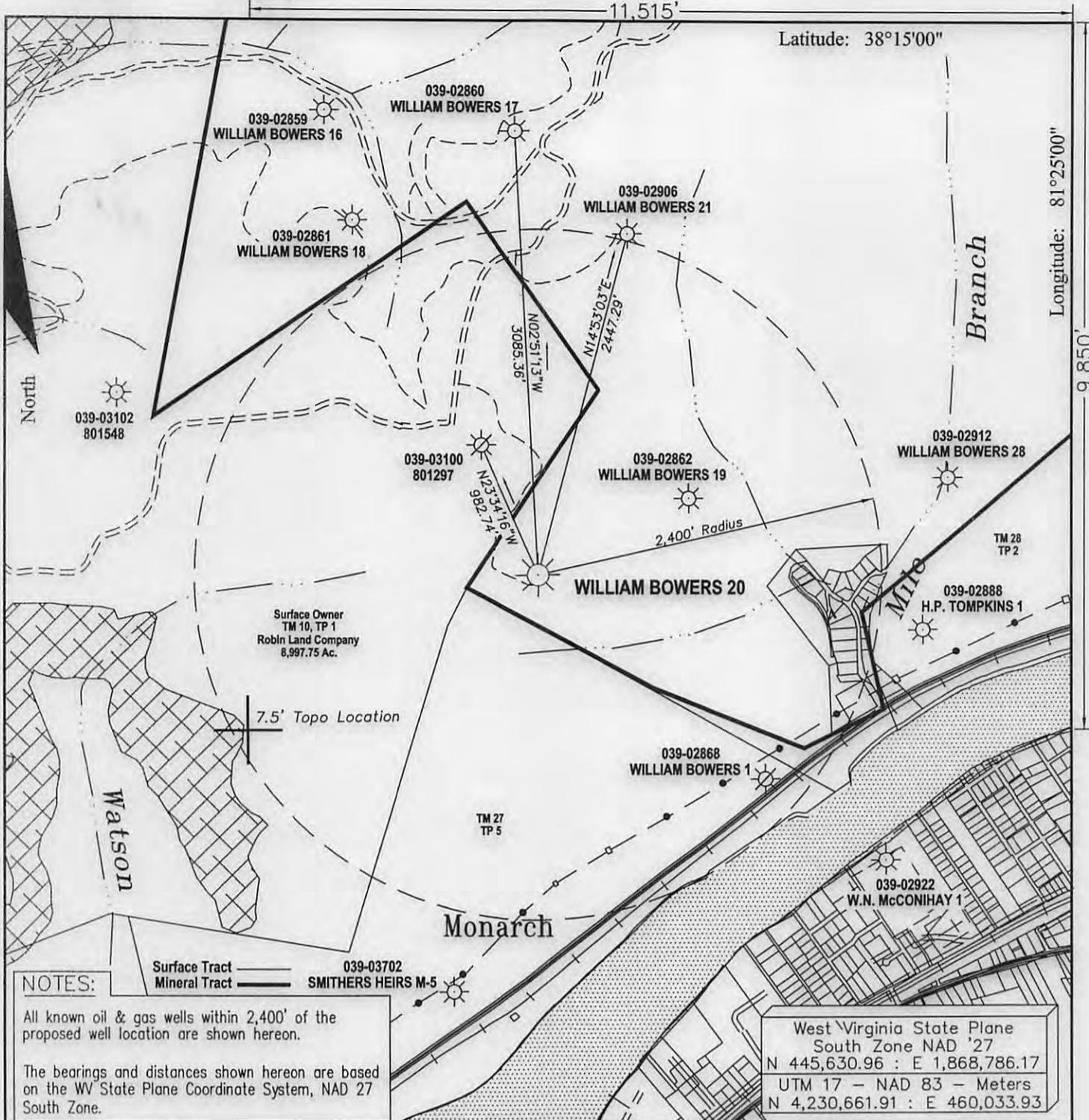
LEASE #: 47-0618 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: \_\_\_\_\_ ESTIMATED DEPTH: \_\_\_\_\_

WELL OPERATOR Cabot Oil & Gas Corp. DESIGNATED AGENT Whitney Johnson  
 Address Five Penn Center West, Suite 401 Address P.O. Box 450  
 City Pittsburgh State PA Zip Code 15276 City Glasgow State WV Zip Code 25086

RECEIVED

WV Department of Environmental Protection



**NOTES:**

All known oil & gas wells within 2,400' of the proposed well location are shown hereon.

The bearings and distances shown hereon are based on the WV State Plane Coordinate System, NAD 27 South Zone.

West Virginia State Plane  
 South Zone NAD '27  
 N 445,630.96 : E 1,868,786.17  
 UTM 17 - NAD 83 - Meters  
 N 4,230,661.91 : E 460,033.93

FILE #:  
 DRAWING #: Bowers 20. dwg  
 SCALE: 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY: 1 : 12,729  
 PROVEN SOURCE OF ELEVATION: Global Positioning System (GPS)

**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 ENVIROMENTAL PROTECTION.**

Signed: Don K. Cunningham  
 R.P.E.: \_\_\_\_\_ L.L.S.: 701



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304



DATE: May 5, 2014  
 OPERATOR'S WELL #: William Bowers 20  
 API WELL #: 47 039 02905 P  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: Unnamed Tributary of Mile Branch ELEVATION: 1,380.17'  
 COUNTY/DISTRICT: Kanawha / Cabin Creek QUADRANGLE: Cedar Grove  
 SURFACE OWNER: Robin Land Company ACREAGE: 8,997.75  
 OIL & GAS ROYALTY OWNER: William Bowers Estate ACREAGE: 1,532  
 LEASE #: 47-0618 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: \_\_\_\_\_ ESTIMATED DEPTH: \_\_\_\_\_  
 WELL OPERATOR Cabot Oil & Gas Corp. DESIGNATED AGENT Whitney Johnson  
 Address Five Penn Center West, Suite 401 Address P.O. Box 450  
 City Pittsburgh State PA Zip Code 15276 City Glasgow State WV Zip Code 25086