



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

Friday, July 19, 2019
WELL WORK PLUGGING PERMIT
Horizontal Plugging

BRC OPERATING COMPANY, LLC
200 CRESCENT COURT, SUITE 1900

DALLAS, TX 75201


Re: Permit approval for PLUM CREEK SOUTH FORK (PCSF) 2-1H
47-025-00034-00-00

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: PLUM CREEK SOUTH FORK 
Farm Name: WEYERHAEUSER COMPANY
U.S. WELL NUMBER: 47-025-00034-00-00
Horizontal Plugging
Date Issued: 7/19/2019

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.

WW-4B
Rev. 2/01

- 1) Date February 20, 2019
- 2) Operator's
Well No. Plum Creek South Fork (PCSF) 2-1H
- 3) API Well No. 47-25 - 00034 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
- 5) Location: Elevation 3665' Watershed South Fork Cherry
District ~~Kentucky~~ FALLING SPRING County Greenbrier Quadrangle Fork Mountain
- 6) Well Operator BRC Operating Company, LLC 7) Designated Agent Charles Brightman
Address 200 Crescent Court, Suite 1900 Address 286 Sunday Rd.
Dallas, TX 75201 Hico, WV 25854
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor
Name Gary Kennedy Name Halliburton
Address 66 Old Church Rd. Address 4999 East Pointe Dr.
Pipestream, WV 25979 Zanesville, OH 43701

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

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APR 10 2019
WV Department of
Environmental Protection

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

Work order approved by inspector *Gary Kennedy* Date 3/29/19

PCSF 2-1H

Check Rock Pressures

12948'

5-1/2" 20# P110 production casing set at ~~13,056'~~ and cemented to surface/topped off

Shallowest perforation is @ 8,217'

MIRU workover rig and BOP

Perform BOP function test

RIH with wire line and remove retrievable csg plugs @ 4,876 & 4,975'

Fill casing with 6% GEL

RIH with wire line and set CIBP @ 6068'.

TIH with 2-7/8" workstring open ended to 6068'.

RU Halliburton cement unit

M&P 6.3 bbl Class A cement @ 15.6 ppg

Set 1st plug from ~~6,068' TO 5794'~~

Displace with 6% GEL

POOH 3 stands above 5794' and WOC

TIH and tag cement. ADD CEMENT IF NEEDED.

M&P 6.3 bbl Class A cement @ 15.6 ppg

Set 2nd balanced plug from 3715' TO 3431'

Displace with 6% GEL . POOH 3 stands above 1,260'

WOC. TIH and tag cement. ADD CEMENT IF NEEDED.

M&P 6.3 bbl Class A cement @ 15.6 ppg

Set 3rd plug from 1621' TO 1337'. WOC, TIH & TAG CEMENT. ADD CEMENT IF NEEDED.

SET SURFACE PLUG FROM 210' TO SURFACE

CUT CASING & SET MONUMENT PER WV CODE.

ADDITIONAL
PLUGADDITIONAL
PLUG. ★

BOND LOG 5 1/2" CASING. FIND FREE POINT. CUT & PULL FREE CASING
SET 300' CEMENT PLUG ACROSS 5 1/2" CASING CUT.

JVM 7/19/2019

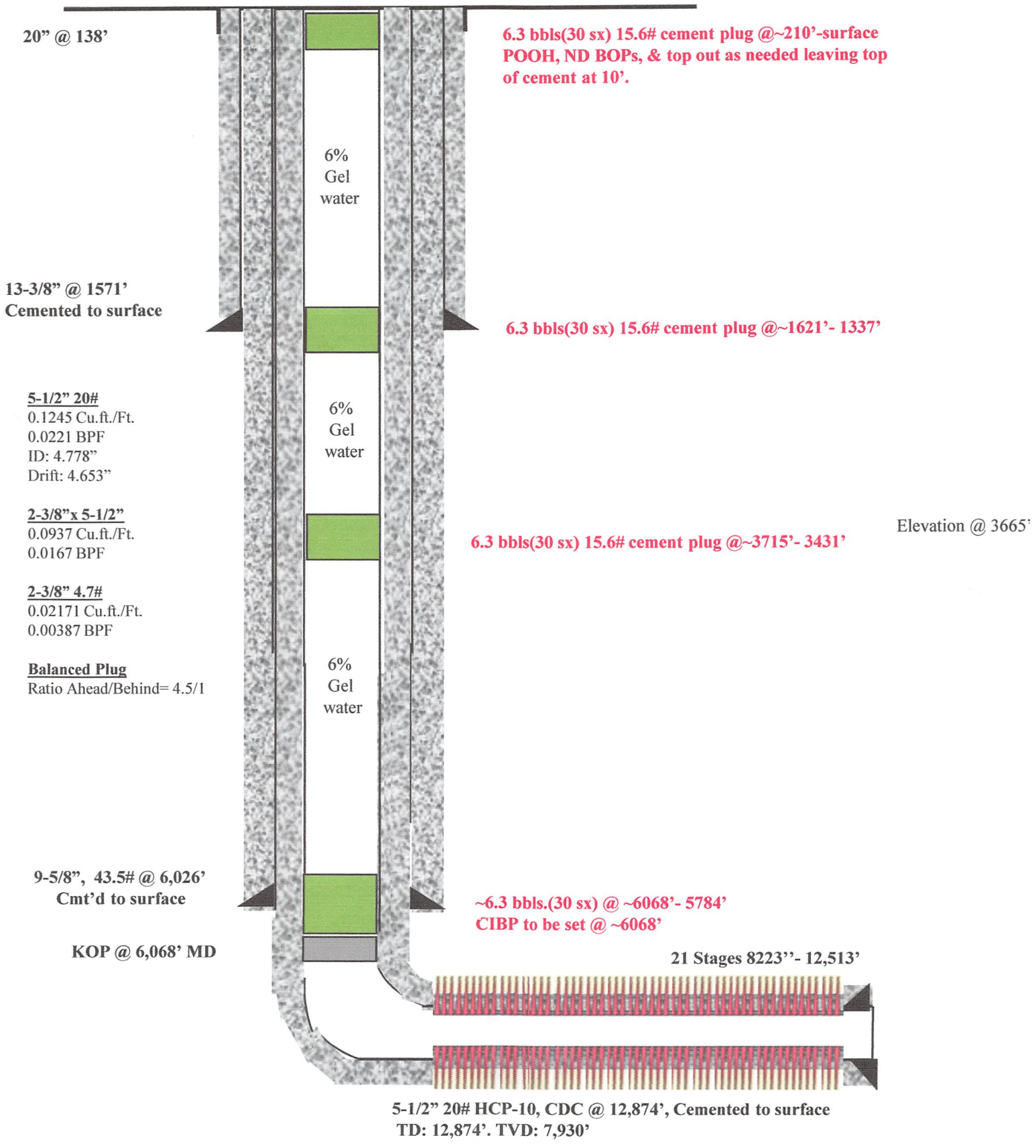
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BRC Operating Company, LLC
PCSF 2-1H
API No. 47-025-00034
Proposed Wellbore Schematic

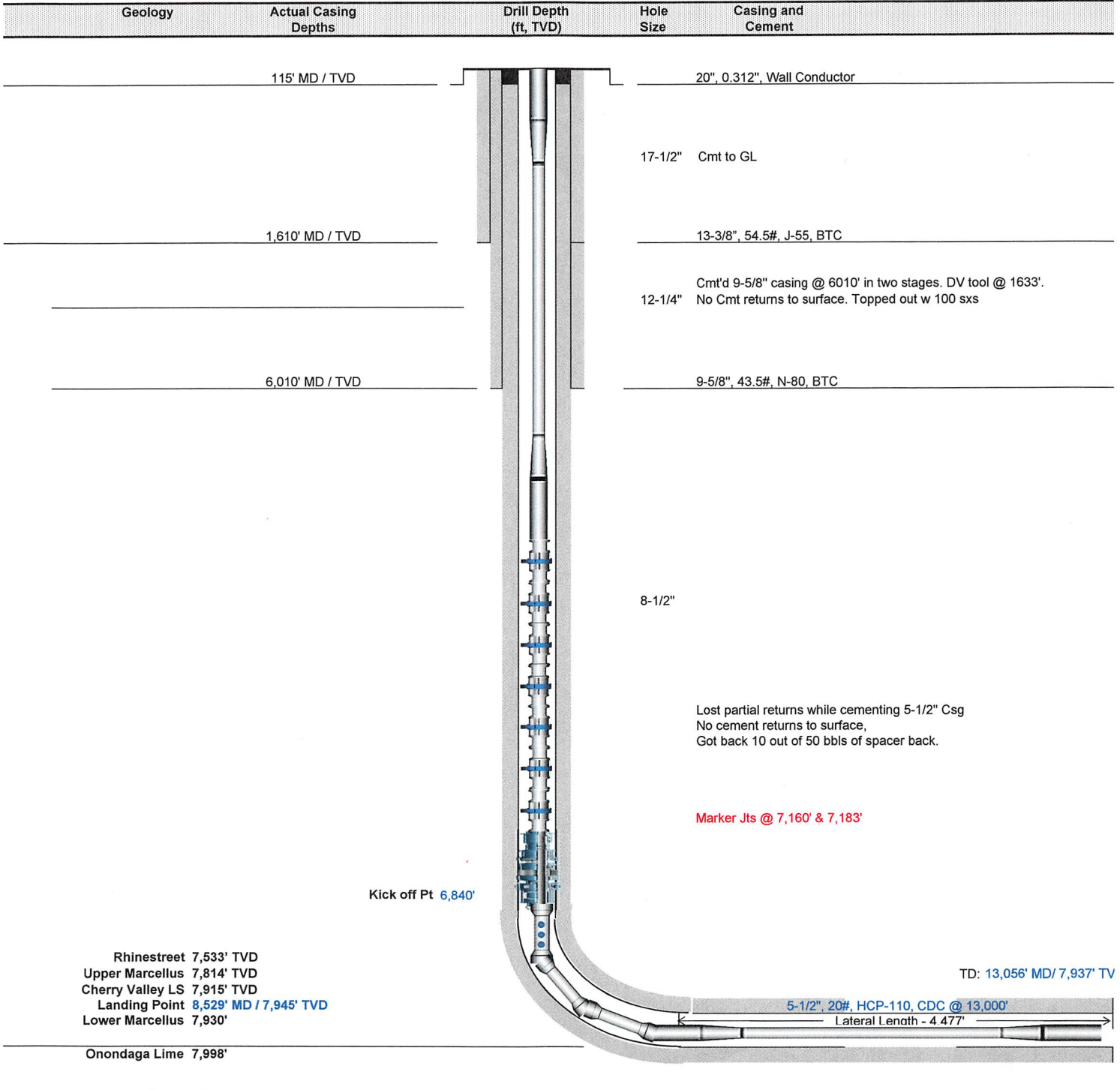
Prepared by: Tim McGilvray



PCSF #2-1H Well Schematic

Well: PCSF #2-1H
 Well Type: Horizontal
 County / District: Greenbrier County, WV
 SHL Lat / Lon: Lat: 38.20282 N Long: -80.44819 W
 BHL Lat / Lon: Lat: 38.19343 N Long: -80.43471 W

AFE #
 Field: Marcellus Shale
 API Well Number:
 Elevation (ft): 3,644'
 KB to GL (ft): 30'
 Objectives: Drill & Run Prod Csg on Marcellus Shale



Seal Assembly in Casing Annulus

Cement Outside Casing

47-025-00034A ✓

WR-35
Rev (9-11)

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas
Well Operator's Report of Well Work

DATE: 5/31/13 REV. 10/30/13
API #: 47-25-00034

Farm name: Plum Creek Timberlands, LP Operator Well No.: PCSF 2-1H

LOCATION: Elevation: 3,665 Quadrangle: Fork Mountain

District: ~~Kentucky~~ **FALLING SPRING** County: Greenbrier
Latitude: 1998 Feet South of 39 Deg. 12 Min. 30 Sec.
Longitude 9068 Feet West of 00 Deg. 25 Min. 00 Sec.

Company: BRC Operating Company, LLC

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
200 Crescent Court, Suite 200 Dallas, TX 75201	20"	138'	138'	207
Agent: Marc A. Monteleone	13 3/8"	1,571'	1,571'	1,290
Inspector: Gary Kennedy	9 5/8"	6,010'	6,010'	2,490 Lead/202 Lag
Date Permit Issued: 1/10/11	5 1/2"	12,948'	12,948'	2,200 Lead/1,144 Lag
Date Well Work Commenced: 8/6/11	2 3/8"	7,400'	7,400'	
Date Well Work Completed: 9/2/12				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 7,943'				
Total Measured Depth (ft): 12,919'				
Fresh Water Depth (ft.): 1,500'				
Salt Water Depth (ft.): 2,350'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 275'				
Void(s) encountered (N/Y) Depth(s) N/A				

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OCT 30 2013
WV Department of
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OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Lower Marcellus Pay zone depth (ft) 7,934
Gas: Initial open flow 3,355 MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 300 MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests 4,512 Hours
Static rock Pressure 3,350 psig (surface pressure) after 36 Hours

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

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments 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.



Signature

10/29/13
Date

Were core samples taken? Yes No Were cuttings caught during drilling? Yes No Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list Pilot hole. Platform Express (0-8102').
Sonic Scanner, MRI (6756 - 8102), MWD GR in lateral (8898 - 12914')

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

23 Stages from 8,217 TMD to 12,948 TMD. 60 degree phasing. 6 SPF.

total 24-42 shots/stage 1 thru 23

Fractured using slickwater fracs at average rates of 65 bpm.

Total sand injected into each frac stage 250,000 lbs.

Average pressures observed were approximately 7,500 psi.

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Office of Oil & Gas

Plug Back Details Including Plug Type and Depth(s):

Well was not plugged

OCT 30 2013

WV Department of
Environmental Protection

Formations Encountered:

<u>Geologic Age</u>	<u>Formation</u>	<u>Lithology</u>	<u>Top Depth</u>	<u>Bottom Depth</u>
Mississippian	Ravencliff	Sandstone	1770	1833
Mississippian		Shale	1833	2107
Mississippian	Lower Maxon	Sandstone	2107	2120
Mississippian		Shale	2120	2211
Mississippian	Greenbrier	Limestone	2211	2359
Mississippian	Big Lime	Limestone	2359	2677
Mississippian		Shale	2677	2731
Mississippian	Injun	Sandstone	2731	2763
Mississippian	Squaw	Shale	2763	2783
Mississippian		Shale	2783	2929
Mississippian	Weir	Sandstone	2929	2937
Mississippian		Shale	2937	3350
Mississippian	Berea	Sandstone	3350	3370
Mississippian		Shale	3370	3436
Devonian	Gordon	Sandstone	3436	3468
Devonian		Shale	3468	3719
Devonian	Huron	Shale	3719	6582
Devonian		Shale	6582	7533
Devonian	Rhinestreet	Organic Shale	7533	7616
Devonian		Shale	7616	7814
Devonian	Upper Marcellus	Shale	7814	7915
Devonian	Cherry Valley	Limestone	7915	7930
Devonian	Lower Marcellus	Shale	7930	7998
Devonian	Onodaga	Limestone	7998	8008
Devonian	Huntersville	Chert	8008	TD

WW-4A
Revised 6-07

1) Date: February 20, 2019
2) Operator's Well Number
Plum Creek South Fork (PCSF) 2-1H
3) API Well No.: 47 - 25 - 00034

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

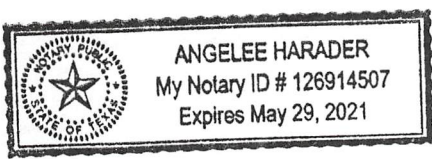
4) Surface Owner(s) to be served:	5) (a) Coal Operator
(a) Name <u>Weyerhaeuser Company</u>	Name <u>None of record</u>
Address <u>220 Occidental Ave South</u>	Address _____
<u>Seattle, WA 98104</u>	_____
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name <u>WPP, LLC</u>
_____	Address <u>5260 Irwin Rd.</u>
_____	<u>Huntington, WV 25705</u>
(c) Name _____	Name _____
Address _____	Address _____
_____	_____
6) Inspector <u>Gary Kennedy</u>	(c) Coal Lessee with Declaration
Address <u>66 Old Church Ln.</u>	Name <u>None of record</u>
<u>Pipestream, WV 25979</u>	Address _____
Telephone <u>304-382-8402</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 BRC Operating Company, LLC
 By: Charles Brightman
 Its: Agent
 Address 286 Sunday Rd.
Hico, WV 25854
 Telephone 304-880-8121

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Office of Oil and Gas
APR 10 2019

Subscribed and sworn before me this 2nd day of April, 2019
Angelee Harader Notary Public
 My Commission Expires 5-29-2021

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.

47-025-00034A

WW-9
(5/16)

API Number 47 - 25 - 00034
Operator's Well No. Plum Creek South Fork (PCSF) 2-1H

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

Operator Name BRC Operating Company, LLC OP Code _____

Watershed (HUC 10) South Fork Cherry Quadrangle Fork Mountain

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 _____)

ANY WELL EFFLUENT WILL BE CONTAINED IN TANKS AND DISPOSED OF OFFSITE BY UNDERGROUND INJECTION, JWH

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. N/A

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

Additives to be used in drilling medium? N/A

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. N/A

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

-Landfill or offsite name/permit number? N/A

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.

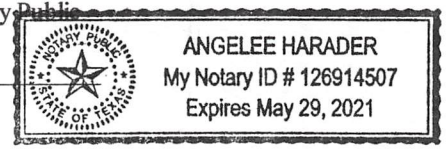
Company Official Signature [Signature]
Company Official (Typed Name) CHARLES BRILLIANT
Company Official Title DESIGNATED AGENT

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Office of Oil and Gas
APR 10 2019
WV Department of Environmental Protection

Subscribed and sworn before me this 3rd day of April, 2019

[Signature] Notary Public

My commission expires 5-29-2021



Proposed Revegetation Treatment: Acres Disturbed +1 - 6.6 Prevegetation pH _____

Lime 5 gals = 2.5 Tons/acre or to correct to pH 6.5

Fertilizer type Liquid starter eq (10-20-20)

Fertilizer amount 7 gals = 500 lbs/acre

Mulch hydro jet & fiber = 500 / EA Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type lbs/acre

Seed Type lbs/acre

N/A

Tall Fescue Blend 250

43% Kentucky 31 Tall Fescue, 43% Red Fescue

7% White Clover, 7% Annual Rye

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: _____

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Office of Oil and Gas
APR 10 2019
WV Department of
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Title: Inspector Date: 3/29/19


Field Reviewed? Yes No

47-025-000349



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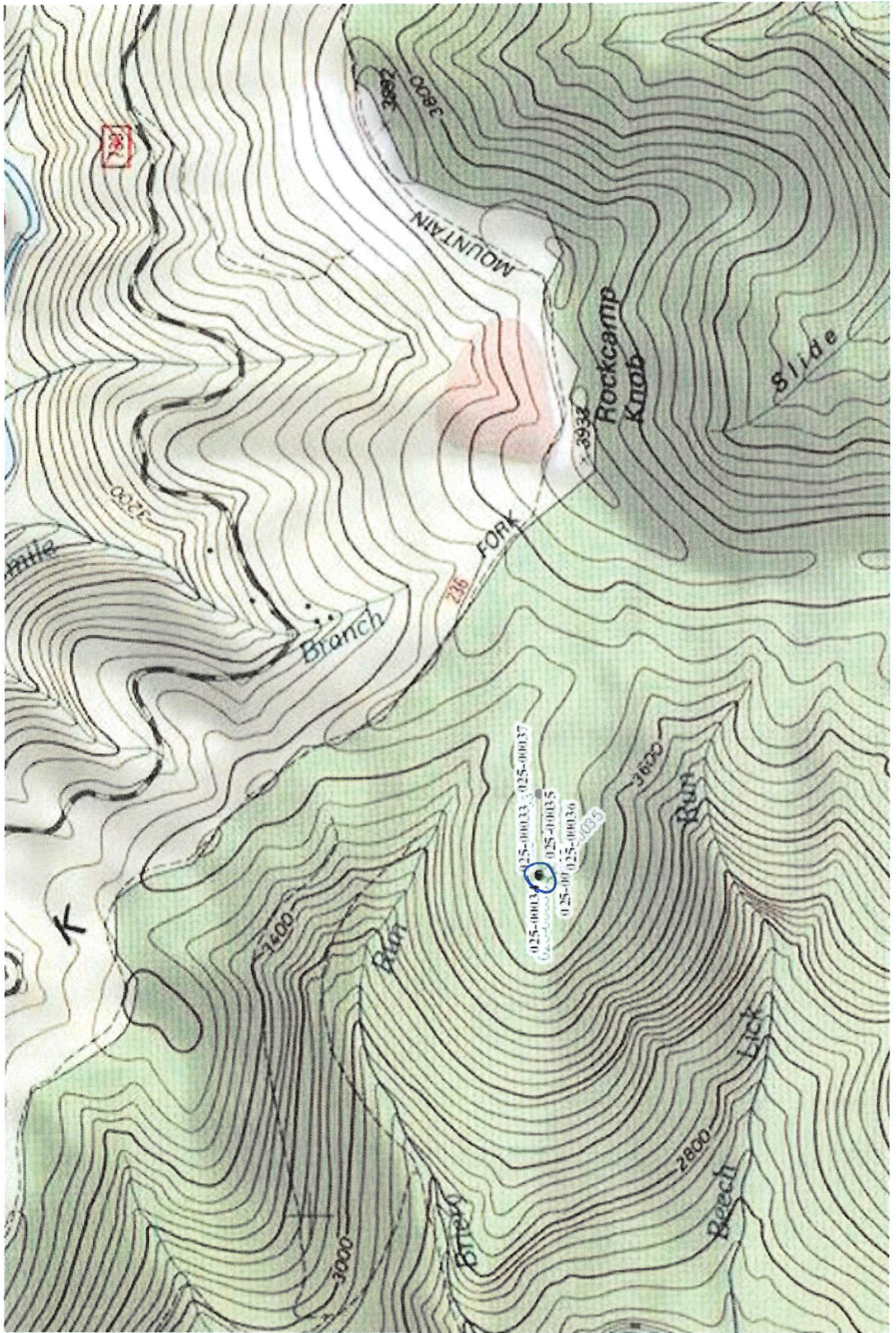
Legend

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Google Earth

© 2018 Google

1000 ft



N

WW-7
8-30-06



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

API: 47-250034 WELL NO.: Plum Creek South Fork (PCSF) 2-1H

FARM NAME: _____

RESPONSIBLE PARTY NAME: BRC Operating Company, LLC

COUNTY: Greenbrier DISTRICT: Kentucky *FALLING SPRING*

QUADRANGLE: Fork Mountain

SURFACE OWNER: Weyerhaeuser Company

ROYALTY OWNER: WestRock Company, Highland Resources Inc., BRC Cherry Meadow, LLC, OXY USA, Inc.

UTM GPS NORTHING: 4228495.21

UTM GPS EASTING: 548323.35 GPS ELEVATION: 3665'

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 _____

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]
Signature

DESIGNATED AGENT
Title

4/16/19
Date