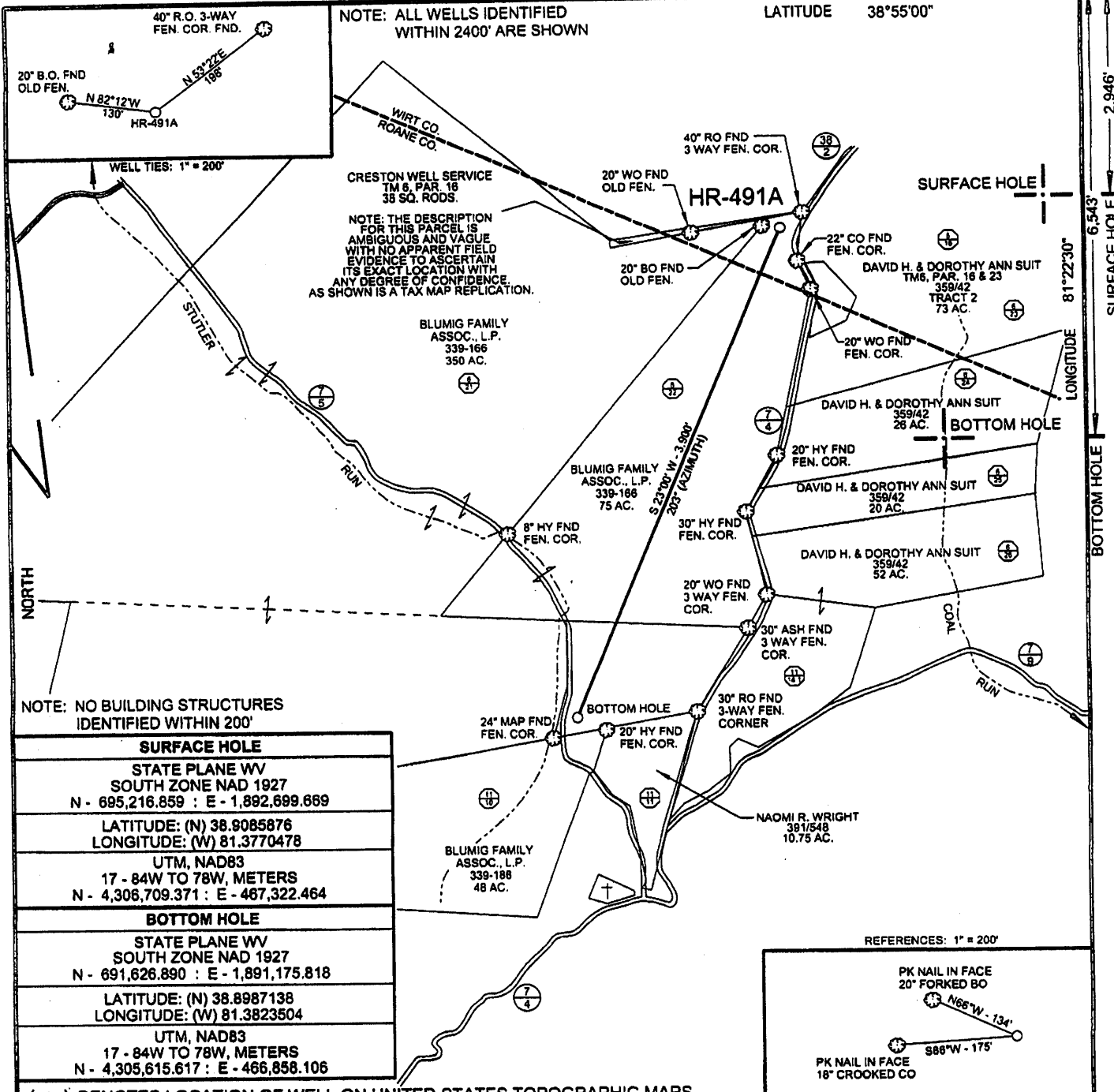


SURFACE HOLE 581'  
BOTTOM HOLE 2,089'

LATITUDE 38°55'00"

NOTE: ALL WELLS IDENTIFIED  
WITHIN 2400' ARE SHOWN

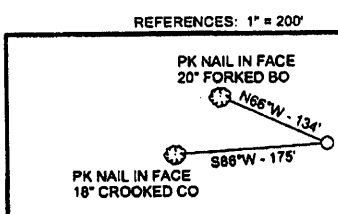


WELL TIES: 1" = 200'

NOTE: THE DESCRIPTION FOR THIS PARCEL IS AMBIGUOUS AND VAGUE WITH NO APPARENT FIELD EVIDENCE TO ASCERTAIN ITS EXACT LOCATION WITH ANY DEGREE OF CONFIDENCE AS SHOWN IS A TAX MAP REPLICATION.

NOTE: NO BUILDING STRUCTURES IDENTIFIED WITHIN 200'

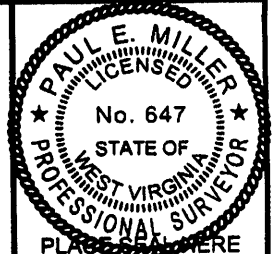
SURFACE HOLE	
STATE PLANE WV SOUTH ZONE NAD 1927 N - 695,216.859 : E - 1,892,699.669	
LATITUDE: (N) 38.9085876 LONGITUDE: (W) 81.3770478	
UTM, NAD83 17 - 84W TO 78W, METERS N - 4,306,709.371 : E - 467,322.464	
BOTTOM HOLE	
STATE PLANE WV SOUTH ZONE NAD 1927 N - 691,626.890 : E - 1,891,175.818	
LATITUDE: (N) 38.8987138 LONGITUDE: (W) 81.3823504	
UTM, NAD83 17 - 84W TO 78W, METERS N - 4,305,615.617 : E - 466,858.106	



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

FILE NO. HR-491A.DGN  
DRAWING NO. HR-491A  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY 1:200  
PROVEN SOURCE OF ELEVATION MAPPING GRADE 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) Paul E. Miller  
R.P.E. \_\_\_\_\_ L.L.S. 647



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

DATE OCTOBER 18, 20 12  
OPERATOR'S WELL NO. HR-491A  
API WELL NO. \_\_\_\_\_

STATE 47 COUNTY 105 PERMIT 01365H

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

LOCATION: ELEVATION 1,110' WATER SHED McCutcheon Run of Reedy Creek  
DISTRICT SPRING CREEK COUNTY WIRT  
QUADRANGLE REEDY, WV 7.5'

SURFACE OWNER BLUMIG FAMILY ASSOCIATES, L.P. ACREAGE 75  
OIL & GAS ROYALTY OWNER Blumig Family Associates, L.P. LEASE ACREAGE 32.15  
LEASE NO. \_\_\_\_\_

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 LOWER HURON ESTIMATED DEPTH 8385' MD, 4745' TVD  
WELL OPERATOR HARD ROCK EXPLORATION, INC. DESIGNATED AGENT JIM STEPHENS  
ADDRESS 1244 MARTIN'S BRANCH ROAD, CHARLESTON WV 25312 ADDRESS SAME

FORM WW-6

COUNTY NAME  
PERMIT

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Blumig Family Associates Operator Well No.: HR 491  
 LOCATION: Elevation: 1110' Quadrangle: Reedy WV 7.5'  
 District: Spring Creek County: Wirt  
 Latitude: 2946' Feet South of 38 Deg. 55 Min. 00 Sec.  
 Longitude 581' Feet West of 81 Deg. 22 Min. 30 Sec.

Company: Hard Rock Exploration

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: <u>1244 Martins Branch Road</u> <u>Charleston WV, 25312</u>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>33'</u>	<u>33'</u>	<u>N/A</u>
Inspector: <u>Joe Taylor</u>	<u>9 5/8"</u>	<u>969'</u>	<u>969'</u>	<u>492ft3 CTS</u>
Date Permit Issued: <u>12/21/12</u>	<u>7"</u>	<u>2741'</u>	<u>2741'</u>	<u>586ft3 CTS</u>
Date Well Work Commenced: <u>2/7/13</u>	<u>4.5"</u>	<u>8056'</u>	<u>8056'</u>	<u>130 ft3</u>
Date Well Work Completed: <u>3/17/13</u>				
Verbal Plugging:	<u>Gamma Log from (3990' MD , 4910'TVD) KOP-4045'</u>			
Date Permission granted on:	<u>Ran Gyro I (for Surface)</u>			
Rotary x Cable Rig	<b>RECEIVED</b> <b>Office of Oil &amp; Gas</b>			
Total Depth (feet): <u>8213'TMD, 4649'TVD</u>	<b>MAY 20 2013</b>			
Fresh Water Depth (ft.): <u>None</u>	<b>WV Department of</b>			
Salt Water Depth (ft.): <u>1550', 2088'</u>	<b>Environmental Protection</b>			
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft.): <u>N/A</u>				

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4366'MD- 8213'MD  
4354'TVD - 4649' TVD

Gas: Initial open flow Trace MCF/d Oil: Initial open flow          Bbl/d  
 Final open flow >2 MMCF/d Final open flow          Bbl/d  
 Time of open flow between initial and final tests 72 Hours  
 Static rock Pressure          psig (surface pressure) after          Hours

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

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

Signed: James Taylor  
 By: President  
 Date: 5/17/2013

*unnamed (a) 6-6*

<u>Formation:</u>	<u>Top:</u>	<u>Bottom:</u>
Soil/Sand/Shale	0	1960
Salt Sand	1960	2170
Big Lime	2170	2225
Big Injun	2225	2260
Dev. Shale	2260	2660
Coffee Shale	2660	2675
Devonian Shale	2675	4649
Lower Huron Section	4459	4649

105-01365

All depths shown As TVD

2/17/13

Run casing with 16 stage Peake Completion open hole mechanical packer system with Total of 180jts of R-3 4.5" 11.6ppf M-80 to depth of 8056'kb. Could not get last two jts in hole due to stacking out again. Land casing hanger in head and ND BOP. MIRU Nabors Packer set crew. Pump 3 bbl water, and drop ball for shoe and 5 bbl water. Follow with N2 at 6-7k scf/min. Land ball and pressure up to 3150 psi with 143k scf N2 and hold pressure for packer operation. Pump 5 bbls cmt at 15 ppg and let air balance out. Pump 10 bbl cmt at 15 ppg and wait for air. Finish with 7 bbl cmt and 2-3 bbl water. Pumped total of 100sx type 1 3% CaCl

NOTE: THERE ARE NO PERFORATED INTERVALS IN THIS STYLE OF COMPLETION. THE PACKERS WILL SERVE AS STAGE ISOLATION AND THE BALL ACTIVATED MECHANICAL SLEEVES SERVE AS THE MEANS OF COMMUNICATION FROM WELLBORE TO FORMATION. ALL DEPTHS ARE INDICATED BELOW.

Stage	Sleeve	Sleeve ID	Ball Size	Packer
1	8056.00	P/O Shoe	N/A	7870.80
2	7734.52	1.156	1.250	7643.77
3	7507.59	1.281	1.375	7411.24
4	7275.06	1.406	1.500	7179.21
5	7043.03	1.531	1.625	6946.88
6	6810.60	1.656	1.750	6714.45
7	6578.27	1.781	1.875	6482.12
8	6345.94	1.906	2.000	6249.79
9	6113.61	2.031	2.125	6017.46
10	5881.68	2.156	2.250	5785.43
11	5649.15	2.281	2.375	5553.00
12	5417.42	2.531	2.750	5321.27
13	5185.69	2.781	3.000	5099.04
14	4962.66	3.031	3.250	4832.11
15	4695.83	3.281	3.500	4599.58
16	4463.10	3.531	3.750	4366.95
Anchor				2906.60

**RECEIVED**  
Office of Oil & Gas

MAY 20 2013

WV Department of  
Environmental Protection

03/13/13 MIRU Nabors. Start pumping at 25k scf/min and open Stg 1 shoe at 4435 psi. Continue to up rate and pump total of 1MM scf N2. Shut down (5min - 1806psi). Drop 1.25" ball for Stg 2. Start pumping ball down at 25k scf/min. Land ball at 163k scf. Up rate and open sleeve at 4010 psi. Up rate and pump total of 1MM scf N2. Shut down and change out high volumes. Load and drop 1.375" ball for Stg 3. Start pumping at 25k scf/min and land ball at 113k scf. Up rate and open sleeve at 3760 psi. Continue to increase rate and pump total of 1MM scf N2. Shut down and drop 1.5" ball for Stg 4. Repeat process for Stgs 4-Stg 16. (treatment Data on Pg. 3)

06/21/2013

105-01365

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8
Max P	5880	5700	5897	5775	5723	5760	5802	5889
Avg P	5834	5530	5763	5622	5692	5700	5713	5812
Max R	89.0	89.0	103.9	104.7	107.4	107.0	103.5	100.0
Avg R	87.7	87.7	100.0	103.6	106.6	106.0	102.0	96.8
Shut In	1806-5min	N/A	2545-5min	1972-5min	N/A	N/A	2226-5min	N/A
	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14	Stage 15	Stage 16
Max P	5598	5194	4880	5239	4881	5371	4180	3642
Avg P	5525	5158	4769	5154	4696	5293	4045	3628
Max R	107.0	106.0	105.0	109.0	103.2	105.0	107.6	105.0
Avg R	105.0	105.8	103.0	108.0	102.0	104.0	103.0	103.3
Shut In	N/A	1905-5min	N/A	N/A	1990-5min	N/A	N/A	1605-5min

**RECEIVED**  
Office of Oil & Gas

MAY 20 2013

WV Department of  
Environmental Protection

06/21/2013



west virginia department of environmental protection

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

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

December 21, 2012

**WELL WORK PERMIT**

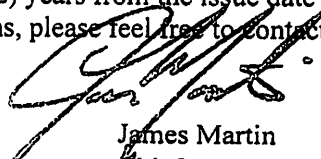
**Horizontal Well**

This permit, API Well Number: 47-10501365, issued to HARD ROCK EXPLORATION, INC., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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 drilling, 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: HR-491A  
Farm Name: BLUMIG FAMILY ASSOCIATES, I  
API Well Number: 47-10501365  
Permit Type: Horizontal Well  
Date Issued: 12/21/2012

**Promoting a healthy environment.**

12/28/2012