

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

API 47-091-1290 County Taylor District BOOTH'S CREEK
Quad ROSEMONT Pad Name DUNHAM Field/Pool Name _____
Farm name CARL MITCHELL DUNHAM Well Number 1H
Operator (as registered with the OOG) Triana Energy LLC
Address 900 VIRGINIA STREET EAST City CHARLESTON State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 14286357.25 Easting 1886445.66
Landing Point of Curve Northing 14286656.27 Easting 1887086.06
Bottom Hole Northing 14283493.18 Easting 1891717.61

Elevation (ft) 1420 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Received

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

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Mud Type(s) and Additive(s)
Synthetic oil based mud with LCM when needed

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Date permit issued 4-28-2014 Date drilling commenced 5/27/14 Date drilling ceased 8/31/14
Date completion activities began 10/21/14 Date completion activities ceased 10/28/14
Verbal plugging (Y/N) No Date permission granted NA Granted by NA

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

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Freshwater depth(s) ft none reported Open mine(s) (Y/N) depths N
Salt water depth(s) ft none reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 293-294,555-556,574-576, 652-653,678-683 (from 2H coal log) Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
REJECTED 11/06/2015

API 47-091 - 1290

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Well number 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	n/a	20"	52'	New	n/a	n/a	No
Surface	17.5"	13.375"	968.55"	New	n/a	n/a	Yes
Coal	-	-	-	-	-	-	-
Intermediate 1	12.25"	9.625"	2475"	New	n/a	n/a	Yes
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8.75"	5.5"	13,544.34'	New	n/a	n/a	No
Tubing							
Packer type and depth set							

Comment Details n/a

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	125	15.6	1.2	150	Surface	1776
Surface	Type 1	706	15.6	1.18	833.08	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Type 1 (lead) / Type 1 (tail)	646 (lead) / 150 (tail)	15.2 (lead) / 15.6 (tail)	1.2 (lead) / 1.18 (tail)	775.2 (lead) / 177 (tail)	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	50:50 Type 1 / Fly Ash	212 (lead) / 1723 (tail)	14.5 (lead) / 14.7 (tail)	1.2 (lead) / 1.16 (tail)	254.4 (l) / 1998.68 (t)	4556'	19.25
Tubing							

Drillers TD (ft) 13,586

Loggers TD (ft) n/a

Deepest formation penetrated Marcellus

Plug back to (ft) n/a


Plug back procedure n/a

Kick off depth (ft) 6009'

Check all wireline logs run caliper density deviated/directional induction neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING


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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS

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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED

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Well number 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10/21/14	13519	13331	60	Marcellus
2	10/22/14	13268	13091	60	Marcellus
3	10/22/14	13030	12852	60	Marcellus
4	10/24/14	12797	12609	60	Marcellus
5	10/25/14	12556	12369	60	Marcellus
6	10/25/14	12316	12128	60	Marcellus
7	10/25/14	12075	11887	60	Marcellus
8	10/25/14	11834	11652	60	Marcellus
9	10/25/14	11593	11406	60	Marcellus
10	10/26/14	11353	11165	60	Marcellus
11	10/26/14	11112	10924	60	Marcellus
12	10/26/14	10871	10684	60	Marcellus
13	10/26/14	10631	10443	60	Marcellus
14	10/27/14	10390	10202	60	Marcellus
15	10/27/14	10149	9962	60	Marcellus
16	10/27/14	9909	9721	60	Marcellus

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	10/21/14	85.5	8476	6762/9102	5670	411980	8660	0
2	10/22/14	84.6	8527	5967/9451	5770	407480	9288	0
3	10/22/14	86.7	8505	5772/8992	5611	409220	8633	0
4	10/24/14	86.6	8352	5510/9281	5253	408500	10789	0
5	10/25/14	85.8	8252	5773/9163	6023	413300	9371	0
6	10/25/14	86.8	8236	5533/8564	5325	411260	9283	0
7	10/25/14	86.8	8161	5950/8508	4930	411240	8454	0
8	10/25/14	86.6	8185	5333/8801	5160	403340	8336	0
9	10/25/14	86.9	8159	5456/9153	5701	409920	9181	0
10	10/26/14	85.5	8321	6077/9196	4839	410740	8259	0
11	10/26/14	86.6	8392	6000/9072	5613	413380	8222	0
12	10/26/14	87.5	8538	5750/9043	5650	406760	8481	0
13	10/26/14	85.7	8186	5720/8563	5784	412670	9872	0
14	10/27/14	87.4	8328	5868/8777	5912	411440	9410	0
15	10/27/14	87.7	8267	6415/9204	5954	411180	9098	0
16	10/27/14	85.6	7798	6050/8467	5580	410460	8779	0

Please insert additional pages as applicable.

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API 47- 091 - 1290 Farm name CARL MITCHELL DUNHAM Well number 1H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7561-7807	TVD	8036-13519 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ Oil _____ NGL _____ Water _____ GAS MEASURED BY
 _____ mcfpd _____ bpd _____ bpd _____ bpd Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	0		0		
Lower Kittanning	678	683	678	683	Coal
Little Lime	1225	1269	1225	1269	
Big Lime	1269	1405	1269	1405	
Big Injun	1405	1437	1405	1437	
Gantz/50-Foot	1807	1890	1807	1890	
5th Sand	2334	2381	2334	2381	
Benson	4323	4373	4323	4373	
Sycamore	6567	6664	6600	6710	
Tully	7222	7300	7354	7430	
Marcellus	7412	7810	7621	13586 (MTD)	GAS

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Please insert additional pages as applicable.

Drilling Contractor Pioneer Energy Resources
 Address 5205 North O'Connor Blvd City Irving State Texas Zip 75039

Logging Company _____
 Address _____ City _____ State _____ Zip _____

Cementing Company Universal Well Services, Inc.
 Address Route 5 Hall Road City Buckhannon State WV Zip 26201

Stimulating Company Universal Well Services, Inc.
 Address 124 Industrial Drive City Bradford State PA Zip 16701

Please insert additional pages as applicable.

Completed by Rachelle A King Telephone 304-205-0160 Office of Oil and Gas
 Signature Rachelle A King Title Director Regulatory Affairs Date 2/19/15
 AUG 05 2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry
 WV Department of Environmental Protection
 11/06/2015

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/21/2014
Job End Date:	10/28/2014
State:	West Virginia
County:	Taylor
API Number:	47-091-01290-00-00
Operator Name:	Triana Energy
Well Name and Number:	Dunham 1H
Longitude:	-80.13010400
Latitude:	39.33626200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,684
Total Base Water Volume (gal):	8,910,342
Total Base Non Water Volume:	

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Number (CAS #)	Maximum Ingredient Concentration In Additive (% by mass)**	Maximum Ingredient Concentration In HF Fluid (% by mass)**	Comments
Water	Triana Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.05511	
Sand (Proppant)	Universal Well Services	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	11.17618	
Hydrochloric Acid (7.5%)	Universal Well Services	Acidizing	Other - (non-hazardous)	NA	92.50000	0.64189	
			Hydrochloric Acid	7647-01-0	7.50000	0.05205	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Unislick ST-50	Universal Well Services	Friction Reducer	Other - (non-hazardous)	NA	70.00000	0.03886	
			Petroleum Distillates, Hydroreated Light	64742-47-8	30.00000	0.01665	
B-84	XChem	Biocide	Glutaraldehyde	111-30-8	27.00000	0.00959	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	8.00000	0.00284	
			n-Alkyl Dimethyl Benzyl Ammonium Chloride	68424-85-1	5.50000	0.00195	
			Ethanol	64-17-5	4.00000	0.00142	

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FS-30	XChem	Scale Inhibitor	Sodium Polyacrylate	9003-04-7	30.00000	0.00281
Unhib G	Universal Well Services	Acid Inhibitor	Short Chained Glycol Ether	112-34-5	60.00000	0.00037
			Ethoxylated Alcohol	68002-97-1	35.00000	0.00022
			Methanol	67-56-1	5.00000	0.00003
			Acetophenone	98-86-2	1.00000	0.00001
			Formaldehyde	50-00-0	1.00000	0.00001
			Thiourea	62-56-6	1.00000	0.00001

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
 Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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A	HELLEN HARR TRUST ET AL	1.5 ACRES±	TM 15-65.2
B	JAMES P. HARR JR.	17.49 ACRES±	TM 15-64
C	PAUL J. TENNANT	0.33 ACRES±	TM 12-73.1
D	PAUL J. TENNANT	0.04 ACRES±	TM 12-73.2
E	JAMES P. HARR JR.	13.33 ACRES±	TM 15-63
F	HELLEN HARR TRUST ET AL	1.02 ACRES±	TM 15-65.1
G	RICHARD N. GLASPELL	1.26 ACRES±	TM 15-66.1
H	PAUL J. TENNANT	0.447 ACRES±	TM 12-73.4

LATITUDE 39° 22' 30"

DUNHAM LEASE DUNHAM 1H

577.33 ACRES± LEASE
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

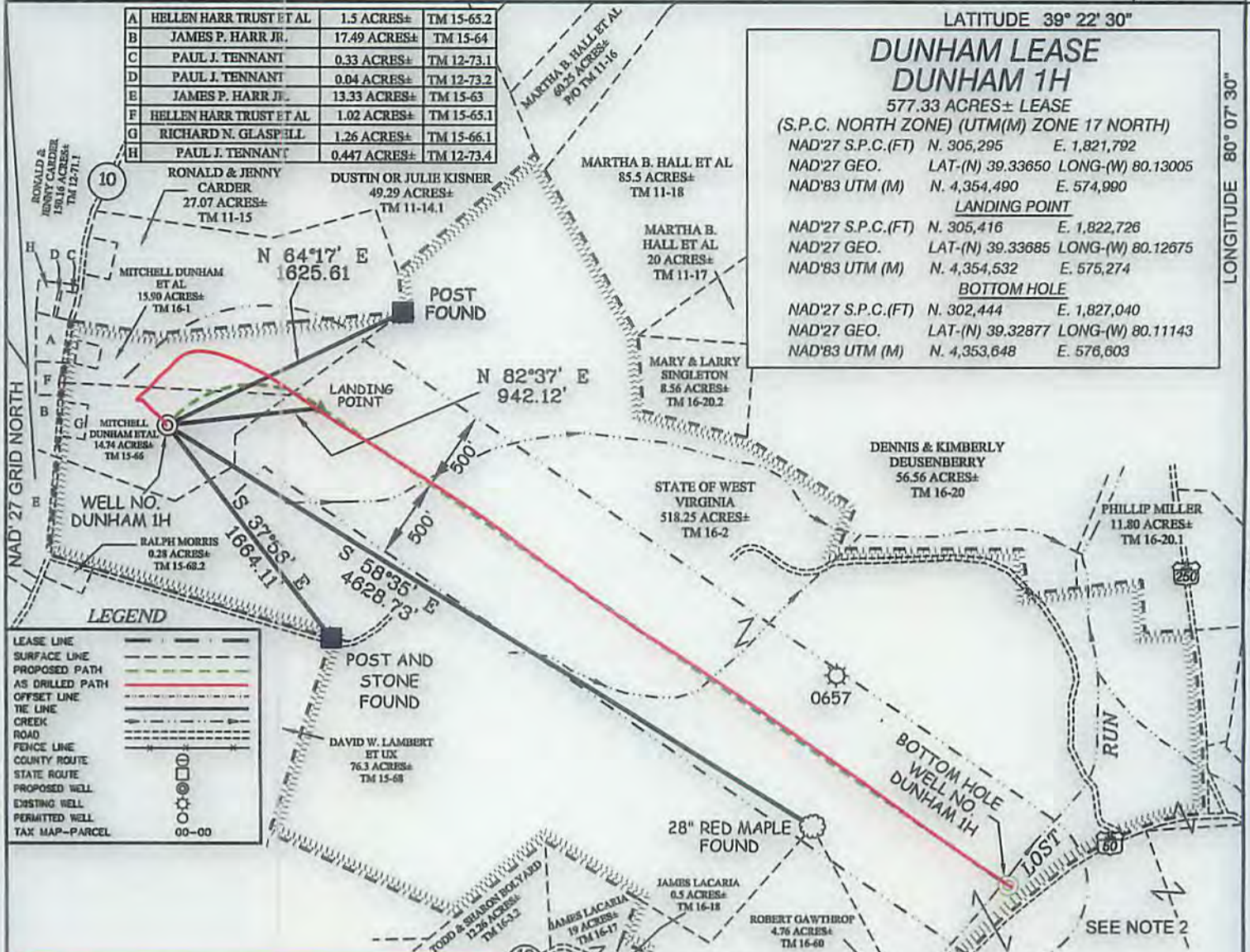
NAD'27 S.P.C.(FT) N. 305,295 E. 1,821,792
NAD'27 GEO. LAT-(N) 39.33650 LONG-(W) 80.13005
NAD'83 UTM (M) N. 4,354,490 E. 574,990

LANDING POINT

NAD'27 S.P.C.(FT) N. 305,416 E. 1,822,726
NAD'27 GEO. LAT-(N) 39.33685 LONG-(W) 80.12675
NAD'83 UTM (M) N. 4,354,532 E. 575,274

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 302,444 E. 1,827,040
NAD'27 GEO. LAT-(N) 39.32877 LONG-(W) 80.11143
NAD'83 UTM (M) N. 4,353,648 E. 576,603



**AS DRILLED COORDINATES
FOR WELL NO. DUNHAM 1H**
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT) N. 305,295 E. 1,821,792
NAD'27 GEO. LAT-(N) 39.33650 LONG-(W) 80.13005
NAD'83 UTM (M) N. 4,354,490 E. 574,990

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 302,431 E. 1,827,064
NAD'27 GEO. LAT-(N) 39.32874 LONG-(W) 80.11134
NAD'83 UTM (M) N. 4,353,645 E. 576,611

- NOTES ON SURVEY**
1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
 2. U.S. ROUTE 50 IN THIS AREA IS ALSO KNOWN AS OLD NORTHWESTERN VIRGINIA TURNPIKE.
 3. AS DRILLED INFORMATION PROVIDED BY TRIANA ENERGY, LLC.
 4. THIS PERMITTED PLAT REVISED TO SHOW THE AS DRILLED PATH AND COORDINATES RELATIVE TO THE PROPOSED WELL.

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.

SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

0941 432-6034 WWW.SLSURVEYS.COM

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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2294 *Matthew J. Hilton*



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

DATE OCTOBER 1, 20 13

REVISED 06/13/14 & 07/29/15

OPERATORS WELL NO. DUNHAM 1H

API WELL NO. 47 - 091 - 01290H

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7754AD1H

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

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

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

LOCATION: ELEVATION 1,420' WATERSHED TRIBUTARY OF LOST RUN

DISTRICT BOOTH'S CREEK COUNTY TAYLOR QUADRANGLE ROSEMONT 7.5'

SURFACE OWNER MITCHELL DUNHAM ET AL ACREAGE 14.74±

ROYALTY OWNER SEE ATTACHED WW-6A1 ACREAGE 577.33±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 7,500' / TMD 13,520'

WELL OPERATOR TRIANA ENERGY, L.L.C. DESIGNATED AGENT RACHELLE A. KING

ADDRESS 900 VIRGINIA STREET EAST, SUITE 400 CHARLESTON, WV 25301 ADDRESS 900 VIRGINIA STREET EAST, SUITE 400 CHARLESTON, WV 25301