



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

PERMIT MODIFICATION APPROVAL

June 19, 2014

TRIANA ENERGY, LLC
900 VIRGINIA STREET, EAST - SUITE 400
CHARLESTON, WV 25301

Re: Permit Modification Approval for API Number 9101290 , Well #: DUNHAM 1H
Change Lateral

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

 for G.S.
Gene Smith

Regulatory/Compliance Manager
Office of Oil and Gas



June 13, 2014

Mr. James Martin
Chief
Office of Oil and Gas
West Virginia Department of Environmental Protection
601 57th Street, S. E.
Charleston, West Virginia 25304

Re: Triana Energy, LLC – Horizontal Well Work Permit Modification Request
API # 47-9101290 Dunham 1H,
API # 47-9101285 Dunham 2H,
API # 47-9101292 Dunham 5H,
Booth's Creek District, Taylor County, West Virginia

Dear Mr. Martin:

Triana Energy, LLC hereby requests to modify the Well Work Permit for the referenced wells located in Booth's District, Taylor County, West Virginia. During the drilling of the vertical section of the Dunham 1H, bore-hole conditions caused a natural deviation in the planned well bore path. Our evaluation of directional drilling survey data shows that it would be more economically beneficial to Triana and the mineral owners if the horizontal section of the original 2H well lateral path is drilled from the current 1H kick-off point. Conversely, the same is true for the drilling the original horizontal section of the 1H well lateral path from the current 2H kick-off point. The original well surface locations have not changed.

Therefore, Triana respectfully requests the Office of Oil and Gas to approve this request to modify the horizontal well lateral paths, effectively swapping the original Dunham 1H and 2H lateral sections with each other. Please find enclosed revised Forms WW-6B and WW-6A1 for the respective wells, as well as revised well plats reflecting the change.

Received

JUN 18 2014

Office of Oil and Gas
WV Dept. of Environmental Protection



Additionally, upon further evaluation of the Dunham 5H well bore path, Triana believes the vertical section travels through a portion of parcel 3-16-2 (West Virginia Department of Agriculture), which lease was not listed on the original Dunham 5H WW-6A1 in the well work application. Therefore, please also find enclosed a revised WW-6A1 that now includes the West Virginia Department of Agriculture as lessor.

Please feel free to contact me should you have any questions or need additional information. Thank you for your attention to this matter.

Sincerely,

Walter C. Showen, III
Manager, Permitting

Cc: Mr. Gene Smith
Mr. Chad Carmichael

Received

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WV Dept. of Environmental Protection

WW - 6B
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: Triana Exploration, LLC 494486431 Taylor Booths Creek, Court House Rosemont, Grafton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: 1H Well Pad Name: Dunham

3 Elevation, current ground: 1,420 Elevation, proposed post-construction: 1,420

4) Well Type: (a) Gas Oil
Other
(b) If Gas: Shallow Deep
Horizontal

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale, 7500 TVD, Thickness = 110', Anticipated Pressure = 3,800

7) Proposed Total Vertical Depth: 7,500'

8) Formation at Total Vertical Depth: Marcellus Shale

9) Proposed Total Measured Depth: 13,500'

10) Approximate Fresh Water Strata Depths: 50, 350, 530, 790

11) Method to Determine Fresh Water Depth: Well records and USGS data

12) Approximate Saltwater Depths: None indicated

13) Approximate Coal Seam Depths: 400, 455, 530, 565

14) Approximate Depth to Possible Void (coal mine, karst, other): NA

15) Does land contain coal seams tributary or adjacent to, active mine? No

16) Describe proposed well work: drill vertical hole to kick-off point, set casing, drill deviated hole to TD and set casing.
Complete well in Marcellus Formation.

17) Describe fracturing/stimulating methods in detail:

Perforate the production casing and production zone with perforating guns at predetermined locations, isolate treatment zones in stages and perform high pressure slick-water fracture, introducing proppant to retain fractures.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 14.1 acres

19) Area to be disturbed for well pad only, less access road (acres): Pad and Impoundment = 11.8 acres

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WW - 6B
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20)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill -up (Cu. Ft.)</u>
Conductor	20"	New	LS	55#	80	80	Cement to surface
Fresh Water	13-3/8"	New	H-40	48#	995	936	C.T.S.
Coal							
Intermediate	9-5/8"	New	J-55	40#	2,450	2,450	C.T.S.
Production	5-1/2"	New	P-110	20#	13,500	13,500	Top @ 5,000'
Tubing	2-3/8"	New	N-80	4.7#	7,700		None
Liners							

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	20"	24"	0.25	340	Class A	N/A
Fresh Water	13-3/8"	17-1/2"	0.33	1,730	Class A w/additives	1.18 - 1.54
Coal						
Intermediate	9-5/8"	12-3/8" - 12-1/4"	0.395	3,950	Class A w/additives	1.18 - 1.54
Production	5-1/2"	8-3/4" - 7-7/8"	0.361	12,360	Type 1 w/additives	1.37 - 1.65
Tubing	2-3/8"	N/A	1.19	11,200	None	None
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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WV Dept. of Environmental Protection

07/04/2014

WW - 6B
(1/12)

21) Describe centralizer placement for each casing string. _____

Centralizers will be used as needed. The number and type is dependent on hole conditions.

Rigid style centralizers will be used in the lateral and curve sections of the well bore.

22) Describe all cement additives associated with each cement type. _____

Cement additives will be used as needed. The amount and type is dependent on hole conditions.

Possible additives may include: Lost Circulation Material - granular, flake or fibrous, depending on the situation;

Accelerant - CaCl₂ up to 2%

23) Proposed borehole conditioning procedures. _____

Proposed borehole conditioning procedures will depend on hole conditions. These may include, but are not limited to: weighted or high viscosity fluid sweeps, mud solvent fluid sweeps, surfactant sweeps, scouring sweeps, high rate or extended circulation, pipe rotation and reciprocation, short trips and other methods.

*Note: Attach additional sheets as needed.

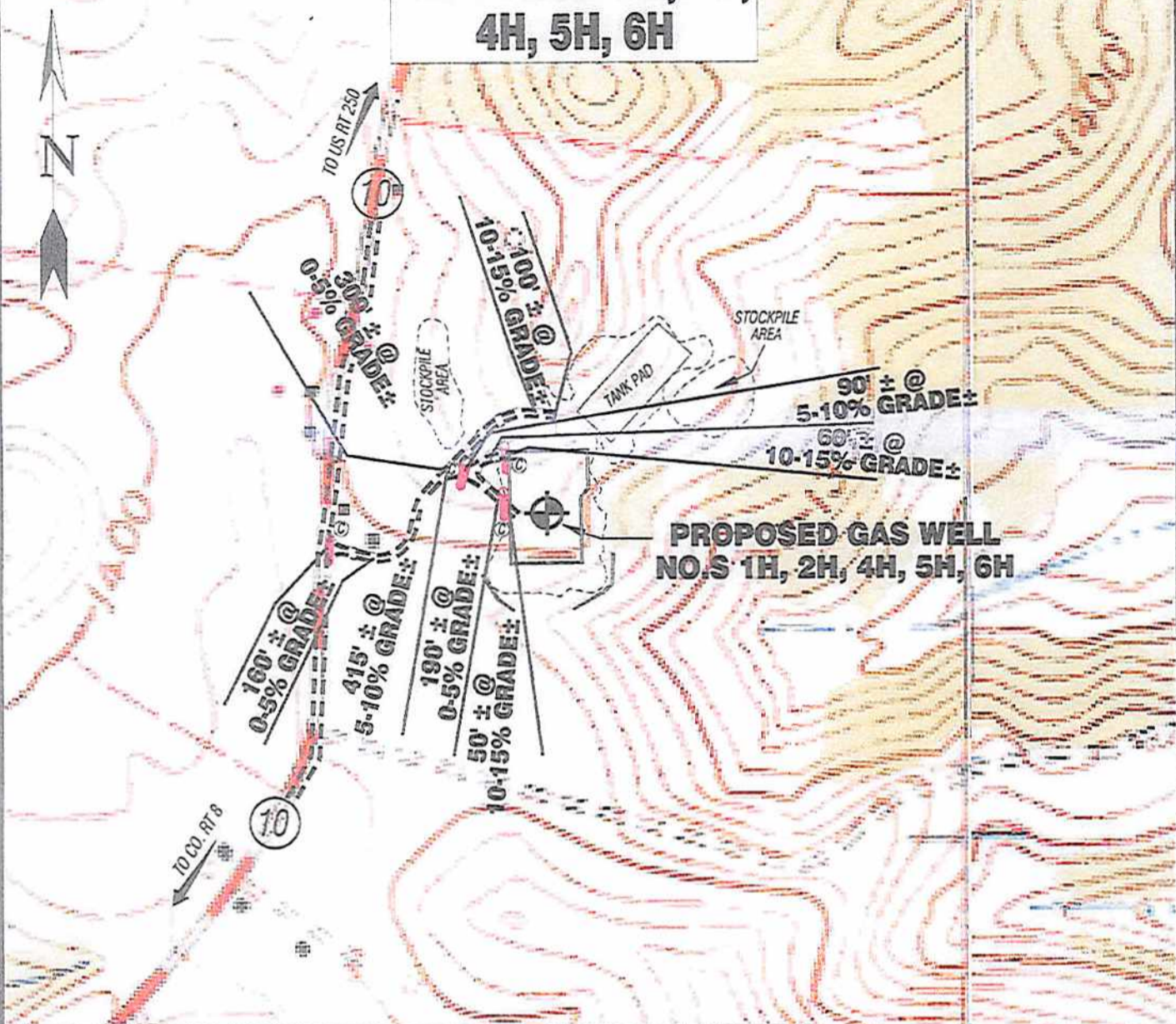
Received

JUN 18 2014

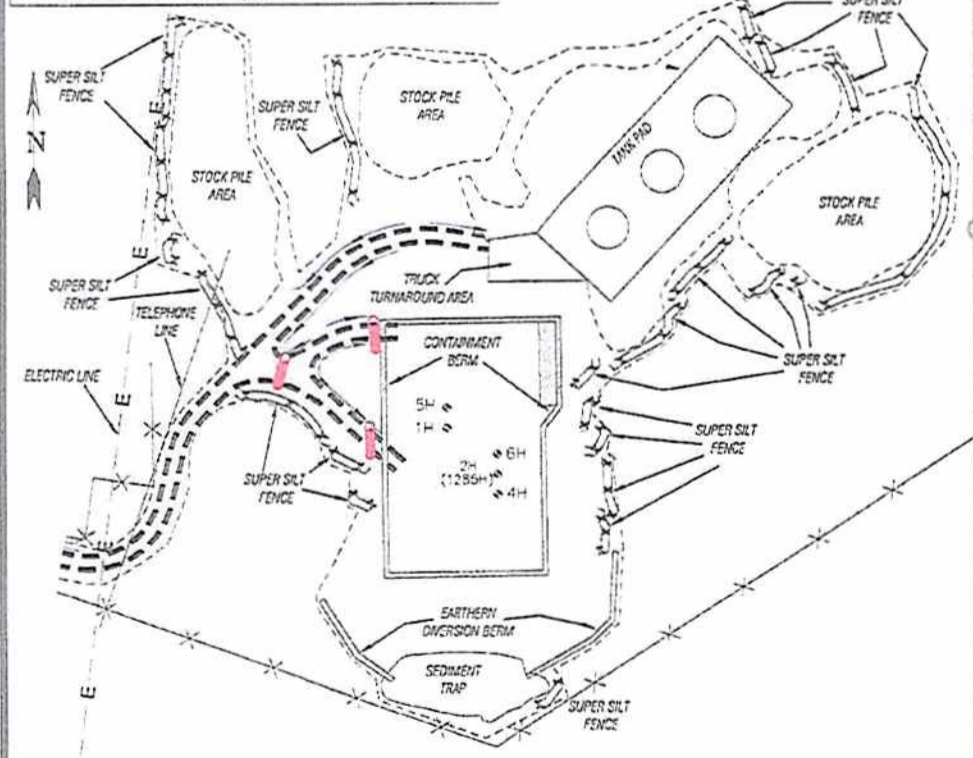
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07/04/2014

**DUNHAM LEASE
WELL NO.S 1H, 2H,
4H, 5H, 6H**



Detail Sketch for Proposed Dunham Wells



SCALE: 1"=500'
0' 500' 1000'

ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WY D.E.P. OIL AND GAS BLM MANUAL ENTRANCES AT COUNTY STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WY D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

SEDIMENT BASINS (TRAPS) AND APPROPRIATE EROSION CONTROL BARRIERS ARE TO BE CONSTRUCTED AT ALL CULVERT AND CROSS DRAIN INLETS AND OUTLETS AS REQUIRED IN THE WY D.E.P. OIL AND GAS BLM MANUAL. FIELD CONDITIONS (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.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION FROM THIS PLAN.

TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PLC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

1266 1-17 07/04/2014

- EXISTING CULVERT
- PROPOSED CULVERT 15" MIN. UNLESS OTHERWISE NOTED
- PROPOSED STREAM CROSSINGS
- APPROXIMATE LIMITS OF DISTURBANCE

Not To Scale

TOPO SECTION OF ROSEMONT 7.5' USGS TOPO QUADRANGLE

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

DRAWN BY K.D.W.	FILE NO. 7754	DATE 01/14/14	CADD FILE: 7754RCP_ANS.dwg
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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"

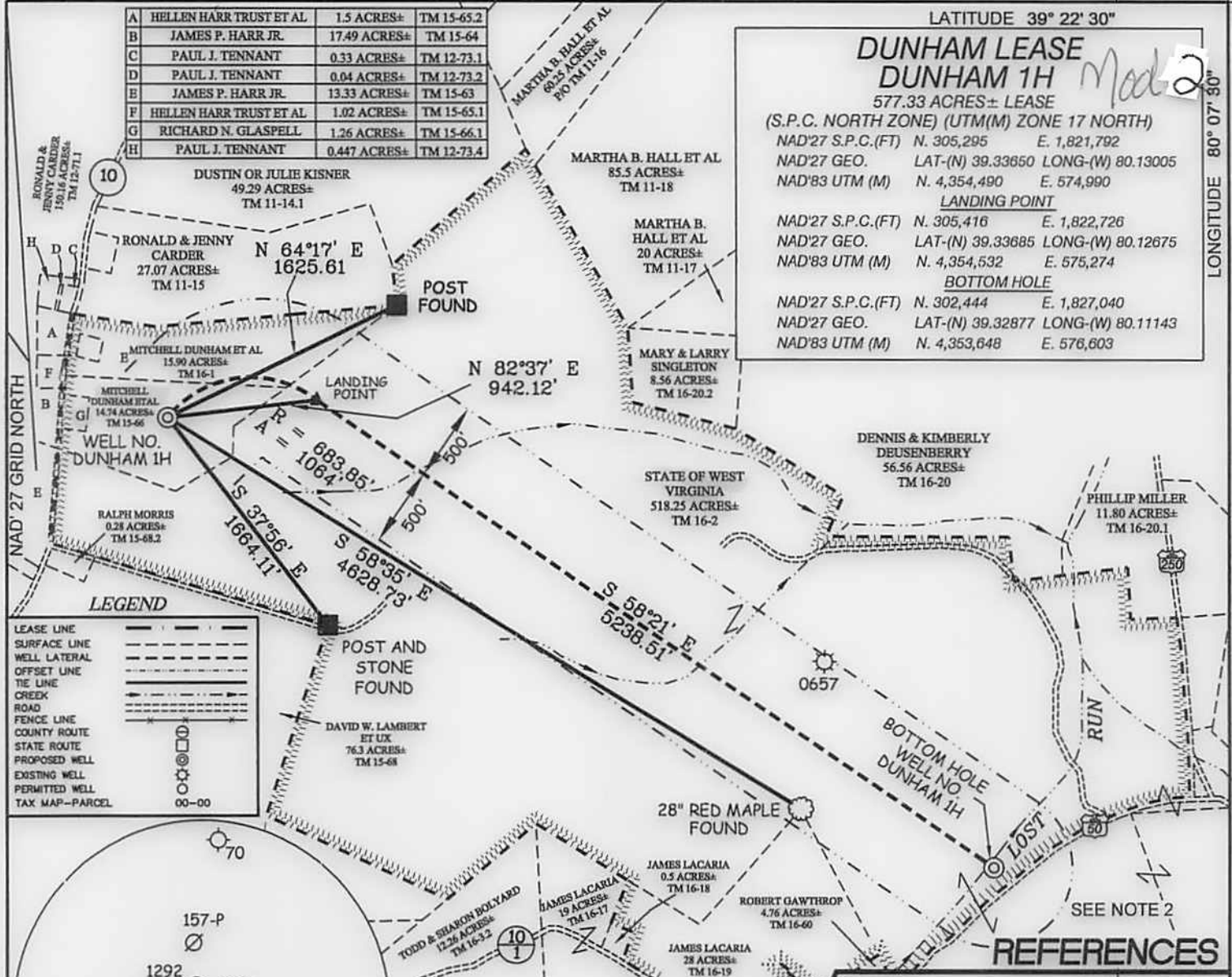
DUNHAM LEASE DUNHAM 1H

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) 39.33685 LONG-(W) 80.13005
NAD'83 UTM (M) N. 4,354,490 E. 574,990

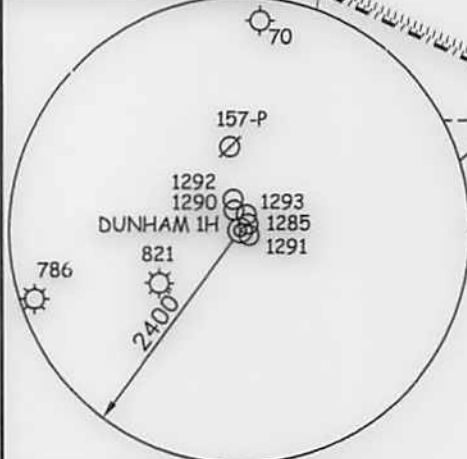
LANDING POINT
NAD'27 S.P.C.(FT) N. 305,416 E. 1,822,726
NAD'27 GEO. LAT-(N) 39.33685 LONG-(W) 80.12675
NAD'83 UTM (M) N. 4,354,532 E. 575,274

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



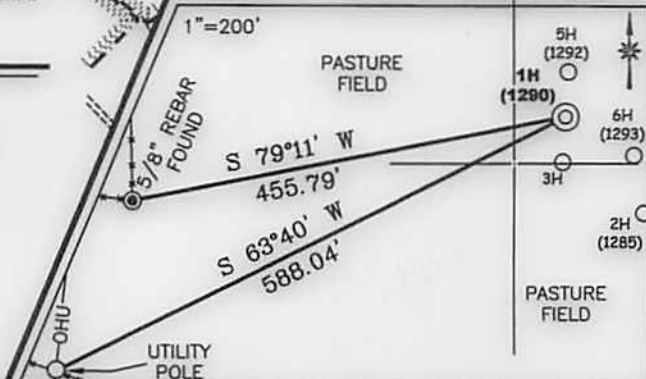
LEGEND

LEASE LINE	---
SURFACE LINE	----
WELL LATERAL	-----
OFFSET LINE	-----
TIE LINE	-----
CREEK	~~~~~
ROAD	=====
FENCE LINE	-----
COUNTY ROUTE	-----
STATE ROUTE	-----
PROPOSED WELL	○
EXISTING WELL	⊙
PERMITTED WELL	⊙
TAX MAP-PARCEL	00-00



NOTES ON SURVEY

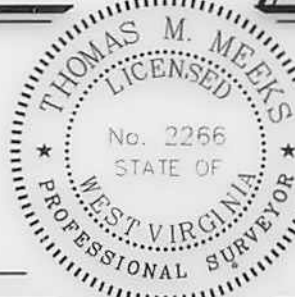
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- U.S. ROUTE 50 IN THIS AREA IS ALSO KNOWN AS OLD NORTHWESTERN VIRGINIA TURNPIKE.



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SLS
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PROJECT MGMT.

(204) 482-5834 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. 2266 *[Signature]*

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

DATE OCTOBER 1, 20 13

REVISED JUNE 13, 20 14

OPERATORS WELL NO. DUNHAM 1H

API WELL NO. 47 - 91 - 1290

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7754P1HR2

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'

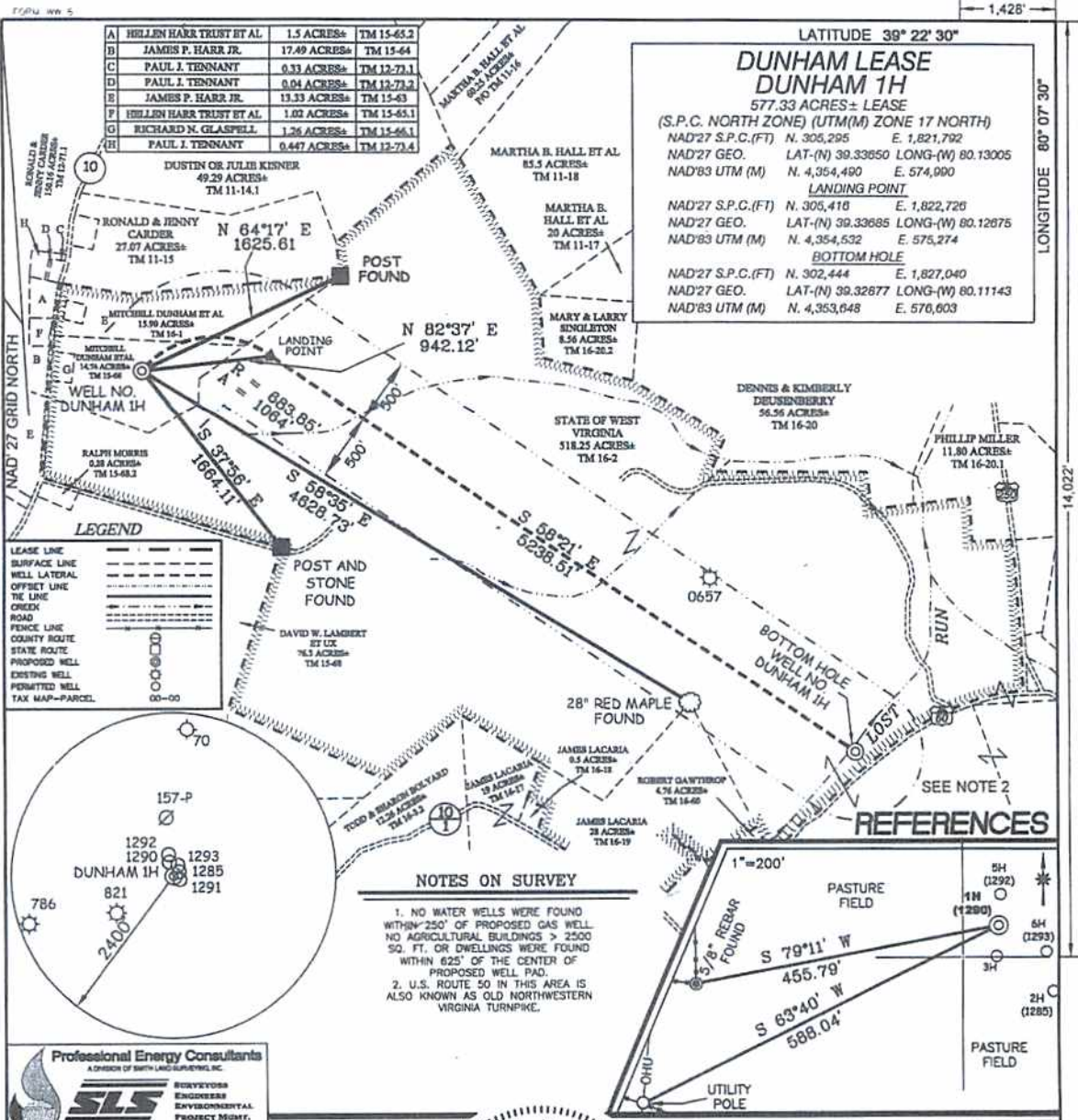
WELL OPERATOR TRIANA ENERGY, L.L.C. DESIGNATED AGENT RACHELLE A. KING

ADDRESS 900 VIRGINIA STREET EAST, SUITE 400 ADDRESS 900 VIRGINIA STREET EAST, SUITE 400

CHARLESTON, WV 25301 CHARLESTON, WV 25301

07/04/2014

MOD 2



**DUNHAM LEASE
DUNHAM 1H**
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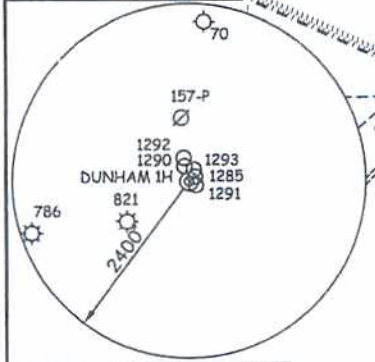
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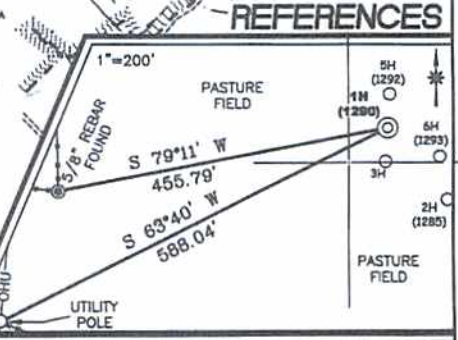
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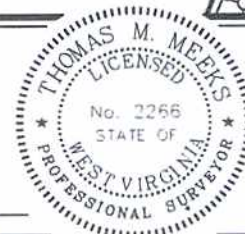


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H6A MOD 2

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OFFICE OF OIL AND GAS

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ADDRESS 900 VIRGINIA STREET EAST, SUITE 400 ADDRESS 900 VIRGINIA STREET EAST, SUITE 400

CHARLESTON, WV 25301 CHARLESTON, WV 25301

07/04/2014

WW-6A1
(1/12)

Operator's Well No. 1H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Mitchell Carl Dunham	Triana Energy, LLC	12.5% +/-	62/140 (TMP 15-66)
		12.5% +/-	62/148 (TMP 16-1)
Lou Ann Glaspell and Richard W. Glaspell	Triana Energy, LLC	12.5% +/-	62/144 (TMP 15-66)
		12.5% +/-	62/154 (TMP 16-1)
West Virginia Department of Agriculture	Triana Energy, LLC	12.5% +/-	62/188

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Triana Exploration, LLC
By: Walter C. Showen, III
Its: Permitting Manager

Received
JUN 18 2014
Office of Oil and Gas
WV Dept. of Environmental Protection