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

September 26, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-9101308, issued to PDC MOUNTAINEER LLC, 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 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.

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: VELTRI 3HM
Farm Name: VELTRI, ANTHONY J.
API Well Number: 47-9101308
Permit Type: Horizontal 6A Well
Date Issued: 09/26/2014

Promoting a healthy environment.

API Number: 91-01308

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) 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. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

91-01308

WW-6B
(9/13)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: PDC Mountaineer, LLC.	494494839	Taylor (91)	Courthouse (2)	Grafton 7.5' (378)
	Operator ID	County	District	Quadrangle

2) Operator's Well Number: 3 HM Well Pad Name: Veltri

3) Farm Name/Surface Owner: Anthony J. Veltri Public Road Access: US Rt 119 & 250

4) Elevation, current ground: 1476' Elevation, proposed post-construction: 1474'

5) Well Type (a) Gas ■ Oil ____ Underground Storage ____
Other ____
(b)If Gas Shallow ■ Deep ____
Horizontal ■

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus Shale / TVD to Landing Zone is 7982' / Thickness = 100' / Pressure: (7982' x 0.42 psi/ft = 3060 psi)

8) Proposed Total Vertical Depth: 7982'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 16,680'

11) Proposed Horizontal Leg Length: 7,890'

12) Approximate Fresh Water Strata Depths: 125', 179', 350', & 525'

13) Method to Determine Fresh Water Depths: Offset wells: 47-091-00825, 00826, 00949, & 00991.

14) Approximate Saltwater Depths: 2012' (If present).

15) Approximate Coal Seam Depths: 144', 298', 631', 875'

16) Approximate Depth to Possible Void (coal mine, karst, other): Not Known

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes ☐ No ☑

(a) If Yes, provide Mine Info: Name: ____
Depth: ____
Seam: ____
Owner: ____

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18) **CASING AND TUBING PROGRAM** 091-01308

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	N	H-40	94 lb.	70'	70'	Cement to Surface
Fresh Water	13 3/8"	N	H-40	48 lb.	575'	575'	Cement to Surface
Coal							
Intermediate	9 5/8"	N	J-55	40 lb.	2,700'	2,700'	Cement to Surface
Production	5 1/2"	N	P-110	20 lb	16,680'	16,680'	3,581 minimum
Tubing							
Liners							

Kenneth L. Skeyoeck
9-25-14

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	.756	1,500	1	1.06
Fresh Water	13 3/8"	17 1/2"	.66	1,730	1	1.36
Coal						
Intermediate	9 5/8"	12 1/4"	.790	3,950	1	1.38
Production	5 1/2"	8 1/2" / 8 3/4"	.722	12,640	H	1.18
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and Complete a horizontal Marcellus Shale well following all State and Federal guidelines. All casing will be new and the production casing will be cemented a minimum of 100' into the intermediate casing if it is not cemented to the surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Slickwater frac, pumping 85 BBL/min. maximum. Each stage to be comprised of approximately 10,000 BBL of water and 400,000 lbs of sand. Maximum pressure of 9000 psi

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 14.4 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.36 acres

23) Describe centralizer placement for each casing string:

Conductor: None
Surface: 1 every 90' of pipe and a basket
Intermediate: 1 every 7 joints and a basket
Production: 1 every 12 Joints in the vertical section, then 1 every 2 joints in the horizontal section

24) Describe all cement additives associated with each cement type:

See attached sheet.

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25) Proposed borehole conditioning procedures:

Surface and intermediate holes are cleaned with air. Production hole is circulated with weighted drilling mud for at least 4 hours with high viscosity sweeps ran intermittently.

*Note: Attach additional sheets as needed.

91-01308

PDC MOUNTAINEER

PDC Mountaineer, LLC
120 Genesis Boulevard, PO Box 26
Bridgeport, WV 26330

304-842-3597
304-808-0913 (fax)

CEMENT ADDITIVES ASSOCIATED WITH EACH CEMENT TYPE:

SURFACE: Type 1 cement + 2% CaCl + 0.25 pps Cello Flake

INTERMEDIATE: Pre-Flush Mud Clean 1
Type 1 cement + 2% CaCl + 0.25 pps Cello Flake

PRODUCTION: Pre-Flush Mud Clean 1
LEAD Class H cement + 0.1% bwoc R-3 + 0.25% bwoc CD-32 + 1.2% bwoc FL-62 + 0.1% bwoc ASA-301 + 0.4% bwoc Sodium Metasilicate + 50.5% fresh water
TAIL Type 1 cement + 0.4% bwoc R-3 + 0.3% bwoc CD-32 + 1% bwoc FL-62 + 0.15% bwoc ASA-301 + 50.5% fresh water

ADDITIVES:
CaCl (Calcium Chloride)= Accelerator
Cello Flake= Lost circulation control agent
R-3= Retarder
CD-32= Dispersant
FL-62= Fluid loss control agent
ASA-301 Sodium Metasillicate= Free water control & Solid suspension

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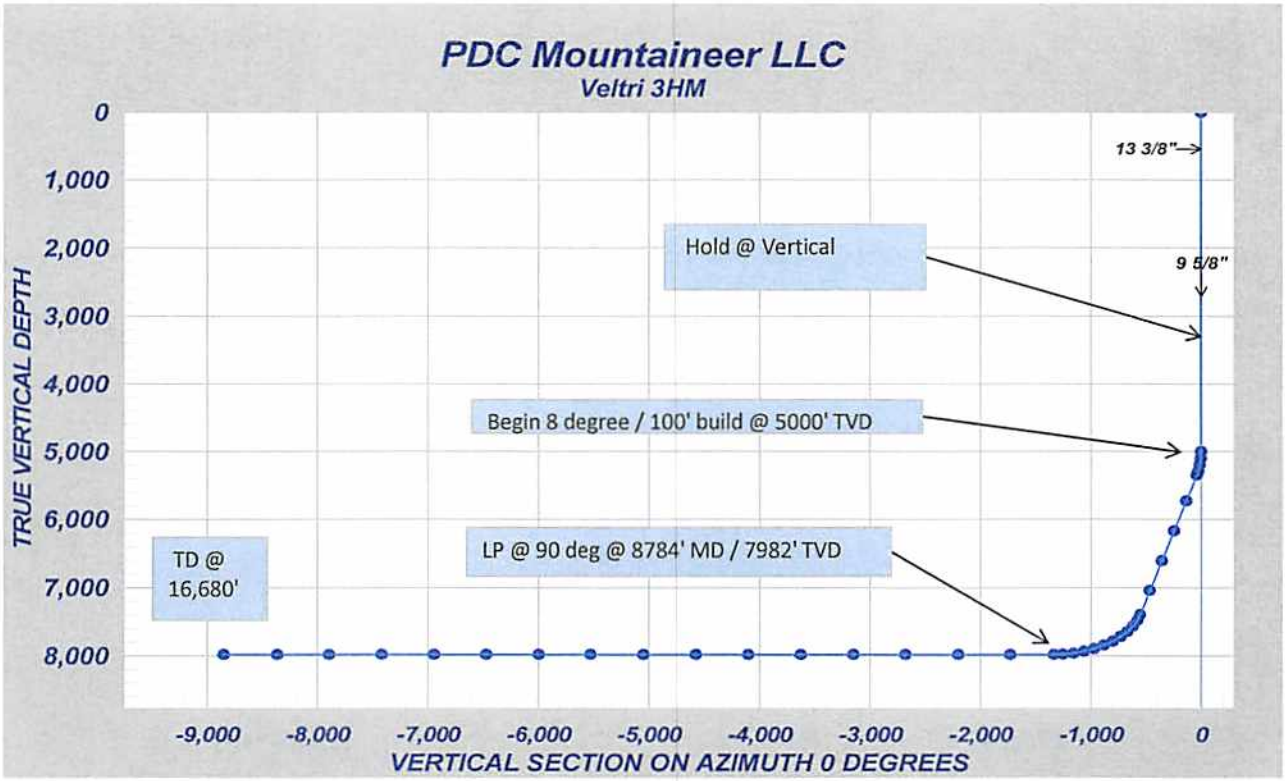
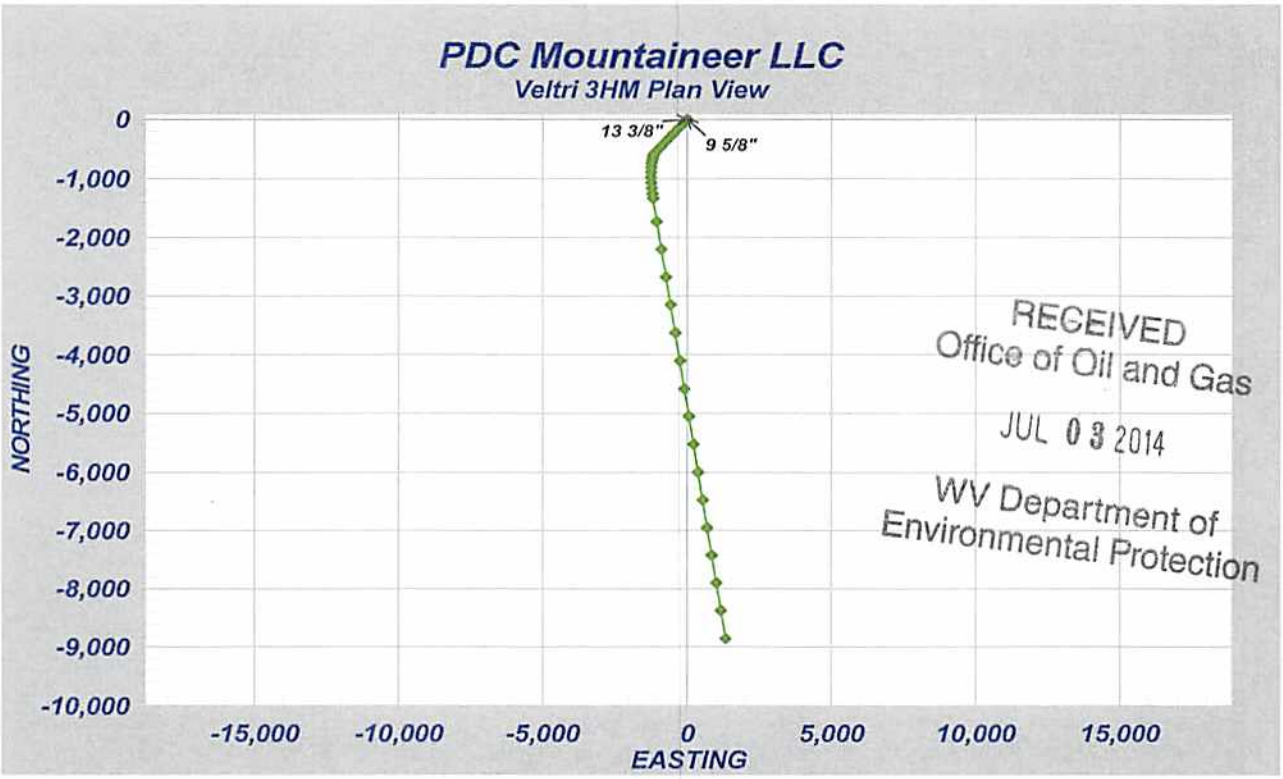
PDC Mountaineer LLC

Veltri 3HM Well Plan

Taylor County, WV

PDC MOUNTAINEER





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WW-9
(9/13)

API Number 47 - 91 - 01308
Operator's Well No. 3HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name PLD Mountaineer, LLC OP Code 494494839

Watershed (HUC 10) Berkley Run Quadrangle Grafton

Elevation 1474 County Taylor District Courthouse

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.? 60

Proposed Disposal Method For Treated Pit Wastes:

- ____ Land Application
- ■ Underground Injection (UIC Permit Number See Attached Sheet)
- ■ Reuse (at API Number To Be Determined)
- ____ Off Site Disposal (Supply form WW-9 for disposal location)
- ____ Other (Explain _____

Will closed loop system be used? If so, describe: Yes, cuttings go into a half round where they will be solidified and hauled to Meadowfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Vertical-air; Horizontal-mud

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

Additives to be used in drilling medium? Lime, perma-lose, xan-plex, super sweep, caustic soda, bar, x-cide.

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

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

-Landfill or offsite name/permit number? Meadowfill Landfill 100678WV

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.

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Office of Oil and Gas
SEP 23 2014
WV Department of Environmental Protection

Company Official Signature Steven P. Johnson

Company Official (Typed Name) Steven P. Johnson

Company Official Title Agent

Subscribed and sworn before me this 23rd day of September, 2014

Mark J. King

My commission expires December 21, 2020

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
MARK J. KING
183 DEER CREEK LANE
BUCKHANNON, WV 26201
My commission expires December 21, 2020

91-01308

Form WW-9

Operator's Well No. Veltri 3HM

PDC Mountaineer, LLC

Proposed Revegetation Treatment: Acres Disturbed 14.4 Prevegetation pH 5.9

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount at least 500 lbs/acre

Mulch 2 - 3 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Timothy Grass	40	Timothy Grass	40
Orchard Grass	12	Orchard Grass	12
Redtop Clover	5	Redtop Clover	5

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: Lennet Greyold

Comments: PLAN SUBJECT TO ACOE WETLAND VERIFICATION

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Title: OIL & GAS INSPECTOR Date: 6-23-14

Field Reviewed? (V) Yes ( ) No

91-01308

Disposal Well Information Sheet
(Includes Lat./Long., Operator, and API#)

Disposal Well Name	Operator	API Well #	State	County	TWP	Lat.	Lon.
Ohio Oil Gathering Corp. - Bells Run	Ohio Oil Gathering Corp.	34-167-2-9395	OH	Washington	Newport	39.387	-81.289
Long Run Disposal Well	Ohio Oil Gathering Corp.	34-167-2-9658	OH	Washington	Newport	39.391	-81.317
Newell Run Disposal Well	Ohio Oil Gathering Corp.	34-167-2-6385	OH	Washington	Newport	39.399	-81.273
BW #4	Appalachian Oil Purchasers	47-073-02523	WV	Pleasants		39.372	-81.247
Greens Run	Appalachian Oil Purchasers	47-073-02940	WV	Pleasants			
The K&H Well	Central Environmental	34-009-2-3821	OH	Athens	Troy	39.336	-81.759

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Disposal Well Information Sheet

(Includes Lat./Long., Operator, and API#)

Disposal Well Name	Operator	API Well #	State	County	TWP	Lat.	Long.
Ohio Oil Gathering Corp. - Bells Run	Ohio Oil Gathering Corp.	34-167-2-9395	OH	Washington	Newport	39.387	[illegible]
Long Run Disposal Well	Ohio Oil Gathering Corp.	34-167-2-9658	OH	Washington	Newport	39.39[illegible]	[illegible]
Newell Run Disposal Well	Ohio Oil Gathering Corp.	34-167-2-6385	OH	Washington	Newport	39.399	[illegible]
BW #4	Appalachian Oil Purchasers	47-073-02523	WV	Pleasants		39.372	[illegible]
Greens Run	Appalachian Oil Purchasers	47-073-02540	WV	Pleasants			
The K&H Well	Central Environmental	34-009-2-3821	OH	Athens	Troy	39.336	81.759

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Vendor	Product	Code Number	Component	CAS-NO.
Schlumberger	100-mesh Sand	S100	Crystalline silica	14808-60-7
Schlumberger	30/50 mesh sand	S012-3050	Crystalline silica	14808-60-7
Schlumberger	40/70 mesh sand	S012-4070	Crystalline silica	14808-60-7
Schlumberger	Corrosion Inhibitor	A264	Methanol	67-56-1
			Prop-2-yn-1-ol	107-19-7
Schlumberger	Surfactant	F108	Methanol	67-56-1
Schlumberger	HCL	H028	Hydrochloric Acid	7647-01-0
Schlumberger	Gelling Agent	J590	Propan-2-ol	67-63-0
Schlumberger	Friction Reducer	J609	Ammonium sulfate	7783-20-2
Schlumberger	Iron Stabilizer	L058	Sodium erthorbate	6381-77-7
XCHEM	Scale Inhibitor	TS-30	Sodium polycarboxylate	ND
XCHEM	Bleach	449610	Sodium chloride	7647-14-5
			Sodium hydroxide	1310-73-2
			Sodium Hypochlorite	7681-52-9
XCHEM	Chlorite	ADOX 3125/8125	Sodium chlorite	7758-19-2

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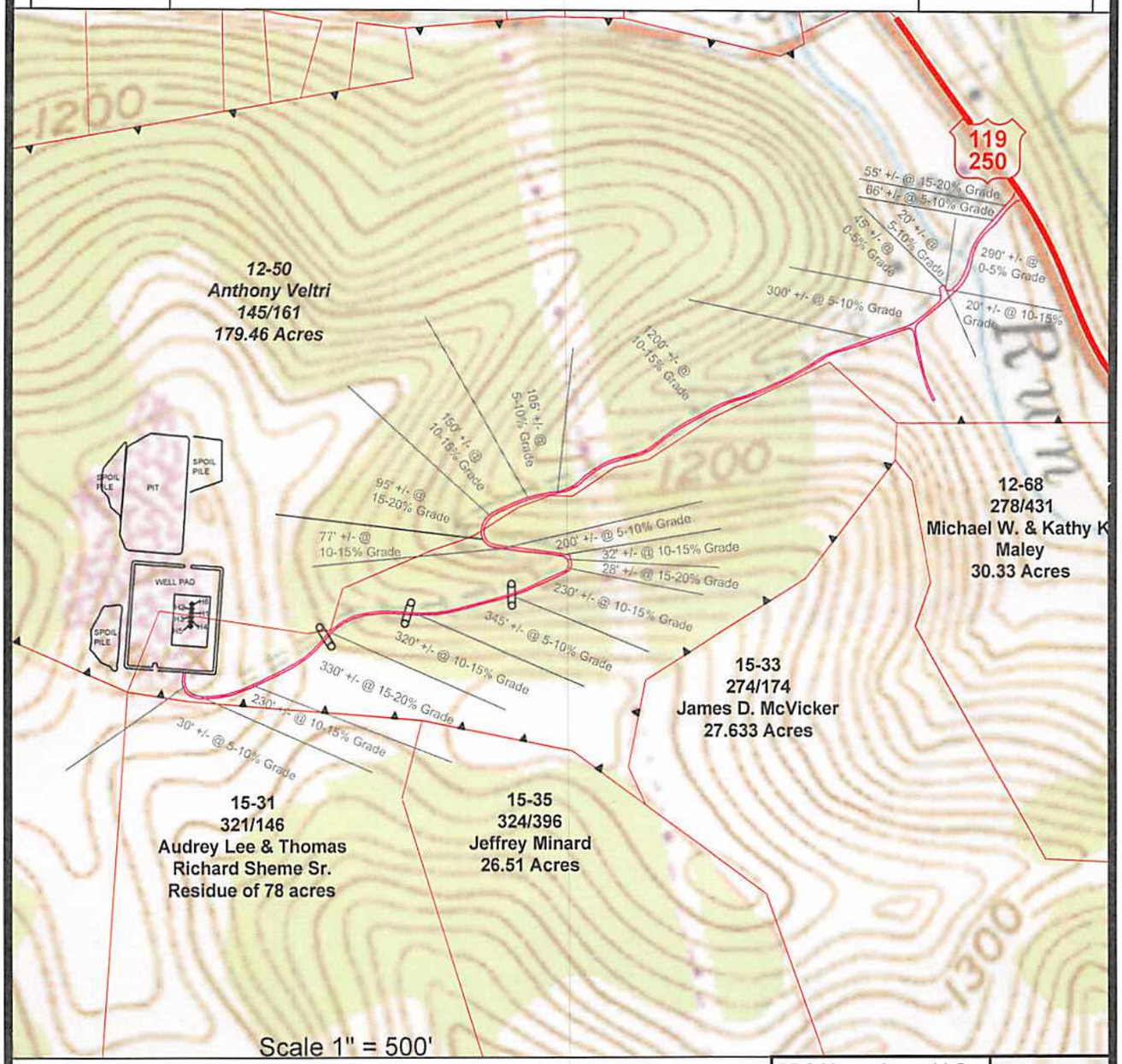
F-024 Add.

91-01308

WW-9

PDC Mountaineer, LLC Veltri Pad Rec Plan



Ⓒ Denotes to install 15" minimum culvert

Ⓧ Denotes a proposed stream crossing (if applies) *see table for culvert detail*

Unless otherwise noted, all roads shown hereon are existing and shall be maintained in accordance with WV D.E.P., Office of Oil and Gas Erosion and Sediment Control Field Manual as revised 2/98

Entrances upon county/state roads shall be maintained in accordance with WV D.O.T. regulations, however, separate permits may be required by the WV D.O.T.

Sediment basins (traps) and appropriate erosion control barriers are to be constructed at all culverts and cross-drains as required in the aforementioned Erosion and Sediment Control Field Manual. Where field conditions dictate, alternative erosion control measures shall be enacted as required.

Earthwork contractors are responsible for notification to the operator and inspector prior to any deviation from this plan.

Temporary seed and mulch all slopes after construction of location.

Cut and stack all marketable timber.

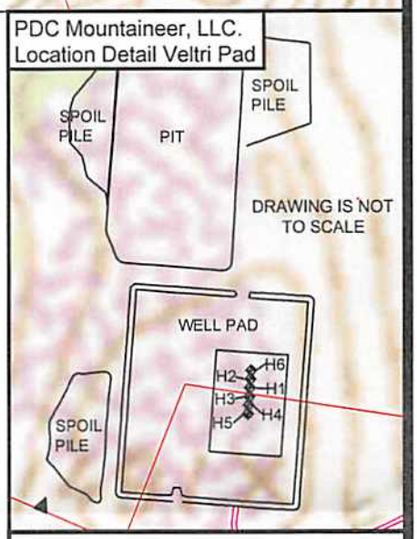
Stacked brush may be used for sediment control.

Applications for seperate Public Land Corporation Permits on the access roads stream crossings have been prepared (if applies).

Additional culverts and/or other drainage structures and sediment control devices may be required by the WV D.E.P. Oil & Gas Inspector.

Operator is responsible for the coordination with contractor and Allegheny Surveys regarding any changes or additions the state may require

PDC Mountaineer, LLC.
Location Detail Veltri Pad



SECTION OF THE Grafton 7.5' USGS QUADRANGLE			
Projected culvert inventory. (for bid purposes only)			
15" minimum diameter culverts	3 Culverts		
18" minimum diameter culverts	0 Culverts		

DRAWN BY:	DATE:	FILE NO.	DRAWING FILE NO.
Scott Brown	July 1, 2014	153-13	15313 Veltri Rec Plan

PROPERTY BOUNDARY
ROAD
DITCH
SILT FENCE
PROPOSED WELL LOCATION
BROAD BASED DIP
EXISTING GATE
EXISTING CULCERT
PROPOSED CULVERT
CROSS DRAIN
PIT-CUT WALLS
PIT-COMPACTED WALLS
AREA OF LAND APPLICATION OF PIT WASTE

Allegheny Surveys, Inc. Established 1988

SURVEYING AND MAPPING SERVICES PERFORMED BY:

ALLEGHENY SURVEYS, INC.

1-800-482-8606

Birch River Office
Phone: (304) 649-8606
Fax: (304) 649-8608

237 Birch River Road
Birch River, WV 26610

LATITUDE 39 - 17 - 30

TH 4,090'

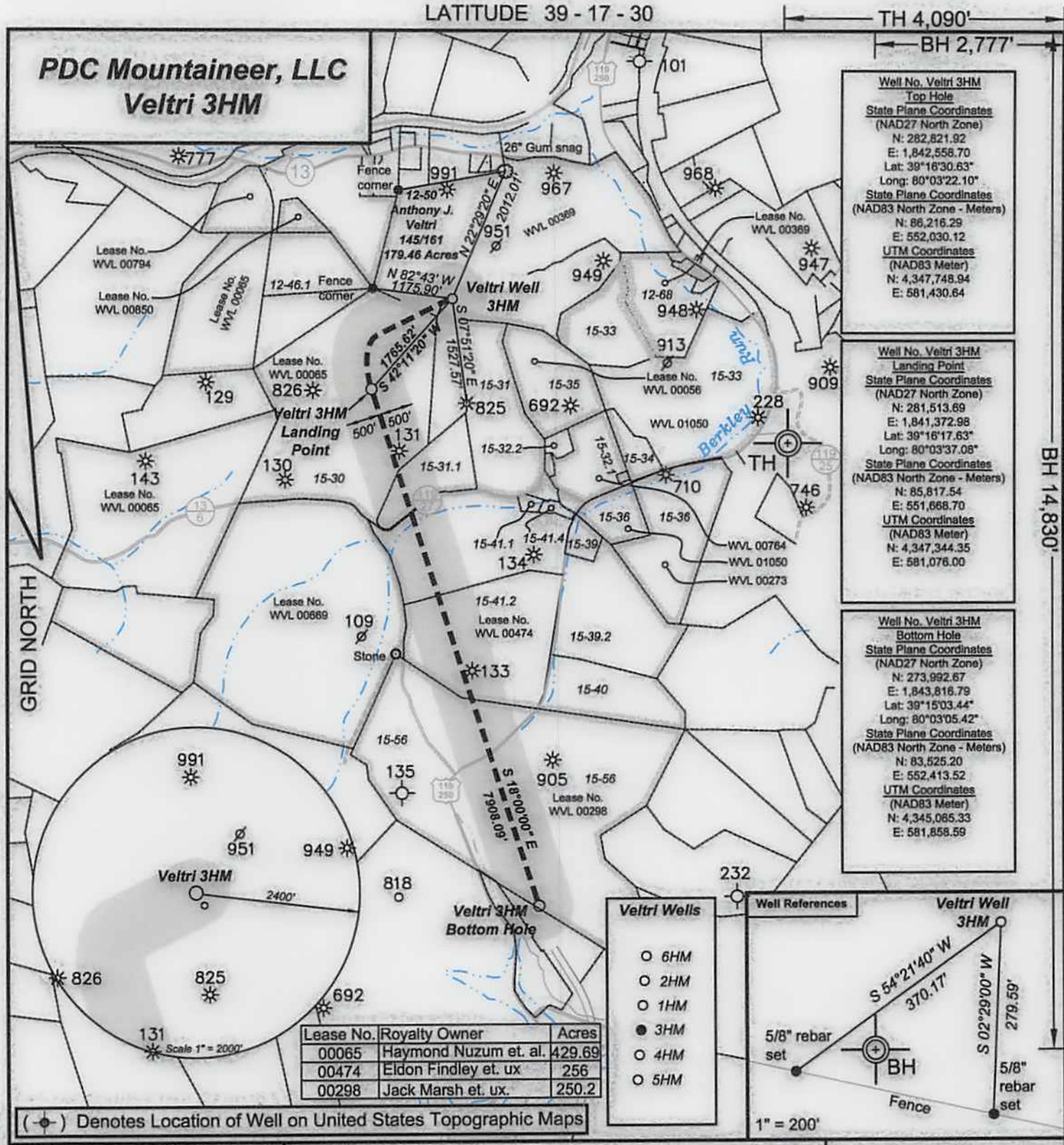
BH 2,777'

TH 6,009'

BH 14,830'

LONGITUDE 80 - 02 - 30

PDC Mountaineer, LLC
Veltri 3HM



Lease No.	Royalty Owner	Acres
00065	Haymond Nuzum et. al.	429.69
00474	Eldon Findley et. ux	256
00298	Jack Marsh et. ux.	250.2

(⊕) Denotes Location of Well on United States Topographic Maps

ALLEGHENY SURVEYS, INC

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.

Ben R. Singleton

P.S. 2092

Ben R. Singleton LICENSED NO. 2092 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

SEAL

FILE NO: 153-13-C-13
DRAWING NO: 15313C13 Vetri 3HM.dwg
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1:2500
PROVEN SOURCE OF ELEVATION: NGS CORS Station

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

DATE: April 10 20 14
OPERATOR'S WELL NO. Veltri 3HM

API WELL NO
47 - 91 - 01308 HGA
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: 1474' WATERSHED Berkley Run QUADRANGLE: Grafton
DISTRICT: Courthouse COUNTY: Taylor
SURFACE OWNER: Anthony J. Veltri ACREAGE: 179.46
ROYALTY OWNER: Anthony J. Veltri et. al. LEASE NO: WVL 00369 ACREAGE: 240
PROPOSED WORK: ☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☒ 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: Marcellus ESTIMATED DEPTH: TVD=7982 MD=16880

WELL OPERATOR: PDC Mountaineer, LLC DESIGNATED AGENT: Steve Johnson
ADDRESS: 120 Genesis Boulevard ADDRESS: 120 Genesis Boulevard
Bridgeport, WV 26330 Bridgeport, WV 26330