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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, November 13, 2018  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Re: Permit Modification Approval for CINQMARS UNIT 1H  
47-085-10341-00-00

**Extend lateral length to 19200'**

ANTERO RESOURCES CORPORATION

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.

A handwritten signature in blue ink, appearing to read "James A. Martin".

James A. Martin  
Chief

Operator's Well Number: CINQMARS UNIT 1H  
Farm Name: DAVID L. WEEKLEY ROVOCABLE TRUST  
U.S. WELL NUMBER: 47-085-10341-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 11/13/2018

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

1) Well Operator: Antero Resources Corporation 494507062 085 - Ritchie Clay Pennsboro 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Cinqmars Unit 1H Well Pad Name: Weekley Trust

3) Farm Name/Surface Owner: David L. Weekley Public Road Access: CR 74-2

4) Elevation, current ground: 1235' Elevation, proposed post-construction: \_\_\_\_\_

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal  \_\_\_\_\_

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7000' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19200' MD

11) Proposed Horizontal Leg Length: 10008'

12) Approximate Fresh Water Strata Depths: 338', 375'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: 887'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

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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Environmental Protection

*Michael Doff*  
*8-16-18*

WW-6B  
(04/15)

Permit Modification API# 47-085-10341  
API NO. 47- 085 - 10341 **11/16/2018**

OPERATOR WELL NO. Cinqmars Unit 1H

Well Pad Name: Weekley Trust

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	425 *see # 19	425 *see # 19	CTS, 590 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	19200	19200	4872 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

**PACKERS**

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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*MDC*  
*8-16-18*



WW-6B  
(10/14)

OPERATOR WELL NO. Cinqmars Unit 1H

Well Pad Name: Weekley Trust

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

\*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): Existing 32.87 acres

22) Area to be disturbed for well pad only, less access road (acres): Existing 8.15 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

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\*Note: Attach additional sheets as needed.

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MBC  
8-16-18

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
<u>David L. Weekley Revocable Trust Lease</u> David L. Weekley Revocable Trust	Antero Resources Corporation	1/8+	0295/0030
<u>Norman Flemming, et ux Lease</u> Norman Flemming, et ux	Antero Resources Corporation	1/8+	0306/0511
<u>Haught Family Trust Lease</u> Haught Family Trust Top Drilling Corporation Antero Resources Appalachian Corporation	Top Drilling Corporation Antero Resources Appalachian Corporation Antero Resources Corporation	1/8 Assignment Name Change	0257/0864 0258/0435 Exhibit 1
<u>John A. Milligan, et al Lease</u> John A. Milligan, et al	Antero Resources Corporation	1/8+	0307/0490
<u>John A. Milligan, et al Lease</u> John A. Milligan, et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0254/0428 ✓ Exhibit 1
<u>John A. Milligan, et al Lease</u> John A. Milligan, et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0254/0428 ✓ 0015/0705
<u>Charles Allman Lease</u> Charles Allman Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0257/0162 Exhibit 1
<u>Emerson McCullough, et al Lease</u> Emerson McCullough, et al Alton Skinner Chase Petroleum Inc. Chase Petroleum Inc. Antero Resources Appalachian Corporation	Alton Skinner Chase Petroleum Inc. Antero Resources Appalachian Corporation Antero Resources Corporation	1/8 Assignment Assignment Name Change	0176/0360 0142/0374 0254/0133 Exhibit 1

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\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.



WW-6A1  
(5/13)

Operator's Well No. Cinqmars Unit 1H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
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- (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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Robert McCullough, et ux Lease</u>	Robert McCullough, et ux	Jack Burg	1/8	0130/0297
	Jack Burg	J&J Enterprises, Inc.	Assignment	0152/0109
	J&J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory	0231/0732
	Eastern American Energy Corporation	Energy Corporation of America	Confirmatory	0306/0836
	Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0257/0377
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**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: Antero Resources Corporation  
 By: Maria Henry - VP of Geology  
 Its: Senior VP - Production

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Environmental Protection

FORM WV-6A1  
EXHIBIT 1

FILED

JUN 10 2013

Natalie E. Tennant  
Secretary of State  
1900 Kanawha Blvd E  
Bldg 1, Suite 157-K  
Charleston, WV 25305



Fenney Backer, Manager  
Corporations Division  
Tel: (304) 558-8000  
Fax: (304) 559-8381  
Website: www.wvscs.com  
E-mail: business@wvscs.com

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

Office Hours: Monday - Friday  
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL  
(Two if you want a filed  
stamped copy returned to you)  
FEE: \$25.00

\*\*\* In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby states  
applies for an Amended Certificate of Authority and submits the following statement:

- 1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachia Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/28/2008
- 3. Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- 4. Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- 5. Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alwyn A. Schopp (305) 367-7310  
Contact Name Phone Number

7. Signature Information (See below *\*Important Lead Notice Regarding Signatures\**):

Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

*\*Important Lead Notice Regarding Signatures For West Virginia Code §31B-1-12b. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.*

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CINQMARS UNIT 1H (WEEKLY TRUST PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

Permit Modification API# 47-085-10341

UWI (API#)	Well Name	Well Number	Operator	Hist Oper	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Productive Formation(s) not perf'd
47085091950000	HAUGHT FAMILY TRUST	P-1	ANTERO RESOURCES CORPORATION	PETROEDGE RES WV LLC	6680	6456-6543	West River Sh, Marcellus Sh	Bradford, Huron, Weir, Riley, Benson, Alexander, Rhinestreet
47085048340000	MCCULLOUGH BEN ETAL	1	PETROLEUM RESOURCES	CHASE PETROLEUM CO	5423	4580-5246	Bradford, Alexander	Huron, Weir, Riley, Benson,
47085061980000	BURG JACK ET AL	1-747	ENERGY CORP OF AMER	J & J ENTERPRISES	5200	4348-4349	Riley, Alexander	Bradford, Huron, Weir, Benson
47085062200000	BURG JACK ET AL	1-745	ENERGY CORP OF AMER	J & J ENTERPRISES	5175	4330-5017	Riley, Angola	Bradford, Huron, Weir
47085091950001	HAUGHT FAMILY TRUST	P-1	ANTERO RES CORP	PETROEDGE RES WV LLC	6680	6166-6351	West River Sh, Marcellus Sh	Bradford, Huron, Weir, Riley, Benson, Alexander, Rhinestreet
47085089980000	ANDERSON M A	2	GASSEARCH CORPORATN	GASSEARCH CORPORATN	5176	2461-4970	Gordon, Benson	Bradford, Huron, Weir, Riley, Alexander, Rhinestreet

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LATITUDE 39°22'30" 2.053'

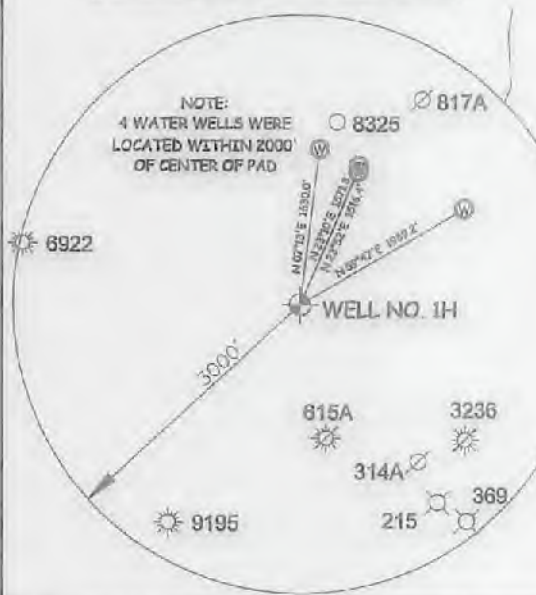
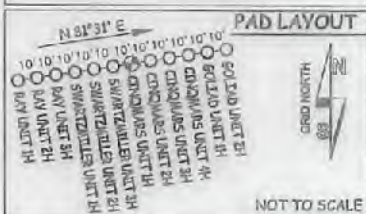
182' TO BOTTOM HOLE  
LATITUDE 39°22'30"

LONGITUDE 80°55'00" 1.247' LONGITUDE 80°55'00"

**Antero Resources Corporation**  
Well No. Cimqars Unit 1H  
47-085-10341

**NOTES:**  
WELL 1H TOP HOLE INFORMATION:  
N: 320,637ft E: 1,597,462ft  
LAT: 39°22'17.68" LON: 80°55'26.14"  
BOTTOM HOLE INFORMATION:  
N: 310,594ft E: 1,599,174ft  
LAT: 39°20'38.70" LON: 80°55'02.32"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 1H TOP HOLE INFORMATION:  
N: 4,358,024m E: 506,567m  
BOTTOM HOLE INFORMATION:  
N: 4,354,973m E: 507,140m



TM-Par	Surface Owner	Book/Pa	Acres
03-03	Brian Jones	298/295	14 AC
03-04	Brian Jones	290/295	30 AC
03-05	Danny Cowger	270/228	18.75 AC
03-09	Steven Hago	222/163	57 AC
03-10	David Weekley Revocable Trust	265/104	203.38 AC
03-11	Steven Hago	303/566	24.12 AC
03-11.1	Walter Hill	840/879	45.83 AC
03-11.2	Steven Hago	318/195	0.58 AC
03-11.3	David Weekley Revocable Trust	308/478	40 AC
03-11.4	Ovonia Threlwell	311/749	76.56 AC
03-12	David Weekley Revocable Trust	265/204	20 AC
03-16	John Milligan	305/256	45.75 AC
03-16.1	John Milligan	305/256	25 AC
03-17	John Milligan	305/256	25 AC
03-18	Parkins Oil & Gas Inc.	305/583	24.7 AC
03-23	Charles Bobinis	297/766	60 AC
03-24	Charles Bobinis	297/766	40 AC
06-06	Walter Fleming	280/373	39.09 AC
08-07	Troy Kirk	236/416	41.556 AC
08-7.1	W.V.D.O.H.	271/851	0.234 AC
08-18.2	Troy Kirk	261/594	74.01 AC
08-19	Edwin Forgan III	283/949	21.202 AC

Royalty Owner
A Brian Keith Jones
B Brian Keith Jones
C Danny Cowger Et Ux
D Norman Fleming Et Ux
E David L. Weekley Revocable Trust
F Hought Family Trust
G John A. Milligan Et Al
H John A. Milligan Et Al
I John A. Milligan Et Al
J Charles Allman
K Charlene Cottrill
L Emerson McCullough Et Al
M Robert McCullough Et Ux
N Lori Pierpont-Cass
O Robert McCullough Et Ux

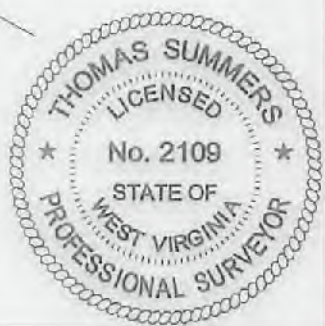
I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

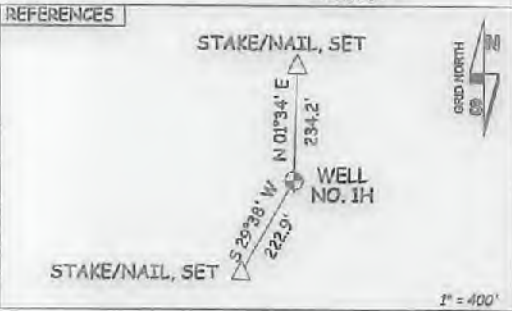
(NAD) 27 (UTM) ZONE 17 COORDS:  
WELL 1H TOP HOLE INFORMATION:  
N: 14,297,236ft E: 1,661,915ft  
POINT OF ENTRY INFORMATION:  
N: 14,296,644ft E: 1,660,412ft  
BOTTOM HOLE INFORMATION:  
N: 14,267,227ft E: 1,663,795ft

**NOTE:**  
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.



JOB # 17-045WA  
DRAWING # CIMQARS 1HR  
SCALE 1" = 2000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS  
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

**LEGEND**  
--- Surface Owner Boundary Lines +/-  
--- Interior Surface Tracts +/-  
X Existing Fence  
⊕ Found monument, as noted  
*Thomas Summers*  
THOMAS SUMMERS P.S. 2109  
DATE 07/30/18  
OPERATOR'S WELL# CIMQARS UNIT #1H



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 085 10341 MOD  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,235' AS BUILT WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE  
SURFACE OWNER DAVID L. WEEKLEY REVOCABLE TRUST ACREAGE 203.38 ACRES +/-  
OIL & GAS ROYALTY OWNER DAVID L. WEEKLEY REVOCABLE TRUST; NORMAN FLEMING ET UX; LEASE ACREAGE 229 AC±; 130 AC±;  
HAUGHT FAMILY TRUST; JOHN A. MILLIGAN ET AL.; JOHN A. MILLIGAN ET AL.; JOHN A. MILLIGAN ET AL.; 323 AC±; 44.5 AC±; 25 AC±; 25 AC±;  
CHARLES ALLMAN; CHARLENE COTTRILL; EMERSON MCCULLOUGH ET AL.; ROBERT MCCULLOUGH ET UX 60 AC±; 40 AC±; 154 AC±; 148 AC±  
PROPOSED WORK: DRILL CONVERT DRILL DEEPER X REDRILL FRACTURE OR STIMULATE X  
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) MOD BHL PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,000' TVD 19,200' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1815 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



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

1) Well Operator: Antero Resources Corporation Operator ID: 494507062 County: 085 - Ritchie District: Clay Quadrangle: Pennsboro 7.5'

2) Operator's Well Number: Cinqmars Unit 1H Well Pad Name: Weekley Trust

3) Farm Name/Surface Owner: David L. Weekley Public Road Access: CR 74-2

4) Elevation, current ground: 1235' Elevation, proposed post-construction:

5) Well Type (a) Gas X Oil Underground Storage

Other

(b) If Gas Shallow X Deep

Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
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15) Approximate Coal Seam Depths: 887'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

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

(a) If Yes, provide Mine Info: Name:

Depth:

Seam:

Owner:

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Office of Oil and Gas

AUG 6 2018

WW-6B  
(04/15)

Permit Modification API# 47-085-10341  
 API NO. 47- 085 - 10341 **11/16/2018**  
 OPERATOR WELL NO. Cinqmars Unit 1H  
 Well Pad Name: Weekley Trust

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	425 *see # 19	425 *see # 19	CTS, 590 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	19200	19200	4872 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

VOID

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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WW-6B  
(10/14)

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Environmental Protection

Permit Modification API# 47-085-10341

API NO. 47-085 - 10341 11/16/2018

OPERATOR WELL NO. Cinqmars Unit 1H

Well Pad Name: Weekley Trust

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

\*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): Existing 32.87 acres

22) Area to be disturbed for well pad only, less access road (acres): Existing 8.15 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

VOID

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

\*Note: Attach additional sheets as needed.



LATITUDE 39°22'30" ← 2,053'

182' TO BOTTOM HOLE  
LATITUDE 39°22'30"

**Antero Resources Corporation**  
Well No. Cinqmars Unit 1H  
47-085-10341

**NOTES:**  
WELL 1H TOP HOLE INFORMATION:  
N: 320,637ft E: 1,597,462ft  
LAT: 39°22'17.68" LON: 80°55'26.14"  
BOTTOM HOLE INFORMATION:  
N: 310,594ft E: 1,599,174ft  
LAT: 39°20'38.70" LON: 80°55'02.32"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

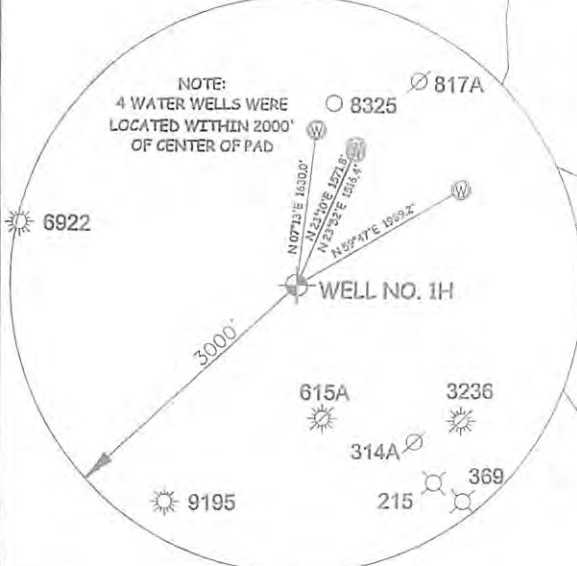
(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 1H TOP HOLE INFORMATION:  
N: 4,358,024m E: 506,567m  
BOTTOM HOLE INFORMATION:  
N: 4,354,973m E: 507,140m



WV NORTH ZONE  
GRID NORTH

TM-Par	Surface Owner	Book/Pg	Acres
03-03	Brian Jones	298/295	14 AC
03-04	Brian Jones	298/295	30 AC
03-05	Denny Cowger	270/228	15.75 AC
03-09	Steven Haga	222/163	57 AC
03-9.1	Steven Haga	222/163	79 AC
03-10	David Weekley Revocable Trust	265/204	203.38 AC
03-11	Steven Haga	303/566	24.12 AC
03-11.1	Walter Hill	340/679	45.83 AC
03-11.2	Steven Haga	318/195	0.58 AC
03-11.3	David Weekley Revocable Trust	309/478	40 AC
03-11.4	Ovando Thelwell	311/749	76.56 AC
03-12	David Weekley Revocable Trust	265/204	25 AC
03-16	John Milligan	305/256	45.75 AC
03-16.1	John Milligan	305/256	25 AC
03-17	John Milligan	305/256	25 AC
03-18	Perkins Oil & Gas Inc.	308/693	24.7 AC
03-23	Charles Bobbins	297/766	60 AC
03-24	Charles Bobbins	297/766	40 AC
08-06	Walter Fleming	280/373	39.09 AC
08-07	Troy Kirk	238/418	41.566 AC
08-7.1	W.V.D.O.H.	271/851	0.234 AC
08-18.2	Troy Kirk	261/594	74.01 AC
08-19	Edwin Ferman III	283/949	21.232 AC

Well	Royalty Owner
A	Brian Keith Jones
B	Brian Keith Jones
C	Denny Cowger Et Ux
D	Norman Fleming Et Ux
E	David L. Weekley Revocable Trust
F	Haught Family Trust
G	John A. Milligan Et Al
H	John A. Milligan Et Al
I	John A. Milligan Et Al
J	Charles Allman
K	Charlene Cottrill
L	Emerson McCullough Et Al
M	Robert McCullough Et Ux
N	Lori Pierpont-Case
O	Robert McCullough Et Ux



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 RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

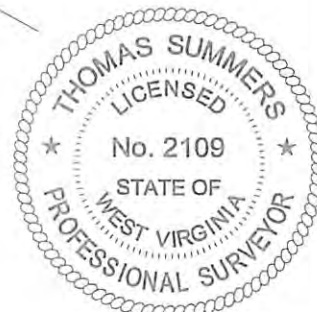


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

(NAD) 27 (UTM) ZONE 17 COORDS:  
WELL 1H TOP HOLE INFORMATION:  
N: 14,297,236ft E: 1,661,915ft  
POINT OF ENTRY INFORMATION:  
N: 14,296,644ft E: 1,660,412ft  
BOTTOM HOLE INFORMATION:  
N: 14,287,227ft E: 1,663,795ft

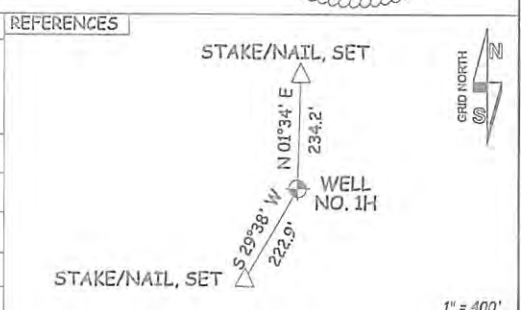
**NOTE**  
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.



JOB # 17-045WA  
DRAWING # CINQMARS 1HR  
SCALE 1" = 2000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS  
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

**LEGEND**  
--- Surface Owner Boundary Lines +/-  
--- Interior Surface Tracts +/-  
X Existing Fence  
⊕ Found monument, as noted

*Thomas Summers*  
THOMAS SUMMERS P.S. 2109  
DATE 07/30/18  
OPERATOR'S WELL# CINQMARS UNIT #1H



WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_ 47 - 085 - 10341  
(IF "GAS") PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW  STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,235' AS BUILT WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE PENNSBORO 7.5 DISTRICT CLAY COUNTY RITCHIE  
SURFACE OWNER DAVID L. WEEKLEY REVOCABLE TRUST ACREAGE 203.38 ACRES +/-  
OIL & GAS ROYALTY OWNER DAVID L. WEEKLEY REVOCABLE TRUST; NORMAN FLEMING ET UX; LEASE ACREAGE 229 AC±; 130 AC±;  
HAUGHT FAMILY TRUST; JOHN A. MILLIGAN ET AL; JOHN A. MILLIGAN ET AL; JOHN A. MILLIGAN ET AL; 323 AC±; 44.5 AC±; 25 AC±; 25 AC±;  
CHARLES ALLMAN; CHARLENE COTTRILL; EMERSON MCCULLOUGH ET AL; ROBERT MCCULLOUGH ET UX 60 AC±; 40 AC±; 154 AC±; 148 AC±  
PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER  REDRILL \_\_\_ FRACTURE OR STIMULATE   
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) MOD BHL PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,000' TVD 19,200' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

LONGITUDE 80°55'00" 1,247' LONGITUDE 80°55'00"  
182' TO BOTTOM HOLE  
1H TOP HOLE  
1H BOTTOM HOLE



11/16/2018

WV Department of  
Environmental Protection

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# WEEKLEY TRUST WELL PAD & W AS-BUILT EROSION CONTROL IMPROVE

**LOCATION COORDINATES**

ACCESS ROAD ENTRANCE  
LATITUDE: 39.366897 LONGITUDE: -80.915223 (NAD 83)  
N 4357496.20 E 507302.94 (UTM ZONE 17 METERS)

CENTER OF TANK  
LATITUDE: 39.369138 LONGITUDE: -80.916700 (NAD 83)  
N 3457744.83 E 507175.49 (UTM ZONE 17 METERS)

CENTROID OF PAD  
LATITUDE: 39.371729 LONGITUDE: -80.923639 (NAD 83)  
N 4358031.88 E 506577.50 (UTM ZONE 17 METERS)

**GENERAL DESCRIPTION**

THE ACCESS ROAD(S), WATER CONTAINMENT PAD, AND WELL PAD HAVE BEEN CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTE**

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54085C0125C.

**MISS UTILITY STATEMENT**

ANTERO RESOURCES CORPORATION HAS NOTIFIED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1421956455. IN ADDITION, MISS UTILITY WAS CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT**

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**ENVIRONMENTAL NOTES**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN JUNE, 2012, & REEVALUATED MAY, 2015 & SEPTEMBER, 2015 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE OCTOBER 16, 2015 STREAM & WETLAND DELINEATION MAP WAS PREPARED BY ALLSTAR ECOLOGY, LLC AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

**GEOTECHNICAL NOTE**

A SUBSURFACE INVESTIGATION OF THE SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN AUGUST 13, 2014 & SEPTEMBER 08, 2014. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED SEPTEMBER 22, 2014, REVISED NOVEMBER 10, 2015, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS**

**OPERATOR:**

ANTERO RESOURCES CORPORATION  
535 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE: (304) 842-4100  
FAX: (304) 842-4102

ELI WAGONER - ENVIRONMENTAL ENGINEER  
OFFICE: (304) 842-4068 CELL: (304) 476-9770

JON McEVERS - OPERATIONS SUPERINTENDENT  
OFFICE: (303) 357-6799 CELL: (303) 808-2423

AARON KUNZLER - CONSTRUCTION SUPERVISOR  
CELL: (405) 227-8344

ROBERT B. WIRKS - FIELD ENGINEER  
OFFICE: (304) 842-4100 CELL: (304) 627-7405

CHARLES E. COMPTON, III - SURVEYING COORDINATOR  
CELL: (304) 719-6449

RENEE HECKEL - LAND AGENT  
CELL: (304) 614-7053

**ENGINEER/SURVEYOR:**

NAVITUS ENGINEERING, INC.  
CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
OFFICE: (888) 662-4185 CELL: (540) 686-6747

**ENVIRONMENTAL:**

ALLSTAR ECOLOGY, LLC  
RYAN L. WARD - ENVIRONMENTAL SCIENTIST  
OFFICE: (866) 213-2666 CELL: (304) 692-7477

**GEOTECHNICAL:**

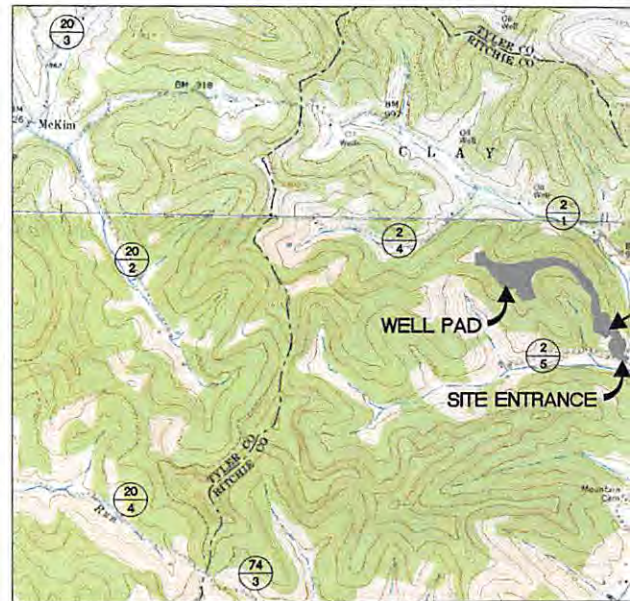
PENNSYLVANIA SOIL & ROCK, INC.  
CHRISTOPHER W. SAMIOS - PROJECT ENGINEER  
OFFICE: (412) 372-4000 CELL: (412) 569-0662

**RESTRICTIONS NOTES:**

1. THERE ARE NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE IS A WETLAND ADJACENT TO ACCESS ROAD "A" THAT HAS REMAINED UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

CLAY DISTRICT, RITCHIE COUNTY  
CABIN RUN-NORTH FORK HUGHES

USGS 7.5 MIDDLEBOURNE & PENN



WEST VIRGINIA COUNTY MAP



**REPRODUCTION NOTE**

THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.

THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

**AS-BUILT CERTIFICATION:**  
THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS §35-4-21, §22-6A, & CRS 35-8.



# WATER CONTAINMENT PAD & SEDIMENT CONTROL PLAN

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AUG 6 2018

WV Department of  
Environmental Protection

SHEET INDEX

- 1 - COVER SHEET
- 2 - LEGEND
- 3 - OVERALL PLAN SHEET INDEX
- 4 - ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN
- 5 - ACCESS ROAD AS-BUILT PLAN
- 6 - WELL PAD AS-BUILT PLAN
- 7 - ACCESS ROAD AS-BUILT PROFILE, WELL PAD & WATER CONTAINMENT PAD AS-BUILT SECTIONS
- 8 - ACCESS ROAD AS-BUILT PROFILE
- 9 - STOCKPILE AS-BUILT SECTIONS

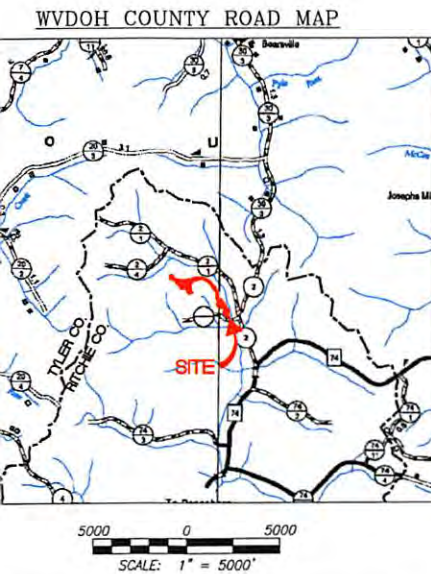
CLAY COUNTY, WEST VIRGINIA  
SANDY CREEK RIVER WATERSHED  
SECTION 20, TOWNSHIP 20 NORTH, RANGE 10 WEST  
BORO QUAD MAPS



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
NORTH ZONE, NAD83  
ELEVATION BASED ON NAVD83  
ESTABLISHED BY SURVEY GRADE GPS & OPUS  
POST-PROCESSING

WEEKLEY TRUST LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Impacts to David L. Weekley, Trustee of the David L. Weekley Revocable Trust UTA TM 3-10	
Access Road "A" (749')	2.72
Access Road "B" (2,486')	10.67
Well Pad	8.15
Water Containment Pad	3.70
Excess/Topsoil Material Stockpiles	7.63
<b>Total Affected Area</b>	<b>32.87</b>
Total Wooded Acres Disturbed	30.22

Proposed Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
Ray	N 320627.84	N 320662.16	N 4358020.94	LAT 39-22-17.8714
Unit 1H	E 1597402.38	E 1565961.32	E 506549.28	LONG -80-55-26.2802
Ray	N 320629.32	N 320663.64	N 4358021.44	LAT 39-22-17.8875
Unit 2H	E 1597412.28	E 1565971.21	E 506552.28	LONG -80-55-26.1546
Ray	N 320530.79	N 320665.11	N 4358021.94	LAT 39-22-17.9037
Unit 3H	E 1597422.17	E 1565981.10	E 506555.29	LONG -80-55-26.0290
Swartzmiller	N 320532.26	N 320666.59	N 4358022.44	LAT 39-22-17.9188
Unit 1H	E 1597432.06	E 1565990.99	E 506558.29	LONG -80-55-25.9033
Swartzmiller	N 320533.74	N 320668.06	N 4358022.94	LAT 39-22-17.9359
Unit 2H	E 1597441.95	E 1566000.88	E 506561.30	LONG -80-55-25.7777
Swartzmiller	N 320535.21	N 320669.54	N 4358023.44	LAT 39-22-17.9520
Unit 3H	E 1597451.84	E 1566010.77	E 506564.30	LONG -80-55-25.6520
Cinqmars	N 320536.69	N 320671.01	N 4358023.94	LAT 39-22-17.9682
Unit 1H	E 1597461.73	E 1566020.68	E 506567.31	LONG -80-55-25.5264
Cinqmars	N 320538.16	N 320672.49	N 4358024.44	LAT 39-22-17.9843
Unit 2H	E 1597471.62	E 1566030.55	E 506570.31	LONG -80-55-25.4008
Cinqmars	N 320539.64	N 320673.96	N 4358024.94	LAT 39-22-18.0004
Unit 3H	E 1597481.51	E 1566040.44	E 506573.32	LONG -80-55-25.2751
Cinqmars	N 320541.11	N 320675.44	N 4358025.44	LAT 39-22-18.0165
Unit 4H	E 1597491.40	E 1566050.33	E 506576.33	LONG -80-55-25.1495
Goliad	N 320542.59	N 320676.91	N 4358025.94	LAT 39-22-18.0327
Unit 1H	E 1597501.29	E 1566060.23	E 506579.33	LONG -80-55-25.0239
Goliad	N 320544.06	N 320678.38	N 4358026.44	LAT 39-22-18.0488
Unit 2H	E 1597511.18	E 1566070.12	E 506582.34	LONG -80-55-24.8982
Well Pad Elevation	1,235.0			



NOTES:

- ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
- THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
- ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
- ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.
- THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF MARCH 5, 2018. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
- THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS
- THE EXISTING EGRESSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (888) 662-4185 | www.NavitusEng.com

REVISION

DATE



THIS DOCUMENT  
WAS PREPARED FOR:  
ANTERO RESOURCES  
CORPORATION

COVER SHEET

**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA



DATE: 03/05/2018  
SCALE: AS SHOWN  
SHEET 1 OF 9

MISS Utility of West Virginia  
1-800-245-4848  
West Virginia State Law  
(Section XIV: Chapter 24-C)  
Requires that you call two  
business days before you dig in  
the state of West Virginia.  
IT'S THE LAW!!



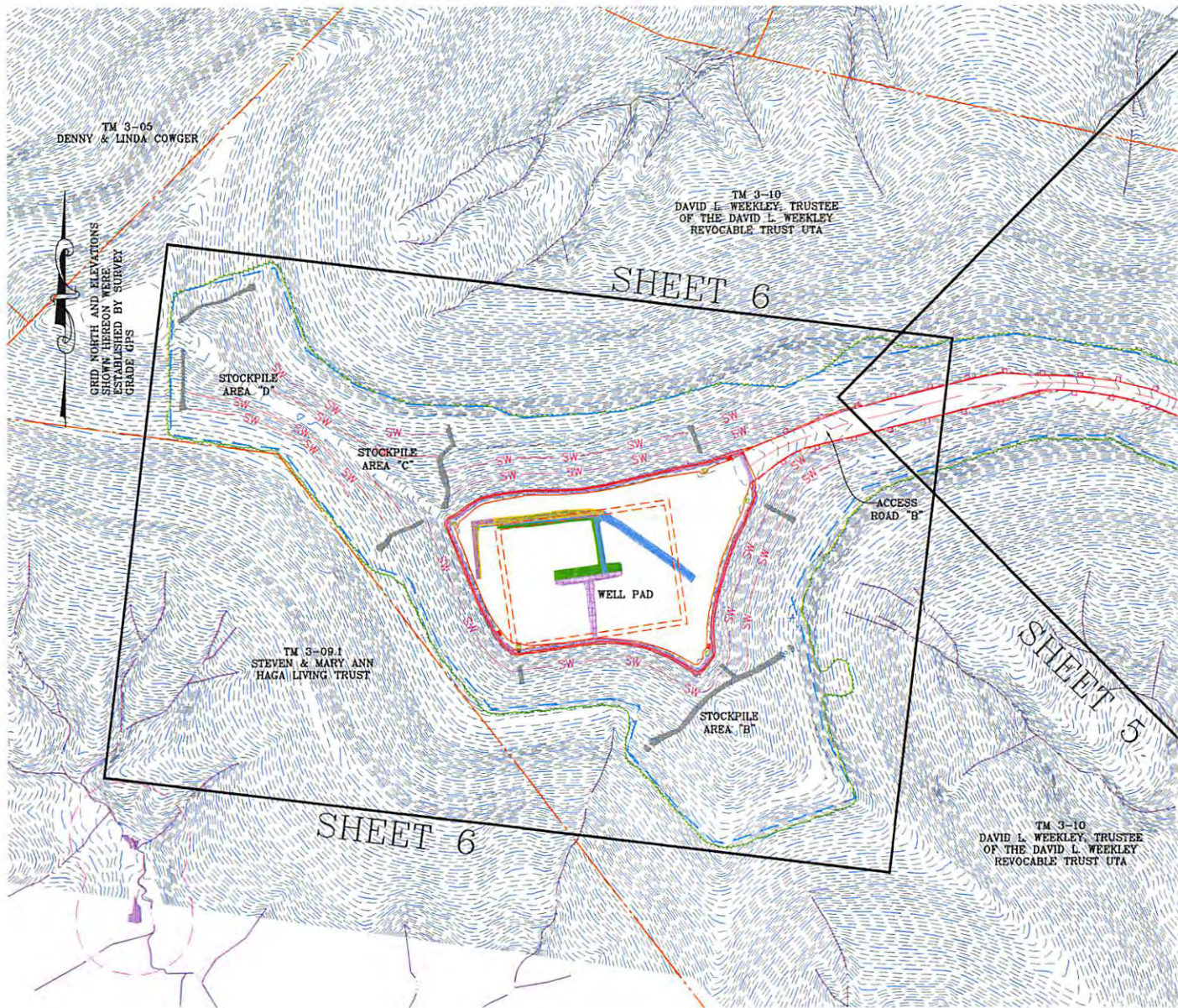
# LEGEND

LEGEND		
EX. INDEX CONTOUR & CONTOUR LABEL		PR. INDEX CONTOUR
EX. INTERMEDIATE CONTOUR		PR. INTERMEDIATE
EX. PROPERTY LINE		PR. INTERMEDIATE
EX. TOP OF BERM		PR. INDEX ROAD C
EX. ROAD EDGE OF GRAVEL/DIRT		PR. INTERMEDIATE
EX. ROAD EDGE OF PAVEMENT		PR. PADS/STOCKP
EX. ROAD CENTERLINE		PERMITTED LIMITS
EX. GUARDRAIL		MODIFICATION LIM
EX. BRIDGE		PR. ROAD/IMPOUN
EX. DITCHLINE/DRAINAGE FEATURE		PR. ROAD CENTER
EX. RIP-RAP		PR. GUARDRAIL
EX. CULVERT		PR. ROCK CONSTR
EX. TREELINE		PR. AIR BRIDGE
EX. BUILDING		PR. CULVERT
EX. MISCELLANEOUS FEATURE		PR. DITCH
EX. 100 YR FEMA FLOODPLAIN		PR. RIP-RAP TRAI
EX. DELINEATED STREAM		PR. OUTLET PROT
EX. DELINEATED WETLAND/POND		PR. DIVERSION
100' WETLAND/STREAM BUFFER		PR. ROCK LEVEL S
STREAM/WETLAND DELINEATION STUDY AREA		PR. COMPOST FIL
EX. FENCELINE		PR. SUPER SILT F
EX. GATE		PR. WELL HEAD
EX. PERIMETER SAFETY FENCE		PR. PAD DEWATER
EX. ACCESS GATE WITH EMERGENCY LIFELINE		PR. TOP OF PAD
EX. WELL HEAD ON DESIGNED PAD		PR. 220' X 320' P
EX. GAS WELL		PR. SPOT SHOT
EX. PIPELINE		PR. PERIMETER SA
EX. PIPELINE R/W		PR. ACCESS GATE
EX. PIPELINE METER		PR. PIPELINE
EX. PIPELINE VALVE		PR. PIPELINE R/W
EX. PIT		PR. OVERHEAD UT
EX. OVERHEAD UTILITY		PR. POWER POLE/
EX. POWER POLE/GUY WIRE		PR. OVERHEAD UT
EX. UNDERGROUND ELECTRIC		PR. WATERLINE
EX. UNDERGROUND TELEPHONE		BORING LOCATION
EX. UNDERGROUND FIBER OPTIC		X-SECTION/PROFI
EX. UTILITY R/W		X-SECTION/PROFI
EX. WATERLINE		X-SECTION/PROFI
EX. WATER WELL/EX. SPRING		X-SECTION/PROFI
EX. COMPOST SOCK		X-SECTION/PROFI
EX. SUPER SILT FENCE		X-SECTION/PROFI
EX. SILT FENCE		MATCHLINE
APPROX. LOCATION OF SLIDE AREA		EX. METER
APPROX. LOCATION OF BORROW/ SPOIL AREA		EX. TANK
PR. TOE BENCH		EX. COMBUSTOR
EX. APPROX. SURFACE & SUB-SURFACE ELECTRIC LINE AREA		EX. GPU
EX. APPROX. SURFACE & SUB-SURFACE DUMP LINE AREA		EX. SEPARATOR
EX. APPROX. SURFACE & SUB-SURFACE WELL LINE AREA		EX. VRT
EX. APPROX. SURFACE & SUB-SURFACE SALES LINE AREA		EX. KNOCK-OUT V



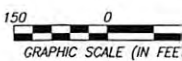






**GENERAL NOTES:**

1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON APRIL 6, 2014 AERIAL PHOTOGRAPHY COMPILED MAY, 2014 BY BLUE MOUNTAIN AERIAL MAPPING, BURTON, WEST VIRGINIA.
2. AS-BUILT INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEY PERFORMED BY NAVITUS ENGINEERING, INC. BETWEEN OCTOBER 20, 2017 TO MARCH 5, 2018.
3. THE PROPERTY LINES SHOWN HEREON DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN. PROPERTY CORNERS AND LINES PERTINENT TO WELL LOCATION ARE BASED ON A FIELD SURVEY. THE REMAINDER OF THE PROPERTY LINES ARE BASED ON COUNTY REAL ESTATE TAX MAPS, GIS INFORMATION AND DEEDS OF RECORD.
4. UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON: A) OBSERVABLE EVIDENCE OF THOSE VISIBLE, ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY NAVITUS ENGINEERING AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE WV 811 TICKET SUBMITTED BY NAVITUS ENGINEERING. NAVITUS ENGINEERING CANNOT GUARANTEE THE ACCURACY OF THE UTILITY MARKINGS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO NAVITUS ENGINEERING AND ANTERO RESOURCES CORPORATION.





# OVERALL PLAN SHEET INDEX

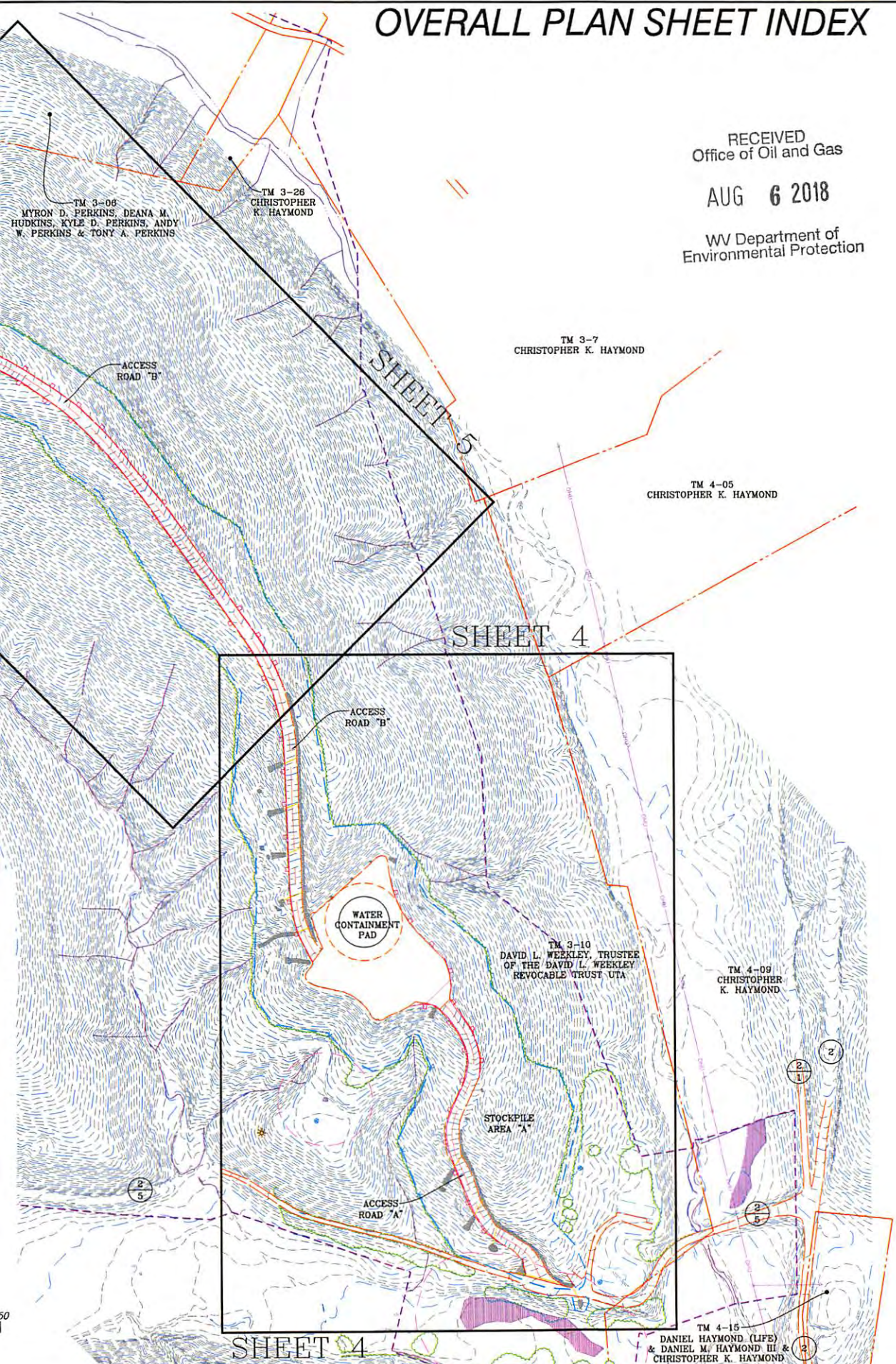
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AUG 6 2018

WV Department of  
Environmental Protection



**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (888) 662-4185 | www.NavitusEng.com



REVISION	DATE



**Antero**  
RESOURCES

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ANTERO RESOURCES  
CORPORATION

OVERALL PLAN SHEET INDEX  
**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA



DATE: 03/05/2018  
SCALE: 1" = 150'  
SHEET 3 OF 9



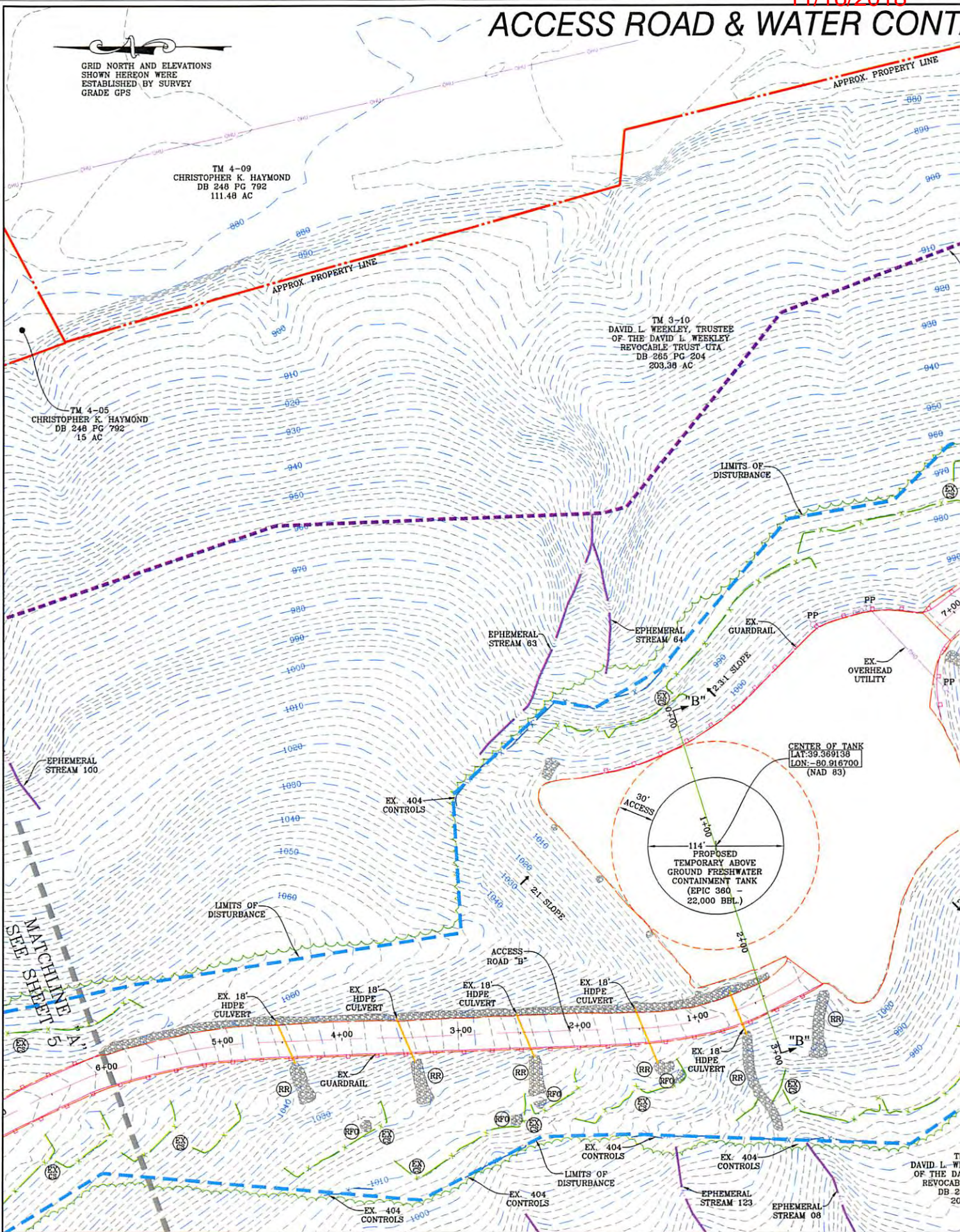
# ACCESS ROAD & WATER CONT

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS

TM 4-09  
CHRISTOPHER K HAYMOND  
DB 248 PG 792  
111.48 AC

TM 4-05  
CHRISTOPHER K HAYMOND  
DB 248 PG 792  
15 AC

TM 3-10  
DAVID L. WEEKLEY, TRUSTEE  
OF THE DAVID L. WEEKLEY  
REVOCABLE TRUST-UTA  
DB 285 PG 204  
209.38 AC



SEE MATCHLINE

DAVID L. WEEKLEY, TRUSTEE OF THE DAVID L. WEEKLEY REVOCABLE TRUST-UTA DB 285 PG 204



11/16/2018

# CONTAINMENT PAD AS-BUILT PLAN



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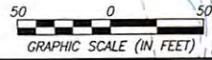
**Antero Resources**

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ANTERO RESOURCES CORPORATION

ACCESS ROAD & WATER CONTAINMENT PAD  
AS-BUILT PLAN  
**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA



DATE: 03/05/2018  
SCALE: 1" = 50'  
SHEET 4 OF 9



3-10  
EKLEY, TRUSTEE  
VID L. WEEKLEY  
E TRUST UTA  
5 PG 204  
1.38 AC

EX. GAS WELL  
API #47-095-03236  
(UNKNOWN OPERATOR)  
PLUGGED

TM 3-10  
DAVID L. WEEKLEY, TRUSTEE  
OF THE DAVID L. WEEKLEY  
REVOCABLE TRUST UTA  
DB 265 PG. 204  
203.38 AC

TM 4-09  
CHRISTOPHER K. HAYMOND  
DB. 248 PG 792  
111.48 AC



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ACCESS  
AS-BUILT

TM 3-06  
MYRON D. PERKINS, DEANA  
M. HUDKINS, KYLE D.  
PERKINS, ANDY T. PERKINS  
& TONY A. PERKINS  
DB 289 PG 1020  
27.5 AC

TM 3-10  
DAVID L. WEEKLEY, TRUSTEE  
OF THE DAVID L. WEEKLEY  
REVOCABLE TRUST UTA  
DB 265 PG 204  
203.38 AC

TM 3-10  
DAVID L. WEEKLEY, TRUSTEE  
OF THE DAVID L. WEEKLEY  
REVOCABLE TRUST UTA  
DB 265 PG 204  
203.38 AC

GRID NORTH AND ELEVATIONS  
ESTABLISHED BY SURVEY

INTERMITTENT  
STREAM 53

EPHEMERAL  
STREAM 56

EPHEMERAL  
STREAM 94

EPHEMERAL  
STREAM 58

EPHEMERAL  
STREAM 57

LIMITS OF  
DISTURBANCE

LIMITS OF  
DISTURBANCE

LIMITS OF  
DISTURBANCE

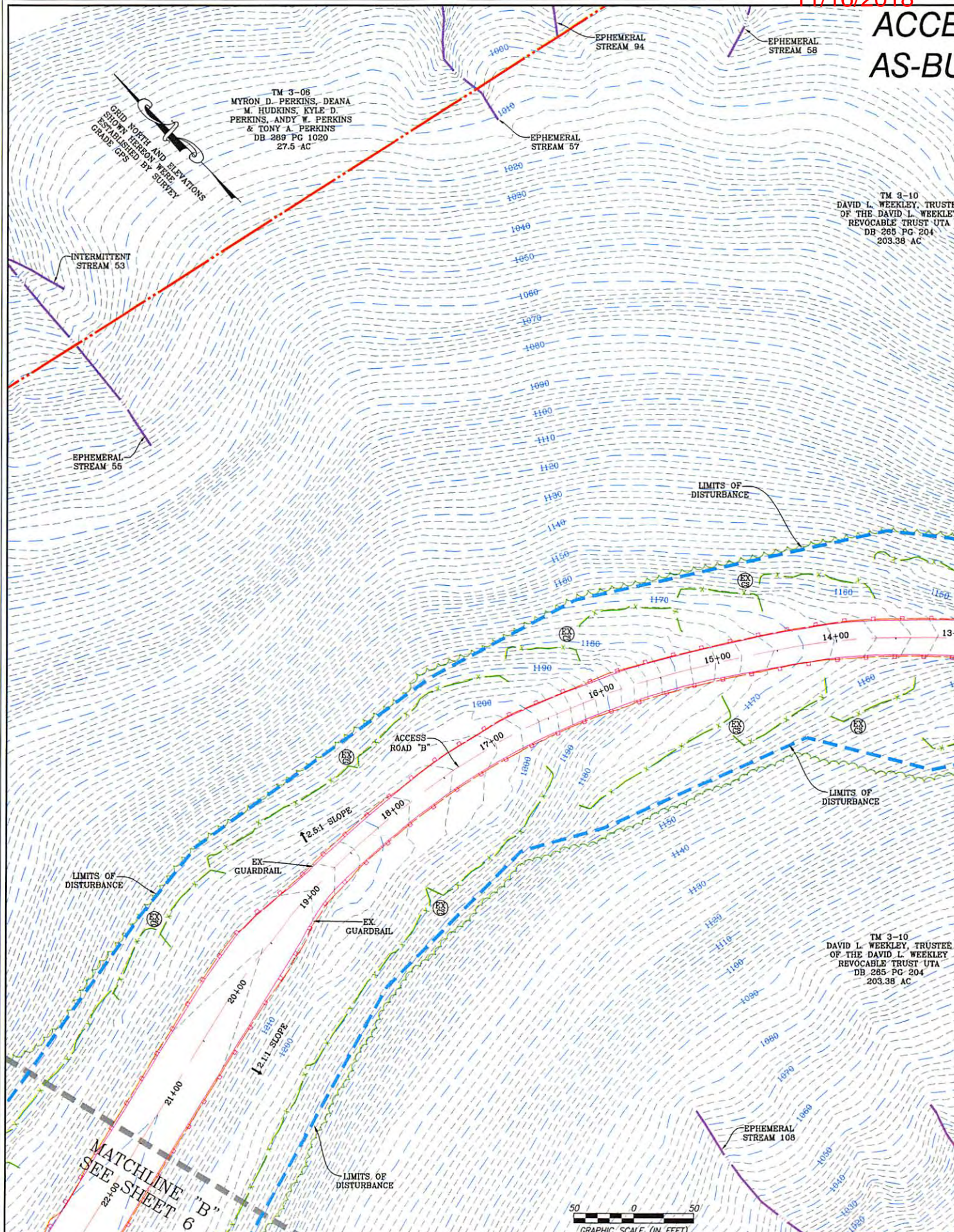
EX  
GUARDRAIL

EX  
GUARDRAIL

LIMITS OF  
DISTURBANCE

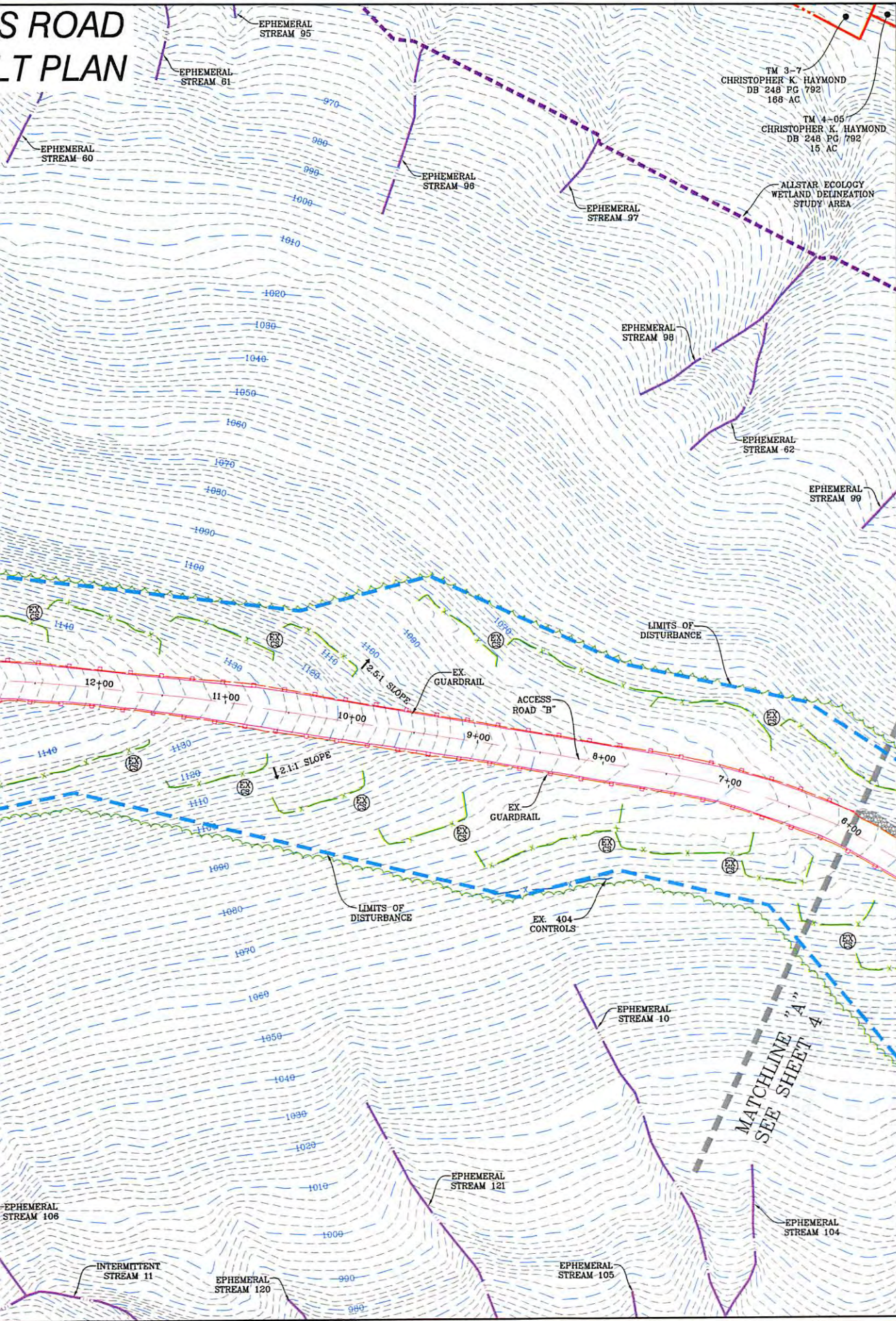
ACCESS  
ROAD "B"

MATCHLINE  
SEE SHEET  
"B"  
6





**S ROAD  
L T PLAN**



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ACCESS ROAD AS-BUILT PLAN  
**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA

DATE: 03/05/2018  
SCALE: 1" = 50'  
SHEET 5 OF 9



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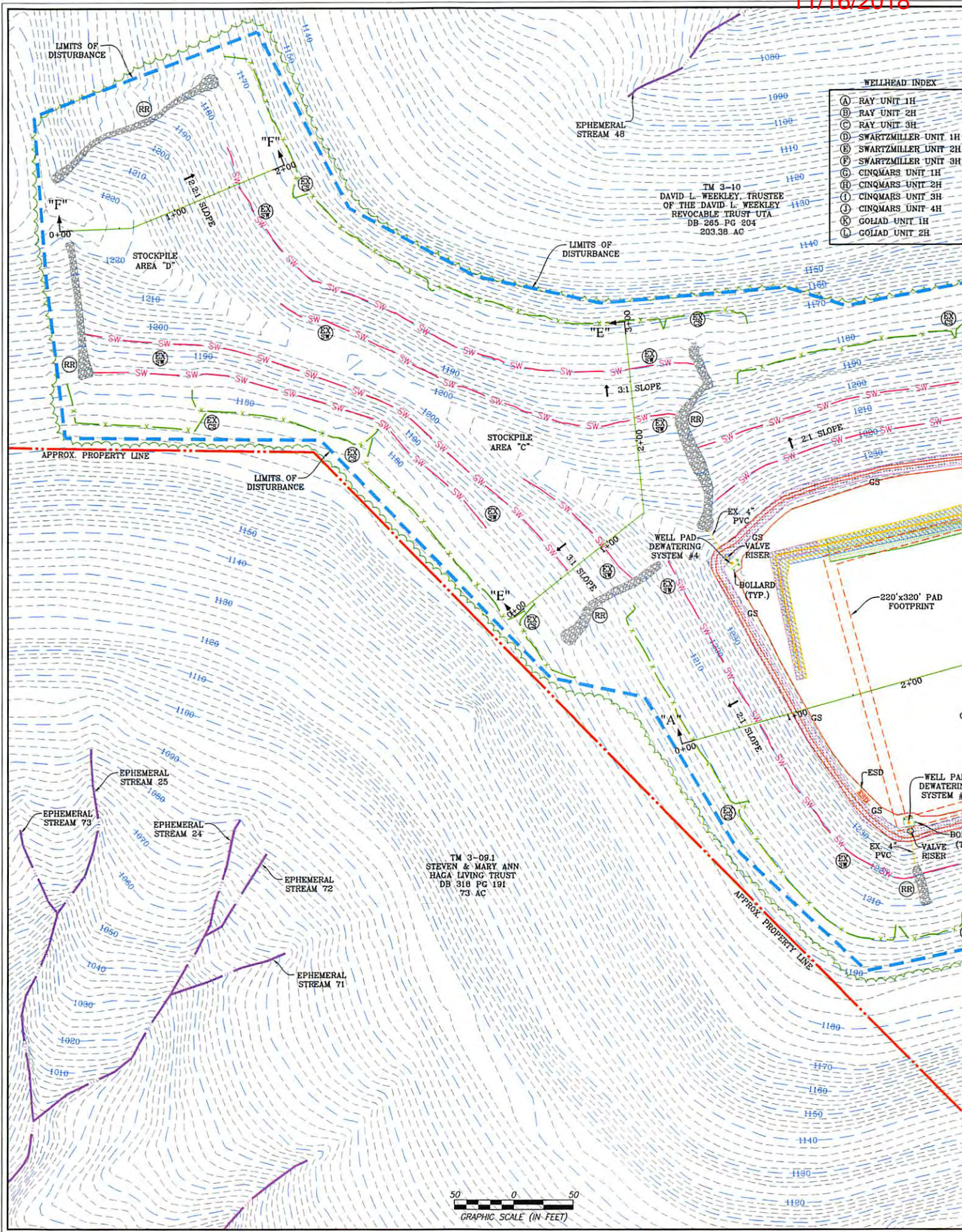


WELLHEAD INDEX

- (A) RAY UNIT 1H
- (B) RAY UNIT 2H
- (C) RAY UNIT 3H
- (D) SWARTZMILLER UNIT 1H
- (E) SWARTZMILLER UNIT 2H
- (F) CINQMARS UNIT 1H
- (G) CINQMARS UNIT 2H
- (I) CINQMARS UNIT 3H
- (J) CINQMARS UNIT 4H
- (K) GOLJAD UNIT 1H
- (L) GOLJAD UNIT 2H

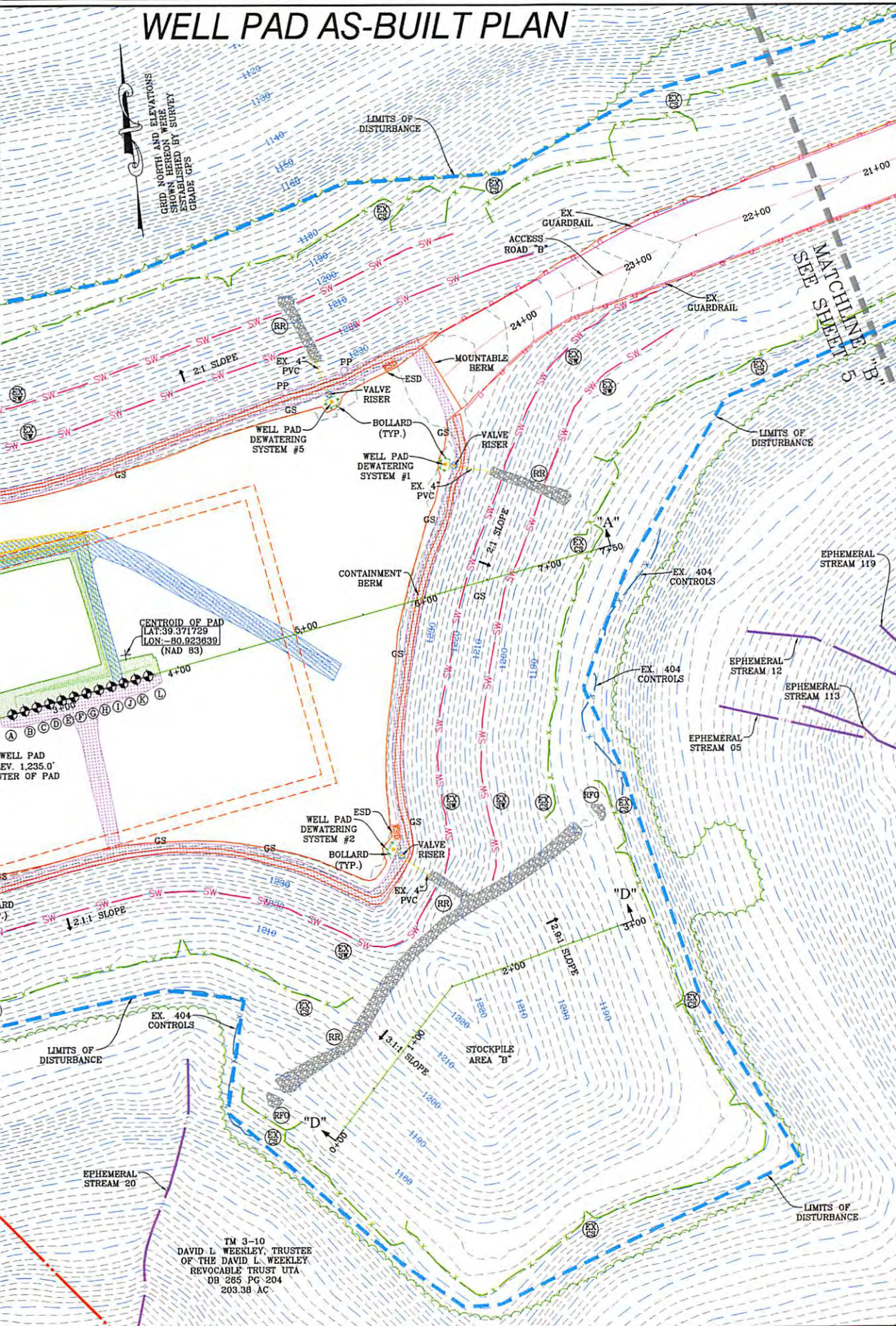
TM 3-10  
 DAVID L. WEEKLEY, TRUSTEE  
 OF THE DAVID L. WEEKLEY  
 REVOCABLE TRUST UTA  
 DB 205 PG 204  
 203.36 AC

TM 3-09.1  
 STEVEN & MARY ANN  
 HAGA LIVING TRUST  
 DB 318 PG 191  
 73 AC





# WELL PAD AS-BUILT PLAN



CENTROID OF PAD  
 LAT: 39.371729  
 LON: -80.923639  
 (NAD 83)

TM 3-10  
 DAVID L. WEEKLEY, TRUSTEE  
 OF THE DAVID L. WEEKLEY  
 REVOCABLE TRUST UTA  
 DB 285 PG 204  
 203.38 AC

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WELL PAD AS-BUILT PLAN  
**WEEKLEY TRUST**  
 WELL PAD & WATER CONTAINMENT PAD  
 CLAY DISTRICT  
 RITCHIE COUNTY, WEST VIRGINIA



DATE: 03/05/2018  
 SCALE: 1" = 50'  
 SHEET 6 OF 9



11/16/2018

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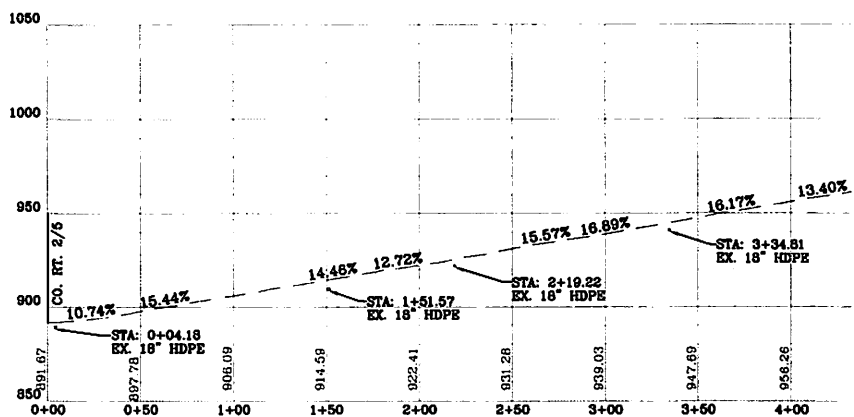
AUG 6 2018

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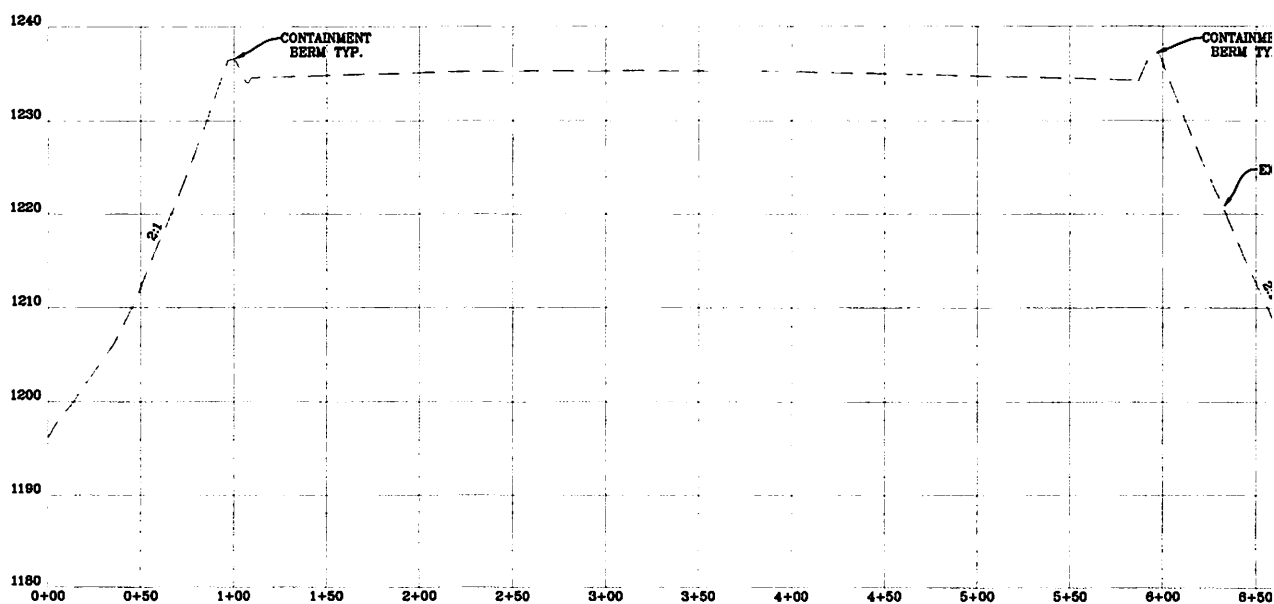


11/16/2018

# ACCESS ROAD AS-BUILT CONTAINMENT PA



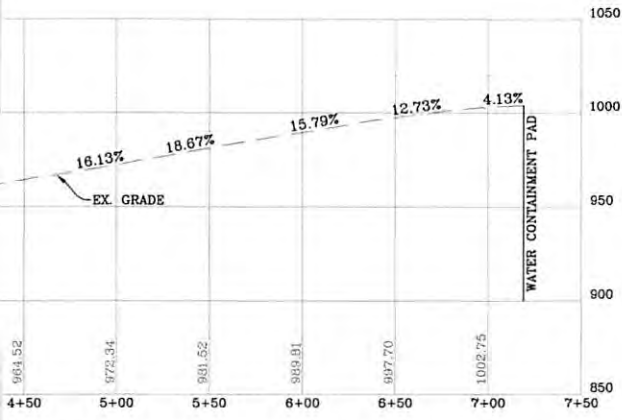
ACCESS ROAD "A" AS-BUILT  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



WELL PAD AS-BUILT CROSS-SECTION "A-A"  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



# PROFILE, WELL PAD & WATER CONTAINMENT PAD AS-BUILT SECTIONS



T PROFILE  
50'

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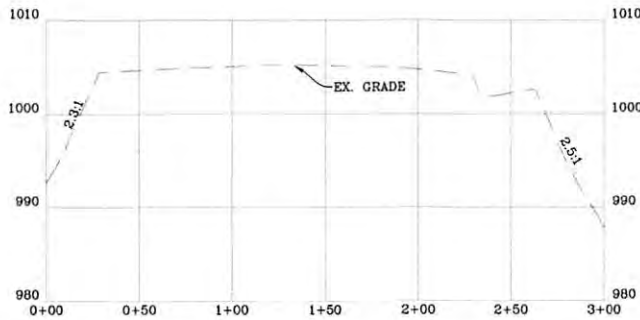
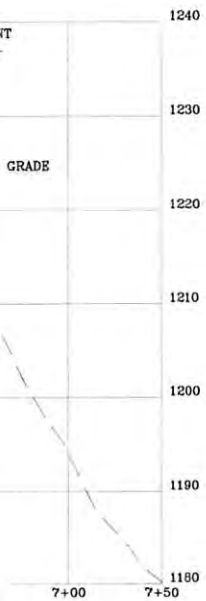


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CORPORATION



WATER CONTAINMENT PAD AS-BUILT CROSS-SECTION "B-B"

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

ACCESS ROAD AS-BUILT PROFILE, WELL PAD &  
WATER CONTAINMENT PAD AS-BUILT SECTIONS  
**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA

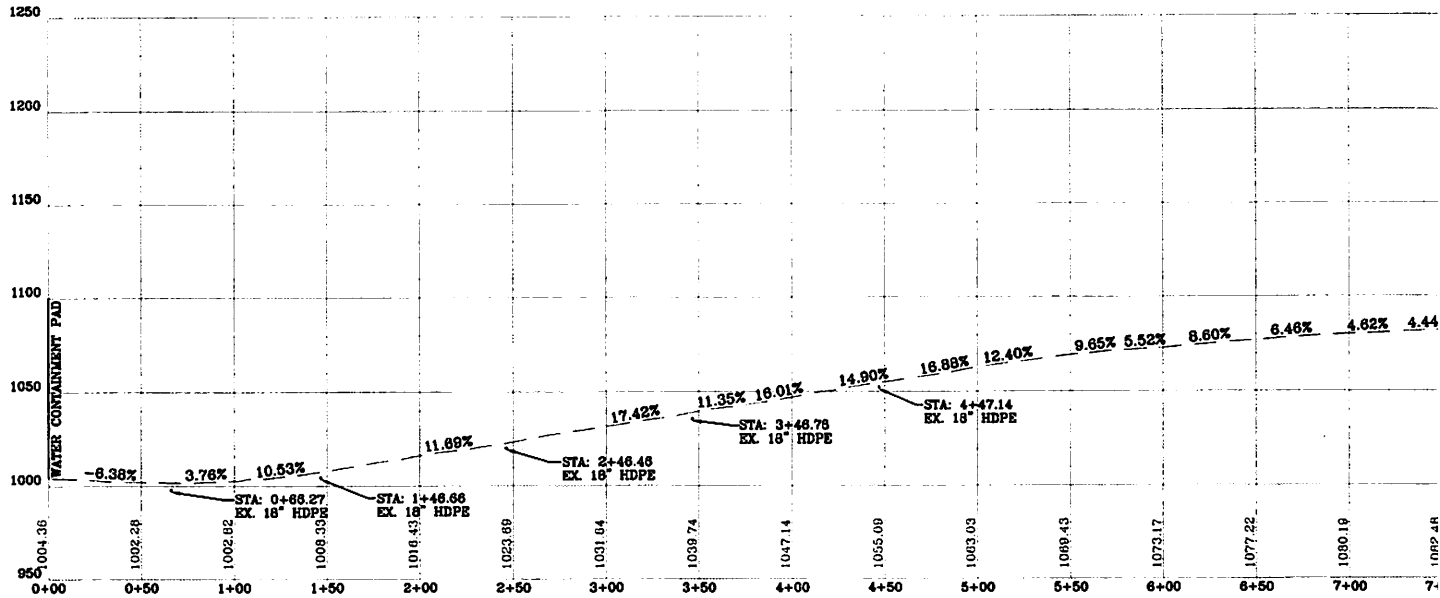


DATE: 03/05/2018

SCALE: AS SHOWN

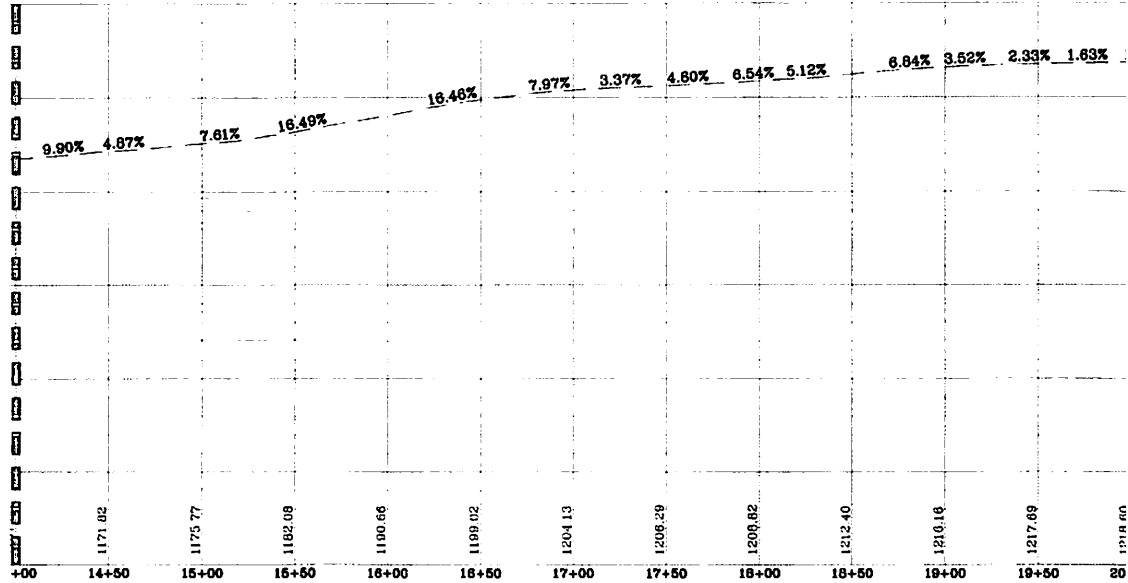
SHEET 7 OF 9

# ACCESS ROAD AS-BU



ACCESS ROAD "B" AS-BU  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

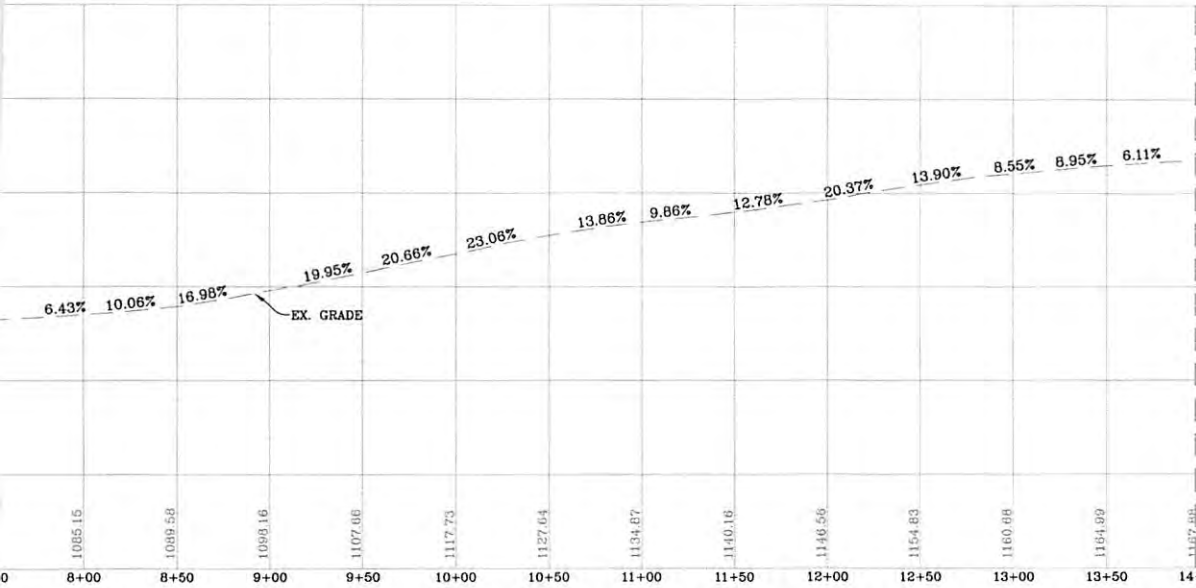
MATCHLINE  
SEE ABOVE



ACCESS ROAD "B" AS-BU  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

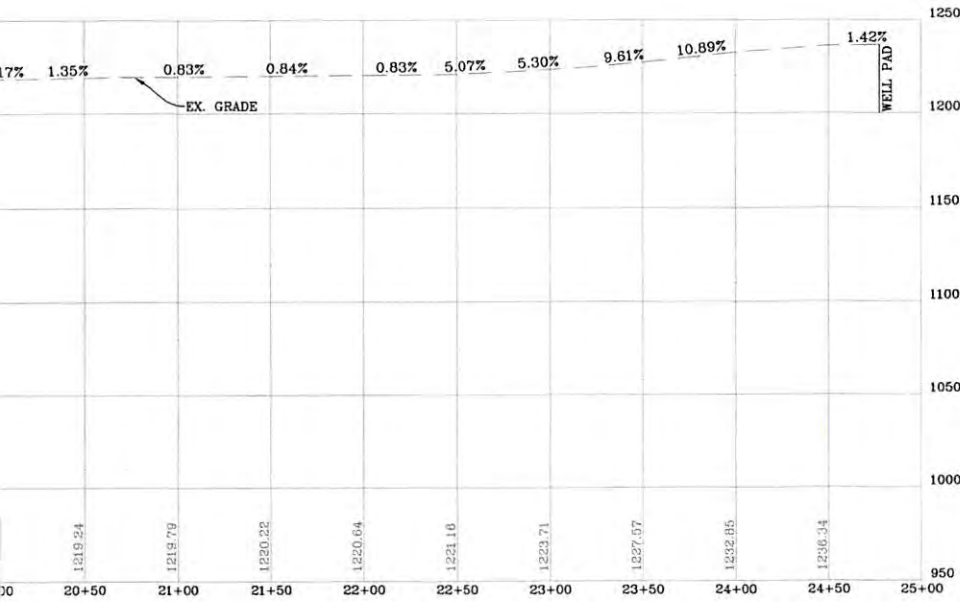


# MILT PROFILE



MATCHLINE  
SEE BELOW

LT PROFILE  
= 50'



LT PROFILE  
= 50'



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ACCESS ROAD AS-BUILT PROFILE  
**WEEKLEY TRUST**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA

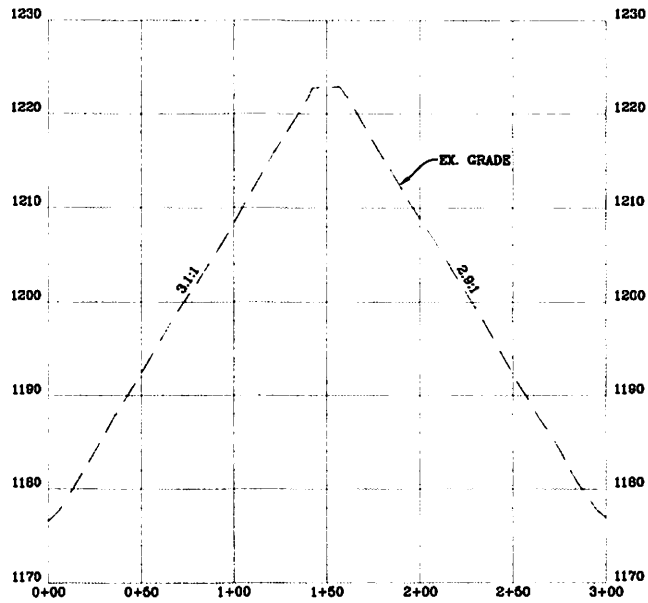


DATE: 03/05/2018  
SCALE: AS SHOWN  
SHEET 8 OF 9

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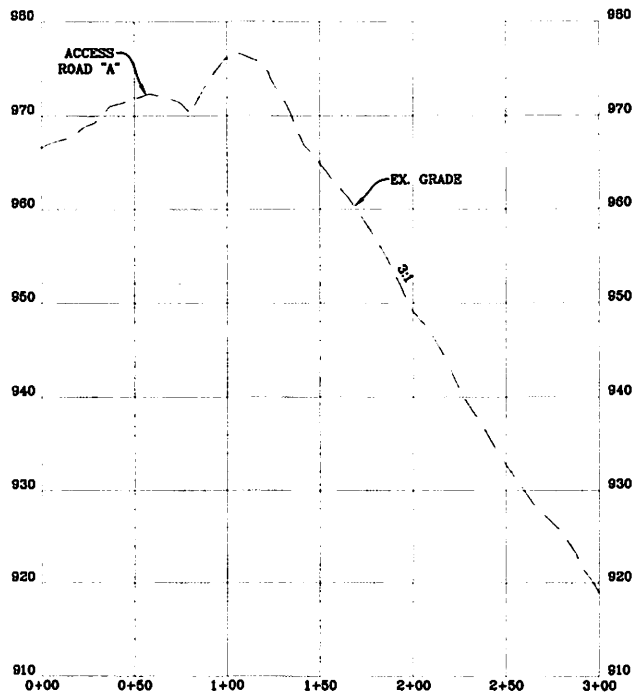


# STOCKPILE AS-BUILT



**STOCKPILE AREA "B" AS-BUILT CROSS-SECTION "D-D"**

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "A" AS-BUILT CROSS-SECTION "C-C"**

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



