



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

June 28, 2012

WELL WORK PERMIT
Horizontal 6A Well

This permit, API Well Number: 47-3305637, issued to ANTERO RESOURCES APPALACHIAN CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, well operators report of well work, is to be submitted to this office within 90 days of completion of drilling, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

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

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: DAWSON UNIT 1H
Farm Name: BOWYER, MATTHEW E. & LISA I
API Well Number: 47-3305637
Permit Type: Horizontal 6A Well
Date Issued: 06/28/2012

Promoting a healthy environment.

05/24/2024

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. 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.

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33-5637

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: Antero Resources Appalachian Corporation 494488557 033 - Harrison Union West Milford
Operator ID County District Quadrangle

2) Operator's Well Number: Dawson Unit 1H Well Pad Name: Bowyer Pad

3 Elevation, current ground: 1290' Elevation, proposed post-construction: 1290' ✓

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: Depth- 7300' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

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7) Proposed Total Vertical Depth: 7300' TVD

JUN 08 2012

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 18,000' MD

10) Approximate Fresh Water Strata Depths: 75', 184', 255' ✓

WV Department of
Environmental Protection

11) Method to Determine Fresh Water Depth: Offset well records

12) Approximate Saltwater Depths: 850', 880', 1190'

13) Approximate Coal Seam Depths: 194', 225', 735', 971', 1056', 1097', 1152', 1236', 1347', 1572' ✓

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

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

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
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."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 12.6 acres

19) Area to be disturbed for well pad only, less access road (acres): 4.5 acres

05/24/2024

33-5637

20)

CASING AND TUBING PROGRAM

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TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	325'	325'	CTS 451 Cu. Ft., Class A
Coal	9-5/8"	New	J-55	36#	2480'	2480'	CTS 1010 Cu Ft., Class A
Intermediate							
Production	5-1/2"	New	P-110	20#	18,000'	18,000'	5570 Cu. Ft. Class H
Tubing	2-3/8"	New	N-80	4.7#		7300'	Office of Oil & Gas
Liners							

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TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Grout	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

33-5637

21) 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.

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

Conductor: no additives, grout cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

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

West Virginia
Office of Oil & Gas

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23) Proposed borehole conditioning procedures.

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

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Environmental Protection

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.

05/24/2024

EXHIBIT 4.a.- WW-6B FORM

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: Antero Resources Appalachian Corporation 494488557 033 - Harrison Union West Milford
Operator ID County District Quadrangle

2) Operator's Well Number: Dawson Unit 1H Well Pad Name: Bowyer Pad

3 Elevation, current ground: 1290' Elevation, proposed post-construction: 1290'

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: Depth- 7300' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

7) Proposed Total Vertical Depth: 7300' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 18,000' MD

10) Approximate Fresh Water Strata Depths: 75', 184', 255'

11) Method to Determine Fresh Water Depth: Offset well records

12) Approximate Saltwater Depths: 650', 880', 1190'

13) Approximate Coal Seam Depths: 194', 225', 735', 971', 1056', 1097', 1152', 1236', 1347', 1572'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

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

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19) Area to be disturbed for well pad only, less access road (acres): 4.5 acres

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CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	325'	325'	CTS/451 Cu. Ft., Class A
Coal	9-5/8"	New	J-55	36#	2480'	2480'	CTS/1010 Cu Ft., Class A
Intermediate							
Production	5-1/2"	New	P-110	20#	18,000'	18,000'	4557 Cu Ft., Class H
Tubing	2-3/8"	New	N-80	4.7#		7300'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Grout	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
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Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

05/24/2024

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

Conductor: no additives, grout cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

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

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

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05/24/2024

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CASING AND TUBING PROGRAM

TYPE	<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	H-40	94#	40'	40'	CTS
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	330'	330'	CTS/458 Cu. Ft., Class A
Coal	9-5/8"	New	J-55	36#	2485'	2485'	CTS/1012 Cu Ft., Class A
Intermediate							
Production	5-1/2"	New	P-110	20#	18,350'	18,350'	4651 Cu Ft., Class H
Tubing	2-3/8"	New	N-80	4.7#		7300'	
Liners							

TYPE	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
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Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
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Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

05/24/2024

21) Describe centralizer placement for each casing string.

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

Conductor: no additives, grout cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

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

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*Note: Attach additional sheets as needed.

05/24/2024

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

**CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE**

Operator Name Antero Resources Appalachian Corporation OP Code 494488557

Watershed Isaac's Creek Quadrangle West Millford

Elevation 1290' County Harrison District Union

Description of anticipated Pit Waste: No pit will be used at this site. Drilling/Flowback fluids will be stored in tanks. Cuttings will be contained and hauled off site.

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a synthetic liner be used in the pit? Yes. If so, what mil.? 60 mil

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Office of Oil & Gas

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____ Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain _____)

JUN 08 2012

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Environmental Protection

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Surf Foam, Production - Water Based Mud

-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used? Please See Attachment

Will closed loop system be used? Yes

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed offsite and taken to landfill

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

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98)

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.

Company Official Signature [Signature]

Company Official (Typed Name) Gerard G. Alberts

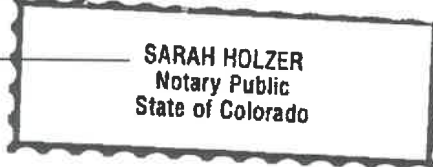
Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 4 day of June, 20 12

[Signature]

Notary Public

My commission expires 12/20/2012



05/24/2024

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Antero Resources Appalachian Corporation OP Code 494488557

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Will a synthetic liner be used in the pit? N/A. If so, what mil.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
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- Other (Explain _____)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud
-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used? Please See Attachment

Will closed loop system be used? Yes

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Company Official Signature *Gerard G. Alberts*

Company Official (Typed Name) Gerard G. Alberts

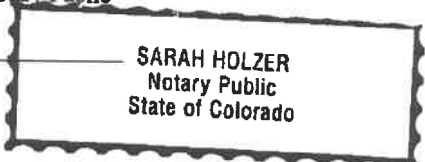
Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 4 day of June, 20 12

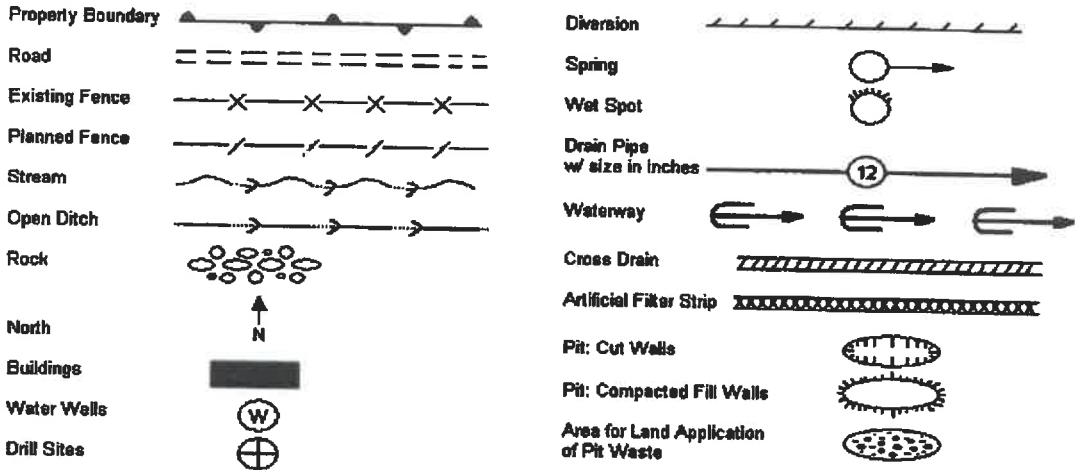
Sarah Holzer

Notary Public

My commission expires 12/20/2012



05/24/2024



(Drill Pad 4.6 + Access Road 2.2 + Tank Pad 3.1 + Topsoil Pile 1.3 = 11.2 acres)

Proposed Revegetation Treatment: Acres Disturbed 11.2 Prevegetation pH _____

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch 2-3 Tons/acre Hay or straw or Wood Fiber (will be used where needed)

Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre	Seed Type	Area II (Permanent) lbs/acre
Annual Rye Grass	40	Fox Tail/Grassy	40
		Perennial Rye	30
		Crown Vetch	20

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

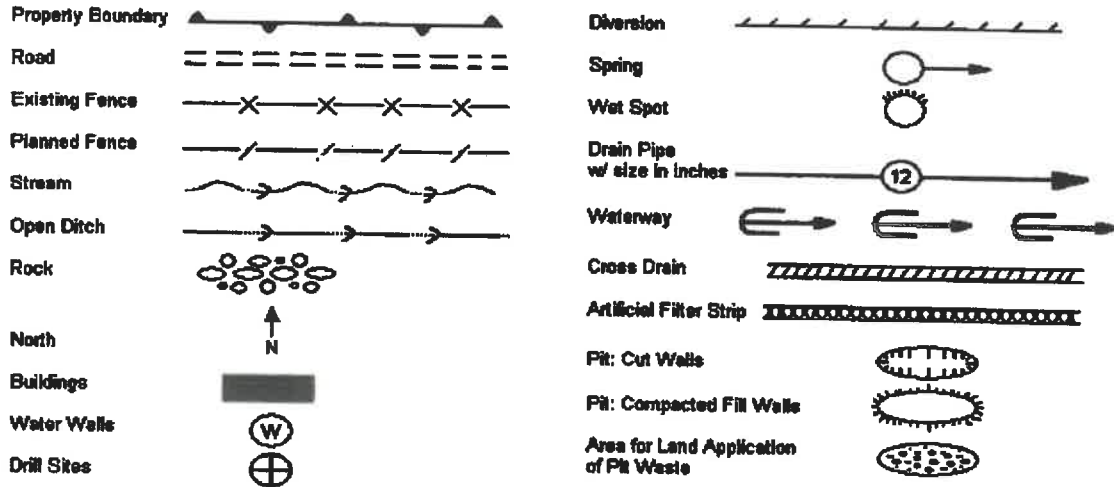
Plan Approved by: _____

Comments: _____

Title: Oil & Gas Inspector

Date: 21 Jun 12

Field Reviewed? Yes No



(Drill Pad 4.6 + Access Road 2.2 + Tank Pad 3.1 + Topsoil Pile 1.3 = 11.2 acres)

Proposed Revegetation Treatment: Acres Disturbed 12.4

Prevegetation pH 6.5
Office of Oil & Gas

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

JUN 08 2012

Mulch 2-3 Tons/acre Hay or straw or Wood Fiber (will be used where needed)

Department of Environmental Protection

Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre	Seed Type	Area II (Permanent) lbs/acre
Annual Rye Grass	40	Fox Tail/Grassy	40
		Perennial Rye	30
		Crown Vetch	20

Attach: Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: _____

Title: Oil & Gas Inspector

Date: 7 June 12

Field Reviewed? Yes No



Well Site Safety Plan

Antero Resources

Well Name: Winnie Unit 1H, Winnie Unit 2H, Dawson Unit 1, Dawson Unit 1H, Dawson Unit 2H Tenmile Unit 1H, Tenmile Unit 2H, Myers Unit 1H and Myers Unit 2H
Office of Oil & Gas

JUN 08 2012

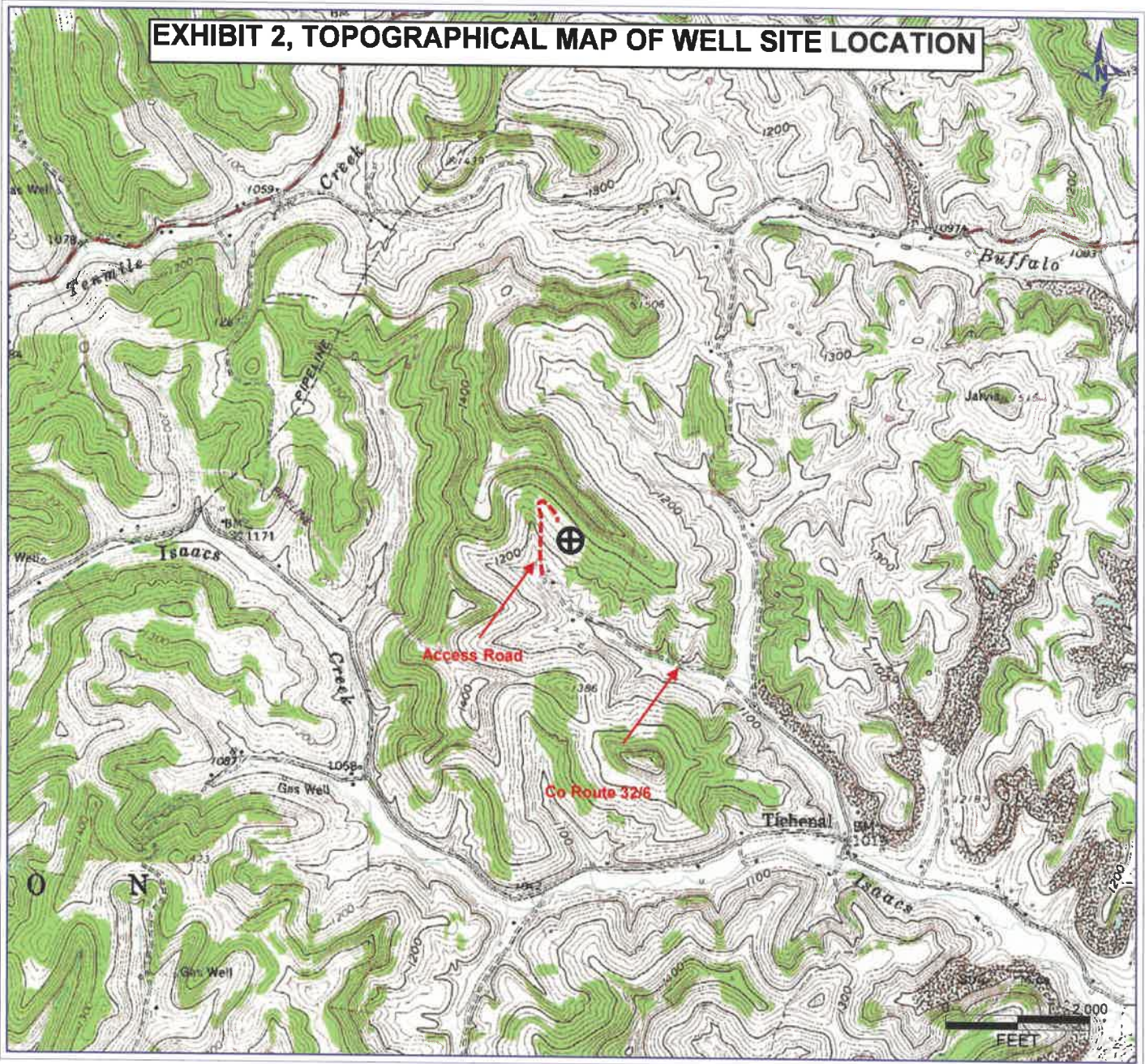
Pad Location: BOWYER PAD
(Harrison County/Union District)
WV Department of Environmental Protection

GPS Coordinates: Lat 39°12'06.18"/Long 80°29'22.49"

Driving Directions: From West Milford, travel west on Main St (WV 270 W) approximately 0.5 miles. Turn left onto Milford St (US 19 S) and travel south approximately 2.8 miles. Turn right onto Isaacs Creek Rd and travel west approximately 1 mile. Continue west onto Industrial-Isaacs Creek Rd (County Rt 38) and travel approximately 1.2 miles. Turn right onto County Rt 32/6 and travel northwesterly approximately 1 mile. Turn right onto Antero's access road and continue approximately 0.3 miles to the Bowyer location.

TAD
2 Jun 12

EXHIBIT 2, TOPOGRAPHICAL MAP OF WELL SITE LOCATION



Antero Resources Corporation
APPALACHIAN BASIN
Bowyer Pad Harrison County
<p>0 2 000 4 000 FEET</p>
<p>REMARKS QUADRANGLE: WEST MILFORD WATERSHED: ISAACS CREEK DISTRICT: UNION</p>
Date: 02/22/12

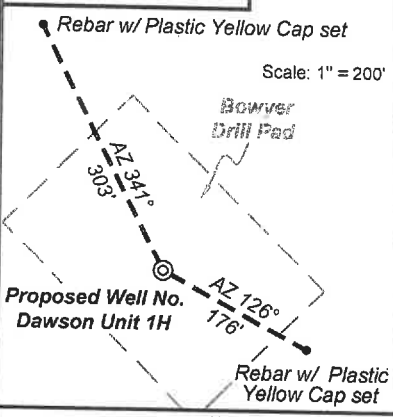
05/24/2024

Antero Resources
Well No. Dawson Unit 1H
Antero Resources
Appalachian Corporation

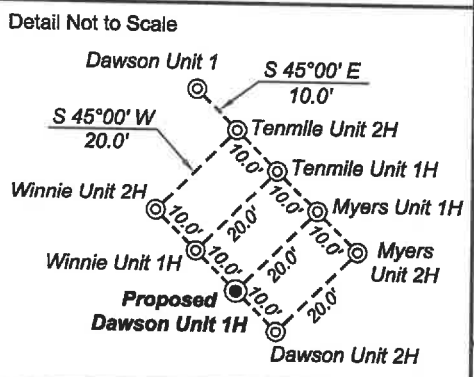
Bearing	Dist.
L1 N 74°07' W	1106.1'
L2 N 64°17' W	482.2'
L3 N 25°12' E	1334.1'

(-•-) Denotes Location of Well on United States Topographic Maps

Well Location References



Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Dawson Unit 1H Top Hole coordinates are
 N: 257,073.95' Latitude: 39°12'05.68"
 E: 1,719,513.39' Longitude: 80°29'23.10"
 Bottom Hole coordinates are
 N: 247,301.79' Latitude: 39°10'29.43"
 E: 1,722,655.93' Longitude: 80°28'41.83"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,339,280.347m N: 4,336,319.183m
 E: 544,073.672m E: 545,080.654m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

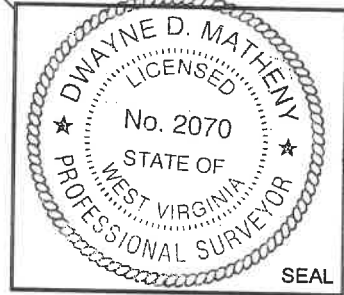


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Department of Environmental Protection.

Dwayne D. Matheny
Dwayne D. Matheny, P.S. 2070

Legend

- ⊙ Proposed gas well
- ⊙ Found corner, as noted
- ⊙ County Route
- Creek or Drain
- Existing Road
- Existing Fenceline
- Lease boundary (approx.)
- Surface boundary (approx.)
- Interior surface tracts (approx.)



Par	Tax Map	383 Owner	Bk/Pg	Acres
1	23	Matthew E. & Lisa Devought Bowyer	1307/68	49.7
2	32	David & Blanche Stutler	1339/72	22.22
3	44	David & Blanche Stutler	1339/72	18.1
4	31	Matthew E. & Lisa Devought Bowyer	1307/68	26.0

Par	Tax Map	403 Owner	Bk/Pg	Acres
5	6	Robert & Carol Golden	993/667	39.95
6	7	David & Ella Gaines	1315/1240	3.3
7	12	David & Ella Gaines	1315/1240	6.0
8	13.3	Tom & Patricia Butcher	WB152/93	40.0



FILE NO: 104-36-U-11
 DRAWING NO: 104-11_Dawson Unit 1H
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: CORS Glenville, WV

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

DATE: March 28 20 12
 API WELL NO: Dawson Unit 1H
 47 - 033 - 56.37
 STATE COUNTY PERMIT
 OPERATOR'S WELL NO.

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: 1290' WATERSHED Isaac's Creek
 QUADRANGLE: West Milford DISTRICT: Union COUNTY: Harrison
 SURFACE OWNER: Matthew E. & Lisa Devought Bowyer
 OIL AND GAS ROYALTY OWNER: Winnie L. Waggoner, et ux; James W. Sommerville, et ux
 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: ESTIMATED DEPTH: 7,300 TVD 18,000 TMD

WELL OPERATOR: Antero Resources Appalachian Corporation
 ADDRESS: 1625 17th Street Denver, CO 80202
 DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 5400 D Big Tyler Road Charleston, WV 25313

DATE: March 28 20 12
 API WELL NO: Dawson Unit 1H
 47 - 033 - 56.37
 STATE COUNTY PERMIT
 OPERATOR'S WELL NO.

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6, Section 8(d)
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>Lease #072907</u>			
Winnie L. Waggoner, et al Dominion E&P, Inc.	Consolidated Gas Supply Corporation Antero Resources Appalachian Corporation	1/8 Assignment	0999/1133 1423/1068
<u>Lease #072697</u>			
Opal Courtney, et al Dominion E&P, Inc.	Hope Natural Gas Company Antero Resources Appalachian Corporation	1/8 Assignment	0879/0085 1423/1068
<u>Waldo B. & Mary E. Brown Lease</u>			
Waldo B. Brown & Mary E. Brown, h/w PDC Mountaineer, LLC	South Penn Oil Company Antero Resources Appalachian Corporation	Flat Rate Assignment	0116/0573 1478/0656
<u>Lease #013954</u>			
James W. Sommerville, et ux Dominion E&P, Inc.	Hope Natural Gas Company Antero Resources Appalachian Corporation	Flat Rate Assignment	0192/0456 1423/1068
<u>Lease #002337</u>			
G.W. Caynor & S.V. Caynor, h/w Dominion E&P, Inc.	South Penn Oil Company Antero Resources Appalachian Corporation	Flat Rate Assignment	0113/0423 1423/1068

****CONTINUED ON NEXT PAGE**

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 WV Department of
 Environmental Protection

05/24/2024

**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
Lease #014277			
G. W. Caynor, et ux Dominion E&P, Inc.	Hope Natural Gas Company Antero Resources Appalachian Corporation	Flat Rate Assignment	0183/0037 1423/1068
Lease #DV011056			
Walter Lawson, et ux Dominion E&P, Inc.	South Penn Oil Company Antero Resources Appalachian Corporation	Flat Rate Assignment	0113/0456 1423/1068
Lease #014765			
H.E. Dawson Dominion E&P, Inc.	Hope Natural Gas Company Antero Resources Appalachian Corporation	1/8 Assignment	0183/0223 1423/1068

**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 Appalachian Corporation
 By: Ward McNeilly *[Signature]*
 Its: Vice President of Engineering

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 APR 13 2012
 WV Department of Environmental Protection

05/24/2024

33-5637

April 11, 2012



Antero Resources
1625 17th Street
Denver, Colorado 80202
Office 303.357.7310
Fax 303.357.7315

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

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Office of Oil & Gas

JUN 08 2012

WV Department of
Environmental Protection

RE: Dawson Unit 1H
Quadrangle: West Milford
Harrison County/Union District, West Virginia

Mr. Martin:

Antero Resources Appalachian Corporation (Antero) is submitting the following application for a new well work permit for the Dawson Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Dawson Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

James Woods
Landman

05/24/2024



April 11, 2012

Antero Resources
1625 17th Street
Denver, Colorado 80202
Office 303.357.7310
Fax 303.357.7315

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

RE: Dawson Unit 1H
Quadrangle: West Milford
Harrison County/Union District, West Virginia

Mr. Martin:

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Sincerely,

James Woods
Landman

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Environmental Protection

05/24/2024

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

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APR 11 2012
WV Department of Environmental Protection

Date of Notice Certification: 04/11/2012

API No. 47- 033
Operator's Well No. Dawson Unit #11
Well Pad Name: Bowyer Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>544,073.672m</u>
County: <u>Harrison</u>		Northing: <u>4,339,280.347m</u>
District: <u>Union</u>	Public Road Access: <u>CR 32/6</u>	
Quadrangle: <u>West Milford</u>	Generally used farm name: <u>Bowyer, Matt E. & Lisa Devought</u>	
Watershed: <u>Isaac's Creek</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

1. NOTICE OF SEISMIC ACTIVITY or NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED

2. NOTICE OF ENTRY FOR PLAT SURVEY or NO PLAT SURVEY WAS CONDUCTED
**Not applicable, Plat Survey was done prior to Implementation of WV Code 22-6A

3. NOTICE OF INTENT TO DRILL or NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or

WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)

4. NOTICE OF PLANNED OPERATION

5. PUBLIC NOTICE

6. NOTICE OF APPLICATION

OOG OFFICE USE ONLY

RECEIVED/
NOT REQUIRED

RECEIVED

RECEIVED/
NOT REQUIRED

RECEIVED

RECEIVED

RECEIVED

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

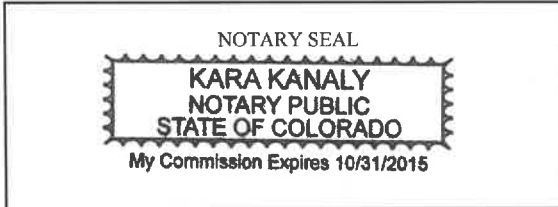
Check # 2343
\$ 5,150.00

05/24/2024

Certification of Notice is hereby given:

THEREFORE, I Ward McNeilly, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator:	<u>Antero Resources Appalachian Corporation</u>	Address:	<u>1625 17th Street</u>
By:	<u>Ward McNeilly</u> <i>[Signature]</i>		<u>Denver, CO 80202</u>
Its:	<u>Vice President of Engineering</u>	Facsimile:	<u>(303) 357-7315</u>
Telephone:	<u>(303) 357-7310</u>	Email:	<u></u>



Subscribed and sworn before me this 14th day of April, 2012
Kara Kanaly Notary Public
 My Commission Expires 10/31/2015

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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 Environmental Protection

05/24/2024

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 04/12/2012 Date Permit Application Filed: 04/12/2012

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APR 18 2012
WV Department of
Environmental Protection

Notice of:

- PERMIT FOR ANY WELL WORK CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE REGISTERED MAIL METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b), no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner.

Notice is hereby provided to:

SURFACE OWNER(s)
Name: Matt E. & Lisa Devought Bowyer ✓
Address: RR 1, Box 271
Lost Creek, WV 26385-9723

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments/Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: SEE ATTACHED LIST
Address: _____

COAL OPERATOR
Name: SEE ATTACHED LIST
Address: _____

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL,
 SPRING OR OTHER WATER SUPPLY SOURCE
Name: SEE ATTACHED LIST
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

05/24/2024

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall also include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

05/24/2024

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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Office of Oil & Gas
APR 19 2012
WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

05/24/2024

WW-6A
(1-12)

API NO. 47- 033 -
OPERATOR WELL NO. Dawson Unit 1H
Well Pad Name: Bowyer Pad

Notice is hereby given by:

Well Operator:	<u>Antero Resources Appalachian Corporation</u>	Address:	<u>1625 17th Street</u>
Telephone:	<u>303-357-7310</u>		<u>Denver, CO 80202</u>
Email:	<u>hknopping@anteroresources.com</u>	Facsimile:	<u>303-357-7315</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

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WW-6A- Notice of Application Attachment:

Coal Owner, Operator, Lessee(s):

Owner: Matt E. & Lisa Devought Bowyer ✓
Address: RR 1, Box 271
Lost Creek, WV 26385-9723

Owner: Betty Jane Coyle (LE) ✓
(Howard Williams et al)
c/o Elizabeth J. Libertini
Address: 402 The Pond Way
Church Hill, MD 21623-8003

Operator: Anker Energy Corporation ✓
Hunter Ridge Coal Company
c/o Corporation Service Company
Address: 2708 Cranberry Square
Morgantown, WV 26508

Operator: Anker West Virginia Mining Co. ✓
Wolf Run Mining Co.
c/o Corporation Service Company
Address: 99 Edmiston Way
Buckhannon, WV 26201

Operator: Patriot Mining Company ✓
c/o Corporation Service Company
Address: 2708 Cranberry Square
Morgantown, WV 26508

Operator: International Coal Group, Inc. ✓
c/o Corporation Service Company
Address: 300 Corporate Center Dr.
Scott Depot, WV 25560

Operator: Bitner Fuel Company ✓
Address: Route 1
Bloomingdale, OH 43910

Operator: Consolidation Coal Company ✓
Attn: Don Puglio
Leatherwood, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317-6506

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Water Well Owners:

WW Owner: Matt E. & Lisa Devought Bowyer (2 water wells)

Address: RR 1, Box 271
Lost Creek, WV 26385-9723

WW Owner: David W. & Blanche Kay Stutler (4 water wells)

Address: RR 1, Box 271D
Lost Creek, WV 26385

(Note: On attached water well map, 3 other water well owners were identified but they are located greater than 1500' from the subject well pad location)

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.
Date of Notice: 01/20/2012 **Date Permit Application Filed:** 04/12/2012

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner; *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Matt E. & Lisa Devought Bowyer
Address: RR 1, Box 271
Lost Creek, WV 26385-9723

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>544,073.672m</u>
County:	<u>Harrison</u>		Northing:	<u>4,339,280.347m</u>
District:	<u>Union</u>	Public Road Access:		<u>CR 32/6</u>
Quadrangle:	<u>West Milford</u>	Generally used farm name:		<u>Bowyer, Matt E. & Lisa Devought</u>
Watershed:	<u>Isaac's Creek</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Address: 1625 17th Street
Denver, CO 80202
Telephone: (303) 357-7310
Email: _____
Facsimile: (303) 357-7315

Authorized Representative: Hannah Knopping
Address: 1625 17th Street
Denver, CO 80202
Telephone: (303) 357-7310
Email: hknopping@anteroresources.com
Facsimile: (303) 357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 04/12/2012 **Date Permit Application Filed:** 04/12/2012

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

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Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Matt E. & Lisa Devought Bowyer ✓
Address: RR 1, Box 271
Lost Creek, WV 26385

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>544,073.672m</u>
County: <u>Harrison</u>	Northing: <u>4,339,280.347m</u>
District: <u>Union</u>	Public Road Access: <u>CR 32/6</u>
Quadrangle: <u>West Millford</u>	Generally used farm name: <u>Bowyer, Matt E. & Lisa Devought</u>
Watershed: <u>Isaac's Creek</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: <u>Antero Resources Appalachian Corporation</u>	Address: <u>1625 17th Street</u>
Telephone: <u>(303) 357-7310</u>	<u>Denver, CO 80202</u>
Email: <u>hknopping@anteroresources.com</u>	Facsimile: <u>(303) 357-7315</u>

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The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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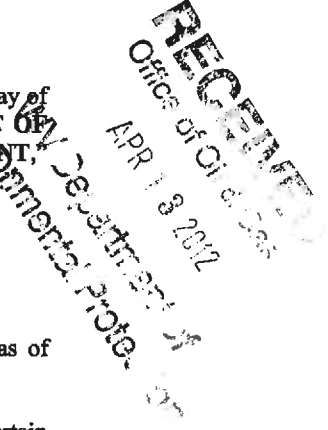
33-5637

**CERTIFICATION OF AGREEMENT WITH WVDOH
to fulfill WV Code 22, Article 6A, Section 20**



**OIL AND GAS ROAD
DISTRICT WIDE BONDING AGREEMENT
For DOH District Four**

THIS AGREEMENT, executed in duplicate, made and entered into this 16 day of September, 2011, by and between the **WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS**, hereinafter called "DEPARTMENT," and Antero Resources Appalachian Corporation, company, hereinafter called "COMPANY."



WITNESSETH:

WHEREAS, Company has horizontal gas well drilling operations in certain areas of West Virginia; and

WHEREAS, the Department believes that the frequent and repetitive use of certain sections of highways in the State by Company, its contractors, agents, independent contractors or suppliers of drilling materials or drilling equipment, and employees contributes to increased wear and tear to public roads in the state road system in the State, including local roads ("State Owned Roads"); and,

WHEREAS, the Department and Company have entered into this Agreement to satisfy the requirements of the Department's policy entitled "Oil & Gas Road Policy" dated February 1, 2011, as issued by Paul A. Mattox, Jr., Secretary of Transportation / Commissioner of Highways, and any subsequent related policies, hereinafter called "Policy", a copy of which is made a part of this Bonding Agreement and is identified as Attachment 1.

NOW, THEREFORE, for and in consideration of the mutual agreements hereinafter set forth, the parties agree as follows:

I. For purposes of this Bonding Agreement, "Project Transportation Usage" of the Company shall be understood to mean use of one or more State Owned Roads for the delivery and removal of drilling materials and drilling equipment at the site or location of one or more of Company's horizontal gas well pad locations. To the extent reasonably practical, prior to commencing use of a State Owned Road for Project Transportation Usage after January 1, 2011, the Company shall submit to the Department a section or sections of current official WVDOH County Highway maps identifying the exact location of the proposed project and the State Owned Roads that the Company will utilize for the Project Transportation Usage.

II. Company and Department shall within 14 days of the Company's submittal, agree to a list of these sections of State Owned Roads, hereinafter called "Project Roads List", to be utilized for each of Company's projects, identified by route number and milepost; at a time to be mutually agreed to by the parties prior to initial commencement of Project Transportation Usage of a particular State Owned Road on a Project Roads List, the Company and Department will jointly review the condition of the roads and bridges on the Project Roads List. The Department will document the road type and surface condition and general right-of-way width of each section of road on the Project Road List. Either party may supplement this documentation with photographs, video or other evidence of the present condition of the road surface, shoulders, ditches, culverts, bridges or other structures or appurtenances of roads on the Project Road List, as well as approaches to the roads, utility facilities located within or along the right-of-way, or any other condition, including third-party activities, that may affect the duties and responsibilities of the parties under this Agreement. A copy of any such documentation must be made and provided to the other party within ten business days after the joint review of the roads on the Project Roads List.

III. Department shall issue a Project Agreement or Project Permit, as appropriate, to Company to use State Owned Roads and may include any minor or major improvements required of Company prior to, during or after Project with the assignment of responsibilities of

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both parties prior to, during and after the operator has completed well fracturing..

IV. In the Project Agreement/Project Permit, the Department shall not require the use of State Owned Roads other than the roads proposed by Company unless the Department has safety concerns as to the Company's proposed roads. A failure to agree on roads that may otherwise be lawfully used for a particular Project Transportation Usage shall result in the designation of the State Owned Roads proposed by Company, with milepost determinations as designated by Department. This Agreement shall only cover portions of State Owned Roads designated on the Project Roads List.

V. For the duration of Company's Project Transportation Usage of the Stated Owned Roads on the Project Roads List, whether by the Company, its contractors (while working on behalf of Company), agents, independent contractors or suppliers of drilling materials or drilling equipment, or employees, the Company agrees to pay for all reasonable maintenance and repair costs incurred by the Department to repair areas of the State Owned Roads included in the Project Roads List that were directly damaged by Company's Project Transportation Usage, as determined to be reasonably necessary and appropriate by the Department. The Department shall keep a record of all labor performed by Department employees and contractors for such maintenance and repairs and shall send an invoice for the same to Company.

VI. Company shall be responsible for the cost of all maintenance and repairs reasonably necessary to put the existing roadways, bridges and appurtenances on the Project Roads List utilized for the Project Transportation Usage in the condition that existed immediately prior to the Project Transportation Usage. Company shall not be required to pay for maintenance or repairs to put any areas of such roadways, bridges and appurtenances on the Project Roads List in a condition better than the condition that existed immediately prior to the Project Transportation Usage. Company shall also not be required to pay for maintenance or repairs to any areas of these roadways, bridges or appurtenances on the Project Roads List that are not actually utilized for the Project Transportation Usage or for damage not caused by Project Transportation Usage.

VII. Company shall notify the Department in writing of Company's final completion of Project Transportation Usage for particular roadways, bridges and appurtenances on the Project Roads List. Within fourteen days after its receipt of written notification of the completion of the Project Transportation Usage for all roads on a Project Roads List, the Department will review the condition of the roadways, bridges and appurtenances on the Project Roads List actually utilized for the Project Transportation Usage and advise Company of any final repairs reasonably necessary to leave these roads, bridges and appurtenances in a condition reasonably deemed by Department to be equal to their condition prior to commencement of Project Transportation Usage; and, upon completion of all such final repairs by or on behalf of Company and acceptance by Department, the Company shall be released from all further liability for maintenance or repairs to roads, bridges, or appurtenances on said Project Roads List. Any maintenance or repair work under the Project Agreement/Project Permit for roads, bridges or appurtenances on the Project Roads List may be performed by a contractor directly chosen by the Company as approved by the Department, the Department's workforce, or a private contractor hired by the Department through the public bid process in accordance with state law, all of which work shall be subject to the standards and specifications of the Department.

VIII. In order to ensure performance of Company's performance and payment obligations under this Bonding Agreement, the Company shall post a corporate surety bond, hereinafter called "Master Bond", with the Department named as the beneficiary, which form of bond shall be subject to the consent of the Department, not to be unreasonably withheld. The amount and form of the bond shall be in accordance with the Policy as set forth above. However, the amount of the Master Bond does not limit the amount of claims that may be made by the Department against the Company under this Bonding Agreement. The Company shall provide the Master Bond to the Department within one (1) month after the execution of this Bonding Agreement. The Master Bond shall secure the good faith performance of all payment obligations of Company under the terms of this Bonding Agreement respecting the roads, bridges and appurtenances on the Project Roads List for each Project Transportation Usage undertaken by the Company, and shall remain in effect until termination of this Agreement. Company shall not be obligated to provide any other bonds, sureties, or other guarantees of performance to the Department for Company's use of State Owned Roads, except as required in this Agreement.

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IX. Company shall maintain Commercial General Liability Insurance in the amount of two million dollars, with a minimum coverage of one million dollars per occurrence, for personal injury or death to persons, or for property damage, resulting from Company's Project Transportation Usage and shall present evidence of such insurance to Department upon request.

X. Company's usage of State Owned Roads under the Project Agreement/Project Permit shall comply with all applicable Federal, State and local laws and regulations including, but not limited to, to the extent applicable, the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Rare, Threatened and Endangered Species Act, Section 401 Water Quality Certification, and hazardous waste requirements. Further, upon reasonable written request of Department, Company shall furnish Department with acceptable documentation of such compliance which is in the possession of the Company.

XI. Company shall defend, indemnify and hold Department harmless from and against any and all losses, damage, and liability, and from all claims for damages on account of or by reason of bodily injury, including death, which may be sustained, or claimed to be sustained, by any person or persons, including employees of Department, and from and against any and all claims, losses or liabilities for damages to property, arising out of the negligent or willful acts or omissions of Company, its agents, independent contractors and suppliers of drilling materials or drilling equipment, employees and contractors, in the performance of all Project Transportation Usage activities undertaken pursuant to this Agreement (collectively, "claims"). The Company shall not be responsible to indemnify, defend or hold harmless Department for any claims caused by the negligent or willful acts or omissions of the Department or its agents, employees and contractors or third parties not performing work at the direction of Company or delivering drilling equipment or drilling materials, including water, for use by or for company.

XII. If a provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect the validity or enforceability of any other provision of this Agreement; or the validity or enforceability in other jurisdictions of that or any other provision of this Agreement.

XIII. Department shall give Company a minimum of thirty days written notice of default under the terms of this Bonding Agreement and the opportunity to cure this default during such thirty-day period. If a default is not cured to the satisfaction of Department, or provision acceptable to Department is not made for a cure, Department may then elect to terminate this Bonding Agreement in whole or in part, and may in addition exercise its rights under the Master Bond or seek any other lawful relief available. Company may terminate this Bonding Agreement upon thirty days written notice to Department for any reason. In the event Company terminates this Agreement for any reason, it shall be liable for the repair and maintenance costs set forth above for prior Project Transportation Usage.

XIV. Nothing herein shall be construed to mean that Company shall have any jurisdiction or control over any public roads in the state road system.

XV. Company, its contractors, agents, employees and suppliers shall at all times be subject to applicable provisions of state and federal law, including without limitation laws requiring operation of vehicles in accordance with legal size and weight restrictions and posted weight limits. Oversize/overweight permits for vehicle or loads not otherwise conforming with law must be obtained in accordance with law; Department agrees to work in good faith with Company to review and grant (where authorized by law) such permits in a timely manner upon request by Company.

XVI. This Bonding Agreement shall be construed and enforced in accordance with the laws of the State of West Virginia, as they may be amended.

XVII. This Bonding Agreement shall be binding upon the successors and assigns of each party hereto.

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IN WITNESS WHEREOF, the parties hereto have caused this Bonding Agreement to be executed by their duly authorized officers effective as of the date first above written.

WEST VIRGINIA DEPARTMENT OF
TRANSPORTATION,
DIVISION OF HIGHWAYS

Doreen Bova
Witness Executive Secretary

By: [Signature]
State Highway Engineer

Frank Knoppig
Witness

By: [Signature]
Alvyn A. Schopp

Title: Vice President of Administration
and Finance

(To be executed in duplicate)

APPROVED AS TO FORM THIS
11th DAY OF June 2012

[Signature]
ATTORNEY LEGAL DIVISION
WEST VIRGINIA DEPARTMENT
OF HIGHWAYS

~~ATTORNEY LEGAL DIVISION
WEST VIRGINIA DEPARTMENT
OF HIGHWAYS~~

APPROVED AS TO FORM THIS
DAY OF 20

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Form WW-9 Additives Attachment

SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

PRODUCTION INTERVAL

1. Alpha 1655
Salt Inhibitor
2. Mil-Carb
Calcium Carbonate
3. Cottonseed Hulls
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
Calcium Hydroxide – Lime
11. LD-9
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
Hydro-Biotite Mica – LCM

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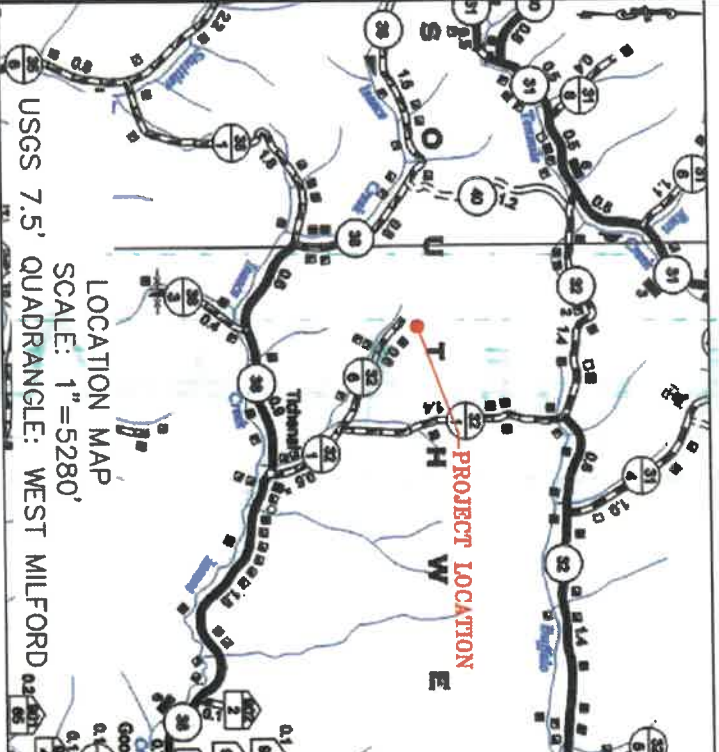
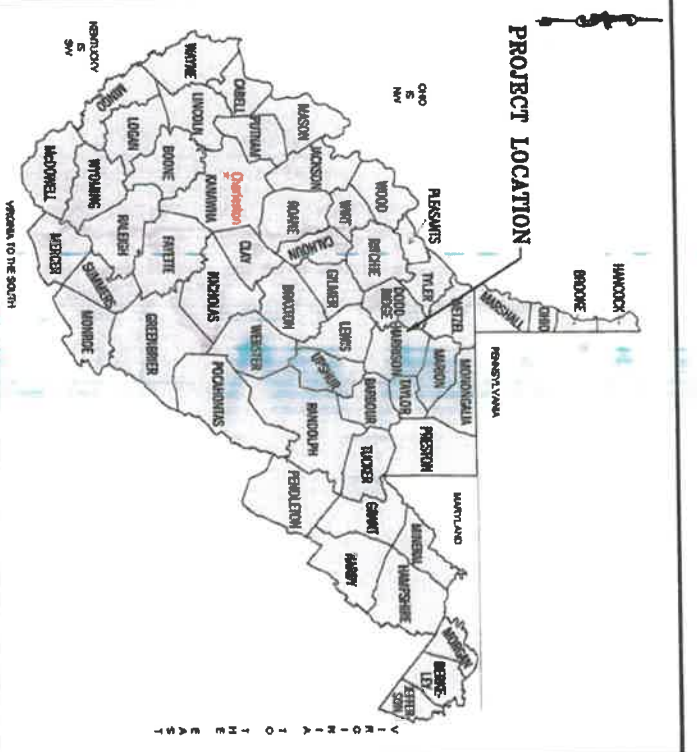
13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
Inorganic Salt
18. D-D
Drilling Detergent – Surfactant
19. Terra-Rate
Organic Surfactant Blend
20. W.O. Defoam
Alcohol-Based Defoamer
21. Perma-Lose HT
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
Natural Graphite – LCM
25. Mil Bar
Barite – Weighting Agent
26. X-Cide 102
Biocide
27. Soda Ash
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
Amine Acid complex – Shale Stabilizer
29. Sulfatrol
Sulfonated Asphalt – Shale Control Additive
30. Xanvis
Viscosifier For Water-Based Muds
31. Milstarch
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
Drilling Fluid Lubricant

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List of Anticipated Additives Used for Fracturing or Stimulating Well

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	proprietary
Anionic polymer	proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	(Proprietary)
Demulsifier Base	(Proprietary)
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitropropionamide	10222-01-2
Microparticle	proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Silica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7

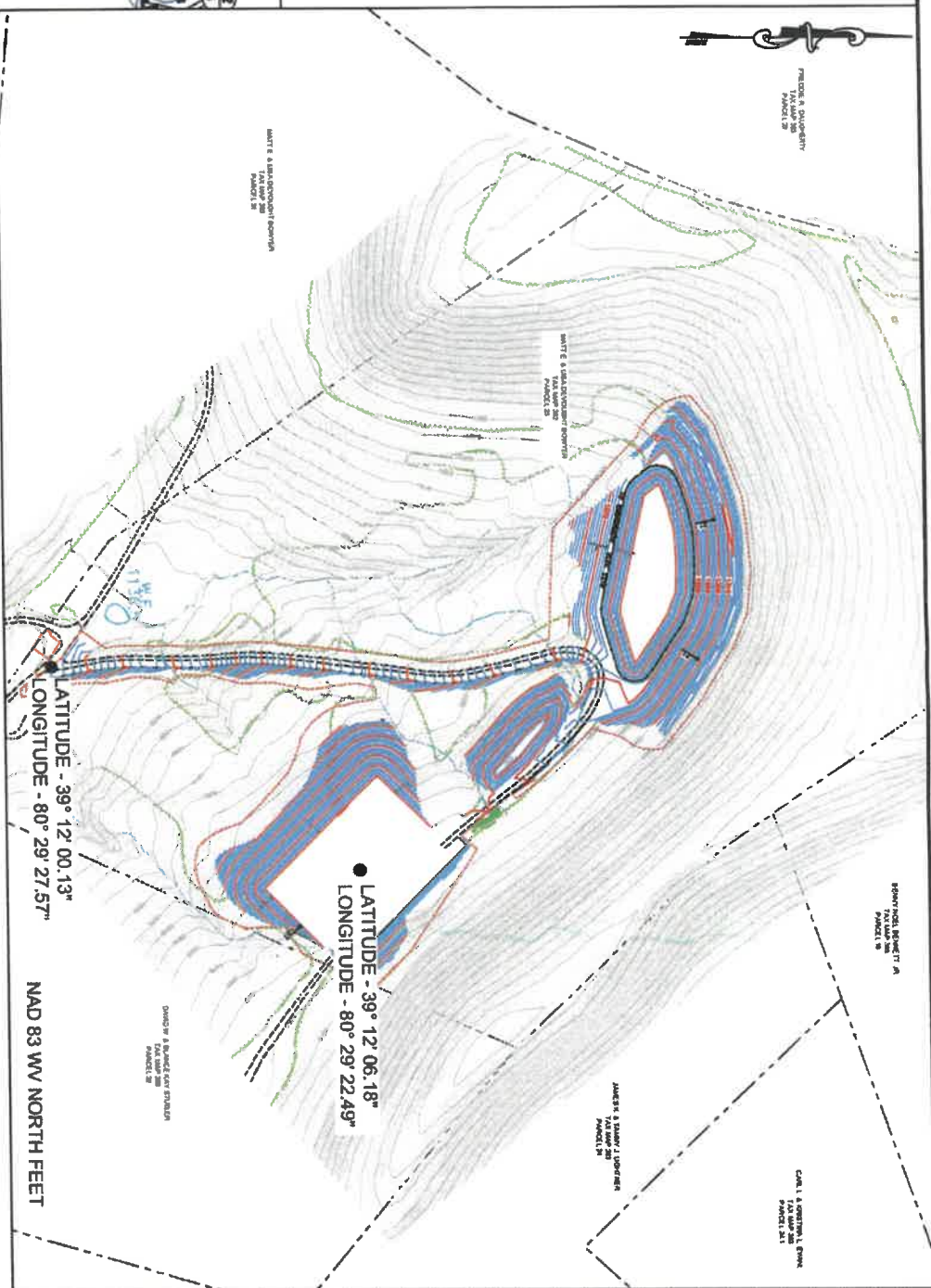
05/24/2024



Hatch Mott
MacDonald

2601 Cranberry Square
Morgantown, WV 26506
T: 304.212.4390 F: 304.594.2814
www.hatchmott.com

Miss Utility of West Virginia
5608 MacCortle Ave. S.W.
So. Charleston, WV 25309
1.800.245.4848



DESIGN CERTIFICATION
THE DESIGN DRAWINGS, NOTES, AND DETAILS HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS §39-4-21.
THE COMPUTED ABOVE GROUND VOLUME OF THE TEMPORARY FRAC PIT IS LESS THAN 15 ACRE FEET. THE IMPOUNDMENT WILL BE LINED, AND WILL BE FILLED BY PUMPING METHODS.

WILLIAM D. BUCKEL, P.E. DATE: *1/24/12*
WV NO. 011956



DRAWING LIST	
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Office of Oil & Gas
JUN 08 2012

WV Department of
Environmental Protection

**BOWYER SITE DESIGN & CONSTRUCTION PLAN,
EROSION & SEDIMENT CONTROL PLANS
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA**

JANUARY 24, 2012

NO.	DESCRIPTION	CHG	APPR	DATE



TW 1/24/12

CONSTRUCTION SEQUENCE

1. REMOVE THE EXISTING CUT STONE WALL AT THE ACCESS ROAD ENTRANCE AT STATE ROUTE 32/6 AND GRADE ENTRANCE AREA AS NECESSARY TO PROVIDE SITE ACCESS.
2. STORE CUT STONES IN A MANNER AND LOCATION ACCEPTABLE TO THE LANDOWNER.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT BEGINNING OF ACCESS ROAD AS SHOWN.
4. ROUGH GRADE ACCESS ROAD AND INSTALL CULVERTS WITH OUTLET PROTECTION UNDER ROAD AS SHOWN.
5. DITCH ACCESS ROAD AS SHOWN.
6. LINE ACCESS ROAD DITCH WITH RIPRAP AND INSTALL ROCK CHECK DAMS AT LOCATIONS SHOWN.
7. GRADE ACCESS ROAD TO FINAL GRADES AS SHOWN.
8. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL DEVICES AT LOCATIONS SHOWN.
9. CLEAR AND GRUB SITE AS NEEDED WITHIN LIMITS OF DISTURBANCE WHILE TAKING ALL NECESSARY PRECAUTIONS TO PROTECT ANY EXISTING WETLANDS AND/OR STREAMS.
10. STOCKPILE TOPSOIL AT THE LOCATION SHOWN ON THE PLANS.
11. PROVIDE EROSION AND SEDIMENT CONTROL FOR TOPSOIL STOCKPILE.
12. SEED AND MULCH TOPSOIL STOCKPILE.
13. CONDUCT ROUGH GRADING OF SITE AS NEEDED.
14. CONTINUE TO INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROLS THROUGHOUT PROJECT IN ACCORDANCE WITH WDEP REQUIREMENTS.
15. INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL AS NEEDED AS PROJECT PROGRESSES.
16. EXCAVATE FRAC PIT AT LOCATION SHOWN ON THE PLANS.
17. INSTALL TOE KEY FOR DRILLING PAD CONSTRUCTION.
18. CONSTRUCT PAD WITH FILL MATERIAL FROM FRAC PIT SITE.
19. CONSTRUCT DRAINAGE DITCH AT PAD AS SHOWN.
20. FINE GRADE SITE AS NEEDED.
21. PERMANENTLY SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF REACHING FINAL GRADE.
22. RESEED AS NECESSARY TO ACHIEVE PERMANENT VEGETATIVE COVER.
23. UPON COMPLETION OF PROJECT INCLUDING ADEQUATE STABILIZATION, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROLS.

QUANTITIES

QUANTITY	LF	EA	AC	LF	LF	CY	LF
1,080	LF	EA	AC	1,913	LF	194	990
32	EA	Rock Check Dam	15-inch HDPE Culvert				
10.4	AC	Revegetation	Unclassified Excavation				
			Silt Sock				
			Ditch				
			Unclassified Excavation				
			Six Foot Chain Link Fence				

05/24/2024

CONTACT INFORMATION

1. OWNER - ANTERO RESOURCES
 CONTACT - TOM WINCE
 TEL - 304.869.3405
 CELL - 304.483.0933
 TWINC@ANTERORESOURCES.COM
2. ENGINEER - HATCH MOTT MACDONALD
 CONTACT - JEFF LAW
 TEL - 304.212.4390
 CELL - 304.282.0199
 JEFFREY.LAW@HATCHMOTT.COM

ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:



NO.	DESCRIPTION	CHG'D	APPR'D	DATE

Hatch Mott MacDonald

DESIGNED BY: HAM
 DRAWN BY: HAM
 APPROVED BY: HAM
 DATE: _____
 HAM PROJECT No: 297605
 DWS SCALE: NOT TO SCALE

CONTACT & QUANTITY SHEET

1. THE DESIGN DRAWINGS SHOW THE PROPOSED LINES, GRADES, AND APPURTENANCES NECESSARY TO ACCOMPLISH THE INTENT OF THE SCOPE OF WORK.
2. THE DESIGN DRAWINGS SHOW THE CONSTRUCTION LINES, GRADES, DEPTHS AND DIMENSIONS ON WHICH ESTIMATED QUANTITIES ARE BASED. THE CONSTRUCTION LINES, GRADES, DEPTHS AND DIMENSIONS ARE SUBJECT TO VARIATION NECESSARY TO OBTAIN SUBGRADE AND/OR FINAL GRADE SATISFACTORY TO THE ENGINEER. THE ENGINEER RESERVES THE RIGHT TO REVISE CONSTRUCTION LINES, GRADES, DEPTHS AND DIMENSIONS AS NECESSARY BASED ON SITE CONDITIONS.
3. ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM TO THE LINES, GRADES, CROSS SECTIONS, DIMENSIONS, AND MATERIAL REQUIREMENTS IN REASONABLE CLOSE CONFORMANCE WITH THE DESIGN DRAWINGS.
4. THE CONTRACTOR SHALL PROVIDE ALL REASONABLE FACILITIES AND FURNISH TO THE ENGINEER, INFORMATION, ASSISTANCE, AND SAMPLES REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIALS AND WORKMANSHIP. THE CONTRACTOR SHALL HAVE ON THE PROJECT SITE AT ALL TIMES, A COMPETENT SUPERINTENDENT CAPABLE OF READING AND UNDERSTANDING THE DESIGN DOCUMENTS. THE SUPERINTENDENT SHALL BE THOROUGHLY EXPERIENCED IN IMPOUNDMENT PIT CONSTRUCTION, AND SHALL BE AUTHORIZED TO ACT ON INFORMATION RECEIVED FROM THE ENGINEER.
5. CLEARING SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 201 OF THE WDOH SPECIFICATIONS, LATEST EDITION. CLEARING IS DEFINED AS THE REMOVAL OF TREES, BRUSH, DOWN TIMBER, ROTTEN WOOD, RUBBISH, OTHER VEGETATION, AND OBJECTIONABLE MATERIALS AT, OR ABOVE, ORIGINAL GROUND ELEVATION NOT DESIGNATED TO BE RETAINED. CLEARING ALSO INCLUDES REMOVAL OF FENCES, POSTS, SIGNS, AND DEMOLITION OR REMOVAL OF OTHER OBSTRUCTIONS INTERFERING WITH THE PROPOSED WORK.
6. GRUBBING SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 201 OF THE WDOH SPECIFICATIONS, LATEST EDITION. REMOVE ALL STUMPS AND ROOTS WITHIN THE CLEARED AREA UNLESS OTHERWISE DIRECTED BY THE ENGINEER. GRUBBING IS DEFINED AS THE REMOVAL FROM BELOW THE ORIGINAL GROUND ELEVATION OF STUMPS, ROOTS, STUBS, BRUSH, ORGANIC MATERIALS AND DEBRIS AS WELL AS CONCRETE AND BRICK, AND OTHER OBSTRUCTIONS INTERFERING WITH THE PROPOSED WORK.
7. THE CONTRACTOR SHALL REMOVE THE EXISTING CUT STONE WALL AT THE SITE ACCESS ENTRANCE AND STACK THE CUT STONES AT A LOCATION DESIGNATED BY THE OWNER.
8. STRIP TOPSOIL TO WHATEVER DEPTH IT MAY OCCUR FROM AREAS TO BE EXCAVATED, FILLED, OR GRADED, AND STOCKPILE AT AN APPROVED LOCATION FOR USE IN FINISH GRADING. THE TOPSOIL SHALL NOT BE USED AS BACKFILL. STRIP TOPSOIL TO FULL DEPTH ENCOUNTERED IN AREAS INDICATED TO BE GRADED IN MANNER TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR WASTE MATERIALS. STOCKPILE SUFFICIENT TOPSOIL MATERIAL TO FACILITATE SEEDING AND LANDSCAPING. STOCKPILE AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH SUBSOIL. GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. PROTECT SOIL STOCKPILES USING EROSION AND SEDIMENT CONTROL MEASURES AS DIRECTED BY THE ENGINEER OR PROJECT MANAGER.
9. DO NOT DEPOSIT OR BURY ON THE SITE DEBRIS RESULTING FROM THE CLEARING AND GRUBBING WITHOUT WRITTEN PERMISSION FROM THE ENGINEER OR PROJECT MANAGER.
10. ALL EARTHWORK SHALL BE IN ACCORDANCE WITH SECTION 207 OF THE WDOH SPECIFICATIONS, LATEST EDITION, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER OR PROJECT MANAGER.
11. SUBSEQUENT TO THE REMOVAL OF THE TOPSOIL, AND PRIOR TO FILL PLACEMENT, EXPOSED SURFACES SHOULD BE COMPACTED AND/OR PROOF ROLLED UNTIL A RELATIVELY UNYIELDING SURFACE IS ACHIEVED.
12. SUITABLE SOIL MATERIALS ARE AS THOSE COMPLYING WITH SECTION 207 OF THE WDOH SPECIFICATIONS, LATEST EDITION.
13. ON-SITE MATERIAL FOR USE AS FILL SHALL CONSIST OF EXCAVATED SOIL FROM OTHER PORTIONS OF THE SITE. THE CONTRACTOR SHALL USE THE ON-SITE SOIL JUDICIOUSLY TO FACILITATE THE CONSTRUCTION SCHEDULE INCLUDING THE USE OF THE MOST READILY COMPACTABLE SOIL FOR FILL. TOPSOIL SHALL NOT BE UTILIZED AS ENGINEERED FILL. EXCAVATED MATERIAL CONTAINING ROCK, STONE OR MASONRY DEBRIS SMALLER THAN SIX INCHES IN ITS LARGEST DIMENSION, MAY BE MIXED WITH SUITABLE MATERIAL AND UTILIZED EXCEPT IN THE IMPOUNDMENT PIT CORE.
14. EXCAVATED MATERIAL CONTAINING ROCK, STONE OR MASONRY DEBRIS LARGER THAN TWO (2) INCHES IN ITS LARGEST DIMENSION MAY NOT BE UTILIZED IN THE IMPOUNDMENT PIT CORE.
15. NO MATERIAL GREATER THAN SIX (6) INCHES IN ITS LARGEST DIMENSION MAY BE UTILIZED IN FILLING OPERATIONS.
15. IMPORTED FILL FROM AN OFF-SITE SOURCE SHALL BE FREE OF ALL HAZARDOUS SUBSTANCES. CERTIFICATION OF COMPLIANCE AND, IF REQUESTED, TEST RESULTS SUBSTANTIATING COMPLIANCE SHALL BE FURNISHED TO THE ENGINEER BY THE CONTRACTOR NOT LESS THAN ONE WEEK PRIOR TO ITS INTENDED USE.
16. MEASURES SHALL BE TAKEN TO PREVENT SURFACE WATER AND SUBSURFACE WATER FROM FLOWING INTO EXCAVATION AND FLOODING THE WORK. REMOVE WATER FROM EXCAVATIONS TO PREVENT SOFTENING OF FOUNDATION SOILS AND CREATING SOIL CHANGES DETRIMENTAL TO THE STABILITY OF SUBGRADES. PROVIDE AND MAINTAIN PUMPS, SUMPS, SUCTION AND DISCHARGE LINES, AND OTHER DEWATERING SYSTEM COMPONENTS NECESSARY TO CONVEY WATER AWAY FROM THE SITE. CONVEY WATER REMOVED FROM EXCAVATIONS TO COLLECTION LOCATIONS OR TO APPROVED RUNOFF AREAS.
17. STOCKPILE EXCAVATED MATERIALS CLASSIFIED AS SATISFACTORY SOIL MATERIAL WHEN DIRECTED AND SHAPE THE STOCKPILES FOR PROPER DRAINAGE.
18. NOTIFY THE ENGINEER IF UNSUITABLE SOIL MATERIALS ARE ENCOUNTERED AND EXCAVATE UNSUITABLE SOIL MATERIALS ENCOUNTERED THAT EXTEND BELOW THE REQUIRED ELEVATIONS, TO THE ADDITIONAL DEPTH AS DIRECTED BY THE ENGINEER.
19. FILL SHALL BE PLACED IN HORIZONTAL LIFTS OF MAXIMUM LOOSE DEPTH OF EIGHT (8) INCHES WITH MATERIAL THAT DOES NOT EXCEED 6 INCHES IN DIAMETER. COMPACTOR FOR MASS EARTHWORK SHALL BE A MINIMUM FIVE TON STATIC DRUM WEIGHT VIBRATORY ROLLER OR FIVE TON STATIC DRUM WEIGHT SHEEP FOOTED COMPACTOR AS APPROPRIATE FOR THE TYPE OF SOIL MATERIAL AT THE SITE, OR OTHER COMPACTOR APPROVED BY THE ENGINEER. THE IMPOUNDMENT PIT CORE OF THE EMBANKMENT SHALL BE COMPACTED USING A SHEEP FOOT COMPACTOR TO PROVIDE INTEGRATION OF LIFTS. FILL AND EMBANKMENT SUBGRADE MATERIALS SHALL BE COMPACTED TO AT LEAST 90% OF STANDARD PROCTOR MAXIMUM DRY DENSITY AT A MOISTURE CONTENT OF NOT LESS THAN 2% BELOW NOR GREATER THAN 3% ABOVE OPTIMUM.
20. IN AREAS TO RECEIVE FILL AND AT THE FINAL CUT SUBGRADE, PROOF ROLL AND COMPACT THE EXPOSED GROUND SURFACE FOLLOWING THE CLEARING AND GRUBBING, AND ANY REQUIRED EXCAVATION, WITH A MINIMUM OF FOUR PASSES OF AN APPROVED COMPACTOR TO OBTAIN AT LEAST THE DENSITY REQUIRED FOR A SUITABLE IMPOUNDMENT PIT FOUNDATION AND AS INDICATED BELOW. PROOF ROLLING SHALL BE UNDER THE OBSERVATION OF THE ENGINEER AS DESCRIBED BELOW. IMMEDIATELY FOLLOWING THE COMPLETION OF EXCAVATION TO PROPOSED SUBGRADES IN CUT AREAS, PROOF ROLLING SHALL BE PERFORMED AS SPECIFIED. ANY AREAS WHICH DEFLECT, RUT, OR PUMP UNDER THE LOADED DUMP TRUCK SHALL BE UNDERCUT AND REPLACED WITH COMPACTED FILL MATERIAL, OR STONE BASE COURSE, AS DIRECTED BY THE ENGINEER. PROOF ROLLING SHALL BE DONE WITH ONE PASS OF A FULLY LOADED TANDEM DUMP TRUCK HAVING A GROSS WEIGHT EQUAL TO OR EXCEEDING 50,000 LBS. OR BY USE OF OTHER CONSTRUCTION EQUIPMENT, IF APPROVED BY THE ENGINEER. PROOF ROLLING METHODS SHALL BE AS FOLLOWS:
 - A. AFTER THE SUBGRADE HAS BEEN COMPLETED THE SUBGRADE SHALL THEN BE PROOF ROLLED. THE COVERAGE AREAS AND METHODS WILL BE IDENTIFIED BY THE ENGINEER.
 - B. THE EQUIPMENT SHALL BE OPERATED AT A SPEED THAT ALLOWS THE ENGINEER TO COMFORTABLY AND SLOWLY WALK ALONG SIDE THE EQUIPMENT.
 - C. IF CORRECTIVE ACTIONS BECOME NECESSARY, SUCH AS BUT NOT LIMITED TO: UNDERDRAIN INSTALLATION, UNDERCUT AND BACKFILL OF AN UNSUITABLE MATERIAL, AND/OR AERATION OF EXCESSIVELY WET MATERIAL IN AREAS THAT HAVE BEEN PROOF ROLLED, THESE AREAS SHALL BE PROOF ROLLED AGAIN FOLLOWING THE COMPLETION OF THE NECESSARY CORRECTIONS.
21. PHOTOGRAPHIC DOCUMENTATION IS REQUIRED DURING ALL PHASES OF CONSTRUCTION. THE PHOTOGRAPHS SHALL BE DIGITAL AND DELIVERED TO THE ENGINEER ON A CD. EACH PHOTOGRAPH SHALL BE IDENTIFIED BY DATE AND A BRIEF DESCRIPTION. PHOTOGRAPHIC DOCUMENTATION SHALL INCLUDE:
 - A. THE SITE AFTER CLEARING AND GRUBBING OPERATIONS ARE COMPLETED.
 - B. TOE KEY CONSTRUCTION.
 - C. DAILY PHOTOS OF FILL AND CUT OPERATIONS.
 - D. GENERAL PHOTOS OF THE CONSTRUCTION PROCESS.
22. BEFORE ANY AS-BUILT DRAWINGS CAN BE CONSIDERED CERTIFIED, A COMPLETE CONSTRUCTION SCHEDULE DETAILING: SITE CONDITIONS, PROJECT AREAS WORKED, APPROXIMATE DEPTH OF FILL PLACED AND WEATHER CONDITIONS WILL BE PROVIDED TO THE DESIGN ENGINEER.
23. PRIOR TO THE INSTALLATION OF THE IMPERVIOUS LINER, THE ENGINEER WILL BE CONTACTED TO PERFORM A GRADE VERIFICATION SURVEY FOR THE AS-BUILT DRAWINGS. ANY VARIANCE IN GRADE WILL BE AT THE ENGINEER'S DISCRETION AS TO THE EFFECT ON THE IMPOUNDMENT.

05/14/2022

ANTERO RESOURCES

BOWYER PAD SITE

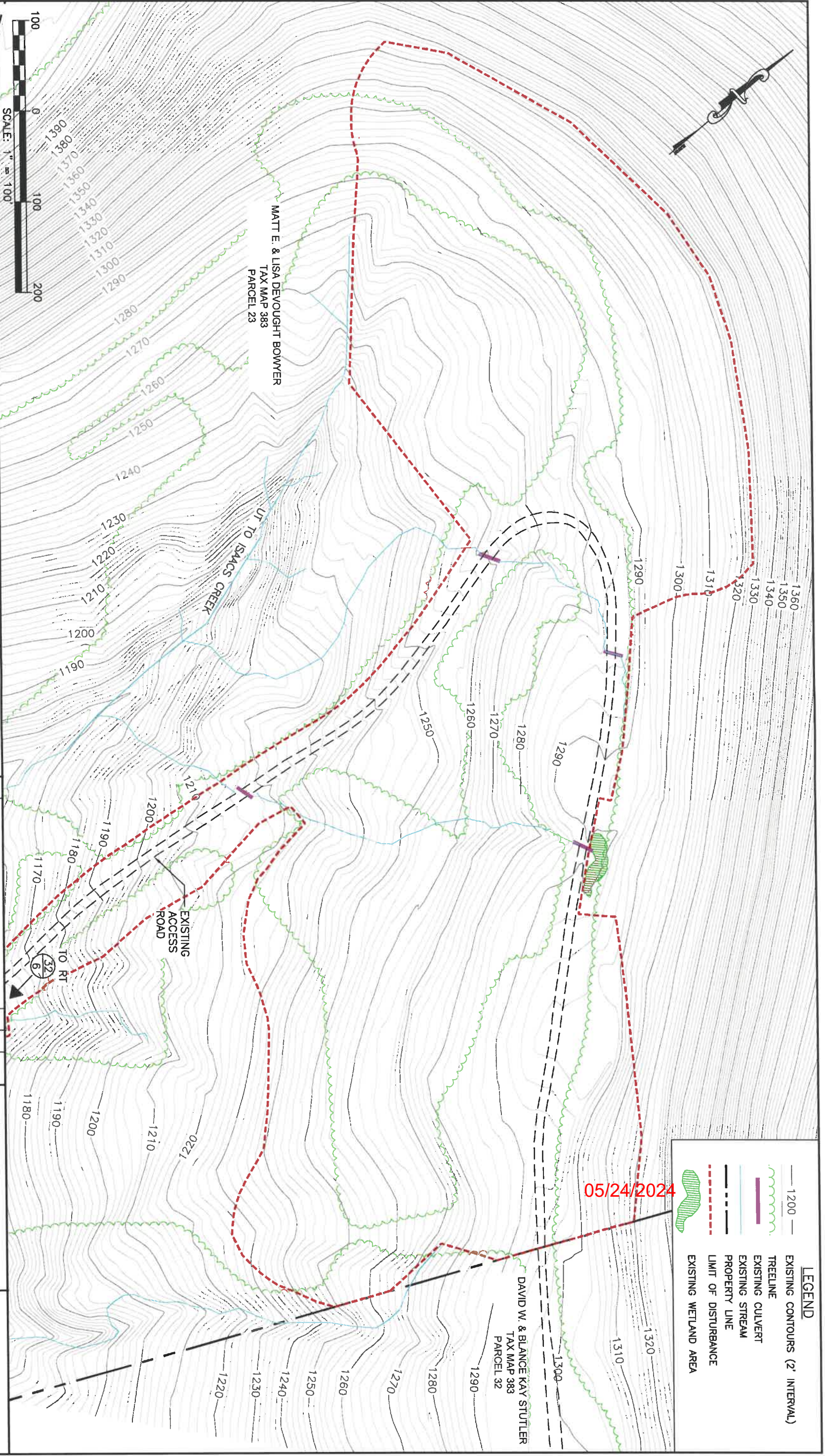
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



NO.	DESCRIPTION	CHG'D	APPR'D	DATE
REVISIONS				

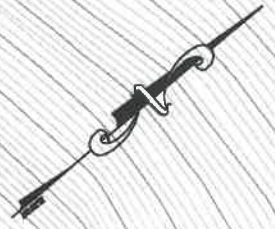


DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No.:	237605
DWG SCALE:	NOT TO SCALE



LEGEND

- 1200 — EXISTING CONTOURS (2' INTERVAL)
- ~ TREELINE
- EXISTING CULVERT
- EXISTING STREAM
- - - PROPERTY LINE
- - - LIMIT OF DISTURBANCE
- EXISTING WETLAND AREA



ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:



NO.	DESCRIPTION	DATE	BY	CHKD	APP'D

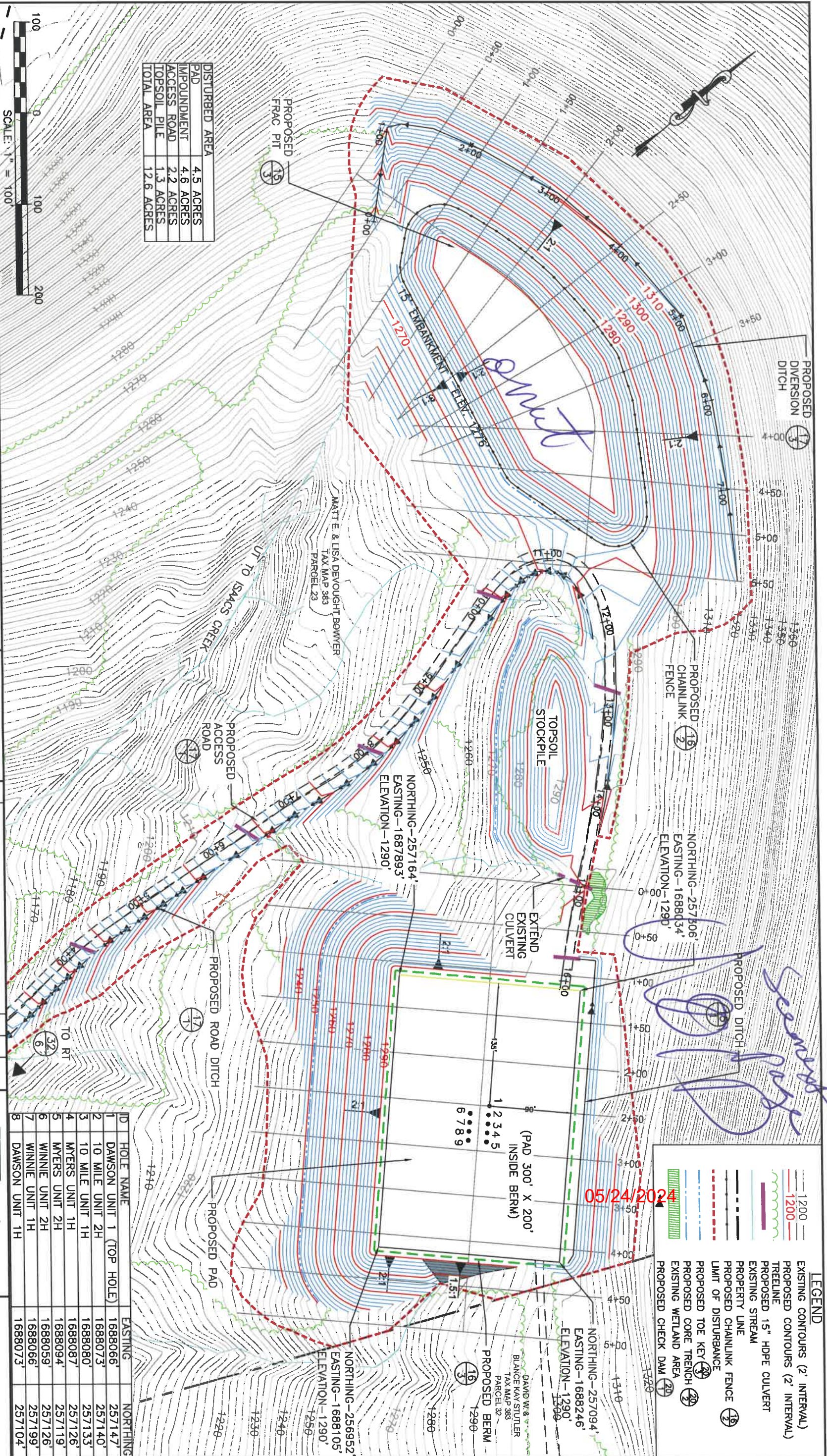


DESIGNED BY: HMM
 DRAWN BY: HMM
 APPROVED BY: HMM
 DATE: HMM
 HMM PROJECT No: 297605
 DWG SCALE: 1" = 100'

EXISTING CONDITIONS

SHEET 4 OF 21

M. Johnson



DISTURBED AREA	
PAD	4.5 ACRES
IMPOUNDMENT	4.6 ACRES
ACCESS ROAD	2.2 ACRES
TOPSOIL PILE	1.3 ACRES
TOTAL AREA	12.6 ACRES



ANTERO RESOURCES

BOWYER PAD SITE

UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:



ID	HOLE NAME	EASTING	NORTHING
1	DAWSON UNIT 1 (TOP HOLE)	1688066'	257147'
2	10 MILE UNIT 2H	1688073'	257140'
3	10 MILE UNIT 1H	1688080'	257133'
4	MYERS UNIT 1H	1688087'	257126'
5	MYERS UNIT 2H	1688094'	257119'
6	WINNIE UNIT 2H	1688059'	257126'
7	WINNIE UNIT 1H	1688066'	257199'
8	DAWSON UNIT 1H	1688073'	257104'

NO.	DESCRIPTION	CHKD	APPRD	DATE

SITE PLAN

SHEET 5 OF 21

2/20/22

LEGEND

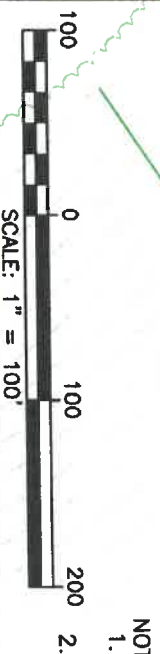
- EXISTING CONTOURS (2' INTERVAL)
- PROPOSED CONTOURS (2' INTERVAL)
- TREELINE
- PROPOSED 15" HDPE CULVERT
- EXISTING STREAM
- PROPERTY LINE
- PROPOSED CHAINLINK FENCE
- LIMIT OF DISTURBANCE
- PROPOSED TOE KEY
- PROPOSED CORE TRENCH
- EXISTING WETLAND AREA
- PROPOSED CHECK DAM

05/24/2024

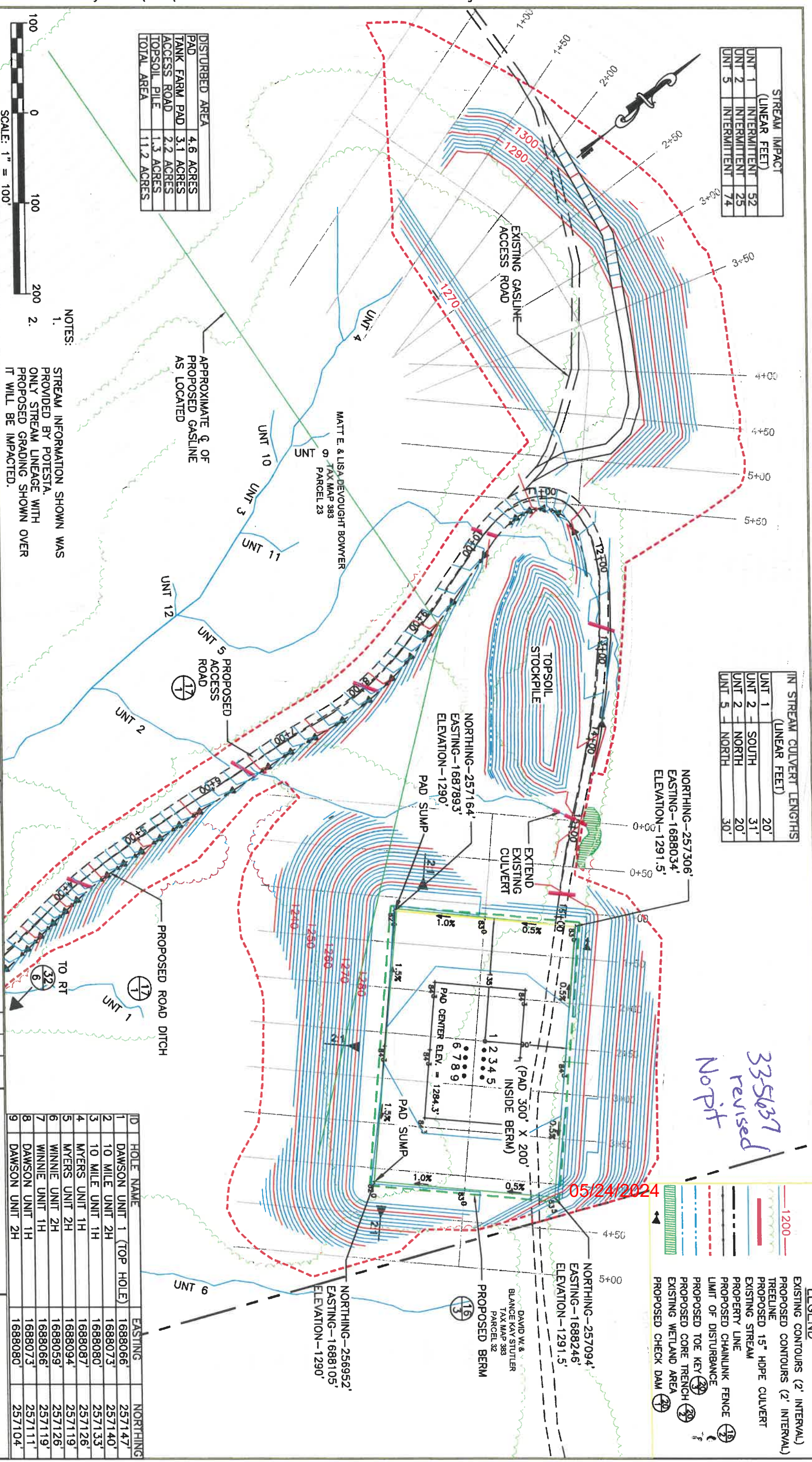
STREAM IMPACT	
UNIT	(LINEAR FEET)
UNIT 1	52
UNIT 2	25
UNIT 5	74

IN STREAM CULVERT LENGTHS	
UNIT	(LINEAR FEET)
UNIT 1	20'
UNIT 2	31'
UNIT 5	30'

DISTURBED AREA	
PAD	4.6 ACRES
TANK FARM PAD	3.1 ACRES
ACCESS ROAD	2.2 ACRES
TOPSOIL PILE	1.3 ACRES
TOTAL AREA	11.2 ACRES



NOTES:
1. STREAM INFORMATION SHOWN WAS PROVIDED BY POTESTA.
2. ONLY STREAM LINEAGE WITH PROPOSED GRADING SHOWN OVER IT WILL BE IMPACTED.



LEGEND

- EXISTING CONTOURS (2' INTERVAL)
- PROPOSED CONTOURS (2' INTERVAL)
- TREELINE
- PROPOSED 15" HDPE CULVERT
- EXISTING STREAM
- PROPERTY LINE
- PROPOSED CHAINLINK FENCE
- LIMIT OF DISTURBANCE
- PROPOSED TOE KEY
- PROPOSED CORE TRENCH
- EXISTING WETLAND AREA
- PROPOSED CHECK DAM

335637 Revised No pit

05/24/2024

ANTERO RESOURCES

BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



Hatch Mott MacDonald

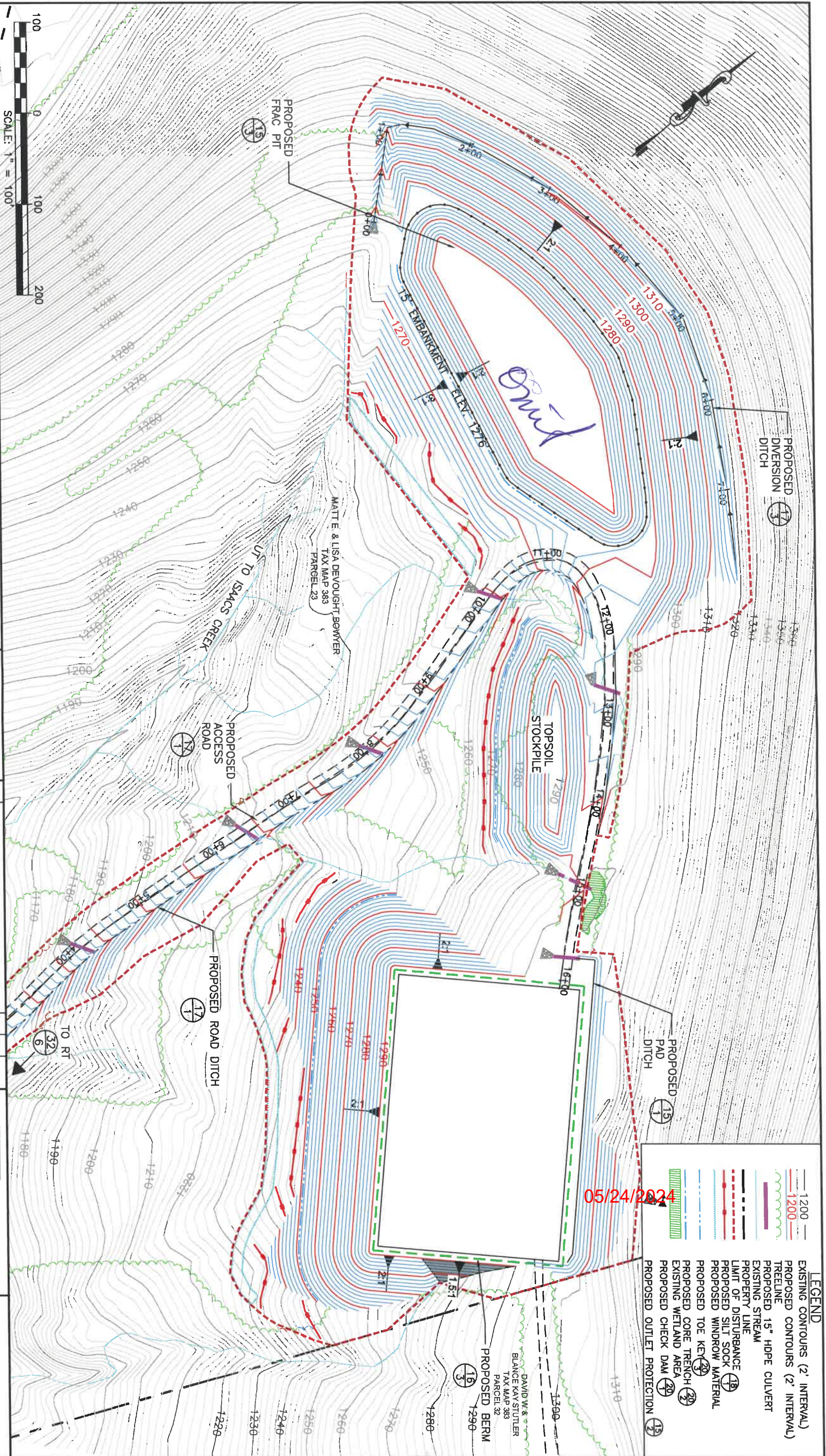
SITE PLAN

NO.	DESCRIPTION	DATE	CHK'D	APP'D
1	STREAM IMPACT DELINEATION	3.27.12	HMM	HMM
2	STREAM IMPACT DELINEATION	4.26.12	HMM	HMM
3	POND CHANGED TO TANK FARM/PAD CHANGES	5.22.12	HMM	HMM

DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT NO.:	297605
DWG SCALE:	1" = 100'

ID	HOLE NAME	EASTING	NORTHING
1	DAWSON UNIT 1 (TOP HOLE)	1688066'	257147'
2	10 MILE UNIT 2H	1688073'	257140'
3	10 MILE UNIT 1H	1688080'	257133'
4	MYERS UNIT 1H	1688087'	257126'
5	MYERS UNIT 2H	1688094'	257119'
6	WINNIE UNIT 2H	1688059'	257126'
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9	DAWSON UNIT 2H	1688080'	257104'

RAJ 5/20/12



LEGEND

- 1200 — EXISTING CONTOURS (2' INTERVAL)
- 1200 — PROPOSED CONTOURS (2' INTERVAL)
- TREELINE
- PROPOSED 15" HDPE CULVERT
- EXISTING STREAM
- LIMIT OF DISTURBANCE
- PROPOSED SILT SOCK
- PROPOSED WINDROW MATERIAL
- PROPOSED TOE KERB
- PROPOSED CORE TRENCH
- EXISTING WETLAND AREA
- PROPOSED CHECK DAM
- PROPOSED OUTLET PROTECTION

05/24/2024

ANTERO RESOURCES
BOWYER PAD SITE
 UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



CLIENT: _____

NO.	DESCRIPTION	DATE	BY	CHKD	APPRD

DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT NO.:	297605
DWG SCALE:	1" = 100'

SITE PLAN
E&S CONTROL
 SHEET 6 OF 21

Handwritten signature/initials



ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:



NO.	DESCRIPTION	CHKD	APPR	DATE

Hatch Mott MacDonald

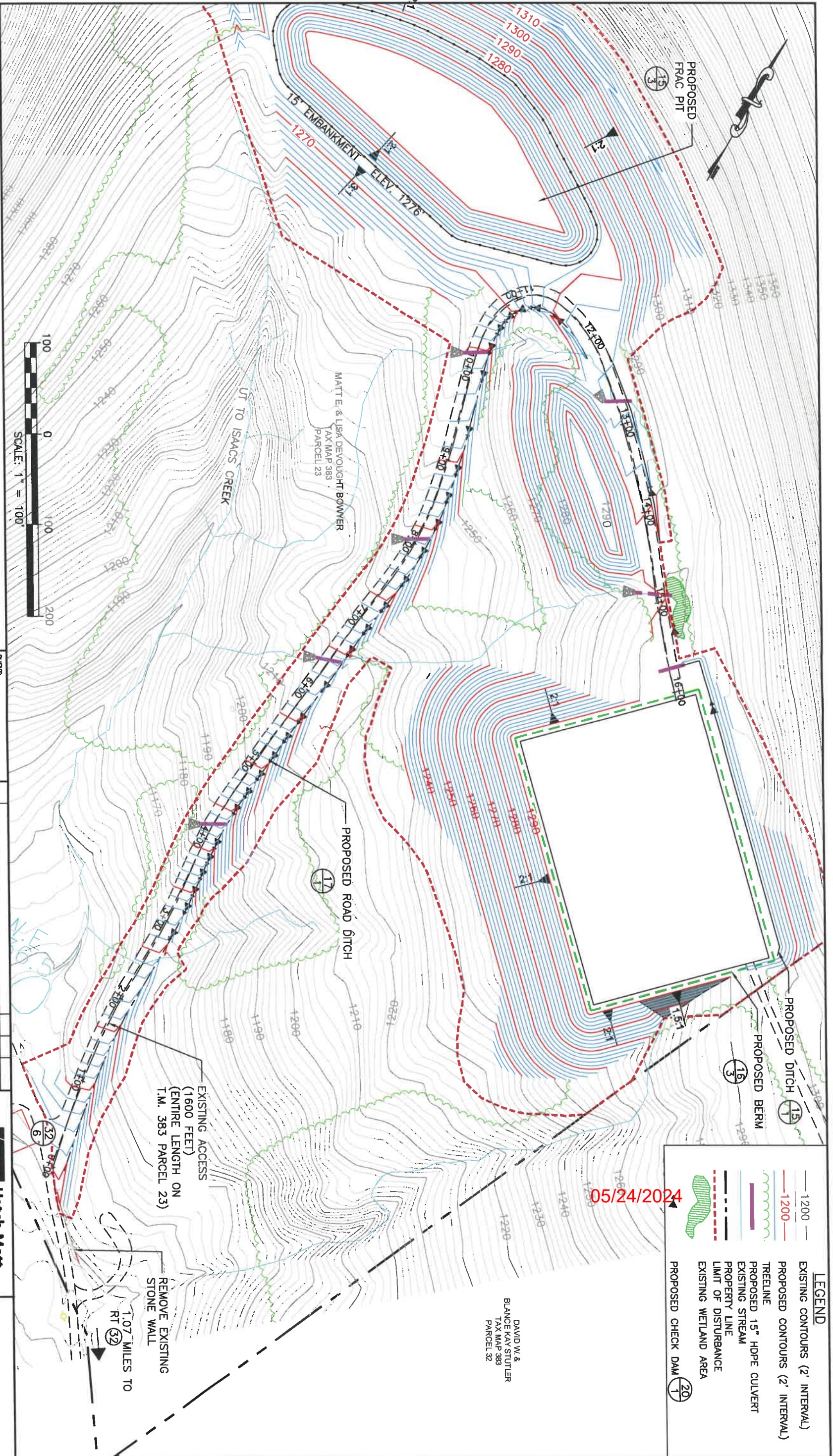
DESIGNED BY: HMM
 DRAWN BY: HMM
 APPROVED BY: HMM
 DATE: 29/7/05
 HMM PROJECT No.: 297605
 DWG SCALE: 1" = 100'

SITE PLAN
AERIAL VIEW

SHEET 7 OF 21

05/24/2024

M. McDonald



LEGEND

- 1200 — EXISTING CONTOURS (2' INTERVAL)
- 1200 — PROPOSED CONTOURS (2' INTERVAL)
- TREELINE
- PROPOSED 15" HDPE CULVERT
- EXISTING STREAM
- PROPERTY LINE
- LIMIT OF DISTURBANCE
- EXISTING WETLAND AREA
- PROPOSED CHECK DAM

05/24/2024

ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



CLIENT:

NO.	DESCRIPTION	CHK'D	APP'D	DATE



DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No:	297605
DWG SCALE:	1" = 100'

ACCESS ROAD PLAN
 SHEET 8 OF 21

Handwritten signature



ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



CLIENT:

NO.	DESCRIPTION	CHKD	APP'D	DATE

Hatch Mott MacDonald

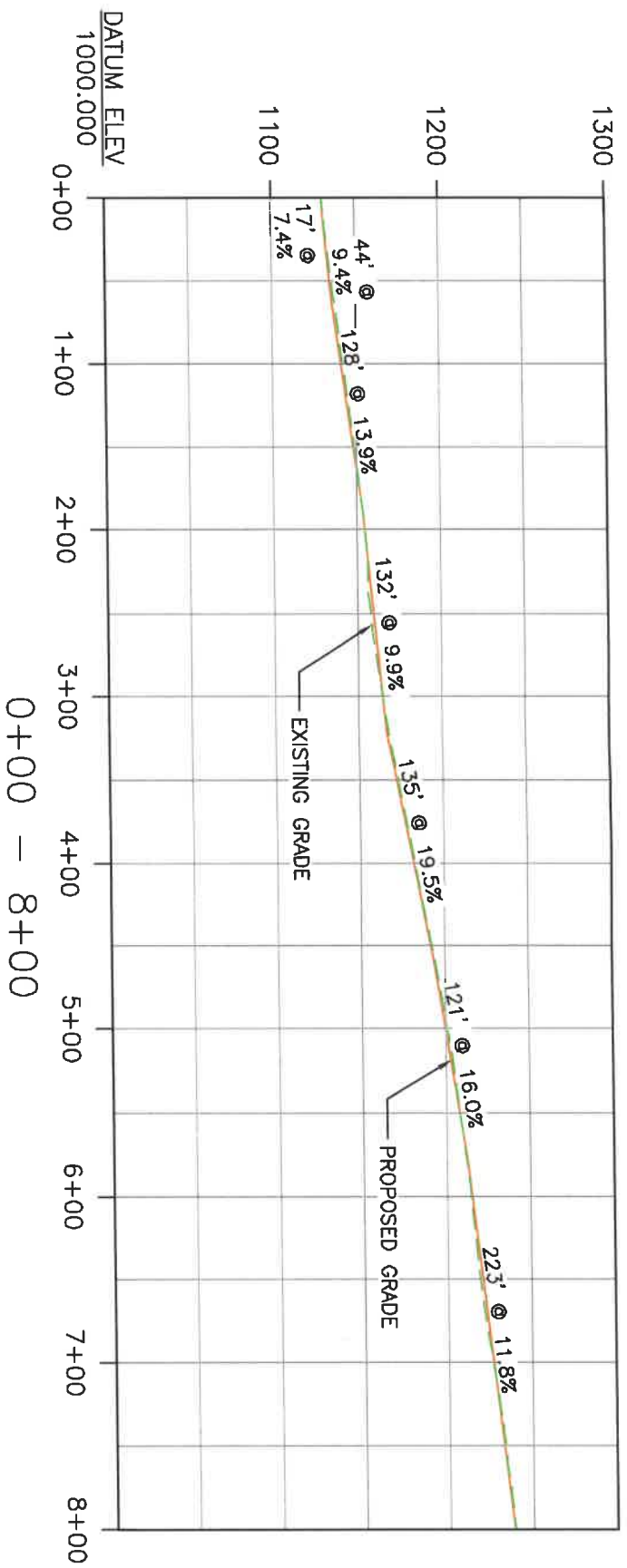
DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT NO.:	297605
DWG SCALE:	1" = 100'

ACCESS ROAD PLAN
AERIAL VIEW

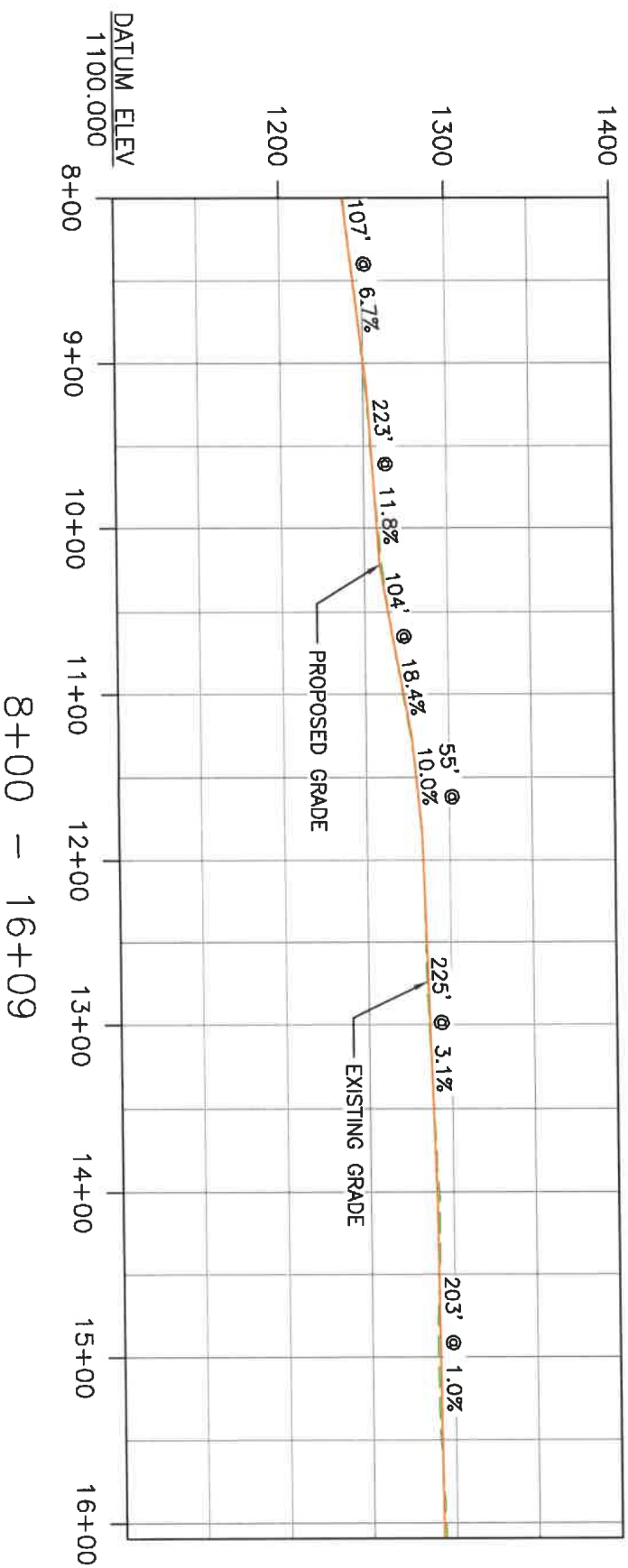
SHEET 9 OF 21

TRJ

05/24/2024



05/24/2024



ANTERO RESOURCES
BOWYER PAD SITE
 UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



CLIENT:

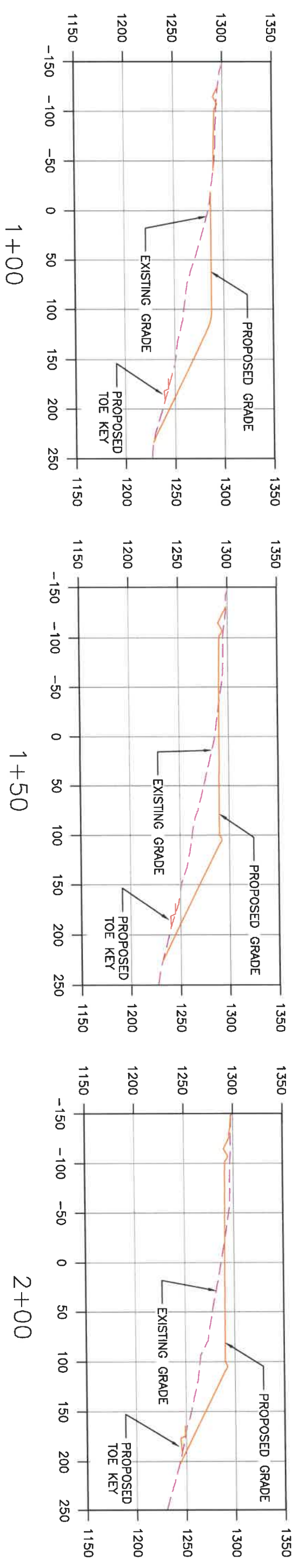
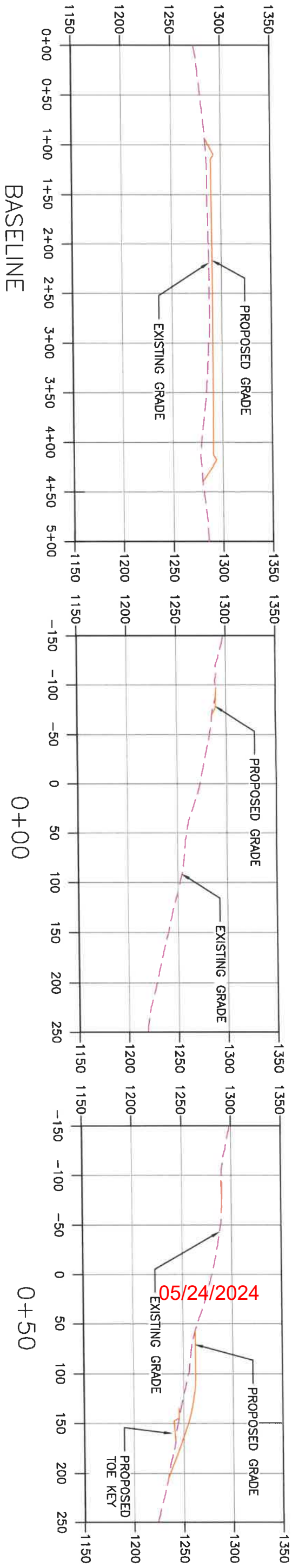
NO.	DESCRIPTION	CHK'D	APP'D	DATE
1				



DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No.:	297605
DWG SCALE:	1" = 100'

ACCESS ROAD
 PROFILE

SHEET 10 OF 21



ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:

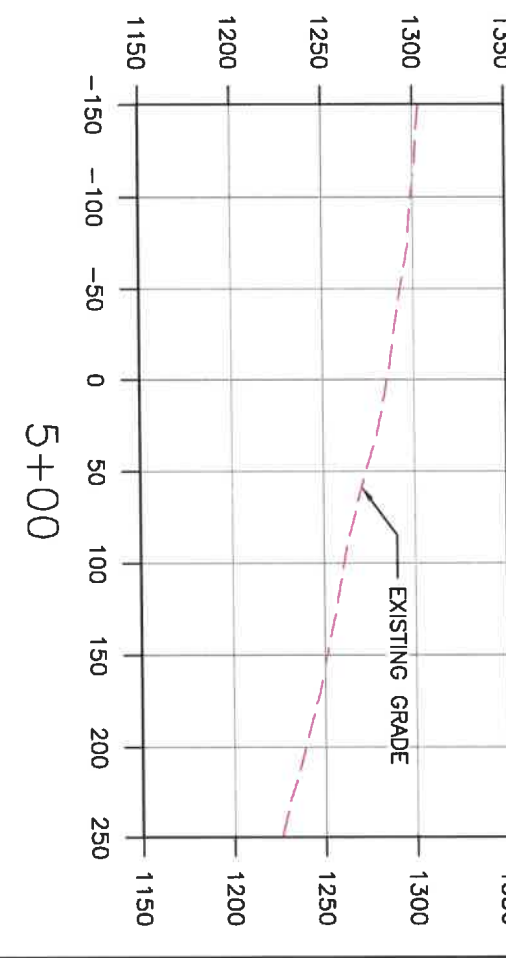
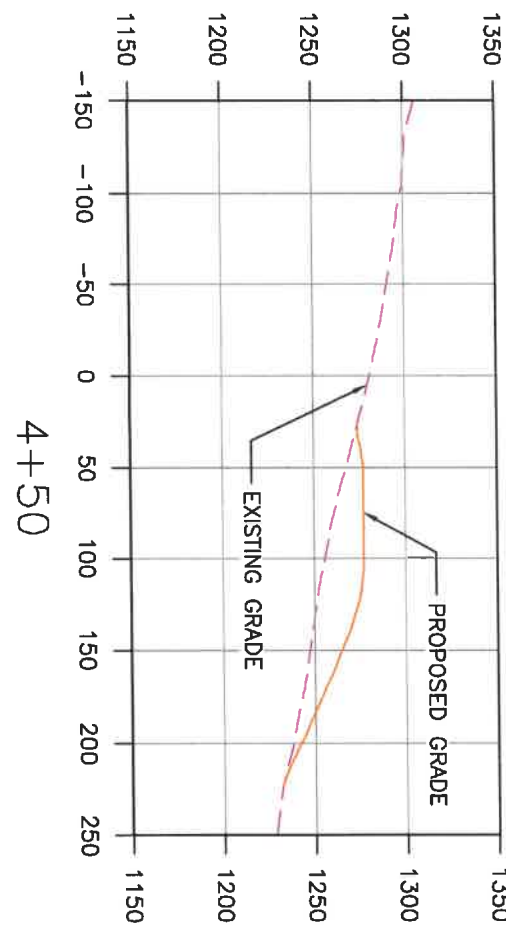
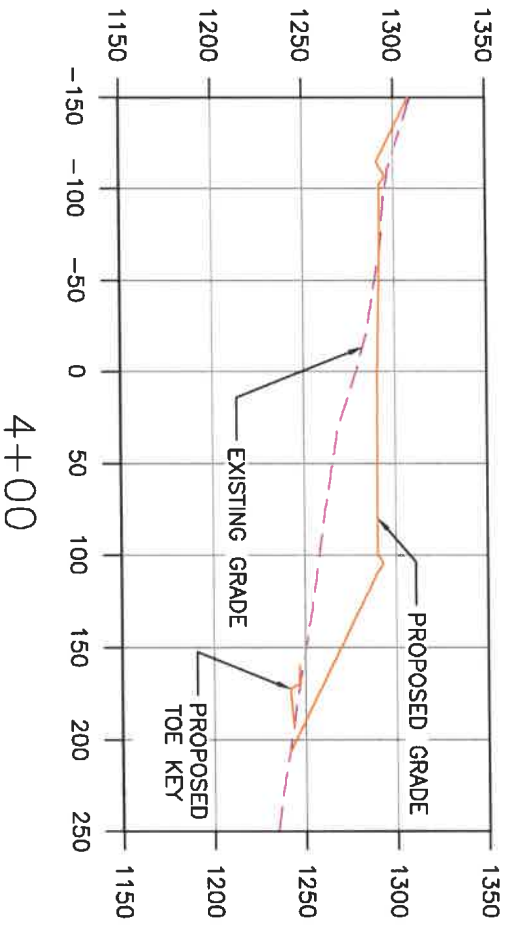
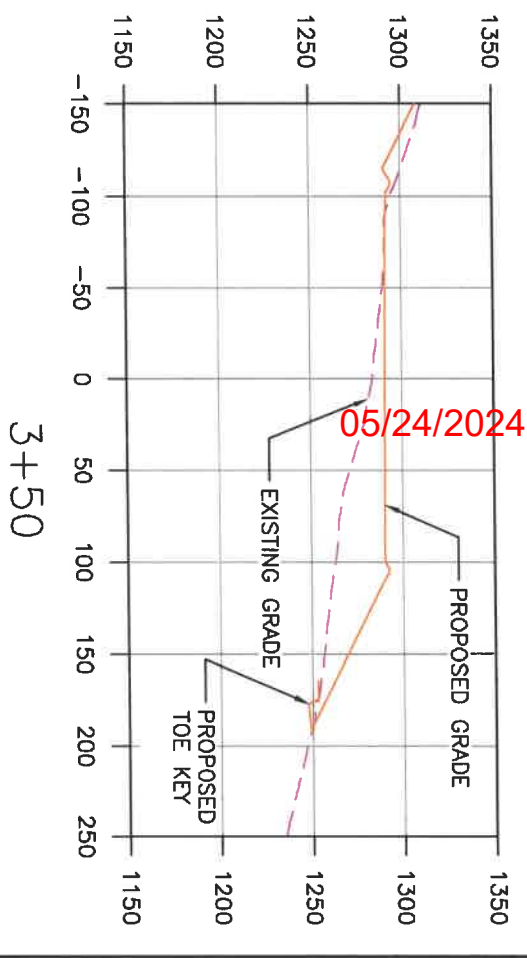
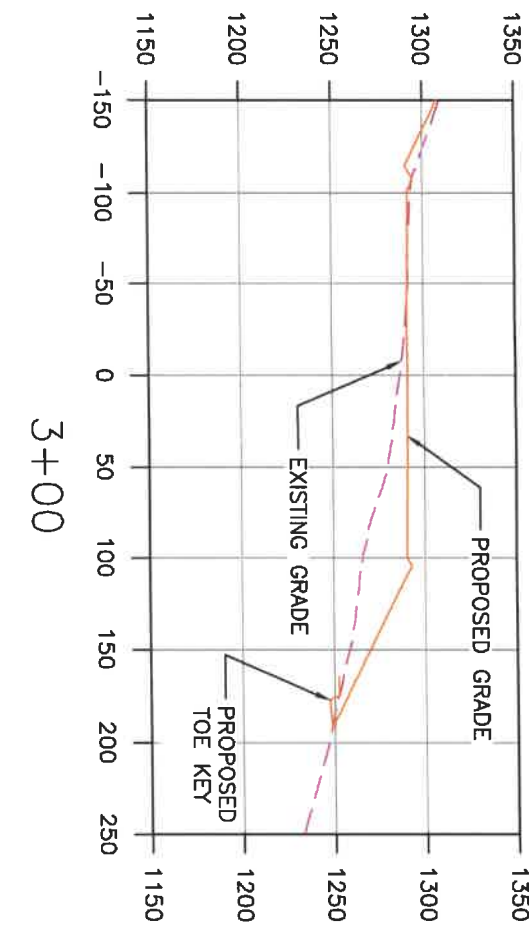
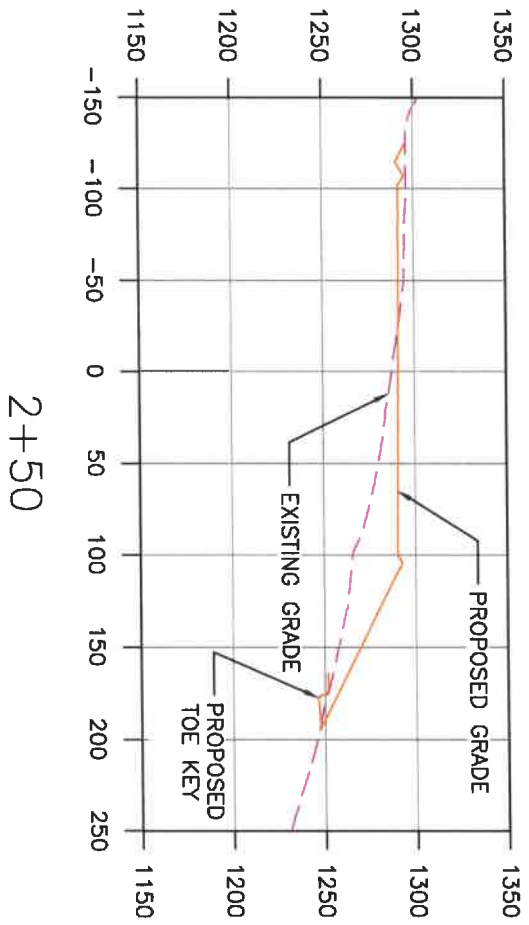


NO.	DESCRIPTION	CHK'D	APP'D	DATE



DESIGNED BY: HMM
 DRAWN BY: HMM
 APPROVED BY: HMM
 DATE: 2/27/2025
 HMM PROJECT No.: 297605
 DWG SCALE: 1" = 100'

PAD
 CROSS SECTIONS
 BASELINE - 2+00



ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



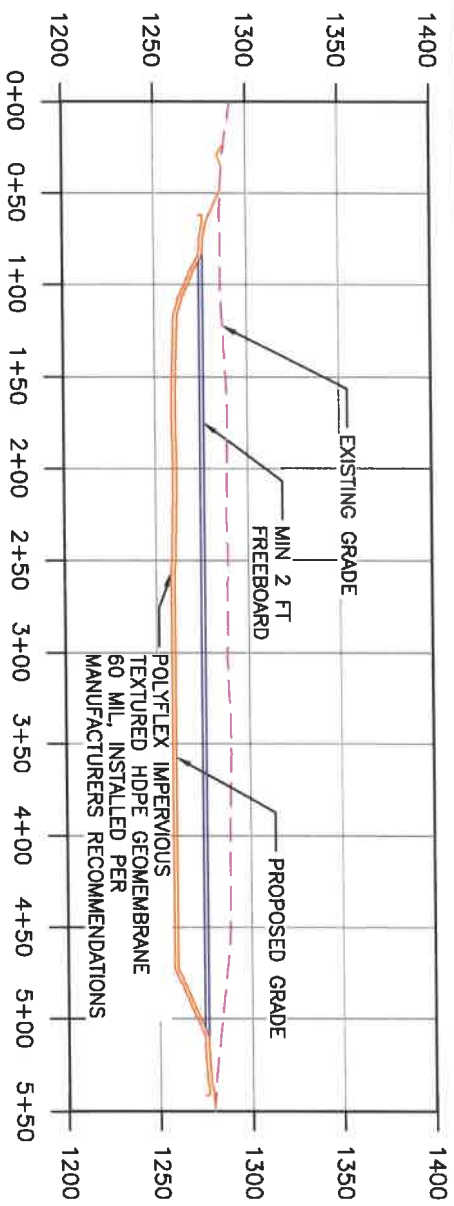
CLIENT

NO.	DESCRIPTION	CHK'D	APP'D	DATE
REVISIONS				



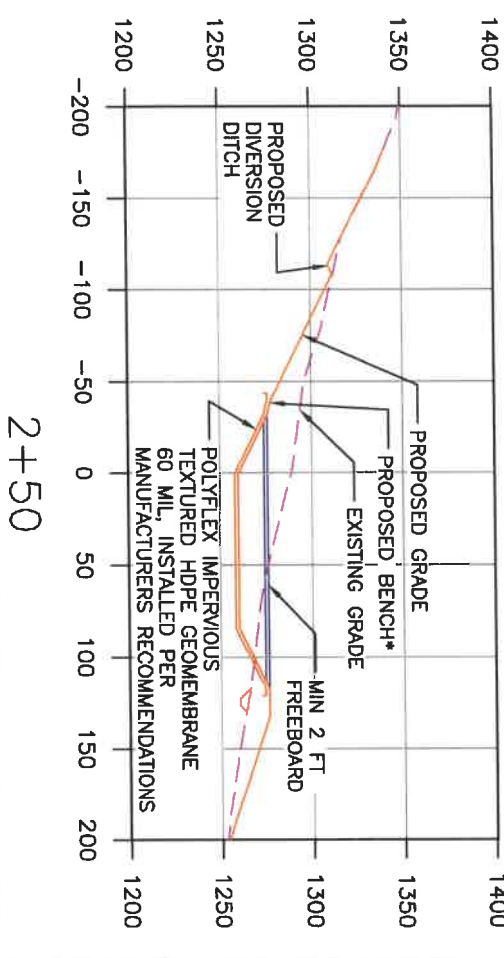
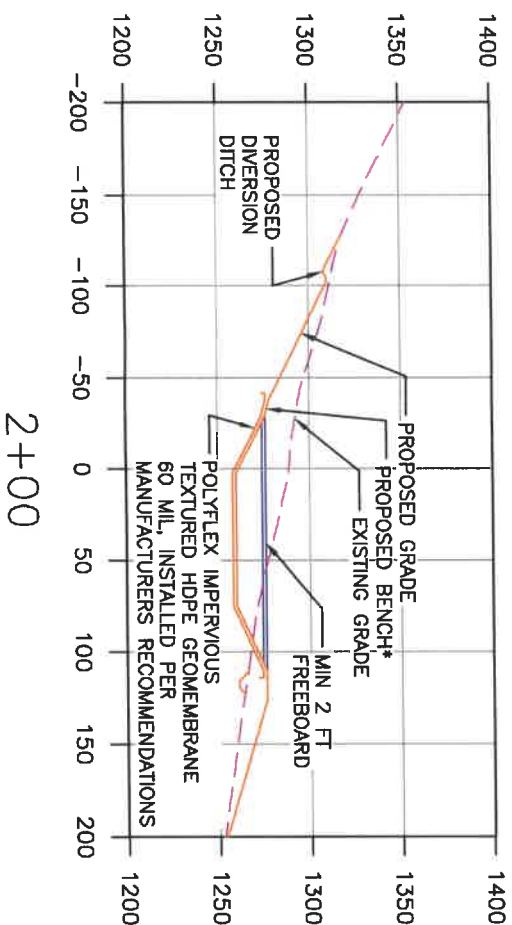
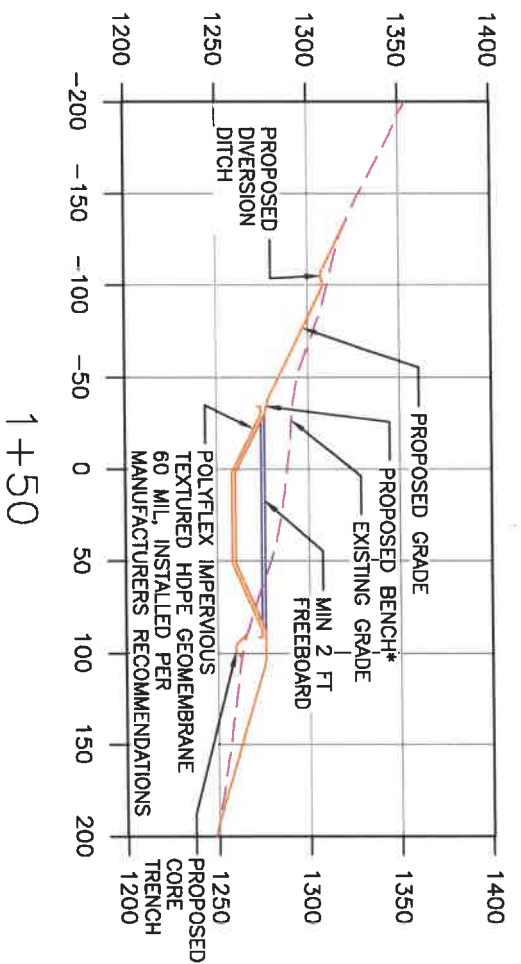
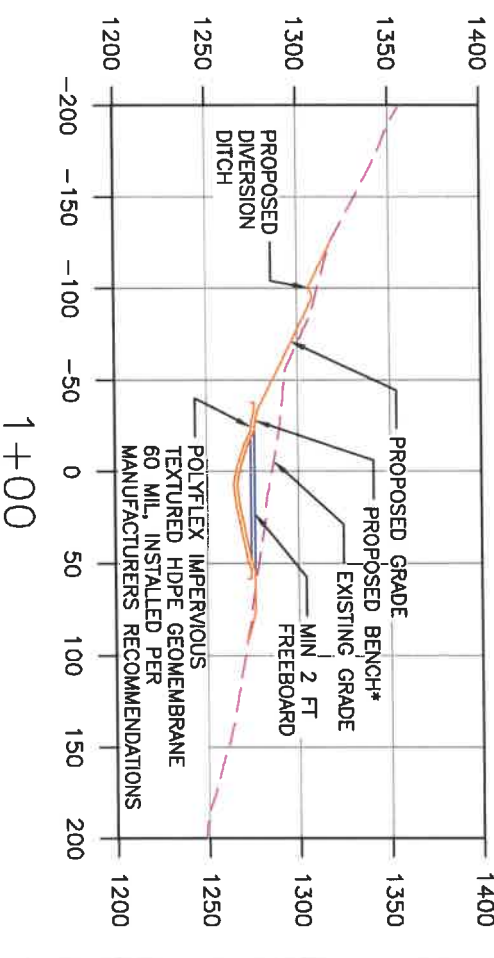
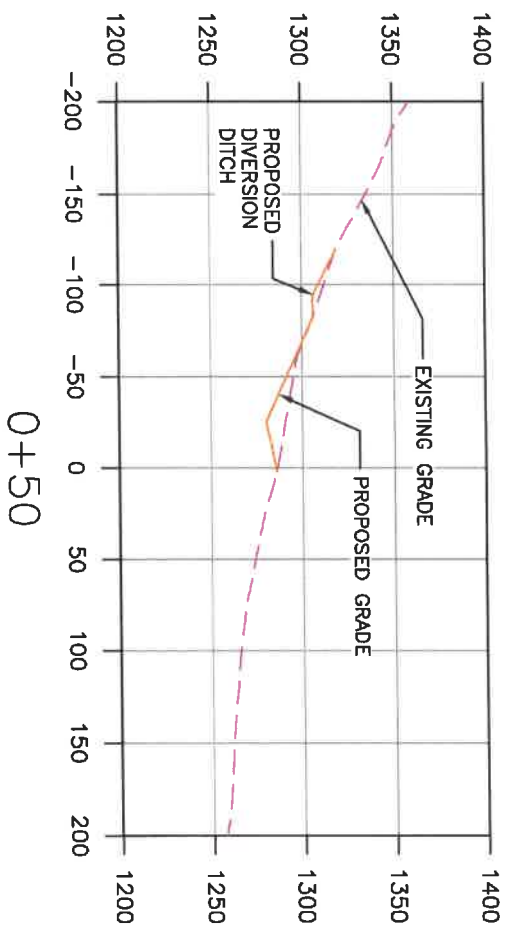
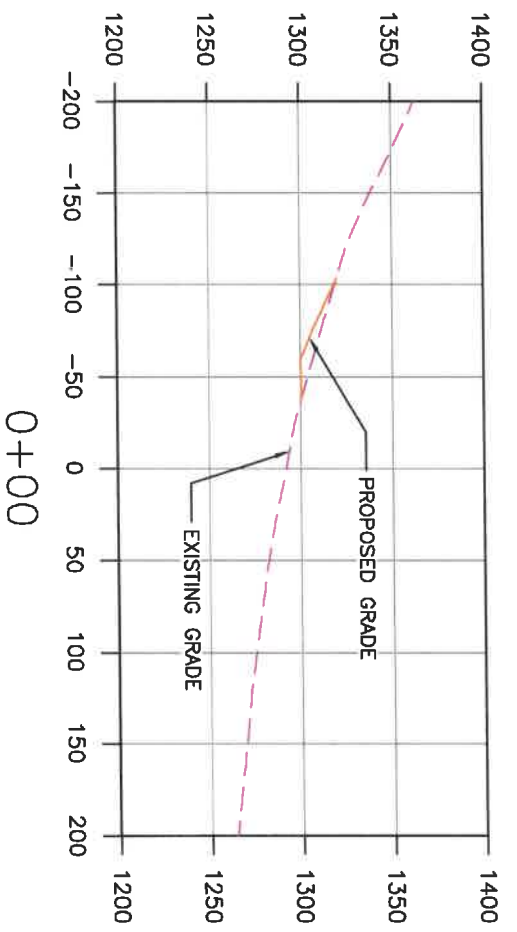
DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT NO.:	297605
DWG SCALE:	1" = 100'

PAD
CROSS SECTIONS
 2+50 - 5+00



* BENCH PROPOSED TO FACILITATE PLACEMENT OF SIX (6) FOOT CHAINLINK SAFETY FENCE

05/24/2024



ANTERO RESOURCES

BOWYER PAD SITE

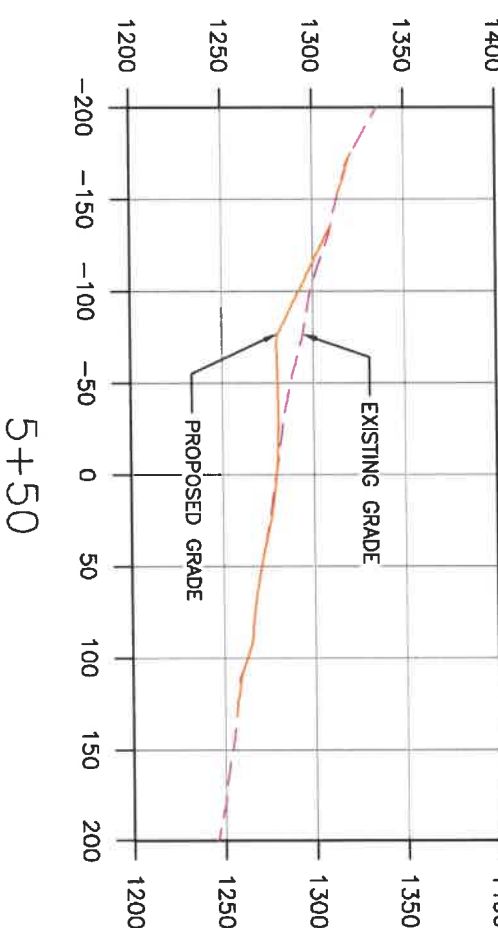
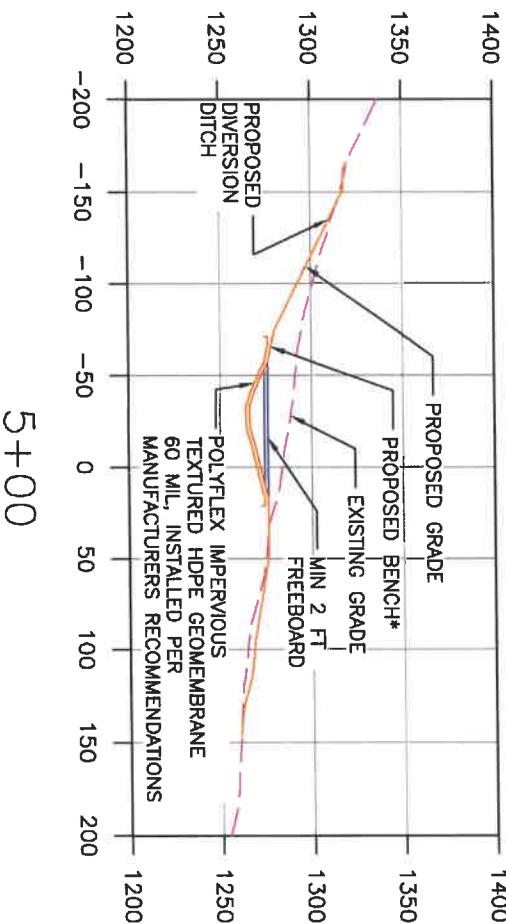
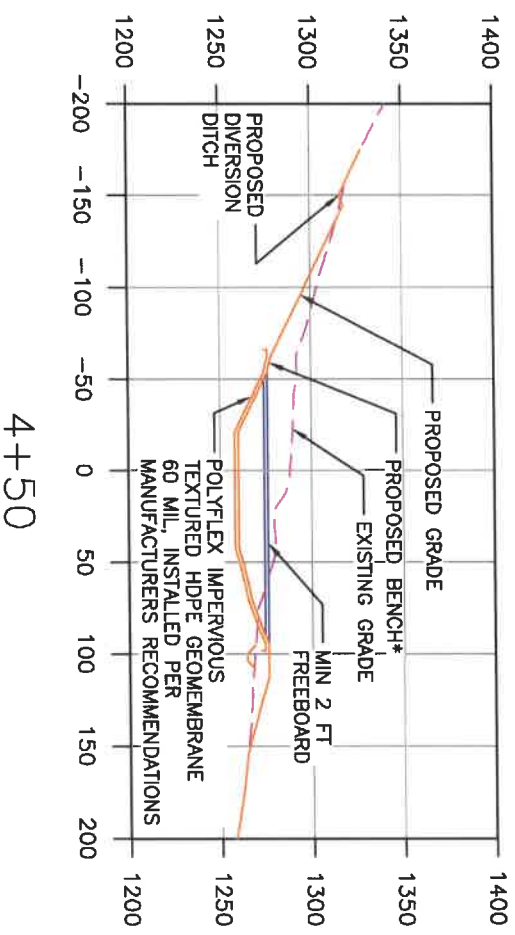
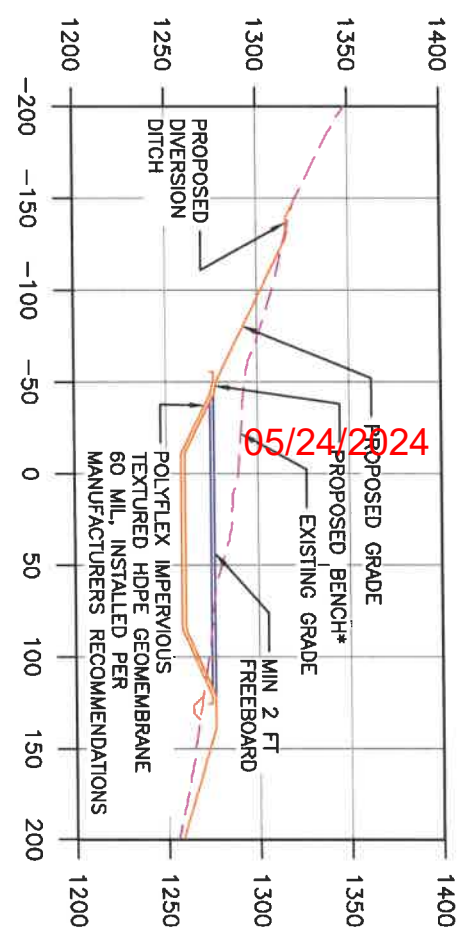
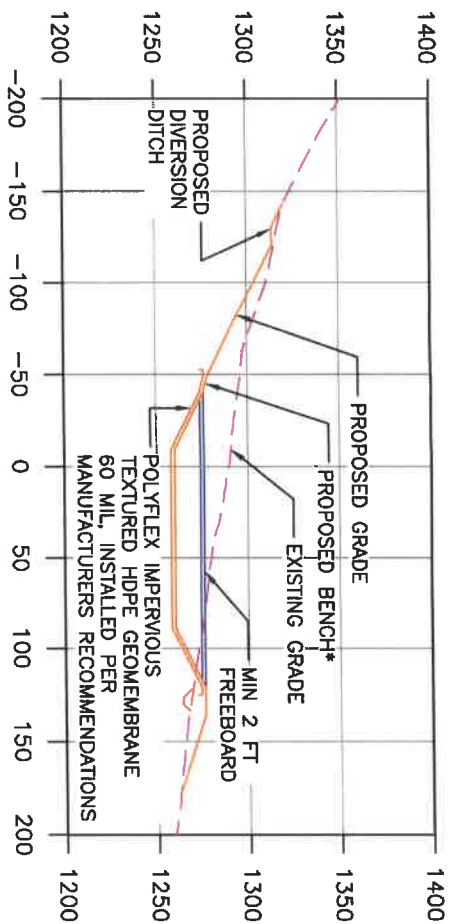
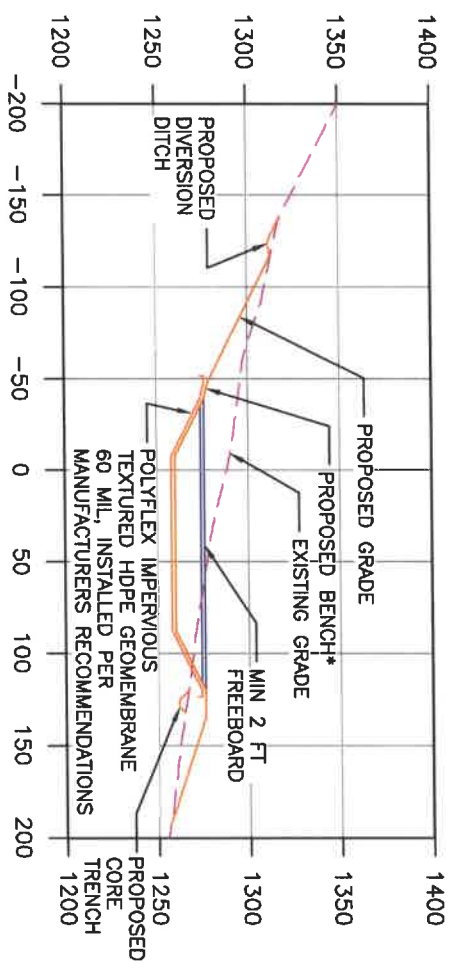
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



NO.	DESCRIPTION	CHK'D	APP'D	DATE
	REVISIONS			



DESIGNED BY:	HMM	FRAC PIT CROSS SECTIONS BASELINE - 2+50
DRAWN BY:	HMM	
APPROVED BY:	HMM	SHEET 13 OF 21
DATE:	2/7/2025	
HMM PROJECT No:	297605	
DWG SCALE:	1" = 100'	



* BENCH PROPOSED TO FACILITATE PLACEMENT OF SIX (6) FOOT CHAINLINK SAFETY FENCE

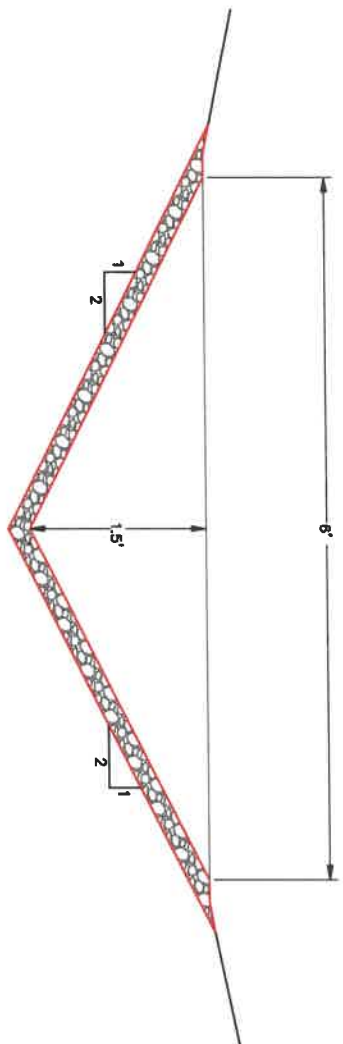
ANTERO RESOURCES
 BOWYER PAD SITE
 UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



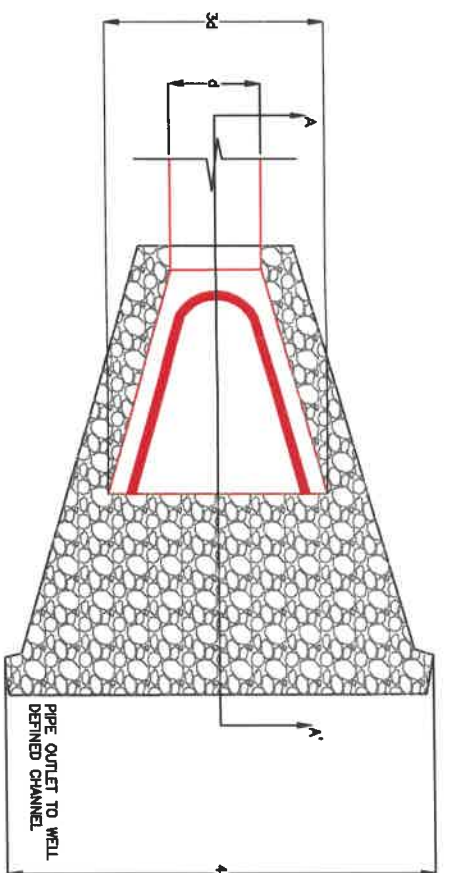
NO.	DESCRIPTION	CHK'D	APP'D	DATE
	REVISIONS			

DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No.:	297605
DWG SCALE:	1" = 100'

FRAC PIT
 CROSS SECTIONS
 3+00 - 5+50

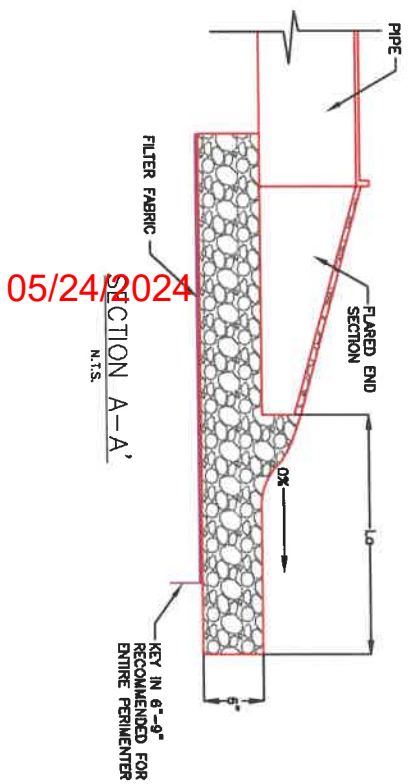


15/1 PAD DITCH SECTION
N.T.S.



PLAN
N.T.S.

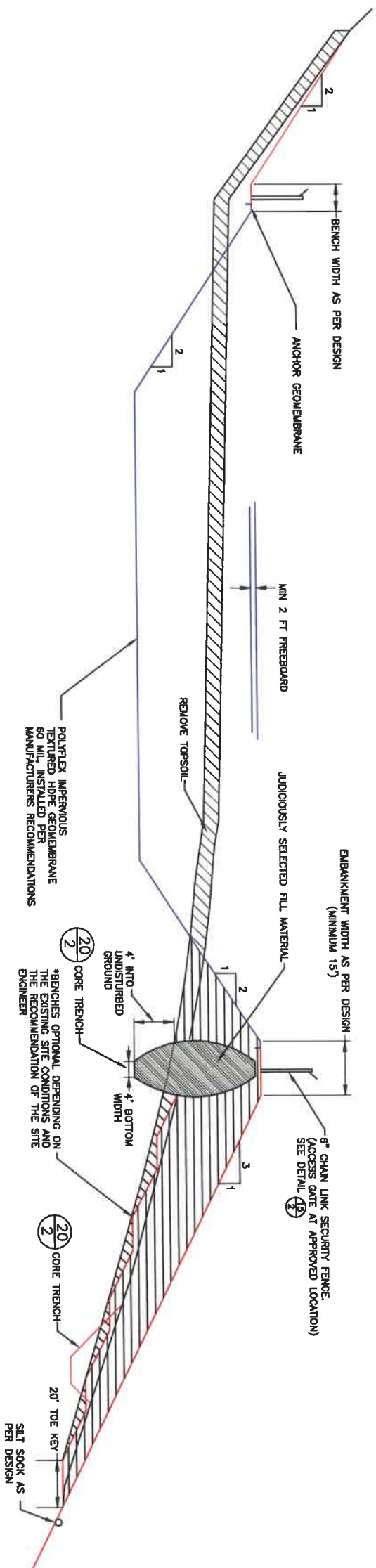
PIPE DIAMETER (INCHES)	DISCHARGE (CFS)	APRON LENGTH (FEET)	RIIP RAP D50 DIAMETER (MIN INCHES)
15	5	10	4
18	9	10	6



05/24/2024

SECTION A-A'
N.T.S.

15/2 TYPICAL INLET / OUTLET PROTECTION
N.T.S.



15/3 TYPICAL FRAC PIT CROSS-SECTION
N.T.S.

ANTERO RESOURCES

BOWYER PAD SITE UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



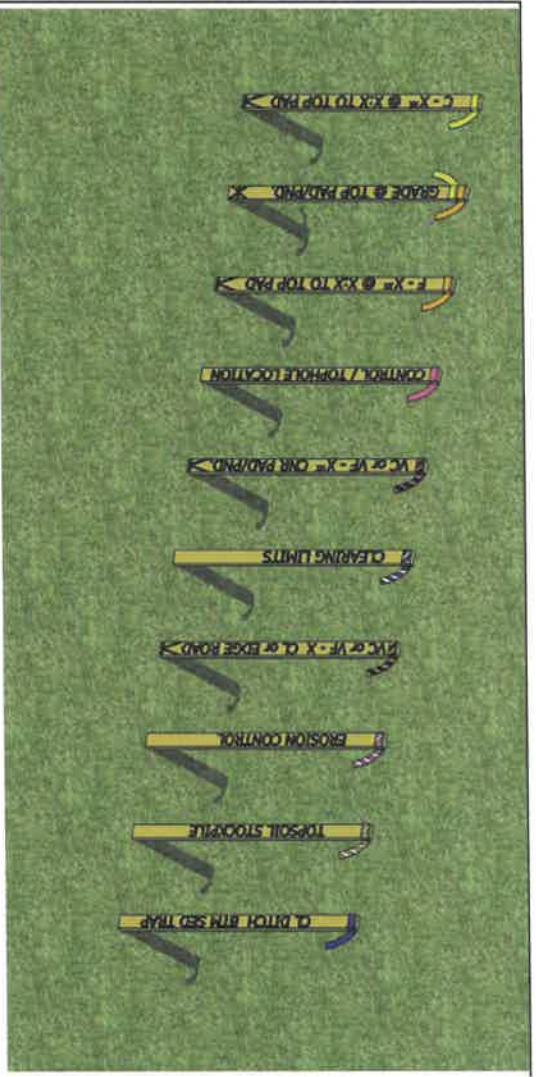
CADW:



DETAIL SHEET 1

NO.	DESCRIPTION	DATE	APPRD	DATE

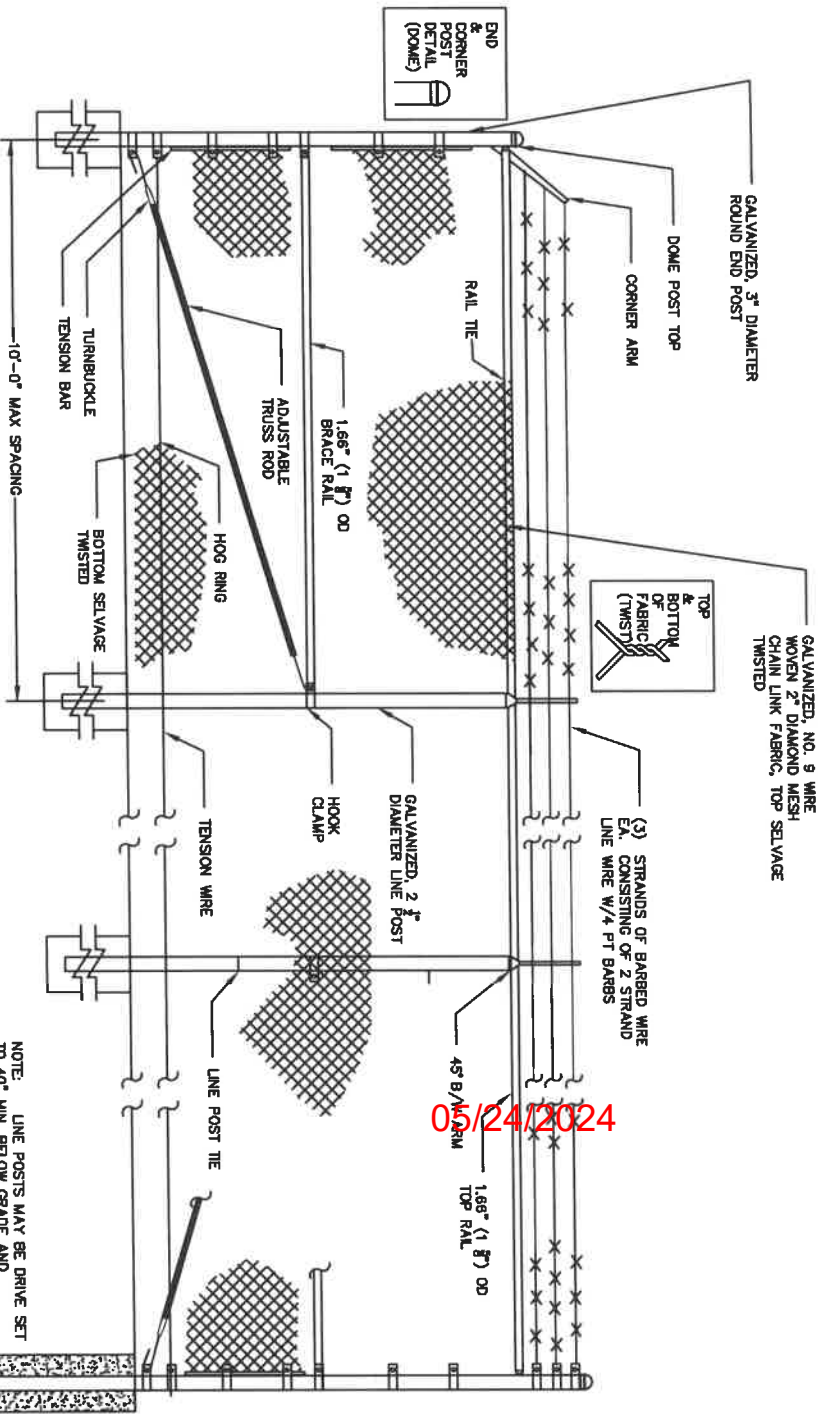
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DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No.:	297605
DWG SCALE:	NOT TO SCALE



	Yellow Ribbon: Yellow Ribbon used to indicate top of Cuts (C) Cut to be determined at time of stakeout Slope determined by site design
	Yellow and Orange Ribbon Yellow and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	Orange Ribbon: Orange Ribbon used to indicate toes of fills (F) Fill to be determined at time of stakeout Slope determined by design
	Pink Ribbon: Pink Ribbon used to indicate Top Hole Location Pink Ribbon used to indicate Survey Control Location
	Pink & Black Stripe Ribbon: Pink & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Pad/Pond/Pit corner or edge Pink & Black Stripe Ribbon used to indicate Vertical Fill (VF) at Centerline or edge of access road
	Blue & White Stripe Ribbon: Blue & White Stripe Ribbon used to indicate clearing limits/construction limits
	Orange & Black Stripe Ribbon: Orange & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Centerline or edge of access road Orange & Black Stripe Ribbon used to indicate Vertical Fill (VF) at Centerline or edge of access road
	Pink & White Stripe Ribbon: Pink & White Stripe Ribbon used to indicate Erosion and Sediment Control Structures Silt Fence (SF), Reinforced Filter Fabric (RFF), Super Silt Fence (SFF) Filter Sock (FS)
	Orange & White Stripe Ribbon: Orange & White Stripe Ribbon used to indicate Topsoil Stockpile Locations
	Blue Ribbon: Blue Ribbon used to indicate Centerline (CL) ORK Blue Ribbon used to indicate Bottom (BTRM) Sediment Traps

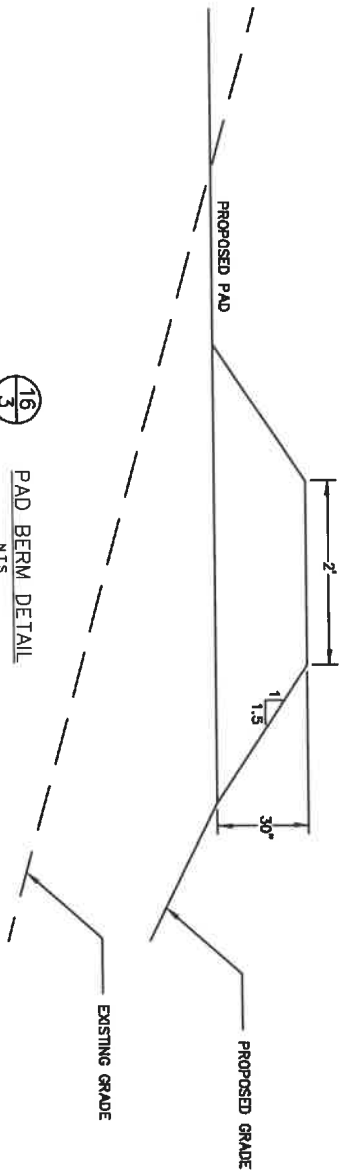
16 SURVEY RIBBON KEY

ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



- CONSTRUCTION NOTES**
1. MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE MANUFACTURER'S SPECIFICATION.
 2. ALL POSTS SHALL BE INSTALLED VERTICALLY. WHERE POSTS ARE INSTALLED ON AN INCLINED SURFACE, THE ANGLE OF THE POST SHALL BE ADJUSTED SO THAT THE POST WILL BE VERTICAL.
 3. FOOTING DIAMETER TO BE 4 TIMES THE POST WIDTH, MINIMUM DEPTH 36".

16 SIX FOOT CHAIN LINK SECURITY FENCE
N.T.S.



16 PAD BERM DETAIL
N.T.S.

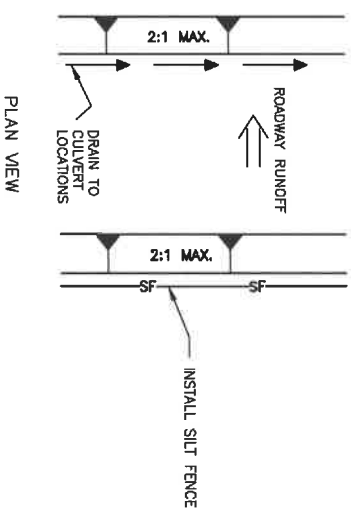
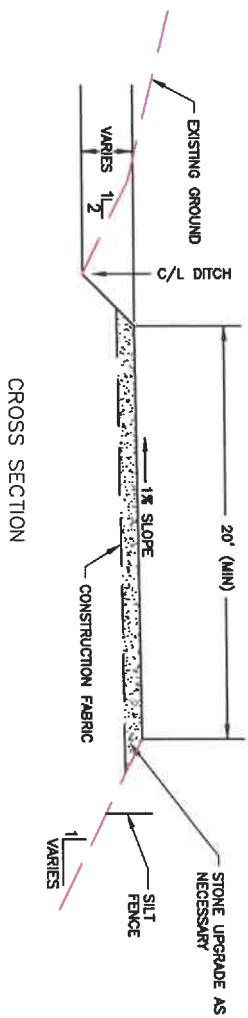


DESIGNED BY: HMM
DRAWN BY: HMM
APPROVED BY: HMM
DATE: 2/27/2025
HMM PROJECT No: 297605

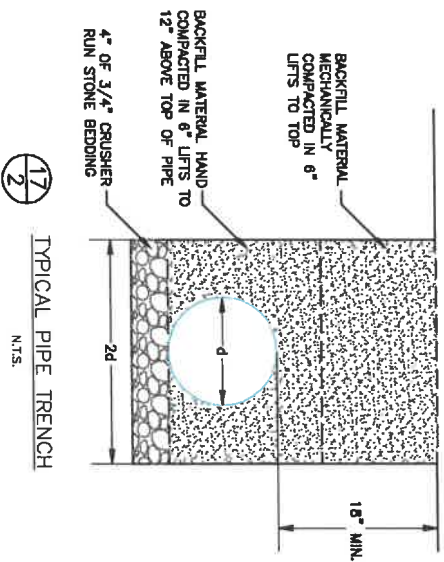
DETAIL SHEET 2

NO.	DESCRIPTION	CHECK'D	APPRO'D	DATE

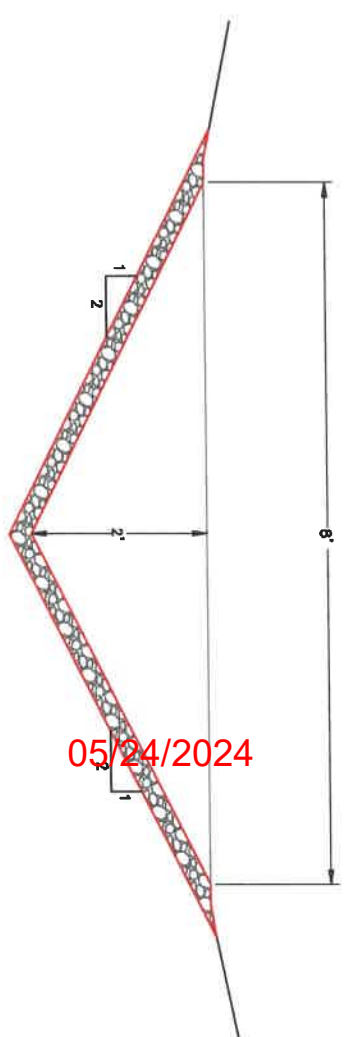
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DRAWN TO SCALE
DWG SCALE: NOT TO SCALE



17 ACCESS ROAD
N.T.S.

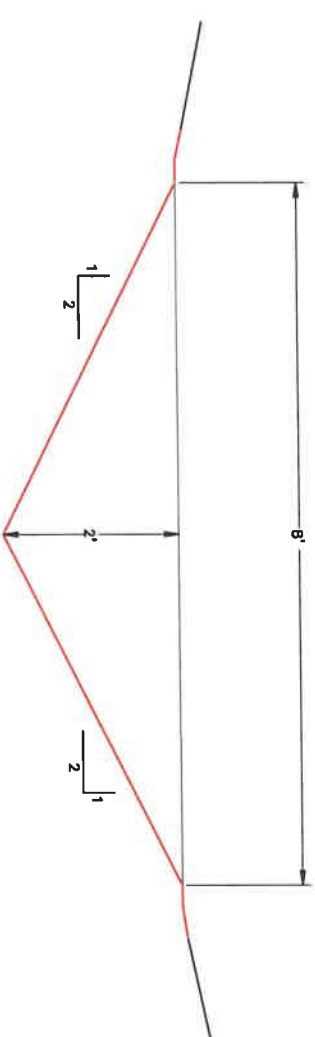


17 TYPICAL PIPE TRENCH
N.T.S.



05/24/2024

GROUTED RIPRAP "V" DITCH
PROPOSED DIVERSION DITCH (0+00-1+20) --- 23.3% SLOPE



VEGETATED "V" DITCH
PROPOSED DIVERSION DITCH (1+20-END) --- 2.0% SLOPE

17 DIVERSION DITCH
N.T.S.

ANTERO RESOURCES

BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



CURB:

NO.	DESCRIPTION	CHG'D	APP'D	DATE



DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT No.:	297605
DWG SCALE:	NOT TO SCALE

DETAIL SHEET 3

SHEET 17 OF 21

STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES:

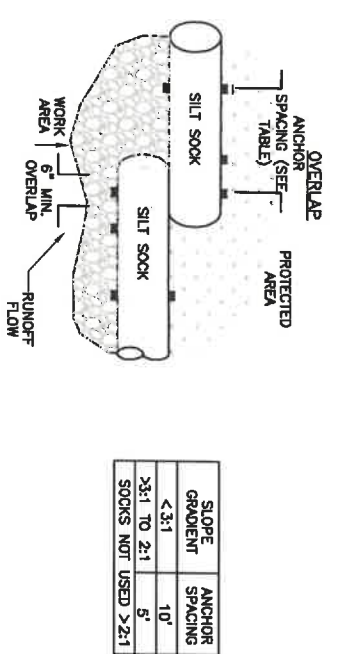
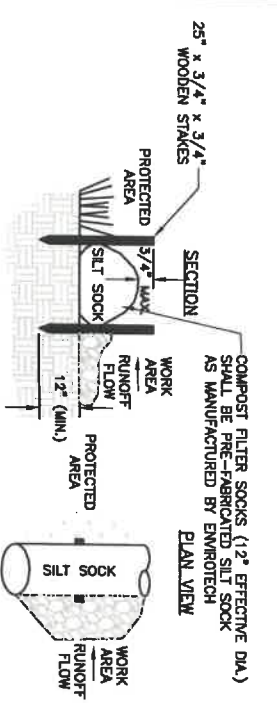
1. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET, AND SLOPED AT 2:1 OR FLATTER.
2. THE CONTRACTOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY IMPLEMENTED. SEEDING AND MULCHING TO BE IN ACCORDANCE WITH WOOD SPECIFICATIONS, LATEST EDITION, UNLESS SPECIFIED OTHERWISE IN THE PLANS, OR UNLESS SPECIFIED OTHERWISE BY THE ENGINEER, OR PROJECT MANAGER.
3. UNTIL THE SITE ACHIEVES FINAL STABILIZATION, THE CONTRACTOR SHALL ASSURE THAT THE BEST MANAGEMENT PRACTICES (BMP's) ARE IMPLEMENTED, INSPECTED, OPERATED, AND MAINTAINED. THE CONTRACTOR WILL MAINTAIN WRITTEN INSPECTOR LOSS OF CONTROL PLAN DISCOVERY WORK, INCLUDING CLEANING, REPAIR, REPLACEMENT, RESOURCING, AND RESTABILIZATION SHALL BE PERFORMED IMMEDIATELY UPON DISCOVERY OF DEFICIENCY.
4. EROSION AND SEDIMENT BMP'S MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMP'S.
5. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY.
6. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FULL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS TO RESIST SLIDING AND OTHER MOVEMENTS.
7. AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY MISS UTILILITY OF WEST VIRGINIA AT 1-800-245-4949 FOR BURIED UTILILITY LOCATIONS.
8. IN A TIMELY MANNER AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE CONTRACTOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION AND SPECIFICATIONS. DISTURBED AREAS WHICH ARE FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
9. TEN FOOT BUFFER AREAS SHALL BE MAINTAINED AT STREAM CROSSINGS, ON BUFFERS, CLEARING, SOD DISTURBANCES, EXCAVATION, AND EQUIPMENT TRAFFIC. SHALL BE MINIMIZED ACTIVITIES SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGING OF RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REPULPING AND MAINTAINING EQUIPMENT SHALL BE ACCOMPLISHED OUTSIDE OF BUFFERS.
10. MULCH OR EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES 3:1 AND STEEPER.
11. SEDIMENT REMOVED FROM BMP'S SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

SEEDING CHART

TEMPORARY SEEDING CHART			
PLANT NAME	APPLICATION RATE (LBS./ACRE)	LIMING RATE (T./ACRE)	MULCHING RATE (T./ACRE)
ANNUAL RYEGRASS	40	2	2.5

PERMANENT SEEDING CHART			
PLANT NAME	APPLICATION RATE (LBS./ACRE)	LIMING RATE (T./ACRE)	MULCHING RATE (T./ACRE)
FOX TAIL/GRASSY PERENNIAL RYE	40	3	2.5
GRAMA VETCH	30		
	20		

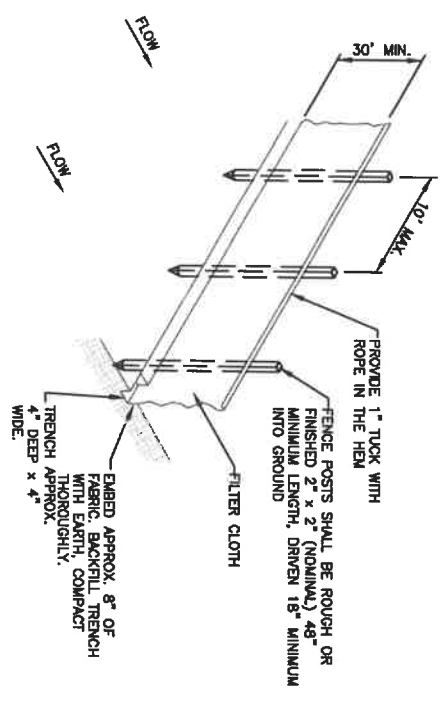
*OR AS RECOMMENDED BY A LOCAL RECOGNIZED SEED SUPPLIER APPROVED BY THE OWNER'S REPRESENTATIVE.



18
SILT SOCK
N.T.S.

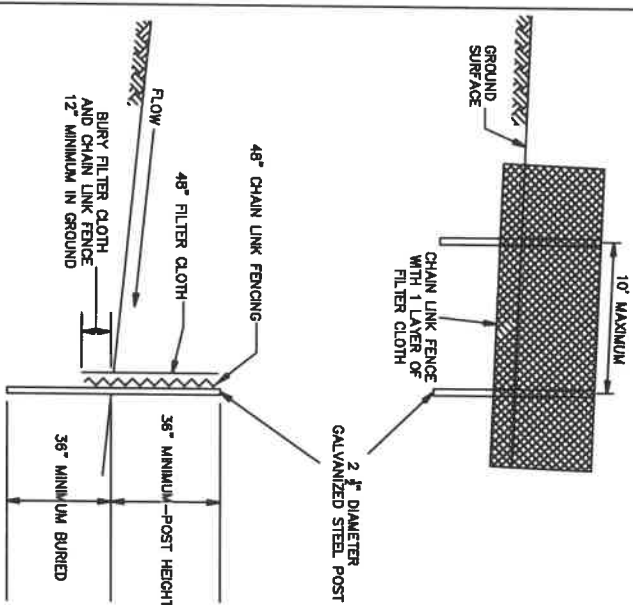
NOTES:

1. INSTALL SILT SOCK ALONG CONTOURS AND ON EXISTING LEVEL GRADE.
2. PROPER SITE PREPARATION IS ESSENTIAL TO ENSURE COMPLETE CONTACT OF THE SILT SOCK WITH THE SOIL.
3. REMOVE ALL ROCKS, CLDS, VEGETATION, OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED SILT SOCK WILL HAVE DIRECT CONTACT WITH THE SOIL.
4. INSTALL THE SILT SOCK SO THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE SILT SOCK. SILT SOCK SHOULD BE OVERLAPPED 6" MINIMUM TO PREVENT SEDIMENT PASSING THROUGH THE FIELD JOINT.
5. 25" x 3/4" x 3/4" WOODEN STAKES SHOULD BE USED TO FASTEN THE SILT SOCK TO THE SOIL LEAVING LESS THAN 3/4" OF STAKE EXPOSED ABOVE THE SOCK.
6. TERMINAL ENDS OF SILT SOCK SHOULD BE DOG-LEGGED UP SLOPE AT A 45° ANGLE TO ENSURE CONTAINMENT AND PREVENT CHANNELING OF SEDIMENT.
7. CARE SHALL BE TAKEN DURING INSTALLATION SO AS TO AVOID DAMAGE OCCURRING TO THE SILT SOCK AS A RESULT OF THE INSTALLATION PROCESS.
8. FIELD MONITORING SHALL BE PERFORMED BY THE ENGINEER TO VERIFY THAT THE PLACEMENT DOES NOT DAMAGE THE SILT SOCK.
9. ANY SILT SOCK DAMAGED DURING PLACEMENT SHALL BE REPLACED AT THE ENGINEER'S EXPENSE. IN THE LATTER CASE, THE MESH IS REMOVED AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
10. UPON STABILIZATION OF THE TRIBUTARY AREA, THE SILT SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED.
11. TRAFFIC SHALL NOT BE PERMITTED TO CROSS SILT SOCKS.
12. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
13. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.



- NOTES:**
1. FILTER FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH TIES/STAPLES.
 2. WHEN TWO SECTIONS OF FILTER ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED TO PREVENT LEAKAGE.
 3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED PRIOR TO "BUILDING" OF SILT FENCE. SILT FENCE SHALL BE CHECKED AFTER EACH STORM EVENT.
 4. POSTS SHALL BE CONSTRUCTED OF HARDWOOD.
 5. FILTER SHALL BE "FILTER X", "MIRAF 100X", "LUNKA T140N", "EXXON GTF 180", OR APPROVED EQUIV.

18
SILT FENCE
N.T.S.



18
SUPER SILT FENCE
N.T.S.

NOTES:

1. CHAIN LINK FENCE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 608 OF THE WOOD SPECIFICATIONS, LATEST EDITION. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE POSTS WITH WIRE TIES OR STAPLES.
2. POSTS NEED NOT BE SET IN CONCRETE.
3. THE FILTER FABRIC SHALL BE FASTENED TO AT THE TOP AND MID SECTION.
4. FABRIC AND FENCE SHALL BE EMBEDDED 12" MINIMUM INTO THE GROUND.
5. A 6" MINIMUM OVERLAP SHALL BE PROVIDED WHERE TWO SECTIONS OF FABRIC ADJOIN. THE OVERLAPPED FABRIC SHALL BE FOLDED TOGETHER AND ATTACHED TO THE CHAIN LINK FENCE.
6. 4" BY 4" PRESSURE TREATED POSTS MAY BE SUBSTITUTED FOR WOODEN POSTS WITH THE APPROVAL OF THE ENGINEER.
7. THE LENGTH OF SLOPE ABOVE THE FENCE SHALL NOT EXCEED 400 FEET IN STEEP TERRAIN. IN FLATTER AREAS THE LENGTH CAN BE EXTENDED WITH THE APPROVAL OF THE ENGINEER.
8. FILTER FABRIC SHALL BE "FILTER X", "MIRAF 100X", "LUNKA 140N", "EXXON GTF 180", OR APPROVED EQUIV.

ANTERO RESOURCES

**BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA**



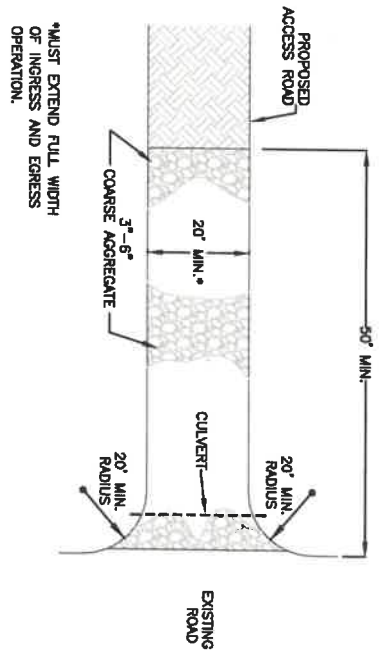
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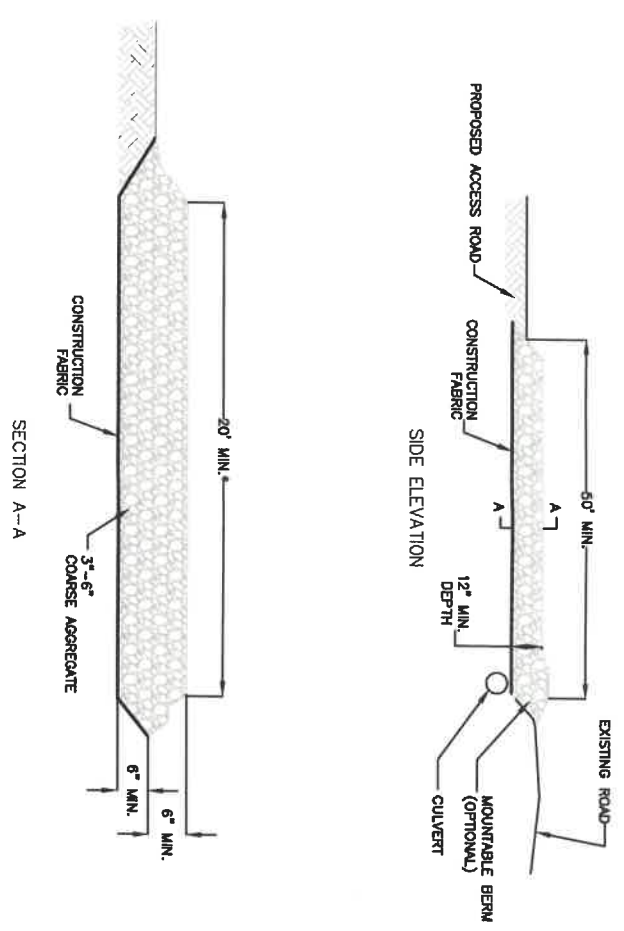


**DETAIL
SHEET 4**

DESIGNED BY: HMM
DRAWN BY: HMM
APPROVED BY: HMM
DATE: _____
HMM PROJECT NO: 297605
DWG SCALE: NOT TO SCALE



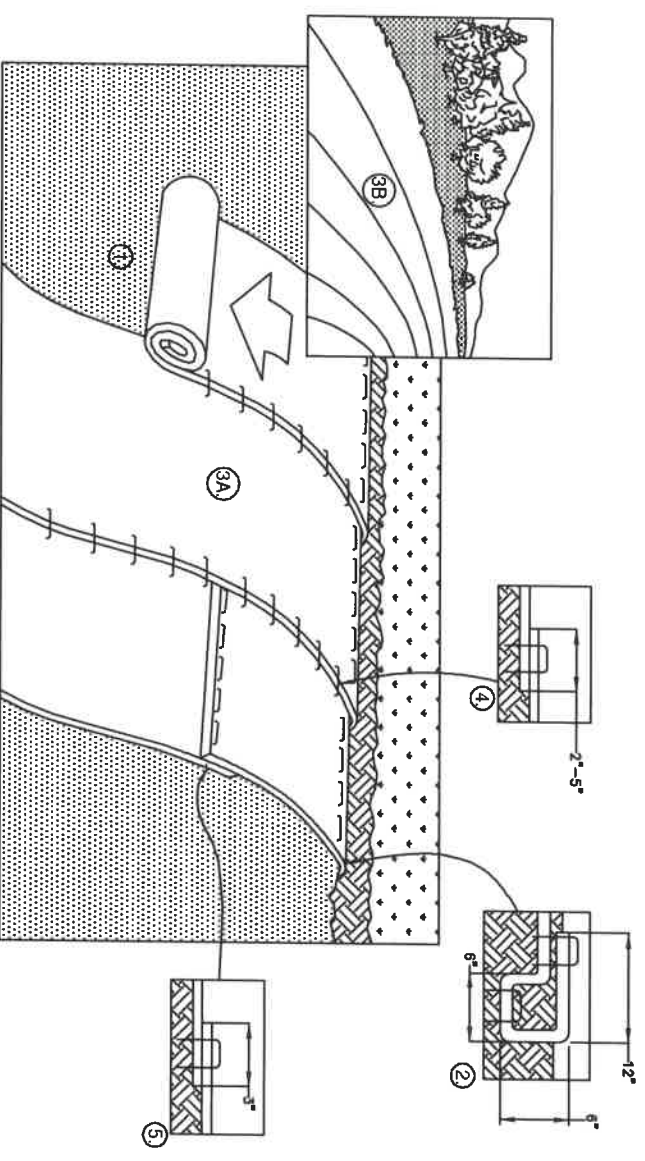
PLAN VIEW



SECTION A-A

19 STABILIZED CONSTRUCTION ENTRANCE
N.T.S.

- A. SUITABLE APPLICATIONS**
1. WHERE DIRT OR MUD CAN BE TRACKED ONTO PUBLIC ROADS.
 2. ADJACENT TO WATER BODIES.
 3. WHERE POOR SOILS ARE ENCOUNTERED.
 4. WHERE DUST IS A PROBLEM DURING DRY WEATHER CONDITIONS.
- B. DESIGN AND LAYOUT**
1. CONSTRUCT ON LEVEL GROUND WHERE POSSIBLE.
 2. USE 3" TO 6" AGGREGATE OVER CONSTRUCTION FABRIC.
 3. USE MINIMUM DEPTH OF STONES OF 12 IN OR AS RECOMMENDED BY SOILS ENGINEER.
 4. PROVIDE AMPLE TURNING AS PART OF THE ENTRANCE RADIUS.
 5. LIMIT SPEED OF VEHICLES TO CONTROL DUST.
 6. PROPERLY GRADE EACH CONSTRUCTION ENTRANCE/EXIT TO PREVENT RUN OFF FROM LEAVING THE CONSTRUCTION SITE.
 7. ROUTE RUNOFF FROM STABILIZED ENTRANCES/EXITS THROUGH A SEDIMENT TRAPPING DEVICE TO THE DISCHARGE.
 8. DESIGNIVE CONSTRUCTION OR SINGLE PURPOSE ENTRANCES AND EXITS TO THE CONSTRUCTION SITE.
 9. REQUIRE THAT ALL EMPLOYEES, SUBCONTRACTORS, AND SUPPLIERS UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE/EXIT.
- C. INSPECTION AND MAINTENANCE**
1. INSPECT AND VERIFY THAT ACTIVITY-BASED BMP'S ARE IN PLACE PRIOR TO THE COMMENCEMENT OF ASSOCIATED ACTIVITIES. WHILE ACTIVITIES ASSOCIATED WITH THE BMP'S ARE UNDER WAY, INSPECT WEEKLY DURING THE RAINY SEASON AND TWO-WEEK INTERVALS IN THE NON-RAINY SEASON TO VERIFY CONTINUED BMP IMPLEMENTATION.
 2. INSPECT LOCAL ROADS ADJACENT TO THE SITE DAILY.
 3. REMOVE AGGREGATE, SEPARATE AND DISPOSE OF SEDIMENT IF CONSTRUCTION ENTRANCE/EXIT IS CLOGGED WITH SEDIMENT.
 4. KEEP ALL TEMPORARY ROADWAY DITCHES CLEAR.
 5. CHECK FOR DAMAGE AND REPAIR AS NEEDED. REPLACE GRAVEL MATERIAL WHEN SURFACE VOIDS ARE VISIBLE. REMOVE GRAVEL AND FILTER FABRIC AT RECLAIMATIONS.



19 EROSION CONTROL MATTING - SLOPE INSTALLATION
N.T.S.

- NOTES:**
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
 3. ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE ANCHORS AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLOURED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON RECP'S TYPE.
 5. CONSEQUENT RECP'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH.
- NOTE:**
- *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.
6. EROSION CONTROL MATTING SHALL BE NORTH AMERICAN GREEN S1959N OR APPROVED EQUAL.

ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



NO.	DESCRIPTION	CHG'D	APPR'D	DATE



DESIGNED BY:	HMM
DRAWN BY:	HMM
APPROVED BY:	HMM
DATE:	
HMM PROJECT NO.:	297605

ANTERO RESOURCES

BOWYER PAD SITE

UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA



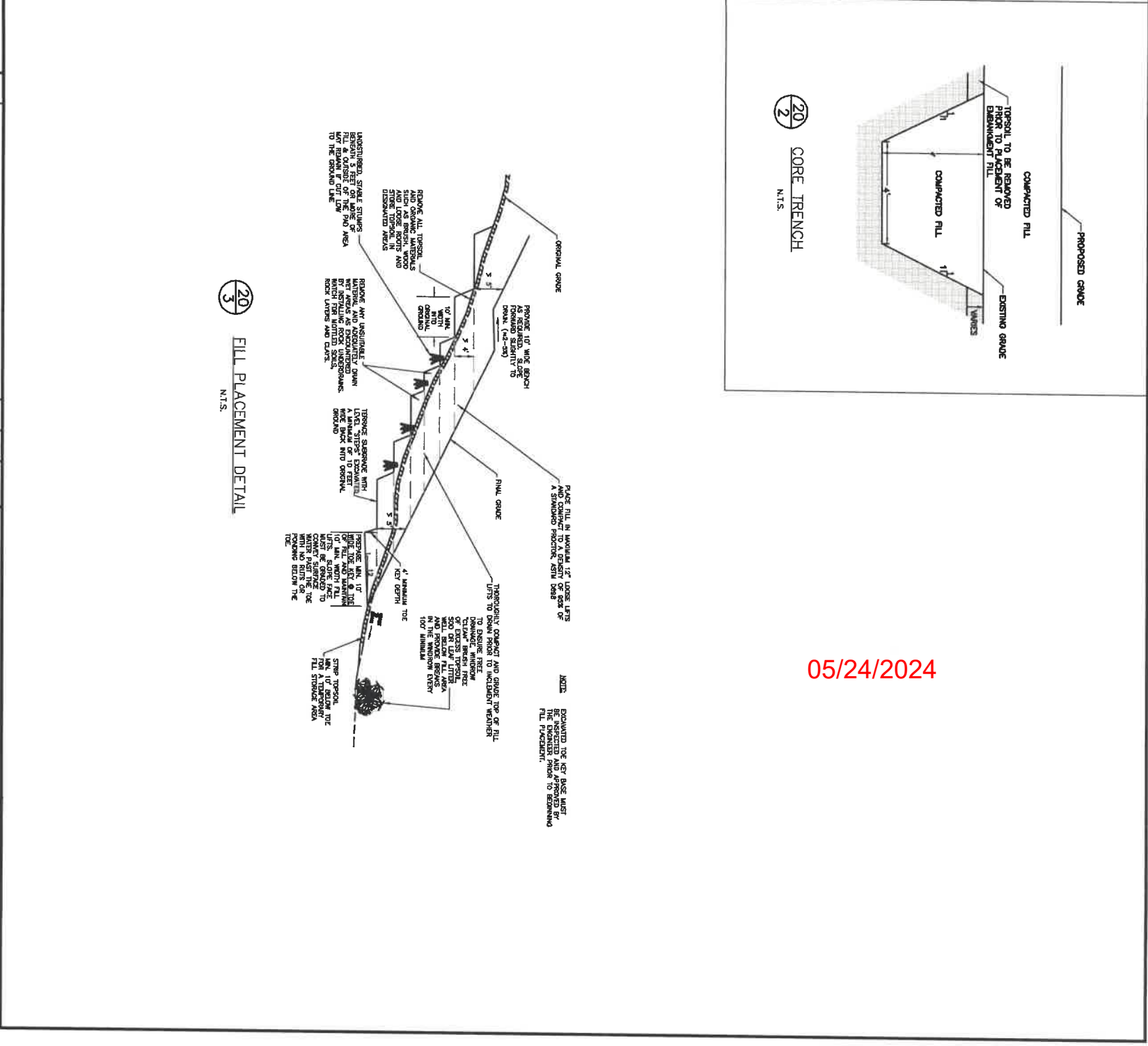
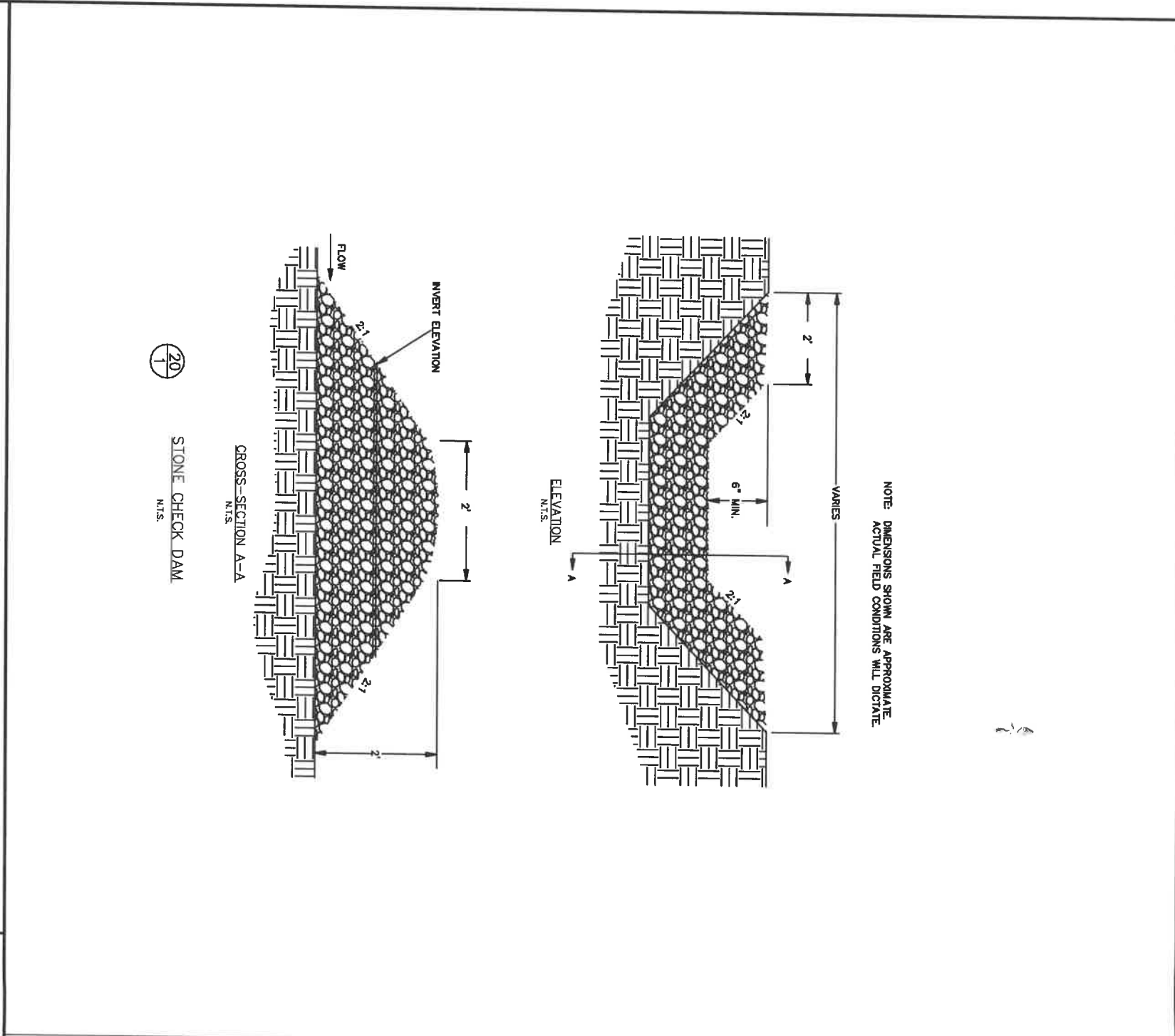
NO.	DESCRIPTION	CHG'D	APPR'D	DATE

Hatch Mott MacDonald

DESIGNED BY: HMM
 DRAWN BY: HMM
 APPROVED BY: HMM
 DATE: _____
 HMM PROJECT No.: 297605
 DWG SCALE: NOT TO SCALE

DETAIL
SHEET 6

SHEET 20 of 21



NOTE: DIMENSIONS SHOWN ARE APPROXIMATE
ACTUAL FIELD CONDITIONS WILL DICTATE

05/24/2024

PAD REPORT

TOP OF PAD ELEVATION: 1290'
 CUT SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 FILL SLOPE PERCENT GRADE: 50.00 AND 86.97, SLOPE RATIO: 2:1 AND 1.5:1
 PAD EARTHWORK VOLUMES
 TOTAL CUT: 5,812 C.Y.
 TOTAL FILL: 48,983 C.Y.
 AREA: 4.5 ACRES

POND REPORT

TOP OF DAM ELEVATION: 1276'
 BOTTOM OF POND ELEVATION: 1260'
 TOP OF DAM WIDTH: 15'
 CUT SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 FILL SLOPE PERCENT GRADE: 33.33, SLOPE RATIO: 3:1
 INTERIOR SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 POND EARTHWORK VOLUMES
 TOTAL CUT: 51,097 C.Y.
 TOTAL FILL: 5,125 C.Y.

WATER ELEVATION	STORAGE (ACREFEET)	(C.Y.)	(C.F.)	(GALLONS)	(BARRELS)
1260	1,17972	1903.3	0	0	0
1282	2,50418	4040.0	5,390.2	384425.7	9152.99
1284	3,97781	6417.5	10908.1	815983.1	19426.17
1286	5,60534	9043.3	173273.6	1298178.4	30881.34
1270	7,39136	11924.7	244188.8	1826509.6	43468.32
1272	9,34049	15089.3	321967.9	2408488.8	57344.92
1274	11,45734	18484.5	408871.8	3043612.2	72468.98
			499081.6	3733389.7	88890.23

ROAD REPORT

CUT SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 FILL SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 ROAD EARTHWORK VOLUMES
 TOTAL CUT: 2,506 C.Y.
 TOTAL FILL: 298 C.Y.
 AREA: 2.2 ACRES

TOPSOIL REPORT

FILL SLOPE PERCENT GRADE: 50.00, SLOPE RATIO: 2:1
 TOTAL TOPSOIL STOCKPILE STORAGE: 6,850 C.Y.

ANTERO RESOURCES
BOWYER PAD SITE
UNION DISTRICT, HARRISON COUNTY, WEST VIRGINIA

CLIENT:



NO.	DESCRIPTION	ORDER	APPROVED	DATE
REVISIONS				



DESIGNED BY: HMM
 DRAWN BY: HMM
 APPROVED BY: HMM

DATE: _____
 HMM PROJECT No: 297605

DWG SCALE: NOT TO SCALE

VOLUME REPORT

05/24/2024