Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. ***This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.***

Permit #: 23-623

Date Approved: February 6, 2023 **Expires: February 6, 2024**

Issued to: Antero Midstream **POC: Daniel Bulian**

Company Address: 535 White Oaks Blvd. Bridgeport, WV 26330

Project Address: 8667 Big Flint Road West Union, WV 26456

Firm: 54017C0130C **Lat/Long: 39.365407N, -80.718887W**

Purpose of development: Surface Waterline (Pipeline)

Issued by: George C. Eidel, Doddridge County FPM (*or designee*)

George C. Eidel

Date: February 6, 2023

For additional information regarding this permit, please contact Doddridge County Floodplain Manager at 304.873.1343, or via email at doddridgecountyfpm@gmail.com
101Church Street Suite102; West Union, WV 26456

12451

KLEINFELDER OFFICE CHECKING
550 WEST C STREET SUITE 1200
SAN DIEGO, CA 92101

DATE 1/10/2023 19-10/1250

PAY TO THE ORDER OF Doddridge County Commission $ 550.00

Five hundred fifty and —— 00/100 —— DOLLARS

Security Features Included. Details on Back.

usbank.

FOR 20232718.002A/12-0000

⑈012451⑈ ⑆125000105⑆ 157519869794⑈

FLOODPLAIN PERMIT #23-623

Antero Resources Crimson South Surface Waterline (Pipeline), Big Flint Rd, 39.365407, -80.718887

TASK	COMPLETE (DATE)	NOTES
CHECK RECEIVED	1/12/2023	
US ARMY CORP. ENGINEERS (USACE)	5/5/23	Pending
US FISH & WILDLIFE SERVICES (USFWS)		Not Submitted
WV DEPT. NATURAL RESOURCES (WVDNR)	5/5/23	Pending
WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)	11/09/2022	
STATE HISTORIC & PRESERVATION OFFICE (SHPO)	5/5/23	TBD-See attached Permitting and Coordination Table
OFFICE of LAND & STREAM (OLS)	11/28/2022	
WVDOH		To be submitted
Elevation Certificate	N/A	
DATE OF COMMISSION READING	1/17/2023	
DATE AVAILABLE TO BE GRANTED	2/6/2023	Pending Receipt of outstanding Permits
PERMIT GRANTED		
COMPLETE		

7021 1970 0001 7228 4443

7021 1970 0001 7228 4450

7021 1970 0001 7228 4467

7021 1970 0001 7228 4474

7021 1970 0001 7228 4481

Permitting & Coordination Table

Permitting Agency	Permit/Coordination Required	Submitted	Received (Anticipated)	Status
USACE[1]	NWP 58	11/07/22	(12/22/22)	Pending
	Mitigation Plan	Not Applicable	Not Applicable	Not Required
USFWS[2]	Threatened & Endangered Species (Section 7 Coordination)	To Be Submitted	To Be Submitted	To Be Submitted
WVSHPO[3]	Section 106 Coordination	**To Be Determined – A Cultural Resources Literature Review Was Submitted to Support USACE's Determination of Potential Affects.**		Required
	Phase I & Architectural Survey			
WVDNR-OLS[4]	Stream Activity Application	11/07/2022	11/28/2022	Approved
WVDNR-WRS[5]	Mussel Survey	09/26/2022	09/28/2022	Approved
	Threatened & Endangered State Species	11/07/2022	(12/07/2022)	Pending
	Spawning Waiver	To Be Determined	To Be Determined	To Be Determined
County Floodplain	Doddridge County Floodplain Application	01/10/2023	(02/24/2023)	Pending
WVDEP[6]	401 WQC Program Notification	11/07/2022	11/09/2022	Approved
	NPDES[7] Permit	Not Applicable	Not Applicable	Not Required
	Construction Stormwater General Permit	11/14/2022	(12/29/2022)	Pending
WVDOH[8]	Utility Permit	To Be Submitted	To Be Submitted	To Be Submitted

1 United States Army Corps of Engineers
2 United States Fish and Wildlife Service
3 West Virginia Division of Culture and History, State Historic Preservation Office
4 West Virginia Division of Natural Resources Office of Land and Stream
5 West Virginia Division of Natural Resources – Wildlife Resources Section
6 West Virginia Department of Environmental Protection
7 National Pollutant Discharge Elimination System
8 West Virginia Division of Highways

Doddridge County Floodplain Permits

(Week of January 16, 2023)

Please take notice that on the **(11th)** of **(January), 2023, (Antero Midstream)** filed an application for a Floodplain Permit **(#23-623)** to develop land located at or about **(8667 Big Flint Road); Coordinates: 39.365407, -80.718887**. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by **(February 6, 2023)** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is the Crimson South Surface Waterline (18" pipeline)**

GEORGE C. EIDEL, CFM

Doddridge County Floodplain Manager

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TRANSMITTAL

To:

Mr. George Eidel
Floodplain Manager
101 Church Street, Suite #102
West Union, WV 26456-2095

Date: January 10, 2023

cc: Project File

Subject:	**Floodplain Permit Application** **Antero Midstream** **Crimson South Surface Water Line** **Doddridge County, West Virginia**
	☒ **Attached** ☐ **Under separate cover**

Via:
- ☐ Messenger/Courier
- ☐ First Class Mail
- ☒ FedEx
- ☐ United Parcel
- ☐ DHL
- ☐ Lone Star Overnight
- ☐ Freight
- ☐ Other

Transmitted:
- ☐ As Requested
- ☒ For Approval
- ☐ For Your Use
- ☐ For Review & Comment

Remarks:

Enclosed please find the following documents to facilitate your review of the above referenced application:

Attachment A – Floodplain Application
Attachment B – Table of Adjacent Property Owners
Attachment C – WV Flood Tool Map
Attachment D – Site Plans
Attachment E – No-Rise Certificate
Attachment F – Permitting & Coordination Table

The check for fee is $550.00. The site budget within the Floodplain is $75,000.00 bringing the permit fee to $550.00.

By: **Matt Albright**
Project Manager
51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
MAlbright@Kleinfelder.com
m| 609.947.5296

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ATTACHMENT A
FLOODPLAIN APPLICATION

Permit# 23-623

Project Name: Crimson South Surface waterline

Permittees Name: Antero Midstream

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. The permit will expire if no work is commenced within six months of issuance.
5. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
6. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
7. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE Daniel Bulian

DATE 01/10/2023

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.

Project Narrative:
Antero Midstream is proposing to construct approximately 3.8 miles of one 18-inch diameter surface water pipeline known as the Crimson South Surface Water Line (Pipeline) in Doddridge County, West Virginia (WV). The southwestern terminus occurs at 39.362046, -80.729105, while the northeastern terminus occurs at 39.385516, -80.685486. The proposed Pipeline will result in a limit of disturbance of approximately 69.1 acres, of which 1.87 acres (2.7%) is located within the limits of the Flint Run regulated floodplain. The West Virginia Flood Tool Map is included in Attachment C and depicts the approximate location where work associated with the proposed Pipeline will encroach upon the floodplain. Construction activities within the regulated floodplain will be temporary and consist of but are not limited to: installation of a 18-inch diameter surface water pipeline, which will be buried at the Flint Run and Big Flint Road (CR-3) crossings, temporary structure (dam and flume or equivalent) crossing materials, and jersey barrier/pier installations for timber mat crossing of equipment at 1 stream crossing (KLF_Flint Run). In addition, rock construction entrances will be installed on both sides of CR-3 (Big Flint Road. The proposed Pipeline design plans are included as Attachment D. The ground surface will be returned to approximate original contours following construction, which should not adversely affect the regulated floodplain in Doddridge County. A No-Rise Certification has been prepared and is included as Attachment E, which indicates that the proposed construction activities will not affect the base flood elevation. A permitting and coordination table is included in Attachment F that outlines all necessary permits and current status.

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Antero Midstream		
Corporate Mailing Address: 1615 Wynkoop Street		
City: Denver	State: CO	Zip: 80202
Corporate Point of Contact (POC): N/A		
Corporate POC Title: N/A		
Corporate POC Primary Phone: N/A		
Corporate POC Primary Email: N/A		
Corporate FEIN: N/A	Corporate DUNS: N/A	
Corporate Website: www.anteroresources.com		
Local Mailing Address: 535 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM): Daniel Bulian		
Local PM Primary Phone: (304) 842-4093		
Local PM Secondary Phone: N/A		
Local PM Primary Email: dbulian@anteroresources.com		
Person Filing Application: Daniel Bulian		
Applicant Title: Environmental Specialist III		
Applicant Primary Phone: (304) 842-4093		
Applicant Secondary Phone: N/A		
Applicant Primary Email: dbulian@anteroresources.com		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: _1__ of _1___

Site/Property Information:		
Legal Description: Crimson South Surface Water Line		
Physical Address/911 Address: Big Flint Rd, Center Point, WV 26339		
Decimal Latitude/Longitude: 39.365815, -80.718835		
DMS Latitude/Longitude:		
District: 3 (Grant)	**Map: 5**	**Parcel: 1**
Land Book Description: N/A		
Deed Book Reference: N/A		
Tax Map Reference: N/A		
Existing Buildings/Use of Property: Farm		

Floodplain Location Data: ***(to be completed by Floodplain Manager or designee)***			
Community:	**Number:**	**Panel:**	**Suffix:**
Location (Lat/Long):		**Approximate Elevation:** **Estimated BFE:**	
Is the development in the floodway? ☐ **Yes** ☐ **No**		**Is the development in the floodplain?** ☐ **Yes** ☐ **No** **Zone: _____**	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

	ACTIVITY		STRUCTURAL TYPE
[]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVELOPLMENT ACTIVITIES:

[] Fill [] Mining [] Drilling [x] Pipelining
[] Grading
[x] Excavation (except for STRUCTURAL DEVELOPMENT checked above)
[] Watercourse Alteration (including dredging and channel modification)
[] Drainage Improvements (including culvert work)
[] Road, Street, or Bridge Construction
[] Subdivision (including new expansion)
[] Individual Water or Sewer System
[] Other (please specify)

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: __2__ of __2__

Property Owner Data:		
Name of Primary Owner (PO): ASHCRAFT JAMES & BEVERLY (SURV)		
PO Address: 8375 Big Flint Rd		
City: West Union	**State: WV**	**Zip: 26456**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	**State: N/A**	**Zip: N/A**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Mineral Rights Owner Data: ***(As Applicable)***		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	**State: N/A**	**Zip: N/A**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: __1__ of __2__

Property Owner Data:		
Name of Primary Owner (PO): TRENT STEPHEN W & REMONDA L		
PO Address: 14 Millbrook Rd		
City: Bridgeport	**State: WV**	**Zip: 26330**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	**State: N/A**	**Zip: N/A**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Mineral Rights Owner Data: ***(As Applicable)***		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	**State: N/A**	**Zip: N/A**
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): N/A		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): N/A		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: __1 of _1

Contractor/Sub-•-Contractor (C/SC) Information:		
C/SC Company Name: One contractor to be selected from the following: ACE Pipeline (#WV049594), Apex Pipeline Services Inc (#WV040540), Integrity Kokosing Pipeline Services LLC (#WV050096), Momentum Pipeline LLC (#WV057216), Entegra Energy Solutions LLC (#WV054560).		
C/SC Company Name: See Above		
C/SC WV License Number: See Above		
C/SC FEIN: TBD	C/SC DUNS: TBD	
Local C/SC Point of Contact (POC): TBD		
Local C/SC POC Title: TBD		
C/SC Mailing Address: TBD		
City: TBD	State: TBD	Zip-•-Code: TBD
Local C/SC Office Phone: TBD		
Local C/SC POC Phone: TBD		
Local C/SC POC E-•-Mail: TBD		

Engineer Firm Information:		
Engineer Firm Name: The Thrasher Group, Inc.		
Engineer WV License Number: 23629		
Engineer Firm FEIN: N/A	Engineer Firm DUNS: N/A	
Engineer Firm Primary Point of Contact (POC): James Howes		
Engineer Firm Primary POC Title: Survey Project Manager		
Engineer Firm Mailing Address: 600 White Oaks Blvd		
City: Bridgeport	State: WV	Zip-•-Code: 26330
Engineer Firm Office Phone: 304-205-8802		
Engineer Firm Primary POC Phone: 304-288-7888		
Engineer Firm Primary POC E-•-Mail: jhowes@thethrashergroup.com		

Applicant

Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have will be properly attained, are current and valid, and must be presented prior to a Doddridge County Floodplain Permit being issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager of designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above---described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site---plan submitted and approved by this permit that a "Stop Work" order may be issued by the Doddridge County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature: Daniel Bulian Date: 01/10/2023

Applicant Printed Name: Daniel Bulian

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-•-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development access roads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE**: All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

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ATTACHMENT B
TABLE OF ADJACENT PROPERTY OWNERS

Table of Adjacent Property Owners

PROPERTY OWNER	PARCEL ID NUMBER	E-911 ADDRESS	PROPERTY OWNER ADDRESS	IN FLOODPLAIN
TRENT STEPHEN W & REMONDA L	09-03-0005-0005-0001	8667 BIG FLINT RD, WEST UNION, WV, 26456	14 MILLBROOK RD, BRIDGEPORT, WV 26330	Yes
ASHCRAFT JAMES & BEVERLY (SURV)	09-03-0006-0012-0000	8375 BIG FLINT RD , WEST UNION, WV, 26456 8359 BIG FLINT RD , WEST UNION, WV, 26456	8375 BIG FLINT RD, WEST UNION, WV 26456	Yes
GESSLER SHIRLEY LEE	09-03-0002-0011-0000	9371 BIG FLINT RD, WEST UNION, WV, 26456	9371 BIG FLINT RD, WEST UNION, WV 26456	Yes (Downstream)
KELLEY DWAYNE E	09-03-0005-0005-0000	75 DOVE LN, WEST UNION, WV, 26456	75 DOVE LN, WEST UNION, WV 26456	Yes (Downstream)
MCKINNEY JEFFEREY E & PHYLLIS M (SURV)	09-03-0006-0012-0004	8205 BIG FLINT RD , WEST UNION, WV, 26456	VANDERBILT TAX DEPT, P O BOX 9800, MARYVILLE, TN 37802	Yes (Upstream)

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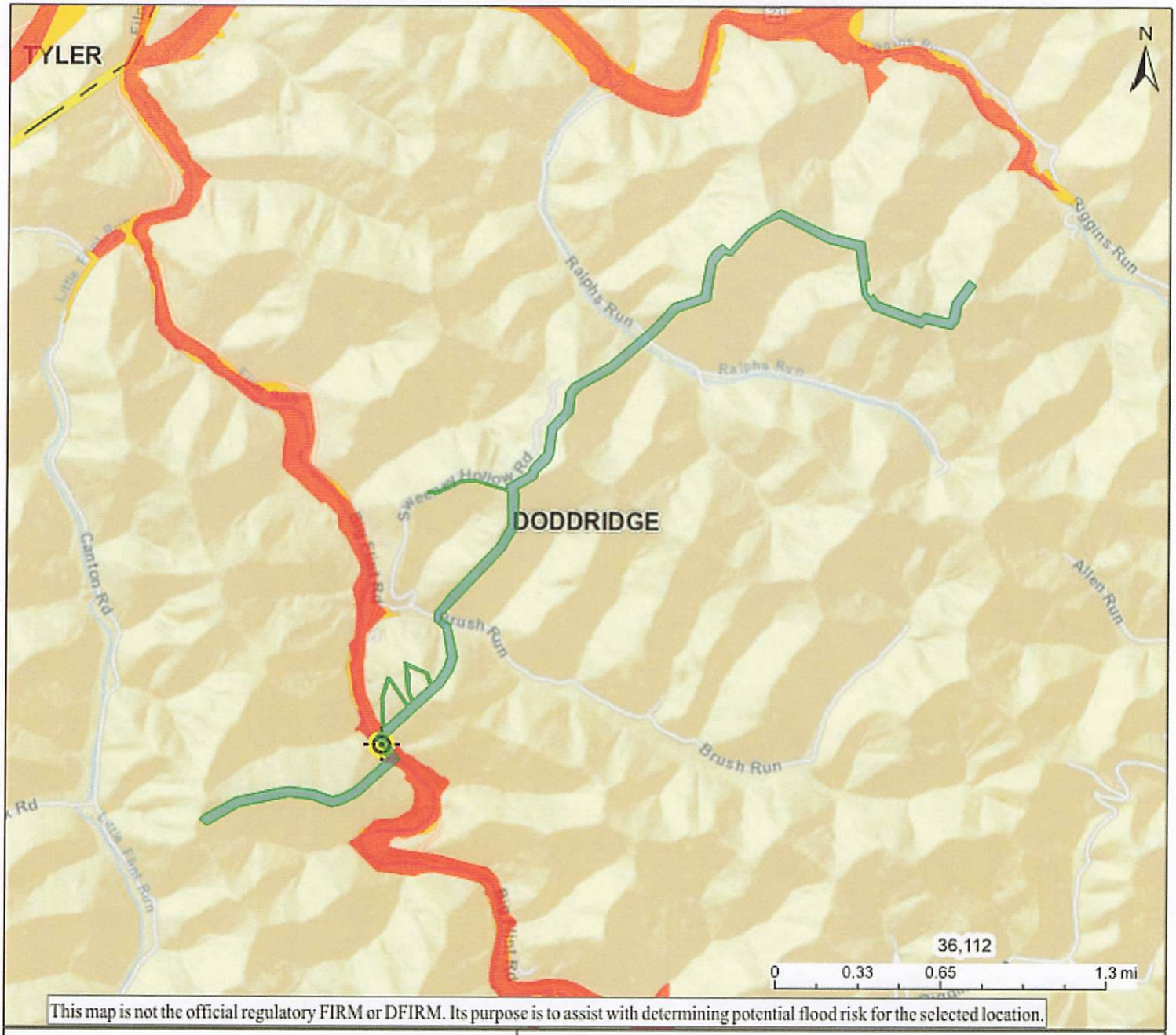
ATTACHMENT C
WV FLOOD TOOL MAP

WV Flood Map-Crimson South SWL



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

HIGH RISK

	Regulatory Floodway
Zone AE	1-Percent-Annual-Chance Flood Hazard Area **With Base Flood Elevation** (BFE)
Zone A	1-Percent-Annual-Chance Flood Hazard Area **Without BFE** (may have Advisory Flood Heights)
Advisory	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)

Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (*https://www.MapWV.gov/flood*) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Info Location — *Map created on 12/14/2022*

User Notes

Flood Hazard Area	Location is **WITHIN** the FEMA 100-year floodplain. Advisory Flood Heights available.
Flood Zone	A (Advisory Flood Heights available)
Stream	Flint Run
Watershed (HUC8)	Little Musringum-Middle Island (5030201)
Flood Height	Flood Height 4 About 768.1 ft (Source: AFH) NAVD88
Water Depth	About 3.7 ft (Source: HEC-RAS)
Elevation	761.4 ft (Source: FEMA 2018-20) (NAVD88)
Community & ID	Doddridge County (ID: 540024)
FEMA Map & Date	54017C0130C; Effective Date: 10/4/2011
Location (lat, long)	(39.365407, -80.718887) (WGS84)
Parcel ID	09-03-0006-0012-0000
E-911 Address	multiple addresses

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ATTACHMENT D
SITE PLANS

WVDOH GENERAL NOTES

ALL CONSTRUCTION ON THE DIVISION OF HIGHWAYS RIGHT OF WAY WILL CONFORM TO THE FOLLOWING:
THE FOLLOWING NOTES APPLY TO ALL PLAN SHEETS:

1. ALL METER SETTINGS ACROSS PAVED ROADS SHALL BE BORED OR MOLED, UNLESS OPEN CUT HAS BEEN APPROVED BY W.V.D.O.H. AND SPECIFICALLY INDICATED ON PLANS.
2. NOTIFICATION OF PROPOSED EXCAVATION, DEMOLITION OR ANY OTHER EARTH DISTURBING ACTIVITIES ARE REQUIRED TO BE PLACED TO MISS UTILITY OF WEST VIRGINIA (1-800-245-4848) NOT LESS THAN FORTY EIGHT (48) BUSINESS HOURS BEFORE ANY SUCH WORK IS TO BEGIN.
3. BEDDING SHALL BE PLACED ON ASPHALT SURFACE TO PROTECT THE PAVEMENT WHEN A TRENCHER OR TRACKED VEHICLE IS USED.
4. THE WEST VIRGINIA DIVISION OF HIGHWAYS PUBLICATIONS "STANDARD SPECIFICATIONS ROADS AND BRIDGES" AND "ACCOMMODATIONS OF UTILITIES ON HIGHWAY RIGHT OF WAY" LATEST EDITION ARE PART OF THE SPECIFICATIONS AND WILL BE ADHERED TO BY THE CONTRACTOR.
5. ALL DAMAGE TO ROAD SURFACE SHALL BE REPAIRED ACCORDING TO THE WEST VIRGINIA DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS AND DETAILS.
6. ALL EXISTING DUMP ROCK OR RIP RAP DITCHES DISTURBED BY THE UTILITY LINE CONTRACTOR SHALL BE RESTORED WITH THE SAME SIZE, GRADE AND QUALITY OF ROCK AFTER THE UTILITY LINE HAS BEEN INSTALLED. NEW DUMP ROCK (RIP RAP) IS TO BE PLACED IN ALL LOCATIONS WHERE THE DITCH LINE GRADE IS GREATER THAN 5% AND THERE IS NO EXISTING RIP RAP.
7. TRAFFIC CONTROL SHALL CONFORM TO THE W.V.D.O.H. PUBLICATION "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE" OPERATION LATEST EDITION.
8. ALL BACKFILL MATERIAL AND COMPACTION REQUIREMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS IN THE ACCOMMODATION OF UTILITIES ON HIGHWAY RIGHT OF WAY AND ADJUSTMENT AND RELOCATION OF UTILITY FACILITIES ON HIGHWAY PROJECTS AND SUBJECT TO D.O.H. APPROVAL. EVIDENCE OF PROPER COMPACTION BY TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TESTING SHALL BE ONE (1) PER DAY OR EVERY 500 LINEAL FEET OR AS DETERMINED BY THE DISTRICT MANAGER (ENGINEER) OR HIS AUTHORIZED REPRESENTATIVE.
9. UTILITY LINES SHALL BE PLACED EITHER AROUND, UNDER OR OVER DRAINAGE CULVERTS AS SHOWN ON PLANS.
10. AGGREGATE SHOULDER STONE IS TO BE PLACED ON THE SHOULDER AT A THICKNESS EQUAL TO 6" OR ITS ORIGINAL THICKNESS WHICHEVER IS GREATER. PAVED SHOULDERS WILL BE PAVED.
11. MAGNETIC MARKING TAPE SHALL BE INSTALLED AT A DEPTH OF 12" TO 18" BELOW THE SURFACE AND DIRECTLY ABOVE ALL LINES OR PIPE.
12. REPAIR TO DRIVEWAYS ON W.V.D.O.H. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. TYPICAL REPAIR DETAIL.
13. CLEANUP WILL BE ACCOMPLISHED DAILY. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. REPAIR. ALL CULVERTS AND DRAINAGE DITCHES SHALL BE OPEN AND MAINTAINED DURING CONSTRUCTION. SHOULDERS WILL BE RESTORED AND STABILIZED WITH STONE DAILY WITH APPROPRIATE STONE AT THE DISCRETION OF W.V.D.O.H.
14. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS OF COMPLETION OF BACK FILL OPERATION.
15. NO EXCESS EXCAVATION MATERIAL SHALL BE WASTED ON W.V.D.O.H. RIGHT OF WAYS WITHOUT THE AGREEMENT OF THE W.V.D.O.H.
16. THE W.V.D.O.H. RESERVES THE RIGHT TO RELOCATE WATERLINES, FIRE HYDRANTS, AND VALVES AS DEEMED NECESSARY.
17. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY COMPANIES, PRIOR TO CONSTRUCTION TO OBTAIN UTILITY LOCATIONS AND PERFORMING EXPLORATORY WORK TO DETERMINE SUBSURFACE MATERIALS AND STRUCTURES THAT MAY AFFECT ITS WORK.
18. PRIOR TO THE START OF ANY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY, THE CONTRACTOR SHALL GIVE THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION 48 HOURS NOTICE.
19. THE CONTRACTOR IS RESPONSIBLE FOR ANY OFFSITE DISPOSAL REQUIRED. DISPOSAL SHALL BE TO AN ACCEPTABLE LEGAL SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL AT DISPOSAL SITES.
20. ALL ELEVATION GRADES AND DISTANCES SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE PRIOR TO CONSTRUCTION.
21. ALL CONSTRUCTION SHALL MAINTAIN 5' FROM EDGE OF PAVEMENT OR BOTTOM OF DITCH UNLESS NO OTHER PRACTICAL MEANS OF CONSTRUCTION EXISTS.
22. PERFORM ACCEPTABLE REPAIR OF ANY AND ALL SUB-BASE FAILURES THAT ARE CAUSED BY THE CONTRACTOR'S OPERATION ON A DAILY BASIS.
23. PERFORM TOTAL REPAIR AND/OR REPLACEMENT OF ANY DAMAGED ASPHALT SURFACE AS DETERMINED BY THE W.V.D.O.H REPRESENTATIVE.
24. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL MAKE A COMPLETE VIDEO SHOWING THE ROAD SURFACE OF ALL ROADS TO BE UTILIZED AND PRESENT IT TO THE UTILITY SUPERVISOR W.V.D.O.H.
25. REMOVE DITCH-LINE OBSTACLES AND/OR RECONSTRUCTION OF THE DITCH-LINE.
26. IN THE CASE OF MANHOLES OR VALVES IF AT ALL POSSIBLE SHALL BE PLACED OUTSIDE THE ROADWAY, SHOULDER, OR DITCH LINE IF PLACED IN THE SHOULDER THERE IS TO BE A MINIMUM OF 6 INCHES OF COVER IN THE DITCH LINE THERE IS TO BE 12 INCHES OF COVER BETWEEN THE MANHOLE AND THE INVERT OF THE DITCH.
27. ANY MANHOLES OR VALVES OR VALVE BOXES PLACED IN THE ROADWAY WILL BE ON THE SAME PLANE AS THE ROADWAY AND SET FLUSH WITH ROADWAY.
28. ANY ROADS REQUIRING AN H.L.B.C. OVERLAY, FULL WIDTH OR PARTIAL, SHALL HAVE SHOULDER STONE FROM AN APPROVED SOURCE PLACED AS PER D.O.H. SPECIFICATIONS.
29. THE DEPARTMENT OF HIGHWAYS REQUIRES THERE BE NO WORK WITHIN THE DEPARTMENT'S RIGHT-OF-WAY DURING SNOW AND ICE REMOVAL. THERE MAY BE EXCEPTIONS FOR EMERGENCY AND CASE BY CASE SITUATIONS WITH NOTIFICATION TO THE DEPARTMENT.

UTILITY AGENCIES SERVING AREA

MISS UTILITY
1-800-245-4848
TICKET # 2223866992, 2223866997, 2223867009

WEST VIRGINIA DIVISION OF HIGHWAYS
WVDOH DIST #4
P.O. BOX 4220
CLARKSBURG, WV 26301-4220
(304) 842-1500
(304) 842-1564 FAX
LACY PRATT – UTILITY SUPERVISOR – CROSSINGS
TARA CARDER – PERMIT SUPERVISOR – TEMP. ACCESSES

POWER
MON POWER
1-800-686-0022

CABLE
AT&T
1-304-216-4100

TELEPHONE
VERIZON TELECOMMUNICATIONS
1-800-275-2355

RESPONSE TEAMS:

NATIONAL RESPONSE CENTER FOR REPORTING CHEMICAL OR OIL SPILLS
1-800-424-8802

STATE EMERGENCY SPILL NOTIFICATION
1-800-642-3074

EMERGENCY AMBULANCE, FIRE, LAW ENFORCEMENT
911

GAS LINE CROSSINGS

STATION	LAT	LONG	DESCRIPTION	PLAN SHEET #
49+33	39.367752	-80.716084	EX. EQT GAS LINE (SIZE UNKNOWN)	07 - PLAN2
60+70	39.370606	-80.715191	EX. EMAX OIL 1" POLY GAS LINE (EXPOSED)	08 - PLAN3
81+00	39.374680	-80.711463	EX. CONSOL 6" STEEL GAS LINE (EXPOSED)	09 - PLAN4
121+58	39.383001	-80.704064	EX. MOUNTAINNER GAS LINE (SIZE UNKNOWN)	10 - PLAN5
169+73	39.386724	-80.692001	EX. 2" POLY GAS LINE (OWNER UNKNOWN)	12 - PLAN7
177+83	39.384571	-80.691173	EX. TRANSCANADA 36" STEEL GAS LINE	12 - PLAN7

DRAWING INDEX

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02	GNOTS	GENERAL NOTES SHEET
03	SPECS	GENERAL CONSTRUCTION SPECS SHEET
04-05	PL-INDEX-AR-INDEX	INDEX SHEETS
06-13	PLAN1-PLAN8	PROPOSED ALIGNMENT PLAN AND PROFILE SHEETS
14-15	ARPS1-ARPS2	ACCESS ROAD PLAN SHEETS
16	HSP	HYDROSTATIC PROFILE SHEET
17-20	S&WC1-S&WC4	STREAM & WETLAND CROSSING SHEETS
21-31	ESCP1-ESCP11	ESCP DETAIL SHEETS
32	CULV1	CULVERT & CHANNEL REPORT SHEETS

GENERAL NOTES

1. EXISTING UTILITIES SHOWN ON PLANS WHERE EVIDENCE HAS BEEN FOUND OR PROVIDED BY LOCAL UTILITIES. EXACT DEPTH AND LOCATION OF UTILITY LINES NOT KNOWN. CONTRACTOR TO VERIFY UTILITY LOCATIONS PRIOR TO CROSSING BY CONTACTING MISS UTILITY AT 1-800-245-4848 AND LOCAL UTILITY COMPANIES AS LISTED AND/OR NOT LISTED ON THIS SHEET. CONTRACTOR TO LOCATE WATER AND UTILITY SERVICES BEFORE BORING AND JACKING.
2. IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.
3. ALL PERMITS MUST BE SECURED PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL COORDINATE ALL STREAM CROSSING INSTALLATIONS PROPOSED SO NOT TO DELAY THE CONSTRUCTION PROCESS. STREAM CROSSINGS ARE TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. ALL PROPOSED PERMANENT FILL TO BE FILLED WITH STONE, NATURAL ROCK, OR A 20" CULVERT TO BE INSTALLED TO MAINTAIN STREAM FLOW.
6. ALL WVDOH ROAD CROSSINGS TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS. WVDOH TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY WORK WITHIN WVDOH R/W.
7. ALL CONSTRUCTION TO BE DONE IN THE PROPOSED PIPELINE LIMITS OF DISTURBANCE AS SHOWN.
8. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS PROVIDED IN A SEPARATE BOUND VOLUME.
9. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE TYPES AND O.D. PRIOR TO CONNECTION.
10. PROPERTY LINES SHOWN ON PLANS WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.

EROSION & SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT MEASURES TO BE IN ACCORDANCE WITH WEST VIRGINIA ONLINE BMP MANUAL FOR STANDARD GUIDELINES AND SPECIFICATIONS AVAILABLE AT: HTTPS://APPS.DEP.WV.GOV/DWWM/STORMWATER/BMP/INDEX.HTML
2. EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN ON PLANS AND DETAILED IN SPECIFICATIONS.
3. EXPOSED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSIVE FORCES OF RAINDROPS, FLOWING WATER, AND WIND.
4. CLEARING AND GRUBBING IS TO OCCUR IN THE NOTED LIMITS OF DISTURBANCE (L.O.D.) ONLY.
5. ALL GRADED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
6. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
7. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH BMPs.
8. EROSION AND SEDIMENT CONTROLS BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY NECESSARY OR REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.

CONSTRUCTION SEQUENCE OF EVENTS

1. CALL MISS UTILITY (1-800-245-4848)
2. INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
3. CONSTRUCTION OF PIPELINE WITH RESTORATIONS.
4. TESTING OF PIPELINE AND APPURTENANCES.
5. WORK CLOSE-OUT, PUNCH LIST, CLEAN UP, REPAIRS, FINAL SEEDING AND MULCHING, ETC...

LEGEND / ABBREVIATIONS

SYMBOL	DESCRIPTION
GV	= EXISTING PIPELINE VENT
	= EXISTING GAS WELL (AS NOTED)
	= EXISTING GAS METER
	= EXISTING PIPELINE MARKER
	= EXISTING GAS VALVE
	= EXISTING MONUMENT FOUND (AS NOTED)
	= EXISTING UTILITY POLE
	= EXISTING GATE / FENCE POST
— G —	= EXISTING PIPELINE
— W —	= EXISTING WATER LINE
— X —	= EXISTING FENCE
— O/U —	= EXISTING OVERHEAD UTILITY
— UGC —	= EXISTING UNDERGROUND UTILITY
— T —	= EXISTING TELEPHONE
	= EXISTING GUARDRAIL
	= EXISTING UNPAVED ROAD
	= EXISTING PAVED ROAD
	= EXISTING DITCH
	= EXISTING TREELINE
	= PROPERTY LINE
	= DOH RIGHT-OF-WAY LINE
	= PROPOSED PERMANENT RIGHT-OF-WAY
	= PROPOSED CONSTRUCTION RIGHT-OF-WAY/ LIMITS-OF-DISTURBANCE
— LOD —	= COMPRESSOR/WELL PAD LIMITS-OF-DISTURBANCE
	= PROPOSED ANTERO BASELINE
— G —	= PROPOSED ANTERO GAS LINE
— W —	= PROPOSED ANTERO BURIED WATER LINE
— W —	= PROPOSED ANTERO SURFACE WATER LINE
	= EXISTING GROUND PROFILE
	= PROPOSED PIPELINE PROFILE
1250	= CONTOUR
	= AREA-OF-INTEREST
— T-A —	= PROPOSED TYPE A BMP (SEE TABLE ON SHEET 22)
— T-B —	= PROPOSED TYPE B BMP (SEE TABLE ON SHEET 22)
— T-C —	= PROPOSED TYPE C BMP (SEE TABLE ON SHEET 22)
— X —	= PROPOSED ORANGE SAFETY FENCE
	= PROPOSED RIGHT-OF-WAY DIVERSION (PLAN)
	= PROPOSED ACCESS ROAD DITCH
	= PROPOSED CULVERT
	= DELINEATED CULVERT
	= DELINEATED STREAMS
	= DELINEATED STREAMS (PROPOSED PERMANENT FILL)
	= DELINEATED WETLANDS
	= DELINEATED WETLANDS (PROPOSED PERMANENT FILL)
	= DELINEATED GROUNDWATER SEEP/SPRING
	= ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
	= ADDITIONAL TEMPORARY WORKSPACE
	= STONE CONSTRUCTION ENTRANCE
	= TEMPORARY TIMBERMAT CROSSING
	= PROPOSED ACCESS ROAD
M 1 P	= PIPELINE MILE POST
	= PROPOSED RIGHT-OF-WAY DIVERSION (PROFILE)
	= PROPOSED EARTH TRENCH BREAKER (PROFILE)
	= PROPOSED TRENCH PLUG DRAIN (PROFILE)
GM	= PROPOSED GAS LINE MARKER
TS	= PROPOSED TEST STATION
43-3-4-31.1	= PARCEL IDENTIFICATION

*LEGEND IS TYPICAL. NOT ALL ITEMS IN LEGEND APPEAR IN DRAWING.

PROPOSED CONSTRUCTION RIGHT-OF-WAY/ LIMITS-OF-DISTURBANCE

CONSTRUCTION R/W LIMITS-OF-DISTURBANCE
VARIES
B.L. PROPOSED CORRIDOR
VARIES
CONSTRUCTION R/W LIMITS-OF-DISTURBANCE

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL GENERAL NOTES

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 02 – GNOTS	
REVISION No.:	3		

ANTERO MIDSTREAM

ISSUED FOR PERMITTING PLANS FOR THE

CRIMSON SOUTH SWL

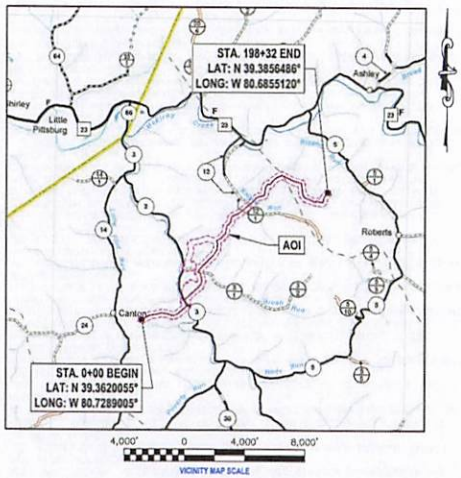
18" HDPE SURFACE WATER LINE

AFE # A11568

101-050-11638

DODDRIDGE COUNTY, WEST VIRGINIA

NOVEMBER 2022



THRASHER

TOTAL AREA AND TREE CLEARING	AREA	UNITS
PERMITTED LIMITS-OF-DISTURBANCE	52.3	ACRES
TREE CLEARING	39.1	ACRES

EXISTING INFORMATION SOURCES

BASE CONTOUR DATA PROVIDED BY OTHERS.

ROUTE INFORMATION AND LOCATION PROVIDED BY ANTERO.

SUPPLEMENTAL SPOT ELEVATIONS AND ALIGNMENT PROVIDED BY:

THE THRASHER GROUP
600 WHITE OAKS BLVD., P.O. BOX 940
BRIDGEPORT, WV 26330

BENCHMARK:
HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, US SURVEY FOOT
VERTICAL - NAVD 88 (GEOID12B), US SURVEY FOOT

ROAD DESIGNATIONS OBTAINED FROM WV-DOH
(http://www.transportation.wv.gov)

1-800-245-4848
TICKET # 2223866992, 2223866997, 2223867009

WEST VIRGINIA 811

CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.
CALL811.COM/811-IN-YOUR-STATE

Antero Midstream

PHONE: (303) 357-7310 | FAX: (303) 357-7315
1615 WYNKOOP STREET
DENVER, CO 80202

ALIGNMENT SHEETS PREPARED BY

BRIDGEPORT, WV OFFICE
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
(304) 624-4108
PO BOX 940

PLAN REPRODUCTION WARNING

THESE PLANS ARE INTENDED TO BE PLOTTED ON ANSI D (22" X 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE. THESE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THESE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.
WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

THIS PLAN SET DEPICTS THE NECESSARY INFORMATION FOR EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED BY THE WVDEP FOR STORM WATER PERMITTING PURPOSES.

THE PIPELINE MATERIALS, ASSOCIATED APPURTENANCES, MATERIAL STRENGTHS, MAOP CALCULATIONS, PIPELINE ROUTING, ETC. DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE APPROPRIATENESS, OR DESIGN, OR SAID MATERIAL DEPICTED IN THESE PLANS.

THE AQUATIC RESOURCES DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE ACCURACY, OR COMPLETENESS, OF THE AQUATIC RESOURCES DEPICTED ON THESE PLANS.

CLAYTON C. WHITE REGISTERED 24495 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

CLAYTON C. WHITE, WV P.E. # 24495

☒ ISSUED FOR PERMITS DATE: 11/9/22 BY:

LAYOUT TAB: COVER
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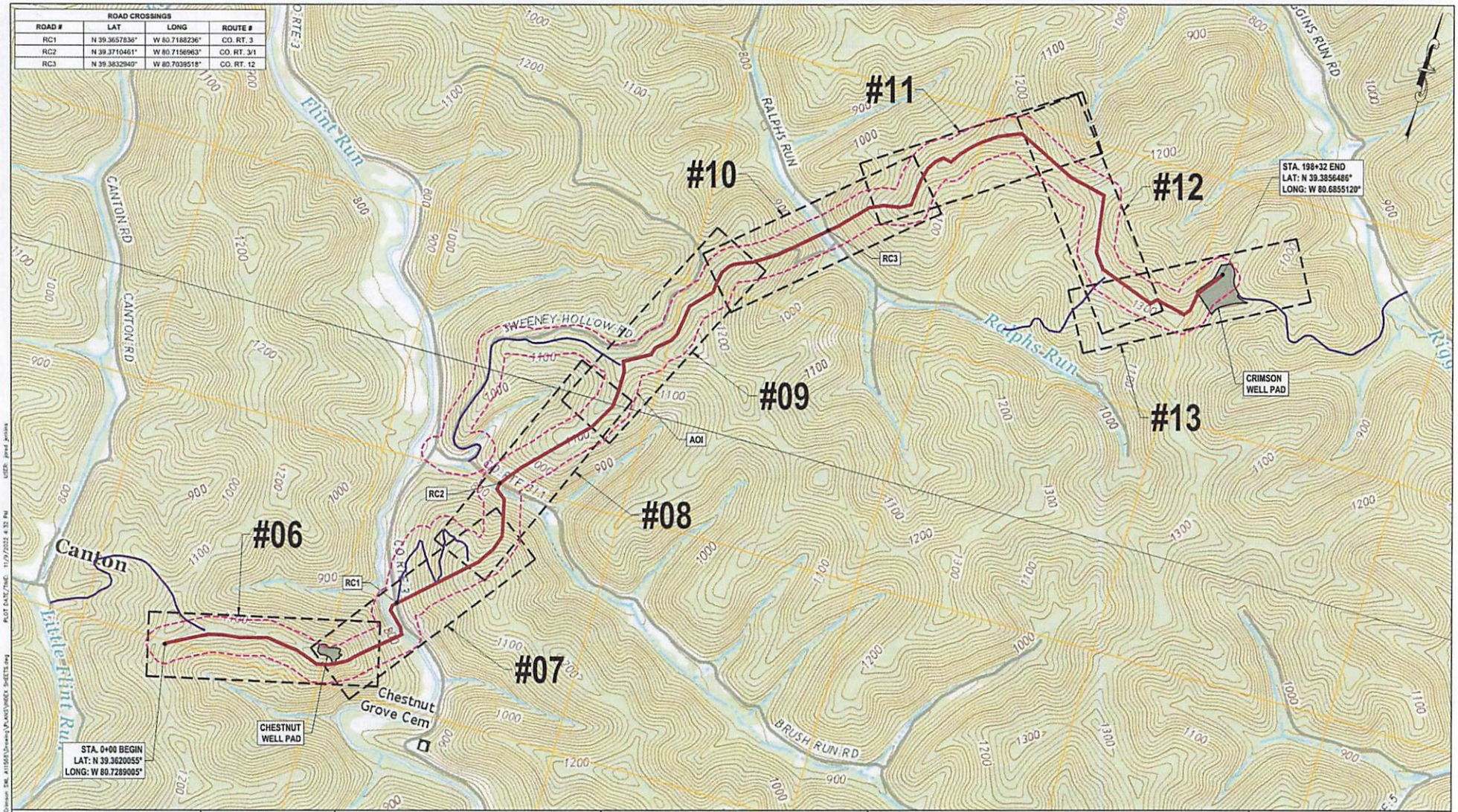

ROAD CROSSINGS			
ROAD #	LAT	LONG	ROUTE #
RC1	N 39.3657836°	W 80.7188236°	CO. RT. 3
RC2	N 39.3710461°	W 80.7156963°	CO. RT. 3/1
RC3	N 39.3832940°	W 80.7039518°	CO. RT. 12

THRASHER

0 600 1200
HORZ. SCALE IN FEET

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	11/08/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/9/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. MAPPING SOURCE: CENTER POINT, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
SMITHBURG, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
6. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL
PLAN INDEX SHEET

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	04 – PL-INDEX
REVISION No.:	3		

LAYOUT TAB: PL-INDEX
CAD FILE: N:\2021\2021-11638.00-Antero Crimson SWL #11568\Drawings\PLANS\INDEX SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:35 PM
USER: jared.gates

GENERAL CONSTRUCTION SPECIFICATIONS

1. GRADING

THE CONTRACTOR SHALL GRADE AS NECESSARY TO MITIGATE THE NECESSITY OF ABRUPT OVER-BENDS OR SAG-BENDS. CONTRACTOR SHALL MINIMIZE THE GRADING WHERE PRACTICAL TO PREVENT UNNECESSARY DISTURBANCE AND MINIMIZE WORK REQUIRED TO RETURN THE RIGHT-OF-WAY TO ITS ORIGINAL ELEVATIONS, SLOPES, AND PROFILE AS CLOSELY AS PRACTICAL, BUT CONSISTENT WITH MINIMIZING ABRUPT OVER-BENDS AND SAG-BENDS. GRADED SUBSOIL MATERIALS SHALL BE STOCK PILED SO IT CAN BE RETURNED TO ITS ORIGINAL DEPTH AND LOCATION AS OPPOSED TO SPREAD ALONG THE RIGHT-OF-WAY. THE CONTRACTOR SHALL GRUB, OR OTHERWISE REMOVE AND DISPOSED OF ALL STUMPS, ROOTS AND DEBRIS FOUND TO BE IN THE WAY OF CONSTRUCTION WITH PERMANENT RIGHT-OF-WAY LIMITS. WHEN THE CONTRACTOR IS CUTTING GRADE ALONG OR ACROSS EXISTING PIPELINES, SPOIL OR MATS SHALL BE PLACED OVER THE EXISTING LINES PER THE REQUIREMENTS OF THE OPERATING COMPANY OF THE FOREIGN PIPELINE.

2. COMPANY FOREIGN LINE AND UTILITY CROSSINGS

CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SUCH CROSSINGS AND NOTIFY THE OWNER PRIOR TO ANY DITCHING ACTIVITY IN THE VICINITY OF THE CROSSINGS. A MINIMUM CLEARANCE OF 12 In., OR AS REQUIRED BY THE OWNER/OPERATOR, SHALL BE MAINTAINED FROM THE FOREIGN CROSSING. THE CONTRACTOR SHALL MAKE ALL REQUIRED "ONE-CALL" NOTIFICATIONS, AND KEEP DOCUMENTATION OF NOTIFICATIONS. THE CONTRACTOR SHALL KEEP THE MARKINGS REFRESHED AS NECESSARY DURING THE LENGTH OF THE CONSTRUCTION ACTIVITIES, MAKING NECESSARY RE-NOTIFICATIONS AS REQUIRED. COMPANY WILL LOCATE AND MARK LOCATIONS OF KNOWN COMPANY-OWNED FACILITIES WITHIN EXISTING OPERATING LOCATIONS.

IN AREAS WHERE UNDERGROUND FACILITIES, SUCH AS PIPELINES, ELECTRICAL LINES, FIBER OPTIC CABLES, ETC. EXISTING, EXCAVATION BY MACHINE SHALL BE LIMITED TO NO CLOSER THAN 2 FEET (IN ANY DIRECTION) TO THE FACILITY. THE FACILITY SHALL THEN BE EXPOSED AND POSITIVELY LOCATED BY HAND EXCAVATION. AFTER THE FACILITY IS EXPOSED, AND ONLY WHILE A COMPANY REPRESENTATIVE IS ON-SITE, EXCAVATION BY MACHINE IS PERMITTED TO WITHIN 1 FOOT (IN ANY DIRECTION) OF THE FACILITY. THE REMAINING EXCAVATION MUST BE HAND DUG.

3. DITCH SPECIFICATIONS

DITCH WIDTH AND DEPTH – UNLESS OTHERWISE STATED ON THE DRAWINGS OR RIGHT-OF-WAY LINE LIST, THE DITCH SHALL BE A MINIMUM OF 12 In. WIDER THAN THE PIPE BEING LAID FOR PIPE DIAMETERS LESS THAN 12 In. AND A MINIMUM OF 18 In. WIDER FOR PIPE DIAMETERS 12 In. AND GREATER AND OF SUCH DEPTH THAT THE PIPE SHALL HAVE 48 In. MINIMUM COVER IN SOIL AND 36 In. IN CONSOLIDATED ROCK, MEASURED FROM THE TOP OF THE PIPE TO THE AVERAGE LEVEL OF THE ORIGINAL OR RESTORED GROUND ON THE TWO SIDES OF THE DITCH, WHICHEVER IS LOWER.

CONSOLIDATED ROCK – CONSOLIDATED ROCK IS DEFINED AS ROCK LAYERS WHERE THE UPPERMOST SURFACE EXISTS AT A HIGHER ELEVATION THAN THE ELEVATION OF THE TOP OF THE PIPE. THIS CONDITION PROVIDES PROTECTION AGAINST DAMAGE FROM EXTERNAL FORCES AND JUSTIFIES COVER.

DITCH GRADING – THE BOTTOM OF THE DITCH SHALL BE CUT TO A UNIFORM GRADE SO THAT THE FULL WIDTH OF THE DITCH SHALL BE AVAILABLE FOR PROVIDING SLACK IN THE LINE WHEN LAID.

BEND EXCAVATIONS – AT OVER-BENDS AND SIDE-BENDS, THE CONTRACTOR SHALL EXCAVATE THE DITCH TO ALLOW PROPER CLEARANCE BETWEEN THE INSIDE BEND OF THE PIPE AND THE BOTTOM OR SIDE OF THE DITCH TO MAINTAIN THE MINIMUM COVER.

ROCK – IN ALL CASES WHERE ROCK, OR ANY BOULDER LARGER THAN TWO In. IN DIAMETER IS ENCOUNTERED IN THE BOTTOM OF THE DITCH, THE DITCH SHALL BE EVENLY PADDED WITH SOIL, SAND OR OTHER PADDING MATERIAL IN ORDER TO PREVENT THE ROCK OR BOULDERS FROM COMING INTO CONTACT WITH THE PIPE COATING.

4. SPOIL BANK

THE SPOIL BANK FROM THE DITCHING OPERATIONS SHALL NOT BE PLACED ON ANY LOOSE DEBRIS OR FOREIGN MATTER WHICH MIGHT BECOME MIXED DURING PADDING AND BACKFILLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN GAPS OR OPENINGS IN THE SPOIL BANK ACROSS CULTIVATED FIELDS, SO THAT EXCESSIVE RAINS DO NOT CAUSE WATER TO BACK UP AND FLOOD CULTIVATED SECTIONS. EXTREME CARE SHALL BE EXERCISED TO KEEP ALL DRAIN DITCHES AND WATER COURSES OPEN AND USEFUL.

5. TEMPORARY BRIDGES

WHEN THE DITCH IS EXCAVATED THROUGH LANDS WHERE LIVESTOCK/WILDLIFE IS CONFINED OR THROUGH AGRICULTURAL FIELDS WHERE THE COMPANY DETERMINES IT IS DESIRABLE FOR THE LANDOWNER OR TENANT TO HAVE A PASSAGEWAY ACROSS THE DITCH, THE CONTRACTOR SHALL PROVIDE SAFE, TEMPORARY BRIDGES FOR CROSSING THE DITCH AND LEAVE AN OPENING IN THE SPOIL BANK.

6. EXCAVATING NEAR IN-SERVICE PIPELINES

WHEN DITCHING PARALLEL TO AN EXISTING PIPELINE IN THE SAME RIGHTS-OF-WAY, NEAR THE EXISTING LINE AND DEEPER THAN THE EXISTING LINE, CARE SHOULD BE TAKEN TO LEAVE SUFFICIENT DISTANCE AND SUPPORT TO ENSURE SAID LINE DOES NOT SLOUGH OFF INTO NEW EXCAVATION. IF PARALLEL LINE IS A COUPLED HIGH PRESSURE LINE, IT IS NOT PERMITTED TO EXPOSE MORE THAN ONE COUPLING AT A TIME. IN ALL INSTANCES, THE WORK SHOULD BE PLANNED SUCH THAT THE EXCAVATION IS OPEN A MINIMUM AMOUNT OF TIME.

7. HAULING AND STRINGING

THE CONTRACTOR SHALL HAUL AND STRING PIPE, CASING AND OTHER MATERIALS TO THE RIGHT-OF- WAY OR WORK AREA. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRUCKS AND EQUIPMENT FOR THE HAULING AND SPOTTING OF ALL MATERIALS. THE CONTRACTOR SHALL FURNISH SKIDS AND PLACE PIPE ON SKIDS ON THE RIGHT-OF-WAY IN A MANNER WHICH KEEPS BOTH ENDS FREE OF DIRT AND DEBRIS.

8. BENDING

FIELD BENDING – WHERE IT IS NECESSARY TO BEND PIPE, ONLY COLD BENDS SHALL BE EMPLOYED. THE BENDS SHALL BE FREE FROM BUCKLING, FLATTENING, CRACKS OR OTHER EVIDENCE OF MECHANICAL DAMAGE AND ALL BENDS SHALL NOT HAVE A DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM DIAMETERS IN EXCESS OF 2.5 % OF THE NOMINAL DIAMETER. ALL BENDS SHALL MEET THE CRITERIA SET FORTH IN DOT PART 192.

8. BENDING (CONT'D)

SLACK AND LONGITUDINAL WELDS – ALL OVER-BENDS, SAGS AND SIDE-BENDS SHALL BE MADE TO PROVIDE AN ADEQUATE AMOUNT OF SLACK IN THE PIPELINE. ON PIPE HAVING A LONGITUDINAL WELD, THE LONGITUDINAL WELD MUST BE LOCATED AS NEAR AS PRACTICABLE TO THE NEUTRAL AXIS OF THE BEND.

BENDING MACHINE – EACH BEND SHALL BE MADE USING A COMPANY APPROVED BENDING MACHINE HAVING A FULL CIRCLE BENDING SHOE WITH A NEOPRENE OR URETHANE LINING TO PRODUCE A SMOOTH, SYMMETRICAL BEND, UNLESS SPECIFIED OTHERWISE BY THE COMPANY. ON PIPE CONTAINING A LONGITUDINAL WELD, THE LONGITUDINAL SEAM MUST BE AS NEAR AS PRACTICAL TO NEUTRAL AXIS OF THE BEND UNLESS THE BEND IS MADE WITH AN INTERNAL BENDING MANDREL OR THE PIPE IS 12 In. OR LESS IN OUTSIDE DIAMETER OR HAS A DIAMETER-TO-WALL THICKNESS RATIO LESS THAN 70. IF THE PIPE IS INTERNALLY COATED, THE BEARING SURFACES OF THE MANDREL SHALL BE CONSTRUCTED TO AVOID PERMANENTLY MARKING OR DAMAGING THE INTERNAL COATING. NO APPRECIABLE STRETCHING OR THINNING OF THE PIPE WALL THICKNESS SHALL BE PERMITTED.

BENDING LIMITATION – DEFLECTION SHALL BE LIMITED TO A MAXIMUM OF ONE AND ONE-HALF DEGREES PER PIPE DIAMETER MEASURED LONGITUDINALLY ALONG THE PIPE. A COMPANY ACCEPTED METHOD OF MEASUREMENT SHALL BE USED BY THE CONTRACTOR WHEN MARKING THE PIPE IN PREPARATION FOR MAKING FIELD BENDS. BENDING SHALL NOT BE ALLOWED IN A CIRCUMFERENTIAL WELD AND NOT CLOSER THAN 6 ft. TO AN OPEN END.

9. SWABBING AND CLOSING OPEN ENDS

SWABBING – EACH PIPE JOINT SHALL BE SWABBED AS NECESSARY TO REMOVE ALL DIRT AND FOREIGN MATTER FROM THE INSIDE OF THE PIPE BEFORE THE JOINTS ARE ALIGNED AND WELDED. THE SWABBING OPERATION SHALL NOT BE CARRIED ON MORE THAN FOUR JOINTS AHEAD OF THE FIRING LINE WELDERS OR ALIGNING AND WELDING OPERATIONS.

CLOSING OF PIPE ENDS – WHERE THE LINE IS WELDED IN LONG SECTIONS BY THE FIRING LINE METHOD, THE ENDS OF THE LONG SECTIONS SHALL BE CLOSED AND KEPT CLOSED IN A MANNER APPROVED BY THE COMPANY UNTIL THE LONG SECTIONS ARE FINALLY JOINED. DURING THE LAYING OPERATIONS, CLOSE ATTENTION SHALL BE GIVEN TO OPEN ENDS TO ENSURE A COMPLETELY OPEN AND CLEAN LINE FREE OF ANY OBSTRUCTIONS. ALL REASONABLE PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER FROM ENTERING THE LINE.

PREVENTION OF FOREIGN MATTER IN THE PIPELINE – THE OPEN END OF THE LINE SHALL BE SECURELY CLOSED AT THE END OF EACH DAY'S WORK TO PREVENT ENTRANCE OF SMALL ANIMALS OR THE INTRODUCTION OF FOREIGN MATTER OF ANY NATURE AND SHALL NOT BE REOPENED UNTIL WORK IS RESUMED. ANY OBSTRUCTIONS REMAINING IN THE LINE AFTER THE COMPLETION THEREOF SHALL BE REMOVED.

10. POSITIONING OF LONGITUDINAL SEAM

IN INSTANCES WHERE PIPE OTHER THAN SEAMLESS IS FURNISHED BY THE COMPANY, THE LONGITUDINAL SEAMS OF SUCH PIPE SHALL BE STAGGERED BY NOT MORE THAN 45°. LONGITUDINAL WELD SEAMS SHALL HAVE A MINIMUM FOUR-INCH CIRCUMFERENTIAL OFFSET BETWEEN ABUTTING JOINTS. UNLESS OTHERWISE SPECIFIED, THE LONGITUDINAL SEAMS ON ADJACENT PIPE SHALL BE STAGGERED, PLACING ONE APPROXIMATELY IN THE 10 O'CLOCK POSITION AND THE OTHER APPROXIMATELY IN THE 2 O'CLOCK POSITION.

11. LOWERING-IN PIPE

OVER-BENDS, SIDE-BENDS AND SAG-BENDS – ALL OVER-BENDS SHALL BE MADE AND INSTALLED TO CLEAR THE HIGH POINT OF THE BOTTOM OF THE DITCH BY AT LEAST 12 IN. AT THE POINT OF BEND. AT SIDE-BENDS, THE PIPE SHALL BE BENT AND LOWERED TO LAY AGAINST THE OUTSIDE WALL AT THE BOTTOM OF THE DITCH. ALL SAG-- BENDS SHALL CONTINUOUSLY LIE ON FIRM GROUND AT THE BOTTOM OF THE DITCH.

PIPE SLINGS AND CRADLES – THE CONTRACTOR SHALL PROVIDE PADDED SLINGS FOR HANDLING COATED AND WRAPPED PIPE. THE USE OF BELTING REINFORCED WITH WIRE CABLE SHALL NOT BE PERMITTED. ANY METHOD OF LOWERING-IN WHICH PREVENTS DAMAGE TO THE COATING SHALL BE ACCEPTABLE; HOWEVER, THE USE OF CRADLES IS PREFERRED.

CONDITION OF DITCH – PRIOR TO LOWERING-IN THE CONTRACTOR SHALL PROVIDE, TO THE SATISFACTION OF THE COMPANY, A DITCH WHICH IS FREE FROM EXCESS DEBRIS, LARGE ROCKS AND ROOTS, WELDING RODS, SKIDS OR OTHER SUCH OBJECTS WHICH CAN CAUSE DAMAGE TO THE PIPE AND ITS PROTECTIVE COATING DURING LOWERING-IN OPERATIONS. THE CONTRACTOR SHALL PUMP WATER FROM THE DITCH, BELL HOLES OR OTHER TIE-IN EXCAVATIONS PRIOR TO LOWERING-IN.

ROCK DITCH PADDING – IN ALL CASES WHERE ROCKS 2 In. AND LARGER ARE ENCOUNTERED IN THE BOTTOM OF THE DITCH AND NO ADDITIONAL PIPE COATING PROTECTION IS PROVIDED, THE CONTRACTOR SHALL PROVIDE PADDING MATERIAL PLACED EVENLY AND CONTINUOUSLY TO A MINIMUM DEPTH OF 8 In. ALONG THE BOTTOM OF THE DITCH AS APPROVED BY THE COMPANY.

SUPPORTS – THE CONTRACTOR SHALL CONSTRUCT THE PIPELINE TO LIE ON THE BOTTOM OF THE PIPE TRENCH. ALL BENDS SHALL BE MADE TO FIT THE PIPE DITCH. WHERE PIPE CANNOT BE DIRECTLY SUPPORTED BY THE BOTTOM OF THE TRENCH, SUPPORT SHALL BE PROVIDED BY SANDBAGS OR OTHER COMPANY APPROVED MATERIALS. SANDBAGS SHALL BE PLACED AT POINTS TO PROVIDE STRESS-FREE SUPPORT FOR THE PIPELINE SUBSEQUENT TO BACKFILLING. SPACING INTERVALS FOR SANDBAG SUPPORTS SHALL BE 15 FT. OR LESS AS REQUIRED BY THE COMPANY. SUPPORTS COMPRISED OF MATERIALS OTHER THAN SANDBAGS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND AT SPACING INTERVALS NO GREATER THAN THE APPROPRIATE MAXIMUM INTERVAL RECOMMENDED BY THE MANUFACTURER. SUPPORT SHALL BE PLACED AT POINTS TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO BACKFILL. THE CONTRACTOR SHALL NOT USE ANY SUPPORT METHOD WITHOUT THE PRIOR APPROVAL OF THE COMPANY AND WITHOUT PROVIDING THE COMPANY WITH THE MANUFACTURER'S RECOMMENDED INSTALLATION DIRECTIONS FOR THE SPECIFIC METHOD BEING USED.

TIE-INS – SECTIONS OF THE PIPELINE EXCAVATED FOR TIE-INS SHALL BE SUPPORTED WITH SANDBAGS OR OTHER APPROVED MATERIALS AT INTERVALS INDICATED ABOVE. SUPPORTS SHALL BE PLACED IMMEDIATELY AFTER FINAL TIE-IN TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO THE BACKFILLING OPERATION.

12. BACKFILLING

AFTER LOWERING-IN HAS BEEN COMPLETED, BUT BEFORE BACKFILLING, THE DITCH SHALL BE PUMPED DRY IN UPLAND AREAS AND THE LINE SHALL BE INSPECTED TO ENSURE THAT NO SKIDS, BRUSH, STUMPS, TREES, BOULDERS OR DEBRIS ARE IN THE DITCH. NO SUCH MATERIALS OR DEBRIS ARE TO BE BACKFILLED INTO THE DITCH. AFTER THE PIPE HAS BEEN INSPECTED AND APPROVED BY THE COMPANY, AFTER ALL DAMAGE TO THE PROTECTIVE COATING HAS BEEN REPAIRED AND AFTER THE COATING ON THE PIPE HAS HAD SUFFICIENT TIME TO CURE, THEN THE CONTRACTOR SHALL BACKFILL THE DITCH SUFFICIENTLY TO PREVENT FLOATING. THE CONTRACTOR SHALL COMPLETE THE FILLING OF THE DITCH TO PRODUCE A TRIM BACKFILL. EXCAVATED MATERIAL SHALL BE PLACED IN THE DITCH. TOPSOIL, WHERE IT HAS BEEN SEGREGATED, SHALL BE BACKFILLED AS CLOSE AS POSSIBLE TO ITS ORIGINAL LOCATION.

ROCK, TWO INCHES IN DIAMETER AND LARGER, OR LIKE MATERIALS SHALL NOT BE BACKFILLED DIRECTLY ONTO THE PIPE. WHERE SUCH MATERIALS ARE ENCOUNTERED, THE CONTRACTOR SHALL HAUL, IF NECESSARY, SUFFICIENT EARTH OR SAND TO BE BACKFILLED AROUND AND OVER THE PIPE TO FORM A PROTECTIVE PADDING OR CUSHION TO A MINIMUM OF EIGHT INCHES OR, AS OTHERWISE SPECIFIED IN THE SCOPE OF WORK, IN DEPTH BETWEEN THE PIPE AND ANY GRAVEL OR SMALL BROKEN ROCK TO BE BACKFILLED. LARGE ROCK OR BOULDERS IN EXCESS OF 24 In. IN DIAMETER, WIDTH OR LENGTH, SHALL NOT BE BACKFILLED INTO THE DITCH. SUCH ROCK SHALL BE DISPOSED OF PROPERLY.

13. TRENCH BREAKER

THE CONTRACTOR SHALL INSTALL EROSION BREAKERS IN THE DITCH OVER, UNDER AND AROUND THE PIPE TO PROVIDE FULL PROTECTION AGAINST BACKFILL WASHING AT VARIOUS POINTS ALONG THE PIPELINE. BREAKER INSTALLATIONS AND SPACING SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS AS WELL AS COMPANY, LOCAL, STATE, AND FEDERAL REQUIREMENTS.

- BREAKER MATERIALS SHALL INCLUDE, BUT ARE NOT BE LIMITED TO, DECOMPOSABLE BAGS, SAND AND ANY OTHER MATERIALS REQUIRED TO FACILITATE THE PROPER PLACEMENT OF THE BREAKER MATERIAL IN THE DITCH.
- BREAKER INSTALLATIONS MAY BE COMPRISED OF EITHER A MULTIPLE SANDBAG CONFIGURATION OR BY OTHER APPROVED METHODS. ALL BREAKER INSTALLATIONS SHALL MEET WITH THE APPROVAL OF THE COMPANY.
- BREAKER SIZE IS DEPENDENT ON THE EXTENT AND CONDITION OF THE DITCH IN DEPTH, WIDTH, SLOPE AND GRADE. AT A MINIMUM, BREAKERS SHALL EXTEND THE WIDTH AND DEPTH OF THE DITCH.
- BREAKERS, SHALL BE SPACED ALONG THE DITCH IN ACCORDANCE WITH THE COMPANY'S ENVIRONMENTAL STANDARDS.

14. DIRT PADDING

THE CONTRACTOR SHALL INSTALL ROCK-FREE DIRT PADDING IN AREAS DESIGNATED BY THE COMPANY. TOPSOIL SHALL NOT BE USED FOR PADDING THE DITCH. DIRT PADDING SHALL BE INSTALLED IN THE BOTTOM OF THE DITCH TO A MINIMUM DEPTH OF 8 IN., PRIOR TO LOWERING-IN THE PIPELINE, IF OTHER ACCEPTABLE SUPPORT FOR PROTECTING THE BOTTOM OF THE PIPE IS NOT UTILIZED. A MINIMUM OF 8 In. OF DIRT PADDING SHALL BE INSTALLED AS COVER ON TOP OF THE LINE AS PROTECTION PRIOR TO BACKFILLING. ACCEPTABLE ROCK-FREE PADDING MATERIAL MAY BE OBTAINED DIRECTLY FROM THE SPOIL, OR BY USING A PADDING MACHINE WITH MATERIAL TAKEN DIRECTLY FROM THE SPOIL OR ROCK-FREE PADDING MATERIAL CAN BE HAULED IN BY THE CONTRACTOR.

15. CLEAN-UP

THE CONTRACTOR SHALL KEEP THE RIGHT-OF-WAY CLEAR OF LITTER, SKIDS, DEFECTIVE MATERIALS, AND ALL OTHER CONSTRUCTION DEBRIS IMMEDIATELY BEHIND ITS OPERATIONS, TO THE SATISFACTION OF THE COMPANY. UPON COMPLETION OF THE BACKFILL, THE CONTRACTOR WILL CLEAN THE RIGHT-OF-WAY IN A NEAT AND ACCEPTABLE CONDITION. SURPLUS MATERIALS SHALL BE ASSEMBLED AND DELIVERED BY CONTRACTOR TO A LOCATION DESIGNATED BY THE COMPANY. FENCES SHALL BE RECONSTRUCTED TO THE ORIGINAL LINE AND GATES INSTALLED AS INDICATED BY THE COMPANY. THE CONTRACTOR SHALL FURNISH GATES, FENCING AND POSTS.

THE RIGHT-OF-WAY SHALL BE DISKED, LIMED, SEEDED AND FERTILIZED DURING THE CLEAN-UP OPERATION. THE CONTRACTOR SHALL FURNISH THE LIME, SEED AND FERTILIZER. SEEDING, FERTILIZING AND MULCHING MUST BE DONE WITHIN 6 DAYS OF FINAL CLEAN UP OR IN ACCORDANCE WITH COMPANY ENVIRONMENTAL REQUIREMENTS.

PIPELINE MARKERS SHALL BE INSTALLED AT POINTS DESIGNATED BY THE COMPANY DURING CLEAN-UP OPERATIONS. THE COMPANY SHALL FURNISH LINE AND AERIAL MARKERS.

LAYOUT TAB: SPECS
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PLOT DATE/TIME: 11/9/2022 4:08 PM
USER: jared jenkins

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

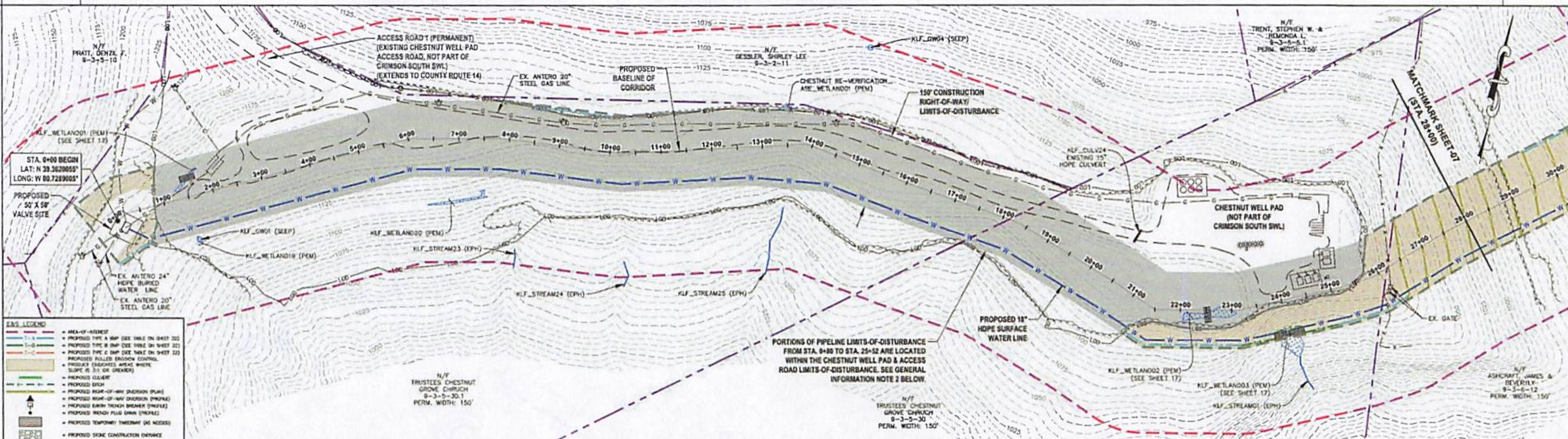
CRIMSON SOUTH SWL
GENERAL CONSTRUCTION SPECS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	03 – SPECS
REVISION No.:	3		

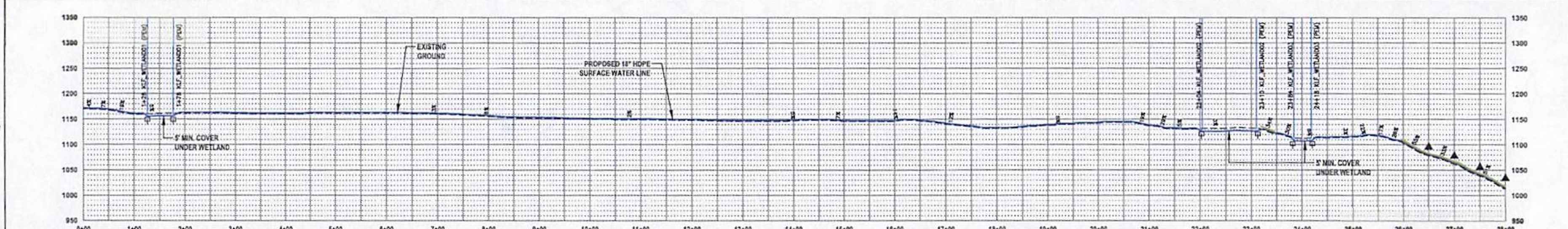
OWNERSHIP & PARCEL NO.	0+00	TRUSTEES CHESTNUT GROVE CHURCH 9-3-5-30.1 CONST. WIDTH: 150' PERM. WIDTH: 150'	18+11	TRUSTEES CHESTNUT GROVE CHURCH 9-3-5-30 CONST. WIDTH: 150' PERM. WIDTH: 150'	26+20	ASHCRAFT, JAMES & BEVERLY 9-3-6-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	28+00
P.I. DEFLECTION ANGLES	0+00						28+00

ALIGNMENT PLAN VIEW



PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

LAYOUT TAB: PLAN1
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THRASHER

HORIZ. SCALE IN FEET (0 – 100 – 200)

VERT. SCALE IN FEET (0 – 100 – 200)

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

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NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
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3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

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2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 28 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

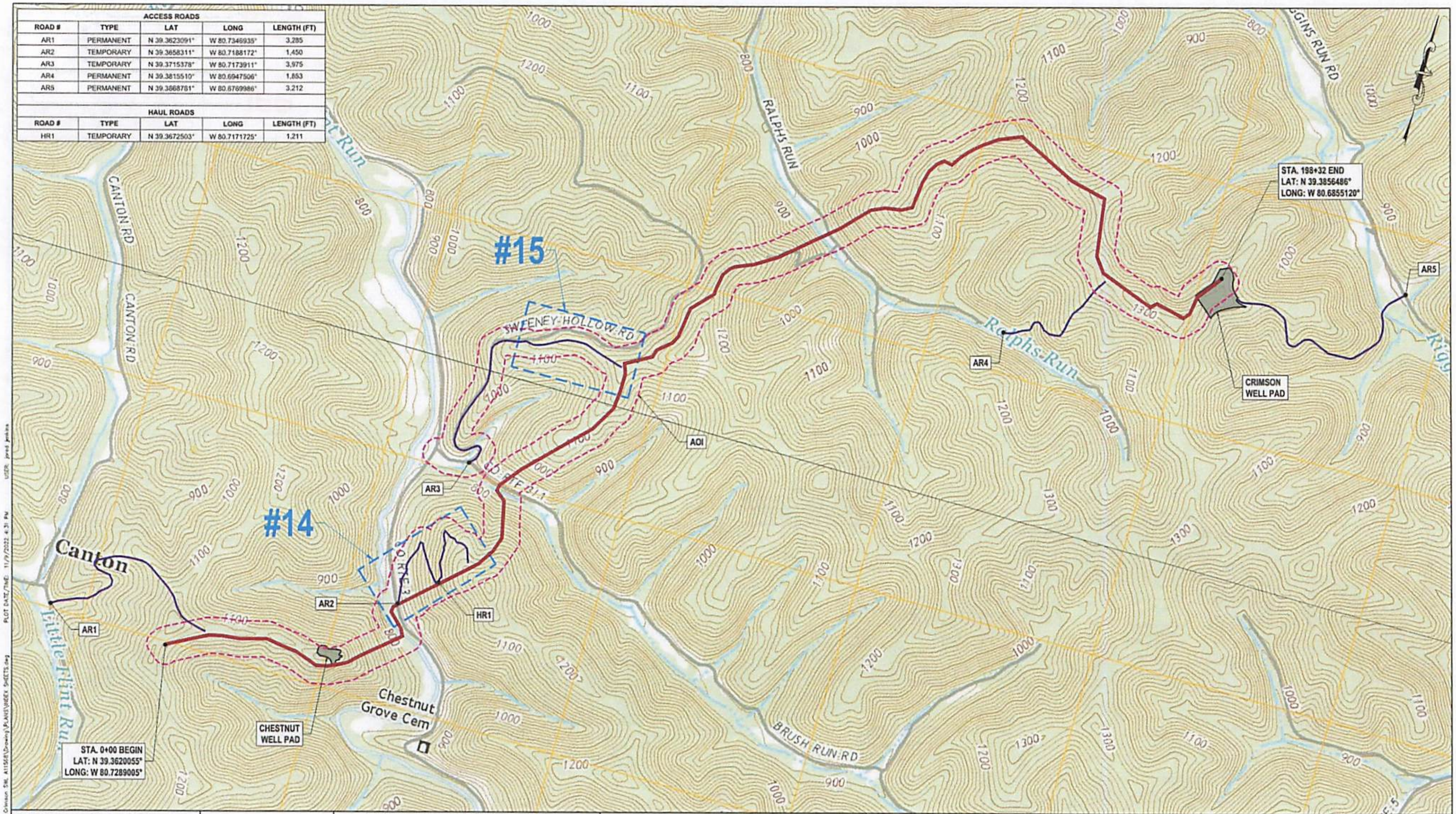
CRIMSON SOUTH SWL STA. 0+00 TO STA. 28+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JDJ (TTG)	DATE: 11/9/2022
CHECKED BY: TTG (TTG)	AFE No.: A11568
SCALE: AS SHOWN	SHEET: 06 – PLAN1
REVISION No.: 3	

ACCESS ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
AR1	PERMANENT	N 39.3623091°	W 80.7346935°	3,285
AR2	TEMPORARY	N 39.3658311°	W 80.7188172°	1,450
AR3	TEMPORARY	N 39.3715378°	W 80.7173911°	3,975
AR4	PERMANENT	N 39.3815510°	W 80.6947506°	1,853
AR5	PERMANENT	N 39.3868781°	W 80.6769986°	3,212

HAUL ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
HR1	TEMPORARY	N 39.3672503°	W 80.7171725°	1,211



THRASHER

0 600 1200
HORIZ. SCALE IN FEET

IFP

ISSUED FOR PERMITTING

DATE 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
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3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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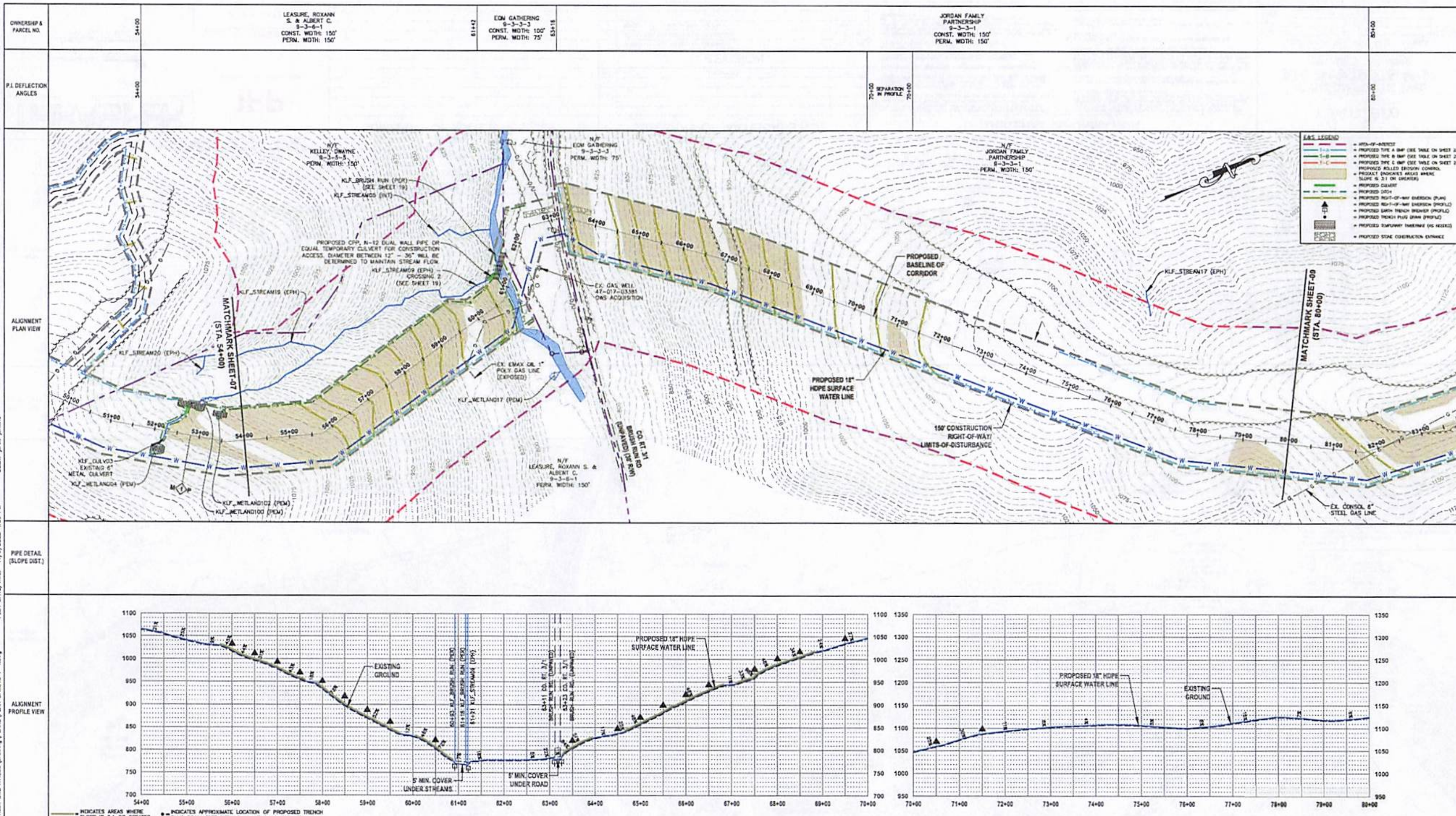
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. MAPPING SOURCE: CENTER POINT, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
   SMITHBURG, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
6. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL ACCESS ROAD INDEX SHEET

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JDJ (TTG)	DATE: 11/9/2022
CHECKED BY: TTG (TTG)	AFE No.: A11568
SCALE: AS SHOWN	SHEET: 05 – AR-INDEX
REVISION No.: 3	



THRASHER

HORIZ. SCALE IN FEET 0 100 200
VERT. SCALE IN FEET 0 100 200

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 31 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

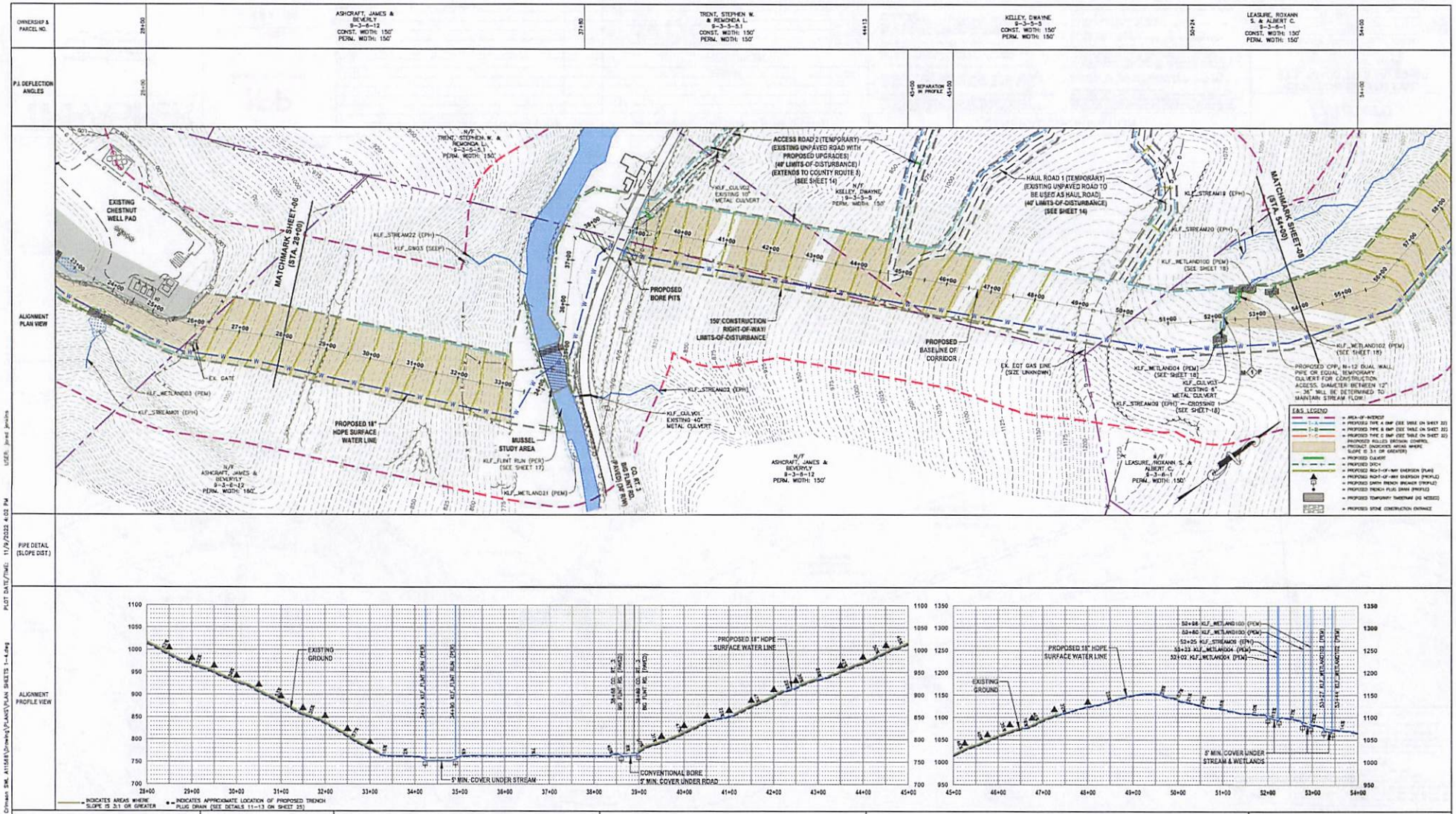
Antero Midstream

CRIMSON SOUTH SWL
STA. 54+00 TO STA. 80+00

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 08 – PLAN3	
REVISION No.:	3		

LAYOUT TAB: PLAN3
CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 1-4.dwg
PLOT DATE/TIME: 11/9/2022 4:02 PM USER: jorad jenkins



THRASHER

0 100 200
HORIZ. SCALE IN FEET
0 100 200
VERT. SCALE IN FEET

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THOSE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE CONSTED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WINDER.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PROPOSED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE IS INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE DETERMINED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 33 & 39 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 38 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET RANGES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (17" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL STA. 28+00 TO STA. 54+00

PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

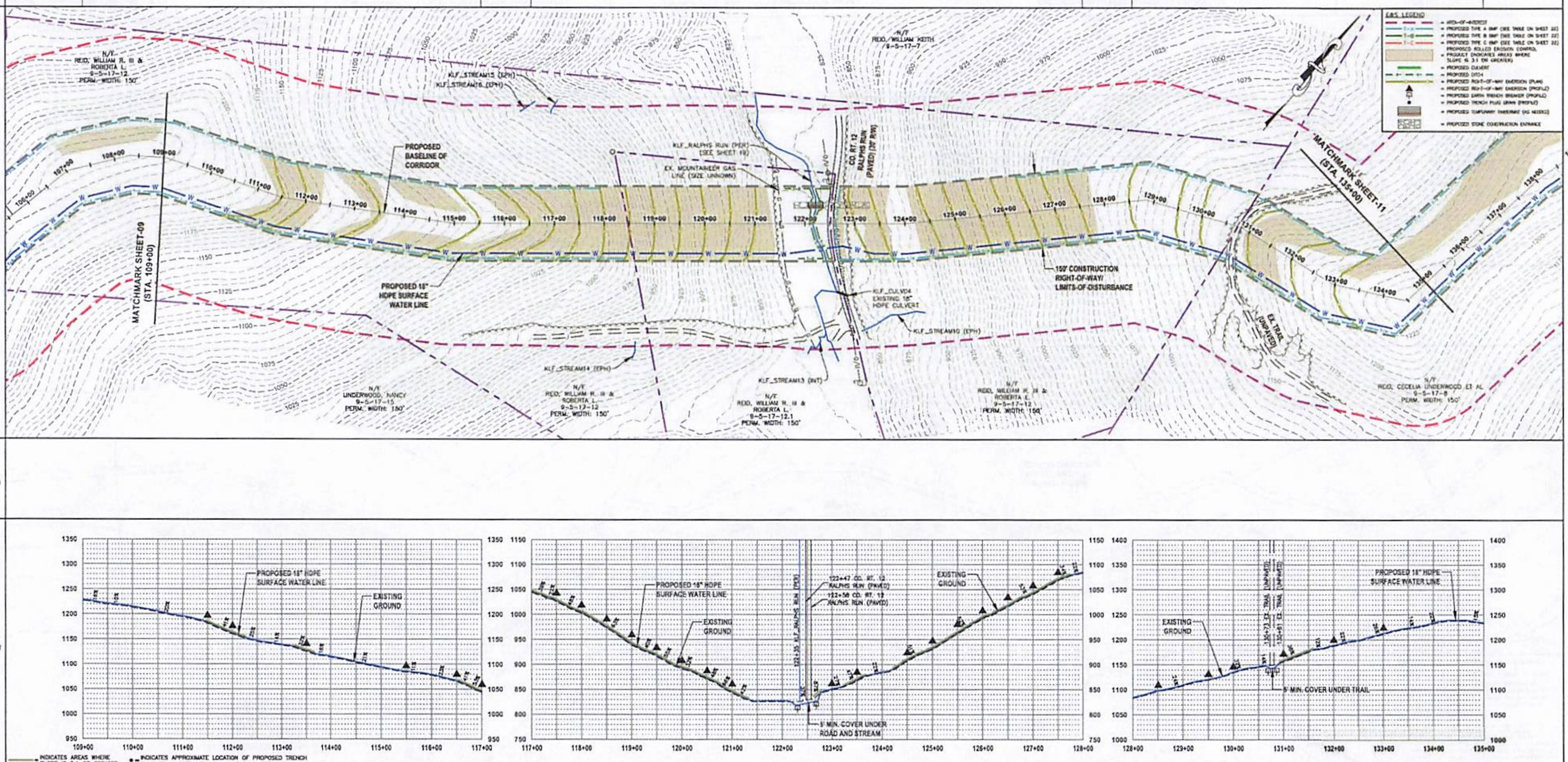
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	07 – PLAN2
REVISION No.:	3		

OWNERSHIP & PARCEL NO.	109+00	REID, WILLIAM R. III & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	118+47	REID, WILLIAM R. III & ROBERTA L. 9-5-17-12.1 CONST. WIDTH: 150' PERM. WIDTH: 150'	123+53	REID, WILLIAM R. III & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	130+74	REID, CECELIA UNDERWOOD ET AL 9-5-17-8 CONST. WIDTH: 150' PERM. WIDTH: 150'	135+00
P.I. DEFLECTION ANGLES	109+00	117+00 SEPARATION IN PROFILE 117+00				128+00 SEPARATION IN PROFILE 128+00			135+00

ALIGNMENT PLAN VIEW

PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



THRASHER

HORIZ. SCALE IN FEET 0 100 200
VERT. SCALE IN FEET 0 100 200

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL
STA. 109+00 TO STA. 135+00

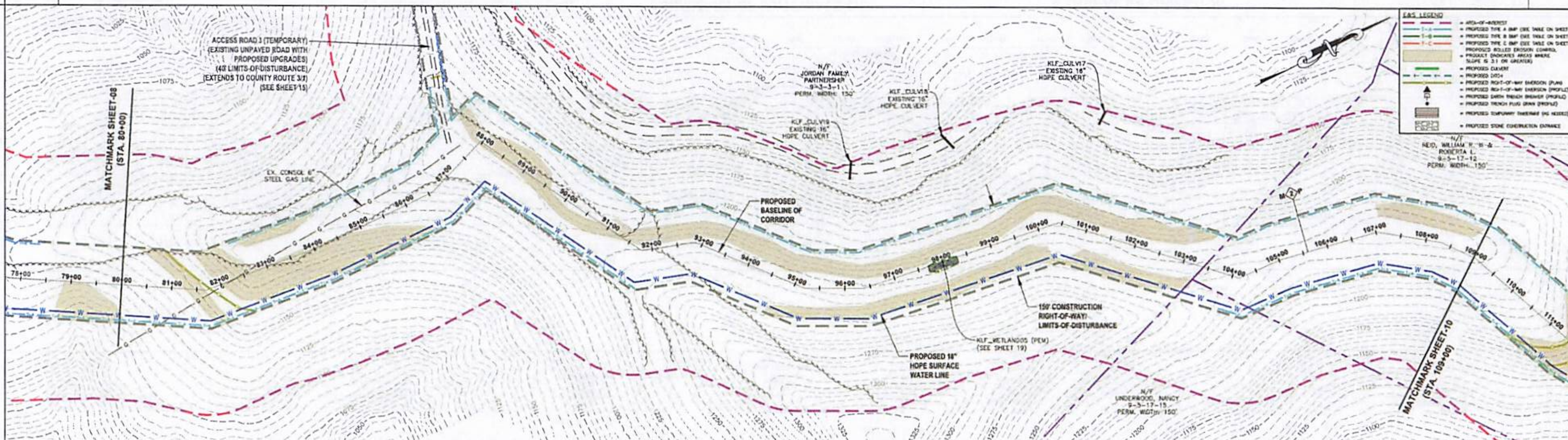
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 10 – PLAN5	
REVISION No.:	3		

LAYOUT TAB: PLAN5
CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg
PLOT DATE/TIME: 11/9/2022 4:03 PM
USER: Jared Jenkins

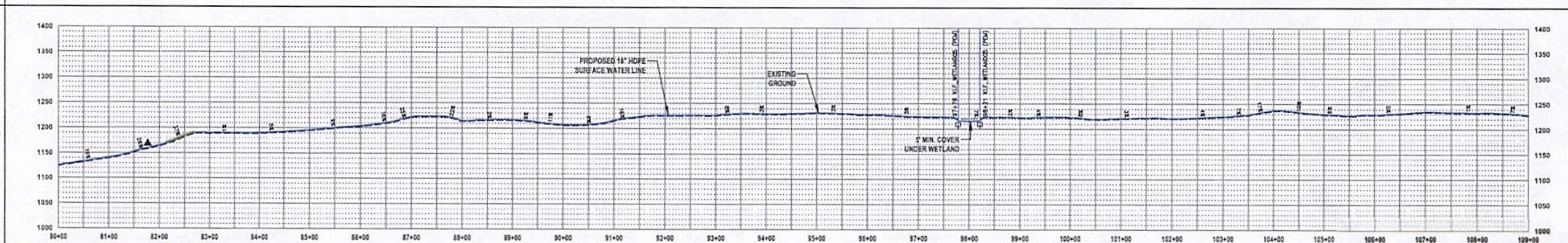
OWNERSHIP & PARCEL NO.	80+00	JORDAN FAMILY PARTNERSHIP 9-3-3-1 CONST. WDTH: 150' PERM. WDTH: 150'	103+41	REID, WILLIAM R. III & ROBERTA L. 9-5-17-12 CONST. WDTH: 150' PERM. WDTH: 150'	109+00
P.I. DEFLECTION ANGLES	80+00				109+00

ALIGNMENT PLAN VIEW



PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



— INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER
• INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

THRASHER

HORIZ. SCALE IN FEET 0 100 200
VERT. SCALE IN FEET 0 100 200

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 30 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL
STA. 80+00 TO STA. 109+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 09 – PLAN4	
REVISION No.:	3		

LAYOUT TAB: PLAN4
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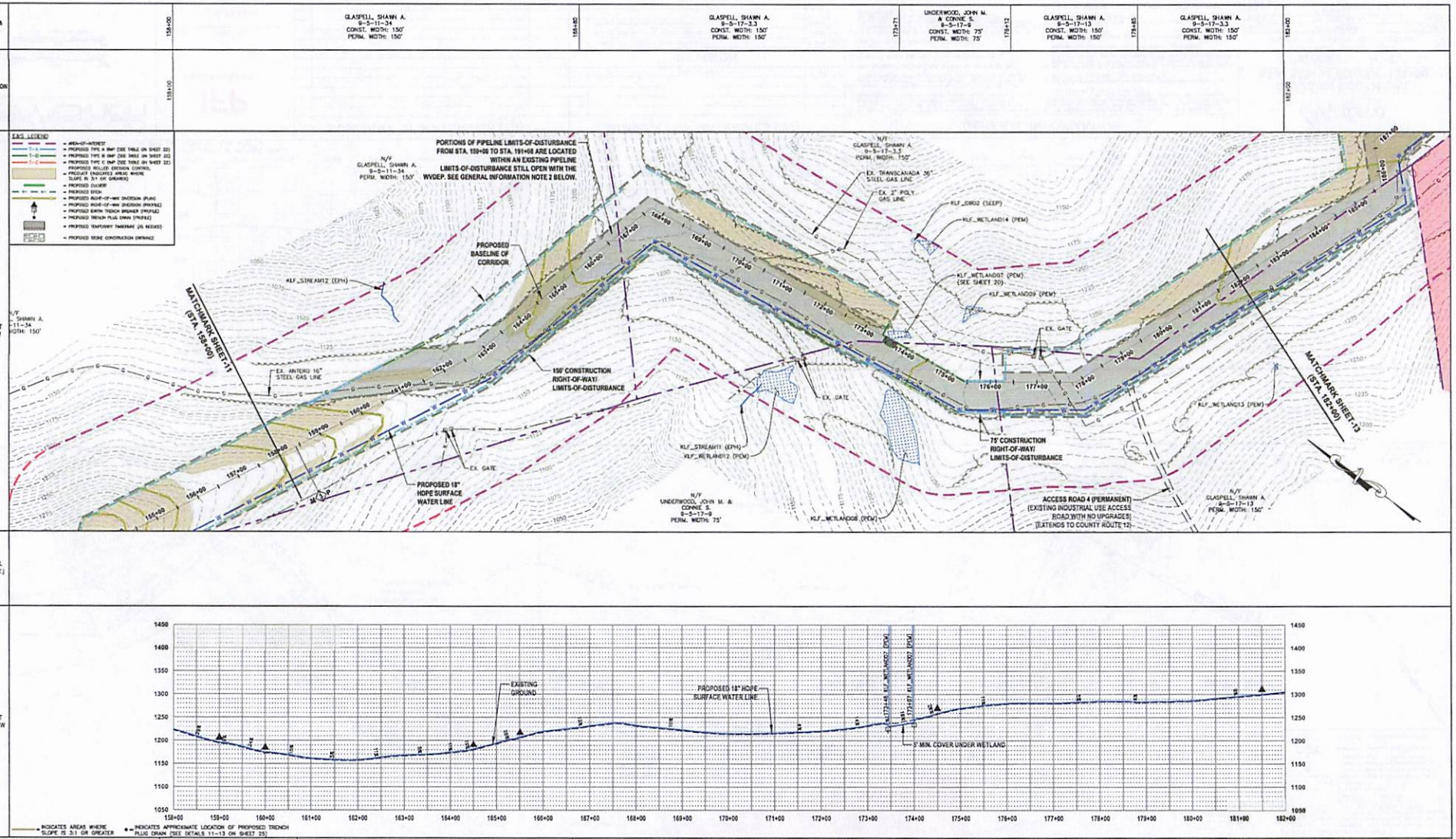
USER: Jared Jenkins



THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MASP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE CONTAINED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED COURTHOUSE RECORDS. ADDITIONAL MONUMENTS OR PLAT IN THE LOCAL COUNTY COURTHOUSE TO DETERMINE A MORE ACCURATE BOUNDARY LINE LOCATION. A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 24 REGARDING WATERWAYS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH SIZINGS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET RANGES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

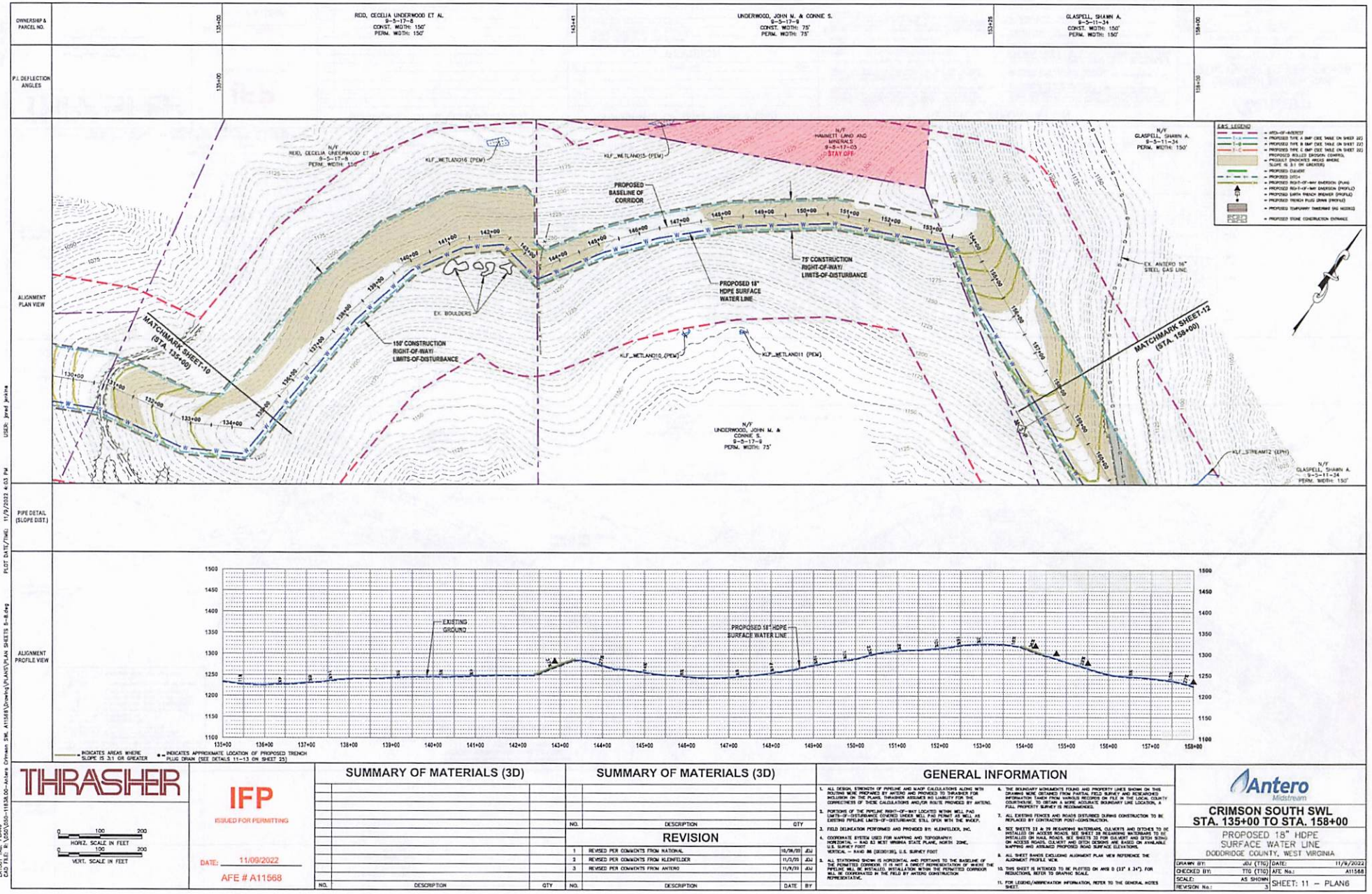
Antero Midstream

CRIMSON SOUTH SWL
STA. 158+00 TO STA. 182+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 12 – PLAN7	
REVISION No.:	3		

LAYOUT TAB: PLAN7
CAD FILE: R:\350\1050-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg
PLOT DATE/TIME: 11/9/2022 4:03 PM
USER: Jared Jenkins



THRASHER

HORIZ. SCALE IN FEET 0 100 200

VERT. SCALE IN FEET 0 100 200

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/1/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL = NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL = NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
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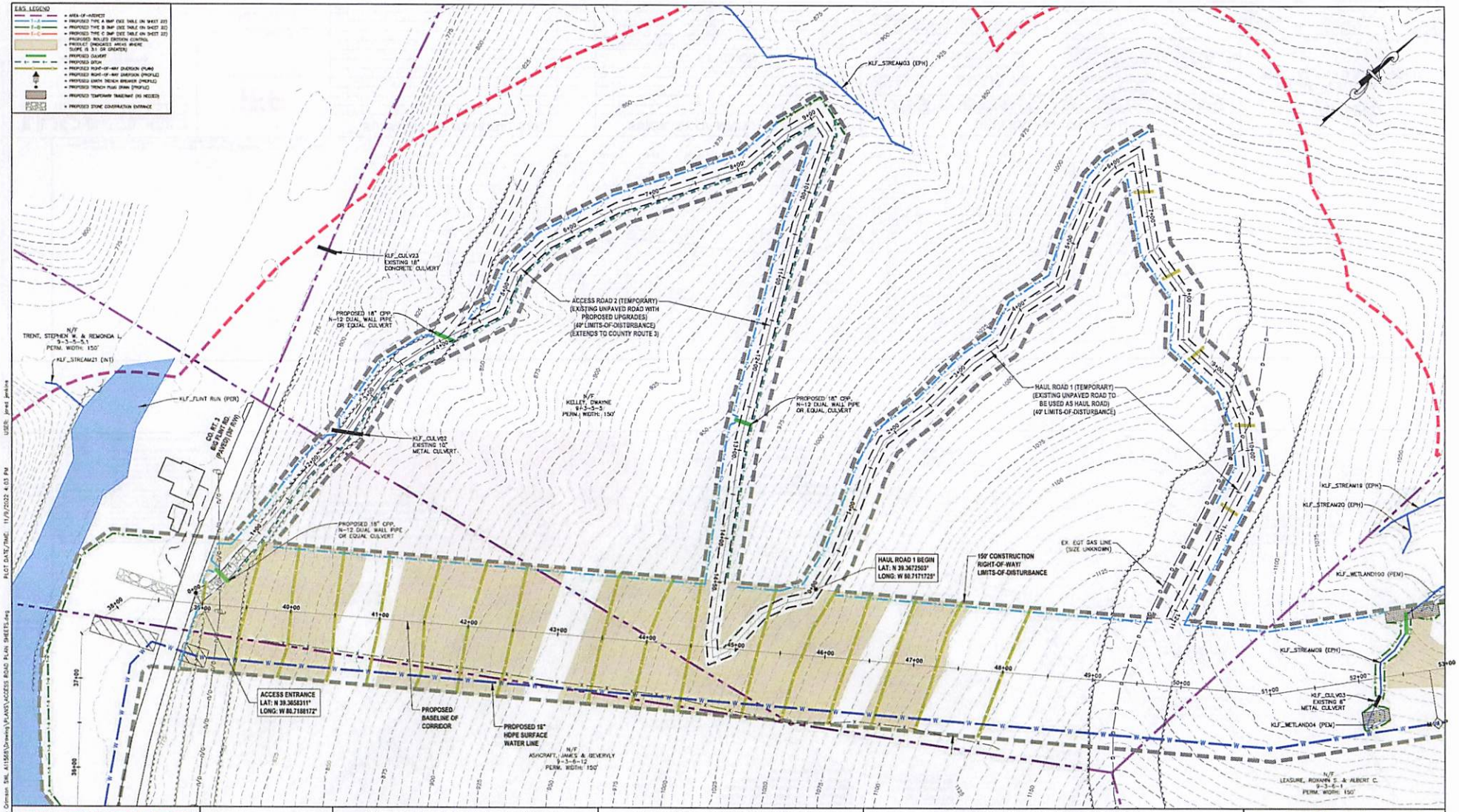
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 25 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 23 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BASES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (37" X 24"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL
STA. 135+00 TO STA. 158+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET: 11 – PLAN6	



THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 26 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEET 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
10. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL ACCESS ROAD PLAN SHEET

PROPOSED 18" HDPE SURFACE WATER LINE

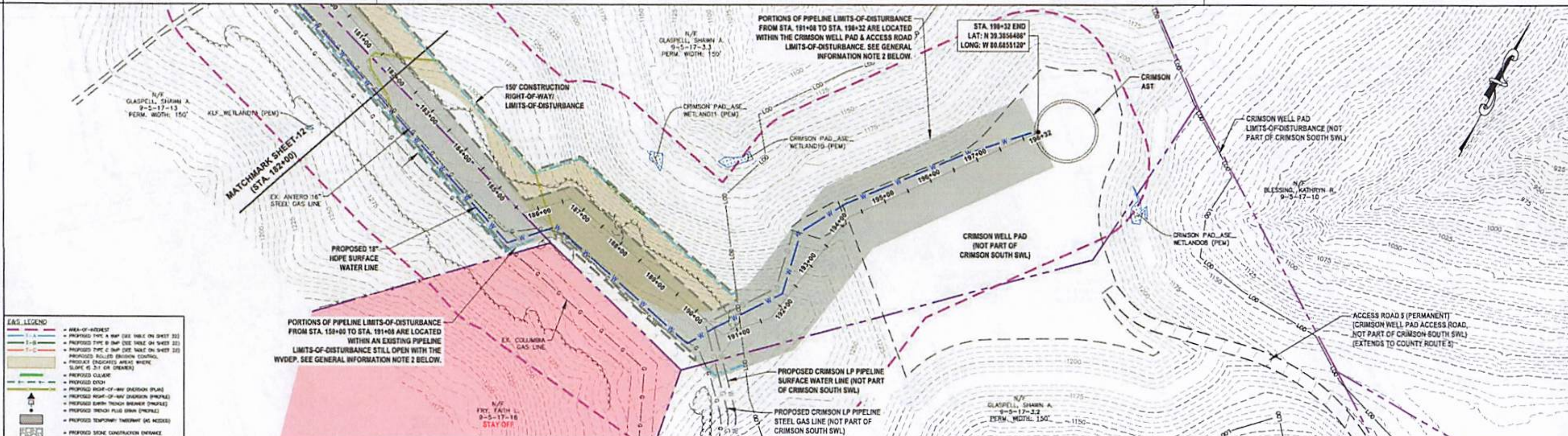
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	14 – ARPS1
REVISION No.:	3		

LAYOUT Tab: ARPS1
CAD FILE: R:\2505\005-118536\Drawing\PLANS\ACCESS ROAD PLAN SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:03 PM
USER: jared jenkins

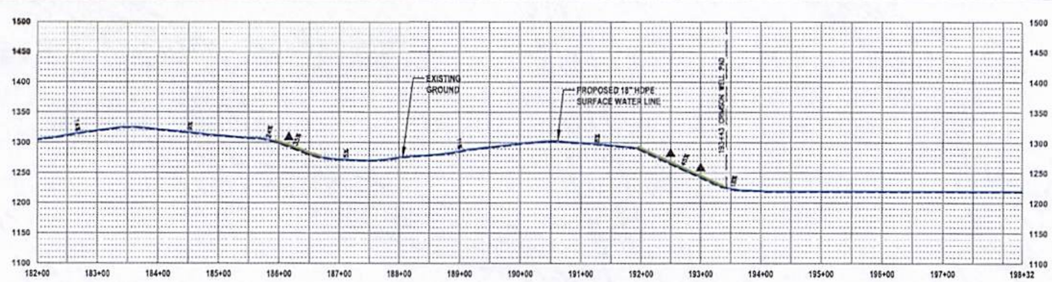
OWNERSHIP & PARCEL NO.	182+00	GLASPELL, SHAWN A. 9-5-17-3.3 CONST. WIDTH: 150' PERM. WIDTH: 150'	198+32
P.I. DEFLECTION ANGLES	182+00		198+32

ALIGNMENT PLAN VIEW



PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



= INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

= INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

THRASHER

HORIZ. SCALE IN FEET 0 100 200

VERT. SCALE IN FEET 0 100 200

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/26/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

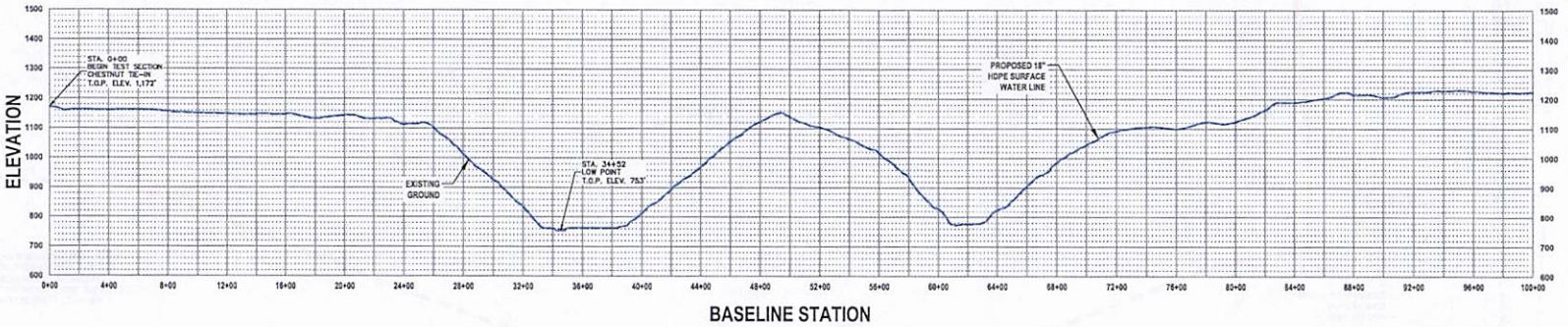
CRIMSON SOUTH SWL
STA. 182+00 TO STA. 198+32

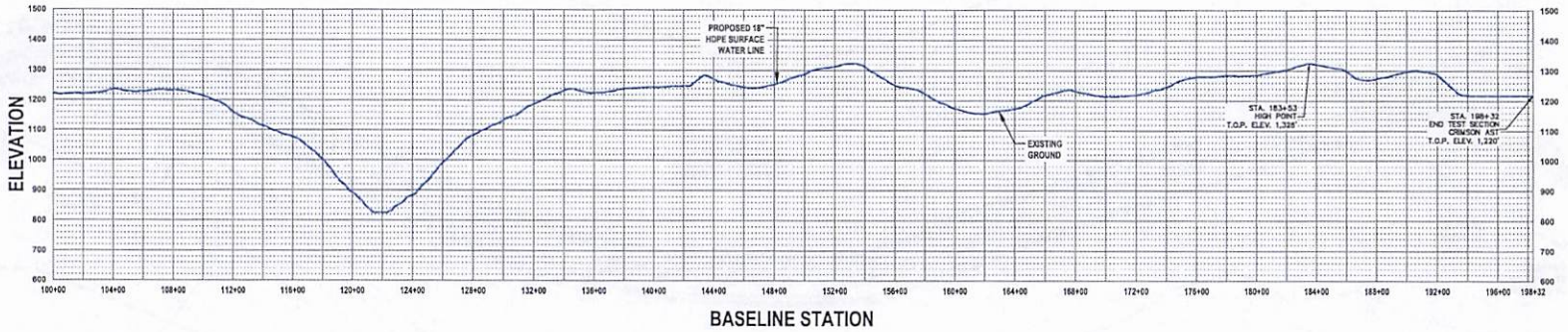
PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 13 – PLAN8	
REVISION No.:	3		

LAYOUT TAB: PLAN8 CAD FILE: R:\050\050-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg PLOT DATE/TIME: 11/9/2022 4:03 PM USER: jared.jenkins





HYDROSTATIC PROFILE	Station	Elevation (ft msl)
Start Point	0+00	1,172
Low Point	34+52	753
High Point	183+53	1,326
End Point	198+32	1,220
Differential	573 ft.	
Static Head Pressure @ 753' Elevation	248 PSI	
Overall Slope Legnth (3D)	20,491 ft.	

THRASHER

HORIZ. SCALE IN FEET 0 400 800

VERT. SCALE IN FEET 0 200 400

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. REFER TO ANTERO MIDSTREAM PRESSURE TESTING PROCEDURE.
3. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
4. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

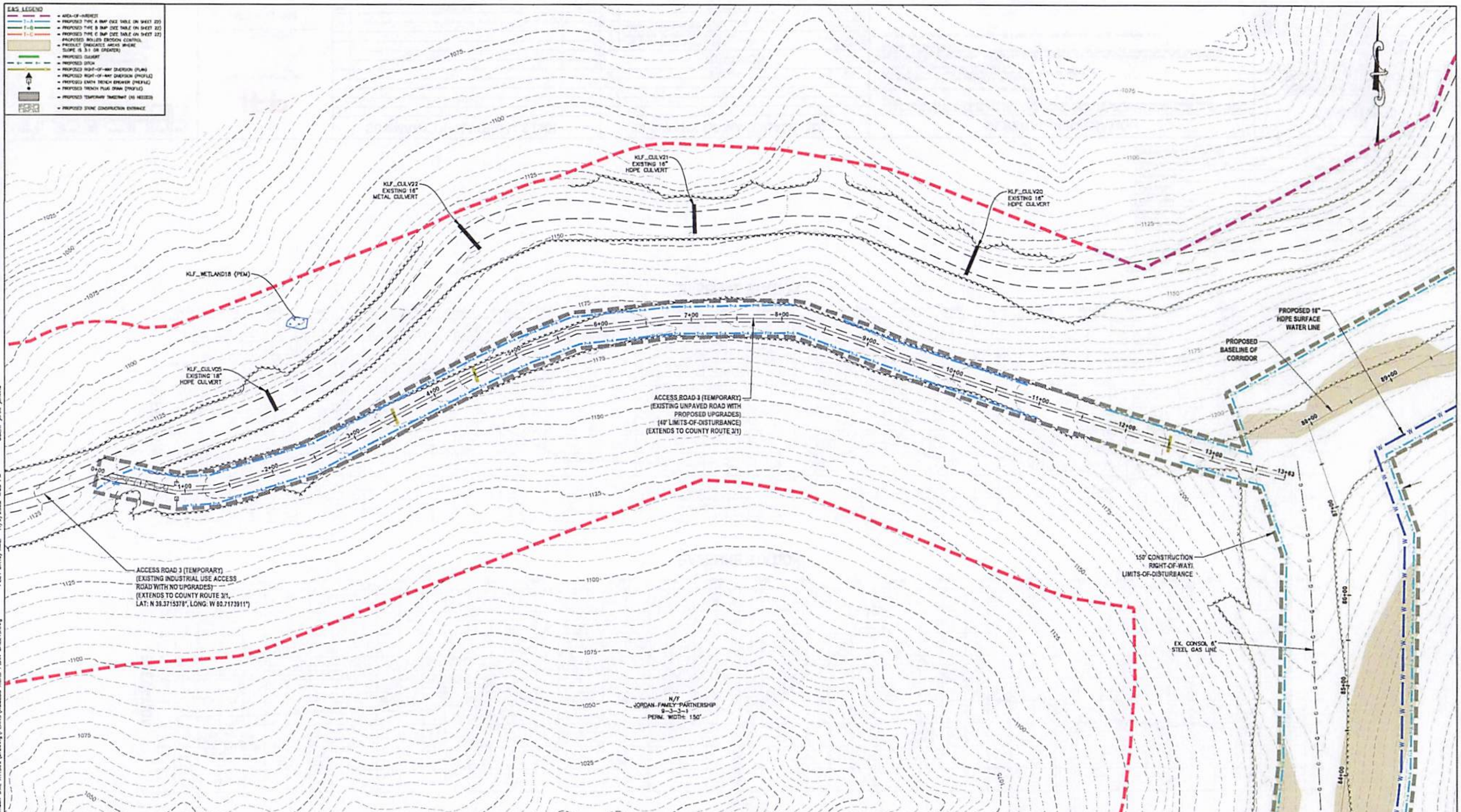
Antero Midstream

CRIMSON SOUTH SWL
HYDROSTATIC PROFILE

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	REVISION No.:	3

SHEET: 16 – HSP



THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

0 50 100

HORIZ. SCALE IN FEET

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEET 32 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
10. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

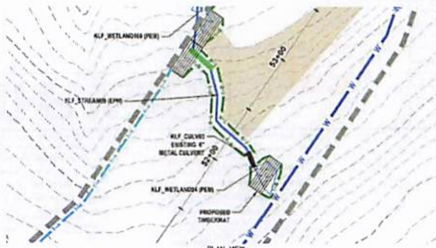
CRIMSON SOUTH SWL ACCESS ROAD PLAN SHEET

PROPOSED 18" HDPE SURFACE WATER LINE

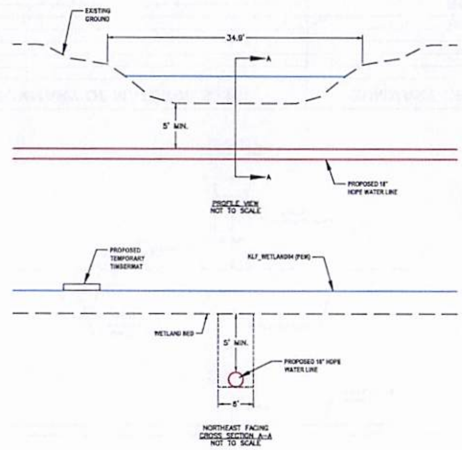
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 15 – ARPS2	
REVISION No.:	3		

WETLAND CROSSING
KLF_WETLAND04 (PEM)



PLAN VIEW
1" = 50'



WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 34.9'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3438446°
LONG: W 80.7207813°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

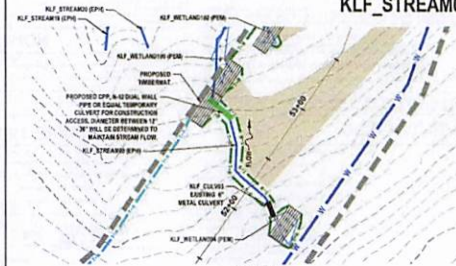
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W — PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A — PRO. TYPE A BMP
- T-B — PRO. TYPE B BMP

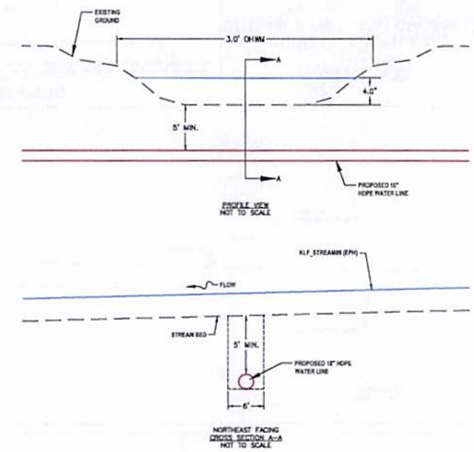
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_STREAM09 (EPH) - CROSSING 1



PLAN VIEW
1" = 50'



STREAM INFORMATION:

STREAM CLASSIFICATION: EPHEMERAL
STREAM WIDTH: 3.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3463467°
LONG: W 80.7194078°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

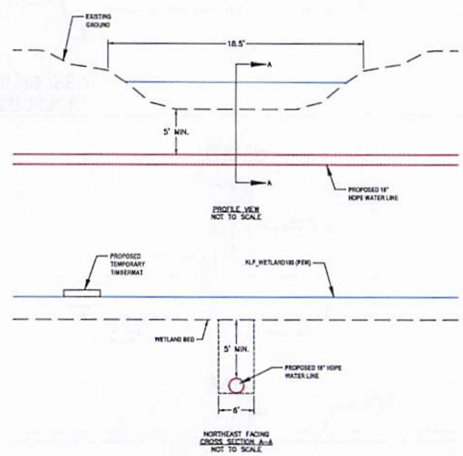
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W — PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A — PRO. TYPE A BMP
- T-B — PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

WETLAND CROSSING
KLF_WETLAND100 (PEM)

PLAN VIEW
1" = 50'



WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 18.5'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3486054°
LONG: W 80.7154861°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

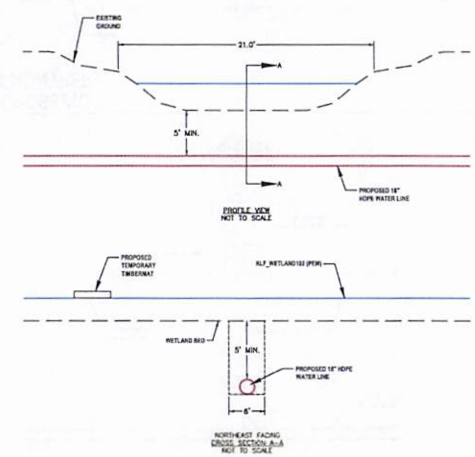
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W — PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A — PRO. TYPE A BMP
- T-B — PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

WETLAND CROSSING
KLF_WETLAND102 (PEM)

PLAN VIEW
1" = 50'



WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 21.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3466643°
LONG: W 80.7153397°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W — PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A — PRO. TYPE A BMP
- T-B — PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

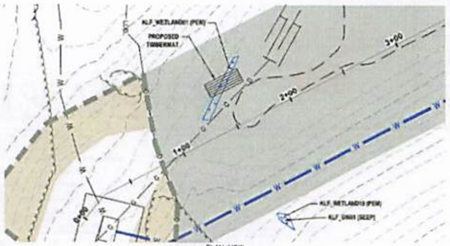
CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

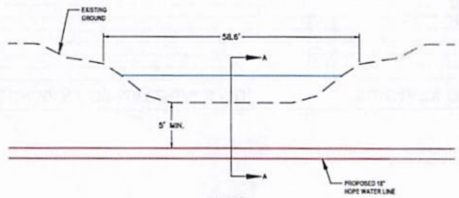
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 18 – S&WC2	
REVISION No.:	3		

USER: Jared Jenkins
PLOT DATE/TIME: 11/9/2022 4:04 PM
LAYOUT TAB: S&WC2
CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg

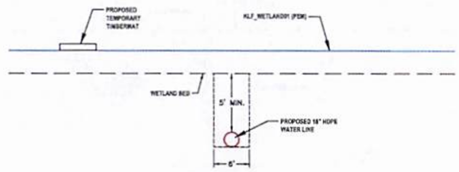
WETLAND CROSSING
KLF_WETLAND01 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 58.6'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3623078'
LONG: W 80.7294057'
SHEET REF: SHEET 04

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

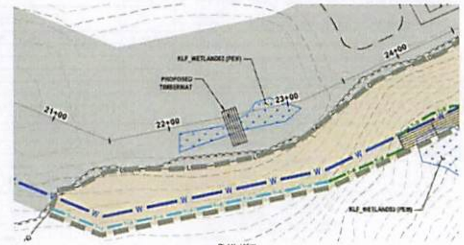
LEGEND:

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

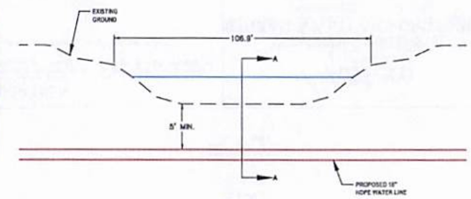
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

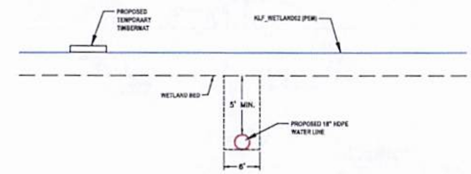
WETLAND CROSSING
KLF_WETLAND02 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 106.9'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3628594'
LONG: W 80.7243382'
SHEET REF: SHEET 06

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

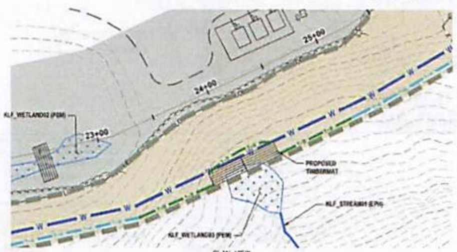
LEGEND:

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

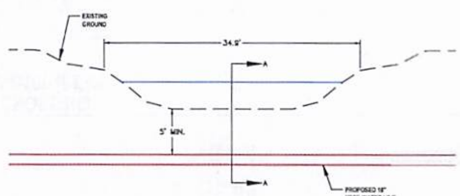
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

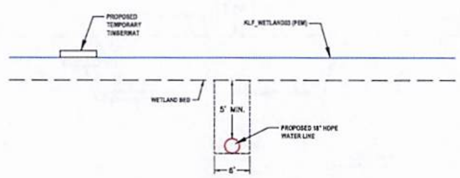
WETLAND CROSSING
KLF_WETLAND03 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 34.9'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3638464'
LONG: W 80.7207617'
SHEET REF: SHEET 06

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

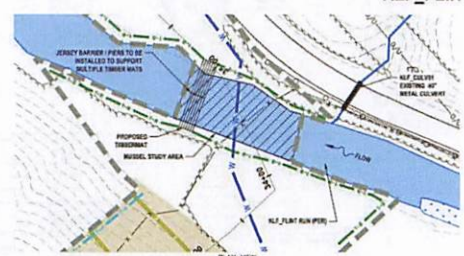
LEGEND:

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

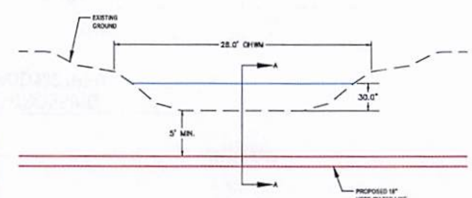
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

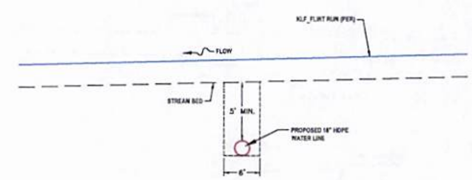
STREAM CROSSING
KLF_FLINT RUN (PER)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 38.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3648015'
LONG: W 80.7183908'
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND:

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/26/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

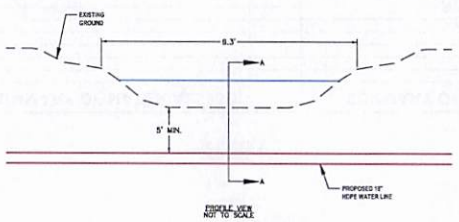
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 17 – S&WC1	
REVISION No.:	3		

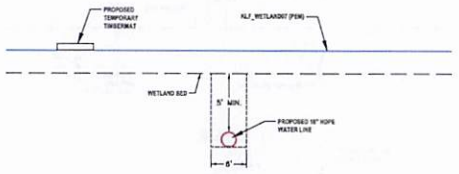
USER: jared jenkins
PLOT DATE/TIME: 11/9/2022 4:04 PM
LAYOUT TAB: S&WC1
CAD FILE: R:\050\050-11568\050-11568.00-Antero Crimson SWL_A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg

WETLAND CROSSING
KLF_WETLAND07 (PEM)

PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



SOUTH FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 8.3'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.380871°
LONG: W 80.491525°
SHEET REF: SHEET 10

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A SWP
- T-B PRO. TYPE B SWP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

USER: jared.jenkins
PLOT DATE/TIME: 11/9/2022 4:05 PM
LAYOUT TAB: S&WC4
CAD FILE: R:\2020\2020-11938.00--Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

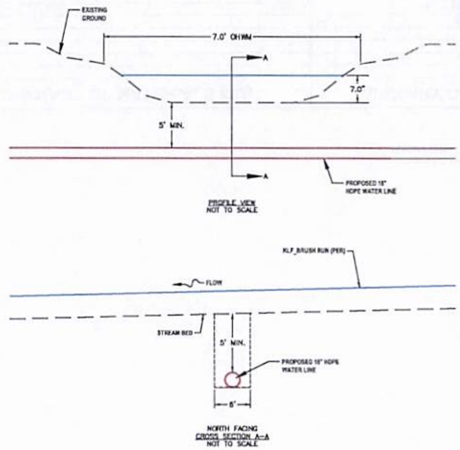
CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 20 – S&WC4	
REVISION No.:	3		

STREAM CROSSING
KLF_BRUSH RUN (PER)

PLAN VIEW
1" = 50'



STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 7.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.370801°
LONG: W 80.715380°
SHEET REF: SHEET 08

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

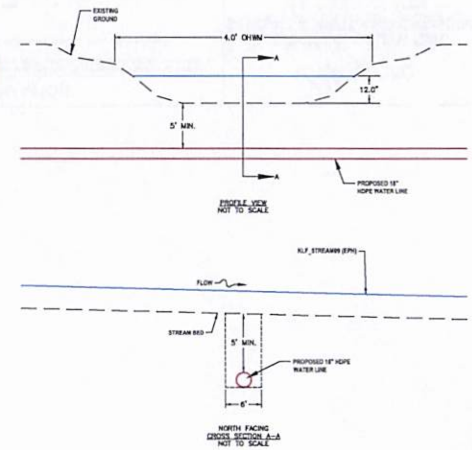
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_STREAM09 (EPH) - CROSSING 2

PLAN VIEW
1" = 50'



STREAM INFORMATION:

STREAM CLASSIFICATION: EPHEMERAL
STREAM WIDTH: 4.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.370540°
LONG: W 80.715401°
SHEET REF: SHEET 08

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

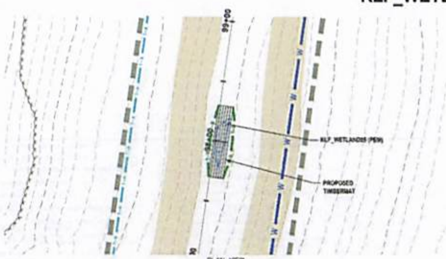
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

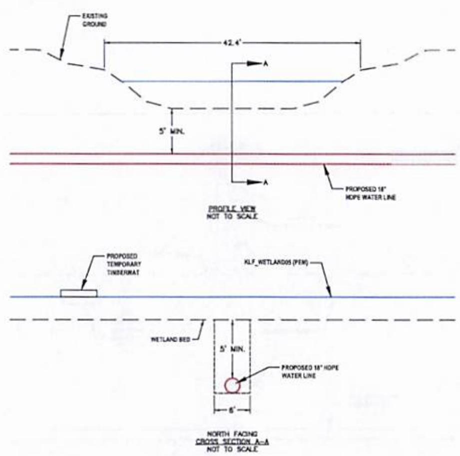
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

WETLAND CROSSING
KLF_WETLAND05 (PEM)



PLAN VIEW
1" = 50'



WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 43.4'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.378573°
LONG: W 80.709413°
SHEET REF: SHEET 08

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

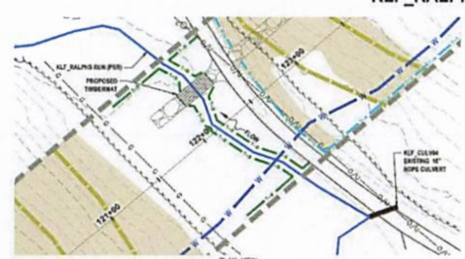
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

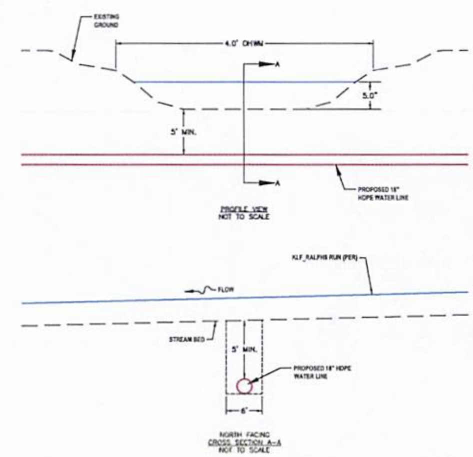
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_RALPHS RUN (PER)



PLAN VIEW
1" = 50'



STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 4.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.383159°
LONG: W 80.703879°
SHEET REF: SHEET 10

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

USER: Jared Jenkins
PLOT DATE/TIME: 11/9/2022 4:05 PM
LAYOUT TAB: S&WC3
CAD FILE: R:\050\050-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

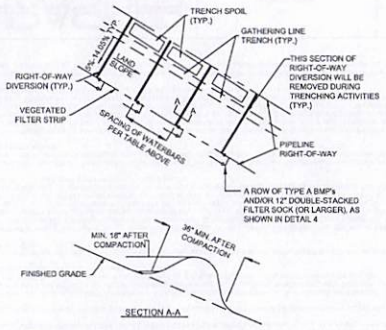
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 19 - S&WC3	
REVISION No.:	3		

RIGHT-OF-WAY DIVERSION SPACING IN FEET

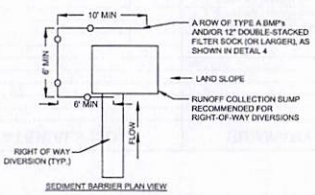
PIPELINE GRADE	> 200' FROM STREAM	< 200' FROM STREAM
2-5 %	400	200
6-12 %	300	150
13-21 %	200	100
22-34 %	100	50
35-50 %	50	25

* IT IS DIFFICULT TO INSTALL DIVERSIONS ON SLOPES STEEPER THAN 25%. THE DIVISION OF WATER AND WASTE MANAGEMENT WILL ALLOW GREATER DISTANCES BETWEEN DIVERSIONS ON EXTREME SLOPES



NOTE:
SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY) PER DETAIL 1A.

1 RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS



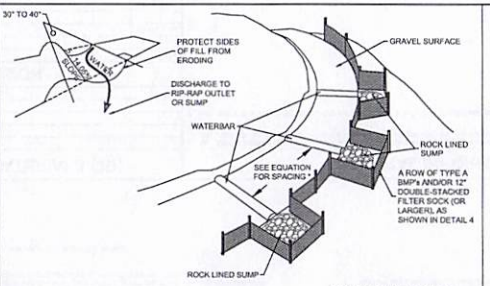
NOTES:

1. RIGHT-OF-WAY DIVERSIONS SHOULD BE INSTALLED ACROSS THE ENTIRE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5%.
2. RIGHT-OF-WAY DIVERSIONS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN IN DETAIL 1, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.
3. RIGHT-OF-WAY DIVERSIONS SHOULD NOT DISCHARGE INTO AN OPEN TRENCH WHEN AVOIDABLE. RIGHT-OF-WAY DIVERSIONS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE RIGHT-OF-WAY. A ROW OF TYPE A BMP's AND/OR 12" DOUBLE-STACKED FILTER SOCK (OR LARGER), AS SHOWN IN DETAIL 4, SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE RIGHT-OF-WAY DIVERSIONS.
4. BSRF CAN BE SUBSTITUTED IN PLACE OF SMARTFENCE FB WITH APPROVAL FROM ANTERO.
5. SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY).

MAINTENANCE:

1. RIGHT-OF-WAY DIVERSIONS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED RIGHT-OF-WAY DIVERSIONS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
2. MAINTENANCE OF RIGHT-OF-WAY DIVERSIONS SHALL BE PROVIDED UNTIL RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
3. RIGHT-OF-WAY DIVERSIONS ON RETIRED RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.
4. CONTRACTOR SHALL RESTORE ALL WATERBARS AT THE END OF EACH WORKDAY AND PRIOR TO A RAIN EVENT.

1A RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS



* SPACING = 400/% GRADE + 75'

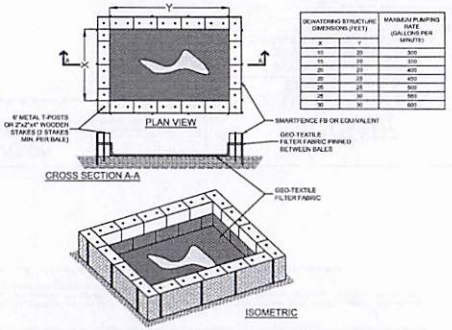
NOTES:

1. WATERBARS SHOULD BE INSTALLED ACROSS THE ENTIRE ROADWAY ON ALL SLOPES GREATER THAN 5%.
2. WATERBARS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.
3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO A RIP-RAP OUTLET OR SUMP. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE ROADWAY. SMARTFENCE FB OR EQUIVALENT SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBARS.
4. REFER TO WVDEP MANUAL SECTIONS 3.03-1, 3.35-6, & 3.35-7 FOR MORE INFORMATION.

MAINTENANCE:

1. WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
2. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
3. WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED, UNLESS OTHERWISE SPECIFIED BY LANDOWNER STIPULATIONS.

2 ACCESS ROAD WATERBARS
NTS



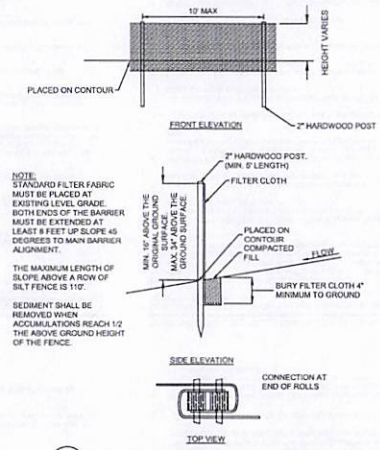
DEWATERING STRUCTURE DIMENSIONS (FEET)		MAXIMUM PUMPING RATE (GALLONS PER MINUTE)
X	Y	
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	600

1. STRAW BALES SHOULD BE PLACED ON THEIR SIDES WITH THE TWINE FACING OUT.
2. STRAW BALES SHOULD BE STACKED TWO HIGH WITH GEO-TEXTILE FABRIC PINNED BETWEEN BALES.
3. SEAMS OF GEOTEXTILE FABRIC SHOULD BE INTERLOCKING.
4. 6 FOOT METAL T-POSTS ARE RECOMMENDED, DRIVEN THROUGH BOTH STRAW BALES. IF METAL T-POSTS ARE NOT AVAILABLE, WOODEN STAKES SHOULD BE A MINIMUM OF 2"X2"X 4'. STAKES SHOULD BE DRIVEN AROUND THE PERIMETER OF THE STRAW BALES AS STRUCTURAL SUPPORT AS WELL AS THROUGH THE BALES TO HELP PIN THE GEO-TEXTILE FABRIC IN PLACE.
5. DEWATERING STRUCTURES DIMENSIONS SHOULD BE DESIGNED TO ACCOMMODATE THE SIZE OF THE WATER PUMP BEING UTILIZED.
6. DEWATERING STRUCTURE DIMENSIONS MAY NEED TO BE ADJUSTED TO SUIT THE VARIOUS SIZES OF FILTER BAGS, THOUGH SQUARE FOOTAGE SPECIFICATIONS SHOULD STILL BE MAINTAINED. THE STRUCTURE SHOULD COMPLETELY ENCOMPASS THE BAG BEING UTILIZED.
7. WHEN PUMPING LARGE AMOUNTS OF WATER FOR AN EXTENDED PERIOD OF TIME, LARGE BELL HOLES, ETC.) INTERVAL PUMPING MAY BE NECESSARY TO AVOID OVERPOWERING THE DEWATERING STRUCTURE.
8. USE OF MULTIPLE DEWATERING STRUCTURES MAY BE NECESSARY UNDER SPECIAL CIRCUMSTANCES.
9. FOR STREAM CROSSINGS, WHEN PUMPING OUT THE TRENCH WITH A 2 INCH TRASH PUMP AT ¼ THROTTLE, A STANDARD 10' BY 10' DEWATERING STRUCTURE WITH A COMPARABLE FILTER BAG SHOULD BE ADEQUATE. FIELD ADJUSTMENTS WILL BE MADE IF FLOW IS OVERPOWERING THE STRUCTURE.
10. ADDITIONAL EROSION CONTROLS MAY BE UTILIZED DOWNSLOPE OF DEWATERING STRUCTURES WHERE NEEDED.
11. DEWATERING STRUCTURE WILL BE PLACED TO MAXIMIZE AVAILABLE VEGETATIVE STRIP.

3 STRAW BALE DEWATERING
NTS

CATEGORY	PRODUCT
TYPE A	1 - SILT SAVER SILT FENCE PRIORITY 2 (BELTED) 2 - ACF ENVIRONMENTAL FILTRATION BARRIER (SMART FENCE FB) WITH WOOD POSTS 3 - MEDIUM DUTY WOVEN BELTED WBSF2S-6 SILT FENCE 2 STAGE
TYPE B	1 - SILT SAVER SILT FENCE PRIORITY 1 (BELTED) 2 - ACF ENVIRONMENTAL FILTRATION BARRIER SMART FENCE 36 (SD) WITH WOOD POSTS 3 - ACF ENVIRONMENTAL FILTRATION BARRIOR (SMART FENCE FB) ORANGE WITH WOOD POSTS 4 - HEAVY DUTY WOVEN BELTED WBSF2S-4 SILT FENCE 2 STAGE
TYPE C	1 - ACF ENVIRONMENTAL SMARTFENCE 42 2 - SUPER SILT FENCE

4 BMP CATEGORIES
NTS

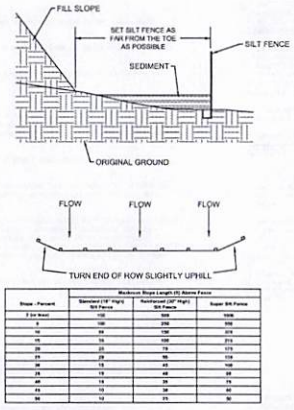


NOTE:
STANDARD FILTER FABRIC MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE 45 DEGREES TO MAIN BARRIER ALIGNMENT.

THE MAXIMUM LENGTH OF SLOPE ABOVE A ROW OF SILT FENCE IS 110'.

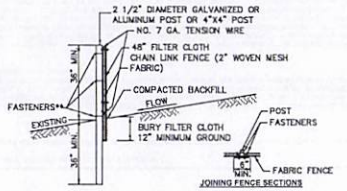
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

5 SILT FENCE
NTS



Slope - Percent	Maximum Slope Length (ft) Along Fence		
	Standard (16" High) Silt Fence	Reinforced (20" High) Silt Fence	Super Silt Fence
2 (or less)	100	200	1000
3	90	200	900
4	80	190	800
5	70	180	700
10	50	120	310
20	25	75	170
33	20	55	120
34	15	45	100
35	15	40	90
40	15	35	75
45	15	30	65
50	12	25	50

5A SILT FENCE PLACEMENT
NTS



* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. GALVANIZED OR ALUMINUM POSTS OR 4" x 4" POST.

** CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POST WITH WIRE TIES OR STAPLES. GEOTEXTILE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID-SECTIONS.

NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN-LINK FENCE.

FILTER FABRIC FENCE SHOULD BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE.

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.

NO SECTION OF SILT FENCE SHOULD EXCEED A GRADE OF 5% FOR MORE THAN A DISTANCE OF 20 FEET.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

6 SUPER SILT FENCE
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 22 – ESCP2	
REVISION No.:	3		

LAYOUT TAB: ESCP2
CAD FILE: K:\2022\2022-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins

GENERAL NOTES

1. ANTERO WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. ANY DISCREPANCIES FOUND BY THE CONTRACTOR BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE MANAGER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
3. WORK SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS, DETAILS AND TYPICALS. ANY DEVIATIONS OR ADDITIONS MUST BE APPROVED BY ANTERO PROJECT MANAGEMENT OR DESIGNATED PROJECT REPRESENTATIVE.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL WEST VIRGINIA 811.
5. ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS, ORGANIC MATERIAL, OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE UNAPPROVED MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
6. A PRE-CONSTRUCTION KICK-OFF MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
7. IF SPRINGS OR SEEPS AND/OR AN ACCUMULATION OF GROUND WATER IS OBSERVED ON A SIDE CUT OR CUT SLOPE PIPE TRENCH, IMMEDIATELY INFORM THE ON-SITE INSPECTOR FOR AN EVALUATION AND CONSIDERATION OF THE INSTALLATION OF A DRAINAGE SYSTEM.
8. EROSION CONTROL BLANKETS ARE REQUIRED FOR SLOPES OF 3:1 OR GREATER.
9. HYDROMULCH (BONDED FIBER MATRIX) CAN BE UTILIZED AS A SUBSTITUTE TO EROSION CONTROL BLANKETS WITH APPROVAL FROM ANTERO, EXCEPT FOR ON RESTORED STREAM BANKS AND ROAD BANKS. HYDROMULCH (BONDED FIBER MATRIX) SHALL ONLY BE A VALID SUBSTITUTE FOR EROSION CONTROL BLANKETS DURING GRASS GROWING SEASONS.
10. HYDROSTATIC PRESSURE TEST - WATER FROM ANTERO APPROVED SOURCES ONLY TO BE USED FOR HYDROTEST. NO DEWATERING IS PERMITTED WITHOUT PRIOR ANTERO APPROVAL AND APPLICABLE PERMITS. NOTIFICATION REQUIRED TO ANTERO ENVIRONMENTAL PRIOR TO HYDROTEST.

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE/CONSTRUCTION SEQUENCES

THE EROSION AND SEDIMENT (E&S) CONTROL MEASURES FOR THE PIPELINE CONSTRUCTION ACTIVITIES CONSIST OF COMPOST FILTER SOCK, SILT FENCE, RIGHT-OF-WAY (ROW) DIVERSIONS, TRENCH BREAKERS (PLUGS), AND TEMPORARY AND PERMANENT SEEDING AND MULCHING OR ANY OTHER APPROVED BMPs. AREAS LOCATED WITHIN TOTAL MAXIMUM DAILY LOADS (TMDL) WATERSHEDS MAY SUBSTITUTE SILT FENCE AND COMPOST FILTER SOCK WITH AN ENHANCED BMP. BMP SPECIFICATIONS FOR THE E&S CONTROL PLAN (E&SCP) AREA TO BE UTILIZED BY THE CONSTRUCTION CONTRACTOR ACCORDING TO THE PROVIDED PLAN. STRAW/HAY BALES WILL NOT BE USED AS AN E&S CONTROL, HOWEVER, THEY MAY BE ACCEPTABLE TO USE AS A VELOCITY DISSIPATER.

GENERAL SEQUENCE FOR PIPELINE CONSTRUCTION:

1. PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES, CLEARLY MARK ALL CLEARING LIMITS, SENSITIVE AREAS, AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA. THESE SHALL BE CLEARLY MARKED, BOTH IN THE FIELD AND ON THE PLANS, TO PREVENT DAMAGE AND OFFSITE IMPACTS.
2. INSTALL STONE CONSTRUCTION ENTRANCES AT ALL LOCATIONS WHERE ACCESS ROADS WILL BE ACCESSING A PUBLIC ROADWAY.
3. INSTALL TEMPORARY E&S CONTROLS (SILT FENCE, ROW DIVERSIONS, ETC.) PRIOR TO ANY EARTH DISTURBING ACTIVITY, WHICH INCLUDES GRUBBING AND EXCAVATION, TO ENSURE, TO THE MAXIMUM EXTENT PRACTICABLE, THAT MINIMAL EROSION OR SEDIMENTATION OCCURS.
4. ROW DIVERSIONS AND/OR OTHER EROSION AND SEDIMENT CONTROL DEVICES WILL BE INSTALLED AS DEPICTED ON THE PLAN SHEETS AND SPECIFIED IN THE DETAIL SHEETS. IF CLEARING AND GRUBBING IS REQUIRED, SEE BELOW REGARDING THE MANAGEMENT AND DISPOSAL OF DEBRIS.
5. AFTER ACCESS TO AND ALONG THE PROPOSED UTILITY LINE HAS BEEN PROVIDED, THE GENERAL CLEARING AND GRUBBING OF THE TREES AND BRUSH ALONG THE ROW FOR PIPE TRENCHING MAY COMMENCE TO THE WIDTH SPECIFIED IN THE E&S PLANS. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON-SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATERS. WINDROWED TREES AND DEBRIS SHALL HAVE A GAP/BREAK, WITH A MINIMUM OF A 10' OPENING AT EVERY WATERBAR OUTLET, LANDOWNER ACCESS POINT/TRAIL, AND/OR A MINIMUM OF EVERY 100'. CLEARING / GRUBBING MATERIAL WILL BE DISPOSED OF PROPERLY AND / OR LAND APPLIED AS PER LANDOWNER STIPULATIONS.
6. MINOR GRADING WITHIN THE ROW WILL BE CONDUCTED WHERE NECESSARY TO PROVIDE AN EVEN SURFACE FOR SAFE AND EFFICIENT OPERATION OF CONSTRUCTION EQUIPMENT. GRADING WILL BE THE MINIMUM AMOUNT NECESSARY AND BMPs WILL BE INSTALLED PROMPTLY. TREE STUMPS, AND LARGE ROCKS AND BOULDERS WILL EITHER BE REMOVED FOR SAFETY CONCERNS OR LAND APPLIED AS PER LANDOWNER STIPULATIONS.
7. EXCAVATE PIPELINE TRENCH. A MINIMUM COVER AS SPECIFIED IN THE MIDSTREAM CONSTRUCTION SPECIFICATIONS SHALL BE PROVIDED ABOVE PIPELINE AT ALL WETLANDS, STREAMS AND ROADWAYS.
8. THE PROPOSED CONSTRUCTION ROW WILL BE USED AS A WORK AREA FOR TRENCH EXCAVATION, EQUIPMENT MOVEMENT, AND THE STORAGE OF SOIL STOCKPILES, AS NEEDED. EQUIPMENT SOIL STOCKPILES, AND OTHER MATERIALS AREA TO REMAIN UPSLOPE OF BMPs DURING CONSTRUCTION ACTIVITIES.
9. SEGREGATION OF TOPSOIL AND SUBSOIL WILL BE PERFORMED WHERE TRENCH EXCAVATION TAKES PLACE IN AN AGRICULTURAL, WETLAND, OR RESIDENTIAL AREA. IT IS BEST MANAGEMENT PRACTICE TO SALVAGE AND SEGREGATE TOPSOIL WHERE APPLICABLE.
10. TEMPORARY E&S CONTROLS FOR STREAM CROSSINGS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE E&SCP AND ASSOCIATED DETAIL SHEETS.
11. STREAM AND RIVER PIPELINE CROSSING CONSTRUCTION METHODS WILL BE INSTALLED AT LOCATIONS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS. WATERBODIES WILL BE CROSSED WITH TEMPORARY BRIDGES, SUCH AS TIMBER MATS OR APPROVED EQUAL CROSSINGS, PRIOR TO CROSSING THE CONVEYANCE. STREAMBANK STABILIZATION WILL BE PERFORMED IMMEDIATELY FOLLOWING COMPLETION OF THE PIPELINE INSTALLATION.
12. WETLAND CROSSING WIDTHS FOR UTILITY CROSSINGS WILL BE KEPT TO A MINIMUM AND WILL BE STABILIZED BY PLACING TIMBER MATS, RIPRAP, OR PRE-FABRICATED SWAMP MATS, AS SHOWN ON THE DETAIL SHEETS. ALL MATERIALS USED TO STABILIZE ACCESS ROADS IN WETLAND AREAS WILL BE REMOVED FROM THE WETLAND UPON COMPLETION OF THE PIPELINE CONSTRUCTION. A BARRIER (GEOTECH FABRIC) SHOULD BE USED TO PREVENT MIXING OF SOILS.
13. PIPELINE SECTIONS WILL BE TRANSPORTED TO THE WORK AREA AND STRUNG ALONG THE WORKING SIDE OF THE ROW PARALLEL TO THE TRENCH LINE. THE PIPELINE WILL BE BENT TO CONFORM TO THE TRENCH CONTOUR, ALIGNED, WELDED AND PLACED ON TEMPORARY SUPPORTS ALONGSIDE THE TRENCH. WELDS WILL BE VISUALLY AND RADIO-GRAPHICALLY INSPECTED AND REPAIRED AS NECESSARY. THE PIPE SECTION WILL BE LOWERED INTO THE TRENCH AND PLACED ON PADDING MATERIAL LAID ON THE TRENCH BOTTOM TO PROTECT THE PIPE COATING. ANY WETNESS ENCOUNTERED DURING CONSTRUCTION WORK WILL BE DEWATERED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG AND / OR DEWATERING STRUCTURE. FLAT, WELL-VEGETATED AREAS WILL BE UTILIZED FOR DEWATERING LOCATIONS, WHEN AVAILABLE. VISUALLY OBSERVABLE SINK HOLES, IDENTIFIED AHEAD OF DEWATERING ACTIVITY, WILL BE AVOIDED WHEN POSSIBLE.
14. INSTALL TRENCH BREAKERS AT LOCATIONS AS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS.
15. THE TRENCH WILL BE SUBSEQUENTLY BACKFILLED WITH SUITABLE EXCAVATED MATERIAL. THE BACKFILL MATERIAL WILL BE SLIGHTLY CROWNED IN UPLAND AREAS TO ALLOW FOR SETTLEMENT THAT MAY OCCUR. CROWNING THE SOIL SLIGHTLY OVER THE PIPELINE WILL HELP PREVENT FUTURE STORMWATER-RELATED PROBLEMS FROM THE SETTLING OF THE BACKFILLED AREA. NO CROWNING OF THE SOILS WILL TAKE PLACE IN WETLANDS, STREAMS, OR FLOODPLAINS, DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
16. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSIVE FORCES OF RAINDROPS, FLOWING WATER AND WIND.
17. ALL DISTURBED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. FOR DISTURBED AREAS WITH SLOPES OF 3:1 OR GREATER, THE AREA WILL BE VERTICALLY TRACKED AND EROSION CONTROL FABRIC SHALL BE INSTALLED AFTER SEED, MULCH, AND SOIL SUPPLEMENTS HAVE BEEN APPLIED. THE TEMPORARY/PERMANENT SEEDING AND MULCH TABLE ON THE DETAIL SHEETS CONSIST OF THE TYPE OF SEED AND APPLICATION RATE THAT SHALL BE APPLIED, INCLUDING THE NURSE CROP THAT SHALL BE USED DURING CERTAIN TIME OF THE YEAR TO PROMOTE STABILIZATION OF THE SOIL UNTIL THE PERENNIAL SEEDLINGS ESTABLISH. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
18. IN THE UNLIKELY EVENT THAT THERE ARE EXCESS EXCAVATED MATERIALS REMAINING AFTER THE TRENCH HAS BEEN BACKFILLED, THE MATERIAL WILL BE DISPOSED OF WITHIN THE EXISTING ROW IN AN UPLAND AREA. MATERIAL WILL BE SPREAD IN A THIN LAYER AND TIED INTO EXISTING CONTOURS TO CREATE POSITIVE DRAINAGE FOR STORMWATER RUNOFF.
19. INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROLS WILL BE, AT A MINIMUM, PERFORMED ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED. TEMPORARY BMPs WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION. THE 70 PERCENT REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE. THESE INSPECTIONS WILL COMMENCE AT THE START OF EARTH DISTURBING ACTIVITY (GRUBBING). ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.
20. NO SEDIMENT TRACKING ON THE PUBLIC ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING.
21. CONSTRUCTION ACCESS RESTORATION SHALL BE EQUAL OR BETTER THAN THE PRE-CONSTRUCTION CONDITION.
22. APPLICABLE STABILIZATION PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, TEMPORARY AND PERMANENT SEEDING, SODDING, MULCHING, EROSION CONTROL FABRICS AND MATTING, THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED, AND DUST CONTROL.
23. SELECTED SOIL STABILIZATION MEASURES SHALL BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, AND ESTIMATED DURATION OF USE.
24. SOIL STOCKPILES MUST BE TEMPORARILY STABILIZED.
25. ALL SLOPE SLIP REPAIRS, ROW MAINTENANCE ITEMS, LANDOWNER DISTURBANCES, PUNCH LIST ITEMS, AND ANY OTHER POST CONSTRUCTION ACTIVITIES WILL BE CONSIDERED PART OF THE STABILIZATION PHASE AND NOT THE GRADING PHASE. UPON REACHING FINAL GRADE, ANTERO CONSIDERS THE GRADING PHASE TO BE COMPLETE AND THE SITE TRANSITIONED TO THE STABILIZATION PHASE. THESE POST CONSTRUCTION ACTIVITIES MAY BE REQUIRED DURING STABILIZATION FOLLOWING THE COMPLETION OF THE CONSTRUCTION SEQUENCE ITEMS 1-24 ABOVE.

25.A. E&S CONTROL RE-INSTALLATION MAY REQUIRE FIELD ADJUSTMENT FROM THE ORIGINAL E&S PLAN TO MAXIMIZE EFFECTIVENESS.

THE CONSTRUCTION SEQUENCE FOR THE SUBSURFACE INSTALLATION OF THE WATER PIPELINE WILL FOLLOW THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE (ITEMS 1-25A ABOVE). THE CONSTRUCTION SEQUENCE FOR THE SURFACE INSTALLATION OF THE WATER PIPELINE CONSISTS OF THE FOLLOWING:

1. ACCESS THE ROW VIA STABILIZED CONSTRUCTION ENTRANCES. GROUND DISTURBANCE THROUGHOUT THE ROW IS NOT EXPECTED SINCE THE WATER PIPELINE(S) ARE PLACED ON THE GROUND SURFACE EXCEPT WHERE LANDOWNER STIPULATIONS / ACCESS MAY REQUIRE THE SURFACE WATER PIPELINE(S) TO BE BURIED, IN WHICH CASE THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE WOULD BE FOLLOWED.
2. STRING OUT THE SURFACE WATER PIPELINE(S) ALONG THE ENTIRE ROW AND FUSE TOGETHER.
3. IF STREAM AND/OR WETLAND CROSSINGS ARE REQUIRED, THEY WILL BE PERFORMED AS AERIAL CROSSINGS VIA I-BEAMS / AIR BRIDGES, WHICH WILL BE SITUATED OUTSIDE THE LIMITS OF EACH WETLAND AND THE ORDINARY HIGH-WATER MARK OF EACH STREAM. WIDER STREAM AND / OR WETLAND CROSSINGS MAY REQUIRE THE SURFACE WATER PIPELINE(S) TO BE INSTALLED SUBSURFACE AND WOULD FOLLOW THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE.

PIPELINE BMPs INSTALLATION AND REMOVAL SEQUENCE

TEMPORARY AND PERMANENT BMPs WILL BE USED DURING CONSTRUCTION ACTIVITIES TO AVOID AND/OR MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS OF CONSTRUCTION ACTIVITIES.

INSPECTIONS OF ALL E&S CONTROLS SHALL BE CONDUCTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD. ALL NECESSARY CLEANING, REPAIR AND/OR MAINTENANCE SHALL BE MADE AS SOON AS POSSIBLE AFTER THE INSPECTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT INSPECTIONS AND REPAIRS ARE MADE AS OUTLINED HEREIN. ALL SEDIMENT COLLECTED FROM THE MAINTENANCE OF E&S CONTROL MEASURES SHALL BE SPREAD ON-SITE AND SEEDED AND MULCHED, OR DISPOSED OF PROPERLY AT A WV DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP)-APPROVED LOCATION. THE FOLLOWING MAINTENANCE WILL BE PERFORMED UNTIL STABILIZATION HAS BEEN ACHIEVED:

1. TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE STABILIZED.
2. WHENEVER INSPECTION AND/OR MONITORING REVEALS THAT THE BMPs IDENTIFIED IN THE E&SCP ARE INADEQUATE, THE E&SCP SHALL BE ADJUSTED TO MAXIMIZE EFFECTIVENESS, AS APPROPRIATE, IN A TIMELY MANNER.
3. MAINTENANCE OF THE E&SCP - THE E&SCP SHALL BE RETAINED ON-SITE. THE E&SCP SHALL BE MODIFIED WHENEVER THERE IS A SIGNIFICANT CHANGE IN THE DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF ANY BMP. THE DEP MUST BE NOTIFIED OF CERTAIN CHANGES TO THE CONSTRUCTION SWPPP, AS IDENTIFIED IN THE CONSTRUCTION SWPPP. DEPENDING ON THE SIGNIFICANCE OF THE REVISION, A PERMIT MODIFICATION MAY NEED TO BE SUBMITTED TO THE DEP.

THE FOLLOWING IS A GENERAL BMP INSTALLATION SEQUENCE FOR PIPELINE CONSTRUCTION ACTIVITIES:

4. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PUBLIC ROAD DIRECTLY FROM A DISTURBED AREA.
5. TEMPORARY SEDIMENT BARRIERS, SUCH AS APPROPRIATELY SIZED SILT FENCE OR ENHANCED BMPs WILL BE PLACED DOWN SLOPE OF WORK AREAS AND AROUND SOIL STOCKPILES, AS NEEDED.
6. APPROPRIATELY SIZED FENCING WILL BE PLACED AROUND WETLANDS AND WATERBODIES ADJACENT TO THE WORK AREA PRIOR TO ANY TRENCHING ACTIVITIES.
7. STOCKPILES WILL NOT EXCEED 35 FEET IN HEIGHT.
8. TEMPORARY STREAM AND WETLAND CROSSINGS SHALL BE INSTALLED AS INDICATED ON THE E&S PLAN SHEETS AND AS PER THE E&S DETAIL SHEETS. FOR ALL OTHER SURFACE OR STORMWATER CONVEYANCES THAT ARE NOT IDENTIFIED ON THE PLAN SHEETS AS STREAMS DUE TO THE LACK OF DEFINED BED AND BANK CONDITIONS, A TEMPORARY BRIDGE SUCH AS A TIMBER MAT OR AN APPROVED EQUAL SHALL BE INSTALLED, PRIOR TO CROSSING THE CONVEYANCE IF THERE IS FLOWING WATER PRESENT AT TIME OF CONSTRUCTION IN THAT AREA.
9. ROW DIVERSIONS WILL BE INSTALLED IMMEDIATELY AFTER INITIAL DISTURBANCE OF THE SOIL IN ACCORDANCE WITH THE DETAILS AND SPACING SIZING REQUIREMENTS AS DEPICTED IN THE RIGHT-OF-WAY DIVERSION OUTLET (WATERBAR) DETAILS. ROW DIVERSIONS WILL BE CONSTRUCTED OF SOIL TO REDUCE RUNOFF VELOCITY AND DIVERT WATER OFF OF THE PIPELINE ROW.
10. TRENCH DEWATERING, IF NEEDED, WILL BE CONDUCTED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG AND / OR DEWATERING STRUCTURE. FLAT, WELL-VEGETATED AREAS WILL BE UTILIZED FOR DEWATERING LOCATIONS, WHEN AVAILABLE. VISUALLY OBSERVABLE SINK HOLES, IDENTIFIED AHEAD OF DEWATERING ACTIVITY, WILL BE AVOIDED WHEN POSSIBLE.
11. TRENCH BREAKERS WILL BE INSTALLED IN SLOPING AREAS GREATER THAN FIVE PERCENT AND ON SLOPES ADJACENT TO STREAMS, WETLANDS, AND ROADS CROSSINGS TO PREVENT SUBSURFACE EROSION. TRENCH BREAKERS WILL BE INSTALLED IN ACCORDANCE WITH THE SPACING REQUIREMENTS.
12. THE WORK AREA WILL BE BACKFILLED FOLLOWING PIPELINE INSTALLATION OR OTHER EXCAVATION WORK. IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST, AND THEN THE TOPSOIL WILL BE SPREAD OVER THE AREA FROM WHICH IT WAS REMOVED. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
13. ROW DIVERSIONS WILL BE INSTALLED AT INCREMENTS ACROSS SLOPED AREAS OF CONSTRUCTION ROW TO REDUCE EROSION AND FLOW LENGTH OF RUNOFF. SUMPS WILL BE INSTALLED AT THE END OF ROW DIVERSIONS AND WRAPPED WITH 18 INCH DIAMETER OR LARGER COMPOST FILTER SOCK AND/OR A ROW OF FILTER FENCING OR EQUIVALENT IN VEIN OF PRIORITY ONE SILT SAVER FENCING. EROSION AND SEDIMENT CONTROLS MUST BE INSTALLED AS DEPICTED ON THE E&SC PLAN SHEETS AND ACCORDING TO DETAIL SPECIFICATIONS.
14. IMMEDIATELY FOLLOWING BACKFILLING, ALL DISTURBED AREAS WILL BE GRADED IN PREPARATION FOR SEEDING AND MULCHING. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED AS SOON AS CONDITIONS ALLOW.
15. FOR THREE TO ONE OR STEEPER SLOPES THE DISTURBED AREA WILL BE VERTICALLY TRACKED. EROSION CONTROL FABRIC WILL BE INSTALLED.
16. TEMPORARY SEDIMENT BARRIERS WILL BE MAINTAINED, UNTIL VEGETATION HAS BECOME ESTABLISHED WITH A UNIFORM COVERAGE OF DENSITY OF 70 PERCENT OR MORE WITHIN THE DISTURBED ROW. ONCE THIS COVERAGE HAS BEEN OBTAINED, APPROPRIATE CONTROLS WILL BE REMOVED FROM THE WORK AREA. AREAS DISTURBED DURING THE REMOVAL OF THE EROSION CONTROLS WILL BE STABILIZED IMMEDIATELY. THE 70 PERCENT REQUIREMENTS REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE.
17. ALL WASTE MATERIAL WILL BE TRANSPORTED OFF-SITE FOR RECYCLING AND/OR DISPOSAL. WHERE FEASIBLE, CONSTRUCTION WASTE MATERIALS WILL BE RECYCLED OR WILL BE TAKEN TO AN APPROVED FACILITY FOR DISPOSAL. AS STATED PREVIOUSLY, EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT.
18. TEMPORARY STOCKPILES NEED BMPs SUCH AS SILT FENCE / SOCK OR ENHANCED BMPs PLACED ADJACENT TO ROW.
19. CONTRACTOR IS EXPECTED TO MINIMIZE DISTURBANCE WITHIN THE ROW.

MAINTENANCE SCHEDULE

AFTER CONSTRUCTION IS COMPLETED AND 70% UNIFORM PERENNIAL VEGETATION HAS BEEN ACHIEVED, ALL BMPs WILL BE REMOVED AND ANY LAND DISTURBED BY REMOVAL WILL BE STABILIZED. UNLESS OTHERWISE SPECIFIED, ALL MAINTENANCE MUST BE COMPLETED AS SOON AS CONDITIONS ALLOW AFTER AN INSPECTION IDENTIFIES THAT A BMP IS NOT FUNCTIONING AS REQUIRED.

1. INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROLS WILL BE, AT A MINIMUM, PERFORMED ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED. TEMPORARY BMPs WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION. THE 70 PERCENT REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE. THESE INSPECTIONS WILL COMMENCE AT THE START OF EARTH DISTURBING ACTIVITY (GRUBBING). ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.
2. SEDIMENT MUST BE REMOVED WHERE ACCUMULATION REACHES ONE-HALF THE ABOVE GROUND HEIGHT OF A BMP (ALL TYPES).
3. BMPs (ALL TYPES), WHICH HAVE BEEN UNDERMINED OR TOPPED, SHOULD IMMEDIATELY BE REPAIRED.
4. REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE.
5. LOGS OF SEDIMENT CONTROL INSPECTION MUST BE KEPT WITH THE INSPECTORS CONSTRUCTION RECORDS AND INCLUDE DATE, TIME, AND CONDITION OF BMPs AND ANY NECESSARY MAINTENANCE.
6. TEMPORARY AND PERMANENT E&S CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT GREATER THAN 0.5-INCH OF RAIN PER 24-HOUR PERIOD.
7. TEMPORARY E&S CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE STABILIZED.

MATERIAL WASTE HANDLING AND RECYCLING

1. GARBAGE DISPOSAL IS HANDLED THROUGH ONE OF THE LOCAL WASTE MANAGEMENT PROVIDERS/FACILITIES. IF NECESSARY, THE CONTRACTOR WILL OBTAIN A DUMPSTER FOR THE DURATION OF THE WORK WHICH WILL BE DISPOSED OF AT A LICENSED/PERMITTED MUNICIPAL LANDFILL.
2. THE CONTRACTOR WILL DISPOSE OF ALL SCRAP MATERIAL. THE SCRAP MATERIAL MUST BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED AT A PROPERLY LICENSED/PERMITTED FACILITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY PERMITS AND/OR DISPOSAL FEES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ASSURE THAT ALL MATERIALS ARE HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, RULES, AND REGULATIONS, INCLUDING BUT NO LIMITED TO THOSE ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY, WVDEP, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
3. CONSTRUCTION WASTE MATERIALS, INCLUDING BUT NOT LIMITED TO BENTONITE, POLY PIPE SHAVINGS, AND SANDBAGS, WILL BE RECYCLED OR WILL BE TAKEN TO THE NEAREST APPROVED FACILITY FOR DISPOSAL. EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NPDES.

SEEDING

1. SEE DETAILS 29-31 FOR TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCHING REQUIREMENTS.
2. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSIVE FORCES OF RAINDROPS, FLOWING WATER AND WIND.

PERMANENT SEEDING/MULCHING

3. ALL DISTURBED AREAS THAT ARE AT FINAL GRADE OR AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATION COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

TEMPORARY SEEDING/MULCHING

4. ALL DISTURBED AREAS THAT ARE NOT AT FINAL GRADE OR AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATION COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

POLLUTANT CONTROLS

1. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATER. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON SITE.
2. COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM SHALL BE PROVIDED FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND NON-INERT WASTES PRESENT ON THE SITE.
3. MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM DRAIN DOWN, SOLVENT AND DE-GREASING CLEANING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO SURFACE WATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. EMERGENCY REPAIRS MAY BE PERFORMED ON-SITE USING TEMPORARY PLASTIC PLACED BENEATH AND, IF RAINING, OVER THE VEHICLE.
4. APPLICATION OF AGRICULTURAL CHEMICALS INCLUDING FERTILIZERS AND PESTICIDES SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO SURFACE WATER RUNOFF. MANUFACTURERS' RECOMMENDATIONS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.
5. BMPs SHALL BE USED TO PREVENT OR TREAT CONTAMINATION OF SURFACE WATER RUNOFF BY PH MODIFYING SOURCES. THESE SOURCES INCLUDE BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, AND CONCRETE PUMPING AND MIXER WASHOUT WATERS.
6. REPORT SPILLAGE OR DISCHARGE OF POLLUTANTS THAT IMPACT SURFACE OR GROUNDWATER TO ANTERO PERSONNEL IMMEDIATELY.

THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 21 – ESCP1	
REVISION No.:	3		

LAYOUT TAB: ESCP1
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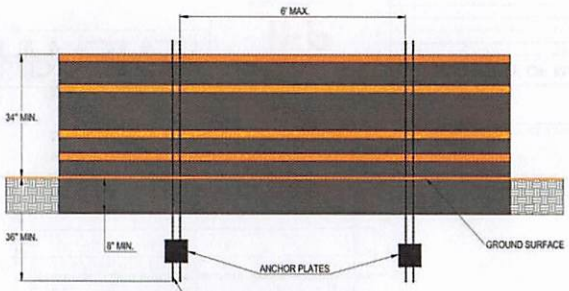
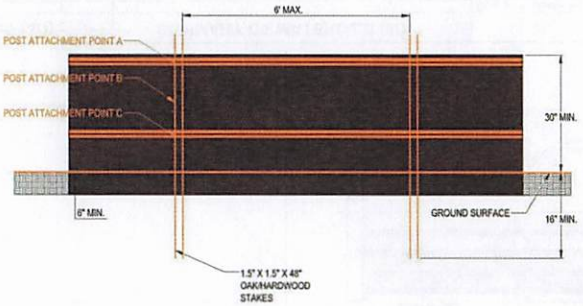
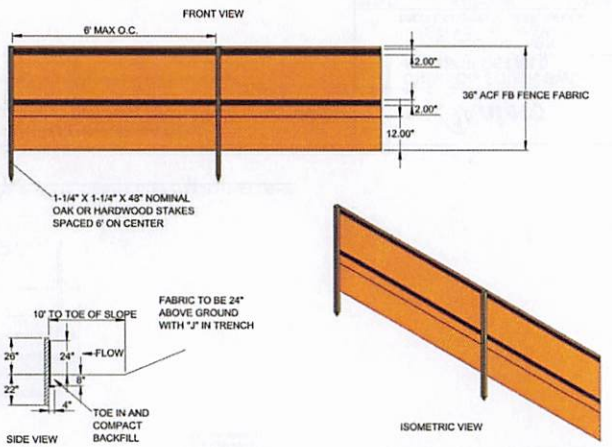
PLOT DATE/TIME: 11/9/2022 4:05 PM
USER: Jared Jenkins



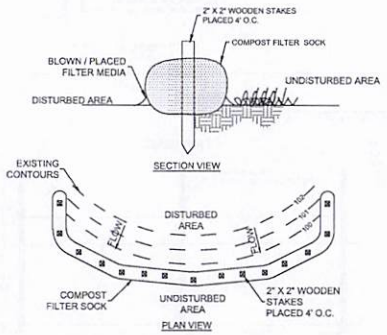
9 A ACF ENVIRONMENTAL SMARTFENCE 42
NTS



9 B ACF ENVIRONMENTAL SMARTFENCE 36 (SD) WITH WOOD POSTS
NTS



9 C ACF ENVIRONMENTAL FILTRATION BARRIER (SMARTFENCE FB) WITH WOOD POSTS
NTS



10 COMPOST FILTER SOCK
NTS

CONDITIONS WHERE PRACTICE APPLIES:

1. INSTALL ON DISTURBED AREAS THAT REQUIRE IMMEDIATE EROSION PROTECTION.
2. USE ON SLOPES REQUIRING STABILIZATION UNTIL PERMANENT VEGETATION CAN BE ESTABLISHED.
3. CAN BE USED ALONG THE PERIMETER OF THE PIPELINE, AS A CHECK DAM IN UNLINED DITCHES AND AROUND TEMPORARY STOCKPILES
4. SOCK CAN BE STAKED TO THE GROUND USING WILLOW CUTTINGS FOR ADDED REVEGETATION
5. EROSION CAN OCCUR BENEATH AND BETWEEN SOCK IF NOT PROPERLY ENTRENCHED, ALLOWING WATER TO PASS BELOW AND BETWEEN SOCKS. IT IS THEREFORE VERY IMPORTANT TO INSTALL SOCKS CORRECTLY.
6. ROLLS ARE A SHORT-TERM SOLUTION TO HELP ESTABLISH NATIVE VEGETATION
7. ROLLS STORE MOISTURE FOR VEGETATION PLANTED IMMEDIATELY UPSLOPE.

CONSTRUCTION SPECIFICATIONS:

1. IT IS CRITICAL THAT SOCK IS INSTALLED PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE CONTOUR.
2. NARROW TRENCHES SHOULD BE DUG ACROSS THE SLOPE, ON CONTOUR, TO A DEPTH OF 3 TO 5 INCHES ON CLAY SOILS AND SOILS WITH GRADUAL SLOPES. ON LOOSE SOILS, STEEP SLOPES, AND DURING HIGH RAINFALL EVENTS, THE TRENCHES SHOULD BE DUG TO A DEPTH OF 5 TO 7 INCHES, OR ½ TO 2/3 OF THE THICKNESS OF THE SOCK.
3. START CONSTRUCTION OF TRENCHES AND INSTALLING SOCK FROM THE BASE OF THE SLOPE AND WORK UPHILL. EXCAVATED MATERIAL SHOULD BE SPREAD EVENLY ALONG THE UPHILL SLOPE AND COMPACTED USING HAND TAMPING OR OTHER METHOD. CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF 3 TO 30 FEET APART DEPENDING ON THE STEEPNESS OF THE SLOPE, SOIL TYPE, AND RAINFALL. THE STEEPER THE SLOPE THE CLOSER TOGETHER THE TRENCHES SHOULD BE CONSTRUCTED.
4. INSTALL THE SOCK SNUGLY INTO THE TRENCHES AND ABUT TIGHTLY END TO END. DO NOT OVERLAP THE ENDS.
5. INSTALL STAKES AT EACH END OF THE SOCK, AND AT A MINIMUM OF 4-FOOT CENTERS ALONG THE ENTIRE LENGTH OF THE SOCK.
6. IF REQUIRED, INSTALL PILOT HOLES FOR THE STAKES USING A STRAIGHT BAR TO DRIVE HOLES THROUGH THE SOCK AND INTO THE SOIL.
7. AT A MINIMUM, WOODEN STAKES SHOULD BE APPROXIMATELY 2 X 2 X 24 INCHES. WILLOW CUTTINGS OR 3/8-INCH REBAR CAN ALSO BE USED FOR STAKES.
8. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK, LEAVING 2 TO 3 INCHES OF THE STAKE PROTRUDING ABOVE THE SOCK.

10 A COMPOST FILTER SOCK
NTS

MAINTENANCE:

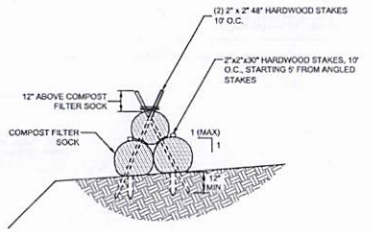
1. INSPECT SOCK AT LEAST ONCE A WEEK AND AFTER EACH RAIN EVENT GREATER THAN 0.5 INCH.
2. REPAIR OR REPLACE SPLIT, TORN, RAVELING, OR SLUMPING SOCK.
3. REMOVE SEDIMENT ACCUMULATIONS WHEN EXCEEDING ½ THE HEIGHT BETWEEN THE TOP OF THE SOCK AND THE GROUND SURFACE.
4. REPAIR ANY RILLS OR GULLIES PROMPTLY.
5. RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.9 in (150 mm)**	9.5 in (250 mm)**	14.5 in (360 mm)**	19 in (480 mm)**	25 in (650 mm)**
2 (or less)	500 (150)	750 (225)	1000 (300)	1200 (360)	1650 (500)
5	400 (120)	500 (150)	700 (210)	900 (270)	1500 (450)
10	200 (60)	250 (75)	350 (105)	450 (135)	650 (195)
15	150 (45)	170 (50)	230 (70)	300 (90)	450 (140)
20	100 (30)	125 (38)	165 (50)	200 (60)	300 (90)
25	80 (24)	100 (30)	130 (40)	160 (50)	240 (70)
30	60 (18)	75 (23)	90 (27)	120 (40)	200 (60)
35	40 (12)	75 (23)	80 (24)	110 (30)	160 (50)
40	40 (12)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	80 (24)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	80 (24)	75 (23)

* Based on a future point of 30 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (300 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/24 hr (25 mm/24 hr) rain event.

** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.

10 B COMPOST FILTER SOCK
NTS



10 C TRIPLE STACK FILTER SOCK
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

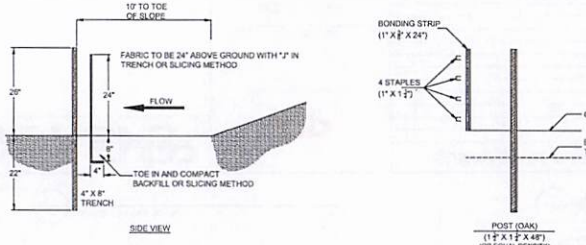
Antero Midstream

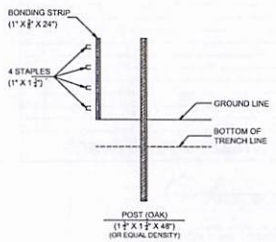
CRIMSON SOUTH SWL
ESCP DETAILS

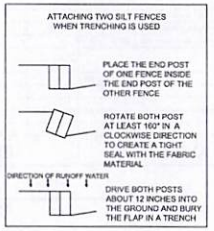
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

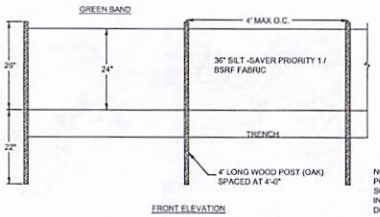
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	24 – ESCP4
REVISION No.:	3		

LAYOUT TAB: ESCP4
CAD FILE: N:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: jared jenkins



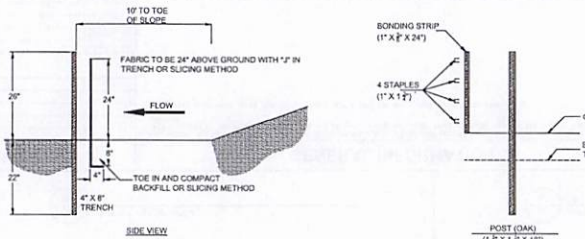


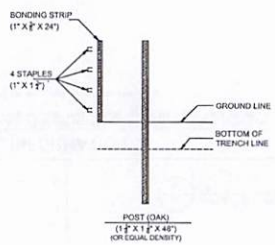


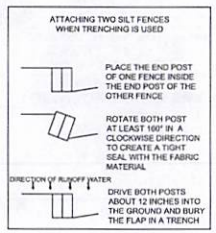


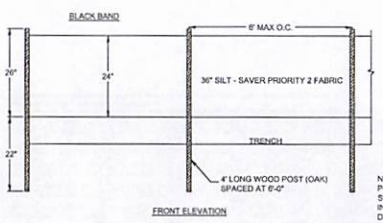
NOTE:
POST HOLES MAY NEED TO BE DRILLED IN ROCKY SOIL OR AREAS WHERE CONVENTIONAL INSTALLATION IS DIFFICULT TO ACHIEVE REQUIRED DEPTH.

7 A SILT SAVER SILT FENCE PRIORITY 1
NTS









NOTE:
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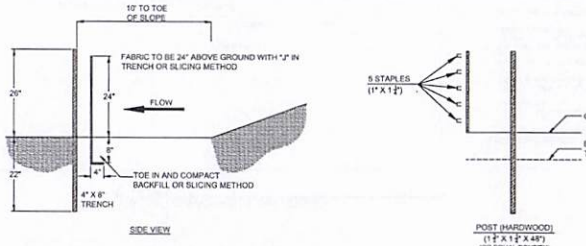
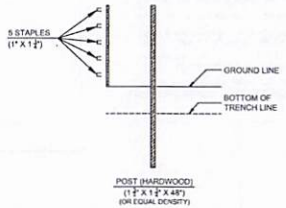
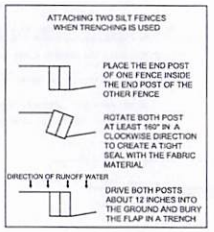
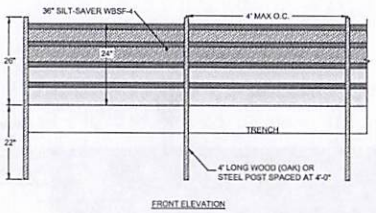
7 B SILT SAVER SILT FENCE PRIORITY 2
NTS

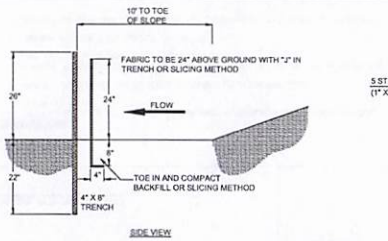


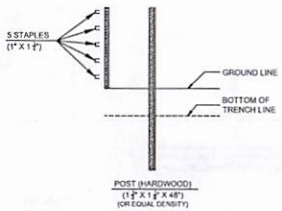


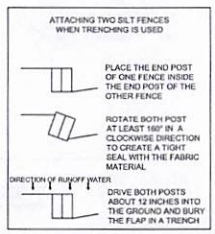


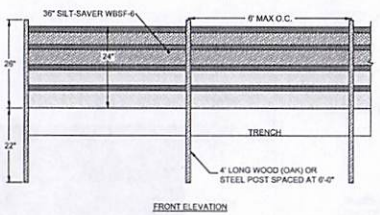


8 A HEAVY DUTY WOVEN BELTED WBSF2S-4 SILT FENCE 2 STAGE
NTS









8 B MEDIUM DUTY WOVEN BELTED WBSF2S-6 SILT FENCE 2 STAGE
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	DATE	BY

REVISION

NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22 JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22 JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22 JDJ

GENERAL INFORMATION

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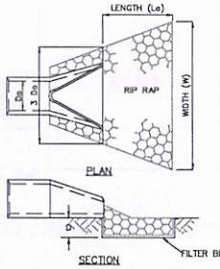
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

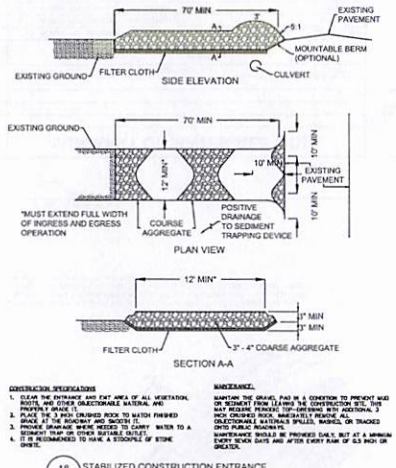
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET: 23 – ESCP3	



NOTES:
1. IF FLARED END SECTION IS DISCHARGING INTO DITCH FROM THE SIDE, EXTEND RIP RAP UP DITCH BANK ON OFF-SIDE A MINIMUM OF 4 FEET.
2. USE WVDEP RIP RAP GRADATION AND FILTER BLANKET REQUIREMENTS PER SECTION 3.17 OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. A SUITABLE NON-WOVEN GEOTEXTILE FABRIC, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR FILTER BLANKET STONE UNDER THE RIPRAP.
4. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

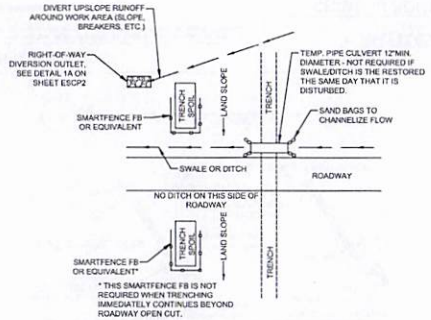
17 RIP RAP APRON
NTS



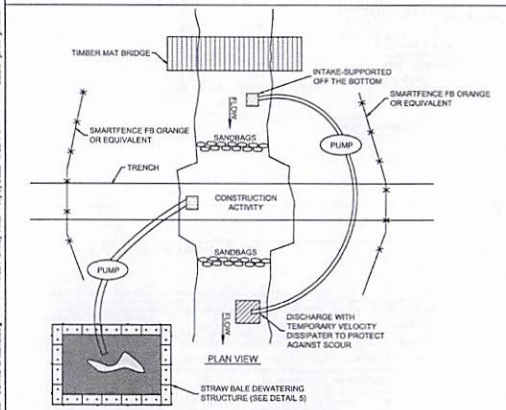
CONSTRUCTION SPECIFICATIONS
1. CLEAR THE ENTRANCE AND FLAT AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND SMOOTH TO GRADE.
2. PLACE THE 2 INCH CRUSHED ROCK TO MATCH FINISHED GRADE AT THE ROADWAY AND SMOOTH IT.
3. PROVIDE DRAINAGE WHERE NEEDED TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.
4. IT IS RECOMMENDED TO HAVE A STOCKPILE OF STONE ONSITE.

MAINTENANCE:
MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL 3 INCH CRUSHED ROCK. REMOVE ALL MUD OR OTHER OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.
MAINTENANCE SHOULD BE PROVIDED DAILY, BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

18 STABILIZED CONSTRUCTION ENTRANCE
NTS

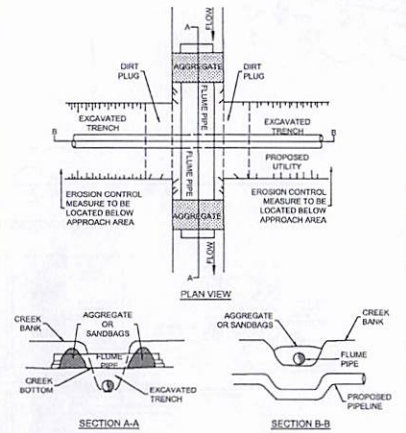


19 OPEN CUT ROAD CROSSING
NTS

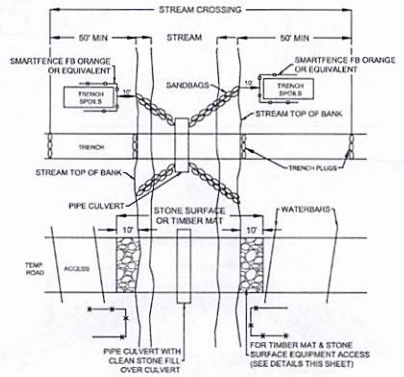


NOTES:
1. DEWATERING STRUCTURE SHOULD BE PLACED IN WELL VEGETATED STRIP.
2. TOP 6"-12" OF NATURAL STREAM SUBSTRATE SHOULD BE ISOLATED DURING IN-STREAM TRENCHING AND RESTORED UPON COMPLETION OF FINAL STREAM STABILIZATION.
3. ENVIRONMENTAL INSPECTOR MUST VERIFY DAM AND PUMP AROUND SETUP.
4. MUST BE A MINIMUM OF 5 FEET OF COVER FROM TOP OF PIPE TO NATURAL GROUND.
5. PIPE SAG SECTION SHOULD BE WELDED PRIOR TO TRENCHING ACTIVITY COMMENCES.
6. ACCUMULATION OF TRENCH WATER MUST BE PUMPED TO DEWATERING STRUCTURE.
7. IN-STREAM WORK MUST BE COMPLETED WITHIN 24 HOURS (HIGH WATER MARK TO HIGH WATER MARK)
8. STREAM BUFFER AREA MUST BE RESTORED WITHIN 72 HOURS.

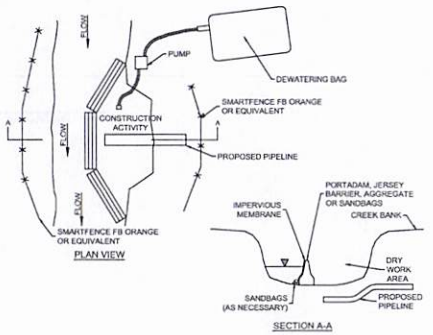
20 OPEN CUT STREAM CROSSING
NTS



21 FLUME PIPE CROSSING
NTS



22 FLUMED STREAM CROSSING WITH ACCESS ROAD
NTS



23 COFFERDAM CROSSING
NTS

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/7/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

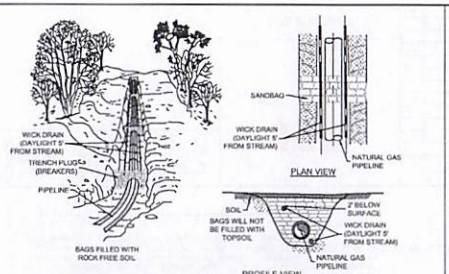
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	26 – ESCP6
REVISION No.:	3		

LAYOUT TAB: ESCP6
CAD FILE: N:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: jared.jenkins

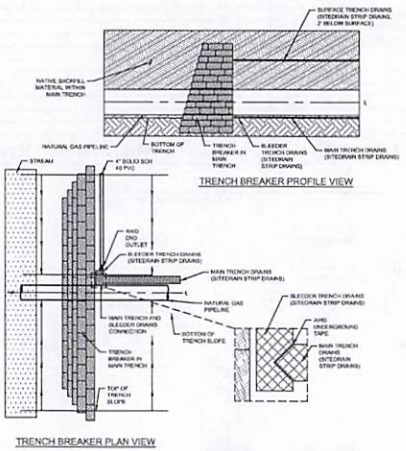


TRENCH BREAKER (PLUG) SPACING (FEET)

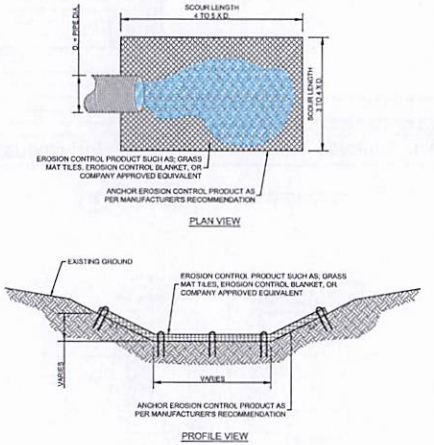
ALIGNMENT SLOPE %*	SPACING L (FT)	PLUG MATERIAL
< 5 %	1,000	** EARTH FILLED SACKS
5-15 %	500	** EARTH FILLED SACKS
15-25 %	300	** EARTH FILLED SACKS
25-35 %	200	** EARTH FILLED SACKS
35-100 %	100	** EARTH FILLED SACKS
>100 %	50	*** CEMENT FILLED BAGS (RECTILEO) OR MORTARED STONE

* TRENCH BREAKERS (PLUGS) ARE REQUIRED AT ALL STREAM, RIVER, OR WATER-BODY CROSSINGS REGARDLESS OF TRENCH SLOPE.
** TOP SOIL MAY NOT BE USED TO FILL SACKS. TRENCH BREAKERS (PLUGS) WITH CEMENT FILLED SACKS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER (PLUG) AREA.
*** TRENCH BREAKERS WITH CEMENT FILLED SACKS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER AREA.

11 PERMANENT TRENCH BREAKER
NTS



12 AMERICAN WICK DRAIN DETAIL
NTS



13 TRENCH PLUG DRAIN OUTFALL EROSION PROTECTION DETAIL
NTS

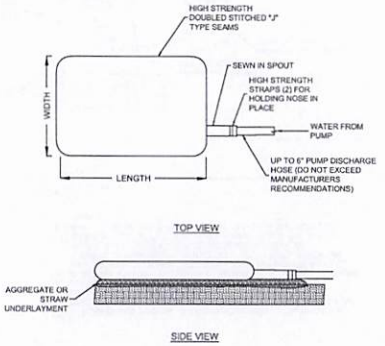
NOTES:
1) PREPARE SOIL BEFORE INSTALLING EROSION CONTROL PRODUCTS. INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.

2) FOR CULVERT AND OUTFALL APPLICATIONS, SCOUR PROTECTION SHOULD EXTEND A MINIMUM WIDTH OF 3-4 TIMES THE PIPE DIAMETER AND A MINIMUM LENGTH OF 4-5 TIMES THE PIPE DIAMETER (SEE PLAN VIEW). WITH STEEPER CHANNEL GRADIENTS, THE LENGTH OF SCOUR PROTECTION MAY NEED TO BE EXTENDED.

3) PLACE STAPLES/ANCHORS IN THE APPROPRIATE PATTERN. IN SOFT OR HIGHLY ERODIBLE SOILS, PERCUSSION EARTH ANCHORS MAY BE REQUIRED.

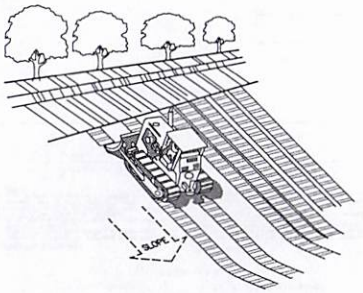
4) TRENCH PLUG DRAIN OUTFALL TO DISCHARGE FLUSH WITH FINAL GRADE ELEVATION OR NO MORE THAN 12" OF OVERHANG.

(SEE MANUFACTURERS RECOMMENDATIONS FOR ADDITIONAL INSTALLATION INSTRUCTIONS).



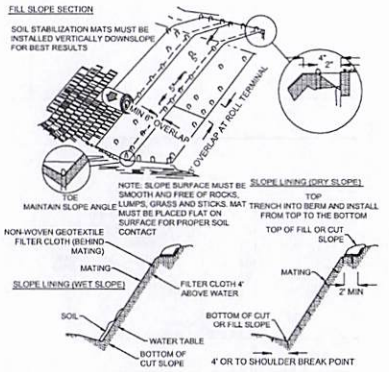
NOTES:
1. UTILIZE VEGETATED STRIP WHERE APPLICABLE.
2. MAXIMIZE DISTANCE BETWEEN LOCATION OF FILTER BAG AND AQUATIC FEATURE.
3. FILTER BAG MUST BE PLACED ON FLAT SURFACE.

14 FILTER BAG
NTS



TRACKING SLOPE IS DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. (NOTE: IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP) CARE SHOULD BE EXERCISED ON SOILS HAVING A HIGH CLAY CONTENT TO AVOID OVER-COMPACTION.

15 TRACKING
NTS



16 ROLLED EROSION CONTROL PRODUCTS
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	DATE	BY

REVISION

NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22 JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22 JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22 JDJ

GENERAL INFORMATION

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Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET:	25 – ESCP5

LAYOUT TAB: ESCP5
DWG FILE: R:\2019\2019-11838.00-Antero Crimson SWL A11568\Drawing\LP-AND\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:55 PM USER: brad.perkins

Temporary Stabilization Seeding		
March 15 – September 15	Annual Rye	250 – 350 lbs per acre
September 15 – March 15	Annual Winter Wheat	100 – 125 lbs per acre

29 TEMPORARY SEEDING CHART
NTS

Antero Midstream Default Pasture Mix (200 - 225 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	20%
Named Variety of Forage Tall Fescue (not Fawn)	20%
Climax Timothy	15%
Orchardgrass	10%
Birdsfoot Trefoil	10%
Medium Red Clover	5%
Ladino Clover	5%
Kentucky Bluegrass VNS	5%
Alsike Clover	5%
Alfalfa	5%
* All seed mixes require double inoculation	
Antero Midstream Default Wildlife Mix (150 - 175 LBS per Acre)	
Medium Red Clover	20%
Buckwheat	10%
Oats (Spring & Summer) or Wheat (Fall & Winter)	10%
Ladino White Clover	20%
Birdsfoot Trefoil	10%
Alfalfa	10%
Named Variety of Forage Perennial Ryegrass	10%
Annual Ryegrass	10%
* All seed mixes require double inoculation	
Antero Midstream General Contractor Mix (200 - 250 LBS per Acre)	
Named Variety of Forage Tall Fescue (not Fawn)	50%
Named Variety of Forage Perennial Ryegrass	20%
Annual Ryegrass	15%
Ladino Clover	5%
Alsike Clover	5%
Birdsfoot Trefoil	5%
* All seed mixes require double inoculation	

30 A PERMANENT SEEDING CHART
NTS

Alternative (Fescue-Free) Antero Midstream Default Pasture Mix (200 - 225 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	30%
Climax Timothy	20%
Orchardgrass	15%
Birdsfoot Trefoil	10%
Medium Red Clover	5%
Ladino Clover	5%
Kentucky Bluegrass VNS	5%
Alsike Clover	5%
Alfalfa	5%
* All seed mixes require double inoculation	
Alternative (Fescue-Free) Antero Midstream Default Wildlife Mix (200 - 250 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	40%
Annual Ryegrass	15%
Climax Timothy	20%
Orchardgrass	10%
Ladino Clover	5%
Alsike Clover	5%
Birdsfoot Trefoil	5%
* All seed mixes require double inoculation	

30 B PERMANENT SEEDING CHART (CONT.)
NTS

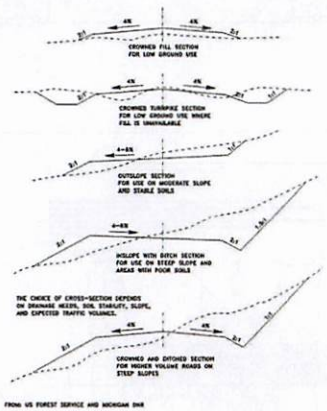
Lime
Pelletized
1.5 tons per acre

Fertilizer
10/20/20
200 lbs per acre

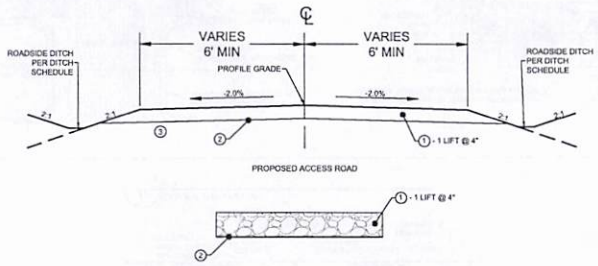
Straw Mulching
2 tons per acre

31 LIME, FERTILIZER, AND MULCH CHARTS
NTS

TYPES OF ROAD CROSS-SECTIONS



32 TYPES OF ROAD CROSS-SECTIONS
NTS



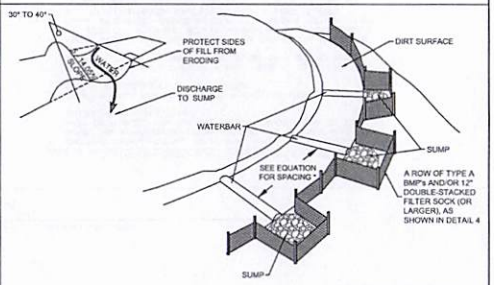
LEGEND

① 3" CLEAN AGGREAGTE (OR APPROVED EQUAL)
② GEOTEXTILE FABRIC
③ COMPACTED SUBGRADE (EXISTING GROUND)

NOTES

1. TIE TO EXISTING ROAD.
2. ALL DITCHES SHALL BE VEGETATED OR ROCK-LINED BASED ON DITCH SLOPE OR AS SHOWN ON THESE PLANS.
3. EXCAVATE A MINIMUM OF 1' INTO EXISTING ACCESS ROAD IN PROPOSED WIDENING AREAS.

33 ACCESS ROAD TYPICAL SECTION
NTS



* SPACING = 400/% GRADE + 75'

NOTES:

1. WATERBARS SHOULD BE INSTALLED ACROSS THE ENTIRE ROADWAY ON ALL SLOPES GREATER THAN 5%.
2. WATERBARS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.
3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO A SUMP. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE ROADWAY. SMARTFENCE FB OR EQUIVALENT SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBARS.
4. HAUL ROADS SHOULD CARRY LESS THAN 25 VEHICLES PER DAY.

MAINTENANCE:

1. WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
2. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL HAUL ROAD HAS ACHIEVED PERMANENT STABILIZATION.

34 HAUL ROAD DETAIL
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

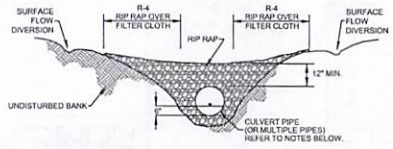
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

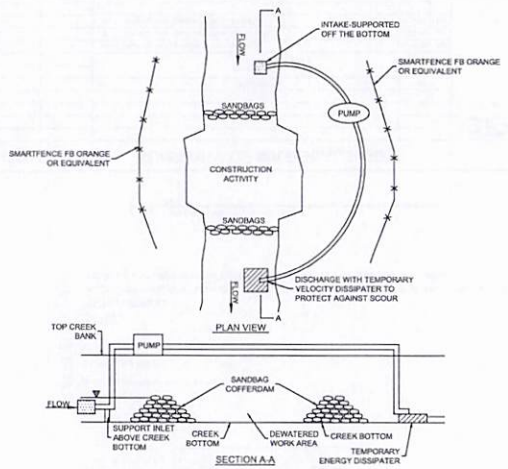
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 28 – ESCP8	
REVISION No.:	3		

LAYOUT TAB: ESCP8
CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins

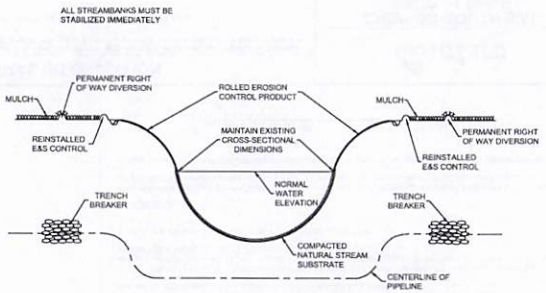


NOTES:
1. PIPE SHOULD EXTEND BEYOND TOE OF ROADWAY.
2. ROADWAY SHOULD BE DEPRESSED OVER CULVERT TO ALLOW FOR OVERFLOW.
3. CLEAN ROCK FILL SHALL BE USED TO GUARD AGAINST EROSION AND SCOURATION. STREAMBED MATERIAL IS NOT TO BE USED.
4. MINIMUM SIZE DIAMETER CULVERT TO BE INSTALLED IS 12 INCHES.
5. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.
6. PROPER EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE INSTALLED.

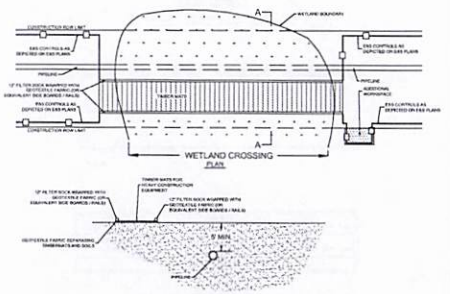
24 ROCK FLUME BRIDGE
NTS



25 DAM & PUMP AROUND
NTS



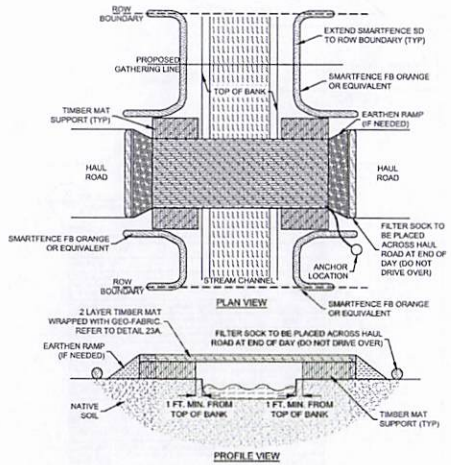
26 STREAM BANK STABILIZATION
NTS

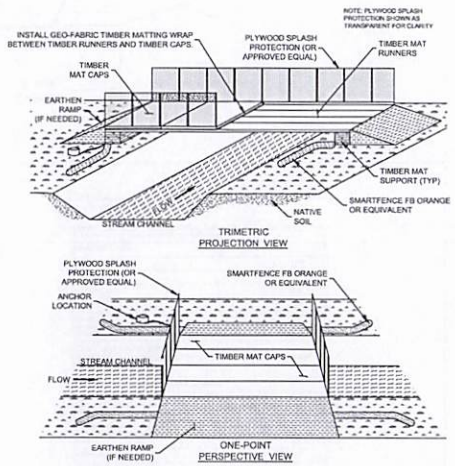


GENERAL CONSTRUCTION SEQUENCE NOTES

1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO EARTH DISTURBANCE.
2. SEDIMENT BARRIERS WILL BE INSTALLED AT THE EDGE OF THE ROW.
3. WORKING SIDE WILL BE STABILIZED WITH PRE-FABRICATED MATS AS NEEDED TO PROVIDE A FIRM SURFACE FOR CONSTRUCTION EQUIPMENT. FOR ALL DELINEATED WETLAND AREAS, GEOTEXTILE SHALL BE PLACED UNDER THE MATS TO PREVENT MOVEMENT OR PUDDLING OF THE SOIL THROUGH THE MATS.
4. WETLAND MATERIAL WILL BE STRIPPED, SEGREGATED, AND RESTORED UPON COMPLETION OF THE CROSSING.

27 TYPICAL EROSION AND SEDIMENT CONTROL FOR WETLAND CROSSINGS
NTS





28 TYPICAL EROSION AND SEDIMENT CONTROL FOR STREAM CROSSINGS
NTS

CONSTRUCTION SPECIFICATIONS AND GENERAL SPECIFICATIONS:

1. CROSSING ALIGNMENT SHALL BE AT RIGHT ANGLE TO THE STREAM. WHERE THE APPROACH CONDITIONS DICTATE, THE CROSSING MAY VARY 15 DEGREES FROM THE LINE DRAWN PERPENDICULAR TO THE CENTERLINE OF THE STREAM.
2. TIMBER MATTING RUNNERS SHALL BE PLACED PERPENDICULAR TO STREAM AND ADJACENT TO ONE ANOTHER.
3. TIMBER MATTING CAPS SHALL BE PLACED PARALLEL TO STREAM AND ADJACENT TO ONE ANOTHER FOR THE ENTIRE SPAN OF THE BRIDGE.
4. TIMBER MATTING CAPS SHALL BE WRAPPED UNDERNEATH AND ALONG THE SIDES OF TIMBER MAT WITH GEO-FABRIC MATERIAL OR APPROVED EQUAL. EXTEND GEO-FABRIC MATERIAL AT MINIMUM 5 FEET ON EITHER SIDE TO ALLOW ENOUGH MATERIAL TO WRAP UP AND TIE INTO PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) TO CONTROL SEDIMENT FROM ENTERING STREAM.
5. PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) SHALL BE SECURELY ATTACHED ALONG THE OUTER SIDES OF TIMBER MATTING TO CONTROL SEDIMENT COLLECTION AND ALLOW GEO-FABRIC MATERIAL TO BE STAPLED TO OUTSIDE OF PLYWOOD.
6. BRIDGE SHALL BE CONSTRUCTED MINIMUM 1 FOOT OUTSIDE TOP OF BANK.
7. BRIDGE SHALL BE SECURELY ANCHORED AT ONLY ONE END USING STEEL CABLE OR CHAIN. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL ANCHORS. ANCHORING SHALL BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
8. ALL AREAS DISTURBED DURING BRIDGE INSTALLATION SHALL BE STABILIZED IMMEDIATELY.
9. PLYWOOD SPLASH PROTECTION (OR APPROVED EQUAL) SHALL BE WELL MAINTAINED, CLEARING SEDIMENT WHEN NECESSARY.
10. FILTER SOCK SHALL BE PLACED ALONG BOTH ENTRANCES OF THE BRIDGE WHEN NOT IN USE FOR MORE THAN 24 HOURS AND/OR PRIOR TO PRECIPITATION EVENTS. DO NOT DRIVE OVER FILTER SOCK.

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

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3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

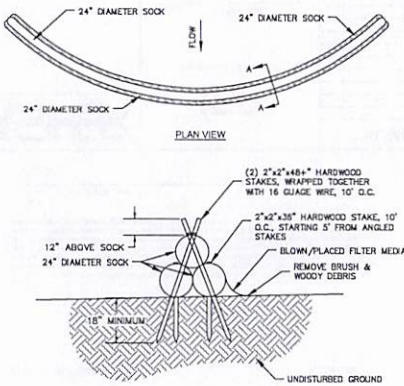
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

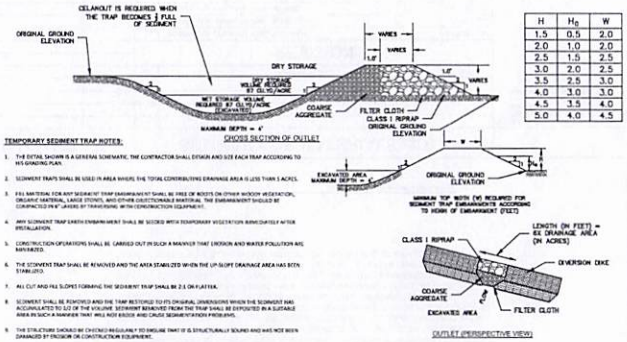
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 27 – ESCP7	
REVISION No.:	3		

LAYOUT TAB: ESCP7
CAD FILE: K:\2022\2022-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins



42 TRIPLE STACK FILTER SOCK SEDIMENT TRAP
NTS



H	H_0	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

TEMPORARY SEDIMENT TRAP NOTES:

1. THE DETAIL SHOWN IS A GENERAL SCHEMATIC. THE CONTRACTOR SHALL DESIGN AND SIZE EACH TRAP ACCORDING TO HIS GRADING PLAN.
2. SEDIMENT TRAPS SHALL BE USED IN AREAS WHERE THE TOTAL CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES.
3. FILL MATERIAL FOR ANY SEDIMENT TRAP EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHOULD BE COMPACTED IN 8" LAYERS BY TRAVERSING WITH CONSTRUCTION EQUIPMENT.
4. ANY SEDIMENT TRAP EARTH EMBANKMENT SHALL BE SEEDED WITH TEMPORARY VEGETATION IMMEDIATELY AFTER INSTALLATION.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
6. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILIZED.
7. ALL CUT AND FILL SLOPES FORMING THE SEDIMENT TRAP SHALL BE 2:1 OR FLATTER.
8. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ OF THE VOLUME. SEDIMENT REMOVED FROM THE TRAP SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS.
9. THE STRUCTURE SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT.
10. A RIPRAP SPILLWAY CHANNEL MAY BE NECESSARY IF A CONCENTRATED OUTLET FLOW IS ANTICIPATED.
11. FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

NOTES:
TEMPORARY SEDIMENT TRAPS ARE ESSENTIALLY SMALL SEDIMENT PONDS. THEY GIVE THE WATER A PLACE TO POOL AND SLOW DOWN THIS REDUCES THE CHANCES OF ADDITIONAL EROSION WHILE ALLOWING ANY SEDIMENT IN THE WATER TO SETTLE OUT. THE OUTLET IS DESIGNED OUT OF GRAVELS OF DIFFERENT DIMENSIONS WHICH CREATES A FILTER AS WELL.

43 TEMPORARY SEDIMENT TRAP
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

NOTES:
ON MOST LOCATIONS ANTERO WILL ALSO CONSTRUCT EROSION AND SEDIMENT (E&S) CONTROLS ABOVE AND BEYOND THE E&S CONTROLS LISTED ON THE PLAN SHEETS. THESE CONTROLS WILL BE CATEGORIZED AS PHASE I, PHASE II, AND PHASE III CONTROLS. THESE CONTROLS WILL BE INSTALLED TO BOTH PROVIDE EXTRA E&S PROTECTION, AND TO ELIMINATE THE CHANCES OF MATERIALS SUCH AS SOIL OR GRAVEL BEING PLACED IN A STREAM OR WETLAND. THE SITE PLANS AND DELINEATIONS ARE REVIEWED AND THESE CONTROLS ARE SPECIFIED IN ANTERO'S CONSTRUCTION RELEASE WHICH IS SENT OUT JUST PRIOR TO CONSTRUCTION BEGINNING. THE PHASE I, II, AND III CONTROLS WILL BE CONSTRUCTED AS FOLLOWS:

PHASE I:
THIS IS ESSENTIALLY ORANGE SAFETY FENCE LIKE SHOWN ABOVE. THIS MEASURE IS PUT IN PLACE TO LET CONTRACTORS KNOW THAT NO WORK IS TAKE PLACE BEYOND THIS POINT. THIS CONTROL IS TYPICALLY UTILIZED WHEN THERE IS A WETLAND OR STREAM LOCATED IN THE AREA BUT NOT WITHIN APPROXIMATELY 100 FEET OF THE DISTURBANCE.

44 A SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

PHASE II:
THIS CONTROL CONSISTS OF TYPICAL SILT FENCE, SUPER SILT FENCE, OR FILTER SOXX. THIS CONTROL WILL BE INSTALLED AS DESCRIBED IN THE PREVIOUS SECTIONS. THIS CONTROL WILL TYPICALLY BE USED WHEN WETLANDS OR STREAMS ARE LOCATED WITHIN 100 FEET OF THE DISTURBED AREA.

44 B SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

PHASE III:
THIS CONTROL CONSISTS OF SUPER SILT FENCE WITH ORANGE CONSTRUCTION FENCE ACTING AS THE VISIBLE PORTION OF THE BARRIER. THIS CONTROL IS USE TO PREVENT SOILS OR GRAVELS FROM ENTERING STREAMS OR WETLANDS DURING CONSTRUCTION. THE SUPER SILT FENCE CAN BE USED IN CONJUNCTION WITH OTHER E&S METHODS. THIS CONTROL IS USED IN AREAS WHERE STREAMS OR WETLANDS ARE WITHIN APPROXIMATELY 50 FEET OF THE DISTURBED AREA.

*NOTE THAT THE DISTANCES MENTIONED IN THE PHASE I, II, AND III CONTROLS ARE A GUIDELINE NOT A RULE FOR THE DECISION OF WHEN AND WHERE TO USE THESE CONTROLS.

44 C SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

DEFINITIONS:

RIP RAP - LOOSE STONE USED TO FORM A FOUNDATION FOR A BREAKWATER OR OTHER STRUCTURE. THIS STONE IS TYPICALLY 3 INCHES OR GREATER IN DIAMETER.

FILTER CLOTH - TYPICALLY TYPAR OR ANOTHER SUCH MATERIAL (USUALLY WOVEN) WHICH IS DESIGNED TO ALLOW WATER TO FLOW BUT RETAIN SEDIMENT.

AGGREGATE - TERM USED TO IDENTIFY ANY TYPE SOLID DENSE MATERIAL USED DURING CONSTRUCTION TYPICALLY GRAVELS, SANDS, AND STONES.

EMBANKMENT - A WALL OR BANK OF EARTH OR STONE.

CLASS 1 RIP RAP - TYPICAL RIP RAP WITH STONES OF A DIAMETER BETWEEN 8 AND 18 INCHES.

45 DEFINITIONS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

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Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	30 – ESCP10
REVISION No.:	3		

LAYOUT TAB: ESCP10
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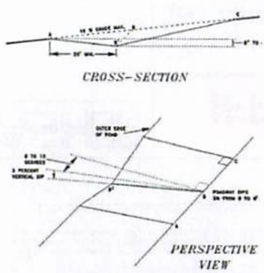
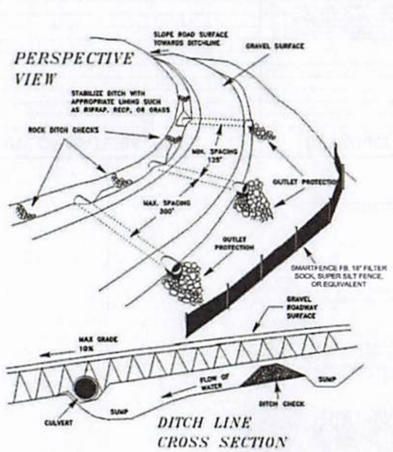
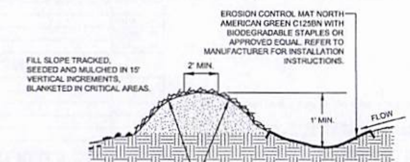


Table 3.35.1				
Drainage Area (Acres)	Average Slope of Watershed			
	2%	4%	5%	10%
	Culvert Size			
1-25	24	30	30	30
26-50	24	30	36	36
51-100	30	36	42	48
101-150	36	42	48	48
151-200	36	42	48	54
201-250	42	48	54	60
251-300	42	48	60	60
301-350	42	48	60	60
351-400	45	54	60	60
401-450	45	54	60	72
451-500	45	54	60	72
501-550	48	60	60	72
551-600	48	60	66	72
601-640	48	60	72	72

35 BROAD-BASE DIP
NTS



36 EROSION AND SEDIMENT CONTROL FOR ACCESS ROADS AND DRIVEWAYS
NTS



INSTALLATION:

1. WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDITIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE
2. REMOVE ALL STUMPS, ROOTS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
3. INSTALL DIVERSION AND COMPACT AS SHOWN IN DETAIL INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
4. SCARIFY, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM
5. INSTALL EROSION CONTROL MAT NORTH AMERICAN GREEN C125N PER MANUFACTURER'S RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER FROM UNDERMINING OR DAMAGING CHANNEL LINER.

NOTES:

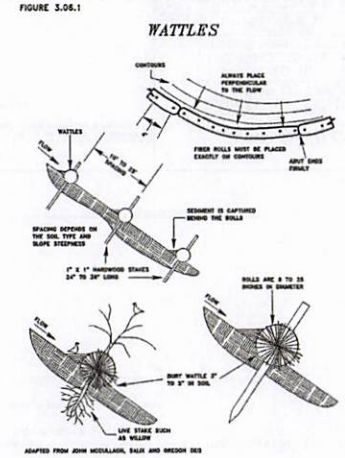
1. TEMPORARY BERMS SHALL BE PLACED, MAINTAINED, AND ADJUSTED CONTINUOUSLY UNTIL 90% VEGETATIVE GROWTH IS ESTABLISHED ON THE EXTERIOR SLOPES WITH PERMANENT STORM DRAINAGE FACILITIES FUNCTIONING.
2. BERMS SHALL OUTLET TO SLOPE PIPES, CHANNELS, OR OTHER APPROVED MEANS OF CONVEYING RUNOFF TO A SEDIMENT TRAP, SEDIMENT BASIN, OR COLLECTOR CHANNEL.
3. CHANNEL BEHIND BERM SHALL HAVE POSITIVE GRADE TO OUTLET AND AN APPROPRIATE PROTECTIVE LINNING.
4. BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE
5. AN ACCEPTABLE ALTERNATIVE TO TOP-OF-SLOPE BERM IS TO CONTINUOUSLY GRADE THE TOP OF FILL TO DIRECT RUNOFF AWAY FROM THE FILLSLOPE TO A COLLECTOR CHANNEL, SEDIMENT TRAP, OR SEDIMENT BASIN.

MAINTENANCE:

INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS. REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

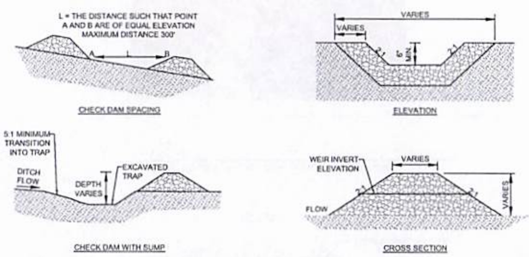
37 TEMPORARY DIVERSION BERM FOR OFFSITE WATER
NTS

FIGURE 3.06.1



ADAPTED FROM JOHN MCCULLAGH, SALIX AND OREGON DES

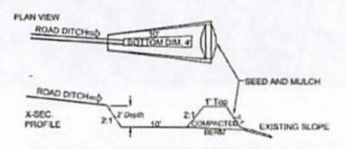
38 WATTLES
NTS



NOTES:

DITCH CHECKS WILL BE CONSTRUCTED IN CHANNELS TO MINIMIZE EROSION. THE CONSTRUCTION OF THE DITCH CHECK WILL FOLLOW THE GUIDELINES ABOVE. DITCH CHECKS WILL BE CONSTRUCTED SO THAT THE ELEVATION OF THE TOP OF THE DOWNSTREAM DITCH CHECK IS EQUAL TO THE ELEVATION OF THE BASE OF THE DITCH CHECK ABOVE. THIS CREATES A SITUATION WHERE THE CHANNEL HAS NO CHANNELIZED FLOW PER SAY, THE WATER FLOWING DOWN THE DITCH WILL CASCADE FROM THE POOL CREATED BY ONE DITCH CHECK INTO THE POOL CREATED BY THE DOWNSTREAM DITCH CHECK THIS DISSIPATES ENERGY AND SLOWS THE WATER FLOW REDUCING EROSION AND ALLOWING ANY SEDIMENT IN THE DRAINAGE TO FALL OUT.

39 ROCK CHECK DAM
NTS



LEVEL SPREADER DETAIL

N.T.S.

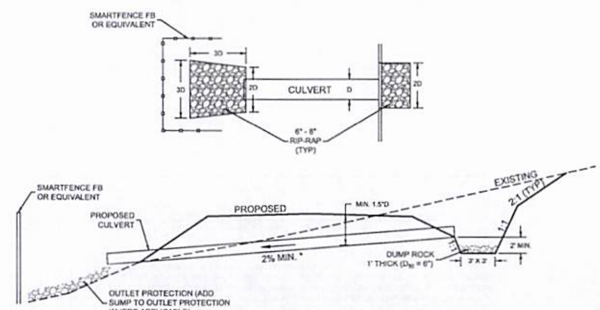
NOTE: TO BE PLACED AT THE ENDS OF DITCHES CALLING FOR LEVEL SPREADERS LEVEL SPREADERS WILL BE CUT INTO THE CONTOUR OF THE EXISTING SLOPE.

NOTES:

LEVEL SPREADER TO BE CONSTRUCTED IN AREAS WHERE A CULVERT OR CHANNEL MUST EMPTY ONTO GROUND WITH NO ASSOCIATES CHANNELIZED FLOW. THE PURPOSE OF THE LEVEL SPREADER IS TO DISSIPATE ENERGY AND SPREAD THE FLOW OUT OVER A SIGNIFICANT AREA. THIS WILL TAKE A CHANNELIZED FLOW AND ESSENTIALLY CONVERT IT BACK TO A SHEET FLOW OVER THE GROUND SURFACE. THE SHEET FLOW WILL HAVE LESS CHANCE FOR EROSION CONSIDERING THE LOWER VELOCITIES AND FLOW VOLUMES IN ANY PARTICULAR AREA. THEY MAY BE CONSTRUCTED MUCH LIKE A SUMP WHERE THE CHANNEL OR CULVERT EMPTIES INTO THE SUMP AND THEN OVERTOPS THE BERMED AREA, BUT THEY MAY OFTEN CONTAIN GRAVEL IN THE SUMPED AREA. THEY WILL ALLOWS BE CONSTRUCTED ALONG THE GROUND CONTOUR.

40 LEVEL SPREADER
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



NOTES:
1. 2% MINIMUM SLOPE EXCEPT WHERE NOTED ON PLANS.
* CULVERTS IN STREAMS SHALL BE LAID AT 0% AND COUNTERSUNK.

INLET AND OUTLET PROTECTION IS ESSENTIALLY GRAVELS AND/OR RIP RAP PLACED AT BOTH THE INLET AND OUTLET SIDES OF CULVERTS. THE GRAVELS WILL HELP TO SLOW THE FLOW OF WATER, AND DISSIPATE ENERGY. THIS WILL IN TURN DECREASE THE CHANCES OF EROSION AND ALSO ALLOW ANY SEDIMENT IN THE WATER TO SETTLE OUT.

41 TYPICAL CULVERT & CULVERT INLET/OUTLET PROTECTION
NTS

THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

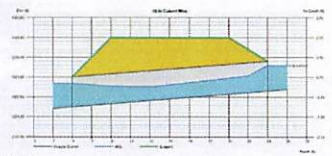
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 29 - ESCP9	
REVISION No.:	3		

Culvert Report

18-in Culvert Max

Invert Elev Dn (ft)	= 1021.50	**Calculations**	
Pipe Length (ft)	= 20.00	Qmin (cfs)	= 5.11
Slope (%)	= 4.00	Qmax (cfs)	= 5.11
Invert Elev Up (ft)	= 1022.30	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 5.11
No. Barrels	= 1	Qpipe (cfs)	= 5.11
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Culvert	Veloc Dn (ft/s)	= 3.41
Culvert Entrance	= Smooth tapered inlet throat	Veloc Up (ft/s)	= 4.81
Coeff. K,M,c,Y,k	= 0.534, 0.555, 0.01(K), 0.9, 0.2	HGL Dn (ft)	= 1022.69
		HGL Up (ft)	= 1023.17
Embankment		Hw Elev (ft)	= 1023.59
Top Elevation (ft)	= 1025.00	Hw/D (ft)	= 0.85
Top Width (ft)	= 12.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 1.00		



NOTES

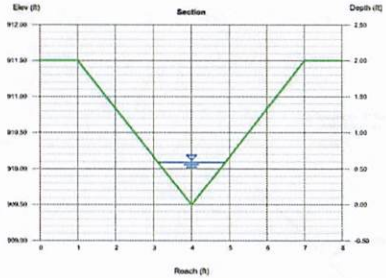
1. CROSS-DRAINAGE CULVERTS ARE SPACED APART AT LEAST 125' AND NO MORE THAN 300'.
2. CULVERT SPACING = 400/PERCENT GRADE + 75'.
3. OUTLET PROTECTION MUST BE INSTALLED AT EACH CULVERT.

TYPICAL 18" CULVERT
NTS

Channel Report

Ditch Max

Triangular		**Highlighted**	
Side Slopes (z:1)	= 1.50, 1.50	Depth (ft)	= 0.59
Total Depth (ft)	= 2.60	Q (cfs)	= 5.690
		Area (sqft)	= 0.52
Invert Elev (ft)	= 909.50	Velocity (ft/s)	= 10.90
Slope (%)	= 12.00	Wetted Perim (ft)	= 2.13
N-Value	= 0.018	Crit Depth, Yc (ft)	= 0.98
		Top Width (ft)	= 1.77
Calculations		EGL (ft)	= 2.44
Compute by:	Known Q		
Known Q (cfs)	= 5.69		



TYPICAL DITCH
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

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NO.	DESCRIPTION	DATE	BY
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2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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2. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
3. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
CULVERT & DITCH REPORTS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 32 – CULV1	
REVISION No.:	3		

LAYOUT TAB: CULV1
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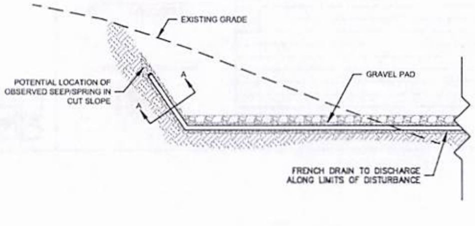
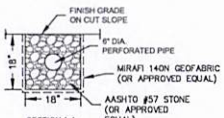


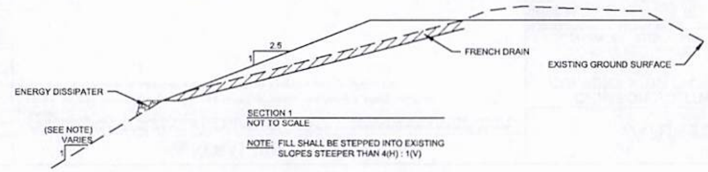


SECTION A-A

NOTE:

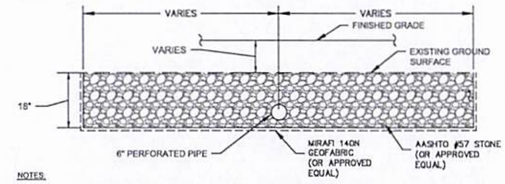
IF EVIDENCE OF A SEEP/SPRING IN A CUT SLOPE IS OBSERVED, THE CONTRACTOR SHOULD INSTALL A FRENCH DRAIN PER DETAIL 36 ABOVE.

46 FRENCH DRAIN AT OBSERVED SEEP/SPRING IN CUT SLOPES
NTS



SECTION 1
NOT TO SCALE

NOTE: FILL SHALL BE STEPPED INTO EXISTING SLOPES STEEPER THAN 4(H) : 1(V)



NOTES:

1. WHERE SPRINGS OR SEEPS ARE ENCOUNTERED DURING CONSTRUCTION, DRAINABLE FILL AND PERFORATED PIPES (FRENCH DRAINS) SHOULD BE INSTALLED TO PROVIDE A DRAINAGE PATH FOR SEEPAGE FROM THE EXISTING SLOPE.

2. THE FRENCH DRAIN SHOULD CONSIST OF A 6 INCH DIAMETER PERFORATED PIPE SURROUNDED BY DRAINABLE FILL, INSTALLED IN AN 18 INCH DEEP TRENCH ALONG THE EXISTING DRAINAGE FEATURE OR SEEP. PRIOR TO DRAINABLE FILL PLACEMENT, THE TRENCH SHOULD BE LINED WITH A LAYER OF GEOFABRIC SUCH AS MIRAFI 140N, OR APPROVED EQUAL, WITH SUFFICIENT OVERLAP TO PROVIDE AN ENVELOP AROUND THE PIPE TRENCH TO PREVENT THE MIGRATION OF FINES INTO THE FRENCH DRAIN.

3. THE FRENCH DRAIN SHOULD DAYLIGHT BEYOND THE TOE OR SIDE OF THE SLOPE AND EXTEND UP TO THE CREST OF THE SLOPE TO FACILITATE DRAINAGE THROUGH THE FILL SECTION. THE AS-BUILT WIDTH OF THE FRENCH DRAIN SHOULD BE A FUNCTION OF THE WIDTH OF THE SPRING, SEEP OR DRAINAGE FEATURE OBSERVED DURING CONSTRUCTION.

4.THE FRENCH DRAIN SHOULD BE CONSTRUCTED TO SPAN THE ENTIRE WIDTH OF THE OBSERVED SPRING OR SEEP.

47 FRENCH DRAIN AND DRAINABLE FILL SECTION AT OBSERVED SEEP/SPRING OR EXISTING DRAINAGE FEATURE LOCATION
NTS

Typical Polymer Stabilized Fiber Matrix Application Rates

Maximum Rainfall of ≤ 20"							
SLOPE	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1
Soil Stabilizer (gals/acre)	4	5	6	7	8	9	10
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000

Maximum Rainfall of > 20" and for Site Winterization			
SLOPE	≤5:1	4:1	≥3:1
Soil Stabilizer (gals/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

NOTES:

A BONDED FIBER MATRIX (BMF) IS AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BMFs MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3H:1V THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAT NEED AS MUCH AS 4,000 LB/ACRE.

BFMs SHOULD ONLY BE USED WHEN NO RAIN IS FORECASTED FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE TACKIFIER SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BFMs SHOULD NOT BE APPLIED BETWEEN SEPTEMBER 30 AND APRIL 1.

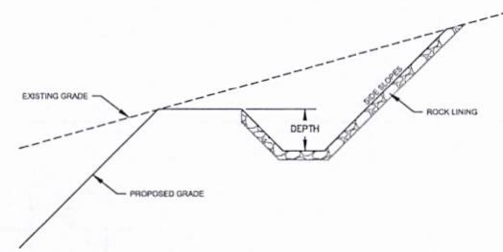
A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERTY. PSFMs MAKE USE OF A LINEAR SOIL STABILIZING TACKIFIER THAT WORKS DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 99% EFFECTIVE.

NOTES:

UNLIKE ROLLED BLANKETS, THERE IS NO NEED TO SMOOTH THE SLOPE PRIOR TO APPLICATION OF HYDRAULICALLY APPLIED BLANKETS. IN FACT SOME ROUGHENING OF THE SURFACE, EITHER NATURAL OR MECHANICALLY INDUCED, IS PREFERABLE. HOWEVER, LARGE ROCKS, THOSE > 9 INCHES, AND EXISTING RILLS SHOULD BE REMOVED PRIOR TO APPLICATION. TRACKING OR GROOVING OF SLOPES SHOULD BE CONSIDERED TO SLOW WATER FLOWS DURING A STORM EVENT. SLOPE INTERRUPTION DEVICES SUCH AS STAIR STEP GRADING OR BENCHING SHOULD BE APPLIED PRIOR TO THE APPLICATION. MIXING AND APPLICATION RATES SHOULD FOLLOW MANUFACTURER'S RECOMMENDATIONS.

HYDRAULICALLY APPLIED BLANKETS ARE TYPICALLY APPLIED IN TWO STAGES. UNLESS SPECIFICALLY RECOMMENDED TO BE APPLIED IN ONE APPLICATION BY THE MANUFACTURER, THE SEED MIXTURE AND SOIL AMENDMENTS SHOULD BE APPLIED FIRST. IF THE SEED IS APPLIED AT THE SAME TIME AS THE HYDRAULICALLY APPLIED BLANKET, THE BONDED FIBERS MAY KEEP THE SEED FROM MAKING SUFFICIENT CONTACT WITH THE SOIL TO GERMINATE. AFTER THE SEED MIXTURE IS APPLIED, THE BFM, FGM, OR PSFM SHOULD BE SPRAYED OVER THE AREA AT THE REQUIRED APPLICATION RATE. (SEE ABOVE TABLES)

48 BONDED FIBER MATRIX (HYDROMULCH)
NTS



NOTE:

DRAINAGE CHANNEL DIMENSIONS AND LINING WILL BE DETERMINED BY ENGINEER AS APPLICABLE.

49 TYPICAL ROCK LINED CHANNEL
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

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NO.	DESCRIPTION	DATE	BY
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2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

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Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 31 – ESCP11	
REVISION No.:	3		

LAYOUT TAB: ESCP11
PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins

KLEINFELDER
Bright People. Right Solutions.

ATTACHMENT E
NO-RISE CERTIFICATE

KLEINFELDER
Bright People. Right Solutions.

Date: 12/19/2022

Signature: Sattle Pretzel

Title: Senior Program Manager

180 White Oaks Blvd, Suite 110, Bridgeport, WV, 26330 p | 304.553.7416

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This is to certify that I am a duly qualified registered professional engineer licensed to practice in the State of West Virginia.

It is further to certify that based on the information provided to me, and the attached technical data supports the fact that the proposed Crimson South Surface Water Line (Site) will not impact the 100-year flood elevation of Flint Run at the published sections in the Flood Insurance Study for Doddridge County (Community ID 540024) effective 10/04/2011 and will not impact the 100-year flood elevation at unpublished cross-sections in the vicinity of the Site.

Work to be performed at the Site involves temporary disturbances associated with a temporary stream timber mat crossing supported with jersey barrier piers, and pipeline installation activities for the permanent 18" HDPE water pipe which will be trenched within the stream boundaries and aboveground within the floodplain.

The work outlined above is the focus of this Hydrologic Engineering Center-River Analysis System (HEC-RAS) analysis as it was shown to be within Flood Zone A. Much of the work will be performed in the floodplain, and the extent of the work is shown on the attached design plans. The total watershed (drainage basin) for Flint Run at this crossing was shown to be 16.671 square miles. A peak flow from this area was calculated utilizing the National Streamflow Statistics application available online. A HEC-RAS analysis was completed, based on the drainage area above and associated flows, to verify that no influence will occur due to the proposed activities within the floodplain of Flint Run. The flows compared for the affected area are attached.

Attached are the following documents that support my findings:

West Virginia Flood Tool Map
Design Plans
National Streamflow Statistics – Drainage Area
Comparison for Calculated Flows – HEC-RAS Excel Data

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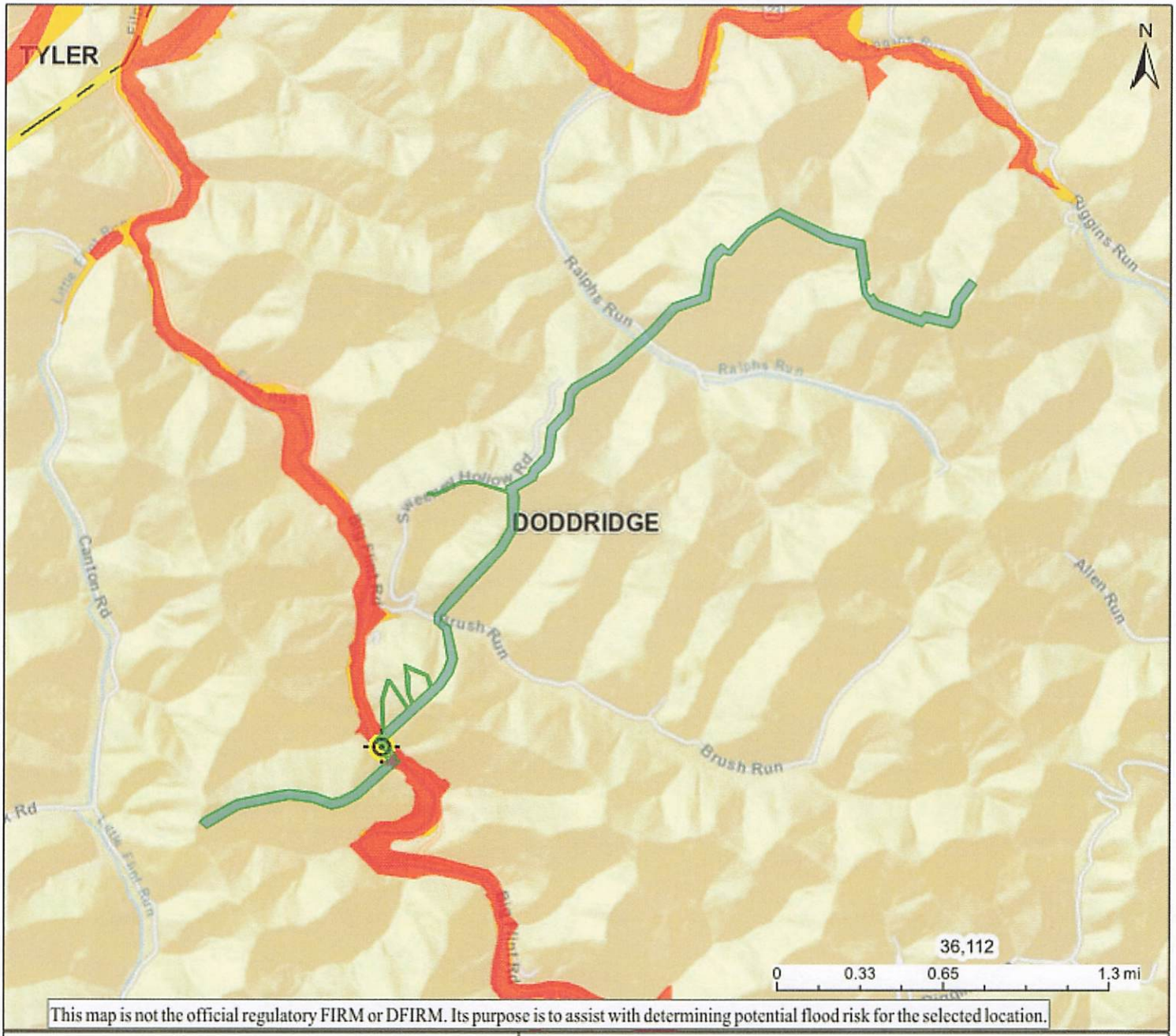
APPENDIX A
West Virginia Flood Tool Map

WV Flood Map-Crimson South SWL



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

HIGH RISK

	Regulatory Floodway
Zone AE	1-Percent-Annual-Chance Flood Hazard Area **With Base Flood Elevation** (BFE)
Zone A	1-Percent-Annual-Chance Flood Hazard Area **Without BFE** (may have Advisory Flood Heights)
Advisory	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)

Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (*https://www.MapWV.gov/flood*) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Info Location — *Map created on 12/14/2022*

User Notes

Flood Hazard Area	Location is **WITHIN** the FEMA 100-year floodplain. Advisory Flood Heights available.
Flood Zone	A (Advisory Flood Heights available)
Stream	Flint Run
Watershed (HUC8)	Little Musringum-Middle Island (5030201)
Flood Height	Flood Height 4 About 768.1 ft (Source: AFH) NAVD88
Water Depth	About 3.7 ft (Source: HEC-RAS)
Elevation	761.4 ft (Source: FEMA 2018-20) (NAVD88)
Community & ID	Doddridge County (ID: 540024)
FEMA Map & Date	54017C0130C; Effective Date: 10/4/2011
Location (lat, long)	(39.365407, -80.718887) (WGS84)
Parcel ID	09-03-0006-0012-0000
E-911 Address	multiple addresses

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APPENDIX B
Design Plans

WVDOH GENERAL NOTES

ALL CONSTRUCTION ON THE DIVISION OF HIGHWAYS RIGHT OF WAY WILL CONFORM TO THE FOLLOWING:
THE FOLLOWING NOTES APPLY TO ALL PLAN SHEETS:

1. ALL METER SETTINGS ACROSS PAVED ROADS SHALL BE BORED OR MOLED, UNLESS OPEN CUT HAS BEEN APPROVED BY W.V.D.O.H. AND SPECIFICALLY INDICATED ON PLANS.
2. NOTIFICATION OF PROPOSED EXCAVATION, DEMOLITION OR ANY OTHER EARTH DISTURBING ACTIVITIES ARE REQUIRED TO BE PLACED TO MISS UTILITY OF WEST VIRGINIA (1-800-245-4848) NOT LESS THAN FORTY EIGHT (48) BUSINESS HOURS BEFORE ANY SUCH WORK IS TO BEGIN.
3. BEDDING SHALL BE PLACED ON ASPHALT SURFACE TO PROTECT THE PAVEMENT WHEN A TRENCHER OR TRACKED VEHICLE IS USED.
4. THE WEST VIRGINIA DIVISION OF HIGHWAYS PUBLICATIONS "STANDARD SPECIFICATIONS ROADS AND BRIDGES" AND "ACCOMMODATIONS OF UTILITIES ON HIGHWAY RIGHT OF WAY" LATEST EDITION ARE PART OF THE SPECIFICATIONS AND WILL BE ADHERED TO BY THE CONTRACTOR.
5. ALL DAMAGE TO ROAD SURFACE SHALL BE REPAIRED ACCORDING TO THE WEST VIRGINIA DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS AND DETAILS.
6. ALL EXISTING DUMP ROCK OR RIP RAP DITCHES DISTURBED BY THE UTILITY LINE CONTRACTOR SHALL BE RESTORED WITH THE SAME SIZE, GRADE AND QUALITY OF ROCK AFTER THE UTILITY LINE HAS BEEN INSTALLED. NEW DUMP ROCK (RIP RAP) IS TO BE PLACED IN ALL LOCATIONS WHERE THE DITCH LINE GRADE IS GREATER THAN 5% AND THERE IS NO EXISTING RIP RAP.
7. TRAFFIC CONTROL SHALL CONFORM TO THE W.V.D.O.H. PUBLICATION "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE" OPERATION LATEST EDITION.
8. ALL BACKFILL MATERIAL AND COMPACTION REQUIREMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS IN THE ACCOMMODATION OF UTILITIES ON HIGHWAY RIGHT OF WAY AND ADJUSTMENT AND RELOCATION OF UTILITY FACILITIES ON HIGHWAY PROJECTS AND SUBJECT TO D.O.H. APPROVAL. EVIDENCE OF PROPER COMPACTION BY TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TESTING SHALL BE ONE (1) PER DAY OR EVERY 500 LINEAL FEET OR AS DETERMINED BY THE DISTRICT MANAGER (ENGINEER) OR HIS AUTHORIZED REPRESENTATIVE.
9. UTILITY LINES SHALL BE PLACED EITHER AROUND, UNDER OR OVER DRAINAGE CULVERTS AS SHOWN ON PLANS.
10. AGGREGATE SHOULDER STONE IS TO BE PLACED ON THE SHOULDER AT A THICKNESS EQUAL TO 6" OR ITS ORIGINAL THICKNESS WHICHEVER IS GREATER. PAVED SHOULDERS WILL BE PAVED.
11. MAGNETIC MARKING TAPE SHALL BE INSTALLED AT A DEPTH OF 12" TO 18" BELOW THE SURFACE AND DIRECTLY ABOVE ALL LINES OR PIPE.
12. REPAIR TO DRIVEWAYS ON W.V.D.O.H. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. TYPICAL REPAIR DETAIL.
13. CLEANUP WILL BE ACCOMPLISHED DAILY. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. REPAIR. ALL CULVERTS AND DRAINAGE DITCHES SHALL BE OPEN AND MAINTAINED DURING CONSTRUCTION. SHOULDERS WILL BE RESTORED AND STABILIZED WITH STONE DAILY WITH APPROPRIATE STONE AT THE DISCRETION OF W.V.D.O.H.
14. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS OF COMPLETION OF BACK FILL OPERATION.
15. NO EXCESS EXCAVATION MATERIAL SHALL BE WASTED ON W.V.D.O.H. RIGHT OF WAYS WITHOUT THE AGREEMENT OF THE W.V.D.O.H.
16. THE W.V.D.O.H. RESERVES THE RIGHT TO RELOCATE WATERLINES, FIRE HYDRANTS, AND VALVES AS DEEMED NECESSARY.
17. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY COMPANIES, PRIOR TO CONSTRUCTION TO OBTAIN UTILITY LOCATIONS AND PERFORMING EXPLORATORY WORK TO DETERMINE SUBSURFACE MATERIALS AND STRUCTURES THAT MAY AFFECT ITS WORK.
18. PRIOR TO THE START OF ANY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY, THE CONTRACTOR SHALL GIVE THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION 48 HOURS NOTICE.
19. THE CONTRACTOR IS RESPONSIBLE FOR ANY OFFSITE DISPOSAL REQUIRED. DISPOSAL SHALL BE TO AN ACCEPTABLE LEGAL SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL AT DISPOSAL SITES.
20. ALL ELEVATION GRADES AND DISTANCES SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE PRIOR TO CONSTRUCTION.
21. ALL CONSTRUCTION SHALL MAINTAIN 5' FROM EDGE OF PAVEMENT OR BOTTOM OF DITCH UNLESS NO OTHER PRACTICAL MEANS OF CONSTRUCTION EXISTS.
22. PERFORM ACCEPTABLE REPAIR OF ANY AND ALL SUB-BASE FAILURES THAT ARE CAUSED BY THE CONTRACTOR'S OPERATION ON A DAILY BASIS.
23. PERFORM TOTAL REPAIR AND/OR REPLACEMENT OF ANY DAMAGED ASPHALT SURFACE AS DETERMINED BY THE W.V.D.O.H REPRESENTATIVE.
24. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL MAKE A COMPLETE VIDEO SHOWING THE ROAD SURFACE OF ALL ROADS TO BE UTILIZED AND PRESENT IT TO THE UTILITY SUPERVISOR W.V.D.O.H.
25. REMOVE DITCH-LINE OBSTACLES AND/OR RECONSTRUCTION OF THE DITCH-LINE.
26. IN THE CASE OF MANHOLES OR VALVES IF AT ALL POSSIBLE SHALL BE PLACED OUTSIDE THE ROADWAY, SHOULDER, OR DITCH LINE IF PLACED IN THE SHOULDER THERE IS TO BE A MINIMUM OF 6 INCHES OF COVER IN THE DITCH LINE THERE IS TO BE 12 INCHES OF COVER BETWEEN THE MANHOLE AND THE INVERT OF THE DITCH.
27. ANY MANHOLES OR VALVES OR VALVE BOXES PLACED IN THE ROADWAY WILL BE ON THE SAME PLANE AS THE ROADWAY AND SET FLUSH WITH ROADWAY.
28. ANY ROADS REQUIRING AN H.L.B.C. OVERLAY, FULL WIDTH OR PARTIAL, SHALL HAVE SHOULDER STONE FROM AN APPROVED SOURCE PLACED AS PER D.O.H. SPECIFICATIONS.
29. THE DEPARTMENT OF HIGHWAYS REQUIRES THERE BE NO WORK WITHIN THE DEPARTMENT'S RIGHT-OF-WAY DURING SNOW AND ICE REMOVAL. THERE MAY BE EXCEPTIONS FOR EMERGENCY AND CASE BY CASE SITUATIONS WITH NOTIFICATION TO THE DEPARTMENT.

UTILITY AGENCIES SERVING AREA

MISS UTILITY
1-800-245-4848
TICKET # 2223866992, 2223866997, 2223867009

WEST VIRGINIA DIVISION OF HIGHWAYS
WVDOH DIST #4
P.O. BOX 4220
CLARKSBURG, WV 26301-4220
(304) 842-1500
(304) 842-1564 FAX
LACY PRATT - UTILITY SUPERVISOR - CROSSINGS
TARA CARDER - PERMIT SUPERVISOR - TEMP. ACCESSES

POWER
MON POWER
1-800-686-0022

CABLE
AT&T
1-304-216-4100

TELEPHONE
VERIZON TELECOMMUNICATIONS
1-800-275-2355

RESPONSE TEAMS:
NATIONAL RESPONSE CENTER FOR REPORTING CHEMICAL OR OIL SPILLS
1-800-424-8802

STATE EMERGENCY SPILL NOTIFICATION
1-800-642-3074

EMERGENCY AMBULANCE, FIRE, LAW ENFORCEMENT
911

GAS LINE CROSSINGS

STATION	LAT	LONG	DESCRIPTION	PLAN SHEET #
49+33	39.367752	-80.716084	EX. EQT GAS LINE (SIZE UNKNOWN)	07 - PLAN2
60+70	39.370606	-80.715191	EX. EMAX OIL 1" POLY GAS LINE (EXPOSED)	08 - PLAN3
81+00	39.374680	-80.711463	EX. CONSOL 6" STEEL GAS LINE (EXPOSED)	09 - PLAN4
121+58	39.383001	-80.704064	EX. MOUNTAINNER GAS LINE (SIZE UNKNOWN)	10 - PLAN5
169+73	39.385724	-80.692001	EX. 2" POLY GAS LINE (OWNER UNKNOWN)	12 - PLAN7
177+83	39.384571	-80.691173	EX. TRANSCANADA 36" STEEL GAS LINE	12 - PLAN7

DRAWING INDEX

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02	GNOTS	GENERAL NOTES SHEET
03	SPECS	GENERAL CONSTRUCTION SPECS SHEET
04-05	PL-INDEX-AR-INDEX	INDEX SHEETS
06-13	PLAN1-PLAN8	PROPOSED ALIGNMENT PLAN AND PROFILE SHEETS
14-15	ARPS1-ARPS2	ACCESS ROAD PLAN SHEETS
16	HSP	HYDROSTATIC PROFILE SHEET
17-20	S&WC1-S&WC4	STREAM & WETLAND CROSSING SHEETS
21-31	ESCP1-ESCP11	ESCP DETAIL SHEETS
32	CULV1	CULVERT & CHANNEL REPORT SHEETS

GENERAL NOTES

1. EXISTING UTILITIES SHOWN ON PLANS WHERE EVIDENCE HAS BEEN FOUND OR PROVIDED BY LOCAL UTILITIES. EXACT DEPTH AND LOCATION OF UTILITY LINES NOT KNOWN. CONTRACTOR TO VERIFY UTILITY LOCATIONS PRIOR TO CROSSING BY CONTACTING MISS UTILITY AT 1-800-245-4848 AND LOCAL UTILITY COMPANIES AS LISTED AND/OR NOT LISTED ON THIS SHEET. CONTRACTOR TO LOCATE WATER AND UTILITY SERVICES BEFORE BORING AND JACKING.
2. IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.
3. ALL PERMITS MUST BE SECURED PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL COORDINATE ALL STREAM CROSSING INSTALLATIONS PROPOSED SO NOT TO DELAY THE CONSTRUCTION PROCESS. STREAM CROSSINGS ARE TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. ALL PROPOSED PERMANENT FILL TO BE FILLED WITH STONE, NATURAL ROCK, OR A 20" CULVERT TO BE INSTALLED TO MAINTAIN STREAM FLOW.
6. ALL WVDOH ROAD CROSSINGS TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS. WVDOH TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY WORK WITHIN WVDOH R/W.
7. ALL CONSTRUCTION TO BE DONE IN THE PROPOSED PIPELINE LIMITS OF DISTURBANCE AS SHOWN.
8. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS PROVIDED IN A SEPARATE BOUND VOLUME.
9. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE TYPES AND O.D. PRIOR TO CONNECTION.
10. PROPERTY LINES SHOWN ON PLANS WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.

EROSION & SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT MEASURES TO BE IN ACCORDANCE WITH WEST VIRGINIA ONLINE BMP MANUAL FOR STANDARD GUIDELINES AND SPECIFICATIONS AVAILABLE AT: HTTPS://APPS.DEP.WV.GOV/DWWM/STORMWATER/BMP/INDEX.HTML
2. EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN ON PLANS AND DETAILED IN SPECIFICATIONS.
3. EXPOSED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSIVE FORCES OF RAINDROPS, FLOWING WATER, AND WIND.
4. CLEARING AND GRUBBING IS TO OCCUR IN THE NOTED LIMITS OF DISTURBANCE (L.O.D.) ONLY.
5. ALL GRADED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
6. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
7. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH BMPs.
8. EROSION AND SEDIMENT CONTROLS BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY NECESSARY OR REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.

CONSTRUCTION SEQUENCE OF EVENTS

1. CALL MISS UTILITY (1-800-245-4848)
2. INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
3. CONSTRUCTION OF PIPELINE WITH RESTORATIONS.
4. TESTING OF PIPELINE AND APPURTENANCES.
5. WORK CLOSE-OUT, PUNCH LIST, CLEAN UP, REPAIRS, FINAL SEEDING AND MULCHING, ETC...

LEGEND / ABBREVIATIONS

- = EXISTING PIPELINE VENT
- = EXISTING GAS WELL (AS NOTED)
- = EXISTING GAS METER
- = EXISTING PIPELINE MARKER
- = EXISTING GAS VALVE
- = EXISTING MONUMENT FOUND (AS NOTED)
- = EXISTING UTILITY POLE
- = EXISTING GATE / FENCE POST
- G = EXISTING PIPELINE
- W = EXISTING WATER LINE
- X = EXISTING FENCE
- O/U = EXISTING OVERHEAD UTILITY
- UGC = EXISTING UNDERGROUND UTILITY
- T = EXISTING TELEPHONE
- = EXISTING GUARDRAIL
- = EXISTING UNPAVED ROAD
- = EXISTING PAVED ROAD
- = EXISTING DITCH
- = EXISTING TREELINE
- = PROPERTY LINE
- = DOH RIGHT-OF-WAY LINE
- = PROPOSED PERMANENT RIGHT-OF-WAY
- = PROPOSED CONSTRUCTION RIGHT-OF-WAY/ LIMITS-OF-DISTURBANCE
- LOD = COMPRESSOR/WELL PAD LIMITS-OF-DISTURBANCE
- = PROPOSED ANTERO BASELINE
- G = PROPOSED ANTERO GAS LINE
- W = PROPOSED ANTERO BURIED WATER LINE
- W = PROPOSED ANTERO SURFACE WATER LINE
- = EXISTING GROUND PROFILE
- = PROPOSED PIPELINE PROFILE
- 1250 = CONTOUR
- = AREA-OF-INTEREST
- T-A = PROPOSED TYPE A BMP (SEE TABLE ON SHEET 22)
- T-B = PROPOSED TYPE B BMP (SEE TABLE ON SHEET 22)
- T-C = PROPOSED TYPE C BMP (SEE TABLE ON SHEET 22)
- X = PROPOSED ORANGE SAFETY FENCE
- = PROPOSED RIGHT-OF-WAY DIVERSION (PLAN)
- = PROPOSED ACCESS ROAD DITCH
- = PROPOSED CULVERT
- = DELINEATED CULVERT
- = DELINEATED STREAMS
- = DELINEATED STREAMS (PROPOSED PERMANENT FILL)
- = DELINEATED WETLANDS
- = DELINEATED WETLANDS (PROPOSED PERMANENT FILL)
- = DELINEATED GROUNDWATER SEEP/SPRING
- = ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- = ADDITIONAL TEMPORARY WORKSPACE
- = STONE CONSTRUCTION ENTRANCE
- = TEMPORARY TIMBERMAT CROSSING
- = PROPOSED ACCESS ROAD
- M⊕P = PIPELINE MILE POST
- = PROPOSED RIGHT-OF-WAY DIVERSION (PROFILE)
- = PROPOSED EARTH TRENCH BREAKER (PROFILE)
- = PROPOSED TRENCH PLUG DRAIN (PROFILE)
- GAS = PROPOSED GAS LINE MARKER
- TS = PROPOSED TEST STATION
- 43-3-4-31.1 = PARCEL IDENTIFICATION

*LEGEND IS TYPICAL, NOT ALL ITEMS IN LEGEND APPEAR IN DRAWING.

PROPOSED CONSTRUCTION RIGHT-OF-WAY/ LIMITS-OF-DISTURBANCE

CONSTRUCTION R/W LIMITS-OF-DISTURBANCE
B.L. PROPOSED CORRIDOR
CONSTRUCTION R/W LIMITS-OF-DISTURBANCE
VARIES

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
GENERAL NOTES
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 02 - GNOTS	
REVISION No.:	3		

LAYOUT TAB: GNOTS
CAD FILE: R:\2501350-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\GENERAL NOTES SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:00 PM
USER: Jared Jenkins

ANTERO MIDSTREAM

ISSUED FOR PERMITTING PLANS FOR THE

CRIMSON SOUTH SWL

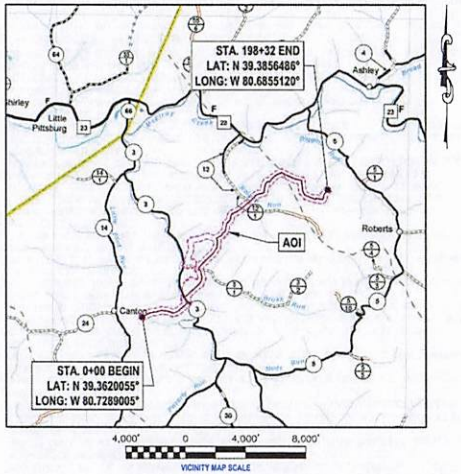
18" HDPE SURFACE WATER LINE

AFE # A11568

101-050-11638

DODDRIDGE COUNTY, WEST VIRGINIA

NOVEMBER 2022



THRASHER

TOTAL AREA AND TREE CLEARING	AREA	UNITS
PERMITTED LIMITS-OF-DISTURBANCE	52.3	ACRES
TREE CLEARING	39.1	ACRES

EXISTING INFORMATION SOURCES

BASE CONTOUR DATA PROVIDED BY OTHERS.

ROUTE INFORMATION AND LOCATION PROVIDED BY ANTERO.

SUPPLEMENTAL SPOT ELEVATIONS AND ALIGNMENT PROVIDED BY:

THE THRASHER GROUP
600 WHITE OAKS BLVD., P.O. BOX 940
BRIDGEPORT, WV 26330

BENCHMARK:
HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, US SURVEY FOOT
VERTICAL - NAVD 88 (GEOID12B), US SURVEY FOOT

ROAD DESIGNATIONS OBTAINED FROM WV-DOH
(http://www.transportation.wv.gov)

1-800-245-4848
TICKET # 2223668992, 2223866987, 2223867009

WEST VIRGINIA 811

CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.
CALL811.COM/811-IN-YOUR-STATE

Antero Midstream
PHONE: (303) 357-7310 | FAX: (303) 357-7315
1615 WYNKOOP STREET
DENVER, CO 80202

ALIGNMENT SHEETS PREPARED BY

BRIDGEPORT, WV OFFICE
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
(304) 624-4108
PO BOX 940

PLAN REPRODUCTION WARNING

THESE PLANS ARE INTENDED TO BE PLOTTED ON ANSI D (22" X 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE. THESE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THESE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.
WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

THIS PLAN SET DEPICTS THE NECESSARY INFORMATION FOR EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED BY THE WVDEP FOR STORM WATER PERMITTING PURPOSES.

THE PIPELINE MATERIALS, ASSOCIATED APPURTENANCES, MATERIAL STRENGTHS, MAOP CALCULATIONS, PIPELINE ROUTING, ETC. DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE APPROPRIATENESS, OR DESIGN, OR SAID MATERIAL DEPICTED IN THESE PLANS.

THE AQUATIC RESOURCES DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE ACCURACY, OR COMPLETENESS, OF THE AQUATIC RESOURCES DEPICTED ON THESE PLANS.

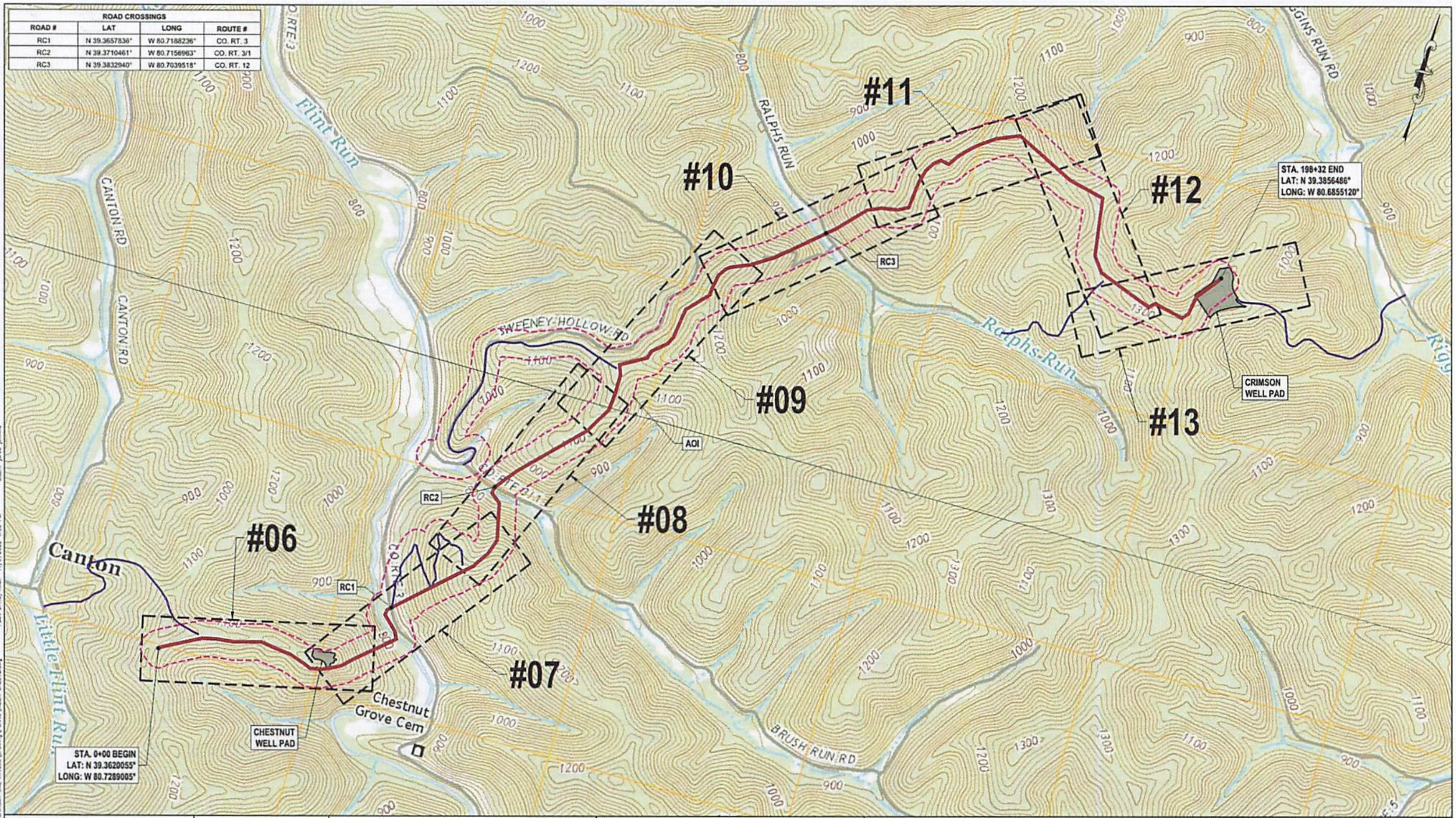
CLAYTON C. WHITE REGISTERED 24495 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

CLAYTON C. WHITE, WV P.E. # 24495

☒ ISSUED FOR PERMITS DATE: 11/9/22 BY:

LAYOUT TAB: COVER
CAD FILE: R:\WV\050-11638.00-Antero Crimson SWL A11568\Drawing\PLANS\COVER SHEET.dwg PLOT DATE/TIME: 11/9/2022 4:27 PM USER: jared.jenkins

ROAD CROSSINGS			
ROAD #	LAT	LONG	ROUTE #
RC1	N 39.3657836°	W 80.7188236°	CO. RT. 3
RC2	N 39.3710461°	W 80.7156963°	CO. RT. 3/1
RC3	N 39.3832940°	W 80.7039518°	CO. RT. 12



THRASHER

0 600 1200
HORIZ. SCALE IN FEET

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

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NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. MAPPING SOURCE: CENTER POINT, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
   SMITHBURG, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
6. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL PLAN INDEX SHEET

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 04 – PL-INDEX	
REVISION No.:	3		

GENERAL CONSTRUCTION SPECIFICATIONS

1. GRADING

THE CONTRACTOR SHALL GRADE AS NECESSARY TO MITIGATE THE NECESSITY OF ABRUPT OVER-BENDS OR SAG-BENDS. CONTRACTOR SHALL MINIMIZE THE GRADING WHERE PRACTICAL TO PREVENT UNNECESSARY DISTURBANCE AND MINIMIZE WORK REQUIRED TO RETURN THE RIGHT-OF-WAY TO ITS ORIGINAL ELEVATIONS, SLOPES, AND PROFILE AS CLOSELY AS PRACTICAL, BUT CONSISTENT WITH MINIMIZING ABRUPT OVER-BENDS AND SAG-BENDS. GRADED SUBSOIL MATERIALS SHALL BE STOCK PILED SO IT CAN BE RETURNED TO ITS ORIGINAL DEPTH AND LOCATION AS OPPOSED TO SPREAD ALONG THE RIGHT-OF-WAY. THE CONTRACTOR SHALL GRUB, OR OTHERWISE REMOVE AND DISPOSED OF ALL STUMPS, ROOTS AND DEBRIS FOUND TO BE IN THE WAY OF CONSTRUCTION WITH PERMANENT RIGHT-OF-WAY LIMITS. WHEN THE CONTRACTOR IS CUTTING GRADE ALONG OR ACROSS EXISTING PIPELINES, SPOIL OR MATS SHALL BE PLACED OVER THE EXISTING LINES PER THE REQUIREMENTS OF THE OPERATING COMPANY OF THE FOREIGN PIPELINE.

2. COMPANY FOREIGN LINE AND UTILITY CROSSINGS

CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SUCH CROSSINGS AND NOTIFY THE OWNER PRIOR TO ANY DITCHING ACTIVITY IN THE VICINITY OF THE CROSSINGS. A MINIMUM CLEARANCE OF 12 In., OR AS REQUIRED BY THE OWNER/OPERATOR, SHALL BE MAINTAINED FROM THE FOREIGN CROSSING. THE CONTRACTOR SHALL MAKE ALL REQUIRED "ONE-CALL" NOTIFICATIONS, AND KEEP DOCUMENTATION OF NOTIFICATIONS. THE CONTRACTOR SHALL KEEP THE MARKINGS REFRESHED AS NECESSARY DURING THE LENGTH OF THE CONSTRUCTION ACTIVITIES, MAKING NECESSARY RE-NOTIFICATIONS AS REQUIRED. COMPANY WILL LOCATE AND MARK LOCATIONS OF KNOWN COMPANY-OWNED FACILITIES WITHIN EXISTING OPERATING LOCATIONS.

IN AREAS WHERE UNDERGROUND FACILITIES, SUCH AS PIPELINES, ELECTRICAL LINES, FIBER OPTIC CABLES, ETC. EXISTING, EXCAVATION BY MACHINE SHALL BE LIMITED TO NO CLOSER THAN 2 FEET (IN ANY DIRECTION) TO THE FACILITY. THE FACILITY SHALL THEN BE EXPOSED AND POSITIVELY LOCATED BY HAND EXCAVATION. AFTER THE FACILITY IS EXPOSED, AND ONLY WHILE A COMPANY REPRESENTATIVE IS ON-SITE, EXCAVATION BY MACHINE IS PERMITTED TO WITHIN 1 FOOT (IN ANY DIRECTION) OF THE FACILITY. THE REMAINING EXCAVATION MUST BE HAND DUG.

3. DITCH SPECIFICATIONS

DITCH WIDTH AND DEPTH – UNLESS OTHERWISE STATED ON THE DRAWINGS OR RIGHT-OF-WAY LINE LIST, THE DITCH SHALL BE A MINIMUM OF 12 In. WIDER THAN THE PIPE BEING LAID FOR PIPE DIAMETERS LESS THAN 12 In. AND A MINIMUM OF 18 In. WIDER FOR PIPE DIAMETERS 12 In. AND GREATER AND OF SUCH DEPTH THAT THE PIPE SHALL HAVE 48 In. MINIMUM COVER IN SOIL AND 36 In. IN CONSOLIDATED ROCK, MEASURED FROM THE TOP OF THE PIPE TO THE AVERAGE LEVEL OF THE ORIGINAL OR RESTORED GROUND ON THE TWO SIDES OF THE DITCH, WHICHEVER IS LOWER.

CONSOLIDATED ROCK – CONSOLIDATED ROCK IS DEFINED AS ROCK LAYERS WHERE THE UPPERMOST SURFACE EXISTS AT A HIGHER ELEVATION THAN THE ELEVATION OF THE TOP OF THE PIPE. THIS CONDITION PROVIDES PROTECTION AGAINST DAMAGE FROM EXTERNAL FORCES AND JUSTIFIES COVER.

DITCH GRADING – THE BOTTOM OF THE DITCH SHALL BE CUT TO A UNIFORM GRADE SO THAT THE FULL WIDTH OF THE DITCH SHALL BE AVAILABLE FOR PROVIDING SLACK IN THE LINE WHEN LAID.

BEND EXCAVATIONS – AT OVER-BENDS AND SIDE-BENDS, THE CONTRACTOR SHALL EXCAVATE THE DITCH TO ALLOW PROPER CLEARANCE BETWEEN THE INSIDE BEND OF THE PIPE AND THE BOTTOM OR SIDE OF THE DITCH TO MAINTAIN THE MINIMUM COVER.

ROCK – IN ALL CASES WHERE ROCK, OR ANY BOULDER LARGER THAN TWO In. IN DIAMETER IS ENCOUNTERED IN THE BOTTOM OF THE DITCH, THE DITCH SHALL BE EVENLY PADDED WITH SOIL, SAND OR OTHER PADDING MATERIAL IN ORDER TO PREVENT THE ROCK OR BOULDERS FROM COMING INTO CONTACT WITH THE PIPE COATING.

4. SPOIL BANK

THE SPOIL BANK FROM THE DITCHING OPERATIONS SHALL NOT BE PLACED ON ANY LOOSE DEBRIS OR FOREIGN MATTER WHICH MIGHT BECOME MIXED DURING PADDING AND BACKFILLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN GAPS OR OPENINGS IN THE SPOIL BANK ACROSS CULTIVATED FIELDS, SO THAT EXCESSIVE RAINS DO NOT CAUSE WATER TO BACK UP AND FLOOD CULTIVATED SECTIONS. EXTREME CARE SHALL BE EXERCISED TO KEEP ALL DRAIN DITCHES AND WATER COURSES OPEN AND USEFUL.

5. TEMPORARY BRIDGES

WHEN THE DITCH IS EXCAVATED THROUGH LANDS WHERE LIVESTOCK/WILDLIFE IS CONFINED OR THROUGH AGRICULTURAL FIELDS WHERE THE COMPANY DETERMINES IT IS DESIRABLE FOR THE LANDOWNER OR TENANT TO HAVE A PASSAGEWAY ACROSS THE DITCH, THE CONTRACTOR SHALL PLUG THE DITCH OR PROVIDE SAFE, TEMPORARY BRIDGES FOR CROSSING THE DITCH AND LEAVE AN OPENING IN THE SPOIL BANK.

6. EXCAVATING NEAR IN-SERVICE PIPELINES

WHEN DITCHING PARALLEL TO AN EXISTING PIPELINE IN THE SAME RIGHTS-OF-WAY, NEAR THE EXISTING LINE AND DEEPER THAN THE EXISTING LINE, CARE SHOULD BE TAKEN TO LEAVE SUFFICIENT DISTANCE AND SUPPORT TO ENSURE SAID LINE DOES NOT SLOUGH OFF INTO NEW EXCAVATION. IF PARALLEL LINE IS A COUPLED HIGH PRESSURE LINE, IT IS NOT PERMITTED TO EXPOSE MORE THAN ONE COUPLING AT A TIME. IN ALL INSTANCES, THE WORK SHOULD BE PLANNED SUCH THAT THE EXCAVATION IS OPEN A MINIMUM AMOUNT OF TIME.

7. HAULING AND STRINGING

THE CONTRACTOR SHALL HAUL AND STRING PIPE, CASING AND OTHER MATERIALS TO THE RIGHT-OF- WAY OR WORK AREA. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRUCKS AND EQUIPMENT FOR THE HAULING AND SPOTTING OF ALL MATERIALS. THE CONTRACTOR SHALL FURNISH SKIDS AND PLACE PIPE ON SKIDS ON THE RIGHT-OF-WAY IN A MANNER WHICH KEEPS BOTH ENDS FREE OF DIRT AND DEBRIS.

8. BENDING

FIELD BENDING – WHERE IT IS NECESSARY TO BEND PIPE, ONLY COLD BENDS SHALL BE EMPLOYED. THE BENDS SHALL BE FREE FROM BUCKLING, FLATTENING, CRACKS OR OTHER EVIDENCE OF MECHANICAL DAMAGE AND ALL BENDS SHALL NOT HAVE A DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM DIAMETERS IN EXCESS OF 2.5 % OF THE NOMINAL DIAMETER. ALL BENDS SHALL MEET THE CRITERIA SET FORTH IN DOT PART 192.

8. BENDING (CONT'D)

SLACK AND LONGITUDINAL WELDS – ALL OVER-BENDS, SAGS AND SIDE-BENDS SHALL BE MADE TO PROVIDE AN ADEQUATE AMOUNT OF SLACK IN THE PIPELINE. ON PIPE HAVING A LONGITUDINAL WELD, THE LONGITUDINAL WELD MUST BE LOCATED AS NEAR AS PRACTICABLE TO THE NEUTRAL AXIS OF THE BEND.

BENDING MACHINE – EACH BEND SHALL BE MADE USING A COMPANY APPROVED BENDING MACHINE HAVING A FULL CIRCLE BENDING SHOE WITH A NEOPRENE OR URETHANE LINING TO PRODUCE A SMOOTH, SYMMETRICAL BEND, UNLESS SPECIFIED OTHERWISE BY THE COMPANY. ON PIPE CONTAINING A LONGITUDINAL WELD, THE LONGITUDINAL SEAM MUST BE AS NEAR AS PRACTICAL TO NEUTRAL AXIS OF THE BEND UNLESS THE BEND IS MADE WITH AN INTERNAL BENDING MANDREL OR THE PIPE IS 12 In. OR LESS IN OUTSIDE DIAMETER OR HAS A DIAMETER-TO-WALL THICKNESS RATIO LESS THAN 70. IF THE PIPE IS INTERNALLY COATED, THE BEARING SURFACES OF THE MANDREL SHALL BE CONSTRUCTED TO AVOID PERMANENTLY MARKING OR DAMAGING THE INTERNAL COATING. NO APPRECIABLE STRETCHING OR THINNING OF THE PIPE WALL THICKNESS SHALL BE PERMITTED.

BENDING LIMITATION – DEFLECTION SHALL BE LIMITED TO A MAXIMUM OF ONE AND ONE-HALF DEGREES PER PIPE DIAMETER MEASURED LONGITUDINALLY ALONG THE PIPE. A COMPANY ACCEPTED METHOD OF MEASUREMENT SHALL BE USED BY THE CONTRACTOR WHEN MARKING THE PIPE IN PREPARATION FOR MAKING FIELD BENDS. BENDING SHALL NOT BE ALLOWED IN A CIRCUMFERENTIAL WELD AND NOT CLOSER THAN 6 ft. TO AN OPEN END.

9. SWABBING AND CLOSING OPEN ENDS

SWABBING – EACH PIPE JOINT SHALL BE SWABBED AS NECESSARY TO REMOVE ALL DIRT AND FOREIGN MATTER FROM THE INSIDE OF THE PIPE BEFORE THE JOINTS ARE ALIGNED AND WELDED. THE SWABBING OPERATION SHALL NOT BE CARRIED ON MORE THAN FOUR JOINTS AHEAD OF THE FIRING LINE WELDERS OR ALIGNING AND WELDING OPERATIONS.

CLOSING OF PIPE ENDS – WHERE THE LINE IS WELDED IN LONG SECTIONS BY THE FIRING LINE METHOD, THE ENDS OF THE LONG SECTIONS SHALL BE CLOSED AND KEPT CLOSED IN A MANNER APPROVED BY THE COMPANY UNTIL THE LONG SECTIONS ARE FINALLY JOINED. DURING THE LAYING OPERATIONS, CLOSE ATTENTION SHALL BE GIVEN TO OPEN ENDS TO ENSURE A COMPLETELY OPEN AND CLEAN LINE FREE OF ANY OBSTRUCTIONS. ALL REASONABLE PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER FROM ENTERING THE LINE.

PREVENTION OF FOREIGN MATTER IN THE PIPELINE – THE OPEN END OF THE LINE SHALL BE SECURELY CLOSED AT THE END OF EACH DAY'S WORK TO PREVENT ENTRANCE OF SMALL ANIMALS OR THE INTRODUCTION OF FOREIGN MATTER OF ANY NATURE AND SHALL NOT BE REOPENED UNTIL WORK IS RESUMED. ANY OBSTRUCTIONS REMAINING IN THE LINE AFTER THE COMPLETION THEREOF SHALL BE REMOVED.

10. POSITIONING OF LONGITUDINAL SEAM

IN INSTANCES WHERE PIPE OTHER THAN SEAMLESS IS FURNISHED BY THE COMPANY, THE LONGITUDINAL SEAMS OF SUCH PIPE SHALL BE STAGGERED BY NOT MORE THAN 45°. LONGITUDINAL WELD SEAMS SHALL HAVE A MINIMUM FOUR-INCH CIRCUMFERENTIAL OFFSET BETWEEN ABUTTING JOINTS. UNLESS OTHERWISE SPECIFIED, THE LONGITUDINAL SEAMS ON ADJACENT PIPE SHALL BE STAGGERED, PLACING ONE APPROXIMATELY IN THE 10 O'CLOCK POSITION AND THE OTHER APPROXIMATELY IN THE 2 O'CLOCK POSITION.

11. LOWERING-IN PIPE

OVER-BENDS, SIDE-BENDS AND SAG-BENDS – ALL OVER-BENDS SHALL BE MADE AND INSTALLED TO CLEAR THE HIGH POINT OF THE BOTTOM OF THE DITCH BY AT LEAST 12 IN. AT THE POINT OF BEND. AT SIDE-BENDS, THE PIPE SHALL BE BENT AND LOWERED TO LAY AGAINST THE OUTSIDE WALL AT THE BOTTOM OF THE DITCH. ALL SAG- BENDS SHALL CONTINUOUSLY LIE ON FIRM GROUND AT THE BOTTOM OF THE DITCH.

PIPE SLINGS AND CRADLES – THE CONTRACTOR SHALL PROVIDE PADDED SLINGS FOR HANDLING COATED AND WRAPPED PIPE. THE USE OF BELTING REINFORCED WITH WIRE CABLE SHALL NOT BE PERMITTED. ANY METHOD OF LOWERING-IN WHICH PREVENTS DAMAGE TO THE COATING SHALL BE ACCEPTABLE; HOWEVER, THE USE OF CRADLES IS PREFERRED.

CONDITION OF DITCH – PRIOR TO LOWERING-IN THE CONTRACTOR SHALL PROVIDE, TO THE SATISFACTION OF THE COMPANY, A DITCH WHICH IS FREE FROM EXCESS DEBRIS, LARGE ROCKS AND ROOTS, WELDING RODS, SKIDS OR OTHER SUCH OBJECTS WHICH CAN CAUSE DAMAGE TO THE PIPE AND ITS PROTECTIVE COATING DURING LOWERING-IN OPERATIONS. THE CONTRACTOR SHALL PUMP WATER FROM THE DITCH, BELL HOLES OR OTHER TIE-IN EXCAVATIONS PRIOR TO LOWERING-IN.

ROCK DITCH PADDING – IN ALL CASES WHERE ROCKS 2 In. AND LARGER ARE ENCOUNTERED IN THE BOTTOM OF THE DITCH AND NO ADDITIONAL PIPE COATING PROTECTION IS PROVIDED, THE CONTRACTOR SHALL PROVIDE PADDING MATERIAL PLACED EVENLY AND CONTINUOUSLY TO A MINIMUM DEPTH OF 8 In. ALONG THE BOTTOM OF THE DITCH AS APPROVED BY THE COMPANY.

SUPPORTS – THE CONTRACTOR SHALL CONSTRUCT THE PIPELINE TO LIE ON THE BOTTOM OF THE PIPE TRENCH. ALL BENDS SHALL BE MADE TO FIT THE PIPE DITCH. WHERE PIPE CANNOT BE DIRECTLY SUPPORTED BY THE BOTTOM OF THE TRENCH, SUPPORT SHALL BE PROVIDED BY SANDBAGS OR OTHER COMPANY APPROVED MATERIALS. SANDBAGS SHALL BE PLACED AT POINTS TO PROVIDE STRESS-FREE SUPPORT FOR THE PIPELINE SUBSEQUENT TO BACKFILLING. SPACING INTERVALS FOR SANDBAG SUPPORTS SHALL BE 15 FT. OR LESS AS REQUIRED BY THE COMPANY. SUPPORTS COMPRISED OF MATERIALS OTHER THAN SANDBAGS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND AT SPACING INTERVALS NO GREATER THAN THE APPROPRIATE MAXIMUM INTERVAL RECOMMENDED BY THE MANUFACTURER. SUPPORT SHALL BE PLACED AT POINTS TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO BACKFILL. THE CONTRACTOR SHALL NOT USE ANY SUPPORT METHOD WITHOUT THE PRIOR APPROVAL OF THE COMPANY AND WITHOUT PROVIDING THE COMPANY WITH THE MANUFACTURER'S RECOMMENDED INSTALLATION DIRECTIONS FOR THE SPECIFIC METHOD BEING USED.

TIE-INS – SECTIONS OF THE PIPELINE EXCAVATED FOR TIE-INS SHALL BE SUPPORTED WITH SANDBAGS OR OTHER APPROVED MATERIALS AT INTERVALS INDICATED ABOVE. SUPPORTS SHALL BE PLACED IMMEDIATELY AFTER FINAL TIE-IN TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO THE BACKFILLING OPERATION.

12. BACKFILLING

AFTER LOWERING-IN HAS BEEN COMPLETED, BUT BEFORE BACKFILLING, THE DITCH SHALL BE PUMPED DRY IN UPLAND AREAS AND THE LINE SHALL BE INSPECTED TO ENSURE THAT NO SKIDS, BRUSH, STUMPS, TREES, BOULDERS OR DEBRIS ARE IN THE DITCH. NO SUCH MATERIALS OR DEBRIS ARE TO BE BACKFILLED INTO THE DITCH. AFTER THE PIPE HAS BEEN INSPECTED AND APPROVED BY THE COMPANY, AFTER ALL DAMAGE TO THE PROTECTIVE COATING HAS BEEN REPAIRED AND AFTER THE COATING ON THE PIPE HAS HAD SUFFICIENT TIME TO CURE, THEN THE CONTRACTOR SHALL BACKFILL THE DITCH SUFFICIENTLY TO PREVENT FLOATING. THE CONTRACTOR SHALL COMPLETE THE FILLING OF THE DITCH TO PRODUCE A TRIM BACKFILL. EXCAVATED MATERIAL SHALL BE PLACED IN THE DITCH. TOPSOIL, WHERE IT HAS BEEN SEGREGATED, SHALL BE BACKFILLED AS CLOSE AS POSSIBLE TO ITS ORIGINAL LOCATION.

ROCK, TWO INCHES IN DIAMETER AND LARGER, OR LIKE MATERIALS SHALL NOT BE BACKFILLED DIRECTLY ONTO THE PIPE. WHERE SUCH MATERIALS ARE ENCOUNTERED, THE CONTRACTOR SHALL HAUL, IF NECESSARY, SUFFICIENT EARTH OR SAND TO BE BACKFILLED AROUND AND OVER THE PIPE TO FORM A PROTECTIVE PADDING OR CUSHION TO A MINIMUM OF EIGHT INCHES OR, AS OTHERWISE SPECIFIED IN THE SCOPE OF WORK, IN DEPTH BETWEEN THE PIPE AND ANY GRAVEL OR SMALL BROKEN ROCK TO BE BACKFILLED. LARGE ROCK OR BOULDERS IN EXCESS OF 24 In. IN DIAMETER, WIDTH OR LENGTH, SHALL NOT BE BACKFILLED INTO THE DITCH. SUCH ROCK SHALL BE DISPOSED OF PROPERLY.

13. TRENCH BREAKER

THE CONTRACTOR SHALL INSTALL EROSION BREAKERS IN THE DITCH OVER, UNDER AND AROUND THE PIPE TO PROVIDE FULL PROTECTION AGAINST BACKFILL WASHING AT VARIOUS POINTS ALONG THE PIPELINE. BREAKER INSTALLATIONS AND SPACING SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS AS WELL AS COMPANY, LOCAL, STATE, AND FEDERAL REQUIREMENTS.

- BREAKER MATERIALS SHALL INCLUDE, BUT ARE NOT BE LIMITED TO, DECOMPOSABLE BAGS, SAND AND ANY OTHER MATERIALS REQUIRED TO FACILITATE THE PROPER PLACEMENT OF THE BREAKER MATERIAL IN THE DITCH.
- BREAKER INSTALLATIONS MAY BE COMPRISED OF EITHER A MULTIPLE SANDBAG CONFIGURATION OR BY OTHER APPROVED METHODS. ALL BREAKER INSTALLATIONS SHALL MEET WITH THE APPROVAL OF THE COMPANY.
- BREAKER SIZE IS DEPENDENT ON THE EXTENT AND CONDITION OF THE DITCH IN DEPTH, WIDTH, SLOPE AND GRADE. AT A MINIMUM, BREAKERS SHALL EXTEND THE WIDTH AND DEPTH OF THE DITCH.
- BREAKERS, SHALL BE SPACED ALONG THE DITCH IN ACCORDANCE WITH THE COMPANY'S ENVIRONMENTAL STANDARDS.

14. DIRT PADDING

THE CONTRACTOR SHALL INSTALL ROCK-FREE DIRT PADDING IN AREAS DESIGNATED BY THE COMPANY. TOPSOIL SHALL NOT BE USED FOR PADDING THE DITCH. DIRT PADDING SHALL BE INSTALLED IN THE BOTTOM OF THE DITCH TO A MINIMUM DEPTH OF 8 IN., PRIOR TO LOWERING-IN THE PIPELINE, IF OTHER ACCEPTABLE SUPPORT FOR PROTECTING THE BOTTOM OF THE PIPE IS NOT UTILIZED. A MINIMUM OF 8 In. OF DIRT PADDING SHALL BE INSTALLED AS COVER ON TOP OF THE LINE AS PROTECTION PRIOR TO BACKFILLING. ACCEPTABLE ROCK-FREE PADDING MATERIAL MAY BE OBTAINED DIRECTLY FROM THE SPOIL, OR BY USING A PADDING MACHINE WITH MATERIAL TAKEN DIRECTLY FROM THE SPOIL OR ROCK-FREE PADDING MATERIAL CAN BE HAULED IN BY THE CONTRACTOR.

15. CLEAN-UP

THE CONTRACTOR SHALL KEEP THE RIGHT-OF-WAY CLEAR OF LITTER, SKIDS, DEFECTIVE MATERIALS, AND ALL OTHER CONSTRUCTION DEBRIS IMMEDIATELY BEHIND ITS OPERATIONS, TO THE SATISFACTION OF THE COMPANY. UPON COMPLETION OF THE BACKFILL, THE CONTRACTOR WILL CLEAN THE RIGHT-OF-WAY IN A NEAT AND ACCEPTABLE CONDITION. SURPLUS MATERIALS SHALL BE ASSEMBLED AND DELIVERED BY CONTRACTOR TO A LOCATION DESIGNATED BY THE COMPANY. FENCES SHALL BE RECONSTRUCTED TO THE ORIGINAL LINE AND GATES INSTALLED AS INDICATED BY THE COMPANY. THE CONTRACTOR SHALL FURNISH GATES, FENCING AND POSTS.

THE RIGHT-OF-WAY SHALL BE DISKED, LIMED, SEEDED AND FERTILIZED DURING THE CLEAN-UP OPERATION. THE CONTRACTOR SHALL FURNISH THE LIME, SEED AND FERTILIZER. SEEDING, FERTILIZING AND MULCHING MUST BE DONE WITHIN 6 DAYS OF FINAL CLEAN UP OR IN ACCORDANCE WITH COMPANY ENVIRONMENTAL REQUIREMENTS.

PIPELINE MARKERS SHALL BE INSTALLED AT POINTS DESIGNATED BY THE COMPANY DURING CLEAN-UP OPERATIONS. THE COMPANY SHALL FURNISH LINE AND AERIAL MARKERS.

LAYOUT TAB: SPECS
DGN FILE: S:\2021\2021-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\GENERAL NOTES SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:00 PM USER: jared.jenkins

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/1/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

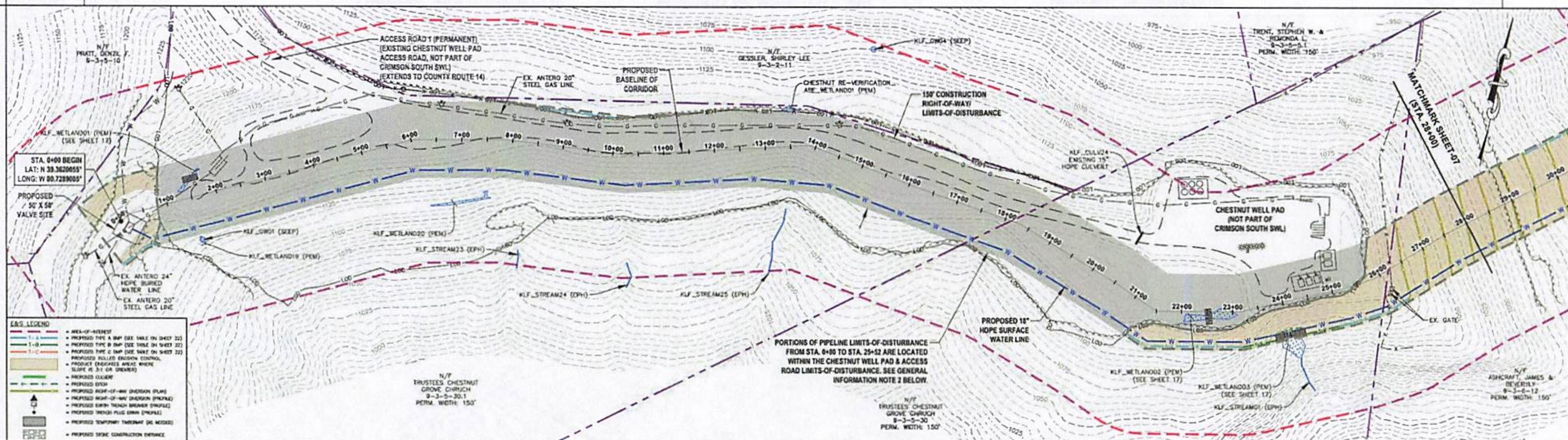
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

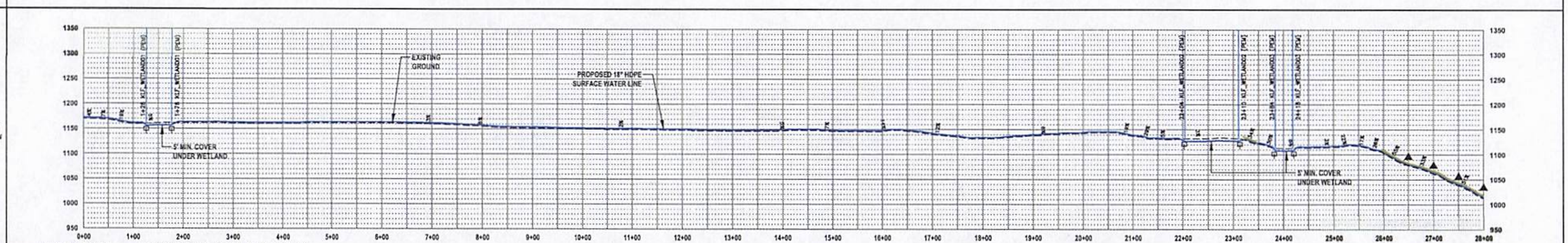
Antero Midstream

CRIMSON SOUTH SWL
GENERAL CONSTRUCTION SPECS
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET:	03 – SPECS

OWNERSHIP & PARCEL NO.	TRUSTEES CHESTNUT GROVE CHURCH 9-3-5-30.1 CONST. WIDTH: 150' PERM. WIDTH: 150' / TRUSTEES CHESTNUT GROVE CHURCH 9-3-5-30 CONST. WIDTH: 150' PERM. WIDTH: 150' / ASHCRAFT, JAMES & BEVERLY 9-3-6-12 CONST. WIDTH: 150' PERM. WIDTH: 150'
P.I. DEFLECTION ANGLES	
ALIGNMENT PLAN VIEW	
PIPE DETAIL (SLOPE DIST.)	
ALIGNMENT PROFILE VIEW	





INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

THRASHER

HORZ. SCALE IN FEET 0 100 200

VERT. SCALE IN FEET 0 100 200

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

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NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

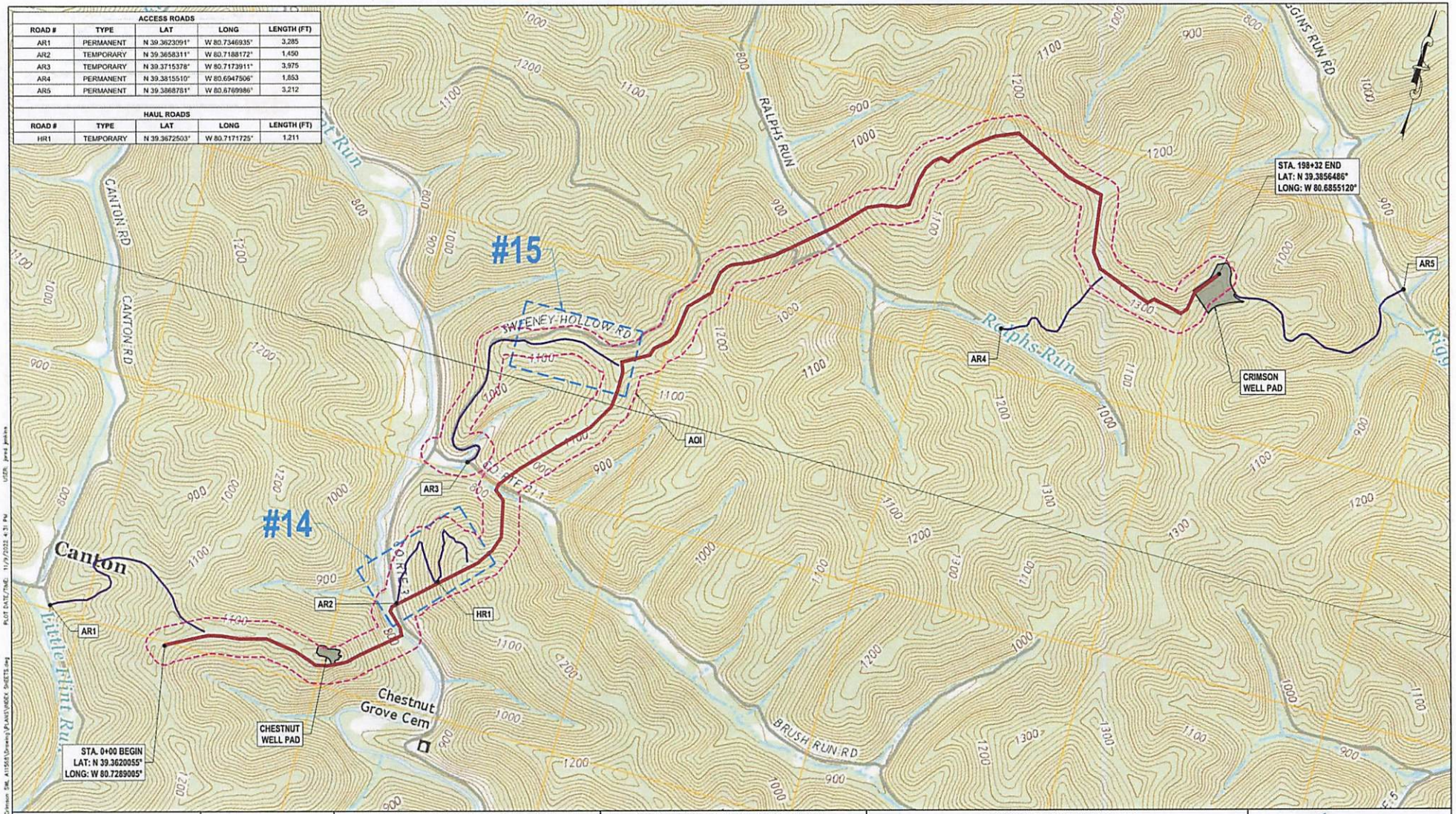
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL STA. 0+00 TO STA. 28+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 06 - PLAN1	
REVISION No.:	3		



ACCESS ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
AR1	PERMANENT	N 39.3623091°	W 80.7346935°	3,285
AR2	TEMPORARY	N 39.3658311°	W 80.7188172°	1,450
AR3	TEMPORARY	N 39.3715378°	W 80.7173911°	3,975
AR4	PERMANENT	N 39.3815510°	W 80.6947506°	1,853
AR5	PERMANENT	N 39.3868781°	W 80.6769986°	3,212

HAUL ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
HR1	TEMPORARY	N 39.3672503°	W 80.7171725°	1,211

THRASHER

0 600 1200
HORIZ. SCALE IN FEET

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	11/08/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
3. MAPPING SOURCE: CENTER POINT, WV USGS 7.5 MINUTE QUADRANGLE DATED: 2019
SMITHBURG, WV USGS 7.5 MINUTE QUADRANGLE DATED 2019
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
6. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL
ACCESS ROAD INDEX SHEET

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	05 – AR–INDEX
REVISION No.:	3		

LAYOUT TAB: AR-INDEX
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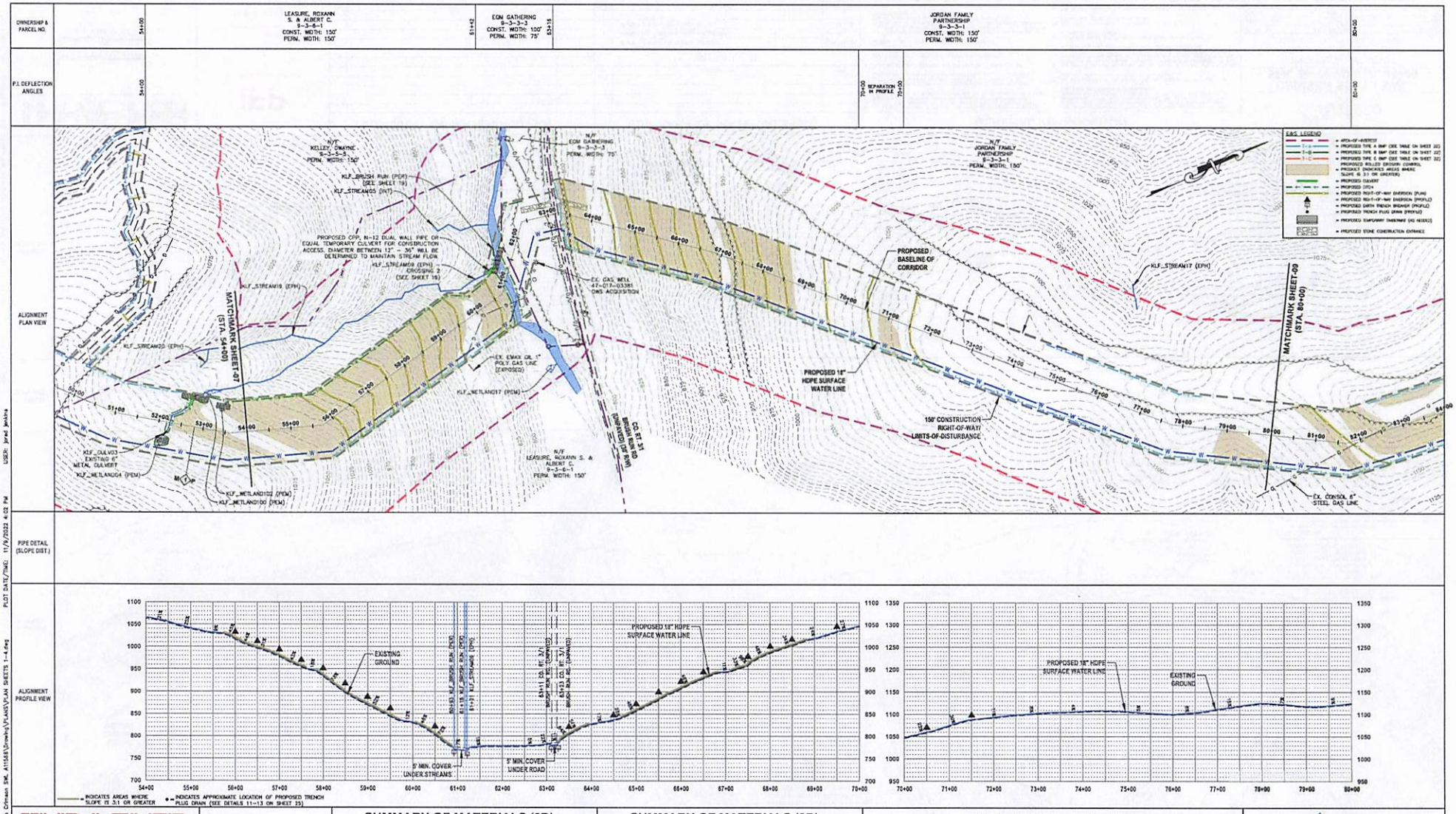

LAYOUT TAB: PLAN3
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USER: Jared Jenkins

THRASHER

HORIZ. SCALE IN FEET 0 100 200
VERT. SCALE IN FEET 0 100 200

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/1/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

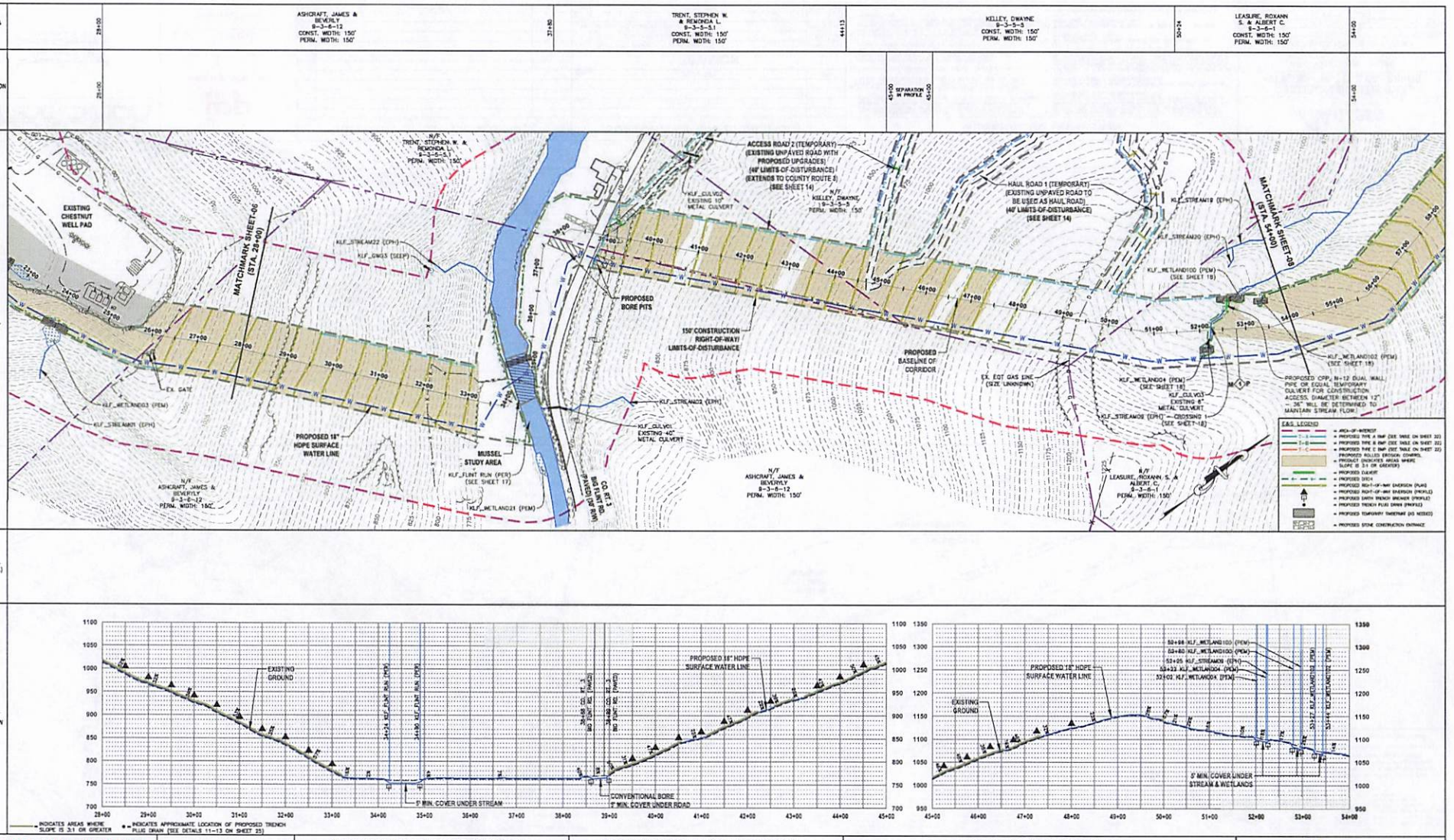
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 26 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET RANGES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL STA. 54+00 TO STA. 80+00

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 08 – PLAN3	
REVISION No.:	3		



THRASHER

HORIZ. SCALE IN FEET 0 100 200

VERT. SCALE IN FEET 0 100 200

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND M.A.O.P. CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE ANGEY.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 33 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET RANGES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

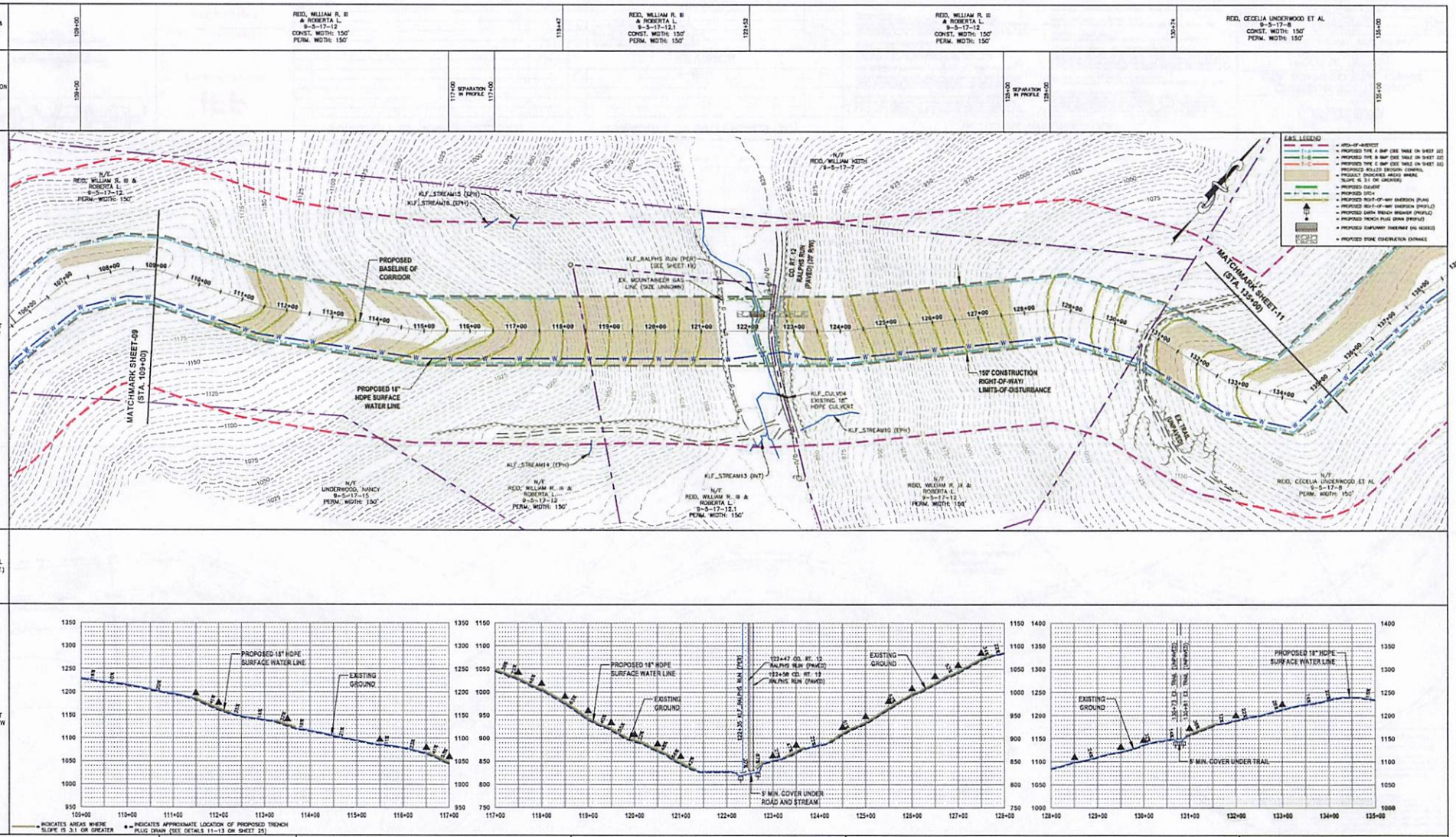
CRIMSON SOUTH SWL STA. 28+00 TO STA. 54+00

PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	07 – PLAN2
REVISION No.:	3		

LAYOUT TAB: PLAN2
CAD FILE: R:\2021\2021-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 1-4.dwg
PLOT DATE/TIME: 11/9/2022 4:03 PM
USER: Jared Jenkins



THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, US SURVEY FOOT
VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED COURTHOUSE RECORDS. FOR ADDITIONAL COURSES ON FILE IN THE LOCAL COUNTY COURTHOUSE, TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 28 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HALL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH SIZING ARE BASED ON AVAILABLE MAPPING AND ESTIMATED POST-GRAD ROAD SURFACE ELEVATIONS.
9. ALL SHEET RANGES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR PROJECTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

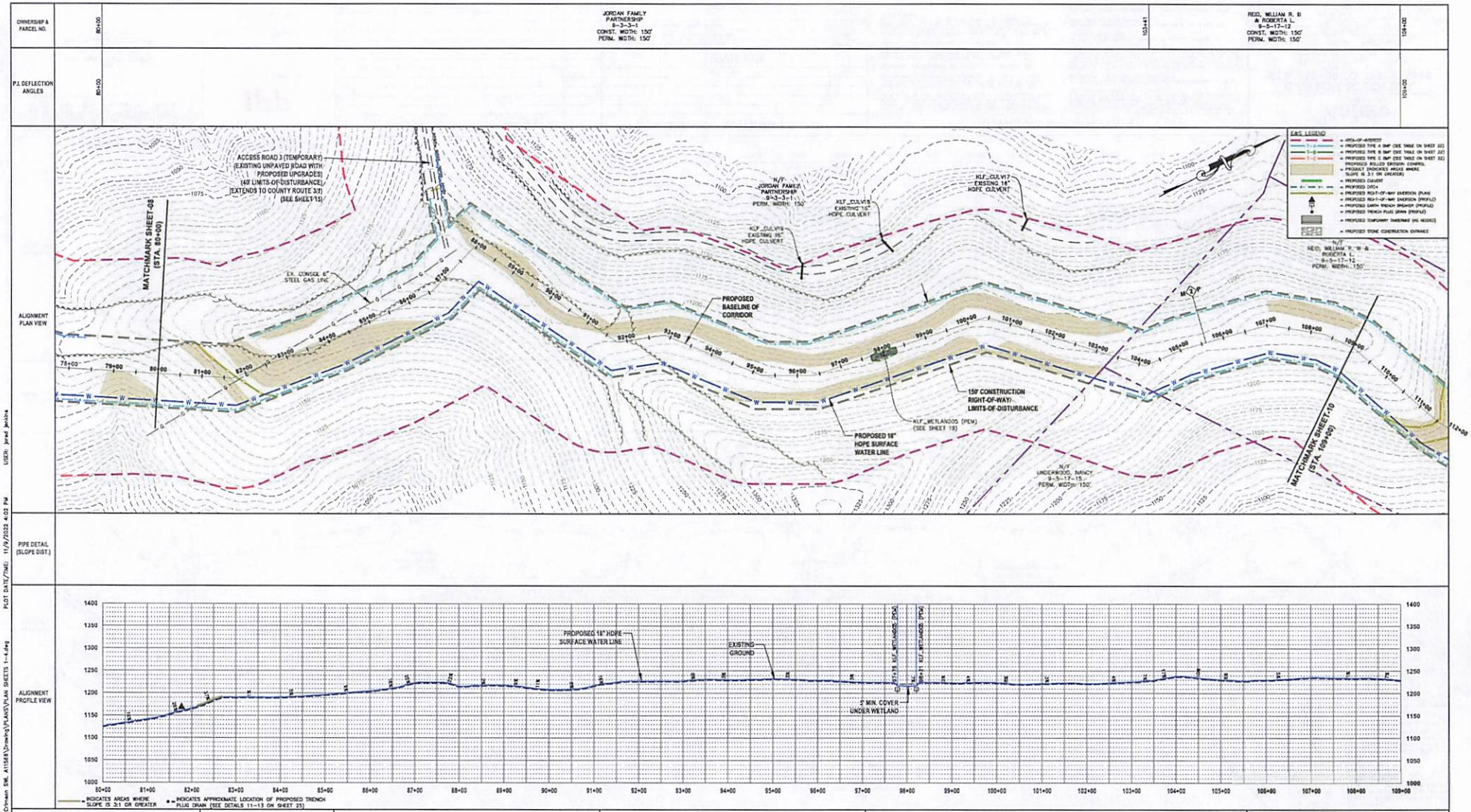
CRIMSON SOUTH SWL STA. 109+00 TO STA. 135+00

PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET: 10 – PLANS	

LAYOUT TAB: PLANS
CAD FILE: R:\2020\2050-11538.00-Antero Crimson SWL 411568\Drawing\PLANS\PLAN SHEETS 5-8.dwg
PLOT DATE/TIME: 11/9/2022 4:53 PM
USER: Jared Jenkins



THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE INSPECT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
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7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 39 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 38 REGARDING WATERBARS TO BE INSTALLED ON PAVED ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34") FOR RESOLUTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

CRIMSON SOUTH SWL STA. 80+00 TO STA. 109+00

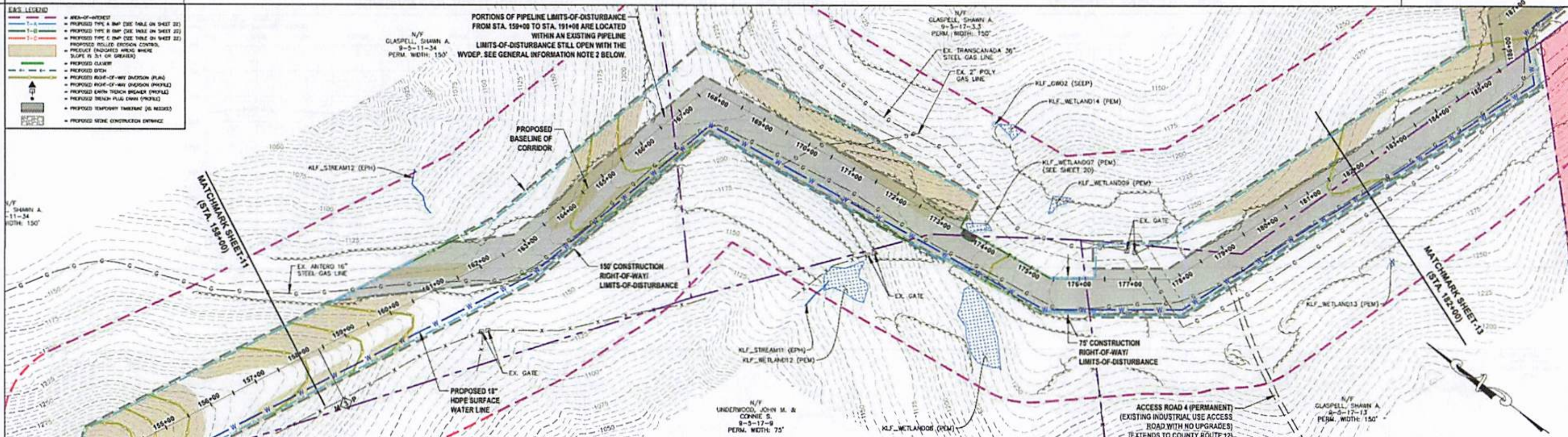
PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TIG)	DATE:	11/9/2022
CHECKED BY:	TTS (TIG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 09 – PLAN4	
REVISION No.:	3		

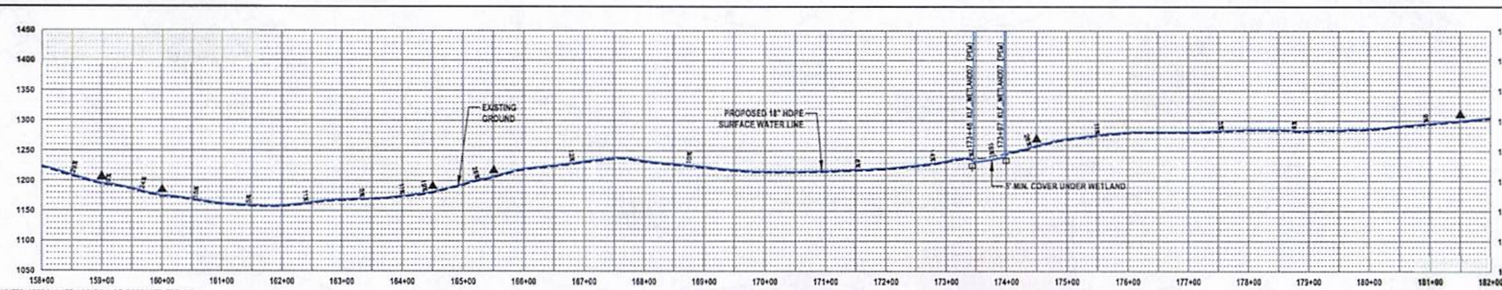
OWNERSHIP & PARCEL NO.	158+00	GLASPELL, SHAWN A. 9-5-11-34 CONST. WIDTH: 150' PERM. WIDTH: 150'	166+80	GLASPELL, SHAWN A. 9-5-17-3.3 CONST. WIDTH: 150' PERM. WIDTH: 150'	173+71	UNDERWOOD, JOHN M. & CONNIE S. 9-5-17-9 CONST. WIDTH: 75' PERM. WIDTH: 75'	176+12	GLASPELL, SHAWN A. 9-5-17-13 CONST. WIDTH: 150' PERM. WIDTH: 150'	178+85	GLASPELL, SHAWN A. 9-5-17-3.3 CONST. WIDTH: 150' PERM. WIDTH: 150'	182+00
P.I. DEFLECTION ANGLES	158+00										182+00

ALIGNMENT PLAN VIEW



PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



— INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

• INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

THRASHER

HORZ. SCALE IN FEET 0 100 200

VERT. SCALE IN FEET 0 100 200

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
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8. SEE SHEETS 22 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 28 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero Midstream

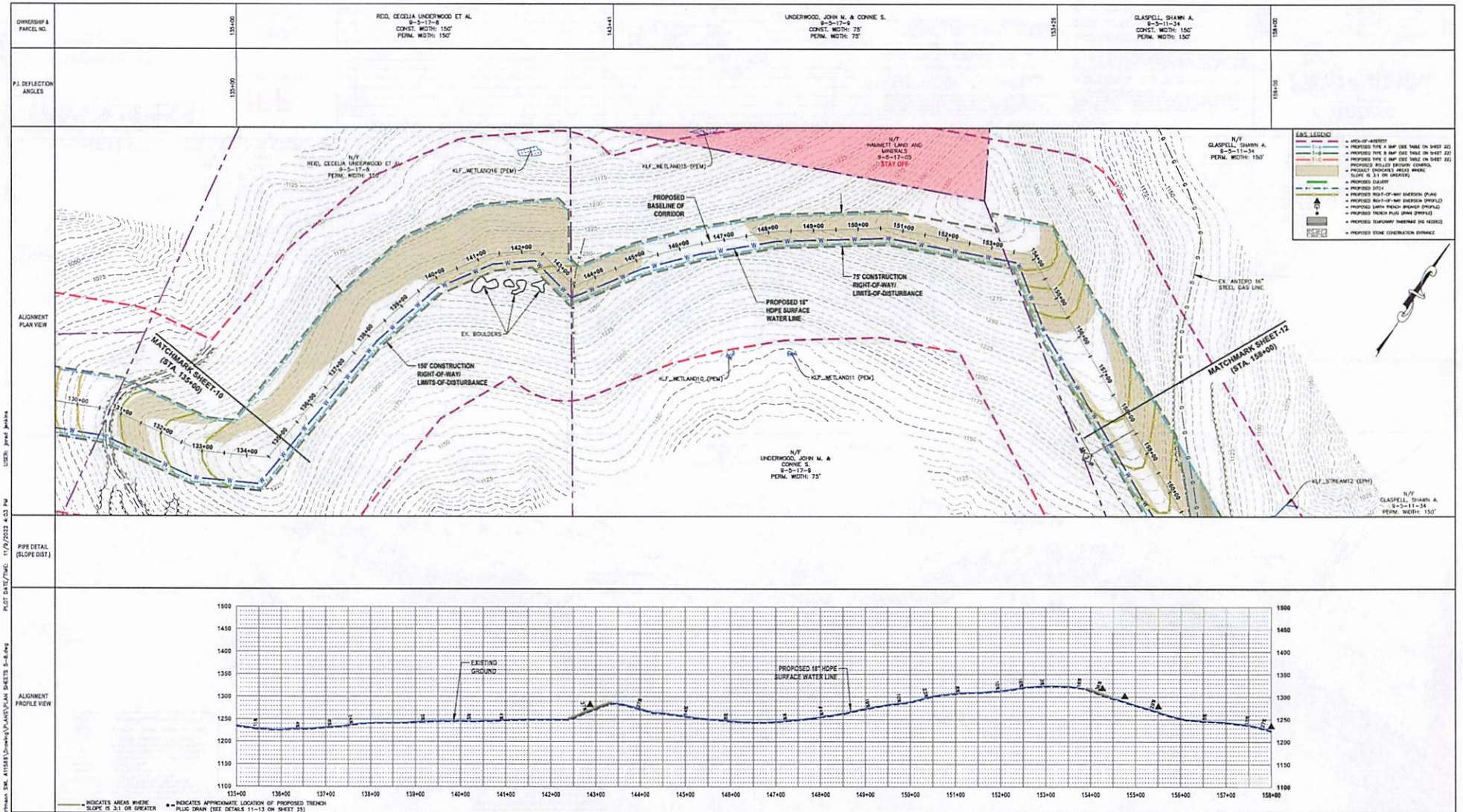
CRIMSON SOUTH SWL
STA. 158+00 TO STA. 182+00

PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 12 – PLAN7	
REVISION No.:	3		

LAYOUT TAB: PLAN7 CAD FILE: R:\050\050-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg PLOT DATE/TIME: 11/9/2022 4:03 PM USER: Jared Jenkins



THRASHER

0 100 200
HORIZ. SCALE IN FEET
0 100 200
VERT. SCALE IN FEET

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE AGENCY.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION.
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8. SEE SHEETS 23 & 29 REGARDING WATERGAPS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 39 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 33 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BASES EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (23" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

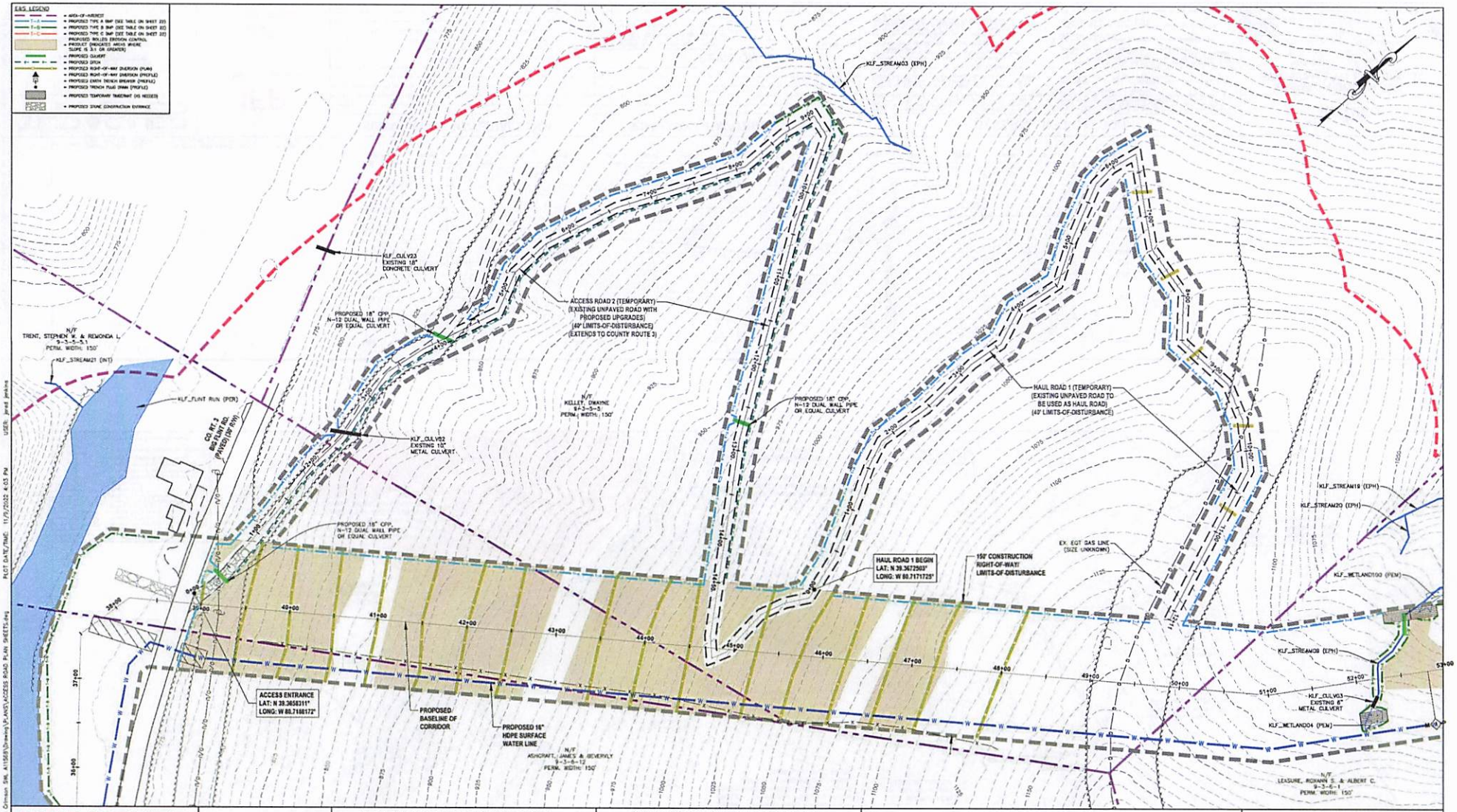
Antero Midstream

CRIMSON SOUTH SWL
STA. 135+00 TO STA. 158+00

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	11 – PLAN6
REVISION No.:	3		

LAYOUT TAB: PLAN6
CAD FILE: N:\Jobs\355-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg
PLOT DATE/TIME: 11/9/2022 4:33 PM
USER: Jared Jenkins



E&S LEGEND

- AREA-OF-INTEREST
- PROPOSED TYPE A SMP (SEE TABLE ON SHEET 22)
- PROPOSED TYPE B SMP (SEE TABLE ON SHEET 22)
- PROPOSED TYPE C SMP (SEE TABLE ON SHEET 22)
- PROPOSED ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- PROPOSED CULVERT
- PROPOSED DITCH
- PROPOSED RIGHT-OF-WAY DIVERSION (PLAN)
- PROPOSED RIGHT-OF-WAY DIVERSION (PROFILE)
- PROPOSED EARTH TRENCH BREAKER (PROFILE)
- PROPOSED TRENCH PLUG DRAIN (PROFILE)
- PROPOSED TEMPORARY TIMBERMAT (AS NEEDED)
- PROPOSED STONE CONSTRUCTION ENTRANCE

HORIZ. SCALE IN FEET: 0, 50, 100

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
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10. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

THRASHER

Antero Midstream

CRIMSON SOUTH SWL ACCESS ROAD PLAN SHEET

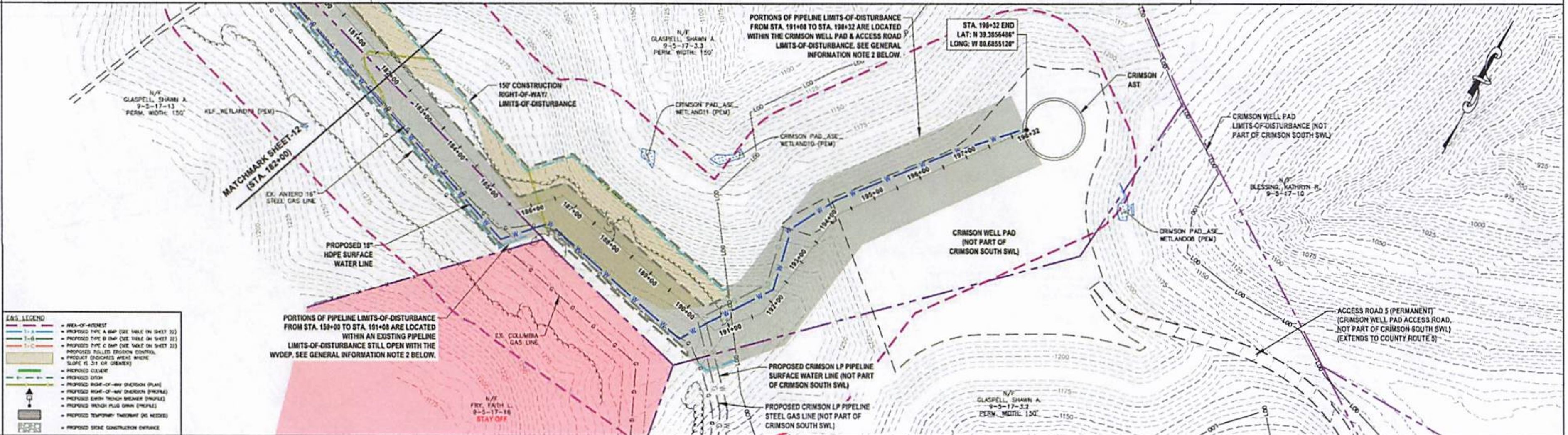
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	14 – ARPS1
REVISION No.:	3		

LAYOUT TAB: ARPS1
DGN FILE: N:\050\1860-11638.00-Antero Crimson SWL A11568\Drawing\P-ANS\ACCESS ROAD PLAN SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:03 PM
USER: jared jenkins

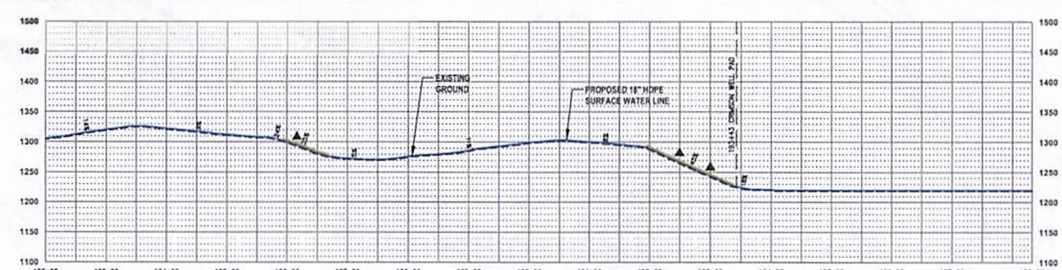
OWNERSHIP & PARCEL NO.	182+00 · GLASPELL, SHAWN A. 9-5-17-3.3 CONST. WIDTH: 150' PERM. WIDTH: 150' · 198+32
P.I. DEFLECTION ANGLES	182+00 · 198+32

ALIGNMENT PLAN VIEW



PIPE DETAIL (SLOPE DIST.)

ALIGNMENT PROFILE VIEW



INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUG DRAIN (SEE DETAILS 11-13 ON SHEET 25)

THRASHER

0 100 200 HORIZ. SCALE IN FEET

0 100 200 VERT. SCALE IN FEET

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WVDEP.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 22 & 39 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 38 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEETS 32 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
10. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
11. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

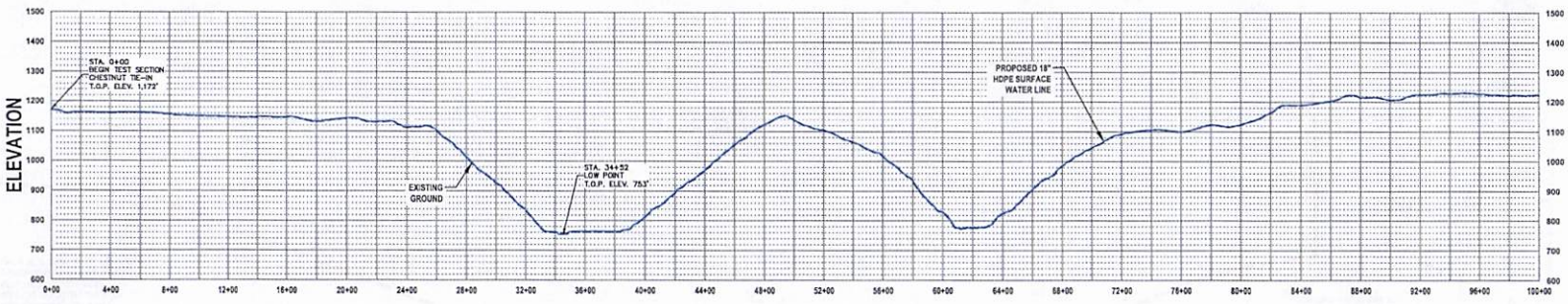
Antero Midstream

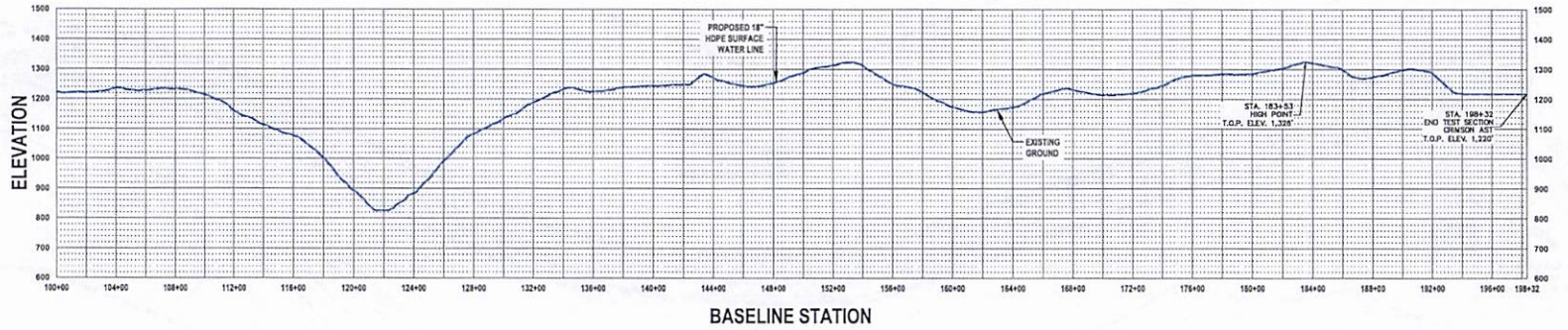
CRIMSON SOUTH SWL
STA. 182+00 TO STA. 198+32

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 13 – PLAN8	
REVISION No.:	3		

LAYOUT TAB: PLAN8 CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\PLAN SHEETS 5-8.dwg PLOT DATE/TIME: 11/9/2022 4:03 PM USER: jared jenkins





HYDROSTATIC PROFILE	Station	Elevation (ft msl)
Start Point	0+00	1,172
Low Point	34+52	753
High Point	183+53	1,326
End Point	198+32	1,220
Differential	573 ft.	
Static Head Pressure @ 753' Elevation	248 PSI	
Overall Slope Legnth (3D)	20,491 ft.	

THRASHER

HORZ. SCALE IN FEET 0 400 800

VERT. SCALE IN FEET 0 200 400

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. REFER TO ANTERO MIDSTREAM PRESSURE TESTING PROCEDURE.
3. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
4. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
5. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
HYDROSTATIC PROFILE

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	16 – HSP
REVISION No.:	3		

LAYOUT TAB: HSP
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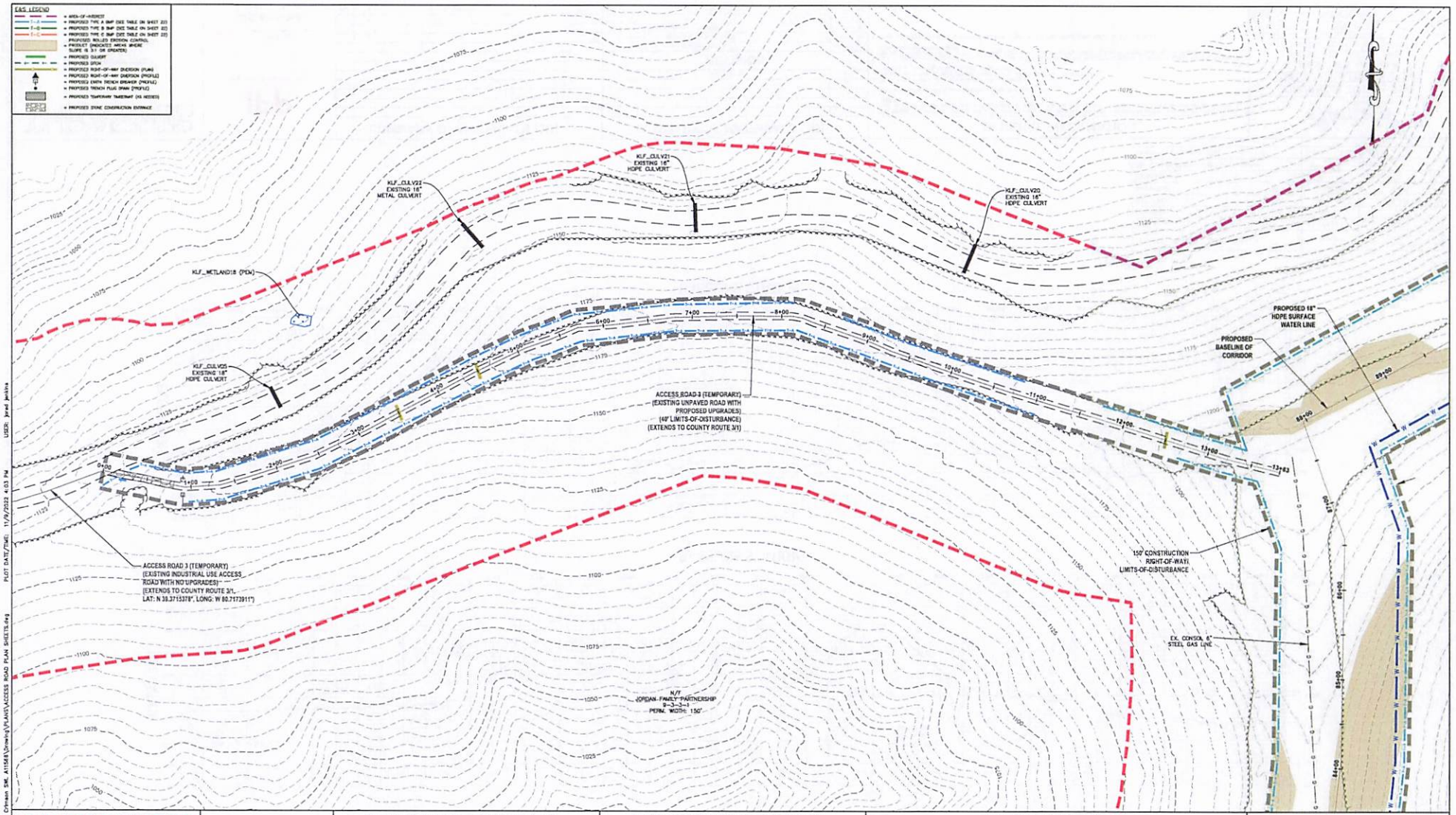

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THRASHER

0 50 100
HORIZ. SCALE IN FEET

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MASP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL – NAVD 88 (GEOID18), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
8. SEE SHEETS 23 & 29 REGARDING WATERBARS, CULVERTS AND DITCHES TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 38 REGARDING WATERBARS TO BE INSTALLED ON HAUL ROADS. SEE SHEET 32 FOR CULVERT AND DITCH SIZING ON ACCESS ROADS. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
9. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
10. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

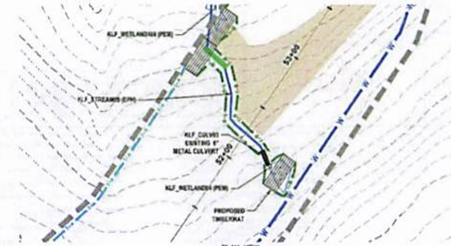
Antero Midstream

CRIMSON SOUTH SWL ACCESS ROAD PLAN SHEET

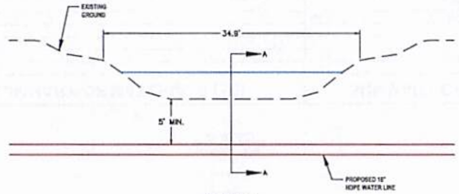
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TIG)	DATE:	11/9/2022
CHECKED BY:	TTG (TIG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	15 – ARPS2
REVISION No.:	3		

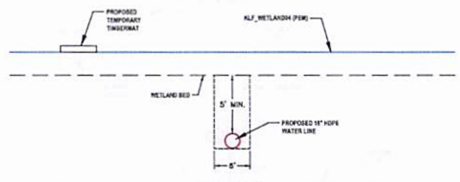
WETLAND CROSSING
KLF_WETLAND04 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 34.4'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3638448°
LONG: W 80.7207817°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

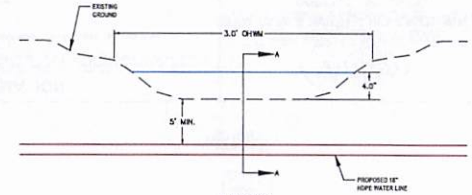
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

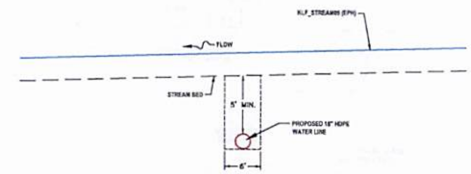
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_STREAM09 (EPH) - CROSSING 1

PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: EPHEMERAL
STREAM WIDTH: 3.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3663467°
LONG: W 80.7154078°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

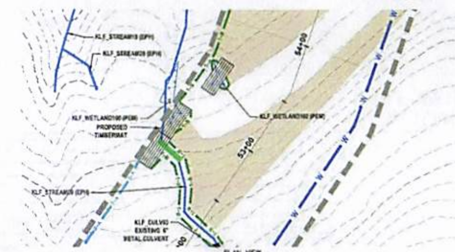
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

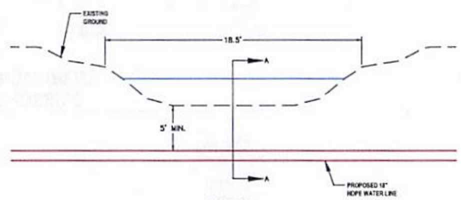
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

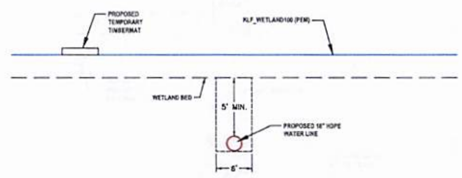
WETLAND CROSSING
KLF_WETLAND100 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 18.5'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3660554°
LONG: W 80.7154661°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

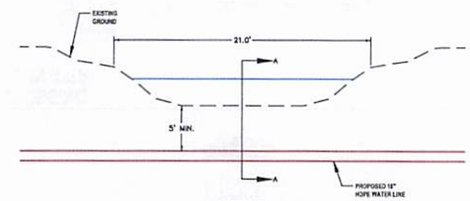
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

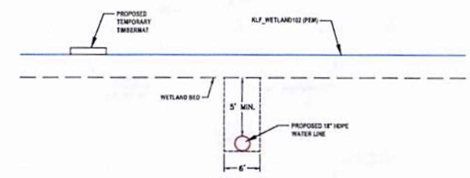
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

WETLAND CROSSING
KLF_WETLAND102 (PEM)

PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 21.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3666887°
LONG: W 80.7153597°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

USER: Jared Jenkins PLOT DATE/TIME: 11/9/2022 4:04 PM

LAYOUT TAB: S&WC2
CAD FILE: R:\050\050-11536.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg

THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

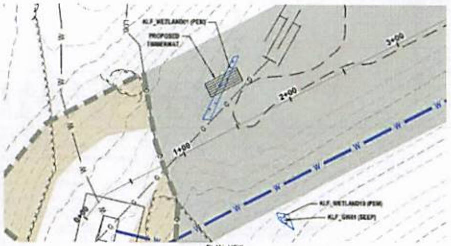
Antero Midstream

CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

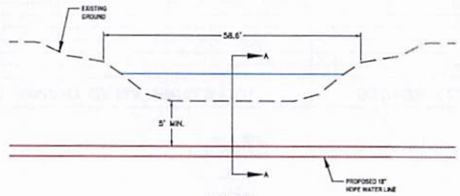
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 18 - S&WC2	
REVISION No.:	3		

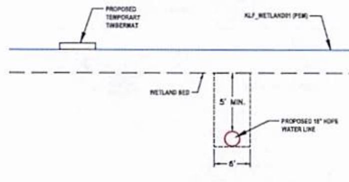
WETLAND CROSSING
KLF_WETLAND01 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 58.6'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3623376°
LONG: W 80.7254057°
SHEET REF: SHEET 04

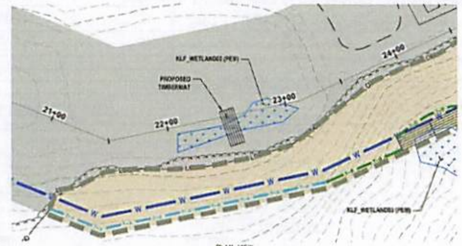
NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

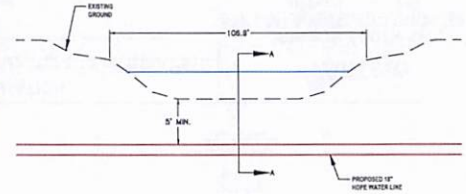
LEGEND:
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

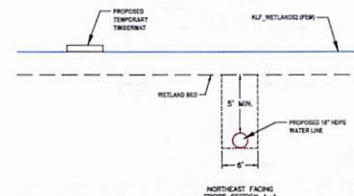
WETLAND CROSSING
KLF_WETLAND02 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 106.8'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3628566°
LONG: W 80.7213367
SHEET REF: SHEET 06

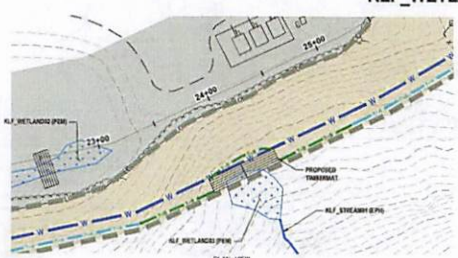
NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

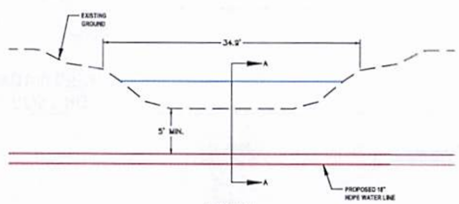
LEGEND:
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

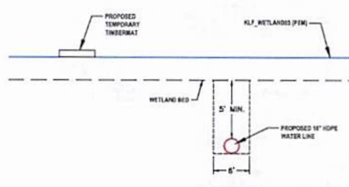
WETLAND CROSSING
KLF_WETLAND03 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



NORTHEAST FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 34.9'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3639448°
LONG: W 80.7207613°
SHEET REF: SHEET 06

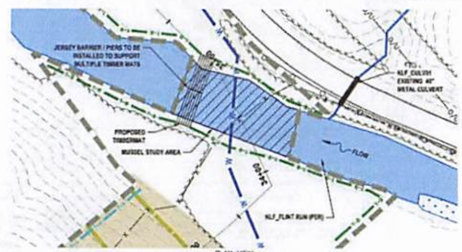
NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

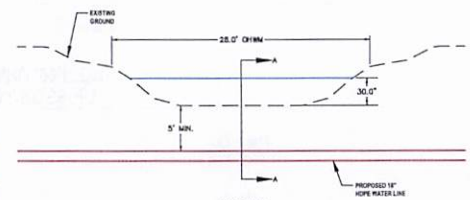
LEGEND:
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_FLINT RUN (PER)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE

NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 28.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3648615°
LONG: W 80.7187808°
SHEET REF: SHEET 07

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND:
- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)
- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

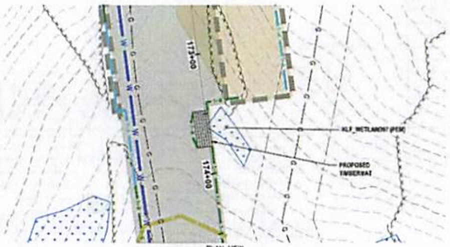
CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

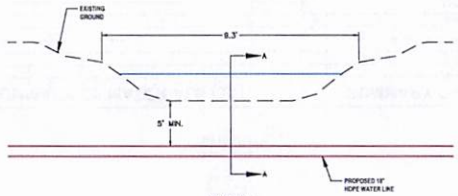
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 17 – S&WC1	
REVISION No.:	3		

LAYOUT TAB: S&WC1
CAD FILE: R:\050\050-11638.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:04 PM
USER: Jared Jenkins

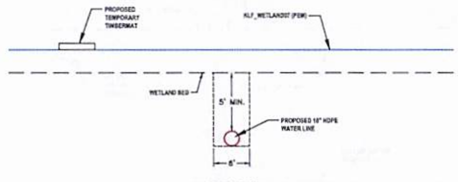
WETLAND CROSSING
KLF_WETLAND07 (PEM)



PLAN VIEW
1" = 50'



PROFILE VIEW
NOT TO SCALE



SOUTH FACING
CROSS SECTION A–A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 9.3'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3956757
LONG: W 80.6915254
SHEET REF: SHEET 12

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

LAYOUT TAB: S&WC4
CAD FILE: R:\050\050-11538.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:05 PM
USER: Jared Jenkins

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

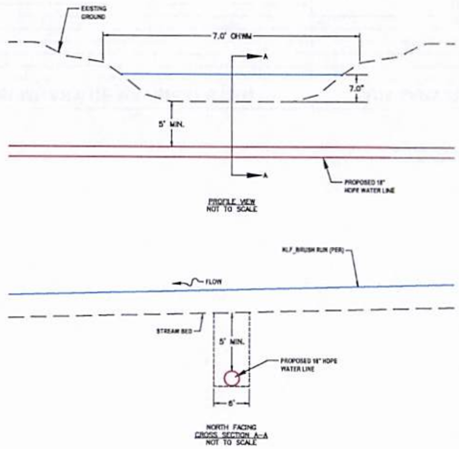
CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 20 – S&WC4	
REVISION No.:	3		

STREAM CROSSING
KLF_BRUSH RUN (PER)

PLAN VIEW
1" = 50'



NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 7.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.370601.8'
LONG: W 80.715360'
SHEET REF: SHEET 08

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

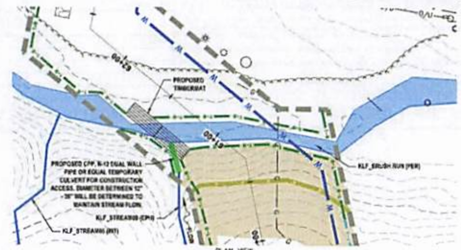
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

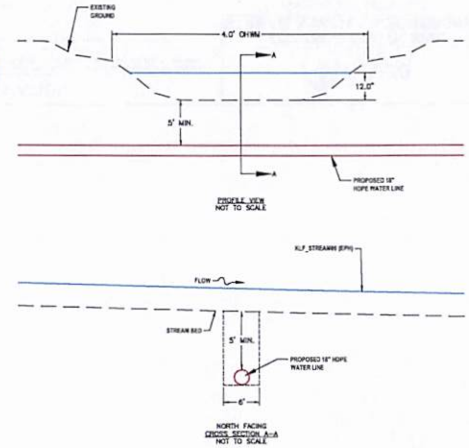
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_STREAM09 (EPH) - CROSSING 2



PLAN VIEW
1" = 50'



NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: EPHEMERAL
STREAM WIDTH: 4.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3705403'
LONG: W 80.7154613'
SHEET REF: SHEET 08

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

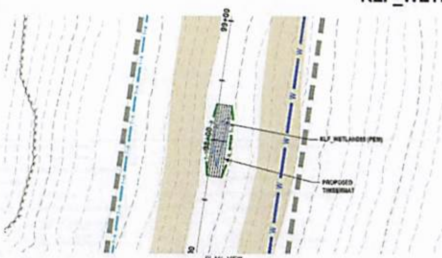
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

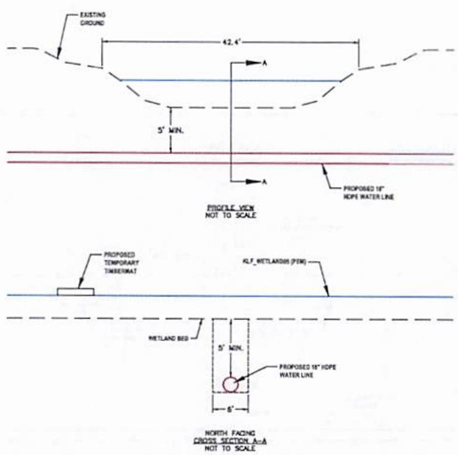
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

WETLAND CROSSING
KLF_WETLAND05 (PEM)



PLAN VIEW
1" = 50'



NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

WETLAND INFORMATION:

WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 43.4'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3785730'
LONG: W 80.7094136'
SHEET REF: SHEET 09

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

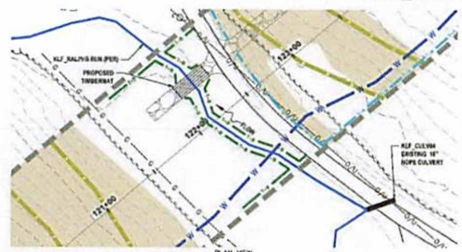
LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

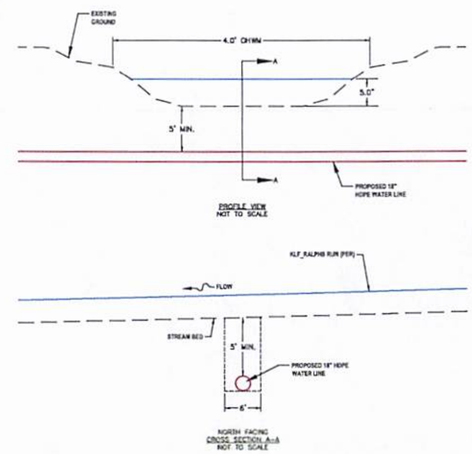
LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

STREAM CROSSING
KLF_RALPHS RUN (PER)



PLAN VIEW
1" = 50'



NORTH FACING
CROSS SECTION A-A
NOT TO SCALE

STREAM INFORMATION:

STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 4.0'
PROPOSED METHOD OF CROSSING: OPEN CUT

REFERENCES:

LAT: N 39.3631.698'
LONG: W 80.7038788'
SHEET REF: SHEET 10

NOTES:

1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

LEGEND

- PRO. CONSTRUCTION RIGHT-OF-WAY/ LIMITS OF DISTURBANCE
- 21+00 BASELINE OF PRO. CORRIDOR WITH STATIONING
- W PRO. 18" HDPE WATER LINE
- PRO. CULVERT
- EX. CULVERT
- PRO. RIGHT-OF-WAY DIVERSION
- T-A PRO. TYPE A BMP
- T-B PRO. TYPE B BMP

LEGEND (CONT.)

- PRO. ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAMS
- DELINEATED WETLANDS
- PRO. STREAMS PERMANENT FILL
- PRO. WETLANDS PERMANENT FILL
- EX. EDGE OF PAVEMENT
- EX. EDGE OF DIRT/GRAVEL ROAD

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/26/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.
3. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
4. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
   HORIZONTAL – NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
   VERTICAL – NAVD 88 (GEOID12B), U.S. SURVEY FOOT
5. ALL STATIONING SHOWN IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
6. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
STREAM & WETLAND CROSSINGS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

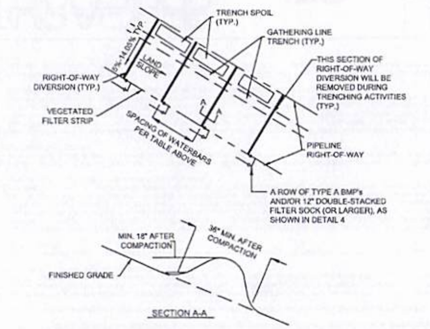
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 19 – S&WC3	
REVISION No.:	3		

LAYOUT TAB: S&WC3
CAD FILE: P:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\STREAM AND WETLAND CROSSING SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:05 PM
USER: jared jenkins

RIGHT-OF-WAY DIVERSION SPACING IN FEET

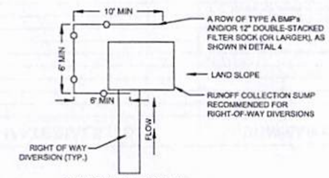
PIPELINE GRADE	> 200' FROM STREAM	< 200' FROM STREAM
2-5 %	400	200
6-12 %	300	150
13-21 %	200	100
22-34 %	100	50
35-50 %	50	25

* IT IS DIFFICULT TO INSTALL DIVERSIONS ON SLOPES STEEPER THAN 35%. THE DIVISION OF WATER AND WASTE MANAGEMENT WILL ALLOW GREATER DISTANCES BETWEEN DIVERSIONS ON EXTREME SLOPES.



NOTE:
SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY) PER DETAIL 1A.

1 RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS



SEDIMENT BARRIER PLAN VIEW

NOTES:

1. RIGHT-OF-WAY DIVERSIONS SHOULD BE INSTALLED ACROSS THE ENTIRE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5%.

2. RIGHT-OF-WAY DIVERSIONS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN IN DETAIL 1, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.

3. RIGHT-OF-WAY DIVERSIONS SHOULD NOT DISCHARGE INTO AN OPEN TRENCH WHEN AVOIDABLE. RIGHT-OF-WAY DIVERSIONS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE RIGHT-OF-WAY. A ROW OF TYPE A BMP's AND/OR 12" DOUBLE-STACKED FILTER SOCK (OR LARGER), AS SHOWN IN DETAIL 4, SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE RIGHT-OF-WAY DIVERSIONS.

4. BSRF CAN BE SUBSTITUTED IN PLACE OF SMARTFENCE FB WITH APPROVAL FROM ANTERO.

5. SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY).

MAINTENANCE:

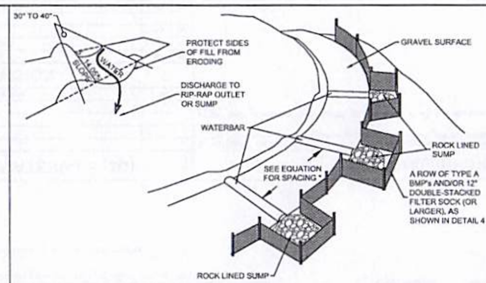
1. RIGHT-OF-WAY DIVERSIONS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED RIGHT-OF-WAY DIVERSIONS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.

2. MAINTENANCE OF RIGHT-OF-WAY DIVERSIONS SHALL BE PROVIDED UNTIL RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.

3. RIGHT-OF-WAY DIVERSIONS ON RETIRED RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

4. CONTRACTOR SHALL RESTORE ALL WATERBARS AT THE END OF EACH WORKDAY AND PRIOR TO A RAIN EVENT.

1/A RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS



* SPACING = 400/% GRADE + 75'

NOTES:

1. WATERBARS SHOULD BE INSTALLED ACROSS THE ENTIRE ROADWAY ON ALL SLOPES GREATER THAN 5%.

2. WATERBARS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.

3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO A RIP-RAP OUTLET OR SUMP. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE ROADWAY. SMARTFENCE FB OR EQUIVALENT SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBARS.

4. REFER TO WVDEP MANUAL SECTIONS 3.03-1, 3.35-6, & 3.35-7 FOR MORE INFORMATION.

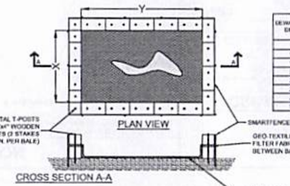
MAINTENANCE:

1. WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.

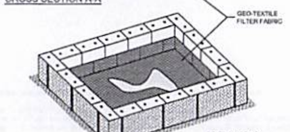
2. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.

3. WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED, UNLESS OTHERWISE SPECIFIED BY LANDOWNER STIPULATIONS.

2 ACCESS ROAD WATERBARS
NTS



DEWATERING STRUCTURE DIMENSIONS (FEET)		MAXIMUM PUMPING RATE (GALLONS PER MINUTE)
X	Y	
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	600



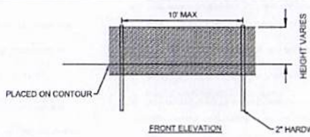
ISOMETRIC

1. STRAW BALES SHOULD BE PLACED ON THEIR SIDES WITH THE TWINE FACING OUT.
2. STRAW BALES SHOULD BE STACKED TWO HIGH WITH GEO-TEXTILE FABRIC PINNED BETWEEN BALES.
3. SEAMS OF GEOTEXTILE FABRIC SHOULD BE INTERLOCKING.
4. 5 FOOT METAL T-POSTS ARE RECOMMENDED, DRIVEN THROUGH BOTH STRAW BALES. IF METAL T-POSTS ARE NOT AVAILABLE, WOODEN STAKES SHOULD BE A MINIMUM OF 2"X2"X 4'. STAKES SHOULD BE DRIVEN AROUND THE PERIMETER OF THE STRAW BALES AS STRUCTURAL SUPPORT AS WELL AS THROUGH THE BALES TO HELP PIN THE GEO-TEXTILE FABRIC IN PLACE.
5. DEWATERING STRUCTURES DIMENSIONS SHOULD BE DESIGNED TO ACCOMMODATE THE SIZE OF THE WATER PUMP BEING UTILIZED.
6. DEWATERING STRUCTURE DIMENSIONS MAY NEED TO BE ADJUSTED TO SUIT THE VARIOUS SIZES OF FILTER BAGS, THOUGH SQUARE FOOTAGE SPECIFICATIONS SHOULD STILL BE MAINTAINED. THE STRUCTURE SHOULD COMPLETELY ENCOMPASS THE BAG BEING UTILIZED.
7. WHEN PUMPING LARGE AMOUNTS OF WATER FOR AN EXTENDED PERIOD OF TIME, (LARGE BELL HOLES, ETC.) INTERVAL PUMPING MAY BE NECESSARY TO AVOID OVERPOWERING THE DEWATERING STRUCTURE.
8. USE OF MULTIPLE DEWATERING STRUCTURES MAY BE NECESSARY UNDER SPECIAL CIRCUMSTANCES.
9. FOR STREAM CROSSINGS, WHEN PUMPING OUT THE TRENCH WITH A 2 INCH TRASH PUMP AT ½ THROTTLE, A STANDARD 10' BY 10' DEWATERING STRUCTURE WITH A COMPARABLE FILTER BAG SHOULD BE ADEQUATE. FIELD ADJUSTMENTS WILL BE MADE IF FLOW IS OVERPOWERING THE STRUCTURE.
10. ADDITIONAL EROSION CONTROLS MAY BE UTILIZED DOWNSLOPE OF DEWATERING STRUCTURES WHERE NEEDED.
11. DEWATERING STRUCTURE WILL BE PLACED TO MAXIMIZE AVAILABLE VEGETATIVE STRIP.

3 STRAW BALE DEWATERING
NTS

CATEGORY	PRODUCT
TYPE A	1 - SILT SAVER SILT FENCE PRIORITY 2 (BELTED) 2 - ACF ENVIRONMENTAL FILTRATION BARRIER (SMART FENCE FB) WITH WOOD POSTS 3 - MEDIUM DUTY WOVEN BELTED WBSF2S-6 SILT FENCE 2 STAGE
TYPE B	1 - SILT SAVER SILT FENCE PRIORITY 1 (BELTED) 2 - ACF ENVIRONMENTAL FILTRATION BARRIER SMART FENCE 36 (SD) WITH WOOD POSTS 3 - ACF ENVIRONMENTAL FILTRATION BARRIOR (SMART FENCE FB) ORANGE WITH WOOD POSTS 4 - HEAVY DUTY WOVEN BELTED WBSF2S-4 SILT FENCE 2 STAGE
TYPE C	1 - ACF ENVIRONMENTAL SMARTFENCE 42 2 - SUPER SILT FENCE

4 BMP CATEGORIES
NTS

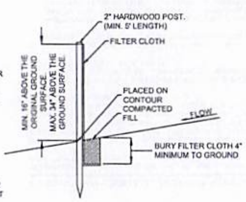


FRONT ELEVATION

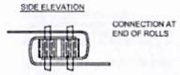
NOTE:
STANDARD FILTER FABRIC MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE 45 DEGREES TO MAIN BARRIER ALIGNMENT.

THE MAXIMUM LENGTH OF SLOPE ABOVE A ROW OF SILT FENCE IS 110'.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

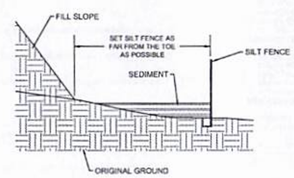


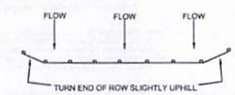
SIDE ELEVATION



TOP VIEW

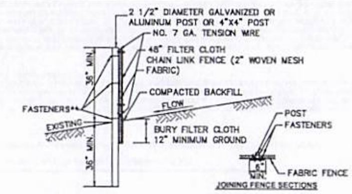
5 SILT FENCE
NTS





Slope - Percent	Maximum Slope Length (ft) Above Fence		
	Standard (18" High) Silt Fence	Reinforced (30" High) Silt Fence	Super Silt Fence
2 (or less)	150	500	1000
5	100	250	550
10	50	150	325
15	35	100	215
20	25	70	175
25	20	55	135
30	15	45	100
35	15	40	85
40	15	35	75
45	10	30	60
50	10	25	50

5/A SILT FENCE PLACEMENT
NTS



* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. GALVANIZED OR ALUMINUM POSTS OR 4" x 4" POST.

** CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POST WITH WIRE TIES OR STAPLES. GEOTEXTILE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID-SECTIONS.

NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN-LINK FENCE.

FILTER FABRIC FENCE SHOULD BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE.

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.

NO SECTION OF SILT FENCE SHOULD EXCEED A GRADE OF 5% FOR MORE THAN A DISTANCE OF 20 FEET.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

6 SUPER SILT FENCE
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/8/22	JDJ

GENERAL INFORMATION

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 22 - ESCP2	
REVISION No.:	3		

LAYOUT TAB: ESCP2 CAD FILE: R:\050\050-11538.00-Antero Crimson SWL A11568\Drawings\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/8/2022 4:05 PM USER: Jared Jenkins

GENERAL NOTES

1. ANTERO WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. ANY DISCREPANCIES FOUND BY THE CONTRACTOR BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE MANAGER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
3. WORK SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS, DETAILS AND TYPICALS. ANY DEVIATIONS OR ADDITIONS MUST BE APPROVED BY ANTERO PROJECT MANAGEMENT OR DESIGNATED PROJECT REPRESENTATIVE.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL WEST VIRGINIA 811.
5. ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS, ORGANIC MATERIAL, OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE UNAPPROVED MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
6. A PRE CONSTRUCTION KICK-OFF MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
7. IF SPRINGS OR SEEPS AND/OR AN ACCUMULATION OF GROUND WATER IS OBSERVED ON A SIDE CUT OR CUT SLOPE PIPE TRENCH, IMMEDIATELY INFORM THE ON-SITE INSPECTOR FOR AN EVALUATION AND CONSIDERATION OF THE INSTALLATION OF A DRAINAGE SYSTEM.
8. EROSION CONTROL BLANKETS ARE REQUIRED FOR SLOPES OF 3:1 OR GREATER.
9. HYDROMULCH (BONDED FIBER MATRIX) CAN BE UTILIZED AS A SUBSTITUTE TO EROSION CONTROL BLANKETS WITH APPROVAL FROM ANTERO, EXCEPT FOR ON RESTORED STREAM BANKS AND ROAD BANKS. HYDROMULCH (BONDED FIBER MATRIX) SHALL ONLY BE A VALID SUBSTITUTE FOR EROSION CONTROL BLANKETS DURING GRASS GROWING SEASONS.
10. HYDROSTATIC PRESSURE TEST - WATER FROM ANTERO APPROVED SOURCES ONLY TO BE USED FOR HYDROTEST. NO DEWATERING IS PERMITTED WITHOUT PRIOR ANTERO APPROVAL AND APPLICABLE PERMITS. NOTIFICATION REQUIRED TO ANTERO ENVIRONMENTAL PRIOR TO HYDROTEST.

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE/CONSTRUCTION SEQUENCES

THE EROSION AND SEDIMENT (E&S) CONTROL MEASURES FOR THE PIPELINE CONSTRUCTION ACTIVITIES CONSIST OF COMPOST FILTER SOCK, SILT FENCE, RIGHT-OF-WAY (ROW) DIVERSIONS, TRENCH BREAKERS (PLUGS), AND TEMPORARY AND PERMANENT SEEDING AND MULCHING OR ANY OTHER APPROVED BMPs. AREAS LOCATED WITHIN TOTAL MAXIMUM DAILY LOADS (TMDL) WATERSHEDS MAY SUBSTITUTE SILT FENCE AND COMPOST FILTER SOCK WITH AN ENHANCED BMP. BMP SPECIFICATIONS FOR THE E&S CONTROL PLAN (E&SCP) AREA TO BE UTILIZED BY THE CONSTRUCTION CONTRACTOR ACCORDING TO THE PROVIDED PLAN. STRAW/HAY BALES WILL NOT BE USED AS AN E&S CONTROL, HOWEVER, THEY MAY BE ACCEPTABLE TO USE AS A VELOCITY DISSIPATER.

GENERAL SEQUENCE FOR PIPELINE CONSTRUCTION:

1. PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES, CLEARLY MARK ALL CLEARING LIMITS, SENSITIVE AREAS, AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA. THESE SHALL BE CLEARLY MARKED, BOTH IN THE FIELD AND ON THE PLANS, TO PREVENT DAMAGE AND OFFSITE IMPACTS.
2. INSTALL STONE CONSTRUCTION ENTRANCES AT ALL LOCATIONS WHERE ACCESS ROADS WILL BE ACCESSING A PUBLIC ROADWAY.
3. INSTALL TEMPORARY E&S CONTROLS (SILT FENCE, ROW DIVERSIONS, ETC.) PRIOR TO ANY EARTH DISTURBING ACTIVITY, WHICH INCLUDES GRUBBING AND EXCAVATION, TO ENSURE, TO THE MAXIMUM EXTENT PRACTICABLE, THAT MINIMAL EROSION OR SEDIMENTATION OCCURS.
4. ROW DIVERSIONS AND/OR OTHER EROSION AND SEDIMENT CONTROL DEVICES WILL BE INSTALLED AS DEPICTED ON THE PLAN SHEETS AND SPECIFIED IN THE DETAIL SHEETS. IF CLEARING AND GRUBBING IS REQUIRED, SEE BELOW REGARDING THE MANAGEMENT AND DISPOSAL OF DEBRIS.
5. AFTER ACCESS TO AND ALONG THE PROPOSED UTILITY LINE HAS BEEN PROVIDED, THE GENERAL CLEARING AND GRUBBING OF THE TREES AND BRUSH ALONG THE ROW FOR PIPE TRENCHING MAY COMMENCE TO THE WIDTH SPECIFIED IN THE E&S PLANS. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON-SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATERS. WINDROWED TREES AND DEBRIS SHALL HAVE A GAP/BREAK, WITH A MINIMUM OF A 10' OPENING AT EVERY WATERBAR OUTLET, LANDOWNER ACCESS POINT/TRAIL, AND/OR A MINIMUM OF EVERY 100'. CLEARING / GRUBBING MATERIAL WILL BE DISPOSED OF PROPERLY AND / OR LAND APPLIED AS PER LANDOWNER STIPULATIONS.
6. MINOR GRADING WITHIN THE ROW WILL BE CONDUCTED WHERE NECESSARY TO PROVIDE AN EVEN SURFACE FOR SAFE AND EFFICIENT OPERATION OF CONSTRUCTION EQUIPMENT. GRADING WILL BE THE MINIMUM AMOUNT NECESSARY AND BMPs WILL BE INSTALLED PROMPTLY. TREE STUMPS, AND LARGE ROCKS AND BOULDERS WILL EITHER BE REMOVED FOR SAFETY CONCERNS OR LAND APPLIED AS PER LANDOWNER STIPULATIONS.
7. EXCAVATE PIPELINE TRENCH. A MINIMUM COVER AS SPECIFIED IN THE MIDSTREAM CONSTRUCTION SPECIFICATIONS SHALL BE PROVIDED ABOVE PIPELINE AT ALL WETLANDS, STREAMS AND ROADWAYS.
8. THE PROPOSED CONSTRUCTION ROW WILL BE USED AS A WORK AREA FOR TRENCH EXCAVATION, EQUIPMENT MOVEMENT, AND THE STORAGE OF SOIL STOCKPILES, AS NEEDED. EQUIPMENT SOIL STOCKPILES, AND OTHER MATERIALS AREA TO REMAIN UPSLOPE OF BMPs DURING CONSTRUCTION ACTIVITIES.
9. SEGREGATION OF TOPSOIL AND SUBSOIL WILL BE PERFORMED WHERE TRENCH EXCAVATION TAKES PLACE IN AN AGRICULTURAL, WETLAND, OR RESIDENTIAL AREA. IT IS BEST MANAGEMENT PRACTICE TO SALVAGE AND SEGREGATE TOPSOIL WHERE APPLICABLE.
10. TEMPORARY E&S CONTROLS FOR STREAM CROSSINGS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE E&SCP AND ASSOCIATED DETAIL SHEETS.
11. STREAM AND RIVER PIPELINE CROSSING CONSTRUCTION METHODS WILL BE INSTALLED AT LOCATIONS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS. WATERBODIES WILL BE CROSSED WITH TEMPORARY BRIDGES, SUCH AS TIMBER MATS OR APPROVED EQUAL CROSSINGS, PRIOR TO CROSSING THE CONVEYANCE. STREAMBANK STABILIZATION WILL BE PERFORMED IMMEDIATELY FOLLOWING COMPLETION OF THE PIPELINE INSTALLATION.
12. WETLAND CROSSING WIDTHS FOR UTILITY CROSSINGS WILL BE KEPT TO A MINIMUM AND WILL BE STABILIZED BY PLACING TIMBER MATS, RIPRAP, OR PRE-FABRICATED SWAMP MATS, AS SHOWN ON THE DETAIL SHEETS. ALL MATERIALS USED TO STABILIZE ACCESS ROADS IN WETLAND AREAS WILL BE REMOVED FROM THE WETLAND UPON COMPLETION OF THE PIPELINE CONSTRUCTION. A BARRIER (GEOTECH FABRIC) SHOULD BE USED TO PREVENT MIXING OF SOILS.
13. PIPELINE SECTIONS WILL BE TRANSPORTED TO THE WORK AREA AND STRUNG ALONG THE WORKING SIDE OF THE ROW PARALLEL TO THE TRENCH LINE. THE PIPELINE WILL BE BENT TO CONFORM TO THE TRENCH CONTOUR, ALIGNED, WELDED AND PLACED ON TEMPORARY SUPPORTS ALONGSIDE THE TRENCH. WELDS WILL BE VISUALLY AND RADIO-GRAPHICALLY INSPECTED AND REPAIRED AS NECESSARY. THE PIPE SECTION WILL BE LOWERED INTO THE TRENCH AND PLACED ON PADDING MATERIAL LAID ON THE TRENCH BOTTOM TO PROTECT THE PIPE COATING. ANY WETNESS ENCOUNTERED DURING CONSTRUCTION WORK WILL BE DEWATERED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG AND / OR DEWATERING STRUCTURE. FLAT, WELL-VEGETATED AREAS WILL BE UTILIZED FOR DEWATERING LOCATIONS, WHEN AVAILABLE. VISUALLY OBSERVABLE SINK HOLES, IDENTIFIED AHEAD OF DEWATERING ACTIVITY, WILL BE AVOIDED WHEN POSSIBLE.
14. INSTALL TRENCH BREAKERS AT LOCATIONS AS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS.
15. THE TRENCH WILL BE SUBSEQUENTLY BACKFILLED WITH SUITABLE EXCAVATED MATERIAL. THE BACKFILL MATERIAL WILL BE SLIGHTLY CROWNED IN UPLAND AREAS TO ALLOW FOR SETTLEMENT THAT MAY OCCUR. CROWNING THE SOIL SLIGHTLY OVER THE PIPELINE WILL HELP PREVENT FUTURE STORMWATER-RELATED PROBLEMS FROM THE SETTLING OF THE BACKFILLED AREA. NO CROWNING OF THE SOILS WILL TAKE PLACE IN WETLANDS, STREAMS, OR FLOODPLAINS. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
16. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSIVE FORCES OF RAINDROPS, FLOWING WATER AND WIND.
17. ALL DISTURBED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. FOR DISTURBED AREAS WITH SLOPES OF 3:1 OR GREATER, THE AREA WILL BE VERTICALLY TRACKED AND EROSION CONTROL FABRIC SHALL BE INSTALLED AFTER SEED, MULCH, AND SOIL SUPPLEMENTS HAVE BEEN APPLIED. THE TEMPORARY/PERMANENT SEEDING AND MULCH TABLE ON THE DETAIL SHEETS CONSIST OF THE TYPE OF SEED AND APPLICATION RATE THAT SHALL BE APPLIED, INCLUDING THE NURSE CROP THAT SHALL BE USED DURING CERTAIN TIME OF THE YEAR TO PROMOTE STABILIZATION OF THE SOIL UNTIL THE PERENNIAL SEEDLINGS ESTABLISH. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
18. IN THE UNLIKELY EVENT THAT THERE ARE EXCESS EXCAVATED MATERIALS REMAINING AFTER THE TRENCH HAS BEEN BACKFILLED, THE MATERIAL WILL BE DISPOSED OF WITHIN THE EXISTING ROW IN AN UPLAND AREA. MATERIAL WILL BE SPREAD IN A THIN LAYER AND TIED INTO EXISTING CONTOURS TO CREATE POSITIVE DRAINAGE FOR STORMWATER RUNOFF.
19. INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROLS WILL BE, AT A MINIMUM, PERFORMED ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED. TEMPORARY BMPs WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION. THE 70 PERCENT REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE. THESE INSPECTIONS WILL COMMENCE AT THE START OF EARTH DISTURBING ACTIVITY (GRUBBING). ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.
20. NO SEDIMENT TRACKING ON THE PUBLIC ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING.
21. CONSTRUCTION ACCESS RESTORATION SHALL BE EQUAL OR BETTER THAN THE PRE-CONSTRUCTION CONDITION.
22. APPLICABLE STABILIZATION PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, TEMPORARY AND PERMANENT SEEDING, SODDING, MULCHING, EROSION CONTROL FABRICS AND MATTING, THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED, AND DUST CONTROL.
23. SELECTED SOIL STABILIZATION MEASURES SHALL BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, AND ESTIMATED DURATION OF USE.
24. SOIL STOCKPILES MUST BE TEMPORARILY STABILIZED.
25. ALL SLOPE SLIP REPAIRS, ROW MAINTENANCE ITEMS, LANDOWNER DISTURBANCES, PUNCH LIST ITEMS, AND ANY OTHER POST CONSTRUCTION ACTIVITIES WILL BE CONSIDERED PART OF THE STABILIZATION PHASE AND NOT THE GRADING PHASE. UPON REACHING FINAL GRADE, ANTERO CONSIDERS THE GRADING PHASE TO BE COMPLETE AND THE SITE TRANSITIONED TO THE STABILIZATION PHASE. THESE POST CONSTRUCTION ACTIVITIES MAY BE REQUIRED DURING STABILIZATION FOLLOWING THE COMPLETION OF THE CONSTRUCTION SEQUENCE ITEMS 1-24 ABOVE.

25.A. E&S CONTROL RE-INSTALLATION MAY REQUIRE FIELD ADJUSTMENT FROM THE ORIGINAL E&S PLAN TO MAXIMIZE EFFECTIVENESS.

THE CONSTRUCTION SEQUENCE FOR THE SUBSURFACE INSTALLATION OF THE WATER PIPELINE WILL FOLLOW THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE (ITEMS 1-25A ABOVE). THE CONSTRUCTION SEQUENCE FOR THE SURFACE INSTALLATION OF THE WATER PIPELINE CONSISTS OF THE FOLLOWING:

1. ACCESS THE ROW VIA STABILIZED CONSTRUCTION ENTRANCES. GROUND DISTURBANCE THROUGHOUT THE ROW IS NOT EXPECTED SINCE THE WATER PIPELINE(S) ARE PLACED ON THE GROUND SURFACE EXCEPT WHERE LANDOWNER STIPULATIONS / ACCESS MAY REQUIRE THE SURFACE WATER PIPELINE(S) TO BE BURIED, IN WHICH CASE THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE WOULD BE FOLLOWED.
2. STRING OUT THE SURFACE WATER PIPELINE(S) ALONG THE ENTIRE ROW AND FUSE TOGETHER.
3. IF STREAM AND/OR WETLAND CROSSINGS ARE REQUIRED, THEY WILL BE PERFORMED AS AERIAL CROSSINGS VIA I-BEAMS / AIR BRIDGES, WHICH WILL BE SITUATED OUTSIDE THE LIMITS OF EACH WETLAND AND THE ORDINARY HIGH-WATER MARK OF EACH STREAM. WIDER STREAM AND / OR WETLAND CROSSINGS MAY REQUIRE THE SURFACE WATER PIPELINE(S) TO BE INSTALLED SUBSURFACE AND WOULD FOLLOW THE ABOVE REFERENCED GENERAL CONSTRUCTION SEQUENCE.

PIPELINE BMPs INSTALLATION AND REMOVAL SEQUENCE

TEMPORARY AND PERMANENT BMPs WILL BE USED DURING CONSTRUCTION ACTIVITIES TO AVOID AND/OR MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS OF CONSTRUCTION ACTIVITIES.

INSPECTIONS OF ALL E&S CONTROLS SHALL BE CONDUCTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD. ALL NECESSARY CLEANING, REPAIR AND/OR MAINTENANCE SHALL BE MADE AS SOON AS POSSIBLE AFTER THE INSPECTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT INSPECTIONS AND REPAIRS ARE MADE AS OUTLINED HEREIN. ALL SEDIMENT COLLECTED FROM THE MAINTENANCE OF E&S CONTROL MEASURES SHALL BE SPREAD ON-SITE AND SEEDED AND MULCHED, OR DISPOSED OF PROPERLY AT A WV DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP)-APPROVED LOCATION. THE FOLLOWING MAINTENANCE WILL BE PERFORMED UNTIL STABILIZATION HAS BEEN ACHIEVED:

1. TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE STABILIZED.
2. WHENEVER INSPECTION AND/OR MONITORING REVEALS THAT THE BMPs IDENTIFIED IN THE E&SCP ARE INADEQUATE, THE E&SCP SHALL BE ADJUSTED TO MAXIMIZE EFFECTIVENESS, AS APPROPRIATE, IN A TIMELY MANNER.
3. MAINTENANCE OF THE E&SCP - THE E&SCP SHALL BE RETAINED ON-SITE. THE E&SCP SHALL BE MODIFIED WHENEVER THERE IS A SIGNIFICANT CHANGE IN THE DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF ANY BMP. THE DEP MUST BE NOTIFIED OF CERTAIN CHANGES TO THE CONSTRUCTION SWPPP, AS IDENTIFIED IN THE CONSTRUCTION SWPPP. DEPENDING ON THE SIGNIFICANCE OF THE REVISION, A PERMIT MODIFICATION MAY NEED TO BE SUBMITTED TO THE DEP.

THE FOLLOWING IS A GENERAL BMP INSTALLATION SEQUENCE FOR PIPELINE CONSTRUCTION ACTIVITIES:

4. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PUBLIC ROAD DIRECTLY FROM A DISTURBED AREA.
5. TEMPORARY SEDIMENT BARRIERS, SUCH AS APPROPRIATELY SIZED SILT FENCE OR ENHANCED BMPs WILL BE PLACED DOWN SLOPE OF WORK AREAS AND AROUND SOIL STOCKPILES, AS NEEDED.
6. APPROPRIATELY SIZED FENCING WILL BE PLACED AROUND WETLANDS AND WATERBODIES ADJACENT TO THE WORK AREA PRIOR TO ANY TRENCHING ACTIVITIES.
7. STOCKPILES WILL NOT EXCEED 35 FEET IN HEIGHT.
8. TEMPORARY STREAM AND WETLAND CROSSINGS SHALL BE INSTALLED AS INDICATED ON THE E&S PLAN SHEETS AND AS PER THE E&S DETAIL SHEETS. FOR ALL OTHER SURFACE OR STORMWATER CONVEYANCES THAT ARE NOT IDENTIFIED ON THE PLAN SHEETS AS STREAMS DUE TO THE LACK OF DEFINED BED AND BANK CONDITIONS, A TEMPORARY BRIDGE SUCH AS A TIMBER MAT OR AN APPROVED EQUAL SHALL BE INSTALLED, PRIOR TO CROSSING THE CONVEYANCE IF THERE IS FLOWING WATER PRESENT AT TIME OF CONSTRUCTION IN THAT AREA.
9. ROW DIVERSIONS WILL BE INSTALLED IMMEDIATELY AFTER INITIAL DISTURBANCE OF THE SOIL IN ACCORDANCE WITH THE DETAILS AND SPACING SIZING REQUIREMENTS AS DEPICTED IN THE RIGHT-OF-WAY DIVERSION OUTLET (WATERBAR) DETAILS. ROW DIVERSIONS WILL BE CONSTRUCTED OF SOIL TO REDUCE RUNOFF VELOCITY AND DIVERT WATER OFF OF THE PIPELINE ROW.
10. TRENCH DEWATERING, IF NEEDED, WILL BE CONDUCTED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG AND / OR DEWATERING STRUCTURE. FLAT, WELL-VEGETATED AREAS WILL BE UTILIZED FOR DEWATERING LOCATIONS, WHEN AVAILABLE. VISUALLY OBSERVABLE SINK HOLES, IDENTIFIED AHEAD OF DEWATERING ACTIVITY, WILL BE AVOIDED WHEN POSSIBLE.
11. TRENCH BREAKERS WILL BE INSTALLED IN SLOPING AREAS GREATER THAN FIVE PERCENT AND ON SLOPES ADJACENT TO STREAMS, WETLANDS, AND ROADS CROSSINGS TO PREVENT SUBSURFACE EROSION. TRENCH BREAKERS WILL BE INSTALLED IN ACCORDANCE WITH THE SPACING REQUIREMENTS.
12. THE WORK AREA WILL BE BACKFILLED FOLLOWING PIPELINE INSTALLATION OR OTHER EXCAVATION WORK. IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST, AND THEN THE TOPSOIL WILL BE SPREAD OVER THE AREA FROM WHICH IT WAS REMOVED. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
13. ROW DIVERSIONS WILL BE INSTALLED AT INCREMENTS ACROSS SLOPED AREAS OF CONSTRUCTION ROW TO REDUCE EROSION AND FLOW LENGTH OF RUNOFF. SUMPS WILL BE INSTALLED AT THE END OF ROW DIVERSIONS AND WRAPPED WITH 18 INCH DIAMETER OR LARGER COMPOST FILTER SOCK AND/OR A ROW OF FILTER FENCING OR EQUIVALENT IN VEIN OF PRIORITY ONE SILT SAVER FENCING. EROSION AND SEDIMENT CONTROLS MUST BE INSTALLED AS DEPICTED ON THE E&SC PLAN SHEETS AND ACCORDING TO DETAIL SPECIFICATIONS.
14. IMMEDIATELY FOLLOWING BACKFILLING, ALL DISTURBED AREAS WILL BE GRADED IN PREPARATION FOR SEEDING AND MULCHING. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED AS SOON AS CONDITIONS ALLOW.
15. FOR THREE TO ONE OR STEEPER SLOPES THE DISTURBED AREA WILL BE VERTICALLY TRACKED. EROSION CONTROL FABRIC WILL BE INSTALLED.
16. TEMPORARY SEDIMENT BARRIERS WILL BE MAINTAINED, UNTIL VEGETATION HAS BECOME ESTABLISHED WITH A UNIFORM COVERAGE OF DENSITY OF 70 PERCENT OR MORE WITHIN THE DISTURBED ROW. ONCE THIS COVERAGE HAS BEEN OBTAINED, APPROPRIATE CONTROLS WILL BE REMOVED FROM THE WORK AREA. AREAS DISTURBED DURING THE REMOVAL OF THE EROSION CONTROLS WILL BE STABILIZED IMMEDIATELY. THE 70 PERCENT REQUIREMENTS REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE.
17. ALL WASTE MATERIAL WILL BE TRANSPORTED OFF-SITE FOR RECYCLING AND/OR DISPOSAL. WHERE FEASIBLE, CONSTRUCTION WASTE MATERIALS WILL BE RECYCLED OR WILL BE TAKEN TO AN APPROVED FACILITY FOR DISPOSAL. AS STATED PREVIOUSLY, EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT.
18. TEMPORARY STOCKPILES NEED BMPs SUCH AS SILT FENCE / SOCK OR ENHANCED BMPs PLACED ADJACENT TO ROW.
19. CONTRACTOR IS EXPECTED TO MINIMIZE DISTURBANCE WITHIN THE ROW.

MAINTENANCE SCHEDULE

AFTER CONSTRUCTION IS COMPLETED AND 70% UNIFORM PERENNIAL VEGETATION HAS BEEN ACHIEVED, ALL BMPs WILL BE REMOVED AND ANY LAND DISTURBED BY REMOVAL WILL BE STABILIZED. UNLESS OTHERWISE SPECIFIED, ALL MAINTENANCE MUST BE COMPLETED AS SOON AS CONDITIONS ALLOW AFTER AN INSPECTION IDENTIFIES THAT A BMP IS NOT FUNCTIONING AS REQUIRED.

1. INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROLS WILL BE, AT A MINIMUM, PERFORMED ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED. TEMPORARY BMPs WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION. THE 70 PERCENT REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE. THESE INSPECTIONS WILL COMMENCE AT THE START OF EARTH DISTURBING ACTIVITY (GRUBBING). ANTERO HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.
2. SEDIMENT MUST BE REMOVED WHERE ACCUMULATION REACHES ONE-HALF THE ABOVE GROUND HEIGHT OF A BMP (ALL TYPES).
3. BMPs (ALL TYPES), WHICH HAVE BEEN UNDERMINED OR TOPPED, SHOULD IMMEDIATELY BE REPAIRED.
4. REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE.
5. LOGS OF SEDIMENT CONTROL INSPECTION MUST BE KEPT WITH THE INSPECTORS CONSTRUCTION RECORDS AND INCLUDE DATE, TIME, AND CONDITION OF BMPs AND ANY NECESSARY MAINTENANCE.
6. TEMPORARY AND PERMANENT E&S CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT GREATER THAN 0.5-INCH OF RAIN PER 24-HOUR PERIOD.
7. TEMPORARY E&S CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE STABILIZED.

MATERIAL WASTE HANDLING AND RECYCLING

1. GARBAGE DISPOSAL IS HANDLED THROUGH ONE OF THE LOCAL WASTE MANAGEMENT PROVIDERS/FACILITIES. IF NECESSARY, THE CONTRACTOR WILL OBTAIN A DUMPSTER FOR THE DURATION OF THE WORK WHICH WILL BE DISPOSED OF AT A LICENSED/PERMITTED MUNICIPAL LANDFILL.
2. THE CONTRACTOR WILL DISPOSE OF ALL SCRAP MATERIAL. THE SCRAP MATERIAL MUST BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED AT A PROPERLY LICENSED/PERMITTED FACILITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY PERMITS AND/OR DISPOSAL FEES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ASSURE THAT ALL MATERIALS ARE HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, RULES, AND REGULATIONS, INCLUDING BUT NO LIMITED TO THOSE ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY, WVDEP, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
3. CONSTRUCTION WASTE MATERIALS, INCLUDING BUT NOT LIMITED TO BENTONITE, POLY PIPE SHAVINGS, AND SANDBAGS, WILL BE RECYCLED OR WILL BE TAKEN TO THE NEAREST APPROVED FACILITY FOR DISPOSAL. EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NPDES.

SEEDING

1. SEE DETAILS 29-31 FOR TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCHING REQUIREMENTS.
2. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSIVE FORCES OF RAINDROPS, FLOWING WATER AND WIND.

PERMANENT SEEDING/MULCHING

3. ALL DISTURBED AREAS THAT ARE AT FINAL GRADE OR AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATION COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

TEMPORARY SEEDING/MULCHING

4. ALL DISTURBED AREAS THAT ARE NOT AT FINAL GRADE OR AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATION COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

POLLUTANT CONTROLS

1. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATER. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON SITE.
2. COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM SHALL BE PROVIDED FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND NON-INERT WASTES PRESENT ON THE SITE.
3. MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM DRAIN DOWN, SOLVENT AND DE-GREASING CLEANING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO SURFACE WATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. EMERGENCY REPAIRS MAY BE PERFORMED ON-SITE USING TEMPORARY PLASTIC PLACED BENEATH AND, IF RAINING, OVER THE VEHICLE.
4. APPLICATION OF AGRICULTURAL CHEMICALS INCLUDING FERTILIZERS AND PESTICIDES SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO SURFACE WATER RUNOFF. MANUFACTURERS' RECOMMENDATIONS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.
5. BMPs SHALL BE USED TO PREVENT OR TREAT CONTAMINATION OF SURFACE WATER RUNOFF BY PH MODIFYING SOURCES. THESE SOURCES INCLUDE BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, AND CONCRETE PUMPING AND MIXER WASHOUT WATERS.
6. REPORT SPILLAGE OR DISCHARGE OF POLLUTANTS THAT IMPACT SURFACE OR GROUNDWATER TO ANTERO PERSONNEL IMMEDIATELY.

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

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NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

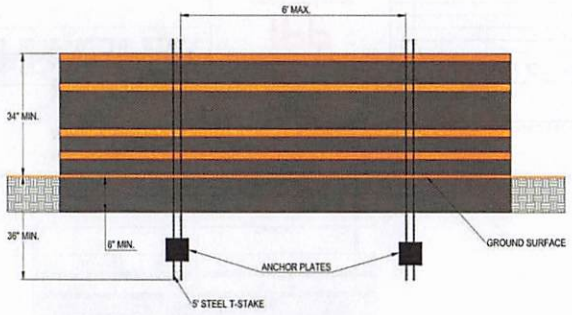
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

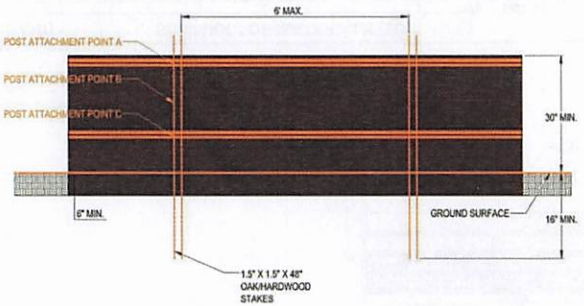
CRIMSON SOUTH SWL
ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

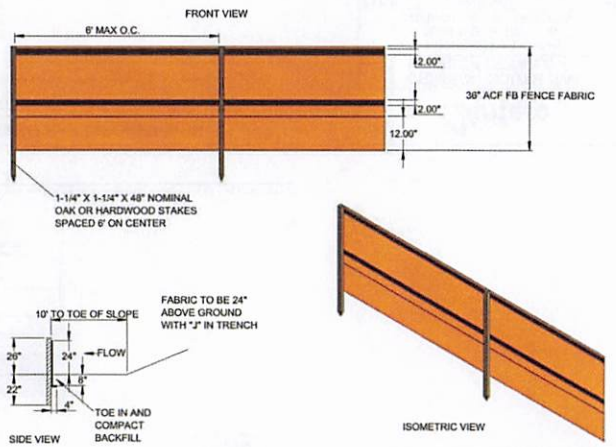
DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 21 – ESCP1	
REVISION No.:	3		



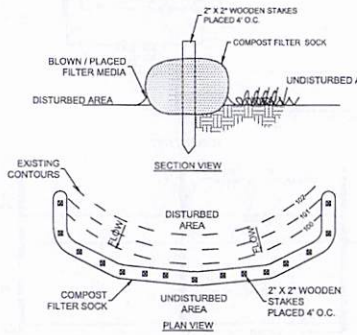
9 A ACF ENVIRONMENTAL SMARTFENCE 42
NTS



9 B ACF ENVIRONMENTAL SMARTFENCE 36 (SD) WITH WOOD POSTS
NTS



9 C ACF ENVIRONMENTAL FILTRATION BARRIER (SMARTFENCE FB) WITH WOOD POSTS
NTS



10 COMPOST FILTER SOCK
NTS

CONDITIONS WHERE PRACTICE APPLIES:

1. INSTALL ON DISTURBED AREAS THAT REQUIRE IMMEDIATE EROSION PROTECTION.
2. USE ON SLOPES REQUIRING STABILIZATION UNTIL PERMANENT VEGETATION CAN BE ESTABLISHED.
3. CAN BE USED ALONG THE PERIMETER OF THE PIPELINE, AS A CHECK DAM IN UNLINED DITCHES AND AROUND TEMPORARY STOCKPILES
4. SOCK CAN BE STAKED TO THE GROUND USING WILLOW CUTTINGS FOR ADDED REVEGETATION
5. EROSION CAN OCCUR BENEATH AND BETWEEN SOCK IF NOT PROPERLY ENTRENCHED, ALLOWING WATER TO PASS BELOW AND BETWEEN SOCKS. IT IS THEREFORE VERY IMPORTANT TO INSTALL SOCKS CORRECTLY.
6. ROLLS ARE A SHORT-TERM SOLUTION TO HELP ESTABLISH NATIVE VEGETATION
7. ROLLS STORE MOISTURE FOR VEGETATION PLANTED IMMEDIATELY UPSLOPE.

CONSTRUCTION SPECIFICATIONS:

1. IT IS CRITICAL THAT SOCK IS INSTALLED PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE CONTOUR.
2. NARROW TRENCHES SHOULD BE DUG ACROSS THE SLOPE, ON CONTOUR, TO A DEPTH OF 3 TO 5 INCHES ON CLAY SOILS AND SOILS WITH GRADUAL SLOPES. ON LOOSE SOILS, STEEP SLOPES, AND DURING HIGH RAINFALL EVENTS, THE TRENCHES SHOULD BE DUG TO A DEPTH OF 5 TO 7 INCHES, OR ½ TO 2/3 OF THE THICKNESS OF THE SOCK.
3. START CONSTRUCTION OF TRENCHES AND INSTALLING SOCK FROM THE BASE OF THE SLOPE AND WORK UPHILL. EXCAVATED MATERIAL SHOULD BE SPREAD EVENLY ALONG THE UPHILL SLOPE AND COMPACTED USING HAND TAMPING OR OTHER METHOD. CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF 3 TO 30 FEET APART DEPENDING ON THE STEEPNESS OF THE SLOPE, SOIL TYPE, AND RAINFALL. THE STEEPER THE SLOPE THE CLOSER TOGETHER THE TRENCHES SHOULD BE CONSTRUCTED.
4. INSTALL THE SOCK SNUGLY INTO THE TRENCHES AND ABUT TIGHTLY END TO END. DO NOT OVERLAP THE ENDS.
5. INSTALL STAKES AT EACH END OF THE SOCK, AND AT A MINIMUM OF 4-FOOT CENTERS ALONG THE ENTIRE LENGTH OF THE SOCK.
6. IF REQUIRED, INSTALL PILOT HOLES FOR THE STAKES USING A STRAIGHT BAR TO DRIVE HOLES THROUGH THE SOCK AND INTO THE SOIL.
7. AT A MINIMUM, WOODEN STAKES SHOULD BE APPROXIMATELY 2 X 2 X 24 INCHES. WILLOW CUTTINGS OR 3/8-INCH REBAR CAN ALSO BE USED FOR STAKES.
8. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK, LEAVING 2 TO 3 INCHES OF THE STAKE PROTRUDING ABOVE THE SOCK.

10 A COMPOST FILTER SOCK
NTS

MAINTENANCE:

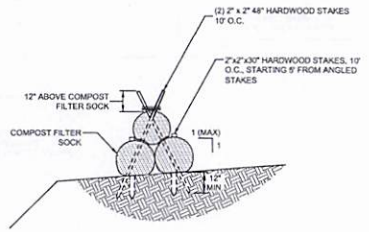
1. INSPECT SOCK AT LEAST ONCE A WEEK AND AFTER EACH RAIN EVENT GREATER THAN 0.5 INCH.
2. REPAIR OR REPLACE SPLIT, TORN, RAVELING, OR SLUMPING SOCK.
3. REMOVE SEDIMENT ACCUMULATIONS WHEN EXCEEDING ½ THE HEIGHT BETWEEN THE TOP OF THE SOCK AND THE GROUND SURFACE.
4. REPAIR ANY RILLS OR GULLIES PROMPTLY.
5. RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	4.5 in (150 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	25 in (630 mm) **
2 (or less)	100 (30)	150 (45)	200 (60)	250 (75)	300 (90)
5	100 (30)	150 (45)	200 (60)	250 (75)	300 (90)
10	50 (15)	100 (30)	150 (45)	200 (60)	250 (75)
15	50 (15)	100 (30)	150 (45)	200 (60)	250 (75)
20	50 (15)	100 (30)	150 (45)	200 (60)	250 (75)
25	50 (15)	100 (30)	150 (45)	200 (60)	250 (75)
30	50 (15)	75 (23)	100 (30)	150 (45)	200 (60)
35	50 (15)	75 (23)	100 (30)	150 (45)	200 (60)
40	50 (15)	75 (23)	100 (30)	150 (45)	175 (53)
45	50 (15)	75 (23)	100 (30)	150 (45)	175 (53)
50	50 (15)	75 (23)	100 (30)	150 (45)	175 (53)

* Based on a failure point of 20 in (0.5 m) super silt fence (wire reinforced) at 1500 ft (200 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 yr/3 hr (25 mm/hr) rain event.

** Effective height of Sediment control after installation and with constant load from runoff as determined by Ohio State University.

10 B COMPOST FILTER SOCK
NTS



10 C TRIPLE STACK FILTER SOCK
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

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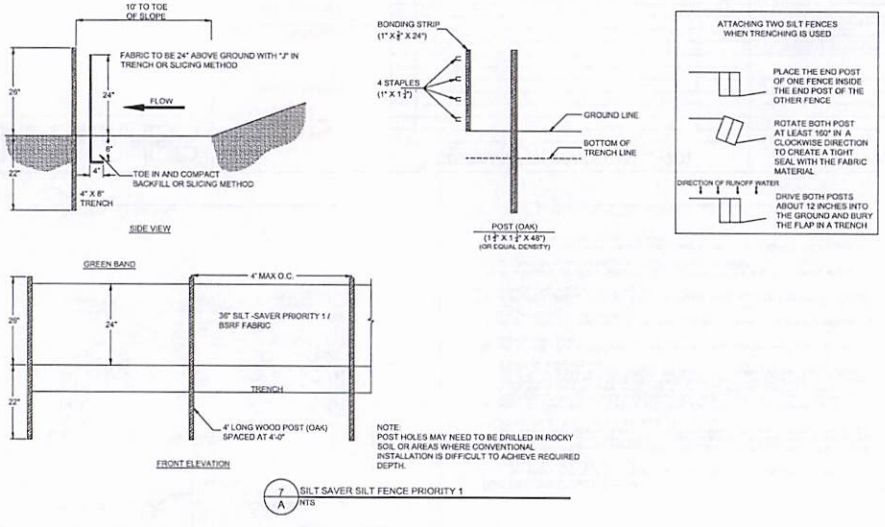
Antero Midstream

CRIMSON SOUTH SWL
ESCP DETAILS

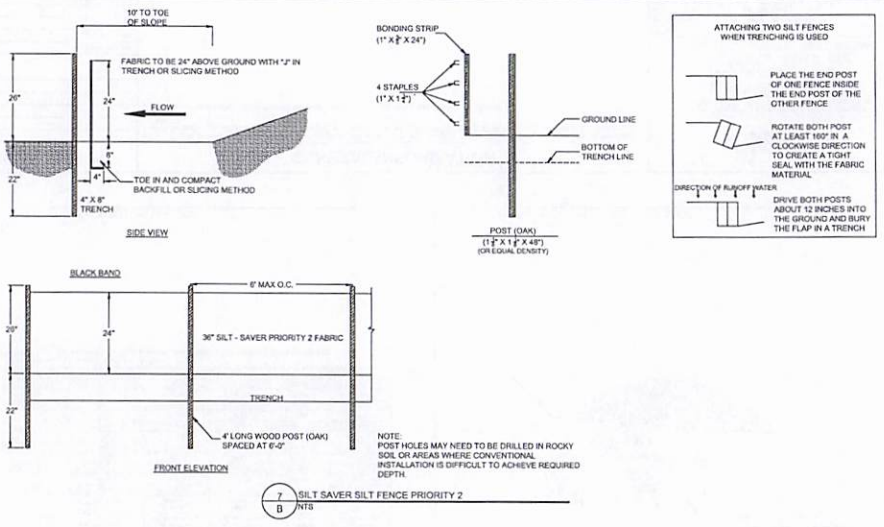
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	24 – ESCP4
REVISION No.:	3		

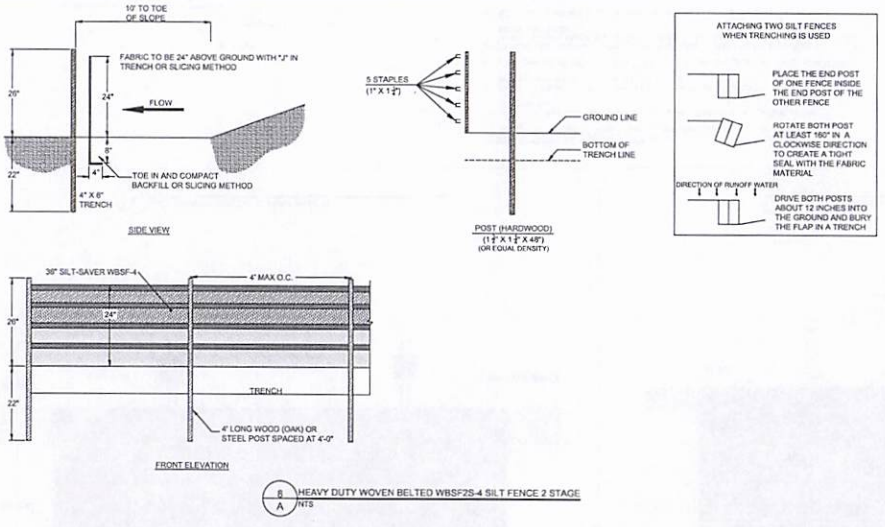
LAYOUT TAB: ESCP4
DWG FILE: N:\2020\2020-11338.00- Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: jared jenkins



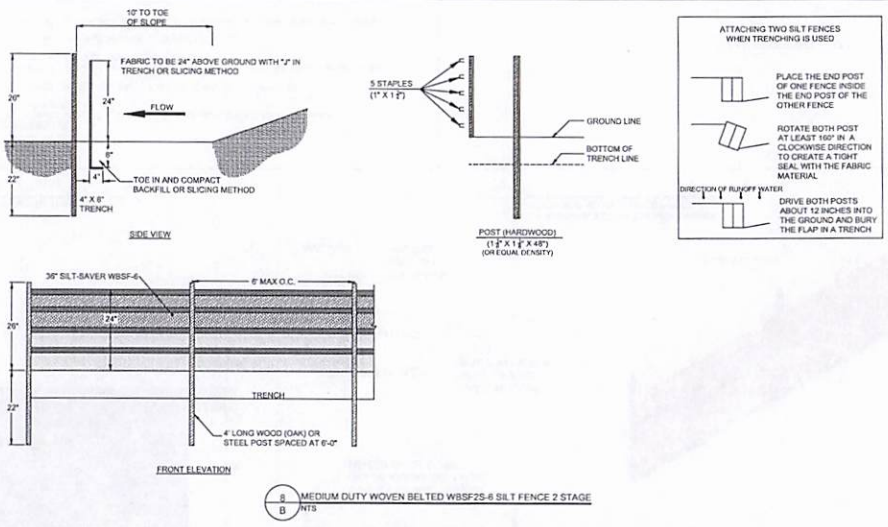
7 A SILT SAVER SILT FENCE PRIORITY 1
NTS



7 B SILT SAVER SILT FENCE PRIORITY 2
NTS



8 A HEAVY DUTY WOVEN BELTED WBSF2S-4 SILT FENCE 2 STAGE
NTS



8 B MEDIUM DUTY WOVEN BELTED WBSF2S-6 SILT FENCE 2 STAGE
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

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3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

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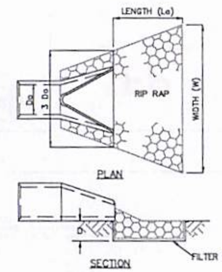
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

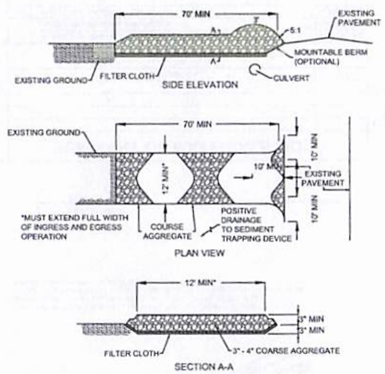
PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN		
REVISION No.:	3	SHEET: 23 – ESCP3	



NOTES:
1. IF FLARED END SECTION IS DISCHARGING INTO DITCH FROM THE SIDE, EXTEND RIP RAP UP DITCH BANK ON OFF-SIDE A MINIMUM OF 4 FEET.
2. USE WVDEP RIP RAP GRADATION AND FILTER BLANKET REQUIREMENTS PER SECTION 3.17 OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. A SUITABLE NON-WOVEN GEOTEXTILE FABRIC, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR FILTER BLANKET STONE UNDER THE RIPRAP.
4. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

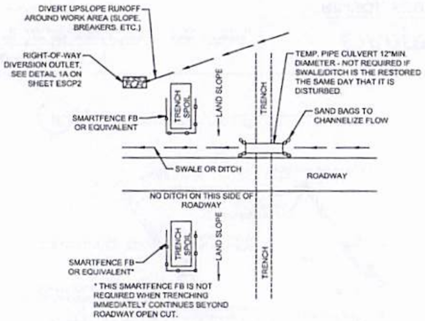
17 RIP RAP APRON
NTS



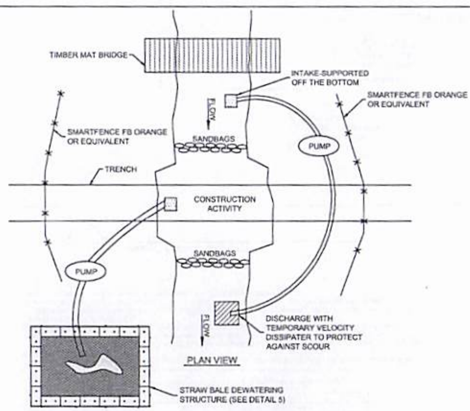
CONSTRUCTION SPECIFICATIONS
1. CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND PROPERLY GRADE IT.
2. PLACE THE 3 INCH CRUSHED ROCK TO MATCH FINISHED GRADE AT THE ROADWAY AND SMOOTH IT.
3. PROVIDE DRAINAGE WHERE NEEDED TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.
4. IT IS RECOMMENDED TO HAVE A STOCKPILE OF STONE ONSITE.

MAINTENANCE:
MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP-DRESSING WITH ADDITIONAL 3 INCH CRUSHED ROCK. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.
MAINTENANCE SHOULD BE PROVIDED DAILY, BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

18 STABILIZED CONSTRUCTION ENTRANCE
NTS

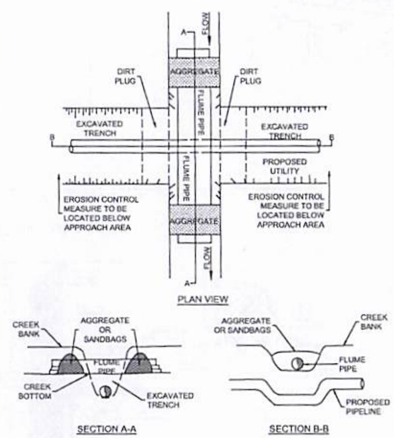


19 OPEN CUT ROAD CROSSING
NTS

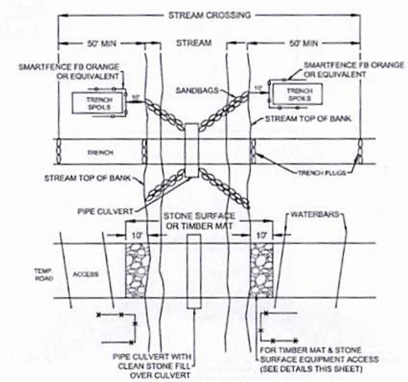


NOTES:
1. DEWATERING STRUCTURE SHOULD BE PLACED IN WELL VEGETATED STRIP.
2. TOP 6"-12" OF NATURAL STREAM SUBSTRATE SHOULD BE ISOLATED DURING IN-STREAM TRENCHING AND RESTORED UPON COMPLETION OF FINAL STREAM STABILIZATION.
3. ENVIRONMENTAL INSPECTOR MUST VERIFY DAM AND PUMP AROUND SETUP.
4. MUST BE A MINIMUM OF 5 FEET OF COVER FROM TOP OF PIPE TO NATURAL GROUND.
5. PIPE SAG SECTION SHOULD BE WELDED PRIOR TO TRENCHING ACTIVITY COMMENCES.
6. ACCUMULATION OF TRENCH WATER MUST BE PUMPED TO DEWATERING STRUCTURE.
7. IN-STREAM WORK MUST BE COMPLETED WITHIN 24 HOURS (HIGH WATER MARK TO HIGH WATER MARK)
8. STREAM BUFFER AREA MUST BE RESTORED WITHIN 72 HOURS.

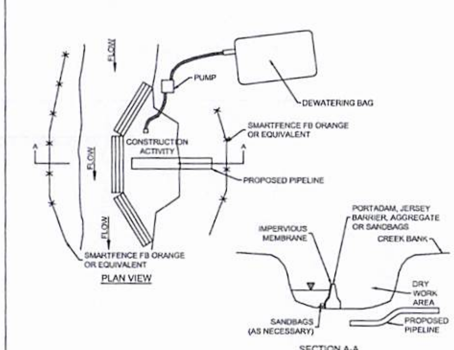
20 OPEN CUT STREAM CROSSING
NTS



21 FLUME PIPE CROSSING
NTS



22 FLUMED STREAM CROSSING WITH ACCESS ROAD
NTS



23 COFFERDAM CROSSING
NTS

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

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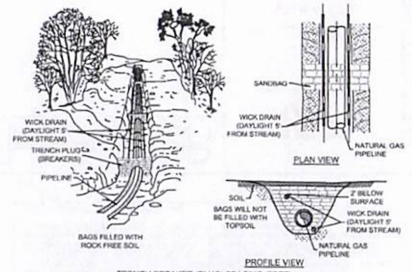
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 26 – ESCP6	
REVISION No.:	3		

LAYOUT TAB: ESCP6
CAD FILE: R:\050\050-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg
PLOT DATE/TIME: 11/9/2022 4:05 PM
USER: jared jenkins



TRENCH BREAKER (PLUG) SPACING (FEET)

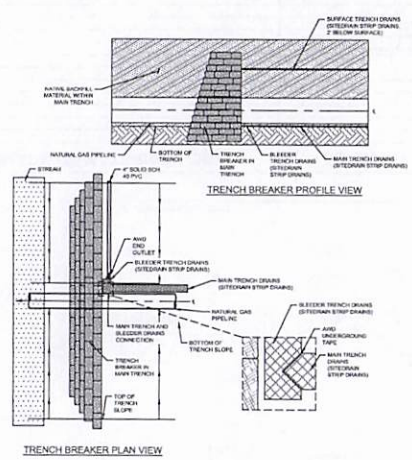
ALIGNMENT SLOPE %*	SPACING L (FT)	PLUG MATERIAL
< 5 %	1,000	** EARTH FILLED SACKS
5-15 %	500	** EARTH FILLED SACKS
15-25 %	300	** EARTH FILLED SACKS
25-35 %	200	** EARTH FILLED SACKS
35-100 %	100	** EARTH FILLED SACKS
>100 %	50	*** USE CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

* TRENCH BREAKERS (PLUGS) ARE REQUIRED AT ALL STREAM, RIVER, OR WATER-BODY CROSSINGS REGARDLESS OF TRENCH SLOPE.

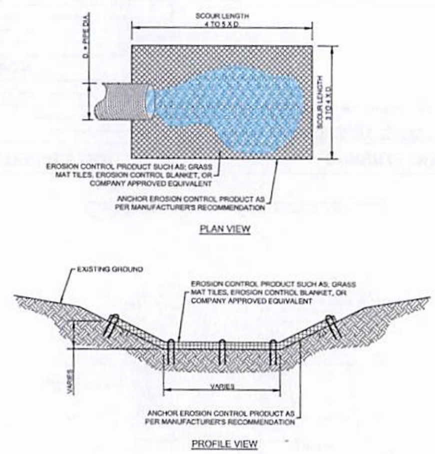
** TOP SOIL MAY NOT BE USED TO FILL SACKS. TRENCH BREAKERS (PLUGS) WITH CEMENT FILLED SACKS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER (PLUG) AREA.

*** TRENCH BREAKERS WITH CEMENT FILLED SACKS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER AREA.

11 PERMANENT TRENCH BREAKER
NTS



12 AMERICAN WICK DRAIN DETAIL
NTS



NOTES:

1) PREPARE SOIL BEFORE INSTALLING EROSION CONTROL PRODUCTS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.

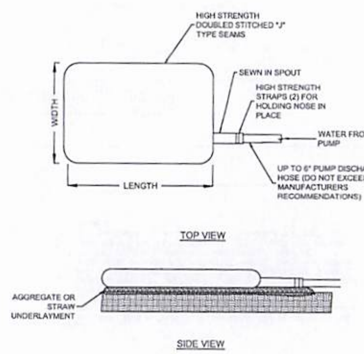
2) FOR CULVERT AND OUTFALL APPLICATIONS, SCOUR PROTECTION SHOULD EXTEND A MINIMUM WIDTH OF 3-4 TIMES THE PIPE DIAMETER AND A MINIMUM LENGTH OF 4-5 TIMES THE PIPE DIAMETER (SEE PLAN VIEW). WITH STEEPER CHANNEL GRADIENTS, THE LENGTH OF SCOUR PROTECTION MAY NEED TO BE EXTENDED.

3) PLACE STAPLES/ANCHORS IN THE APPROPRIATE PATTERN. IN SOFT OR HIGHLY ERODIBLE SOILS, PERCUSSION EARTH ANCHORS MAY BE REQUIRED.

4) TRENCH PLUG DRAIN OUTFALL TO DISCHARGE FLUSH WITH FINAL GRADE ELEVATION OR NO MORE THAN 12" OF OVERHANG.

(SEE MANUFACTURERS RECOMMENDATIONS FOR ADDITIONAL INSTALLATION INSTRUCTIONS).

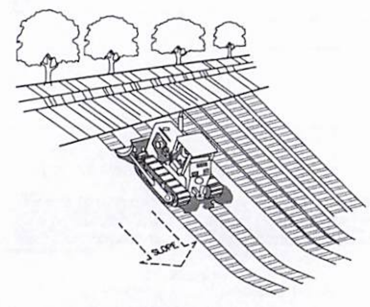
13 TRENCH PLUG DRAIN OUTFALL EROSION PROTECTION DETAIL
NTS



NOTES:

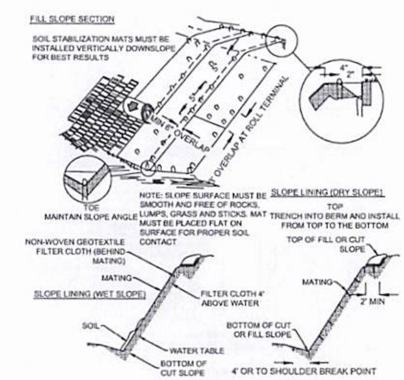
1. UTILIZE VEGETATED STRIP WHERE APPLICABLE.
2. MAXIMIZE DISTANCE BETWEEN LOCATION OF FILTER BAG AND AQUATIC FEATURE.
3. FILTER BAG MUST BE PLACED ON FLAT SURFACE.

14 FILTER BAG
NTS



TRACKING SLOPE IS DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. (NOTE: IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP) CARE SHOULD BE EXERCISED ON SOILS HAVING A HIGH CLAY CONTENT TO AVOID OVER-COMPACTION.

15 TRACKING
NTS



16 ROLLED EROSION CONTROL PRODUCTS
NTS

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

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Antero Midstream

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PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 25 – ESCP5	
REVISION No.:	3		

Temporary Stabilization Seeding		
March 15 – September 15	Annual Rye	250 – 350 lbs per acre
September 15 – March 15	Annual Winter Wheat	100 – 125 lbs per acre

29 TEMPORARY SEEDING CHART
NTS

Antero Midstream Default Pasture Mix (200 - 225 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	20%
Named Variety of Forage Tall Fescue (not Fawn)	20%
Climax Timothy	15%
Orchardgrass	10%
Birdsfoot Trefoil	10%
Medium Red Clover	5%
Ladino Clover	5%
Kentucky Bluegrass VNS	5%
Alsike Clover	5%
Alfalfa	5%
* All seed mixes require double inoculation	
Antero Midstream Default Wildlife Mix (150 - 175 LBS per Acre)	
Medium Red Clover	20%
Buckwheat	10%
Oats (Spring & Summer) or Wheat (Fall & Winter)	10%
Ladino White Clover	20%
Birdsfoot Trefoil	10%
Alfalfa	10%
Named Variety of Forage Perennial Ryegrass	10%
Annual Ryegrass	10%
* All seed mixes require double inoculation	
Antero Midstream General Contractor Mix (200 - 250 LBS per Acre)	
Named Variety of Forage Tall Fescue (not Fawn)	50%
Named Variety of Forage Perennial Ryegrass	20%
Annual Ryegrass	15%
Ladino Clover	5%
Alsike Clover	5%
Birdsfoot Trefoil	5%
* All seed mixes require double inoculation	

30 A PERMANENT SEEDING CHART
NTS

Alternative (Fescue-Free) Antero Midstream Default Pasture Mix (200 - 225 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	30%
Climax Timothy	20%
Orchardgrass	15%
Birdsfoot Trefoil	10%
Medium Red Clover	5%
Ladino Clover	5%
Kentucky Bluegrass VNS	5%
Alsike Clover	5%
Alfalfa	5%
* All seed mixes require double inoculation	
Alternative (Fescue-Free) Antero Midstream Default Wildlife Mix (200 - 250 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	40%
Annual Ryegrass	15%
Climax Timothy	20%
Orchardgrass	10%
Ladino Clover	5%
Alsike Clover	5%
Birdsfoot Trefoil	5%
* All seed mixes require double inoculation	

30 B PERMANENT SEEDING CHART (CONT.)
NTS

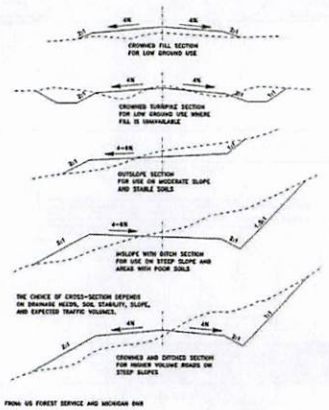
Lime
Pelletized
1.5 tons per acre

Fertilizer
10/20/20
200 lbs per acre

Straw Mulching
2 tons per acre

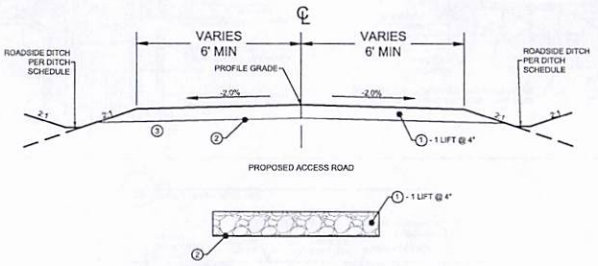
31 LIME, FERTILIZER, AND MULCH CHARTS
NTS

TYPES OF ROAD CROSS-SECTIONS



FROM US FOREST SERVICE AND MICHIGAN DNR

32 TYPES OF ROAD CROSS-SECTIONS
NTS



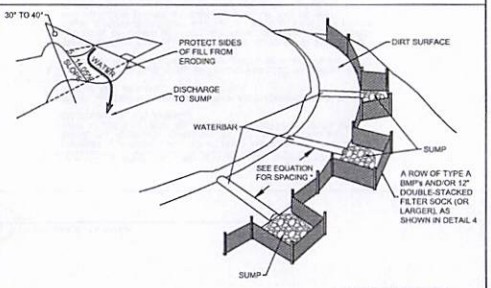
LEGEND

① 3" CLEAN AGGREAGTE (OR APPROVED EQUAL)
② GEOTEXTILE FABRIC
③ COMPACTED SUBGRADE (EXISTING GROUND)

NOTES

1. TIE TO EXISTING ROAD.
2. ALL DITCHES SHALL BE VEGETATED OR ROCK-LINED BASED ON DITCH SLOPE OR AS SHOWN ON THESE PLANS.
3. EXCAVATE A MINIMUM OF 1' INTO EXISTING ACCESS ROAD IN PROPOSED WIDENING AREAS.

33 ACCESS ROAD TYPICAL SECTION
NTS



* SPACING = 400/% GRADE + 75'

NOTES:

1. WATERBARS SHOULD BE INSTALLED ACROSS THE ENTIRE ROADWAY ON ALL SLOPES GREATER THAN 5%.
2. WATERBARS SHALL BE PLACED AT 5% TO 14.05% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.
3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO A SUMP. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE ROADWAY. SMARTFENCE FB OR EQUIVALENT SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBARS.
4. HAUL ROADS SHOULD CARRY LESS THAN 25 VEHICLES PER DAY.

MAINTENANCE:

1. WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
2. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL HAUL ROAD HAS ACHIEVED PERMANENT STABILIZATION.

34 HAUL ROAD DETAIL
NTS

THRASHER

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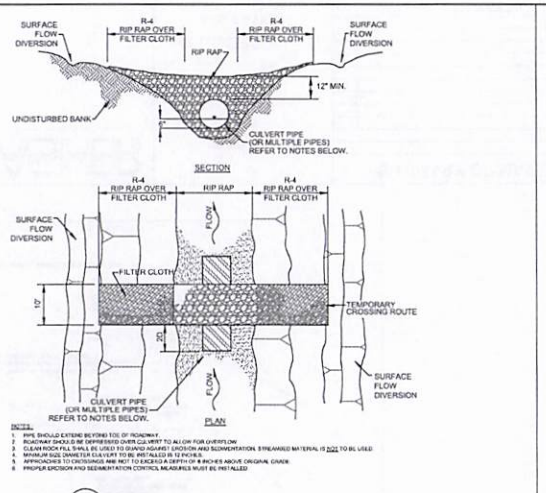
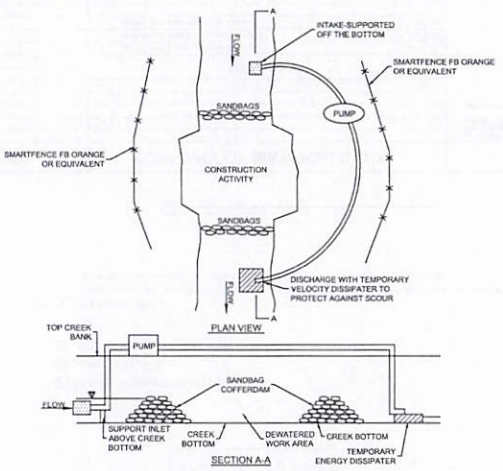
REVISION No.:	3		

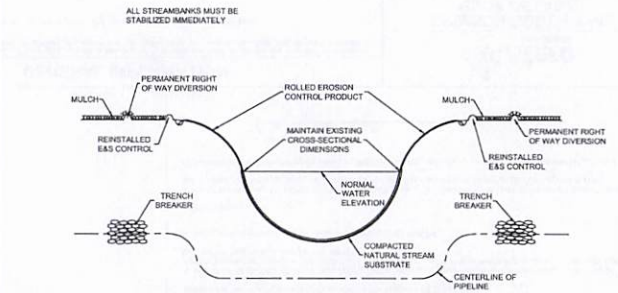
LAYOUT TAB: ESCP8
CAD FILE: R:\2560\2560-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins



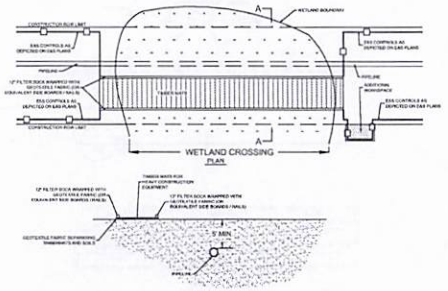
24 ROCK FLUME BRIDGE
NTS



25 DAM & PUMP AROUND
NTS



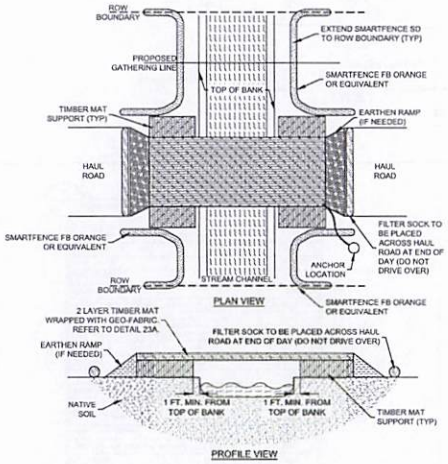
26 STREAM BANK STABILIZATION
NTS

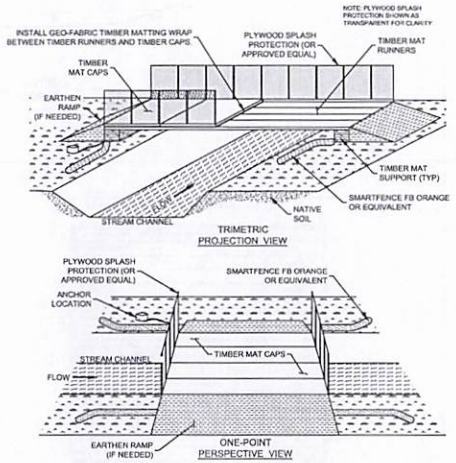


GENERAL CONSTRUCTION SEQUENCE NOTES

1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO EARTH DISTURBANCE.
2. SIGNIFICANT SHRUBBERY WILL BE INSTALLED AT THE EDGE OF THE ROW.
3. WORKING SIDE WILL BE STABILIZED WITH PRE-FABRICATED MATS, AS NEEDED TO PROVIDE A FIRM SURFACE FOR CONSTRUCTION EQUIPMENT. FOR ALL DELINEATED WETLAND AREAS, GEOTEXTILE SHALL BE PLACED UNDER THE MATS TO PREVENT MOVEMENT OR PUMPING OF THE SOIL THROUGH THE MATS.
4. WETLAND MATERIAL WILL BE STRIPPED, SEGREGATED, AND RESTORED UPON COMPLETION OF THE CROSSING.

27 TYPICAL EROSION AND SEDIMENT CONTROL FOR WETLAND CROSSINGS
NTS





28 TYPICAL EROSION AND SEDIMENT CONTROL FOR STREAM CROSSINGS
NTS

CONSTRUCTION SPECIFICATIONS AND GENERAL SPECIFICATIONS:

1. CROSSING ALIGNMENT SHALL BE AT RIGHT ANGLE TO THE STREAM. WHERE THE APPROACH CONDITIONS DICTATE, THE CROSSING MAY VARY 15 DEGREES FROM THE LINE DRAWN PERPENDICULAR TO THE CENTERLINE OF THE STREAM.
2. TIMBER MATTING RUNNERS SHALL BE PLACED PERPENDICULAR TO STREAM AND ADJACENT TO ONE ANOTHER.
3. TIMBER MATTING CAPS SHALL BE PLACED PARALLEL TO STREAM AND ADJACENT TO ONE ANOTHER FOR THE ENTIRE SPAN OF THE BRIDGE.
4. TIMBER MATTING CAPS SHALL BE WRAPPED UNDERNEATH AND ALONG THE SIDES OF TIMBER MAT WITH GEO-FABRIC MATERIAL OR APPROVED EQUAL. EXTEND GEO-FABRIC MATERIAL AT MINIMUM 5 FEET ON EITHER SIDE TO ALLOW ENOUGH MATERIAL TO WRAP UP AND TIE INTO PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) TO CONTROL SEDIMENT FROM ENTERING STREAM.
5. PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) SHALL BE SECURELY ATTACHED ALONG THE OUTER SIDES OF TIMBER MATTING TO CONTROL SEDIMENT COLLECTION AND ALLOW GEO-FABRIC MATERIAL TO BE STAPLED TO OUTSIDE OF PLYWOOD.
6. BRIDGE SHALL BE CONSTRUCTED MINIMUM 1 FOOT OUTSIDE TOP OF BANK.
7. BRIDGE SHALL BE SECURELY ANCHORED AT ONLY ONE END USING STEEL CABLE OR CHAIN. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL ANCHORS. ANCHORING SHALL BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
8. ALL AREAS DISTURBED DURING BRIDGE INSTALLATION SHALL BE STABILIZED IMMEDIATELY.
9. PLYWOOD SPLASH PROTECTION (OR APPROVED EQUAL) SHALL BE WELL MAINTAINED, CLEARING SEDIMENT WHEN NECESSARY.
10. FILTER SOCK SHALL BE PLACED ALONG BOTH ENTRANCES OF THE BRIDGE WHEN NOT IN USE FOR MORE THAN 24 HOURS AND/OR PRIOR TO PRECIPITATION EVENTS. DO NOT DRIVE OVER FILTER SOCK.

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

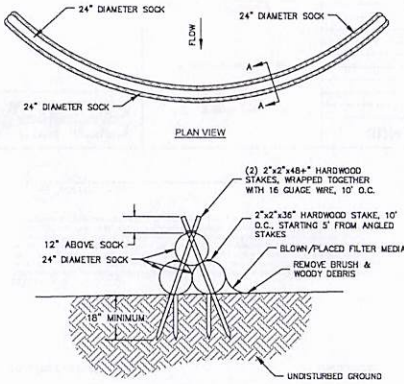
Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

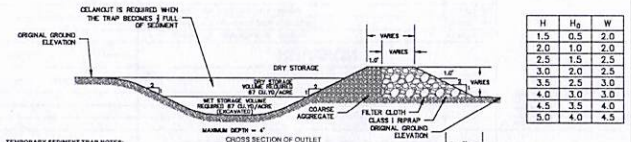
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET:	27 – ESCP7
REVISION No.:	3		

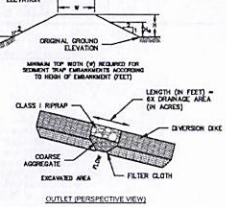
LAYOUT Tab: ESCP7
CAD FILE: R:\000\065-11838.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:55 PM USER: brad jenkins



42 TRIPLE STACK FILTER SOCK SEDIMENT TRAP
NTS



H	H_0	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5



TEMPORARY SEDIMENT TRAP NOTES:

1. THE DETAIL SHOWN IS A GENERAL SCHEMATIC. THE CONTRACTOR SHALL DESIGN AND SIZE EACH TRAP ACCORDING TO ITS GRADING PLAN.
2. SEDIMENT TRAPS SHALL BE USED IN AREA WHERE THE TOTAL CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES.
3. FILL MATERIAL FOR ANY SEDIMENT TRAP EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHOULD BE COMPACTED IN 6" LAYERS BY TRAVERSING WITH CONSTRUCTION EQUIPMENT.
4. ANY SEDIMENT TRAP EARTH EMBANKMENT SHALL BE SEEDED WITH TEMPORARY VEGETATION IMMEDIATELY AFTER INSTALLATION.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
6. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILIZED.
7. ALL CUT AND FILL SLOPES FORMING THE SEDIMENT TRAP SHALL BE 2:1 OR FLATTER.
8. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ OF THE VOLUME. SEDIMENT REMOVED FROM THE TRAP SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS.
9. THE STRUCTURE SHOULD BY CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT.
10. A RIPRAP SPILLWAY CHANNEL MAY BE NECESSARY IF A CONCENTRATED OUTLET FLOW IS ANTICIPATED.
11. FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

NOTES:
TEMPORARY SEDIMENT TRAPS ARE ESSENTIALLY SMALL SEDIMENT PONDS. THEY GIVE THE WATER A PLACE TO POOL AND SLOW DOWN THIS REDUCES THE CHANCES OF ADDITIONAL EROSION WHILE ALLOWING ANY SEDIMENT IN THE WATER TO SETTLE OUT. THE OUTLET IS DESIGNED OUT OF GRAVELS OF DIFFERENT DIMENSIONS WHICH CREATES A FILTER AS WELL.

43 TEMPORARY SEDIMENT TRAP
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

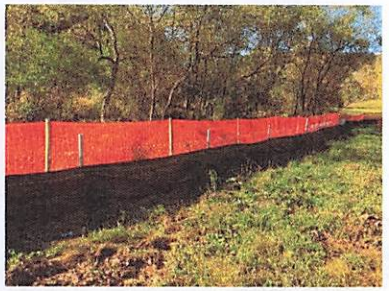
NOTES:
ON MOST LOCATIONS ANTERO WILL ALSO CONSTRUCT EROSION AND SEDIMENT (E&S) CONTROLS ABOVE AND BEYOND THE E&S CONTROLS LISTED ON THE PLAN SHEETS. THESE CONTROLS WILL BE CATEGORIZED AS PHASE I, PHASE II, AND PHASE III CONTROLS. THESE CONTROLS WILL BE INSTALLED TO BOTH PROVIDE EXTRA E&S PROTECTION, AND TO ELIMINATE THE CHANCES OF MATERIALS SUCH AS SOIL OR GRAVEL BEING PLACED IN A STREAM OR WETLAND. THE SITE PLANS AND DELINEATIONS ARE REVIEWED AND THESE CONTROLS ARE SPECIFIED IN ANTERO'S CONSTRUCTION RELEASE WHICH IS SENT OUT JUST PRIOR TO CONSTRUCTION BEGINNING. THE PHASE I, II, AND III CONTROLS WILL BE CONSTRUCTED AS FOLLOWS:

PHASE I:
THIS IS ESSENTIALLY ORANGE SAFETY FENCE LIKE SHOWN ABOVE. THIS MEASURE IS PUT IN PLACE TO LET CONTRACTORS KNOW THAT NO WORK IS TAKE PLACE BEYOND THIS POINT. THIS CONTROL IS TYPICALLY UTILIZED WHEN THERE IS A WETLAND OR STREAM LOCATED IN THE AREA BUT NOT WITHIN APPROXIMATELY 100 FEET OF THE DISTURBANCE.

44 A SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

PHASE II:
THIS CONTROL CONSISTS OF TYPICAL SILT FENCE, SUPER SILT FENCE, OR FILTER SOXX. THIS CONTROL WILL BE INSTALLED AS DESCRIBED IN THE PREVIOUS SECTIONS. THIS CONTROL WILL TYPICALLY BE USED WHEN WETLANDS OR STREAMS ARE LOCATED WITHIN 100 FEET OF THE DISTURBED AREA.

44 B SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



PHASE III:
THIS CONTROL CONSISTS OF SUPER SILT FENCE WITH ORANGE CONSTRUCTION FENCE ACTING AS THE VISIBLE PORTION OF THE BARRIER. THIS CONTROL IS USE TO PREVENT SOILS OR GRAVELS FROM ENTERING STREAMS OR WETLANDS DURING CONSTRUCTION. THE SUPER SILT FENCE CAN BE USED IN CONJUNCTION WITH OTHER E&S METHODS. THIS CONTROL IS USED IN AREAS WHERE STREAMS OR WETLANDS ARE WITHIN APPROXIMATELY 50 FEET OF THE DISTURBED AREA.

*NOTE THAT THE DISTANCES MENTIONED IN THE PHASE I, II, AND III CONTROLS ARE A GUIDELINE NOT A RULE FOR THE DECISION OF WHEN AND WHERE TO USE THESE CONTROLS.

44 C SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

DEFINITIONS:

RIP RAP - LOOSE STONE USED TO FORM A FOUNDATION FOR A BREAKWATER OR OTHER STRUCTURE. THIS STONE IS TYPICALLY 3 INCHES OR GREATER IN DIAMETER.

FILTER CLOTH - TYPICALLY TYPAR OR ANOTHER SUCH MATERIAL (USUALLY WOVEN) WHICH IS DESIGNED TO ALLOW WATER TO FLOW BUT RETAIN SEDIMENT.

AGGREGATE - TERM USED TO IDENTIFY ANY TYPE SOLID DENSE MATERIAL USED DURING CONSTRUCTION TYPICALLY GRAVELS, SANDS, AND STONES.

EMBANKMENT - A WALL OR BANK OF EARTH OR STONE.

CLASS 1 RIP RAP - TYPICAL RIP RAP WITH STONES OF A DIAMETER BETWEEN 6 AND 18 INCHES.

45 DEFINITIONS
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

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NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/1/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

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Antero Midstream

CRIMSON SOUTH SWL
ESCP DETAILS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 30 – ESCP10	
REVISION No.:	3		

LAYOUT TAB: ESCP10
CAD FILE: R:\050\050-11938.00-Antero Crimson SWL A11568\Drawing\PLANS\ESCP DETAIL SHEETS.dwg PLOT DATE/TIME: 11/9/2022 4:05 PM USER: Jared Jenkins

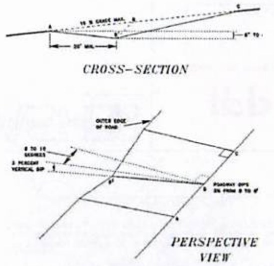
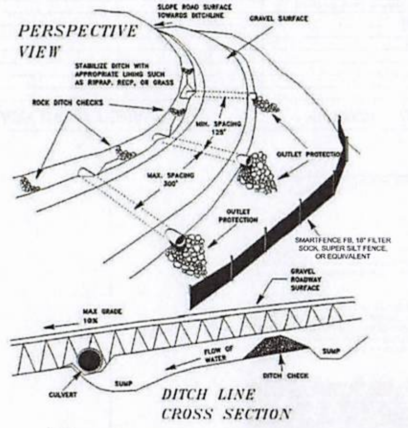
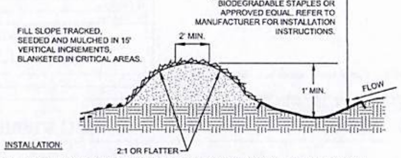


Table 3.15.1				
Drainage Area (Acres)	Average Slope of Watershed			
	2%	4%	8%	16%
	Culvert Size			
1-25	24	24	30	30
26-50	24	30	36	36
51-100	30	36	42	48
101-150	36	42	48	48
151-200	36	42	48	54
200-250	42	48	54	60
251-300	42	48	60	60
301-350	42	48	60	60
351-400	42	54	60	60
401-450	42	54	60	72
451-500	42	54	60	72
501-550	48	60	60	72
551-600	48	60	66	72
601-640	48	60	72	72

35 BROAD-BASE DIP
NTS



36 EROSION AND SEDIMENT CONTROL FOR ACCESS ROADS AND DRIVEWAYS
NTS



INSTALLATION:

1. WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDITIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE
2. REMOVE ALL STUMPS, ROOTS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
3. INSTALL DIVERSION AND COMPACT AS SHOWN IN DETAIL INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
4. SCARIFY, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM
5. INSTALL EROSION CONTROL MAT NORTH AMERICAN GREEN C125N PER MANUFACTURER'S RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER FROM UNDERMINING OR DAMAGING CHANNEL LINER.

NOTES:

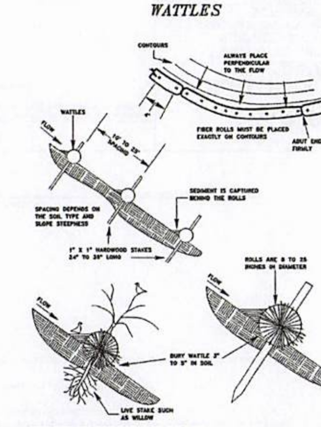
1. TEMPORARY BERMS SHALL BE PLACED, MAINTAINED, AND ADJUSTED CONTINUOUSLY UNTIL 90% VEGETATIVE GROWTH IS ESTABLISHED ON THE EXTERIOR SLOPES WITH PERMANENT STORM DRAINAGE FACILITIES FUNCTIONING.
2. BERMS SHALL OUTLET TO SLOPE PIPES, CHANNELS, OR OTHER APPROVED MEANS OF CONVEYING RUNOFF TO A SEDIMENT TRAP, SEDIMENT BASIN, OR COLLECTOR CHANNEL.
3. CHANNEL BEHIND BERM SHALL HAVE POSITIVE GRADE TO OUTLET AND AN APPROPRIATE PROTECTIVE LINNING.
4. BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
5. AN ACCEPTABLE ALTERNATIVE TO TOP-OF-SLOPE BERM IS TO CONTINUOUSLY GRADE THE TOP OF FILL TO DIRECT RUNOFF AWAY FROM THE FILLSLOPE TO A COLLECTOR CHANNEL, SEDIMENT TRAP, OR SEDIMENT BASIN.

MAINTENANCE:

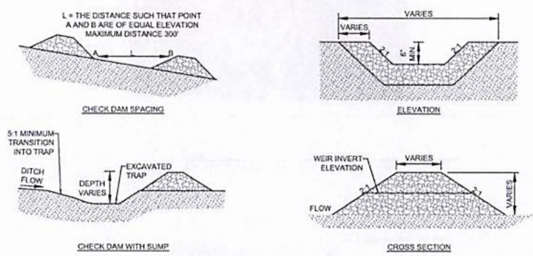
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS. REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

37 TEMPORARY DIVERSION BERM FOR OFFSITE WATER
NTS

FIGURE 3.05.1



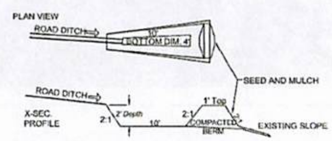
38 WATTLES
NTS



NOTES:

DITCH CHECKS WILL BE CONSTRUCTED IN CHANNELS TO MINIMIZE EROSION. THE CONSTRUCTION OF THE DITCH CHECK WILL FOLLOW THE GUIDELINES ABOVE. DITCH CHECKS WILL BE CONSTRUCTED SO THAT THE ELEVATION OF THE TOP OF THE DOWNSTREAM DITCH CHECK IS EQUAL TO THE ELEVATION OF THE BASE OF THE DITCH CHECK ABOVE. THIS CREATES A SITUATION WHERE THE CHANNEL HAS NO CHANNELIZED FLOW PER SAY, THE WATER FLOWING DOWN THE DITCH WILL CASCADE FROM THE POOL CREATED BY ONE DITCH CHECK INTO THE POOL CREATED BY THE DOWNSTREAM DITCH CHECK THIS DISSIPATES ENERGY AND SLOWS THE WATER FLOW REDUCING EROSION AND ALLOWING ANY SEDIMENT IN THE DRAINAGE TO FALL OUT.

39 ROCK CHECK DAM
NTS



LEVEL SPREADER DETAIL

N.T.S.

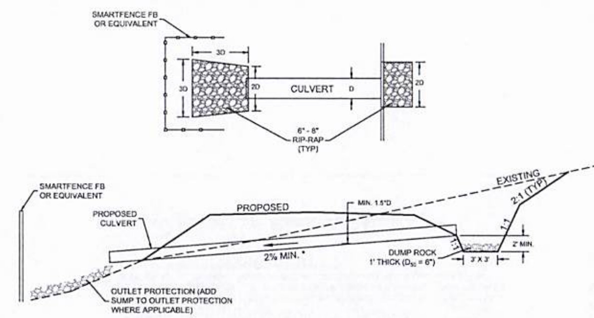
NOTE: TO BE PLACED AT THE ENDS OF DITCHES CALLING FOR LEVEL SPREADERS LEVEL SPREADERS WILL BE CUT INTO THE CONTOUR OF THE EXISTING SLOPE.

NOTES:

LEVEL SPREADER TO BE CONSTRUCTED IN AREAS WHERE A CULVERT OR CHANNEL MUST EMPTY ONTO GROUND WITH NO ASSOCIATES CHANNELIZED FLOW. THE PURPOSE OF THE LEVEL SPREADER IS TO DISSIPATE ENERGY AND SPREAD THE FLOW OUT OVER A SIGNIFICANT AREA. THIS WILL TAKE A CHANNELIZED FLOW AND ESSENTIALLY CONVERT IT BACK TO A SHEET FLOW OVER THE GROUND SURFACE. THE SHEET FLOW WILL HAVE LESS CHANCE FOR EROSION CONSIDERING THE LOWER VELOCITIES AND FLOW VOLUMES IN ANY PARTICULAR AREA. THEY MAY BE CONSTRUCTED MUCH LIKE A SUMP WHERE THE CHANNEL OR CULVERT EMPTIES INTO THE SUMP AND THEN OVERTOPS THE BERMED AREA, BUT THEY MAY OFTEN CONTAIN GRAVEL IN THE SUMPED AREA. THEY WILL ALLOWS BE CONSTRUCTED ALONG THE GROUND CONTOUR.

40 LEVEL SPREADER
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



NOTES:
1. 2% MINIMUM SLOPE EXCEPT WHERE NOTED ON PLANS.
* CULVERTS IN STREAMS SHALL BE LAID AT 0% AND COUNTERSUNK.

INLET AND OUTLET PROTECTION IS ESSENTIALLY GRAVELS AND/OR RIP RAP PLACED AT BOTH THE INLET AND OUTLET SIDES OF CULVERTS. THE GRAVELS WILL HELP TO SLOW THE FLOW OF WATER, AND DISSIPATE ENERGY. THIS WILL IN TURN DECREASE THE CHANCES OF EROSION AND ALSO ALLOW ANY SEDIMENT IN THE WATER TO SETTLE OUT.

41 TYPICAL CULVERT & CULVERT INLET/OUTLET PROTECTION
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

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REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL ESCP DETAILS

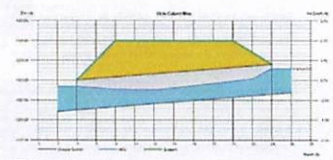
PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 29 – ESCP9	
REVISION No.:	3		

Culvert Report

18-in Culvert Max

Invert Elev Dn (ft)	= 1021.50	**Calculations**	
Pipe Length (ft)	= 20.00	Qmin (cfs)	= 5.11
Slope (%)	= 4.00	Qmax (cfs)	= 5.11
Invert Elev Up (ft)	= 1022.30	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 5.11
No. Barrels	= 1	Qpipe (cfs)	= 5.11
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Culvert	Veloc Dn (ft/s)	= 3.41
Culvert Entrance	= Smooth tapered inlet throat	Veloc Up (ft/s)	= 4.81
Coeff. K,M,c,Y,k	= 0.534, 0.555, 0.0196, 0.9, 0.2	HGL Dn (ft)	= 1022.69
		HGL Up (ft)	= 1023.17
Embankment		Hw Elev (ft)	= 1023.59
Top Elevation (ft)	= 1025.00	Hw/D (ft)	= 0.86
Top Width (ft)	= 12.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 1.00		



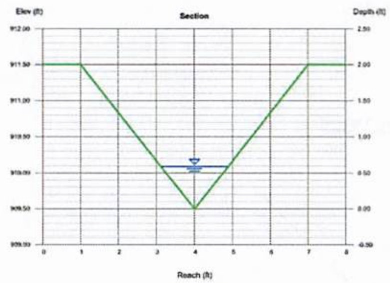
NOTES
1. CROSS-DRAINAGE CULVERTS ARE SPACED APART AT LEAST 125' AND NO MORE THAN 300'.
2. CULVERT SPACING = 400/PERCENT GRADE + 75'.
3. OUTLET PROTECTION MUST BE INSTALLED AT EACH CULVERT.

TYPICAL 18" CULVERT
NTS

Channel Report

Ditch Max

Triangular		**Highlighted**	
Side Slopes (z:1)	= 1.50, 1.50	Depth (ft)	= 0.59
Total Depth (ft)	= 2.00	Q (cfs)	= 5.090
		Area (sqft)	= 0.52
Invert Elev (ft)	= 909.50	Velocity (ft/s)	= 10.90
Slope (%)	= 12.00	Wetted Perim (ft)	= 2.13
N-Value	= 0.018	Crit Depth, Yc (ft)	= 0.98
		Top Width (ft)	= 1.77
Calculations		EGL (ft)	= 2.44
Compute by:	Known Q		
Known Q (cfs)	= 5.09		



TYPICAL DITCH
NTS

THRASHER

IFP
ISSUED FOR PERMITTING
DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

GENERAL INFORMATION

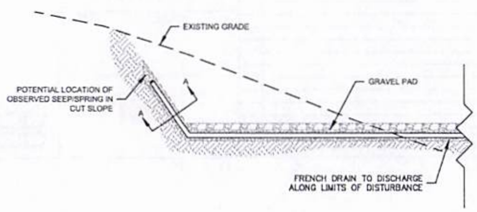
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAOP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. CULVERT AND DITCH DESIGNS ARE BASED ON AVAILABLE MAPPING AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
3. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

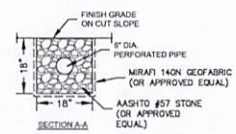
Antero Midstream

CRIMSON SOUTH SWL CULVERT & DITCH REPORTS

PROPOSED 18" HDPE SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 32 - CULV1	
REVISION No.:	3		

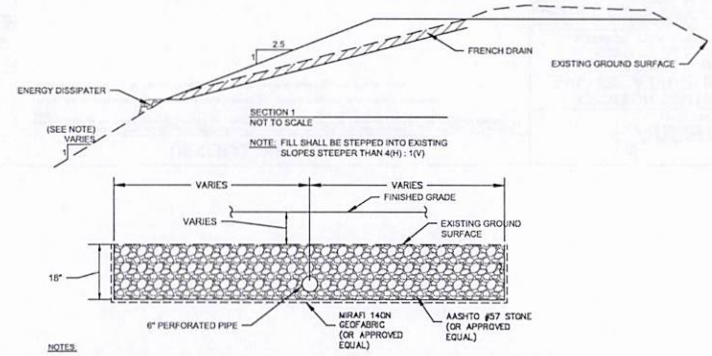




NOTE:

IF EVIDENCE OF A SEEP/SPRING IN A CUT SLOPE IS OBSERVED, THE CONTRACTOR SHOULD INSTALL A FRENCH DRAIN PER DETAIL 36 ABOVE.

46 FRENCH DRAIN AT OBSERVED SEEP/SPRING IN CUT SLOPES
NTS



NOTES:

1. WHERE SPRINGS OR SEEPS ARE ENCOUNTERED DURING CONSTRUCTION, DRAINABLE FILL AND PERFORATED PIPES (FRENCH DRAINS) SHOULD BE INSTALLED TO PROVIDE A DRAINAGE PATH FOR SEEPAGE FROM THE EXISTING SLOPE.

2. THE FRENCH DRAIN SHOULD CONSIST OF A 6 INCH DIAMETER PERFORATED PIPE SURROUNDED BY DRAINABLE FILL, INSTALLED IN AN 18 INCH DEEP TRENCH ALONG THE EXISTING DRAINAGE FEATURE OR SEEP. PRIOR TO DRAINABLE FILL PLACEMENT, THE TRENCH SHOULD BE LINED WITH A LAYER OF GEOFABRIC SUCH AS MIRAFI 140N, OR APPROVED EQUAL, WITH SUFFICIENT OVERLAP TO PROVIDE AN ENVELOP AROUND THE PIPE TRENCH TO PREVENT THE MIGRATION OF FINES INTO THE FRENCH DRAIN.

3. THE FRENCH DRAIN SHOULD DAYLIGHT BEYOND THE TOE OR SIDE OF THE SLOPE AND EXTEND UP TO THE CREST OF THE SLOPE TO FACILITATE DRAINAGE THROUGH THE FILL SECTION. THE AS-BUILT WIDTH OF THE FRENCH DRAIN SHOULD BE A FUNCTION OF THE WIDTH OF THE SPRING, SEEP OR DRAINAGE FEATURE OBSERVED DURING CONSTRUCTION.

4.THE FRENCH DRAIN SHOULD BE CONSTRUCTED TO SPAN THE ENTIRE WIDTH OF THE OBSERVED SPRING OR SEEP.

47 FRENCH DRAIN AND DRAINABLE FILL SECTION AT OBSERVED SEEP/SPRING OR EXISTING DRAINAGE FEATURE LOCATION
NTS

Typical Polymer Stabilized Fiber Matrix Application Rates

Maximum Rainfall of ≤ 20"							
SLOPE	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1
Soil Stabilizer (gals/acre)	4	5	6	7	8	9	10
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000

Maximum Rainfall of > 20" and for Site Winterization			
SLOPE	≤5:1	4:1	≥3:1
Soil Stabilizer (gals/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

NOTES:

A BONDED FIBER MATRIX (BMF) IS AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BMFs MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3H:1V THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAT NEED AS MUCH AS 4,000 LB/ACRE.

BFMs SHOULD ONLY BE USED WHEN NO RAIN IS FORECASTED FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE TACKIFIER SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BFMs SHOULD NOT BE APPLIED BETWEEN SEPTEMBER 30 AND APRIL 1.

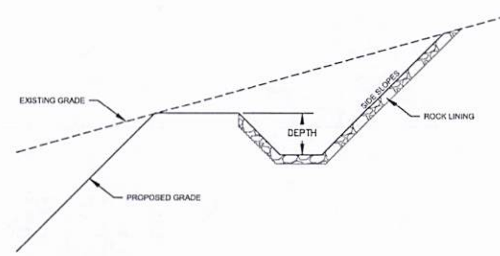
A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERTY. PSFMs MAKE USE OF A LINEAR SOIL STABILIZING TACKIFIER THAT WORKS DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 99% EFFECTIVE.

NOTES:

UNLIKE ROLLED BLANKETS, THERE IS NO NEED TO SMOOTH THE SLOPE PRIOR TO APPLICATION OF HYDRAULICALLY APPLIED BLANKETS. IN FACT SOME ROUGHENING OF THE SURFACE, EITHER NATURAL OR MECHANICALLY INDUCED, IS PREFERABLE. HOWEVER, LARGE ROCKS, THOSE > 9 INCHES, AND EXISTING RILLS SHOULD BE REMOVED PRIOR TO APPLICATION. TRACKING OR GROOVING OF SLOPES SHOULD BE CONSIDERED TO SLOW WATER FLOWS DURING A STORM EVENT. SLOPE INTERRUPTION DEVICES SUCH AS STAIR STEP GRADING OR BENCHING SHOULD BE APPLIED PRIOR TO THE APPLICATION. MIXING AND APPLICATION RATES SHOULD FOLLOW MANUFACTURER'S RECOMMENDATIONS.

HYDRAULICALLY APPLIED BLANKETS ARE TYPICALLY APPLIED IN TWO STAGES. UNLESS SPECIFICALLY RECOMMENDED TO BE APPLIED IN ONE APPLICATION BY THE MANUFACTURER, THE SEED MIXTURE AND SOIL AMENDMENTS SHOULD BE APPLIED FIRST. IF THE SEED IS APPLIED AT THE SAME TIME AS THE HYDRAULICALLY APPLIED BLANKET, THE BONDED FIBERS MAY KEEP THE SEED FROM MAKING SUFFICIENT CONTACT WITH THE SOIL TO GERMINATE. AFTER THE SEED MIXTURE IS APPLIED, THE BFM, FGM, OR PSFM SHOULD BE SPRAYED OVER THE AREA AT THE REQUIRED APPLICATION RATE. (SEE ABOVE TABLES)

48 BONDED FIBER MATRIX (HYDROMULCH)
NTS



NOTE:

DRAINAGE CHANNEL DIMENSIONS AND LINING WILL BE DETERMINED BY ENGINEER AS APPLICABLE.

49 TYPICAL ROCK LINED CHANNEL
NTS

THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 11/09/2022
AFE # A11568

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	10/28/22	JDJ
2	REVISED PER COMMENTS FROM KLEINFELDER	11/2/22	JDJ
3	REVISED PER COMMENTS FROM ANTERO	11/9/22	JDJ

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2. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero Midstream

CRIMSON SOUTH SWL
ESCP DETAILS

PROPOSED 18" HDPE
SURFACE WATER LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY:	JDJ (TTG)	DATE:	11/9/2022
CHECKED BY:	TTG (TTG)	AFE No.:	A11568
SCALE:	AS SHOWN	SHEET: 31 – ESCP11	
REVISION No.:	3		

LAYOUT TAB: ESCP11
PLOT DATE/TIME: 11/9/2022 4:05 PM
USER: Jared Jenkins

KLEINFELDER
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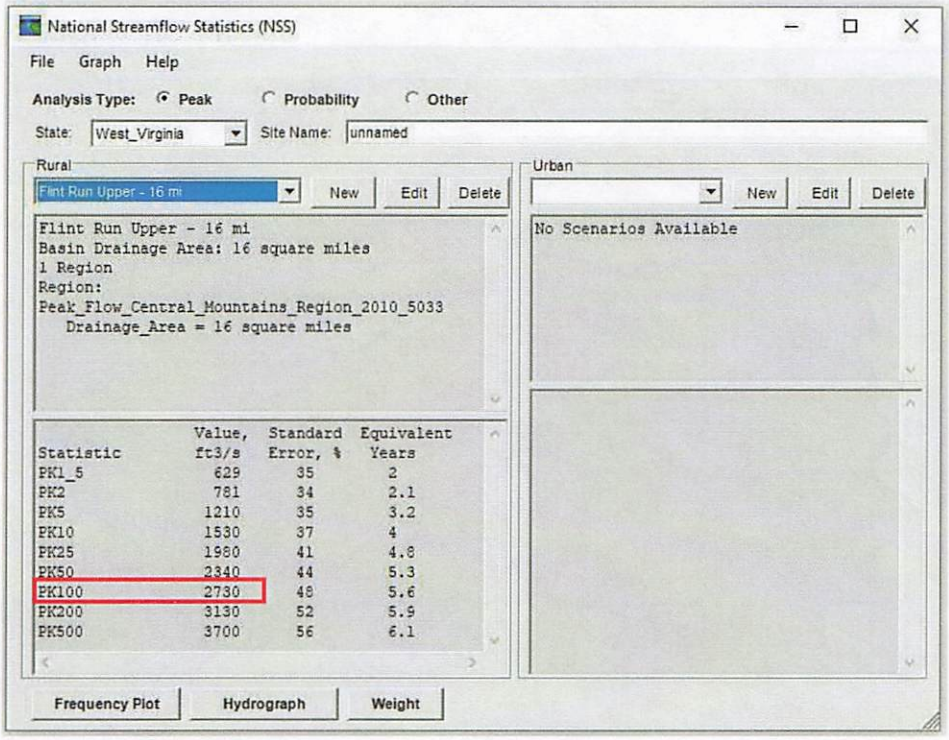
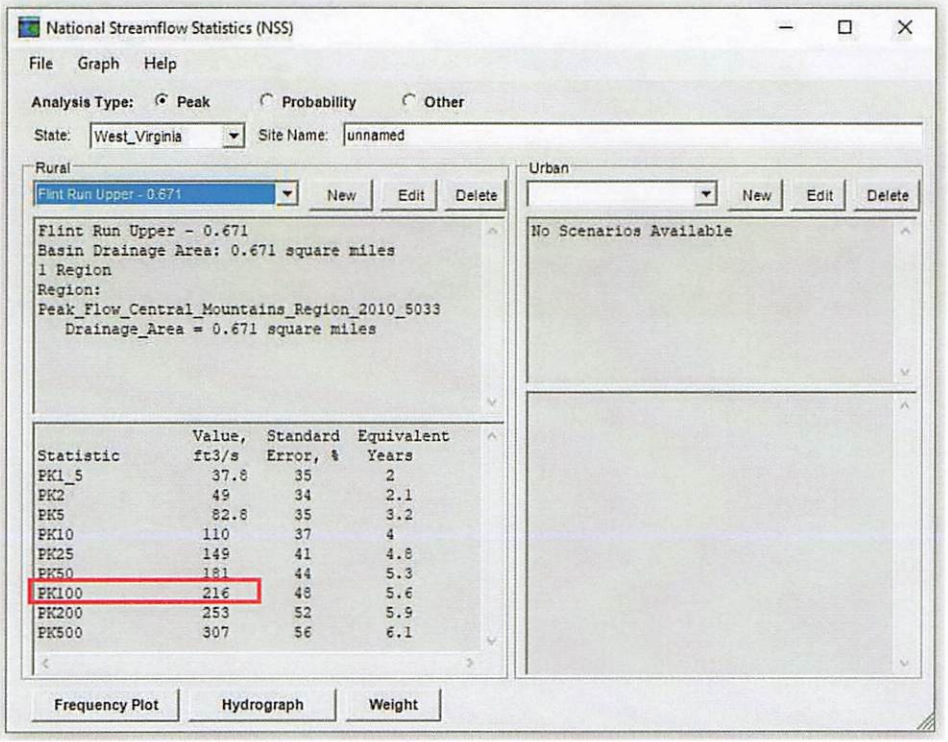
APPENDIX C
National Streamflow Statistics – Drainage Area

Upper Flint Run = 16.671 sq. mi.





Legend | Basins | Layers | Basemaps

Input Coordinate

examples:
38 15 30.1, -81 25 15.2 (lat, lon)
38.123456, -81.123456 (lat, lon)
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

zoom to point

Go

7Q10 Query Results

Stream Name	*Flint Run*	
Stream Code	*OMN-13-CH-16*	
WV Code	*WVOMI-30-H*	
Drainage Area	*16.671*	*sq mi*

Exceptions and Warnings

Regulated Flow	*N*
Regulated Flow Info	*NA*
Known Losing Stream	*N*
Potential Karst Influence	*N*
Potential Non-Perennial	*N*

Gage-based Estimates

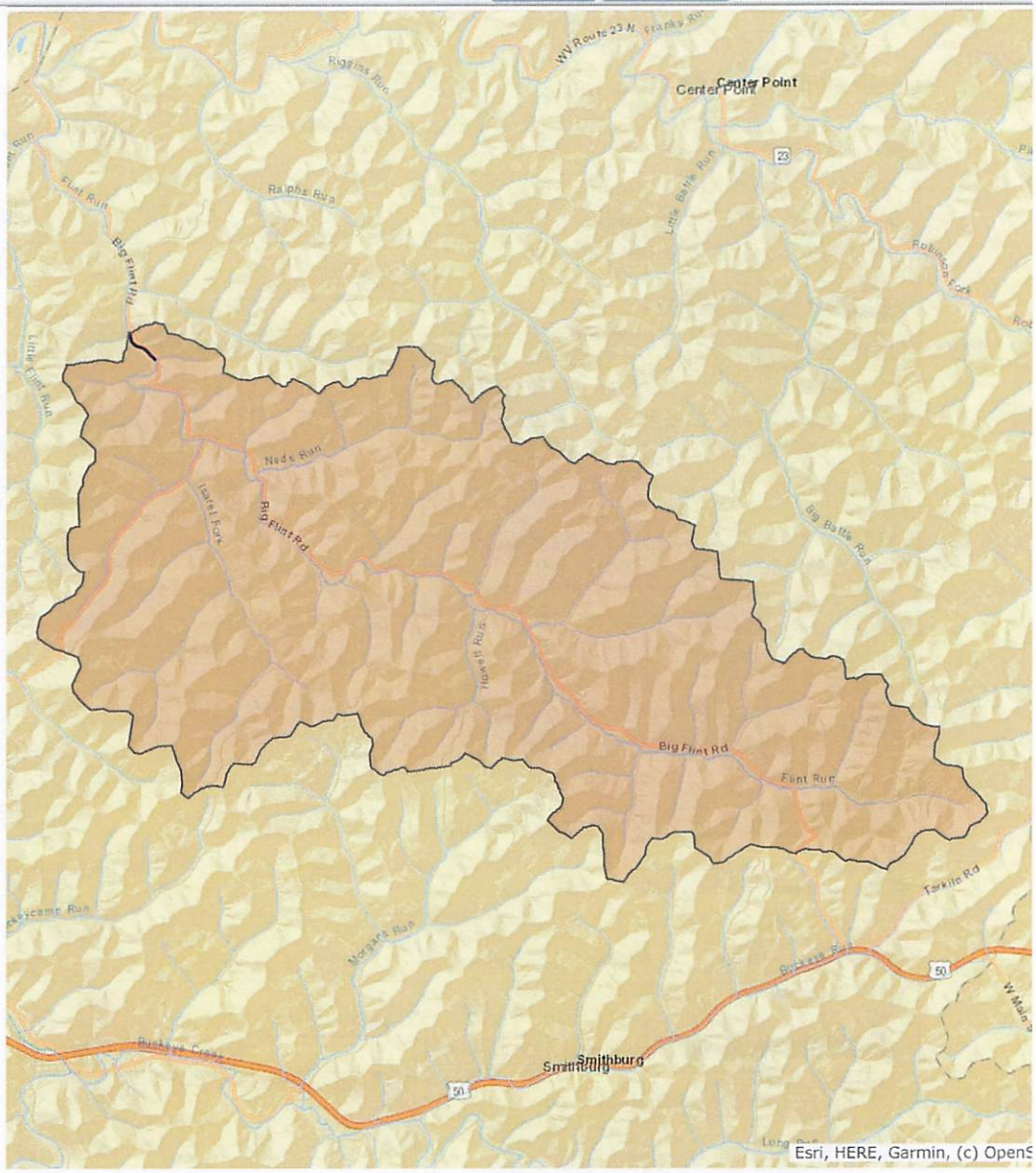
Method	
Upstream Gage	
Downstream Gage	
Annual 7Q10	*cfs*
Spring 7Q10	*cfs*
Summer 7Q10	*cfs*
Fall 7Q10	*cfs*
Winter 7Q10	*cfs*

Regional Estimates

Annual 7Q10	*0.010*	*cfs*
Spring 7Q10	*0.214*	*cfs*
Summer 7Q10	*0.010*	*cfs*
Fall 7Q10	*0.050*	*cfs*
Winter 7Q10	*1.539*	*cfs*
Spring D50	*7.801*	*cfs*
Summer D50	*0.774*	*cfs*
Fall D50	*3.404*	*cfs*
Winter D50	*19.315*	*cfs*
D75	*1.154*	*cfs*
Harmonic Mean	*0.457*	*cfs*

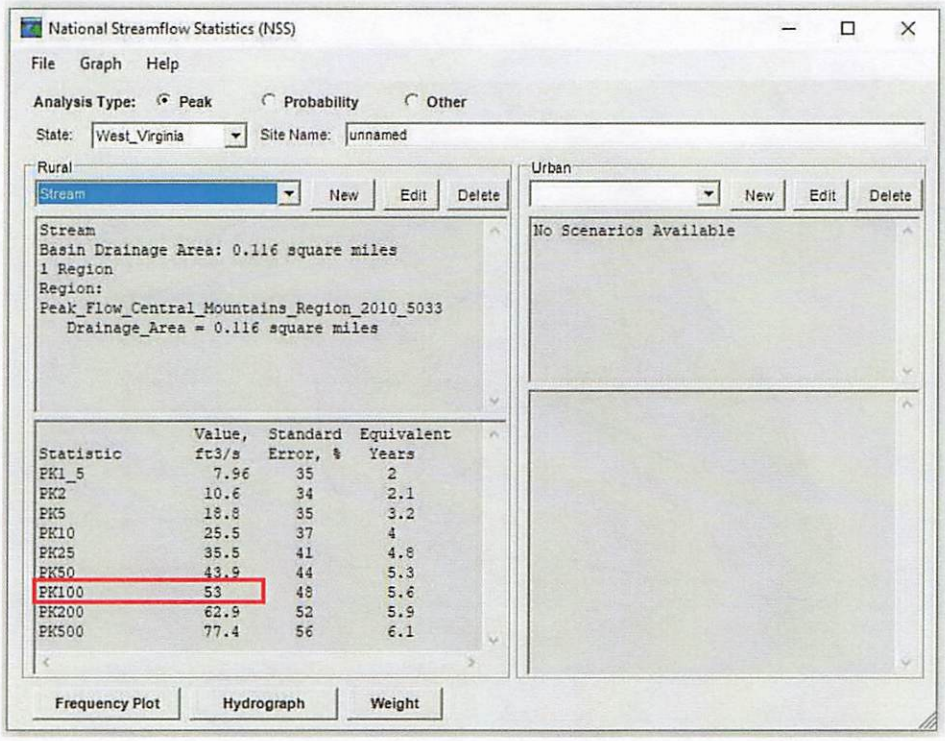
Guidance:
This stream is not proximate to a stream gage. Use the regional estimate.

flow calculation methods



2k
1mi

Stream = 0.116 sq. mi.



Legend | Basins | Layers | Basemaps

Input Coordinate

examples:
38 15 30.1, -81 25 15.2 (lat, lon)
38.123456, -81.123456 (lat, lon)
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

zoom to point

Go

7Q10 Query Results

Stream Name	*UNT/Flint Run RM 2.59*	
Stream Code	*OMN-13-CH-16-F*	
WV Code		
Drainage Area	*0.116*	*sq mi*

Exceptions and Warnings

Regulated Flow	*N*
Regulated Flow Info	*NA*
Known Losing Stream	*N*
Potential Karst Influence	*N*
Potential Non-Perennial	*Y*

Gage-based Estimates

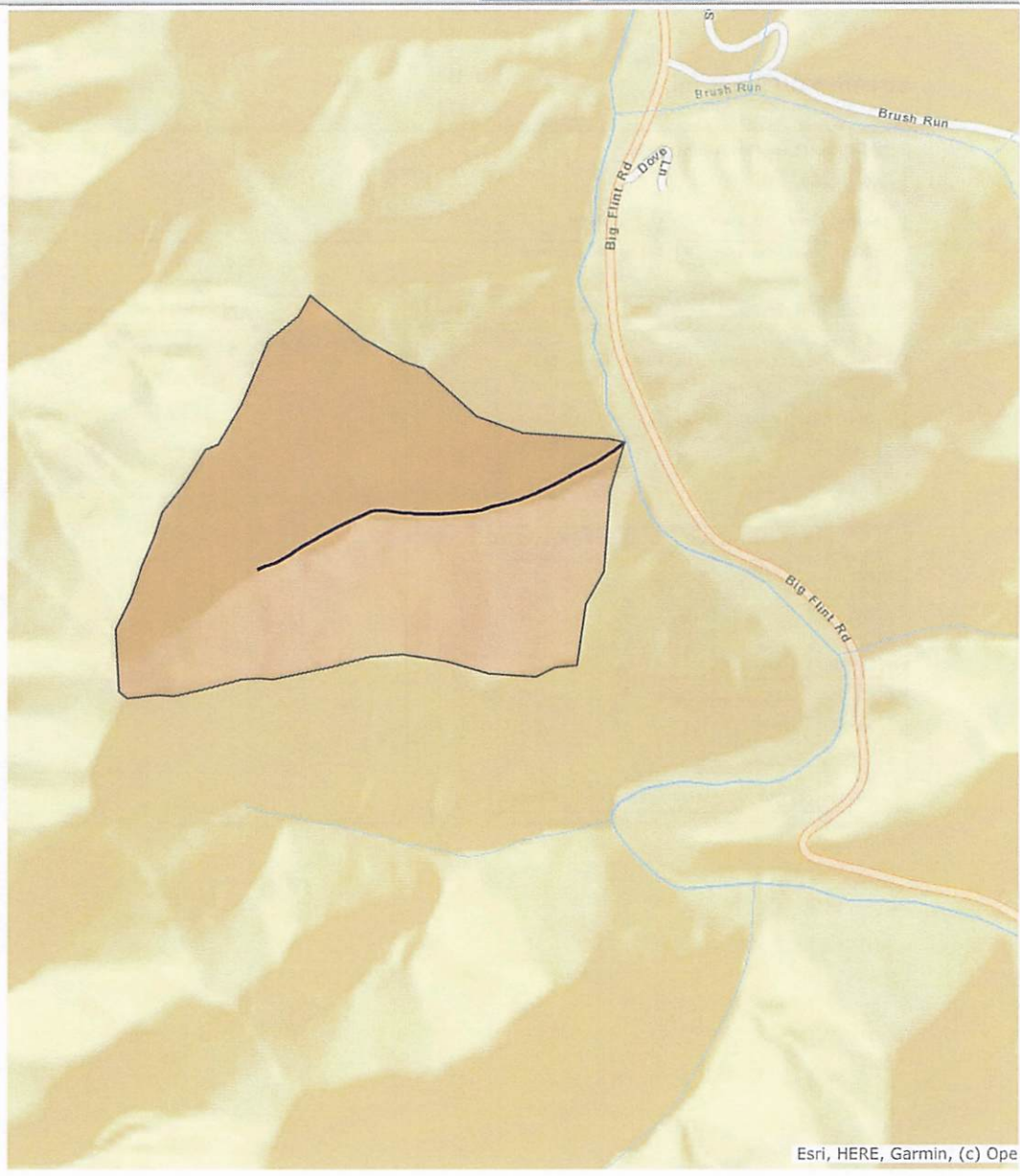
Method		
Upstream Gage		
Downstream Gage		
Annual 7Q10		*cfs*
Spring 7Q10		*cfs*
Summer 7Q10		*cfs*
Fall 7Q10		*cfs*
Winter 7Q10		*cfs*

Regional Estimates

Annual 7Q10	*0.000*	*cfs*
Spring 7Q10	*0.001*	*cfs*
Summer 7Q10	*0.000*	*cfs*
Fall 7Q10	*0.000*	*cfs*
Winter 7Q10	*0.006*	*cfs*
Spring D50	*0.036*	*cfs*
Summer D50	*0.001*	*cfs*
Fall D50	*0.011*	*cfs*
Winter D50	*0.089*	*cfs*
D75	*0.003*	*cfs*
Harmonic Mean	*0.001*	*cfs*

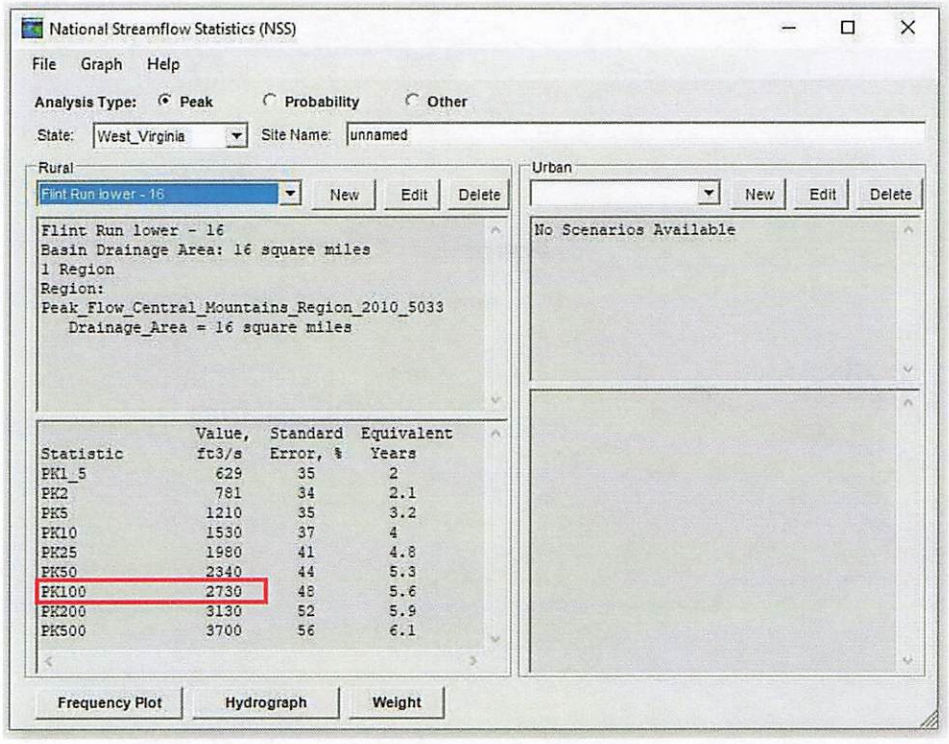
Guidance:
This stream is not proximate to a stream gage.
Use the regional estimate.

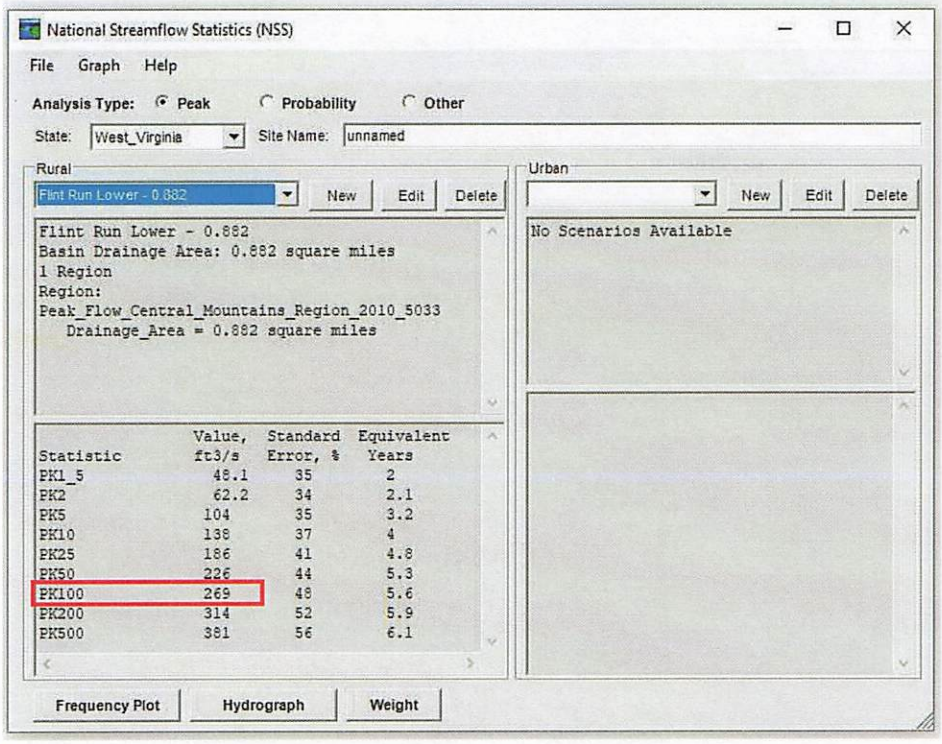
flow calculation methods



200m
600ft

Lower Flint Run = 16.882 sq.mi.





Legend | Basins | Layers | Basemaps

Input Coordinate

examples:
38 15 30.1, -81 25 15.2 (lat, lon)
38.123456, -81.123456 (lat, lon)
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

☑ zoom to point

Go

7Q10 Query Results

Stream Name	*Flint Run*
Stream Code	*OMN-13-CH-16*
WV Code	*WVOMI-30-H*
Drainage Area	*16.882 sq mi*

Exceptions and Warnings

Regulated Flow	*N*
Regulated Flow Info	*NA*
Known Losing Stream	*N*
Potential Karst Influence	*N*
Potential Non-Perennial	*N*

Gage-based Estimates

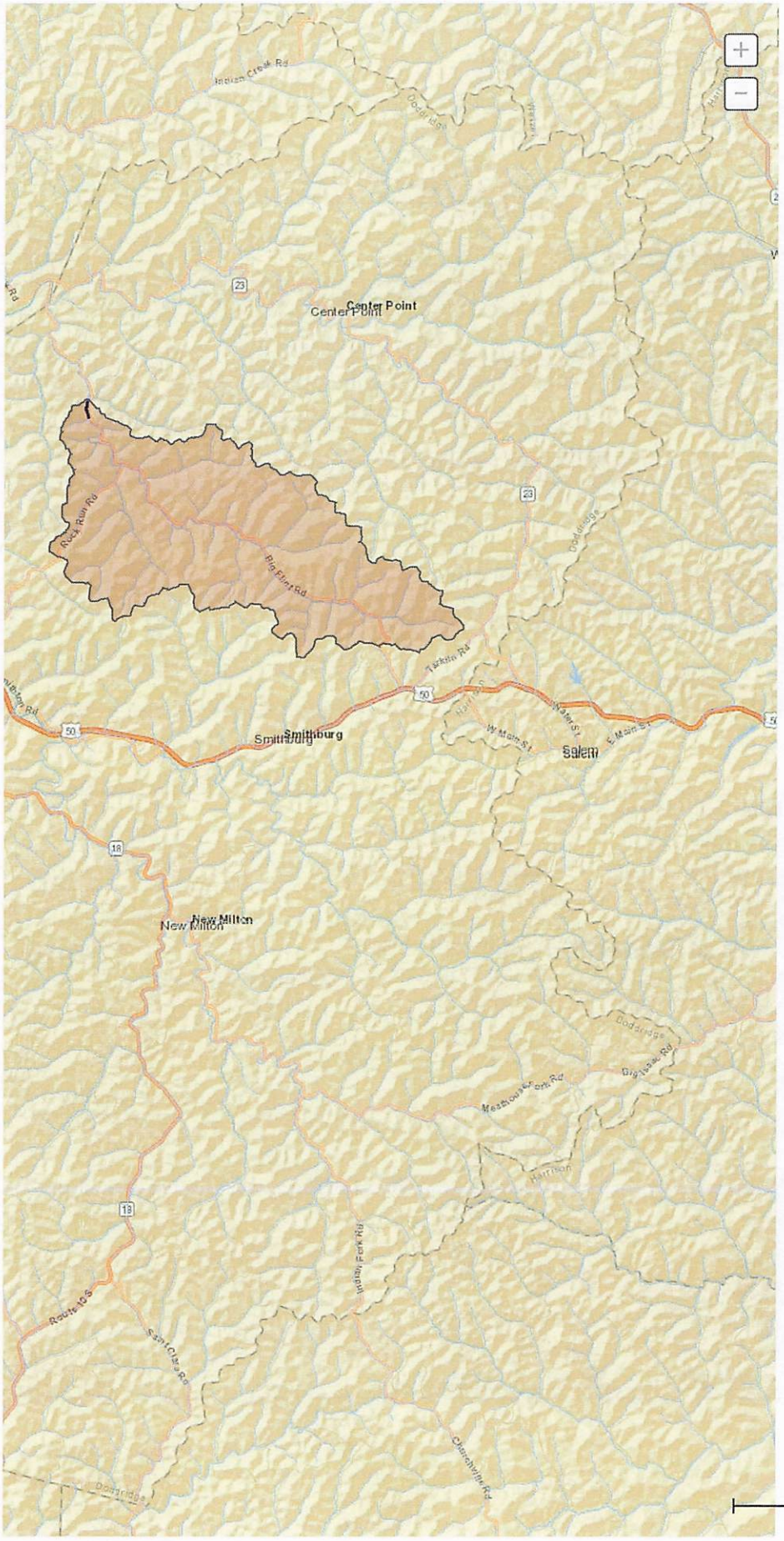
Method	
Upstream Gage	
Downstream Gage	
Annual 7Q10	*cfs*
Spring 7Q10	*cfs*
Summer 7Q10	*cfs*
Fall 7Q10	*cfs*
Winter 7Q10	*cfs*

Regional Estimates

Annual 7Q10	*0.010*	*cfs*
Spring 7Q10	*0.217*	*cfs*
Summer 7Q10	*0.010*	*cfs*
Fall 7Q10	*0.051*	*cfs*
Winter 7Q10	*1.560*	*cfs*
Spring D50	*7.905*	*cfs*
Summer D50	*0.786*	*cfs*
Fall D50	*3.452*	*cfs*
Winter D50	*19.576*	*cfs*
D75	*1.171*	*cfs*
Harmonic Mean	*0.464*	*cfs*

Guidance:
This stream is not proximate to a stream gage.
Use the regional estimate.

flow calculation methods



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APPENDIX D
Comparison for Calculated Flows - HEC-RAS
Excel Data

HEC-RAS River: Flint Run Profile: PF 1

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev
				(cfs)	(ft)	(ft)
Upper	1402	PF 1	Pre	2946	758.00	765.85
Upper	1402	PF 1	Post	2946	758.00	765.93
Upper	1133	PF 1	Pre	2946	758.00	765.42
Upper	1133	PF 1	Post	2946	758.00	765.52
Upper	921	PF 1	Pre	2946	758.00	765.05
Upper	921	PF 1	Post	2946	758.00	765.22
Proposed Matting Bridge: River Sta 900						
Upper	874	PF 1	Pre	2946	758.00	764.93
Upper	874	PF 1	Post	2946	758.00	764.88
Upper	680	PF 1	Pre	2946	758.00	764.07
Upper	680	PF 1	Post	2946	758.00	763.96
Upper	422	PF 1	Pre	2946	758.00	763.10
Upper	422	PF 1	Post	2946	758.00	762.99
lower	176	PF 1	Pre	2999	756.00	763.06
lower	176	PF 1	Post	2999	756.00	762.90
lower	114	PF 1	Pre	2999	756.00	762.96
lower	114	PF 1	Post	2999	756.00	762.92

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ATTACHMENT F
PERMITTING & COORDINATION TABLE

Permitting & Coordination Table

Permitting Agency	Permit/Coordination Required	Submitted	Received (Anticipated)	Status
USACE[1]	NWP 58	11/07/22	(12/22/22)	Pending
	Mitigation Plan	Not Applicable	Not Applicable	Not Required
USFWS[2]	Threatened & Endangered Species (Section 7 Coordination)	To Be Submitted	To Be Submitted	To Be Submitted
WVSHPO[3]	Section 106 Coordination	**To Be Determined – A Cultural Resources Literature Review Was Submitted to Support USACE's Determination of Potential Affects.**		Required
	Phase I & Architectural Survey			
WVDNR-OLS[4]	Stream Activity Application	11/07/2022	11/28/2022	Approved
WVDNR-WRS[5]	Mussel Survey	09/26/2022	09/28/2022	Approved
	Threatened & Endangered State Species	11/07/2022	(12/07/2022)	Pending
	Spawning Waiver	To Be Determined	To Be Determined	To Be Determined
County Floodplain	Doddridge County Floodplain Application	01/10/2023	(02/24/2023)	Pending
WVDEP[6]	401 WQC Program Notification	11/07/2022	11/09/2022	Approved
	NPDES[7] Permit	Not Applicable	Not Applicable	Not Required
	Construction Stormwater General Permit	11/14/2022	(12/29/2022)	Pending
WVDOH[8]	Utility Permit	To Be Submitted	To Be Submitted	To Be Submitted

1 United States Army Corps of Engineers
2 United States Fish and Wildlife Service
3 West Virginia Division of Culture and History, State Historic Preservation Office
4 West Virginia Division of Natural Resources Office of Land and Stream
5 West Virginia Division of Natural Resources – Wildlife Resources Section
6 West Virginia Department of Environmental Protection
7 National Pollutant Discharge Elimination System
8 West Virginia Division of Highways

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Antero Midstream		
Corporate Mailing Address: 1615 Wynkoop Street		
City: Denver	**State: CO**	**Zip: 80202**
Corporate Point of Contact (POC): N/A		
Corporate POC Title: N/A		
Corporate POC Primary Phone: N/A		
Corporate POC Primary Email: N/A		
Corporate FEIN: N/A	**Corporate DUNS: N/A**	
Corporate Website: www.anteroresources.com		
Local Mailing Address: 535 White Oaks Blvd		
City: Bridgeport	**State: WV**	**Zip: 26330**
Local Project Manager (PM): Daniel Bulian		
Local PM Primary Phone: (304) 842-4093		
Local PM Secondary Phone: N/A		
Local PM Primary Email: dbulian@anteroresources.com		
Person Filing Application: Daniel Bulian		
Applicant Title: Environmental Specialist III		
Applicant Primary Phone: (304) 842-4093		
Applicant Secondary Phone: N/A		
Applicant Primary Email: dbulian@anteroresources.com		

Permit# 23-623

Project Name: Crimson South Surface Waterline (Pipeline)

Permittees Name: ANtero Mid Stream

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. The permit will expire if no work is commenced within six months of issuance.
5. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
6. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
7. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE Daniel Bulian

DATE 01/10/2023

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

	ACTIVITY		STRUCTURAL TYPE
[]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVELOPLMENT ACTIVITIES:

[] Fill [] Mining [] Drilling [x] Pipelining
[] Grading
[x] Excavation (except for STRUCTURAL DEVELOPMENT checked above)
[] Watercourse Alteration (including dredging and channel modification)
[] Drainage Improvements (including culvert work)
[] Road, Street, or Bridge Construction
[] Subdivision (including new expansion)
[] Individual Water or Sewer System
[] Other (please specify)

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.

Project Narrative:
Antero Midstream is proposing to construct approximately 3.8 miles of one 18-inch diameter surface water pipeline known as the Crimson South Surface Water Line (Pipeline) in Doddridge County, West Virginia (WV). The southwestern terminus occurs at 39.362046, -80.729105, while the northeastern terminus occurs at 39.385516, -80.685486. The proposed Pipeline will result in a limit of disturbance of approximately 69.1 acres, of which 1.87 acres (2.7%) is located within the limits of the Flint Run regulated floodplain. The West Virginia Flood Tool Map is included in Attachment C and depicts the approximate location where work associated with the proposed Pipeline will encroach upon the floodplain. Construction activities within the regulated floodplain will be temporary and consist of but are not limited to: installation of a 18-inch diameter surface water pipeline, which will be buried at the Flint Run and Big Flint Road (CR-3) crossings, temporary structure (dam and flume or equivalent) crossing materials, and jersey barrier/pier installations for timber mat crossing of equipment at 1 stream crossing (KLF_Flint Run). In addition, rock construction entrances will be installed on both sides of CR-3 (Big Flint Road. The proposed Pipeline design plans are included as Attachment D. The ground surface will be returned to approximate original contours following construction, which should not adversely affect the regulated floodplain in Doddridge County. A No-Rise Certification has been prepared and is included as Attachment E, which indicates that the proposed construction activities will not affect the base flood elevation. A permitting and coordination table is included in Attachment F that outlines all necessary permits and current status.

Gmail **George Eidel <doddridgecountyfpm@gmail.com>**

Antero Midstream: Crimson South Surface Water Line - Doddridge County Floodplain Application

1 message

Matthew Albright <MAlbright@kleinfelder.com> Tue, Jan 10, 2023 at 5:02 PM
To: George Eidel <doddridgecountyfpm@gmail.com>
Cc: "Daniel Bulian (dbulian@anteroresources.com)" <dbulian@anteroresources.com>, Carrie Maier <CMaier@kleinfelder.com>, Spencer Chronister <SChronister@kleinfelder.com>

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1. **20230110_Crimson South SWL_Doddridge Co_Floodplain App-Final.pdf** (70.03 MB) in Antero
https://kleinfelderupstream.filegenius.com/downloadPublic/kozif9thf66ujva/fm4nido2ei8hsrj

This link will expire on **04/10/23 at 05:59 pm EDT**

Please let us know if you have any questions.

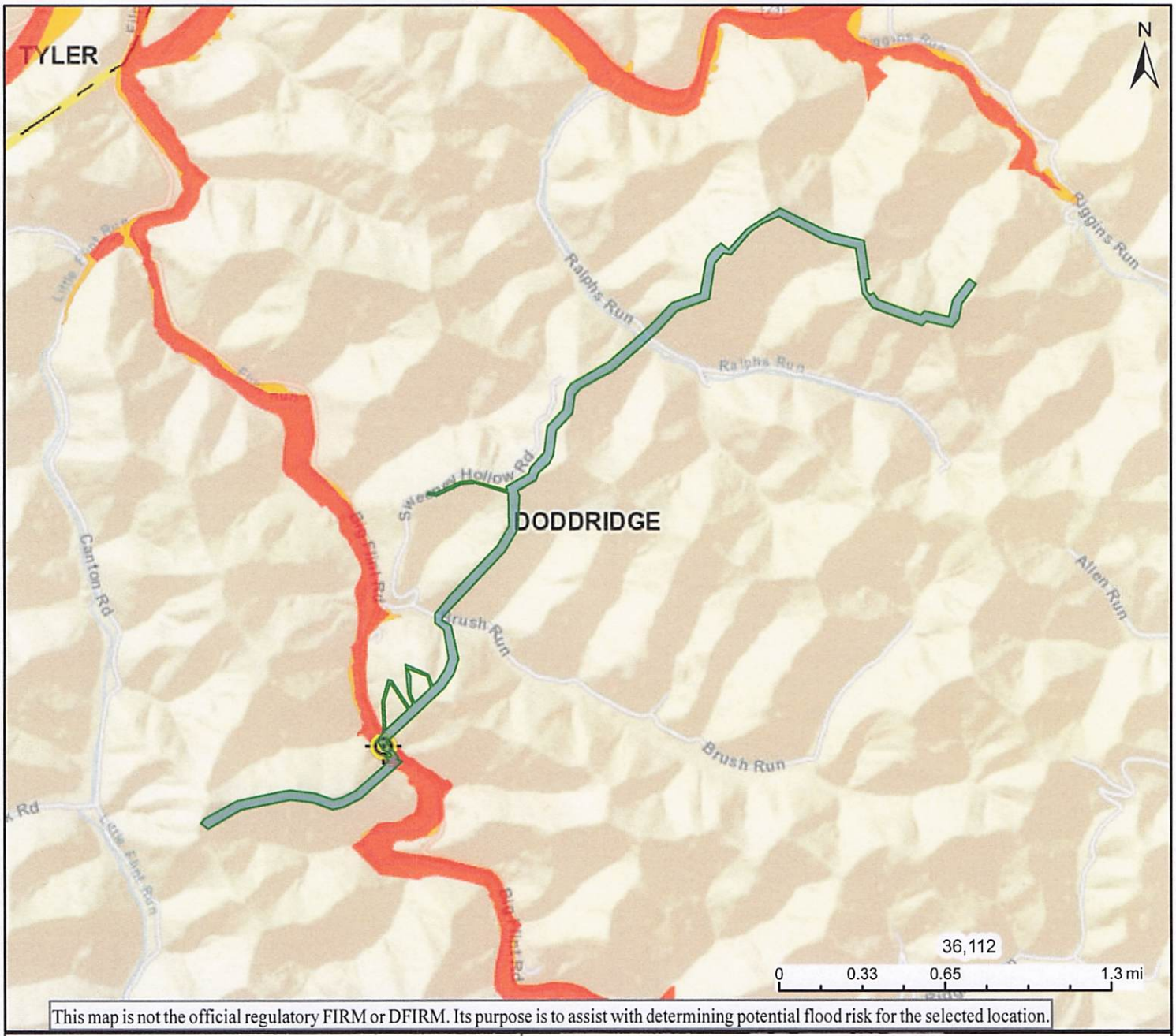
Thanks,

Matt Albright
Project Manager

51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
m| 609.947.5296

KLEINFELDER
Bright People. Right Solutions.

WV Flood Map-Crimson South SWL



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

HIGH RISK

Regulatory Floodway	
Zone AE	1-Percent-Annual-Chance Flood Hazard Area **With Base Flood Elevation** (BFE)
Zone A	1-Percent-Annual-Chance Flood Hazard Area **Without BFE** (may have Advisory Flood Heights)
Advisory	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)

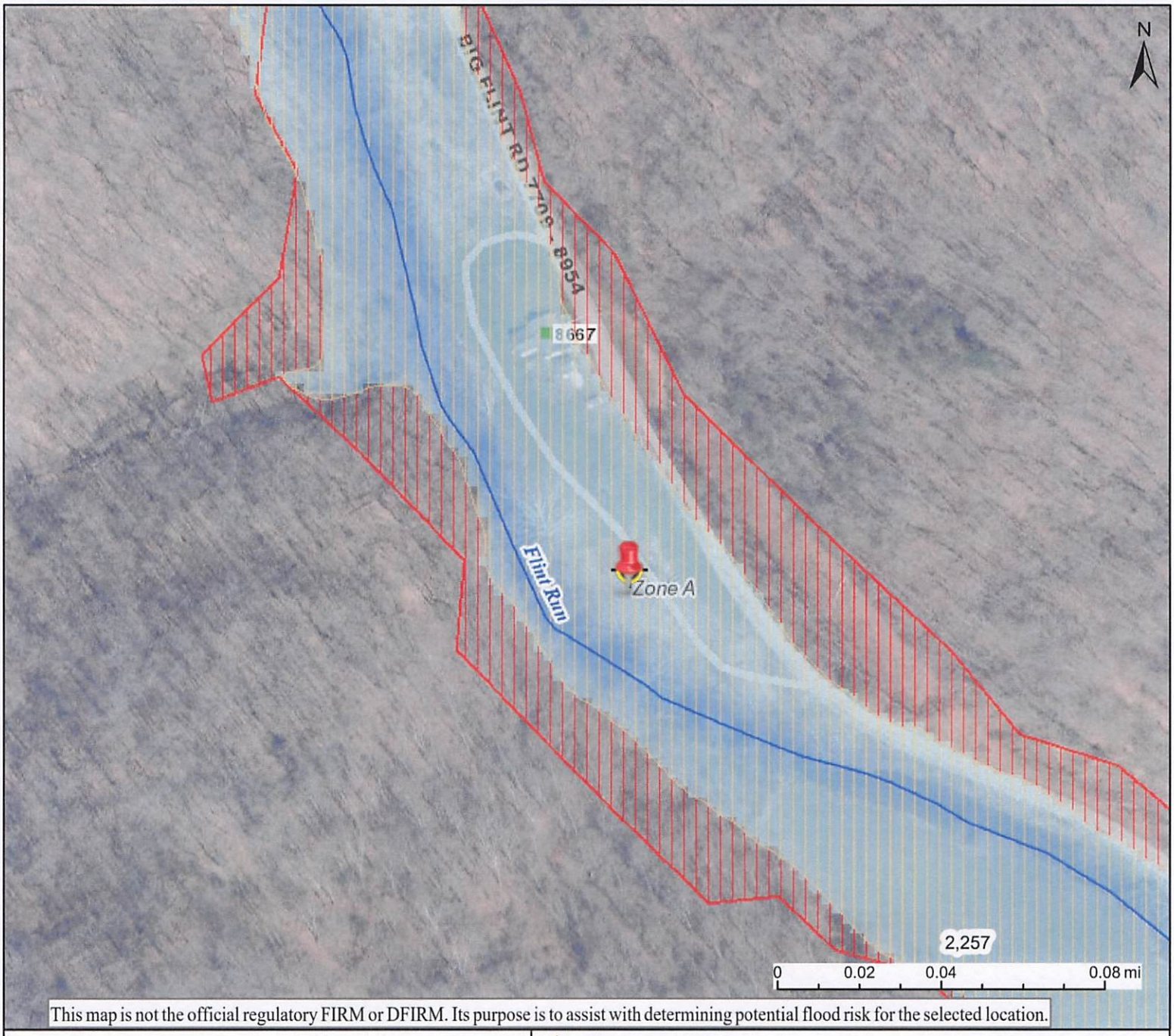
Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (*https://www.MapWV.gov/flood*) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Info Location — *Map created on 12/14/2022*

User Notes	
Flood Hazard Area	Location is **WITHIN** the FEMA 100-year floodplain. Advisory Flood Heights available.
Flood Zone	A (Advisory Flood Heights available)
Stream	Flint Run
Watershed (HUC8)	Little Musringum-Middle Island (5030201)
Flood Height	Flood Height 4 About 768.1 ft (Source: AFH) NAVD88
Water Depth	About 3.7 ft (Source: HEC-RAS)
Elevation	761.4 ft (Source: FEMA 2018-20) (NAVD88)
Community & ID	Doddridge County (ID: 540024)
FEMA Map & Date	54017C0130C; Effective Date: 10/4/2011
Location (lat, long)	(39.365407, -80.718887) (WGS84)
Parcel ID	09-03-0006-0012-0000
E-911 Address	multiple addresses

WV Flood Map



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HIGH RISK

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Flood Info Location — *Map created on 1/11/2023*

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Location (lat, long)	(39.365407, -80.718887) (WGS84)
Parcel ID	09-03-0005-0005-0001
E-911 Address	8667 BIG FLINT RD, WEST UNION, WV, 26456

George

[Quoted text hidden]
--

George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management
101 Church Street Suite 102
West Union, WV 26456-2095
Work Phone:1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
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Thanks,

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KLEINFELDER
Bright People. Right Solutions.

From: George Eidel <doddridgecountyfpm@gmail.com>
Sent: Thursday, January 12, 2023 1:35 PM
To: Matthew Albright <MAlbright@kleinfelder.com>
Subject: Re: Antero Midstream: Crimson South Surface Water Line - Doddridge County Floodplain Application

Gmail

George Eidel <doddridgecountyfpm@gmail.com>

Antero Midstream: Crimson South Surface Water Line - Doddridge County Floodplain Application

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It takes 20 days from the reading at our commission meeting, I will do this on Tuesday. It is scheduled to be approved on February 6th, 2023, if all of the permits are in to me it will be approved then. If not then it gets approved when all of the permits come in.

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Thanks George. Appreciate the confirmation.

[Quoted text hidden]

The Doddridge Independent

The Doddridge Independent

PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Please take notice that on the {11th) of (January), 2023, (Antero Midstream) filed an application for a Floodplain Permit (#23-623) to develop land located at or about (8667 Big Flint Road); Coordinates: 39.365407, -80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (February 6, 2023) (20 calendar days after the announcement at the regularly scheduled Doddridge County

was published in The Doddridge Independent
2 times commencing on Friday, January 13, 2023 and
Ending on Friday, January 20, 2023 at the request of:

George Eidel, Doddridge County Floodplain Manager& Doddridge County Commission

Given under my hand this Monday, September 11, 2023

The publisher's fee for said publication is:

$ 31.05 1st Run/$ 23.29 Subsequent Runs

This Legal Ad Total: $ 54.34

Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on
this date: 09/12/2023

Tamra D Dodd

Notary Public in and for Doddridge County
My Commission expires on
The 20 day of May 2025

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
TAMRA D. DODD
Summit Community Bank
251 Main Street
West Union, WV 26456
My Commission Expires May 20, 2025

Floodplain Public Notice • Legal Notice

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INVOICE

The Herald Record LLC
177 MAIN STREET
WEST UNION,WV 26456
United States

Phone:304-873-1600
Fax: 304-666-1017
Mobile: 304-266-2247
TheHeraldRecord.com

Doddridge County OFFICE OF EMERGENCY MANAGEMENT
101 Church Street
West Union, West Virginia 26456
United States

Invoice Number: 4019
Invoice Date: February 1, 2023
Payment Due: February 1, 2023
Amount Due (USD): **$0.00**

Items	Quantity	Price	Amount
Class II Legal -- Floodplain Permit # 623 Run Dates: 1/18/23 & 1/25/23	1	$0.00	$0.00
		Total:	$0.00
		Amount Due (USD) :	~~$0.00~~ 37.03

020-718-220

PAID
FEB 07 2023
BY: 1638

Called Treasurer's Should be $37.03

INVOICE

The Herald Record LLC
177 MAIN STREET
WEST UNION,WV 26456
United States

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(Week of JANUARY 16, 2023)

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S/George C. Eidel, CFM
Doddridge County Floodplain Manager

STATE of WEST VIRGINIA;
COUNTY OF DODDRIDGE, TO WIT:

I, Tamela B. Beamer, Editor of THE HERALD RECORD, a certified weekly newspaper published regularly in Doddridge County, West Virginia, DO Hereby Certify Upon Oath that the accompanying Legal Notice entitled:

Doddridge County Floodplain Permit # 23-623
Antero Midstream -- 8667 Big Flint Road

was published in said paper for 2 successive weeks beginning with the issue of 1/18, 2023 and ending with the issue of 1/25/2023 that contains 184 word space at .115 cents per word and amounts to the sum of $ 21.16 FOR THE FIRST PUBLICATION.

SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION and each other publication thereafter$ 15.78for the TOTAL OF: $ 37.03

Editor,

Tamela B. Beamer

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 1 day of February, 2022.

NOTARY PUBLIC

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Chantel A Davis
West Union Bank
212 Main Street
West Union WV 26456
My Commission Expires November 8, 2025

Doddridge County Floodplain Permits
(Week of JANUARY 16, 2023)

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My Commission Expires November 8, 2025

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COUNTY OF DODDRIDGE, TO WIT:

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Doddridge County -- BID FOR CREEK AND STREAM TREE REMOVAL SERVICES

was published in said paper for 2 successive weeks beginning with the issue of 1/25/2023 and ending with the issue of 2/1/2023 that contains 268 word space at .115 cents per word and amounts to the sum of $ 30.82 FOR THE FIRST PUBLICATION.

SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION and each other publication thereafter$ 23.11 for the TOTAL OF: $ 53.93

Editor,

Tamela B Beamer

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 1 day of February, 2023.

NOTARY PUBLIC

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NOTARY PUBLIC
STATE OF WEST VIRGINIA
Chantel A Davis
West Union Bank
212 Main Street
West Union WV 26456
My Commission Expires November 8, 2025

BID FOR CREEK AND STREAM TREE REMOVAL SERVICES

Doddridge County, West Virginia, in conjunction with the WV Department of Land Conservation, is soliciting proposals from experienced and qualified licensed contractors to provide Stream Debris and Tree Removal Services in Doddridge County. The county invites you to bid on an anticipated contract for creek and stream tree removal when needed.

The project consists of maintenance activities that provide for tree removal as directed by the county floodplain manager or his/her representative as needed. The scope of the work shall include all equipment, materials, labor at an hourly rate, necessary to complete the removal of trees and debris. The county understands that some projects will require special equipment at times, therefore bids need to include a fee estimate for the equipment needed to perform such work.

Contracts will be for a period of one year and renewable with a bid process each year thereafter. Bid proposals must be received prior to February 15, 2023 and mailed to 101 Church Street, Suite 102, West Union, WV 26456 and marked "Attention: FLOODPLAIN MANAGER" at that time the bids will be publicly opened and read aloud at the NEXT Doddridge County Commission meeting. Each proposal should be placed in a sealed envelope marked "CREEK and STREAM TREE REMOVAL BID". Only sealed bids will be accepted. The Commission reserves the right to accept or reject any and all bids.

535 White Oaks Blvd

Bridgeport, WV 26330

Office: (304) 842-4093

Cell: (304) 579-3666

dbulian@anteroresources.com

From: George Eidel <doddridgecountyfpm@gmail.com>
Sent: Thursday, March 23, 2023 12:48 PM
To: Daniel Bulian <dbulian@anteroresources.com>; Matt Albright <MAlbright@kleinfelder.com>
Subject: Crimson South Surface Waterline

[Quoted text hidden]

Gmail George Eidel <doddridgecountyfpm@gmail.com>

Crimson South Surface Waterline

2 messages

George Eidel <doddridgecountyfpm@gmail.com> Thu, Mar 23, 2023 at 12:47 PM
To: Daniel Bulian <dbulian@anteroresources.com>, Matthew Albright <MAlbright@kleinfelder.com>

Good Afternoon,

I am just following up to see if you had the other permits approved for the Crimson South Surface Waterline project. Attached is the permit & coordination table you all had sent with the floodplain permit application. The floodplain permit is ready to go pending the remaining permits being submitted.

George

--

George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management
101 Church Street Suite 102
West Union, WV 26456-2095
Work Phone:1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
--

doc00509820230323105259.pdf
393K

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To: George Eidel <doddridgecountyfpm@gmail.com>, Matt Albright <MAlbright@kleinfelder.com>

George,

No, we are still pending our USACE permit which is our FWS and SHPO approvals. I will send it along once we receive them.

Thanks,

Daniel Bulian, CPESC

Environmental Supervisor

Antero Resources

Zero incidents
Zero harm
Zero compromise
Keeping you healthy, safe and environmentally responsible every day at work!

George

[Quoted text hidden]
--

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Sent: Thursday, January 12, 2023 1:35 PM
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Subject: Re: Antero Midstream: Crimson South Surface Water Line - Doddridge County Floodplain Application

Gmail George Eidel <doddridgecountyfpm@gmail.com>

Antero Midstream: Crimson South Surface Water Line - Doddridge County Floodplain Application

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Thanks George. Appreciate the confirmation.

[Quoted text hidden]

George Eidel <doddridgecountyfpm@gmail.com> Wed, Mar 15, 2023 at 9:00 AM
To: Matthew Albright <MAlbright@kleinfelder.com>

Matt,

This is in reference to Antero's Crimson South Surface Waterline project. The permit is ready to be released, we are just waiting on the remaining other permits to be received.

George

[Quoted text hidden]

Gmail George Eidel <doddridgecountyfpm@gmail.com>

FW: LRH-2022-916 - Crimson South Surface Waterline - NWP 58 Verification and PJD

1 message

Daniel Bulian <dbulian@anteroresources.com> Fri, May 5, 2023 at 12:37 PM
To: George Eidel <doddridgecountyfpm@gmail.com>
Cc: Matt Albright <MAlbright@kleinfelder.com>

George,

See the attached NWP from USACE. Please move forward with processing the Floodplain Permit.

From: Kist, Emma K CIV USARMY CELRH (USA) <Emma.K.Kist@usace.army.mil>
Sent: Tuesday, April 18, 2023 11:47 AM
To: Daniel Bulian <dbulian@anteroresources.com>
Cc: Matt Albright <MAlbright@kleinfelder.com>
Subject: LRH-2022-916 - Crimson South Surface Waterline - NWP 58 Verification and PJD

Good morning,

Attached are the NWP 58 verification and PJD documents for the Crimson South Surface Waterline. If you have any questions or concerns, please let me know.

Thank you,

Emma Kist

Regulatory Specialist (Biologist)

U.S. Army Corps of Engineers

Huntington District

502 8th Street

Huntington, WV 25701

O: 304-399-6900

C: 681-340-2793

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5 attachments

2022-916 NWP 58 Letter signed.pdf
218K

2022-916 NWP 58 Certification.pdf
100K

2022-916 JD NAO Appeal Form.pdf
128K

2022-916 PJD.pdf
151K

WV NWP 58 Handout.pdf
378K

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Requestor: Antero Midstream, LLC	File Number: LRH-2022-916-LKR	Date: 17-Apr-23

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Mike Hatten, Chief, Regulatory Division, 304-399-6918
Teresa Spagna, Chief, North Branch, 304-399-5210
Lee Robinette, Chief, Energy Resource Branch, 304-399-5610
Susan Porter, Chief, South/Transportation Branch, 304-399-5710
Address: U.S. Army Corps of Engineers
Regulatory Division
502 8th Street
Huntington, WV 25701

If you only have questions regarding the appeal process you may also contact:
Katherine McCafferty
Regulatory Administrative Appeals Officer
U.S. Army Corps of Engineers
CELRD-PD-REG
550 Main Street, Room 10780
Cincinnati, OH 45202-3222
TEL (513) 684-2699; FAX (513) 684-2460
katherine.a.mccafferty@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HUNTINGTON DISTRICT
502 8TH STREET
HUNTINGTON, WV 25701-2018

REPLY TO
ATTENTION OF

April 17, 2023

Regulatory Division
Energy Resource Branch
LRH-2022-916-LKR-Flint Run

NATIONWIDE PERMIT (NWP) NO. 58 VERIFICATION AND
PRELIMINARY JURISDICTIONAL DERTERMINATION

Mr. Daniel Bulian
Antero Midstream
535 White Oaks Boulevard
Bridgeport, WV 26330

Dear Mr. Bulian:

I refer to the pre-construction notification (PCN) requesting a Department of the Army (DA) authorization for the discharge of dredged and/or fill material into waters of the United States (U.S.) in association with the construction of the Crimson South Surface Water Line. The proposed pipeline is located near Center Point, in Doddridge County, West Virginia (northeastern terminus occurs at 39.385516, -80.685486; southwestern terminus occurs at 39.362046, -80.729105). The proposed project area drains to Flint Run, an indirect tributary to the Little Kanawha River, a traditional navigable water of the U.S. Your PCN has been assigned the following file number: LRH-2022-916-LKR-Flint Run. Please reference this number on all future correspondence related to this project.

The U.S. Army Corps of Engineers' (Corps) authority to regulate waters of the U.S. is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a DA permit be obtained prior to discharging dredged and/or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

Based upon a review of the provided information, this office has determined that approximately 6,556 linear feet of twenty-seven (27) streams and 0.51 acre of twenty-five (25) wetlands, as indicated on the enclosed preliminary JD form, are located within the review area. This office has determined that these aquatic resources may be waters of the United States in accordance with the Regulatory Guidance Letter for JDs issued by the Corps on October 31, 2016 (Regulatory Guidance Letter No. 16-01). As indicated in the guidance, this Preliminary JD is non-binding and cannot be appealed (33 C.F.R. 331.2) and only provides a written indication that waters of the United States, including wetlands, may be present on-site.

You have declined to exercise the option to obtain an approved JD in this instance and at this time for the above aquatic resources. However, for the purposes of the determination of impacts, compensatory mitigation, and other resource protection measures for activities that require authorization from this office, the non-wetlands and wetlands will be evaluated as if they are waters of the United States.

Enclosed please find two (2) copies of the Preliminary JD form. If you agree with the findings of this Preliminary JD and understand your options regarding the same, please sign and date one (1) copy of the Preliminary JD form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

United States Army Corps of Engineers
Huntington District
Attn: Energy Resource Branch
502 Eighth Street
Huntington, West Virginia 25701
LRH-2022-916-LKR-Flint Run

Each single and complete project, as described in the submitted information, has been reviewed in accordance with Section 404 and Section 10. Based on your description of the proposed work, and other information available to us, it has been determined that each single and complete project will not involve activities subject to the requirements of Section 10. However, each single and complete project will include the discharge of dredged and/or fill material into waters of the U.S. subject to the requirements of Section 404.

In the submitted PCN materials, you have requested a DA authorization for the temporary discharge of dredge and/or fill material into 660 linear feet (0.13 acre) of four (4) streams and 0.057 acre of eight (8) wetlands at eight (8) single and complete project locations, in association with the construction of the Crimson South Surface Waterline. The discharge of dredged and/or fill material into waters of the U.S. is described in the enclosed Table 1. Upon completion of the pipeline crossings, the temporarily affected waters of the United States will be restored to their pre-disturbance conditions. All work will be conducted in accordance with the PCN received in this office on November 7, 2022.

Based on the provided information, it has been determined that each single and complete project meets the criteria for Nationwide Permit (NWP) No. 58 (*Utility Line Activities for Water and Other Substances*) under the January 13, 2021 Federal Register, Reissuance and Modification of NWPs (86 FR 2744) provided you comply with all terms and conditions of the enclosed material, the enclosed special conditions, and the Section 401 Water Quality Certification (401 WQC) issued by the West Virginia Department of Environmental Protection (WVDEP). A copy of this NWP can be found on our website at http://www.lrh.usace.army.mil/Missions/Regulatory.aspx.

Please be aware this NWP verification does not obviate the requirement to obtain other local, state, and federal authorizations. This verification is valid until the expiration date of the NWPs, unless the NWP authorization is modified, suspended, or revoked. The verification will remain valid if the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. All of the existing NWPs are scheduled to be modified, reissued, or revoked on March 14, 2026. Prior to this date, it is not necessary to contact this office for re-verification of your project unless the plans for the proposed activity are modified. Furthermore, if you commence or under contract to commence this activity before March 14, 2026, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

A copy of this NWP and verification letter must be supplied to your project engineer responsible for construction activities. A copy of the verification letter must be kept at the site during construction. Upon completion of the work associated with this project, the attached certification must be signed and returned to this office. If you have any questions concerning the above, please contact Emma K. Kist of the Energy Resource Branch at 304-399-6900 or by email at emma.k.kist@usace.army.mil.

Sincerely,

Kimberly Courts-Brown

Kimberly D. Courts-Brown
Regulatory Project Manager
Energy Resource Branch

Enclosures

cc (letter only; via email):

Matt Albright
Kleinfelder, Inc.
MAlbright@kleinfelder.com

Cristina Sanders
U.S. Fish and Wildlife Service
West Virginia Field Office
cristina_sanders@fws.gov

Table 1. Authorized discharge of dredged and/or fill material into waters of the United States in association with the Crimson South Surface Water Line – LRH-2022-916-LKR-Flint Run.

Single and Complete Project	Aquatic Resource	Latitude and Longitude	Fill Length (LF)	Fill Area (Acre)	Description of the Regulated Activity
1	KLF_ Wetland01	39.362304, -80.728508	N/A	0.0062	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
2	KLF_ Wetland02	39.362873, -80.721337	N/A	0.0310	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_ Wetland03	39.362854, -80.720768	N/A	0.0047	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
3	KLF_ Flint Run	39.364976, -80.718263	104	0.0669	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
4	KLF_ Wetland102	39.368689, -80.715357	N/A	0.0014	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_ Wetland100	39.368603, -80.715487	N/A	0.0017	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_ Wetland04	39.368251, -80.715303	N/A	0.0065	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace

	KLF_ Stream09 Crossing 1	39.368422, -80.715450	137	0.0094	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
	KLF_ Stream09 Crossing 2	39.370532, -80.715488	34	0.0031	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
5	KLF_ Brush Run	39.370621, -80.715414	226	0.0363	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
6	KLF_ Wetland05	39.378577, -80.709412	N/A	0.0054	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
7	KLF_ Ralphs Run	39.383222, -80.704037	159	0.0146	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
8	KLF_ Wetland07	39.385694, -80.691590	N/A	0.0005	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. **REPORT COMPLETION DATE FOR PJD:** 17-APR-2023

B. **NAME AND ADDRESS OF PERSON REQUESTING PJD:**
Bulian, Daniel
Antero Midstream Llc
535 White Oak Blvd
Bridgeport, WV 26330

C. **DISTRICT OFFICE, FILE NAME, AND NUMBER:**
LRH, OG58WV - Crimson South Surface Water Line - Antero Midstream, LRH-2022-00916-LKR

D. **PROJECT LOCATION(S) AND BACKGROUND INFORMATION:**
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: WV County/parish/borough: Doddridge County City:
Center coordinates of site (lat/long in degree decimal format):
Lat.: 39.374461° Long.: -80.706239°
Universal Transverse Mercator: 17
Name of nearest waterbody: Flint Run

E. **REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**
☒ Office (Desk) Determination. Date: 17-Apr-2023
☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Chestnut Re-Verification_ASE_Wetland01 (PEM)	39.363439	-80.724531	0.0041 acres	Wetland	Section 404
Crimson Pad_ASE_Wetland08 (PEM)	39.385556	-80.684679	0.0061 acres	Wetland	Section 404
Crimson Pad_ASE_Wetland10 (PEM)	39.384765	-80.687215	0.0076 acres	Wetland	Section 404
Crimson Pad_ASE_Wetland11 (PEM)	39.384531	-80.687758	0.0142 acres	Wetland	Section 404
KLF_Brush Run (PER)	39.370699	-80.715906	1125 feet	Non-wetland waters	Section 404
KLF_Flint Run (PER)	39.366042	-80.71967	967 feet	Non-wetland waters	Section 404
KLF_Ralphs Run	39.383218	-80.704028	601 feet	Non-wetland waters	Section 404

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

(PER)					
KLF_Stream01 (EPH)	39.362676	-80.720601	71 feet	Non-wetland waters	Section 404
KLF_Stream02 (EPH)	39.365114	-80.717826	208 feet	Non-wetland waters	Section 404
KLF_Stream03 (EPH)	39.368344	-80.718714	310 feet	Non-wetland waters	Section 404
KLF_Stream05 (INT)	39.370451	-80.715897	139 feet	Non-wetland waters	Section 404
KLF_Stream06 (EPH)	39.375636	-80.718115	25 feet	Non-wetland waters	Section 404
KLF_Stream07 (EPH)	39.373354	-80.718521	180 feet	Non-wetland waters	Section 404
KLF_Stream08 (INT)	39.371108	-80.717649	859 feet	Non-wetland waters	Section 404
KLF_Stream09 (EPH)	39.369439	-80.715495	907 feet	Non-wetland waters	Section 404
KLF_Stream10 (EPH)	39.383141	-80.703197	137 feet	Non-wetland waters	Section 404
KLF_Stream11 (EPH)	39.386146	-80.692513	33 feet	Non-wetland waters	Section 404
KLF_Stream12 (EPH)	39.388198	-80.69368	94 feet	Non-wetland waters	Section 404
KLF_Stream13 (INT)	39.382766	-80.70346	62 feet	Non-wetland waters	Section 404
KLF_Stream14 (EPH)	39.382093	-80.704438	9 feet	Non-wetland waters	Section 404
KLF_Stream15 (EPH)	39.382764	-80.70597	17 feet	Non-wetland waters	Section 404
KLF_Stream16 (EPH)	39.382673	-80.706119	21 feet	Non-wetland waters	Section 404
KLF_Stream17 (EPH)	39.374091	-80.713216	30 feet	Non-wetland waters	Section 404
KLF_Stream18 (EPH)	39.37097	-80.717993	21 feet	Non-wetland waters	Section 404
KLF_Stream19 (EPH)	39.369056	-80.715699	308 feet	Non-wetland waters	Section 404
KLF_Stream20 (EPH)	39.368715	-80.715751	47 feet	Non-wetland waters	Section 404
KLF_Stream21 (INT)	39.365954	-80.719722	35 feet	Non-wetland waters	Section 404
KLF_Stream22 (EPH)	39.365047	-80.719247	158 feet	Non-wetland waters	Section 404
KLF_Stream23 (EPH)	39.362314	-80.726137	30 feet	Non-wetland waters	Section 404
KLF_Stream24 (EPH)	39.362387	-80.725362	32 feet	Non-wetland waters	Section 404
KLF_Stream25 (EPH)	39.362734	-80.724428	130 feet	Non-wetland waters	Section 404
KLF_Wetland01 (PEM)	39.3623	-80.728509	0.0062 acres	Wetland	Section 404
KLF_Wetland02 (PEM)	39.362876	-80.721335	0.031 acres	Wetland	Section 404
KLF_Wetland03 (PEM)	39.362822	-80.720731	0.0312 acres	Wetland	Section 404
KLF_Wetland04 (PEM)	39.368254	-80.715302	0.0065 acres	Wetland	Section 404
KLF_Wetland05 (PEM)	39.378581	-80.709415	0.0054 acres	Wetland	Section 404
KLF_Wetland06 (PEM)	39.372409	-80.716934	0.0077 acres	Wetland	Section 404
KLF_Wetland07 (PEM)	39.385676	-80.691529	0.015 acres	Wetland	Section 404
KLF_Wetland08 (PEM)	39.385337	-80.692086	0.1852 acres	Wetland	Section 404

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

KLF_Wetland09 (PEM)	39.385412	-80.691054	0.0147 acres	Wetland	Section 404
KLF_Wetland100 (PEM)	39.368642	-80.715496	0.0071 acres	Wetland	Section 404
KLF_Wetland102 (PEM)	39.368682	-80.715357	0.0013 acres	Wetland	Section 404
KLF_Wetland12 (PEM)	39.386064	-80.692381	0.0945 acres	Wetland	Section 404
KLF_Wetland13 (PEM)	39.383775	-80.68999	0.0017 acres	Wetland	Section 404
KLF_Wetland14 (PEM)	39.385848	-80.690846	0.0147 acres	Wetland	Section 404
KLF_Wetland15 (PEM)	39.38817	-80.699071	0.0001 acres	Wetland	Section 404
KLF_Wetland16 (PEM)	39.387486	-80.700142	0.0184 acres	Wetland	Section 404
KLF_Wetland17 (PEM)	39.370636	-80.714591	0.0046 acres	Wetland	Section 404
KLF_Wetland18 (PEM)	39.376887	-80.715564	0.0059 acres	Wetland	Section 404
KLF_Wetland19 (PEM)	39.36201	-80.728309	0.002 acres	Wetland	Section 404
KLF_Wetland20 (PEM)	39.362547	-80.726592	0.0105 acres	Wetland	Section 404
KLF_Wetland21 (PEM)	39.364688	-80.717675	0.0145 acres	Wetland	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the.JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "may be" waters of the U.S. and/or that there "may be" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

_X_ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: *Wetland Delineation and Stream Identification Report for the Crimson South Surface Waterline Doddridge County, West Virginia* (November 2022).

_X_ Data sheets prepared/submitted by or on behalf of the PJD requestor.
- _X_ Office concurs with data sheets/delineation report.
- ___ Office does not concur with data sheets/delineation report. Rationale: _____.

___ Data sheets prepared by the Corps: _____.

___ Corps navigable waters' study: _____.

_X_ U.S. Geological Survey Hydrologic Atlas: USACE Regulatory Viewer NHD Dataset.
- _X_ USGS NHD data.
- ___ USGS 8 and 12 digit HUC maps.

_X_ U.S. Geological Survey map(s). Cite scale & quad name: 1:24K Smithburg - WV.

___ Natural Resources Conservation Service Soil Survey. Citation: _____.

_X_ National wetlands inventory map(s). Cite name: USACE Regulatory Viewer USFWS NWI Dataset.

___ State/local wetland inventory map(s): _____.

_X_ FEMA/FIRM maps: USACE Regulatory Viewer FEMA Flood Hazard Zones Dataset

___ 100-year Floodplain Elevation is: _____. (National Geodetic Vertical Datum of 1929)

_X_ Photographs: _X_ Aerial (Name & Date): Figure 2. Potentially Jurisdictional Waters Map (November 2022).
___ or _X_ Other (Name & Date): Appendix B: Photos of Potentially Jurisdictional Aquatic Features & Data Points (November 2022).

___ Previous determination(s). File no. and date of response letter: _____.

___ Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Emma Kist 17 April 2023

Signature and date of Regulatory staff member completing PJD

Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

COMPLETION OF WORK FORM

Permit Number: LRH- 2022-916-LKR-Flint Run
Crimson South Surface Water Line

Name of Permittee: Mr. Daniel Bulian
Antero Midstream
535 White Oaks Blvd.
Bridgeport, WV 26330

Date of Issuance: April 17, 2023

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

Huntington District
U.S. Army Corps of Engineers
502 8th Street
Huntington, West Virginia 25701-2070
Attn: RD-E (2022-916)

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

PM - KIST

Nationwide Permit NO. 58 Verification Special Conditions for the Crimson South Surface Water Line LRH-2022-916-LKR-Flint Run 1 of 2

1. Enclosed is a copy of Nationwide Permit 58 which will be kept at the site during construction. A copy of the nationwide permit verification and special conditions must be kept at the site during construction. The permittee will supply a copy of these documents to their project engineer responsible for construction activities.

2. Construction activities will be performed during low flow conditions to the greatest extent practicable. Additionally, appropriate site-specific best management practices for sediment and erosion control will be fully implemented during construction activities at the site.

3. Upon completion of the activity authorized by this nationwide permit verification, the enclosed certification must be signed and returned to this office.

4. No area for which grading has been completed will be unseeded or unmulched for longer than 14 days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species.

5. The project site lies within the range of the Indiana bat (*Myotis sodalis*), a federally-listed endangered species, the northern long-eared bat (*Myotis septentrionalis*), a federally-listed endangered species, and the tricolored bat (*Perimyotis subflavus*), a proposed federally-listed endangered species. Several factors have contributed to the three species decline, including habitat loss, fragmentation of habitat and the disease White Nose Syndrome. During winter, the three bat species hibernate in caves and abandoned mines. Suitable summer habitat for the Indiana bats and the northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat.

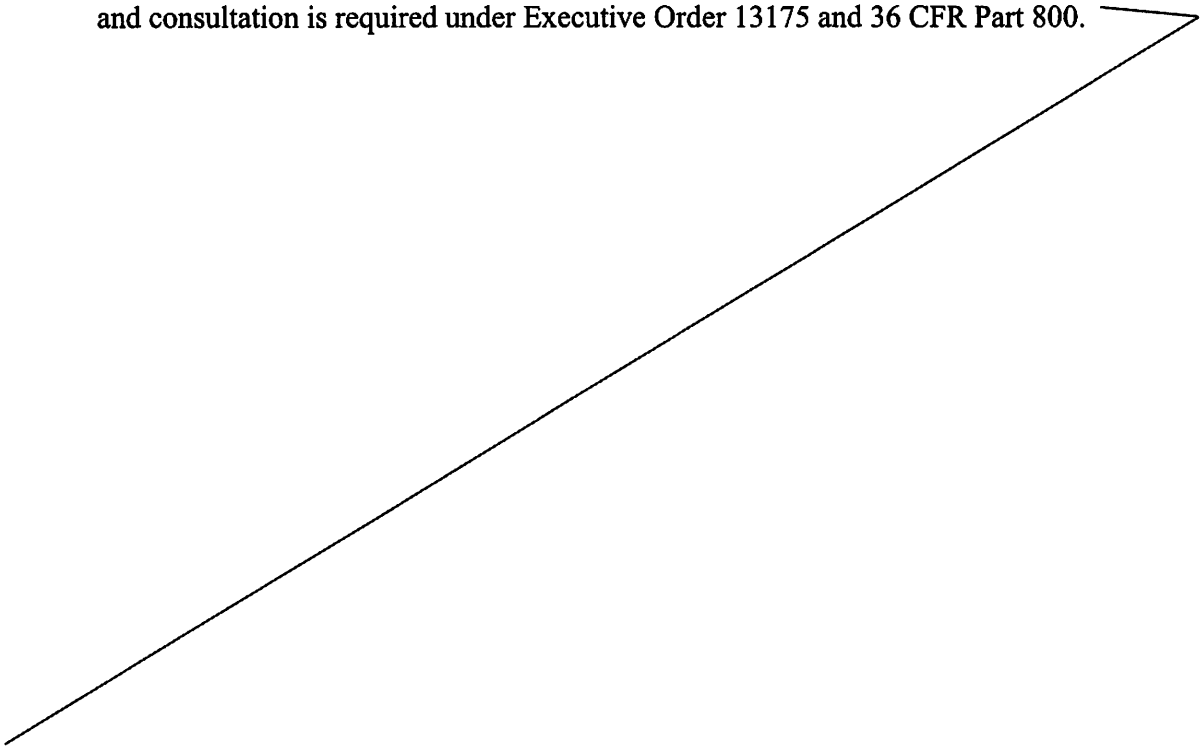
   The permittee will preserve wooded/forested habitats exhibiting any of the characteristics listed above wherever possible. Should suitable habitat be present that cannot be saved during construction activities, any trees ≥3 inches dbh will only be cut between November 15 - March 31.

Nationwide Permit NO. 58 Verification Special Conditions for the Crimson South Surface Water Line LRH-2022-916-LKR-Flint Run 2 of 2

6. Section 7 obligations under the Endangered Species Act (Section 7) must be reconsidered if new information reveals impacts of the project that may affect Federally listed species or critical habitat in a manner not previously considered, the proposed project is subsequently modified to include activities which were not considered during Section 7 consultation with the USFWS, or new species are listed, or critical habitat designated that might be affected by the subject project.

7. Should new information regarding the scope and/or impacts of the project become available that was not submitted to this office during our review of the proposal, the permittee must submit written information concerning proposed modification(s) to this office for review and evaluation, as soon as practicable.

8. In the event any previously unknown historic or archaeological sites or human remains are uncovered while accomplishing the activity authorized by this nationwide permit authorization, the permittee must cease all work in waters of the United States immediately and contact local, state and county law enforcement offices (only contact law enforcement on findings of human remains), the Corps at 304-399-5610 and the West Virginia State Historic Preservation Office at 304-558-0220. The Corps will initiate the Federal, state and tribal coordination required to comply with the National Historic Preservation Act and applicable state and local laws and regulations. Federally recognized tribes are afforded a government-to-government status as sovereign nations and consultation is required under Executive Order 13175 and 36 CFR Part 800.



NATIONWIDE PERMITS FOR THE STATE OF WEST VIRGINIA

U.S. ARMY CORPS OF ENGINEERS (CORPS) REGULATORY PROGRAM REISSUANCE AND ISSUANCE OF NATIONWIDE PERMITS WITH WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 401 WATER QUALITY CERTIFICATION

NWP 58

NWP 58. Utility Line Activities for Water and Other Substances. Activities required for the construction, maintenance, repair, and removal of utility lines for water and other substances, excluding oil, natural gas, products derived from oil or natural gas, and electricity. Oil or natural gas pipeline activities or electric utility line and telecommunications activities may be authorized by NWPs 12 or 57, respectively. This NWP also authorizes associated utility line facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines for water and other substances, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. Examples of activities authorized by this NWP include utility lines that convey water, sewage, stormwater, wastewater, brine, irrigation water, and industrial products that are not petrochemicals. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for above-ground utility lines: This NWP authorizes the construction or maintenance of foundations for above-ground utility lines in all waters of the United States, provided the foundations are the minimum size necessary.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States.

This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites.

Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) A section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the utility line is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 5: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 6: For activities that require preconstruction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require preconstruction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Corps NWP 58 Specific Regional Conditions:

- PCN in accordance with NWP General Condition 32 is required for all permanent conversion of scrub/shrub and forested wetlands of greater than 1/10 of an acre per each single and complete project. Use of conversion in this regional condition relates to the change of a scrub/shrub and forested wetlands to a herbaceous state, but it would not result in a loss of waters of the U.S. as the wetland would

continue to exist in the landscape.

- Should an inadvertent return of drilling mud occur during a directional drilling activity, and the clean-up of drilling muds results in a discharge of dredged and/or fill material into waters of the U.S. necessitates the use of NWP 58 the permittee must report to the Corps the location and circumstances of the clean-up after the work has been conducted unless a PCN is otherwise required.

NWP 58 West Virginia 401 Water Quality Certification Special Conditions:

A. General Water Quality Certification is declined for the following activities:

   i. Pipeline crossings on a Section 10 river (unless the bore is greater than 100 feet below the stream bed on the Ohio River mainstem, or greater than 50 feet below the stream bed on all other Section 10 waters);
   ii. Utility lines within wetlands that would use or consider the use of herbicides for right-of-way maintenance;
   iii. Projects proposing permanent impacts to any stream identified in WQC Standard Condition 15 A, B, and C;
   iv. Cumulative permanent impacts to stream(s) totaling greater than 300 linear feet and cumulative wetland impacts exceeding 1/10 acre; and
   v. Pipelines transporting hazardous substances consistent with the definition found in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601(14) and Toxic Substances Control Act, 15 U.S.C. §53(2601–2629).

   An individual Section 401 Water Quality Certification or waiver must be obtained from the WVDEP.

B. To prevent permanent impacts to aquatic resources associated with equipment tracking in wetlands, the use of protective mats when practicable is required. This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

C. To protect the integrity of aquatic resources dredging for backfill material is not allowed in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

D. Submarine pipeline stream crossings (including horizontal directional drilling) must be designed and constructed to prevent flotation and the possibility of leakage or rupture and the top of pipelines must he buried a minimum of three (3) feet below the stream bottom in accordance with; WV Water Pollution Control Act, W.Va. Code §22-11-8 (2014), Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008), and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016).

E. Horizontal directional drilling for underwater crossings requires an Inadvertent Return Contingency Plan certified by a West Virginia Professional Engineer to be

kept on site and made available upon request. This condition is required to ensure the protection of the chemical, physical and biological integrity of the aquatic resource in accordance with; WV Water Pollution Control Act, W.Va. Code §22-11-8 (2014), Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008), and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016).

F. General Water Quality Certification is declined when this permit is being used for water withdrawal. An individual Section 401 Water Quality Certification or waiver must be obtained from the WVDEP.

G. To protect the biological integrity of the aquatic ecosystem, no permanent structure authorized by this permit shall prevent fish movement upstream or downstream in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

H. To prevent erosion of stream banks at Right of Way (ROW) crossings all waterbody banks are to be returned as close as practicable to preconstruction contours. Riparian areas shall be revegetated with native species of conservation grasses, legumes, and woody species (of low determinate growth), similar in density to adjacent undisturbed lands. Routine mowing or clearing adjacent to waterbodies shall be limited to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Seeding recommendations can be found in West Virginia Division of Natural Resources' publication, "Enhancing Wildlife Habitat on Oil & Gas Infrastructure." This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. 33 §47-2-1, et seq. (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

Special Note: For NWPs that do not require pre-construction notification to the Corps, it is an applicant's responsibility to review the Water Quality Certification general and NWP-specific terms and conditions and submit information to the WVDEP as required by their water quality certification. A project that meets the terms and conditions of a NWP with no Pre-Construction Notification to the Corps is only valid when accompanied by a blanket or individual 401 Water Quality Certification from the WVDEP. No work in waters of the United States may commence until the required 401 water quality certification (or waiver) has been obtained from the WVDEP.

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for a NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. ***Navigation***.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. ***Aquatic Life Movements***. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. ***Spawning Areas***. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. ***Migratory Bird Breeding Areas***. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. *Shellfish Beds.* No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. *Suitable Material.* No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. *Water Supply Intakes.* No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. *Adverse Effects From Impoundments.* If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. *Management of Water Flows*. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. *Fills Within 100-Year Floodplains.* The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. *Equipment.* Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. *Soil Erosion and Sediment Controls.* Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. *Removal of Temporary Structures and Fills.* Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. *Proper Maintenance.* Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. *Single and Complete Project.* The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. *Wild and Scenic Rivers.*

(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. *Tribal Rights.* No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. *Endangered Species.*

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is

required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.
(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http:// www.fws.gov/ipac and http:// www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. *Migratory Birds and Bald and Golden Eagles.* The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. *Historic Properties.*

(a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for

listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre- construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties.

Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)).

When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non- Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation

specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. *Discovery of Previously Unknown Remains and Artifacts.* Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. *Designated Critical Resource Waters.* Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. *Mitigation.* The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre- construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre- construction notification, the district engineer may determine on a case-by- case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre- construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre- construction notification, the district engineer may determine on a case-by- case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult- to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee- responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2- acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory

mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee- responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee- responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. *Safety of Impoundment Structures.* To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. *Water Quality.*

(a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. *Coastal Zone Management.* In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. *Regional and Case-By-Case Conditions.* The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. *Use of Multiple Nationwide Permits.* The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. *Transfer of Nationwide Permit Verifications.* If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

> *"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this*

nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. *Compliance Certification.* Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. *Activities Affecting Structures or Works Built by the United States.* If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. *Pre-Construction Notification.*

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30

calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer;
or
(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other

appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.
(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project and does not change those non-PCN NWP activities into NWP PCNs.
(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the

proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre- construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative

effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the

applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which

remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance

to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non- tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character

of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre- construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re- establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: Re- establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems,

through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility").
Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: (1) Held in trust by the United States for the benefit of any Indian tribe or individual; or (2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a "water of the United States." If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Nationwide Permits Regional General Conditions for the State of West Virginia

1. **Threatened and Endangered Species:** Section 7(a)(2) of the Endangered Species Act (ESA) states that each federal agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.. Section 7 of the ESA, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the continued existence of any federally or proposed federally listed species. Consistent with NWP General Condition 18, information for federally threatened and endangered species must be provided in the PCN to determine the proposed activity's compliance with NWP General Condition 18 and to facilitate project-specific coordination with the USFWS. All relevant information obtained from the USFWS must be submitted with the PCN.

2. All regulated activities located in high-quality waterways listed below require PCN in accordance with NWP General Condition 32:

    - New River, which includes all river miles contained in the boundaries of the New River Gorge National Park and Preserve;
    - Bluestone River from the upstream boundary of Pipestem Park to Bluestone Reservoir;
    - Meadow River from an area near the US 19 Bridge to its junction with the Gauley River;
    - All streams within the Monongahela National Forest designated as National Wild and Scenic Study Rivers;
    - All streams and other bodies of water in State and National Forests and Recreation Areas (included are streams and bodies of water located within the Spruce Knob, Seneca Rocks and Gauley River National Recreation Areas); and
    - Streams and their tributaries as contained within the boundaries of the designated National Wilderness Areas or the headwaters of such rivers and their tributaries, including but not limited to: Cranberry River, Red Creek, Laurel Fork and Otter Creek.

    The Corps will consult, as necessary, with the National Park Service and/or the U.S. Forest Service upon receipt of the PCN.

3. Due to the ecological significance of the following waterways protection under the Natural Streams Preservation Act (WV Code Chapter 22 Article 13), all regulated activities located in these waterways require PCN in accordance with NWP General Condition 32:

    - Greenbrier River from its confluence with Knapps Creek to its confluence with the New River;

- Anthony Creek from its headwaters to its confluence with the Greenbrier River;
- Cranberry River from its headwaters to its confluence with the Gauley River;
- Birch River from Cora Brown Bridge in Nicholas County to its confluence with the Elk River; and
- New River from its confluence with the Greenbrier River to its confluence with the Gauley River, which includes the length of the New River contained in the boundaries of the New River Gorge National Park and Preserve.

The Corps will consult, as necessary, with the National Park Service and/or the U.S. Forest Service upon receipt of the PCN.

4. **Historic Properties:** Under the National Historic Preservation Act (NHPA), the Corps must ensure no federal undertaking, including a Corps permit action, which may affect historic resources, is commenced before the impacts of such action are considered and the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) are provided an opportunity to comment as required by the NHPA, 36 CFR 800, and 33 CFR 325, Appendix C. Consistent with NWP General Condition 20, historic properties information must be provided in the PCN if the proposed undertaking might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. All relevant information obtained from the SHPO must be submitted with the PCN.

HELPFUL INFORMATION FOR COMPLIANCE WITH THE 2021 NWP GENERAL CONDITIONS

DISCLAIMER: The below information is intended to provide helpful contact information and other submittal recommendations. Contact the appropriate local, state, or federal agency for the most updated links to ensure compliance with the NWP General Conditions.

General Condition 1 (Navigation)

List of Section 10 Navigable Waters of the United States:

Huntington District –
https://www.lrh.usace.army.mil/Missions/Regulatory/Section-10-Streams/

Pittsburgh District –
https://www.lrp.usace.army.mil/Portals/72/docs/regulatory/RegulatoryBoundaries/PN12-2.pdf

Navigation Charts:

Huntington District –

https://www.lrh.usace.army.mil/Missions/Civil-Works/Navigation/

Pittsburgh District –
https://www.lrp.usace.army.mil/Missions/Navigation/Navigation-Charts/

Locks and Dams:

Huntington District
https://www.lrh.usace.army.mil/Missions/Civil-Works/Locks-and-Dams/
Pittsburgh District
https://www.lrp.usace.army.mil/Missions/Navigation/Locks-and-Dams/#:~:text=Locks%20and%20Dams%20%20%20Allegheny%20River%20,Locks%20%26%20Dam%20%205%20more%20rows%20

Notice to Navigation Interests Request Sheets:

Huntington District
https://www.lrh.usace.army.mil/Portals/38/docs/navigation/Notice%20Info%20sheet.pdf
Pittsburgh District
https://www.lrp.usace.army.mil/Portals/72/docs/regulatory/NavNoticeRequestForm.pdf

General Condition 3 (Spawning Areas)

In stream work in designated warm water streams and their adjacent tributaries during the fish spawning season, April - June and trout waters and their adjacent tributaries during the trout water fish spawning season September 15 to March 31 requires a spawning season waiver from the West Virginia Division of Natural Resources Coordination Unit, at (304) 637-0245. For information about specific stream designations contact West Virginia Department of Environmental Protection, Water Quality Standards Section at (304) 926-0495.

General Condition 5 (Shellfish Beds)

Shellfish beds in West Virginia include concentrations of freshwater mussels. All mussels are protected in the State of West Virginia pursuant to West Virginia §20-2-4 and CSR 58-605.11. In addition, nine (9) federally endangered freshwater mussel species are known to occur in the state. These species are protected by the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). All streams that contain mussels or potential mussel habitat must be surveyed prior to any proposed streambed disturbance. Please contact the West Virginia Department of Natural Resources (WVDNR) and/or the USFWS for assistance in determining if a mussel survey is or is not required. The WVDNR contact information can be found at: http://www.wvdnr.gov/contact.shtm. Currently accepted protocol and supporting materials can be found at the WVDNRs' website:
http://www.wvdnr.gov/Mussels/Main.shtm

General Condition 7 (Water Supply Intakes)

Locations of public water supply intakes can be found at the following link:

http://gis.wvinfrastructure.com/

General Condition 10 (Fills Within 100-year Floodplains)

The following website provides a statewide listing of Floodplain Managers in West Virginia: http://www.dhsem.wv.gov/MitigationRecovery/Pages/Floodplain-Management.aspx

General Condition 16 (Wild and Scenic Rivers)

The following website provides information on wild and scenic rivers within West Virginia:

https://www.rivers.gov/west-virginia.php

General Condition 18 (Endangered Species)

To obtain the most up to date information on federally threatened and endangered species applicants are encouraged to utilize the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation System (IPaC) found at https://ecos.fws.gov/ipac/

Prior to the submittal of a PCN, applicants may also contact the USFWS, West Virginia Field Office, Ecological Services at:

Address: 6263 Appalachian Highway
Davis, West Virginia 26260

Email: fw5_wvfo@fws.gov

The West Virginia Mussel Survey Protocol may be found at the following link:

http://www.wvdnr.gov/Mussels/Main.shtm

General Condition 4 (Migratory Bird Breeding Areas) and General Condition 19 (Migratory Birds and Bald and Golden Eagles)

Prior to the submittal of a PCN, information to assist in complying with NWP General Conditions 4 and 19 may be obtained from the USFWS, West Virginia Field Office, Ecological Services at:

Address: 6263 Appalachian Highway
Davis, West Virginia 26260

Email: fw5_wvfo@fws.gov

The West Virginia Division of Natural Resources Coordination Unit may be contacted at (304) 637-0245.

General Condition 20 (Historic Properties)

The West Virginia National Register of Historic Places can be found at the following link: http://www.wvculture.org/shpo/nr/nr.html

The West Virginia State Historic Preservation Office (SHPO) Interactive Map Viewer can be found at the following link: https://mapwv.gov/shpo/

When reviewing a PCN, the Corps will scope appropriate historic property identification efforts and if applicable work with the applicant to take into account the effect of the proposed activity on historic properties. In these instances, information and coordination may include:

- Requesting comments directly from the West Virginia Division of Culture and History SHPO on the effect the proposed regulated activity may have on historic properties. The West Virginia Division of Culture and History SHPO may be contacted at:

  Address: 1900 Kanawha Blvd E
  Charleston, West Virginia 25305
  Phone: (304) 558-0220

- To identify potential historic properties that may be affected by a proposed project, the following historic properties information may be reviewed and/or provided with the PCN when applicable:
  - A detailed description of the project site in its current condition (i.e. prior to construction activities) including information on the terrain and topography of the site, the acreage of the site, the proximity of the site to major waterways, and any known disturbances within the site.
  - A detailed description of past land uses in the project site.
  - Photographs and mapping showing the site conditions and all buildings or structures within the project site and on adjacent parcels are useful. Photographs and maps supporting past land uses should be provided as available.
  - Information regarding any past cultural resource studies or coordination pertinent to the project area, if available.
  - U.S. Geological Survey (USGS) 7.5' series topographic maps;
  - West Virginia Division of Culture and history files including:
    - Historic Property Inventory Form;
    - Archaeological Site Forms;
    - Cemetery Inventory Forms;
    - National Register of Historic Places nomination forms including Historic Districts; and
    - County atlases, histories and historic USGS 15' series topographic map(s).

- When needed to evaluate effects to historic properties, the applicant is encouraged to consult with professionals meeting the Professional Qualification

Standards as set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716) during this data gathering process. These professionals can assist with compiling the project information discussed above and should provide recommendations as to whether the proposal has the potential to affect historic properties and if further effort is needed to identify or assess potential effects to historic properties. These professionals can also compile preliminary review information to submit to the district engineer as part of the PCN.

General Condition 23 (Mitigation)

Information pertaining to mitigation can be found at the following link:

https://www.lrh.usace.army.mil/Missions/Regulatory/Mitigation.aspx

General Condition 25 (Water Quality)

The West Virginia Department of Environmental Protection may be contacted at:

Address: 601 57th Street
Charleston, West Virginia 25304

Phone: (304) 926-0440

Information pertaining to the West Virginia Department of Environmental Protection water quality certification (WQC) program, including the Section 401 Clean Water Act WQC application form, can be obtained at the following link:
https://dep.wv.gov/WWE/Programs/Pages/401Certification.aspx

General Condition 32 (Pre-Construction Notification)

The nationwide permit pre-construction notification form (Form ENG 6082) may be obtained at the following link:

https://www.publications.usace.army.mil/Portals/76/Eng_Form_6082_2019Oct.pdf?ver=2019-10-22-081550-710/

A checklist of information that must be provided in a pre-construction notification can be obtained at the following link:

https://www.lrh.usace.army.mil/Missions/Regulatory/How-to-Apply-for-a-Permit/Nationwide-Permits/

Electronic Submittal:

- PCNs should be saved as a PDF document, and then submitted as an attachment in an email to the appropriate Regulatory Office:

  Huntington District – LRH.permits@usace.army.mil

Pittsburgh District – Regulatory.Permits@usace.army.mil

- Electronic documents must have sufficient resolution to show project details. The PCN and supporting documents submitted electronically must not exceed 10 megabytes (10MB) per email. Multiple emails may be required to transmit documents to ensure the 10MB limit is not exceeded. Alternatively, use of the Department of Defense Secure Access File Exchange (DoD SAFE) service to transfer large files may be requested in your email.

- For tracking and processing purposes, the email should include the following:

    - Email Subject Line: include the name of the applicant, type of NWP request, and location (County and State). Example: RE: Doe, John, NWP (or Pre-Construction Notification) and Section 401 WQC Request, Cabell County, West Virginia;
    - Email Body: 1) Brief description of the proposed project, 2) contact information (phone number, mailing address, and email address) for the applicant and/or their agent, and 3) the project location: Address and Latitude/Longitude in decimal degrees (e.g. 42.92788°, -88.36257°).

- If you do not have internet access, information may be submitted through the U.S. Postal Service to the appropriate Regulatory Office:

    U.S. Army Corps of Engineers, Huntington District
    ATTN: Regulatory Division
    502 Eighth Street
    Huntington, West Virginia 25701-2070
    Phone: (304) 399-5610
    Fax: (304) 399-5805

    U.S. Army Corps of Engineers, Pittsburgh District
    ATTN: Regulatory Division
    William S. Moorhead Federal Building
    1000 Liberty Avenue
    Pittsburgh, Pennsylvania 15222-4186
    Phone: (412) 395-7155
    Fax: (412) 644-4211

Standard Conditions of State 401 Water Quality Certification Applicable to the 2021 Nationwide Permits

1. To ensure project compliance with state water quality requirements applicable to these Nationwide Permits, notification is to be provided prior to construction to West Virginia Department of Environmental Protection (WV DEP) for any permitted activity for which the U.S. Army Corps of Engineers (USACE) requires pre-construction notification (PCN), in accordance with Nationwide Permit General Condition 32. This condition is required through authority provided in State

Certification of Activities Requiring a Federal License or Permit, 40 C.F.R §121.3 (2020) and WV Water Pollution Control Act, W.Va. Code §22-11-1, et seq. (2014).

2. To compensate for unavoidable impacts to aquatic resources as a result of the discharge of dredge or fill material, the applicant must provide proof of compensatory mitigation (as outlined in Standard Condition 16 below) to WV DEP prior to construction, for an activity resulting in cumulative permanent impacts to streams greater than 300 linear feet or causing the loss of greater than 1/10 acre of wetlands. This condition is required in accordance with the following; Rules for Individual State Certification of Activities Requiring a Federal Permit, W.Va. C.S.R. §47-5A-6 (2014), Antidegradation Implementation Procedures, W.Va. C.S.R §60-5-1, et seq. (2008), and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1 et seq. (2016).

3. To protect the biological integrity of the aquatic ecosystem, culverted crossings shall be sized and installed in a manner to allow the passage of aquatic life and freely pass bankfull flows. Exceptions to this requirement would be when culvert placement is on bedrock, or when stream gradient is equal to or greater than 4%, or when bankfull elevation is greater than final surface elevation. This condition is required in accordance with Antidegradation Implementation Procedures, W.Va. C.S.R §60-5-1, et seq. (2008), and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016).

4. To protect the designated uses of waters of the state, the permittee shall investigate for the presence of water supply intakes or other activities within 1/2 mile downstream of the activity, which may be affected by increased suspended solids and turbidity, caused by work in the watercourse. The permittee shall give notice to operators of any such water supply intakes and such other water quality dependent activities as necessary before beginning work in the watercourse in sufficient time to allow preparation for any change in water quality. This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-7.2.a.2 (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R §60-5-1, et seq (2008).

5. To ensure that temporary stream and wetland crossings have no significant adverse impact to aquatic resources, the following procedures and requirements shall be followed and met in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3.2 (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008). At each stream crossing, substrate in the channel will be removed and stockpiled separately from other excavated material. This native material must be reused in restoration of the stream channel, which is to be completed within 72 hours or as soon as practicable after completion of the crossing. Upon final stream bed restoration, the stream must have similar physical characteristics to include substrate, pattern, profile, dimension and embeddedness of the original stream channel. At each wetland crossing, any excavated material from the top 12 inches of soil will be removed and stockpiled separately from other excavated material. This native material must be reused in restoration of the wetlands temporarily impacted by the open cut crossing and restoration must be completed within 72

hours or as soon as practicable after completion of the crossing. Stream crossings will be conducted as close to a right angle to the watercourse as practicable and the area of in stream activity will be limited to reduce disturbance.

6. Spoil materials from the watercourse or onshore operations, including sludge deposits, shall not be dumped in the watercourse, or deposited in wetlands or other areas where the deposit may adversely affect the surface waters of the state consistent with the requirements set forth in WV Water Pollution Control Act, W.Va. Code §22-11-4.a.16 (2014) and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016).

7. To protect aquatic resources from unauthorized discharge of pollutants, storage and refueling areas shall not be located within any surface water body. All spills shall be promptly reported to the State Center for Pollution, Toxic Chemical and Oil Spills, 1-800-642-3074. This condition is required in accordance with; Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016) and WV Water Pollution Control Act, W.Va. Code §22-11-8 (2014).

8. To reduce sedimentation of aquatic resources and increased turbidity, it is required that proper stabilization of all disturbances below the ordinary high-water mark of waters shall be installed within 24 hours or as soon as practicable to prevent erosion. Where possible, stabilization shall incorporate revegetation using bioengineering as an alternative to riprap. If riprap is utilized, it must be of such weight and size that bank stress or slump conditions shall not be created due to its placement. Fill must be clean, nonhazardous and of such composition that it shall not adversely affect the biological, chemical or physical properties of the receiving waters. Unsuitable materials include but are not limited to: copper chromium arsenate (CCA) and creosote treated lumber, car bodies, tires, large household appliances, and asphalt. To reduce potential slope failure and/or erosion behind the material, fill containing concrete must be of such weight and size that promotes stability during expected high flows. Loose large slab placement of concrete sections from demolition projects greater than thirty-six (36) inches in its longest dimension are prohibited. Rebar or wire in concrete shall not protrude further than one (1) inch. All activities require the use of clean and coarse non-erodible materials with 15% or less of like fines that is properly sized to withstand expected high flows. This condition is required in accordance with; Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016), WV Water Pollution Control Act, W.Va. Code §22-11-8 (2014) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

9. To protect the water quality of aquatic resources, runoff from any storage areas or spills shall not be allowed to enter storm sewers without acceptable removal of solids, oils and toxic compounds. Discharges from retention/detention ponds must comply with permit requirements of the National Pollutant Discharge Elimination System permit program of the WV DEP. This condition is required in accordance with; WV Water Pollution Control Act, W.Va. Code §22-11-4.a.16 (2014) and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016).

10. To protect aquatic resources from discharge associated with land disturbance activities, which are one (1) acre or greater in total area, the project proponent must comply with the National Pollutant Discharge Elimination System or other state stormwater permit requirements as established by the WV DEP, if applicable. Any land disturbances are required to use Best Management Practices for Sediment and Erosion Control, as described in the latest West Virginia Department of Environmental Protection's Erosion and Sediment Control Best Management Practice Manual, or similar documents prepared by the West Virginia Division of Highways. These handbooks are available from the respective agency offices. This condition is required in accordance with; WV Water Pollution Control Act, W.Va. Code §22-11-4.a.16 (2014) and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016).

11. To protect aquatic resources from unpermitted discharges consistent with the requirements of WV Water Pollution Control Act, W.Va. Code §22-11-4.a.16 (2014) and Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016), concrete shall not be permitted to enter the watercourse unless contained by tightly sealed forms or cells. Concrete handling equipment shall not discharge waste washwater into wetlands or watercourses at any time without adequate wastewater treatment as approved by the WV DEP.

12. To maintain the biological integrity of the state's fisheries, a spawning waiver is required for in-stream work in designated warm water streams and their adjacent tributaries during the fish spawning season of April to June and for trout waters and their adjacent tributaries during the trout water fish spawning season of September 15 to March 31. Fish spawning waivers may be requested from West Virginia Division of Natural Resources (WV DNR) Coordination Unit, at (304) 637-0245. For information about specific stream designations contact West Virginia Department of Environmental Protection, Water Quality Standards Section at (304) 926-0440. This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3.2 (2016) and Wildlife Resources Declaration of Policy, W.Va. Code §20-2-4 (2017).

13. To protect stream stability and avoid unnecessary degradation of aquatic resources, the project proponent should avoid removal of riparian vegetation to the greatest extent practicable. This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

14. To protect aquatic life and reduce turbidity and disturbance to aquatic resources, the operation of equipment in-stream shall be minimized and accomplished during low flow periods when practical. Ingress and egress for equipment outside the immediate work area requires prior approval of the WV DNR Office of Land and Stream. This condition is required in accordance with; Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016) and Wildlife Resources Declaration of Policy, W.Va. Code §20-2-4 (2017).

15. To ensure the protection of West Virginia's high quality and special aquatic resources, notification must be provided to the WV DEP 60-days prior to construction describing the project purpose, location, and impacts for use of any Nationwide Permit(s) resulting in work in streams set forth in Sections A, B, and C below. The WV DEP will provide applicant coordination within 15 days of receipt of a complete notification.

    A. Tier 3 Protection is provided for aquatic resources in accordance with West Virginia Code of State Regulations, Requirements Governing Water Quality Standards, Antidegradation Policy, Title 47, Series 2, Section 4 for Outstanding National Resource Waters to include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by The Wilderness Act (16 U.S.C. §1131, et seq.) within the state, all federally designated rivers under the Wild and Scenic Rivers Act, 16 U.S.C. §1271, et seq.; all streams and other bodies of water in state parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which are high quality waters or naturally reproducing trout streams; waters designated under the National Parks and Recreation Act of 1978, as amended; and pursuant to W.Va. C.S.R. §§60-5-6, 7 (2008) those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource. This condition is required in accordance with Tier 3 Protection Review Procedures, W.Va. C.S.R. §§60-5-6, 7 (2008). The listing of Tier 3 streams is located at: https://dep.wv.gov/WWE/Programs/wqs/Documents/Tier%203%20Info/WVTier_3_Nov2013_web.xlt

    B. Naturally-Reproducing Trout Streams are protected to ensure the continued propagation and maintenance of naturally-reproducing trout. For information about specific streams contact WV DEP, Water Quality Standards, at 304-926-0440. This condition is required in accordance with Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016) and Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq. (2008).

    C. West Virginia Natural Stream Preservation Act identifies the following streams or rivers as protected from activities that would impound, divert or flood the body of water: Greenbrier River from its confluence with Knapps Creek to its confluence with the New River, Anthony Creek from its headwaters to its confluence with the Greenbrier River, Cranberry River from its headwaters to its confluence with the Gauley River, Birch River from Cora Brown Bridge in Nicholas County to the confluence of the river with the Elk River, and New River from its confluence with the Greenbrier River to its confluence with the Gauley River. This condition is required consistent with the authority and requirements of the Natural Streams Preservation Act, W.Va. Code §22-13-1, et seq. (2011).

16. The following mitigation guidelines are established to ensure no significant adverse impact to the chemical, physical, hydrologic, or biological integrity of wetlands and streams without compensating for the aquatic resource functions

that will be lost as a result of the permitted activity. The discharge of dredged or fill material into a stream or wetland is authorized based upon the following criteria:

A. Greater than one-tenth (1/10) acre of cumulative permanent impact to wetland(s) (including wetland type conversion) requires prior notification describing the project location, impacts, and plan for mitigation to be submitted to the WV DEP.

B. The amount of fill in a wetland, wetland complex or wetland system without mitigation is not to cumulatively exceed 1/10 acre.

C. Cumulative permanent impacts to stream(s) greater than 300 linear feet requires prior notification describing the project location, impacts, and plan for mitigation to be submitted to the WV DEP. The West Virginia Stream Wetland Valuation Metric (SWVM) is the preferred assessment methodology to assist with the determination of required mitigation. The metric is available at the Huntington and Pittsburgh USACE web sites.

In all instances, mitigation for all impacts incurred through use of these Nationwide Permits must first be directed to elimination of the impacts, then minimization of the impacts and lastly through compensatory mitigation. In many cases, the environmentally preferable compensatory mitigation may be provided through an approved mitigation bank or the West Virginia In-Lieu Fee Program. Permittee responsible compensatory mitigation may be performed using the methods of; restoration, enhancement, establishment, and in certain circumstances, preservation. In general, the required compensatory mitigation should be located in the same watershed as the impact site and located where it is most likely to successfully replace lost functions and services as the impacted site. However, the use of mitigation banks or in-lieu fee for in-kind replacement is not restricted to the same watershed in which the impact has occurred until such time as mitigation banks or in-lieu projects are developed in each major watershed.

Wetlands. When permittee responsible in-kind replacement mitigation is used, it is to be accomplished at the following ratios until such time an approved functional assessment methodology is established for the state of West Virginia.

Permanent impacts to open water wetlands are to be one (1) acre replaced for one (1) acre impacted.
Permanent impacts to wet meadow/emergent wetlands are to be two (2) acres replaced for one (1) acre impacted.
Permanent impacts to scrub-shrub and forested wetlands are to be three (3) acres replaced for one (1) acre impacted.

In instances where compensatory in-kind mitigation is completed 12 months prior to the impact of the aquatic resource, the replacement ratio may be reduced to as low as one (1) acre created/restored to every one (1) acre impacted.

NOTE: The ratio of created/restored wetlands to impacted wetlands not only ensures no net loss but assures the adequate replacement of the impacted wetlands

functions and values at the level existing prior to the impact. For many of the more complicated type wetlands, such as scrub-shrub and forested, the values and functions cannot readily be replaced through creation. Furthermore, not all wetland creation is successful.

In certain instances, the WV DEP DWWM may consider the acquisition of existing wetlands. Acquisition ratios include the following:

Five (5) to one (1) for open water wetlands;
Ten (10) to one (1) for wet meadow/emergent wetlands; and
Fifteen (15) to (1) for scrub-shrub and forested wetlands.

Under extenuating circumstances, the Secretary may accept lower ratios for high quality wetlands under significant threat of development.

All wetlands acquired, using the acquisition method of mitigation, shall either be deeded to the WVDNR Public Land Corporation for management by the Wildlife Resources Section or placed under a conservation casement and be protected from disturbance by the permittee or their designee. Third party oversight of the conservation easement by a non-profit conservation organization is preferred.

Streams. When proposing permittee responsible compensatory mitigation, projects shall attempt to replace lost functions for permanent stream impacts. Mitigation shall be determined on a case-by-case basis based on the pre- and post- condition stream quality and complexity of the mitigation project preferably utilizing the most current version of the SWVM worksheets. Compensatory mitigation may require protection through deed restrictions or conservation easements by the permittee or their designee.

These requirements are established in accordance with; Antidegradation Implementation Procedures, W.Va. C.S.R. §60-5-1, et seq, (2008), Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-3 (2016), WV Water Pollution Control Act, W.Va. Code §22-11-1, et seq. (2014), Rules for Individual State Certification of Activities Requiring a Federal Permit, W.Va. C.S.R. §47-5A-6 (2014), and Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 33 C.F.R. §332 (2008).

17. To protect mussel populations in accordance with state and federal requirements, should native freshwater mussels be encountered during the use of any Nationwide Permit, all activity reasonably expected to jeopardize the population is to cease immediately and the WV DNR Wildlife Resources Section, Wildlife Diversity Program is to be contacted (304-637-0245) to determine significance of the mussel population and the action to be taken. This condition is required in accordance with; Rules for Individual State Certification of Activities Requiring a Federal Permit, W.Va. C.S.R. §47-5A-3.1 (2014), Requirements Governing Water Quality Standards, W.Va. C.S.R. §47-2-1, et seq. (2016), Possession of Wildlife, W.Va. Code §20-2-4 (2017) and Fishing Regulations W.Va. C.S.R. §58-60-5.11 (2020).

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X James Ashcraft ☐ Agent ☐ Addressee

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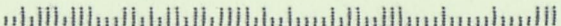

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1. Article Addressed to:

Dwayne E. Kelley
75 Dove Lane
West Union, WV 26456

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2. Article Number *(Transfer from service label)*

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A. Signature

X Dwayne E Kelley ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Dwayne Kelley

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Jefferey E. & Phyllis M. McKinney
8205 Big Flint Road
West Union, WV 26456

9590 9402 7059 1225 4204 16

2. Article Number *(Transfer from service label)*

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Phyllis McKinney ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Phyllis McKinney

C. Date of Delivery 1-17-23

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1. Article Addressed to:

Shirley L. Gessler
9371 Big Flint Road
West Union, WV 26456

9590 9402 7059 1225 4203 93

2. Article Number *(Transfer from service label)*

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Shirley Gessler ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Shirley Gessler

C. Date of Delivery 1/3-23

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Stephen W. & Ramonda L. Strent

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$ .53

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Dwayne E. Kelley

Street and Apt. No., or PO Box No.
75 Dove Ln.

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Westlon, WV 26456 #623

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Shirley L. Gessler

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9371 Big Flint Rd.

City, State, ZIP+4®
West Union, WV 26456 #623

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