



# Floodplain Development Permit

## 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: #16-439**  
**West Union Pipeline Slip at Wilhelm**

**Date Approved: November 22, 2016**

**Expires: November 22, 2017**

**Issued to: Antero Midstream, LLC**

**POC: Rachel Grzybek**  
**304-842-4008**

**Company Address: 1615 Wynkoop Street**  
**Denver, CO 80202**

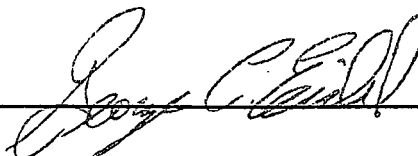
**Project Address: Wilhelm Run**

**Firm: 54017C0115C**

**Lat/Long: 39.284769N, 80.834451W**

**Purpose of development: Repair Slip**

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




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**Date: November 22, 2016**

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For additional information regarding this permit, please contact  
Doddridge County Floodplain Manager at 304.873.2631, or via email at  
doddridgecountyfpm@gmail.com  
118 East Court Street; West Union, WV 26456

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<b>SENDER: COMPLETE THIS SECTION</b>		<b>COMPLETE THIS SECTION ON DELIVERY</b>	
<ul style="list-style-type: none"> <li>■ Complete items 1, 2, and 3.</li> <li>■ Print your name and address on the reverse so that we can return the card to you.</li> <li>■ Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		<p>A. Signature  <input checked="" type="checkbox"/> <i>Michael G. Webb</i>      <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>	
<p>Michael G. &amp; Rosalind A. Webb  Rt. 1 Box 290  West Union, WV 26456</p>		<p>B. Received by (Printed Name)      C. Date of Delivery    10/25/2016</p>	
 9590 9402 1601 5362 0147 55		<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes  If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>762 Stone Valley Rd.  West Union, WV  #16439      26456</p>	
<p>2. Article Number (Transfer from service label)</p>		<p>3. Service Type      <input type="checkbox"/> Priority Mail Express®  <input type="checkbox"/> Adult Signature      <input type="checkbox"/> Registered Mail™  <input type="checkbox"/> Adult Signature Restricted Delivery      <input type="checkbox"/> Registered Mail Restricted Delivery  <input type="checkbox"/> Certified Mail®      <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Certified Mail Restricted Delivery      <input type="checkbox"/> Signature Confirmation™  <input type="checkbox"/> Collect on Delivery      <input type="checkbox"/> Signature Confirmation Restricted Delivery  <input type="checkbox"/> Collect on Delivery Restricted Delivery      <input type="checkbox"/> Insured Mail  <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

<b>SENDER: COMPLETE THIS SECTION</b>		<b>COMPLETE THIS SECTION ON DELIVERY</b>	
<ul style="list-style-type: none"> <li>■ Complete items 1, 2, and 3.</li> <li>■ Print your name and address on the reverse so that we can return the card to you.</li> <li>■ Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		<p>A. Signature  <input checked="" type="checkbox"/> <b>David Empey</b>      <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>	
<p>1.</p> <p>Barbara Reed  1 First American Way  Westlake, TX 76262</p>		<p>B. Received by (Printed Name)      C. Date of Delivery    OCT 24 2016</p>	
 9590 9402 1601 5362 0147 79		<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes  If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>#16439</p>	
<p>2. Article Number (Transfer from service label)</p>		<p>3. Service Type      <input type="checkbox"/> Priority Mail Express®  <input type="checkbox"/> Adult Signature      <input type="checkbox"/> Registered Mail™  <input type="checkbox"/> Adult Signature Restricted Delivery      <input type="checkbox"/> Registered Mail Restricted Delivery  <input type="checkbox"/> Certified Mail®      <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Certified Mail Restricted Delivery      <input type="checkbox"/> Signature Confirmation™  <input type="checkbox"/> Collect on Delivery      <input type="checkbox"/> Signature Confirmation Restricted Delivery  <input type="checkbox"/> Collect on Delivery Restricted Delivery      <input type="checkbox"/> Insured Mail  <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

**William D. & Emily J. Davis**  
**542 Stone Valley Road**  
**West Union, WV 26456**



9590 9402 1601 5362 0147 62

2. Article Number (Transfer from service label)

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X *William Davis*

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

10-24-16

D. Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No

#16-439

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

USPS TRACKING#  
CHARLESTON



9590 9402 1601 5362 0147 62

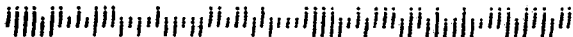


First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

**United States  
Postal Service**

• Sender: Please print your name, address, and ZIP+4® in this box•

George Eidel  
Doddridge County OEM/CFM  
108 Court St. Ste 1  
West Union, WV 26456





ANTERO MIDSTREAM  
1615 WYNKOOP STREET  
DENVER, COLORADO 80202

Vendor Name	Vendor No.	Date	Check Number	Check Total
DODDRIDGE COUNTY COMMISSION	43312	Nov-28-2016	105133	\$500.00

INV #	INV DATE	DESCRIPTION	AMOUNT	DISCOUNTS	NET AMOUNT
MR112316	11/23/16	FLOODPLAIN PERMIT - WEST UNION PL S	500.00	0.00	500.00

COPY

COPY

COPY

TOTAL INVOICES PAID ==> 500.00 0.00 500.00

DETACH AND RETAIN FOR TAX PURPOSES

THIS CHECK HAS A COLORED FACE ON WHITE STOCK AND AN ARTIFICIAL WATERMARK ON THE BACK.



ANTERO MIDSTREAM  
1615 WYNKOOP STREET  
DENVER, COLORADO 80202

Wells Fargo  
Denver, CO

Check No. 105133

11-24  
412

800 - AP ACCT WELLS FARGO

Void After 90 Days

CHECK NUMBER	DATE	PAY EXACTLY
105133	Nov-28-2016	\$500.00

PAY EXACTLY **500dols00cts**  
Five Hundred Dollars and Zero Cents

TO  
THE  
ORDER  
OF

DODDRIDGE COUNTY COMMISSION  
BETH A ROGERS, CLERK~118 EAST COURT STREET~ROOM 10  
2  
WEST UNION, WV 26456

*[Handwritten Signature]*

⑈ 105133 ⑈ ⑆ 041203824 ⑆

9657481710 ⑈

COPY



ANTERO MIDSTREAM  
1615 WYNKOOP STREET  
DENVER, COLORADO 80202

Vendor Name	Vendor No.	Date	Check Number	Check Total
DODDRIDGE COUNTY COMMISSION	43312	Nov-28-2016	105133	\$500.00

INV #	INV DATE	DESCRIPTION	AMOUNT	DISCOUNTS	NET AMOUNT
MR112316	11/23/16	FLOODPLAIN PERMIT - WEST UNION PL S	500.00	0.00	500.00

# 16-439  
16-439

## Doddridge County, West Virginia

RECEIPT NO: 8183

DATE: 2016/12/06

FROM: ANTERO MIDSTREAM

AMOUNT: \$ 500.00

FIVE HUNDRED DOLLARS AND 00 CENTS

FOR: #16-439 WEST UNION PL S

00000105133 FP-BUILDING PERMITS

020-318

TOTAL: \$500.00

MICHAEL HEADLEY

SHERIFF & TREASURER

MEC

CLERK

Customer Copy

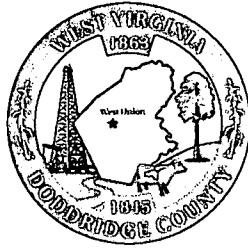
TOTAL INVOICES PAID ==>

500.00

0.00

500.00

DETACH AND RETAIN FOR TAX PURPOSES



## **Doddridge County Floodplain Permits**

(Week of October 30, 2016 )

Please take notice that on the **17** day of **October, 2016**, **Antero Midstream, LLC** filed an application for a Floodplain Permit (**#16-439**) to develop land located at or about **Wilhelm Run, 39.284769N, 80.834451W**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **November 21, 2016** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is to repair a slip.**

  
Antero  
Midstream Partners LP  
Antero Midstream, LLC  
535 White Oaks Blvd  
Bridgeport, WV 26330  
Office 304.842.4100  
Fax 304.842.4102

October 4, 2016

OCT17 16 1:13PM

Doddridge County Commission  
Attn: George Eidel, Doddridge County Floodplain Manager  
118 East Court Street, Room 102  
West Union, WV 26456

Mr. Eidel:

Antero Midstream LLC would like to submit a Doddridge County Floodplain permit application for our *West Union Pipeline Slip at Wilhelm*. Our project is located in Doddridge County, Central District where the repair is located at coordinates 39.284769N, 80.834451W. Per the FIRM Map #54017C0115C, this location is in the floodplain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application
- No-Rise Certificate
- Site Location Map
- Design Plans
- WV Flood Tool Map
- FIRM Map

If you have any questions please feel free to contact me at (304) 842-4008.

Thank you in advance for your consideration.

Sincerely,



Rachel Grzybek  
Environmental Specialist II  
Floodplain Engineer  
Antero Resources Corporation

Enclosures





Permit# _____
Project Name: _____
Permittees Name: _____

OCT17 16 1:14PM

# ***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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. 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 

DATE 10-7-28

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Applicant Information:**

*Please provide all pertinent data.*

<b>Applicant Information</b>		
<b>Responsible Company Name: Antero Midstream, LLC.</b>		
<b>Corporate Mailing Address: 1615 Wynkoop Street</b>		
<b>City: Denver</b>	<b>State: CO</b>	<b>Zip: 80202</b>
<b>Corporate Point of Contact (POC):</b>		
<b>Corporate POC Title:</b>		
<b>Corporate POC Primary Phone:</b>		
<b>Corporate POC Primary Email:</b>		
<b>Corporate FEIN:</b>	<b>Corporate DUNS:</b>	
<b>Corporate Website: <a href="http://www.anteroresources.com">www.anteroresources.com</a></b>		
<b>Local Mailing Address: 535 White Oaks Blvd</b>		
<b>City: Bridgeport</b>	<b>State: WV</b>	<b>Zip: 26330</b>
<b>Local Project Manager (PM):</b>		
<b>Local PM Primary Phone:</b>		
<b>Local PM Secondary Phone:</b>		
<b>Local PM Primary Email:</b>		
<b>Person Filing Application: Rachel Grzybek</b>		
<b>Applicant Title: Environmental Specialist II</b>		
<b>Applicant Primary Phone: (304) 842-4008</b>		
<b>Applicant Secondary Phone: (304) 641-2396</b>		
<b>Applicant Primary Email: <a href="mailto:rgrzybek@anteroresources.com">rgrzybek@anteroresources.com</a></b>		



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**

<u>ACTIVITY</u>	<u>STRUCTURAL TYPE</u>
<input type="checkbox"/> New Structure	<input type="checkbox"/> Residential (1 – 4 Family)
<input type="checkbox"/> Addition	<input type="checkbox"/> Residential (more than 4 Family)
<input type="checkbox"/> Alteration	<input type="checkbox"/> Non-residential (floodproofing)
<input type="checkbox"/> Relocation	<input type="checkbox"/> Combined Use (res. & com.)
<input type="checkbox"/> Demolition	<input type="checkbox"/> Replacement
<input type="checkbox"/> Manufactured/Mobil Home	

**B. OTHER DEVELOPMENT ACTIVITIES:**

- Fill                     Mining                     Drilling                     Pipelining
- Grading
- 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)

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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  

<b>Site/Property Information:</b>		
<b>Legal Description:</b> Wilhelms Creek 75.43 AC		
<b>Physical Address/911 Address:</b> Off RT 36		
<b>Decimal Latitude/Longitude:</b> 39.284383 N, 80.833689 W		
<b>DMS Latitude/Longitude:</b> 39° 17' 3.78" N, 80° 50' 1.28" W		
<b>District:</b> 1	<b>Map:</b> 7	<b>Parcel:</b> 85
<b>Land Book Description:</b>		
<b>Deed Book Reference:</b> Book 279, Page 470		
<b>Tax Map Reference:</b> 09-01-0007-0085-0000		
<b>Existing Buildings/Use of Property:</b> Antero Midstream LLC.'s West Union Pipeline right-of-way is located on this property.		

<b>Floodplain Location Data: (to be completed by Floodplain Manager or designee)</b>			
<b>Community:</b>	<b>Number:</b>	<b>Panel:</b>	<b>Suffix:</b>
<b>Location (Lat/Long):</b>		<b>Approximate Elevation:</b>	
		<b>Estimated BFE:</b>	
<b>Is the development in the floodway?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Is the development in the floodplain?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Zone:</b> _____	
<b>Notes:</b>			

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: <u>  1  </u> of <u>  1  </u>
--

<b>Property Owner Data:</b>		
Name of Primary Owner (PO): Michael G. and Rosalind A. Webb		
PO Address: Rt. 1 Box 290		
City: West Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email: 7014 0150 0001 7356 7757		

<b>Surface Rights Owner Data:</b>		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

<b>Mineral Rights Owner Data: (As Applicable)</b>		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**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: ___ of ___
----------------------------------

<b>Contractor/Sub-Contractor (C/SC) Information:</b>		
C/SC Company Name:		
C/SC WV License Number:		
C/SC FEIN:	C/SC DUNS:	
Local C/SC Point of Contact (POC):		
Local C/SC POC Title:		
C/SC Mailing Address:		
City:	State:	Zip-Code:
Local C/SC Office Phone:		
Local C/SC POC Phone:		
Local C/SC POC E-Mail:		

<b>Engineer Firm Information:</b>		
Engineer Firm Name:		
Engineer WV License Number:		
Engineer Firm FEIN:	Engineer Firm DUNS:	
Engineer Firm Primary Point of Contact (POC):		
Engineer Firm Primary POC Title:		
Engineer Firm Mailing Address:		
City:	State:	Zip-Code:
Engineer Firm Office Phone:		
Engineer Firm Primary POC Phone:		
Engineer Firm Primary POC E-Mail:		

### 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.

<b>Adjacent Property Owner Data: Upstream</b>		
Name of Primary Owner (PO): William D. and Emily J. Davis		
Physical Address: 542 Stone Valley Road		
City: West Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email: 7014 0150 0001 7356 7733		

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

<b>Adjacent Property Owner Data: Downstream</b>		
Name of Primary Owner (PO): Barbara B. Reed		
Physical Address: 1 First American Way		
City: Westlake	State: TX	Zip: 76262
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email: 7014 0150 0001 7356 7740		

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



## 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.

## **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 been properly attained, are current and valid, and must be presented with this application before a Doddridge County Floodplain Permit may be 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 or 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 at the next scheduled Doddridge County Commission meeting after the date of issuance. 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. A Certificate of Compliance is required upon substantial completion of the project.
- 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 Wirt County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature:  Date: 10-7-16

Applicant Printed Name: Brian Guarnas

# West Union Pipeline Slip at Wilhelm



## User Notes:

- Flood Hazard Zone
- Flood Point of Interest

### 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. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at [www.msc.fema.gov](http://www.msc.fema.gov). *WV Flood Tool* (<http://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Map created on September 30, 2016

### Flood Hazard Area:

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

**FEMA Issued Flood Map:** 54017C0115C

**Watershed (HUC8):** Little Musringum-Middle Island (5

**Elevation:** About 829 ft

**Location (long, lat):** (80.833797 W,39.284532 N)

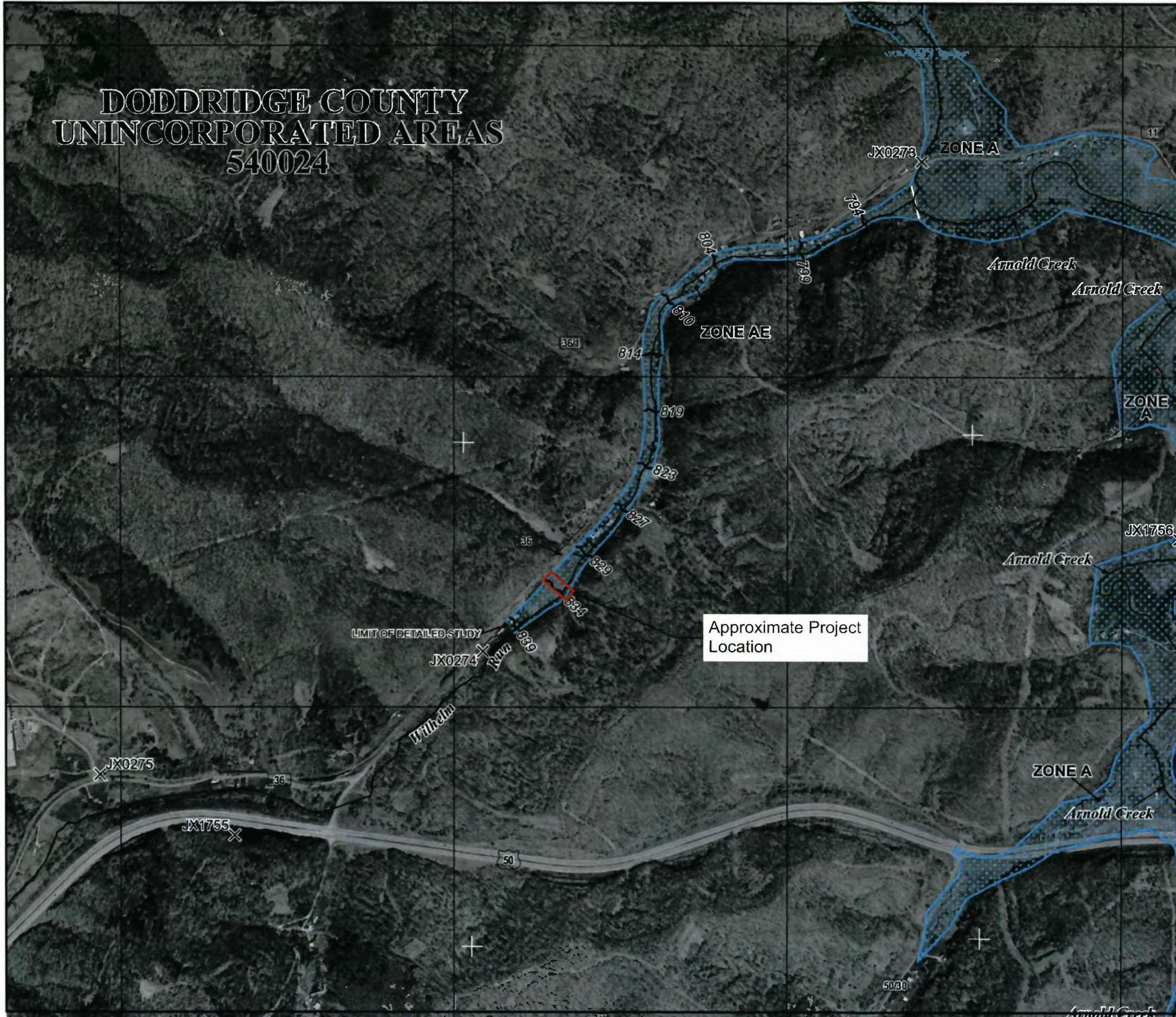
**Location (UTM 17N):** (514334, 4348365)

**Contacts:** Doddridge

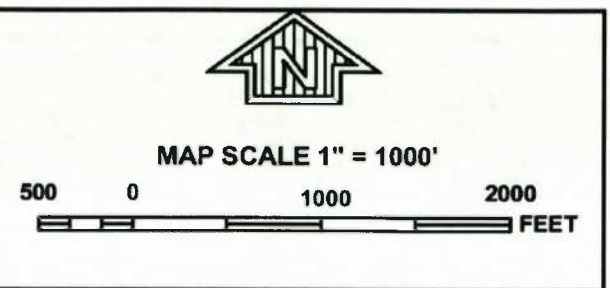
**CRS Information:** N/A

**Parcel Number:**

**DODDRIDGE COUNTY  
UNINCORPORATED AREAS  
540024**



Approximate Project Location



PANEL 0115C

**FIRM**  
FLOOD INSURANCE RATE MAP  
DODDRIDGE COUNTY,  
WEST VIRGINIA  
AND INCORPORATED AREAS

PANEL 115 OF 325  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0115	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER  
54017C0115C  
MAP REVISED  
OCTOBER 4, 2011  
Federal Emergency Management Agency

290000 FT

285000 FT

JOINS PANEL 0120

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



October 3, 2016

Doddridge County Commission  
Attn: George Eidel, Doddridge County Floodplain Manager  
118 East Court Street, Room 102  
West Union, WV 26456

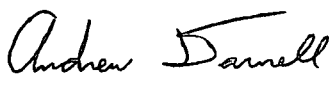
Subject: Antero Midstream, LLC.  
West Union Pipeline Slip at Wilhelm  
No-Rise Certificate  
Doddridge County, West Virginia  
CEC Project 163-065


Civil & Environmental Consultants, Inc. (CEC) is pleased to evaluate the potential floodplain impacts for the above referenced project on behalf of Antero Midstream, LLC., 535 White Oaks Blvd, Bridgeport, WV 26330. Antero Midstream, LLC. proposes to repair a slip that has occurred on the hillside where the West Union Pipeline crosses Wilhelm Run. Portions of the proposed project are located within the Wilhelm Run Zone AE flood hazard area according to the Flood Insurance Rate Map for Doddridge County, Map Panel #54017C0115C, with a map revised date of October 4, 2011. The proposed work involves excavating the slip material to break up the slip plane, installing drains as necessary, and backfilling to restore the ground to existing conditions. Proposed erosion and sediment control measures include a stabilized construction entrance, filter sock, a timber mat crossing and pump around of Wilhelm Run, and slope protection. Since the ground surface will be returned to existing conditions at the conclusion of the work, the proposed project will not result in a decrease of the available floodplain storage area and will not adversely affect the existing base flood elevation of Wilhelm Run.

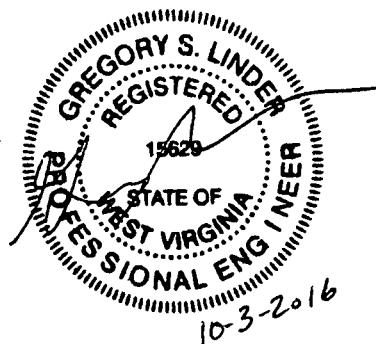
This no-rise certificate is provided in support of the floodplain development permit application. Your time and effort in reviewing this floodplain development permit application is appreciated. Please feel free to contact me at 304-933-3119 or via e-mail at [glinder@cecinc.com](mailto:glinder@cecinc.com) or contact Ms. Rachel Grzybek at 304-842-4008 or via e-mail at [rgrzybek@anteroresources.com](mailto:rgrzybek@anteroresources.com) if you have questions or need additional information.

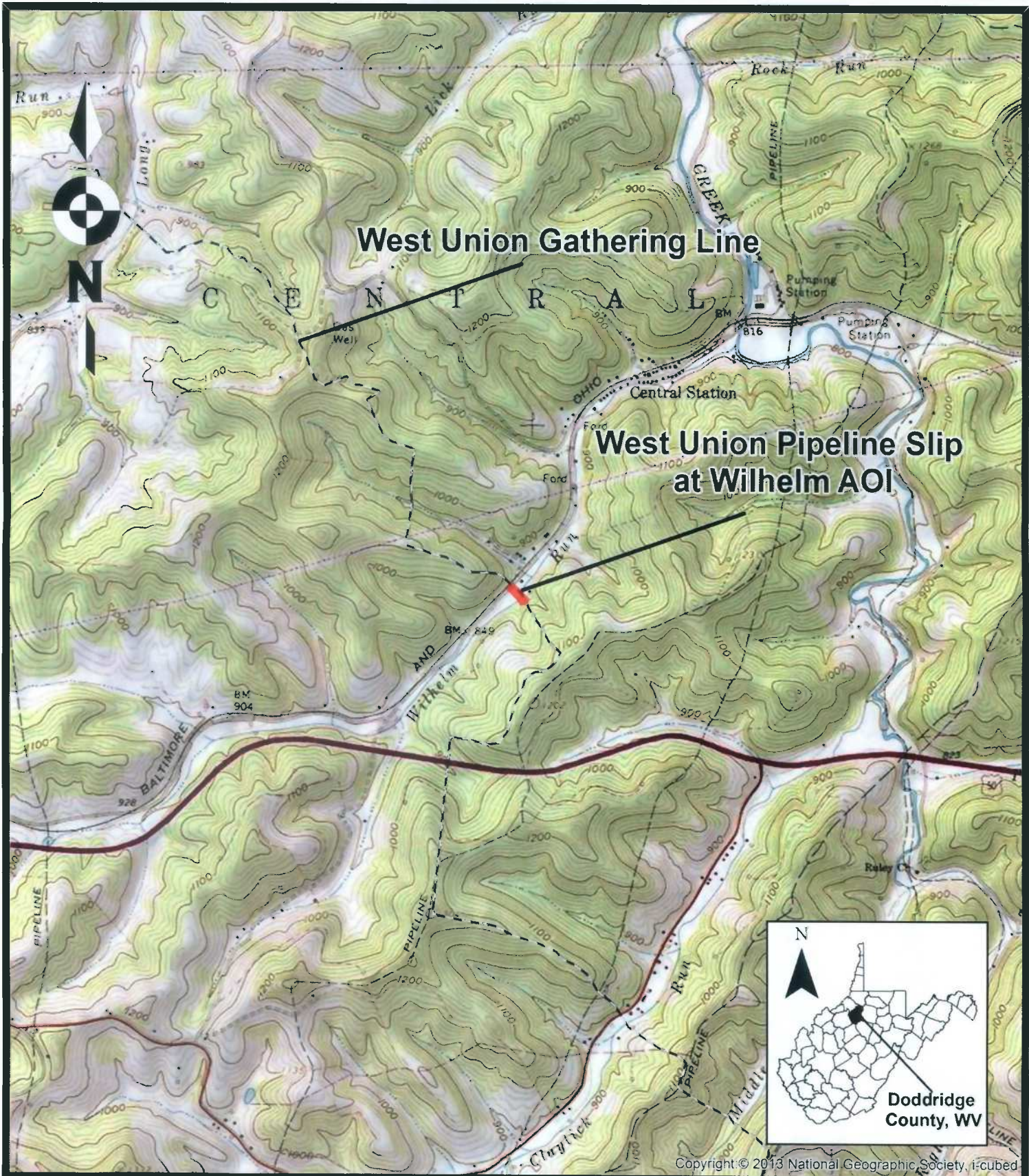
Respectfully submitted,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

  
Andrew Darnell, EIT  
Project Consultant

  
Greg Linder, P.E.  
Project Manager





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**Attachment A.**  
**Project Location Map**  
**West Union Pipeline Slip at**  
**Wilhelm**  
 A portion of the Salem 7 1/2' Quadrangle

39.228420 °N, -80.833637°W  
 Scale = 1:24,000

Prepared by:



**ALLSTAR ECOLOGY**  
 Natural Resource Specialists  
 1582 Meadowdale Rd.  
 Fairmont, WV 26554  
 304-816-3490

Prepared for:

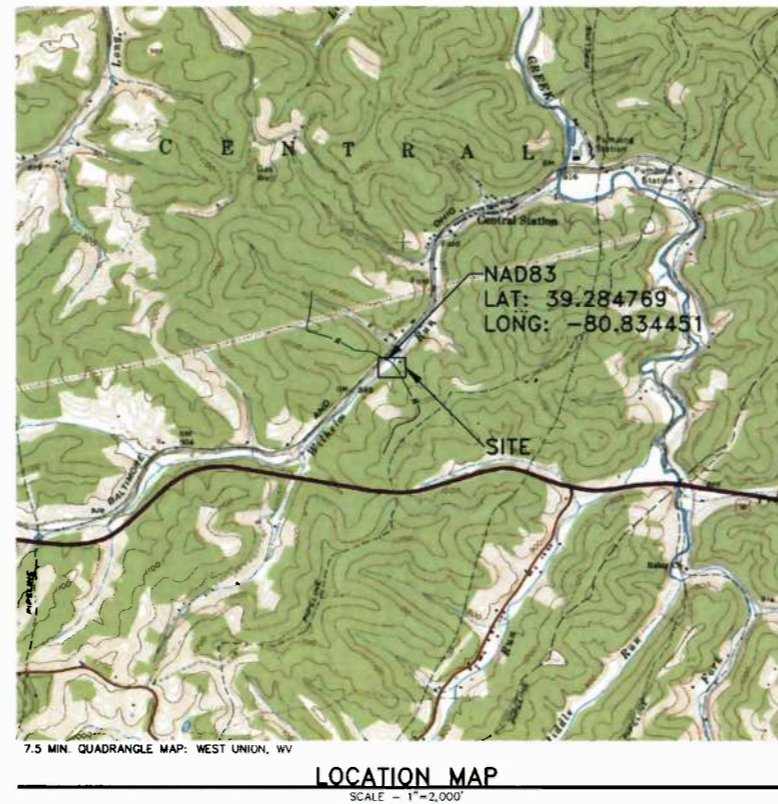


# EROSION & SEDIMENT CONTROL PLAN

## FOR

# WEST UNION PIPELINE SLIP AT WILHELM

## CENTRAL DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA



**LIST OF DRAWINGS**

1 OF 4	COVER SHEET
2 OF 4	SLIP REPAIR PLAN
3 OF 4	NOTES & DETAIL SHEET
4 OF 4	DETAIL SHEET

**SOILS CLASSIFICATION**

GsE - GLPIN-PEABODY COMPLEX, 15 TO 35% SLOPES, VERY STONY  
 GsF - GLPIN-PEABODY COMPLEX, 35 TO 70% SLOPES, VERY STONY  
 Ss - SENSABAUGH SILT LOAM

**GENERAL NOTES**

1. THE TOPOGRAPHIC DATA UTILIZED FOR THIS BASE MAPPING IS A COMBINATION OF FIELD RUN TOPOGRAPHY PERFORMED BY RETIEW ASSOCIATES, INC IN APRIL 2016 AND BEST AVAILABLE THREE (3) METER DATA FROM WEST VIRGINIA GIS TECHNICAL CENTER (WVGISTC), AND THE STATE ADDRESSING AND MAPPING BOARD (SAMB).
2. PROPERTY BOUNDARIES, AND LANDOWNER INFORMATION SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA AND DEED REFERENCES.
3. EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
6. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION PRIOR TO ANY EXCAVATION BY NOTIFYING MISS UTILITY OF WEST VIRGINIA AT 1-800-245-4848.
7. A WETLANDS PRESENCE/ABSENCE SURVEY WAS PERFORMED BY ALLSTAR ECOLOGY IN MAY 2016.
8. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR PERMITTING AND INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY EXISTING GRADES AND TO VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.
9. ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
10. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES AND WILL BE RESPONSIBLE FOR THE PROTECTION OF THESE UTILITIES AND STRUCTURES AT ALL TIMES.
11. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DUE TO THE CONTRACTORS NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AND COMPLETELY AT HIS EXPENSE.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWN'S.
13. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
14. CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
15. CONTRACTOR MAY WIDEN ACCESS ROAD DUE TO STEEP SLOPES IF DEEMED NECESSARY.
16. PROPOSED ROCK CONSTRUCTION ENTRANCE TO BE BUILT SUCH THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SHEET FLOW ON TO PUBLIC ROAD.
17. SEED AND MULCH ALL DISTURBED AREAS PER DETAILS.
18. ALL CLEARED TREE GRINDINGS SHOULD BE PLACED ON UPHILL SIDE OF COMPOST FILTER SOCKS AND NOT STOCKPILED ON-SITE.
19. CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT ANTERO AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, POTTERY, ETC.) ARE ENCOUNTERED DURING CONSTRUCTION.
20. WATERBAR LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS WILL BE DETERMINED IN THE FIELD.
21. OWNER OF PIPELINE TO BE CROSSED MUST BE CONTACTED PRIOR TO BEGINNING OF CONSTRUCTION OF CROSSING.
22. MAINTAIN ACCESS ROADS WITH GRAVEL AS NEEDED. INSTALL APPROPRIATE BMP'S (FILTER SOCK, BROAD BASED DIPS) FOR AREAS WHERE UPGRADE OF ROADS REQUIRES EARTH DISTURBANCE. SEE DETAIL SHEETS FOR BMP SPACING.
23. CONSTRUCTION TRAFFIC SHALL USE ONLY ROADS WITHIN THE LIMITS OF DISTURBANCE MARKED ON THIS PLAN. ALL ACCESS ROADS (AR) ARE EXISTING AND WILL HAVE MINIMAL WIDENING AND MAINTENANCE.
24. CONTRACTOR TO REPLACE ACCESS ROAD CULVERTS AS NEEDED. CULVERTS THAT ARE CRUSHED, SILTED, DETERIORATING, AND BEYOND MAINTENANCE SHALL BE REPLACED ACCORDING TO THE DETAILS WITHIN THIS PLAN.
25. THE PERIMETER CONTROLS ON THIS PLAN ARE INTERCHANGABLE FILTER SOCK, SILT FENCE, SUPER SILT FENCE AS REQUESTED BY THE CONTRACTOR.

**LOCAL ANTERO OFFICE**

535 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE (304) 842-4100

LOCAL CONTACTS:  
 ELI WAGONER-ENVIRONMENTAL ENGINEER  
 PHONE (304) 842-4068  
 CELL (304) 476-9770

SHAWN BENNETT-CONSTRUCTION SUPERVISOR  
 PHONE (304) 842-4341  
 CELL (304) 841-0071

ROBERT WIKS-DESIGN MANAGER  
 PHONE (304) 842-4401  
 CELL (304) 627-7405

**WEST VIRGINIA 811**

**CALL BEFORE YOU DIG!** Dial 811 or 800.245.4848

Miss Utility of West Virginia

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-245-4848.




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

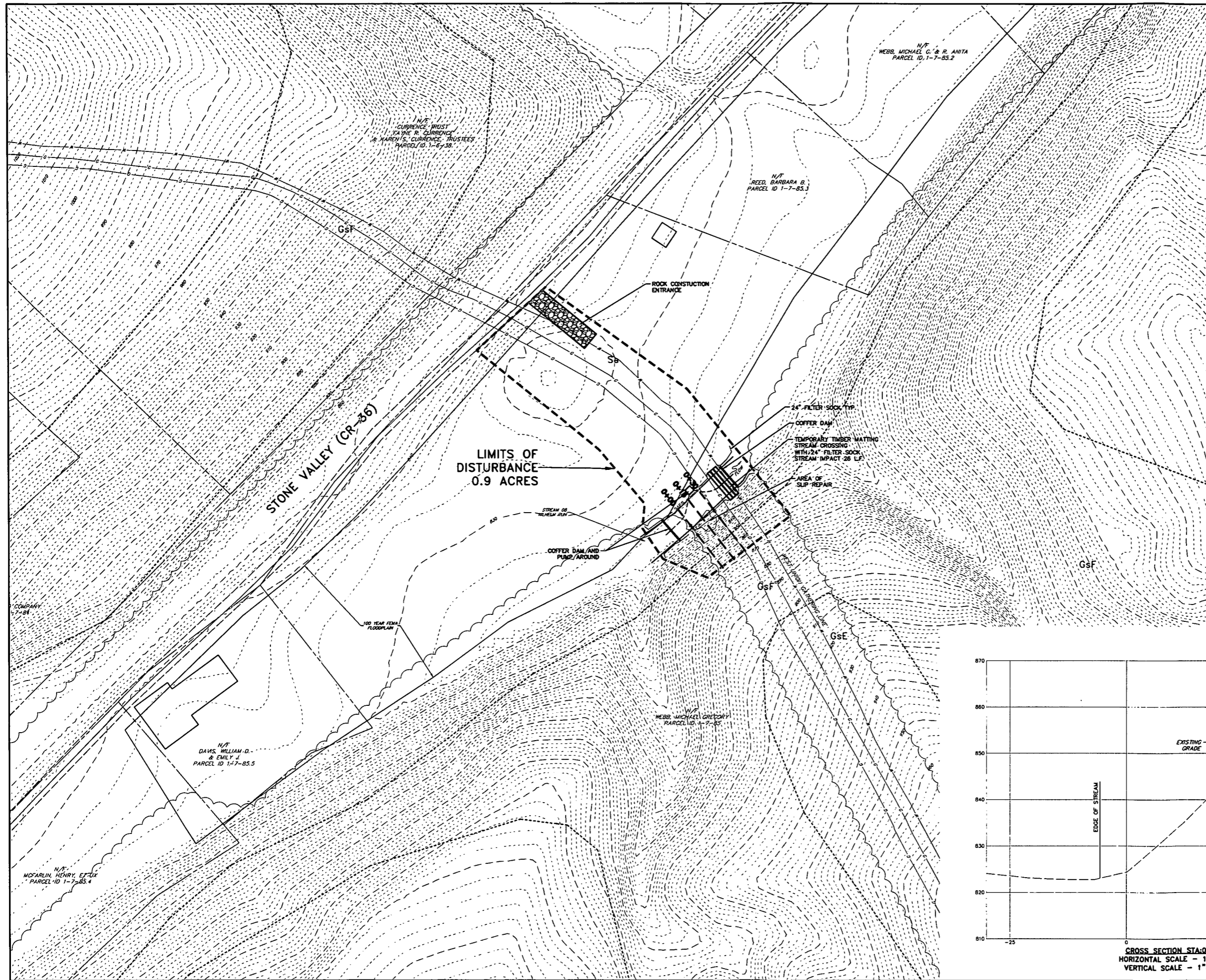
PRINTED NAME: BLAND SPRAY, PE SIGN NAME: \_\_\_\_\_

COMPANY: RETIEW ASSOCIATES, INC.

ADDRESS: ONE ROBINSON PLAZA, SUITE 200  
 PITTSBURGH, PA 15205

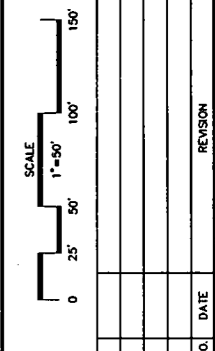
PHONE: (412) 446-1728

SCALE AS NOTED							
FOR RETIEW ASSOCIATES BY:							
							
MANAGER: ANDREW S. LEVINE	DESIGN BY: JDN	CHKD BY: P.J.F	CHKD BY: JDN	CHKD BY: P.J.F	FIELDBOOK NO.	DATE COLLECTOR	NO. DATE
CLIENT <b>ANTERO RESOURCES</b> APPALACHIAN CORPORATION 1615 WYNKOOP STREET DENVER, COLORADO 80202							
							
							
RETIEW Associates, Inc. One Robinson Plaza, Suite 200, Pittsburgh, PA 15205 Phone (412) 446-1728 Fax (412) 446-1733 Email: retiew@retiew.com Website: www.retiew.com							
ENGINEERS • PLANNERS • SURVEYORS • ENVIRONMENTAL SCIENTISTS Environmental Consultants							
COVER SHEET	EROSION & SEDIMENT CONTROL PLAN	FOR		WEST UNION PIPELINE SLIP AT WILHELM			
CENTRAL DISTRICT DODDRIDGE COUNTY, WV							
DATE: 06/17/16							
SHEET NO. 1 OF 4							
DWG. NO. 095452280							



**LEGEND**

- EXISTING PROPERTY LINE
- EXISTING RIGHT-OF-WAY LINE
- EXISTING PAVEMENT
- EXISTING STONE
- EXISTING SOILS BOUNDARY
- EXISTING TREELINE
- EXISTING TREE
- EXISTING MAJOR CONTOUR LINE
- EXISTING MINOR CONTOUR LINE
- EXISTING UTILITY POLE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING SANITARY SEWER LINE
- EXISTING FENCE LINE
- EXISTING AREA OF INVESTIGATION
- EXISTING DRAINAGE CHANNEL
- EXISTING STREAM-EPHEMERAL
- EXISTING STREAM-PERENNIAL
- EXISTING STREAM-INTERMITTENT
- EXISTING WETLAND
- COUNTY LINE
- DISTRICT LINE
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED MAJOR CONTOUR LINE
- PROPOSED MINOR CONTOUR LINE
- PROPOSED TREELINE
- PROPOSED GRAVEL
- LIMITS OF DISTURBANCE
- PROPOSED FILTER SOCK
- PROPOSED 18" FILTER SOCK
- PROPOSED 24" FILTER SOCK



FOR RETTEW ASSOCIATES BY:

MANAGER: ANDREW S. LEVINE	CHD BY: P.J.F.	CHD BY: P.J.F.	FIELDBOOK NO.:
DESIGN BY: J.D.N.	CHD BY: P.J.F.	CHD BY: P.J.F.	DATE COLLECTED:
DRAWN BY: J.D.N.			
SURV. CHIEF: J.D.N.			

CLIENT

**ANTERO RESOURCES CORPORATION**  
 1615 WYNKOOP STREET  
 DENVER, COLORADO 80202

**RETTEW**

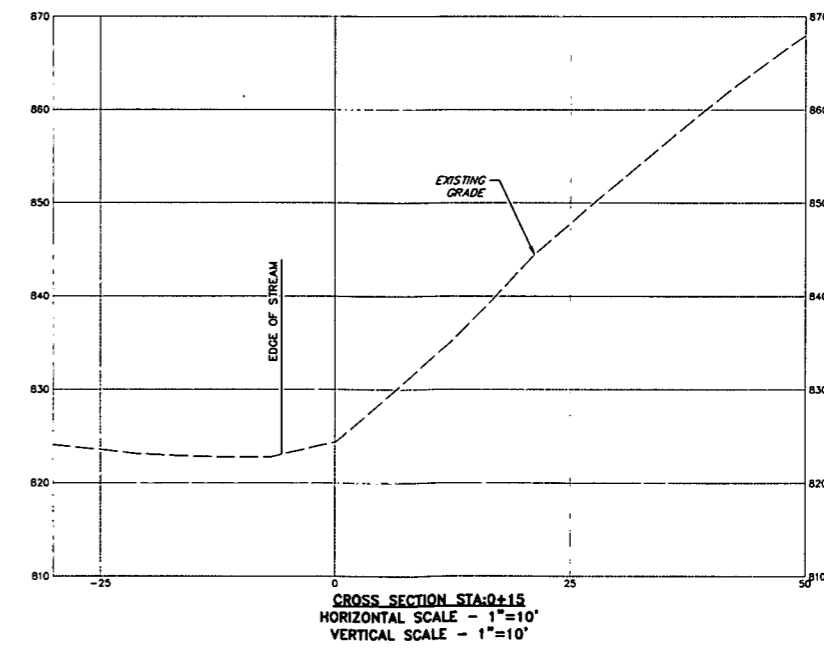
RETTEW Associates, Inc.  
 One Robison Plaza, Suite 200, Pittsburgh, PA 15205  
 Phone (412) 446-1726 Fax (412) 446-1733  
 Email: rettew@rettew.com  
 Website: www.rettew.com

Engineers - Planners - Scientists - Landscape Architects  
 Environmental Consultants

SLIP REPAIR PLAN  
 EROSION & SEDIMENT CONTROL PLAN  
 for  
**WEST UNION PIPELINE SLIP  
 AT WILHELM**

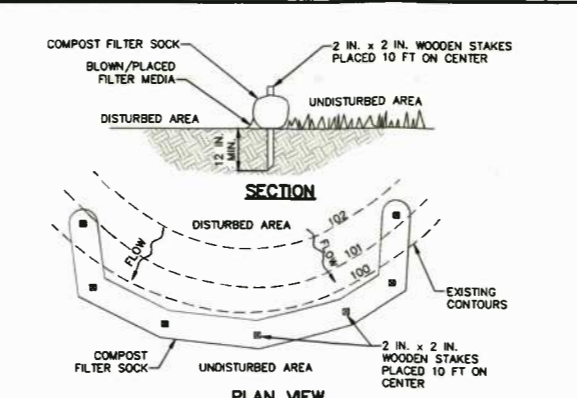
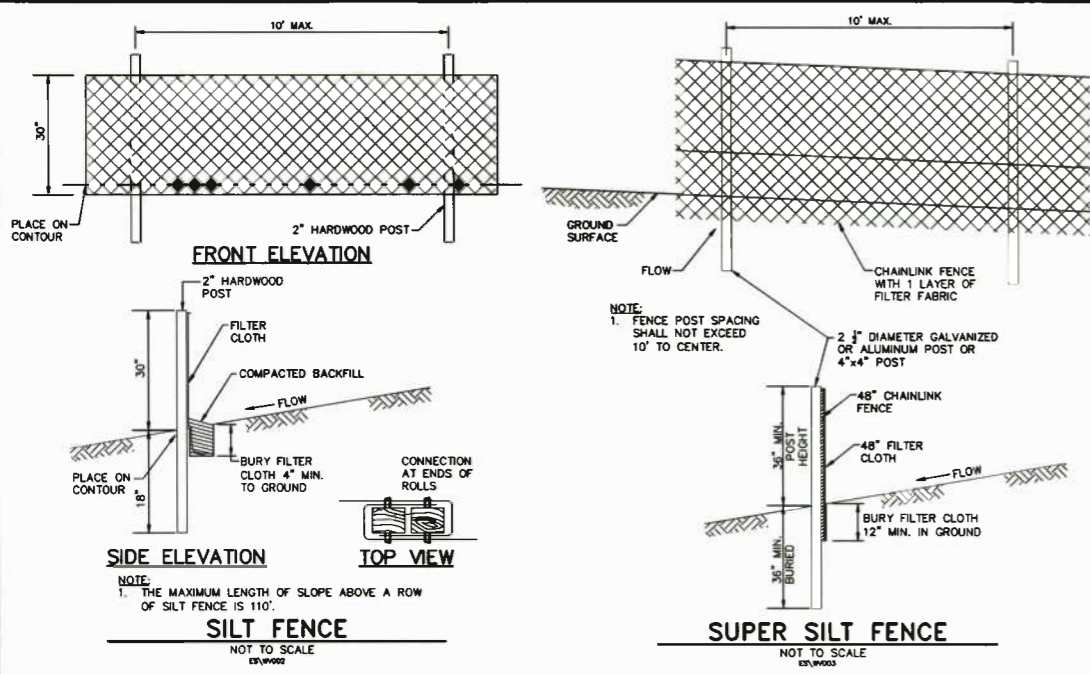
CENTRAL DISTRICT  
 DODDRIDGE COUNTY, WV

DATE:	06/17/16
SHEET NO.	2 OF 4
DWG. NO.	095452280

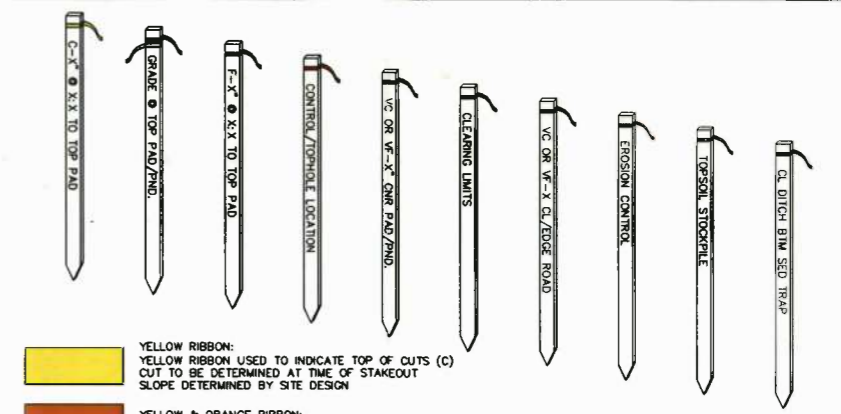






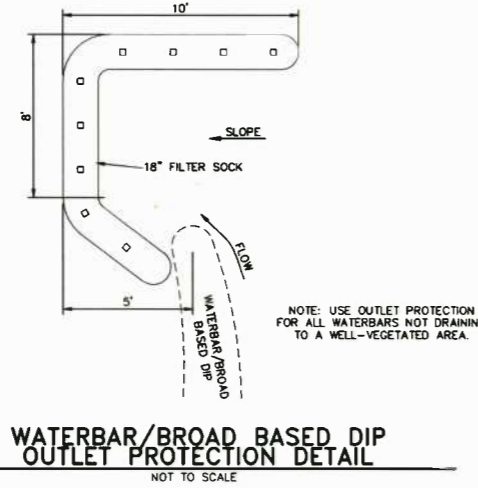
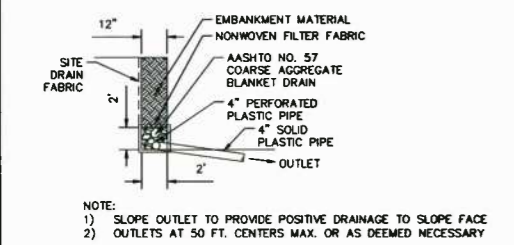
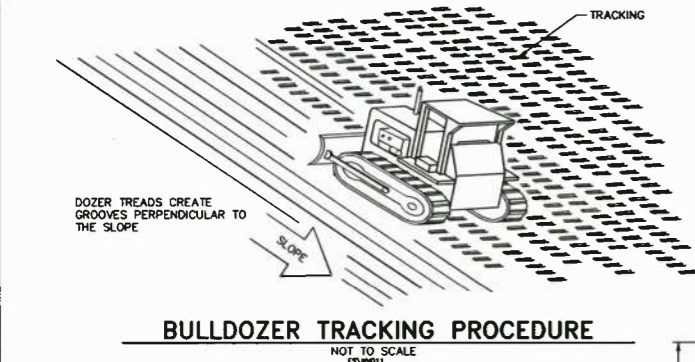


**NOTES:**  
SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.  
COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.  
TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.  
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.  
COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.  
UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.



- YELLOW RIBBON:** YELLOW RIBBON USED TO INDICATE TOP OF CUTS (C) CUT TO BE DETERMINED AT TIME OF STAKEOUT SLOPE DETERMINED BY SITE DESIGN
- YELLOW & ORANGE RIBBON:** YELLOW & ORANGE RIBBON USED TO INDICATE GRATE AT TOP OF PAD/POND/PIT
- ORANGE RIBBON:** ORANGE RIBBON USED TO INDICATE TOES OF FILLS (F) FILL TO BE DETERMINED AT TIME OF STAKEOUT SLOPE DETERMINED BY SITE DESIGN
- PINK RIBBON:** PINK RIBBON USED TO INDICATE TOP HOLE LOCATION  
PINK RIBBON USED TO INDICATE SURVEY CONTROL LOCATIONS
- PINK AND BLACK STRIPE RIBBON:** PINK & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL CUT (VC) AT PAD/POND/PIT CORNER OR EDGE  
PINK & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL FILL (VF) AT PAD/POND/PIT CORNER OR EDGE  
VERTICAL CUT/VERTICAL FILL TO BE DETERMINED AT TIME OF STAKEOUT
- BLUE & WHITE STRIPE RIBBON:** BLUE & WHITE STRIPE RIBBON USED TO INDICATE CLEARING LIMITS/CONSTRUCTION LINE
- ORANGE & BLACK STRIPE RIBBON:** ORANGE & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL CUT (VC) AT CENTERLINE OR EDGE OF ACCESS ROAD  
ORANGE & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL FILL (VF) AT CENTERLINE OR EDGE OF ACCESS ROAD
- PINK & WHITE STRIPE RIBBON:** PINK & WHITE STRIPE RIBBON USED TO INDICATE EROSION AND SEDIMENT CONTROL STRUCTURES  
SILT FENCE (SF) REINFORCED FILTER FENCE (RFF) SUPER SILT FENCE (SSF) FILTER SOCK (FS)
- ORANGE & WHITE STRIPE RIBBON:** ORANGE & WHITE STRIPE RIBBON USED TO INDICATE TOPSOIL STOCKPILE LOCATIONS
- BLUE RIBBON:** BLUE RIBBON USED TO INDICATE CENTERLINE (CL) DITCH  
BLUE RIBBON USED TO INDICATE BOTTOM (BTM) SEDIMENT TRAPS

**ANTERO RESOURCES STANDARD RIBBON COLOR SCHEME**



**SPECIFICATION:** 31 25 14.13 - HIGH PERFORMANCE-FLEXIBLE GROWTH MEDIUM  
THIS SECTION SPECIFIES A HYDRALICALLY-APPLIED, 100% BIODEGRADABLE, HIGH PERFORMANCE-FLEXIBLE GROWTH MEDIUM (HP-FGM) THAT IS MANUFACTURED IN THE UNITED STATES AND IS COMPOSED OF 100% RECYCLED THERMALLY REFINED (WITHIN A PRESSURE VESSEL) WOOD FIBERS, CRIMPED INTERLOCKING MAN-MADE BIODEGRADABLE FIBERS, MICRO-PORE GRANULES, NATURALLY DERIVED CROSSLINKED BIOPOLYMERS AND WATER ABSORBENTS. THE HP-FGM IS PHYTOSANITIZED, FREE FROM PLASTIC NETTING, REQUIRES NO CURING PERIOD AND UPON APPLICATION FORMS AN INTIMATE BOND WITH THE SOIL SURFACE TO CREATE A CONTINUOUS, POROUS, ABSORBENT AND FLEXIBLE EROSION RESISTANT BLANKET THAT ALLOWS FOR RAPID GERMINATION AND ACCELERATED PLANT GROWTH. ALL COMPONENTS OF THE FGM SHALL BE PRE-PACKAGED BY THE MANUFACTURER TO ASSURE BOTH MATERIAL PERFORMANCE AND COMPLIANCE WITH THE FOLLOWING VALUES. NO CHEMICAL ADDITIVES WITH THE EXCEPTION OF FERTILIZER, LIMING AND BIOSTIMULANT MATERIALS SHOULD BE ADDED TO THIS PRODUCT.

- 1. THERMALLY PROCESSED (WITHIN A PRESSURE VESSEL) WOOD FIBER - 80% ± 3%
- HEATED TO A TEMPERATURE GREATER THAN 380 DEGREES FAHRENHEIT (193 DEGREES CELSIUS) FOR 5 MINUTES AT A PRESSURE GREATER THAN 50 PSI (3.45 MPa)
- 2. CRIMPED, MAN-MADE BIODEGRADABLE INTERLOCKING FIBERS - 5% ± 1%
- 3. MICRO-PORE GRANULES - 5% ± 1%

**INSTALLATION:**  
STRICTLY COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. USE APPROVED HYDRO-SPRAYING MACHINES WITH FAN-TYPE NOZZLE (50-DEGREE TIP) TO ACHIEVE OPTIMUM SOIL SURFACE COVERAGE. APPLY HP-FGM FROM OPPOSING DIRECTIONS TO SOIL SURFACE. ROUGH SURFACES (ROCKY TERRAIN, CAT TRACKS AND RIPPED SOILS) MAY REQUIRE HIGHER APPLICATION RATES TO ACHIEVE 100% COVER. SLOPE INTERRUPTION DEVICES OR WATER DIVERSION TECHNIQUES ARE RECOMMENDED WHEN SLOPE LENGTHS EXCEED 100 FEET (30 M). MAXIMUM SLOPE LENGTH IS FOR PRODUCT APPLICATIONS ON A 3H:1V SLOPE. FOR APPLICATION ON STEEPER SLOPES, SLOPE INTERRUPTION LENGTHS MAY NEED TO BE DECREASED BASED ON ACTUAL SITE CONDITIONS. NOT RECOMMENDED FOR CHANNELS OR AREAS WITH CONCENTRATED WATER FLOW. NO CHEMICAL ADDITIVES WITH THE EXCEPTION OF FERTILIZER, LIMING AND BIOSTIMULANT MATERIALS SHOULD BE ADDED TO THIS PRODUCT. TO ENSURE PROPER APPLICATION RATES, MEASURE AND STAKE AREA FOR MAXIMUM PERFORMANCE. APPLY HP-FGM IN A TWO-STEP PROCESS AS FOLLOWS:

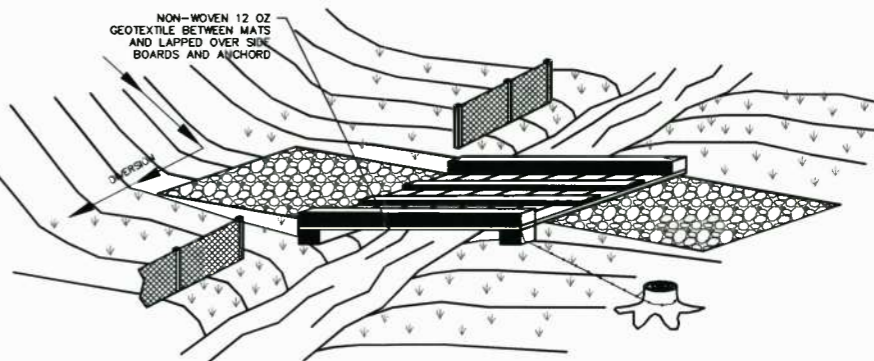
- STEP ONE: APPLY FERTILIZER WITH SPECIFIED PRESCRIPTIVE AGRONOMIC FORMULATIONS AND 50% OF SEED WITH A SMALL AMOUNT OF HP-FGM FOR VISUAL METEERING.
- STEP TWO: MIX BALANCE OF SEED AND APPLY HP-FGM AT A RATE OF 50 LB PER 125 GALLONS (23 KG/475 LITERS) OF WATER OVER FRESHLY SEEDED SURFACES. CONFIRM LOADING RATES WITH EQUIPMENT MANUFACTURER. DO NOT LEAVE SEEDED SURFACES UNPROTECTED, ESPECIALLY IF PRECIPITATION IS IMMINENT.

**APPLICATION RATES:** THESE APPLICATION RATES ARE FOR STANDARD CONDITIONS. DESIGNERS MAY WISH TO REDUCE RATES TO ENCOURAGE FASTER VEGETATION ESTABLISHMENT OR MAY NEED TO INCREASE APPLICATION RATES ON ROUGH SURFACES. CONSULT APPLICATION AND LOADING CHARTS TO DETERMINE NUMBER OF BAGS TO BE ADDED FOR DESIRED AREA AND APPLICATION RATE.

SLOPE GRADIENT / CONDITION	ENGLISH	SI
< 4H TO 1V	2500 LB/AC	2800 KG/HA
> 4H TO 1V AND < 3H TO 1V	3000 LB/AC	3400 KG/HA
> 3H TO 1V AND < 2H TO 1V	3500 LB/AC	3900 KG/HA
> 2H TO 1V AND < 1H TO 1V	4000 LB/AC	4500 KG/HA
> 1H TO 1V	4500 LB/AC	5100 KG/HA
BELOW ECB OR TRM	1500 LB/AC	1700 KG/HA
AS INFILL FOR TRM	3500 LB/AC	3900 KG/HA

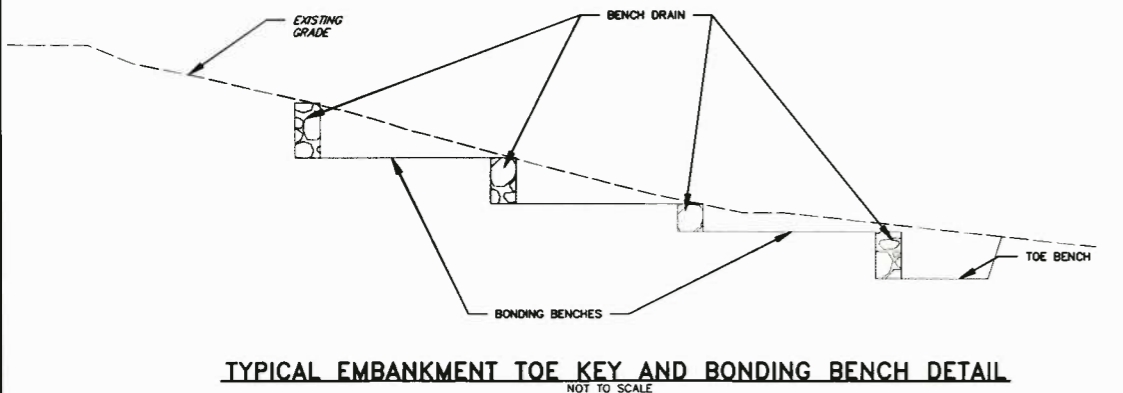
**NOTES:**  
1. PLEASE NOTE THAT THE INFORMATION PRESENTED HEREIN IS GENERAL INFORMATION ONLY. IT IS FOR CONCEPTUAL USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION. WHILE EVERY EFFORT HAS BEEN MADE TO ENSURE ITS ACCURACY, THIS INFORMATION SHOULD NOT BE USED FOR A SPECIFIC APPLICATION WITHOUT INDEPENDENT PROFESSIONAL EXAMINATION AND VERIFICATION OF ITS SUITABILITY, APPLICABILITY AND ACCURACY.  
2. SEE COMPREHENSIVE CSI FORMATTED SPECIFICATION FOR FURTHER DETAILS

**FLEXTERRA® HP-FGM SLOPE LINING**  
NOT TO SCALE  
ES/ES038



- NOTES:**
- A WATER DIVERTING STRUCTURE SUCH AS A DIKE OR SWALE SHALL BE CONSTRUCTED ACROSS THE ROADWAY ON BOTH ROADWAY APPROACHES 50 FEET (MAXIMUM) ON EITHER SIDE OF THE ROADWAY CROSSING TO PREVENT ROADWAY SURFACE RUNOFF FROM DIRECTLY ENTERING THE WATERWAY.
  - CLEARING AND EXCAVATION OF THE STREAMBED AND BANKS SHALL BE KEPT TO A MINIMUM.
  - THE TEMPORARY BRIDGE STRUCTURE SHALL BE CONSTRUCTED AT OR ABOVE BANK ELEVATION TO PREVENT THE ENTRAPMENT OF FLOATING MATERIALS AND DEBRIS.
  - ANY ABUTMENTS SHALL BE PLACED PARALLEL TO AND ON STABLE BANKS.
  - BRIDGES SHALL BE CONSTRUCTED TO SPAN THE ENTIRE CHANNEL.
  - STRINGERS SHALL EITHER BE LOGS, SAWN TIMBER, PRE-STRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER ENGINEER APPROVED MATERIALS.
  - CURBS OR FENDERS SHALL BE INSTALLED ALONG THE OUTER SIDES OF THE DECK TO PROVIDE ADDITIONAL SAFETY AND KEEP MUD FROM FLOWING OVER THE EDGE.
  - BRIDGES SHOULD 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.
  - ALL AREAS DISTURBED DURING INSTALLATION SHALL BE STABILIZED IMMEDIATELY.
  - WHEN THE TEMPORARY BRIDGE IS NO LONGER NEEDED, ALL STRUCTURES INCLUDING ABUTMENTS AND OTHER BRIDGING MATERIALS SHOULD BE REMOVED IMMEDIATELY.
  - FINAL CLEAN UP SHALL CONSIST OF REMOVAL OF THE TEMPORARY BRIDGE FROM THE WATERWAY, PROTECTION OF BANKS FROM EROSION, AND REMOVAL OF ALL CONSTRUCTION MATERIALS. ALL REMOVED MATERIALS SHALL BE STORED OUTSIDE THE FLOODPLAIN OF THE STREAM. REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA SHALL BE ACCOMPLISHED WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL.

**TEMPORARY BRIDGE CROSSING**  
NOT TO SCALE



SCALE AS NOTED

NO. DATE REVISION

FOR RETIEW ASSOCIATES BY:

MANAGER: ANDREW S. LEVINE  
DESIGN BY: ANDREW S. LEVINE  
DRAWN BY: JON P.J.F.

CHD BY: JON P.J.F.  
FIELDBOOK NO.:  
SURV. CHIEF: DATA COLLECTOR

CLIENT: ANTERO RESOURCES CORPORATION  
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1615 WYNKOOP STREET  
DENVER, COLORADO 80202

ANTERO RESOURCES

DETAIL SHEET  
EROSION & SEDIMENT CONTROL PLAN  
FOR  
WEST UNION PIPELINE SLIP  
AT WILHELM

CENTRAL DISTRICT  
DOODRIDGE COUNTY, WV

DATE: 06/17/16  
SHEET NO. 4 OF 4  
DWG. NO. 095452280