

# Commercial/Industrial Floodplain Development Permit

## Doddridge County, WV Floodplain Management

This permit has been issued to ANTERO RESOURCES , and is for the approved commercial and/or industrial development project associated with this permit 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: #14-239 Heflin Centralized Freshwater Impoundment

**Date Approved: 07/10/2014**

**Expires: N/A**

**Issued to: ANTERO RESOURCES**

**POC: Emily Kijowski  
303-357-7232**

**Company Address: 1615 WYNKOOP ST  
DENVER, CO**

**Project Address: Greenbrier District**

**Lat/Long: 39.204619N/80.551906W**

**Purpose of development: Freshwater Impoundment. Project does NOT impact floodplain.**

**Issued by: Edwin L. "Bo" Wriston, Doddridge County FPM (or designee)**

**Date: 07/10/2014**

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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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Legal Advertisement:  
Doddridge County  
Floodplain Permit Application

Please take notice that on the 2<sup>nd</sup> day of July, 2014

**Antero Resources**

filed an application for a Floodplain Permit to develop land located at or about:

**Greenbrier District 39.204619N / 80.551906W**

**Permit #14-239 Heflin Centralized Freshwater Impoundment**

(Note: This project is not within the floodplain)

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. As this project is outside the FEMA identified floodplain of Doddridge County, Doddridge County Floodplain Management has no regulatory authority.

Any interested persons who desire to comment shall present the same in writing by **August 4, 2014**, delivered to:

Clerk of the County Court  
118 E. Court Street, West Union, WV 26456  
Beth A Rogers, Doddridge County Clerk  
Edwin L. "Bo" Wriston. Doddridge County Flood Plain Manager

# 14-239

FILED

2014 JUL -2 AM 11:05

BETH A. ROGERS  
COUNTY CLERK  
DODDRIDGE COUNTY, WV



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

June 27, 2014

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

Mr. Wriston:

Antero Resources Appalachian Corporation (Antero) would like to submit a Doddridge County Floodplain permit application for our Heflin Centralized Fresh Water Impoundment. Our project is located in Doddridge County, Greenbriar District and per FIRM map #54017C0260C, this location is **not** within the floodplain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application
- Heflin Construction Plans
- FIRM Map
- WV Flood Tool Map

If you have any questions please feel free to contact me at (303) 357-7232.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Emily Kijowski".

Emily Kijowski  
Permit Representative  
Antero Resources Appalachian Corporation

Enclosures

**DODDRIDGE COUNTY  
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION**

**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 June 30, 2014

**SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).**

**IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.**

**APPLICANT'S NAME:** Antero Midstream LLC - Randy Kloberdanz,

**ADDRESS:** 1615 Wynkoop Street, Denver, CO 80202

**TELEPHONE NUMBER:** Contact Emily Kijowski: (303)-357-7232

**BUILDER'S NAME:** Antero Midstream LLC  
**ADDRESS:** 1615 Wynkoop Strett, Denver, CO 80202  
**TELEPHONE NUMBER:** (303)-357-7310

**ENGINEER'S NAME:** Navitus Engineering, Inc.  
**ADDRESS:** 151 Windy Hill Lane, Winchester, VA 22602  
**TELEPHONE NUMBER:** (888)-662-4185

**PROJECT LOCATION:**

**NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)** Please see attached Firm map with landowner tabulation  
**ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)** Please see attached Firm map with landowner tabulation

**DISTRICT:** Greenbrier

**DATE/FROM WHOM PROPERTY**

**PURCHASED:** N/A

**LAND BOOK DESCRIPTION:** Please see attached Firm map with landowner tabulation

**DEED BOOK REFERENCE:** Please see attached Firm map with landowner tabulation

**TAX MAP REFERENCE:** Please see attached Firm map with landowner tabulation

**EXISTING BUILDINGS/USES OF PROPERTY:** None

**NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY** Please see attached Firm map with landowner tabulation

**ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY** \_\_\_\_\_

To avoid delay in processing the application, please provide enough information to easily identify the project location.

**DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)**

**A. STRUCTURAL DEVELOPMENT**

**ACTIVITY**

**STRUCTURAL TYPE**

- |                                     |                         |                          |                                  |
|-------------------------------------|-------------------------|--------------------------|----------------------------------|
| <input checked="" 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:**

- |                                     |   |                          |        |                          |          |                          |            |
|-------------------------------------|---|--------------------------|--------|--------------------------|----------|--------------------------|------------|
| <input checked="" type="checkbox"/> | Fill  | <input type="checkbox"/> | Mining | <input type="checkbox"/> | Drilling | <input type="checkbox"/> | Pipelining |
| <input checked="" type="checkbox"/> | Grading   |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Excavation (except for STRUCTURAL DEVELOPMENT checked above)          |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Watercourse Altercation (including dredging and channel modification) |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Drainage Improvements (including culvert work)                        |                          |        |                          |          |                          |            |
| <input checked="" type="checkbox"/> | Road, Street, or Bridge Construction                                  |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Subdivision (including new expansion)                                 |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Individual Water or Sewer System                                      |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Other (please specify)  |                          |        |                          |          |                          |            |
- 

**C. STANDARD SITE PLAN OR SKETCH**

- 1. SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
- 2. IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**  
SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
- 3. SIGN AND DATE THE SKETCH.**

**ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN** \$ N/A - Project is not located within the floodplain

**D. ADJACENT AND/OR AFFECTED LANDOWNERS:**

**1. NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).**

**NAME:** N/A - No properties sharing an  
**ADDRESS:** immediate common boundary up  
or down stream due to the location  
not being in floodplain

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**1. NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.**

**NAME:** N/A - No properties sharing an  
**ADDRESS:** immediate common boundary up  
or down stream due to the location  
not being in floodplain

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**NAME:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

**E. CONFIRMATION FORM**

**THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:**

- (A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.
- (B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.
- (C) PUBLICATION.

- (D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.
- (E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): AK  
 SIGNATURE: Landy Kloverdanz DATE: 6/30/14

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

**SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)**

**THE PROPOSED DEVELOPMENT:**

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: \_\_\_\_\_  
 Dated: \_\_\_\_\_

Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

Is located in Special Flood Hazard Area.  
 FIRM zone designation \_\_\_\_\_  
 100-Year flood elevation is: \_\_\_\_\_ NGVD (MSL)

Unavailable

The proposed development is located in a floodway.  
 FBFM Panel No. \_\_\_\_\_ Dated \_\_\_\_\_

See section 4 for additional instructions.



SIGNED \_\_\_\_\_

DATE \_\_\_\_\_

**SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)**

The applicant must submit the documents checked below before the application can be processed.

- A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.
  
- Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also \_\_\_\_\_  
\_\_\_\_\_
  
- Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).
  
- Plans showing the extent of watercourse relocation and/or landform alterations.
  
- Top of new fill elevation \_\_\_\_\_ Ft. NGVD (MSL).  
For floodproofing structures applicant must attach certification from registered engineer or architect.
  
- Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.
  
- Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

Other:

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**SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)**

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County?  Yes  No

Hearing Date: \_\_\_\_\_

County Commission Decision - Approved  Yes  No

CONDITIONS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).**

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

- 1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is \_\_\_\_\_ FT. NGVD (MSL)
- 2 Actual (As Built) elevation of floodproofing is \_\_\_\_\_ FT. NGVD (MSL)

**Note: Any work performed prior to submittal of the above information is at risk of the applicant.**

**SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).**

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

**INSPECTIONS:**

DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
DEFICIENCIES ?      Y/N

COMMENTS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).**

Certificate of Compliance issued: DATE: \_\_\_\_\_ BY: \_\_\_\_\_

**CERTIFICATE OF COMPLIANCE  
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA  
(OWNER MUST RETAIN)**

**PERMIT NUMBER:** \_\_\_\_\_

**PERMIT DATE:** \_\_\_\_\_

**PURPOSE –**

**CONSTRUCTION LOCATION:** \_\_\_\_\_

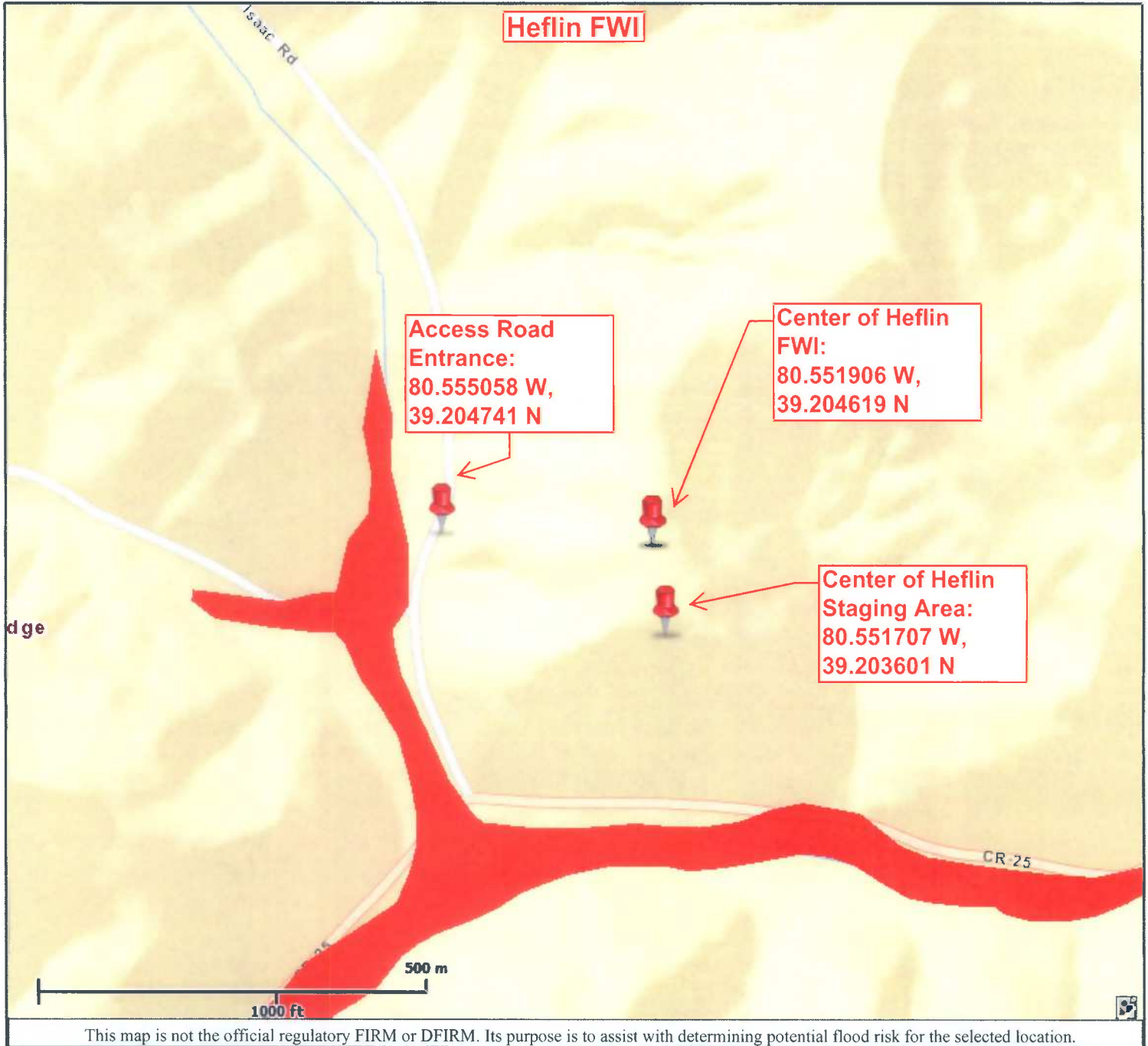
**OWNER'S ADDRESS:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN  
ADMINISTRATOR/MANAGER OR HIS/HER AGENT.**

**COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE  
FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF  
DODDRIDGE COUNTY ON MAY 21, 2013.**


**SIGNED** \_\_\_\_\_ **DATE** \_\_\_\_\_


# WV Flood Map



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

Map Created on 6/27/2014

 Location of the mouse click

 **Flood Hazard Zone**  
(1% annual chance floodplain)

**User Notes:**

**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 is supported by FEMA, WV NFIP Office, and WV GIS Technical Center  
(<http://www.MapWV.gov/flood>)

**Flood Hazard Area:**  
Elevation: About 1341 feet  
Location (long, lat): 80.624619 W, 39.224515 N  
Location (UTM 17N): (532402, 4341759)  
FEMA Issued Flood Map: 54017C0255C  
Contacts: Doddridge County  
CRS Information: N/A  
Parcel Number:

STATE OF WEST VIRGINIA,  
COUNTY OF DODDRIDGE, TO WIT

I, Virginia Nicholson, Editor of THE  
HERALD RECORD, a weekly newspaper  
published regularly, in Doddridge County,  
West Virginia, Do Hereby Certify  
That the Accompanying Legal Notice  
Entitled:

*Floodplain Permit*  
*# 14-239*  
*Heflin Impoundment*  
was published in said paper for *2*

successive weeks beginning with the issue  
of *July 15<sup>th</sup>* 2014 and  
ending with the issue of

*July 22<sup>nd</sup>* 2014 and  
that said notice contains *189*

WORD SPACE at *115* cents a word  
amounts to the sum of \$ *21.74*

FOR FIRST PUBLICATION, SECOND  
PUBLICATION IS 75% OF THE FIRST  
PUBLICATION

\$ *16.31*  
and each publication thereafter  
\$ *38.05* TOTAL

EDITOR,

*Virginia Nicholson*

SWORN TO AND SUBSCRIBED

BEFORE ME THIS THE *24<sup>th</sup>* DAY  
OF *July* 2014  
NOTARY PUBLIC

*Laura Adams*

LEGAL ADVERTISEMENT:

Doddridge County

Floodplain Permit Application

Please take notice that on the 22<sup>nd</sup> day of July, 2014, Antero Resources filed an application for a Floodplain Permit to develop land located at or about: Greenbrier District 39.204619N/80.551906W Permit #14-239 Heflin Centralized Freshwater Impoundment (Note: This project is not within the floodplain)

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. As this project is outside the FEMA identified floodplain of Doddridge County, Doddridge County Floodplain Management has no regulatory authority. Any interested persons who desire to comment shall present the same in writing by August 4, 2014.

Delivered to the:

Clerk of the County Court

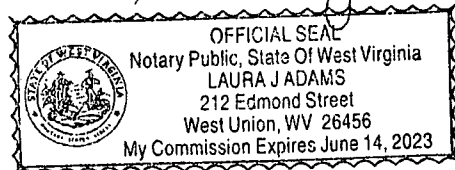
118 E. Court Street, West Union, WV 26456

Beth A. Rogers, Doddridge County Clerk

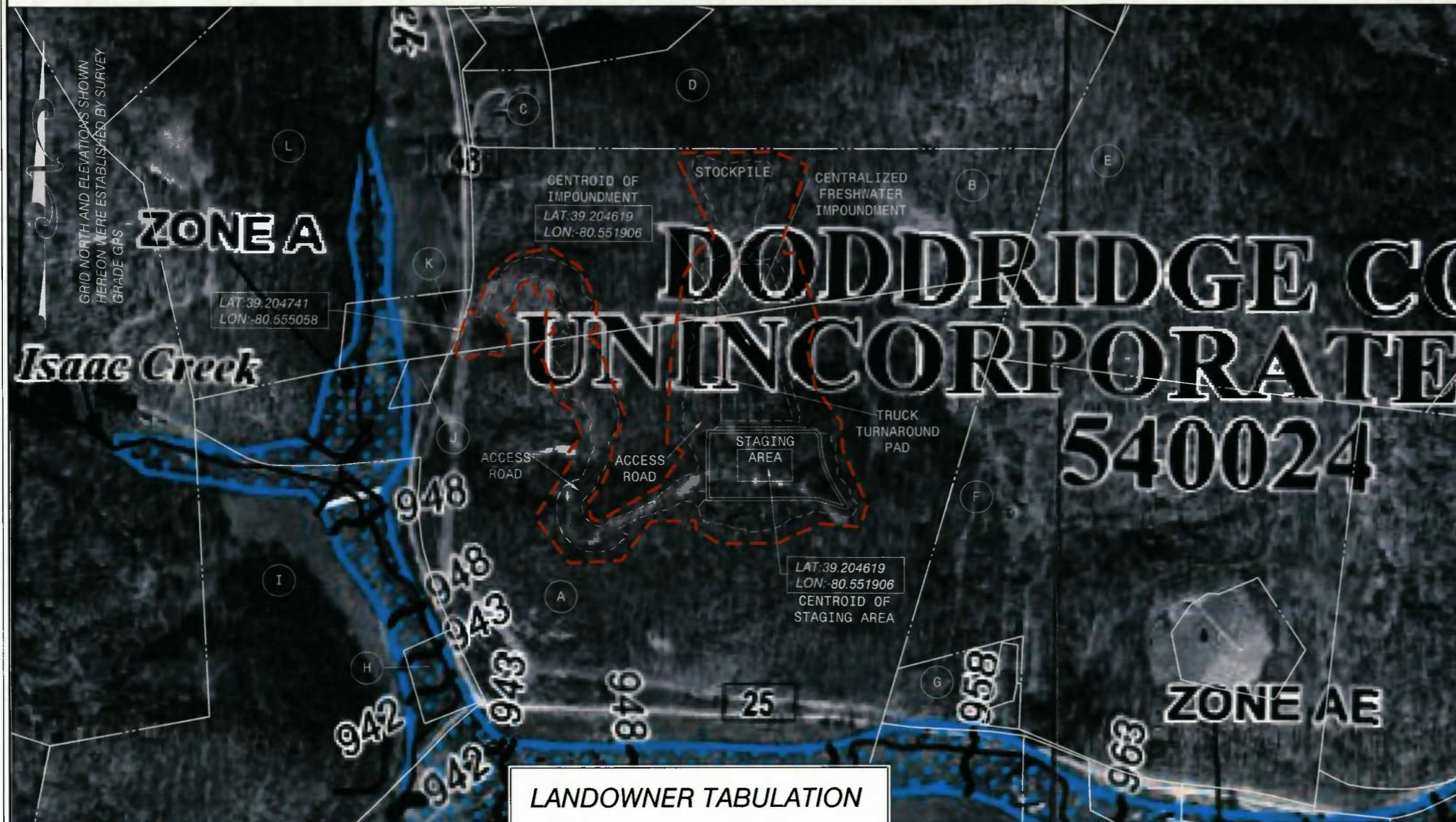
Edwin L. "Bo" Wriston, Doddridge County Flood Plain

Manager

7-15-2xb



# FIRM EXHIBIT



## LANDOWNER TABULATION

<b>A</b>	TM 11-36 JEFFREY J. FORD DB 281 PG 665 89.74 ACRES 15 MEADOW LANE BRIDGEPORT, WV 26330	<b>B</b>	PEGGY L. HURST, DAVID NICHOLSON, KRISTI NICHOLSON & BERNARD HURST, JR. WB 39 PG 687 RT 1 BOX 284 LOST CREEK, WV 26385 RT 2 BOX 220 JANE LEW, WV 26378 823 WESTVIEW DRIVE BELPRE, OH 45714 RT 1 BOX 284A LOST CREEK, WV 26385 JEAN A. NICHOLSON WB 40 PG 679 2200 CAPITAL DRIVE PARKERSBURG, WV 26101 CLIFFORD BASH, LAURA MATUNDAN & KATHERINE TAYLOR MB 15 PG 178 26 VIEW DRIVE FAIRFIELD, OH 45014 10330 HUNTERS PATH NEW BRAUNFELS, TX 78132 1244 STONE BRANCH NEW BRAUNFELS, TX 78130	<b>C</b>	TM 11-26.1 JAMES R. BARNES DB 274 PG 235 1.437 ACRES RT 3 BOX 26A SALEM, WV 26426	<b>D</b>	TM 11-26 MONA LEE MORGAN DB 205 PG 308 18.42 ACRE RT 3 BOX 96 SALEM, WV 26426	<b>E</b>	TM 12-3 DONALD B. CORDER & LINDA M. GREGORY WB 40 PG 689 65.16 ACRE RT 3 BOX 91A SALEM, WV 26426 166 HOOP POLE RN. MOUNT CLARE, WV 26408	<b>F</b>	TM 11-37.5 DAVID B. & DONNA J. BOWERS DB 246 PG 279 30.18 ACRES 161 LEWIS STREET CLARKSBURG, WV 26301	<b>G</b>	TM 11-37.4 DAVID P. & BRENDA J. MORRISON DB 226 PG 399 1.51 ACRES RT 3 BOX 95 SALEM, WV 26426	<b>H</b>	TM 11-31 JEFFREY J. FORD DB 281 PG 665 1 ACRE 15 MEADOW LANE BRIDGEPORT, WV 26330	<b>I</b>	TM 11-35 JEFFREY J. FORD WB 41 PG 619 30 ACRES 15 MEADOW LANE BRIDGEPORT, WV 26330	<b>J</b>	TM 11-29 JEFFREY J. FORD DB 281 PG 665 0.5 ACRES 15 MEADOW LANE BRIDGEPORT, WV 26330	<b>K</b>	TM 11-30 WARREN E. & JUDY E. BEE DB 262 PG 505 1.4 ACRES RT 3 BOX 26 SALEM, WV 26426	<b>L</b>	TM 11-25 WARREN & JUDY BEE DB 153 PG 503 22.3 ACRES RT 3 BOX 26 SALEM, WV 26426
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PANEL 0260C

## FIRM

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

PANEL 260 OF 325  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

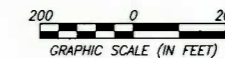
CONTAINS	NUMBER	PANEL	SUFFIX
COMMUNITY	540024	260C	C
DODDRIDGE COUNTY			

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**  
54017C0260C

**MAP REVISED**  
OCTOBER 4, 2011

Federal Emergency Management Agency



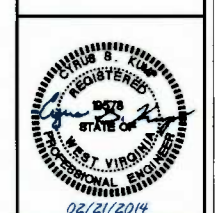
**FLOODPLAIN NOTE**  
THE PROPOSED SITE IS LOCATED IN FLOODPLAIN ZONE "X" PER FEMA MAP NUMBER #54017C0260C.

**NAVITUS**  
 ENERGY ENGINEERING  
 Telephone: (888) 682-4165 | www.NavitusEng.com

DATE	REVISION
02/21/2014	REVISE PER CLIENT REQUEST

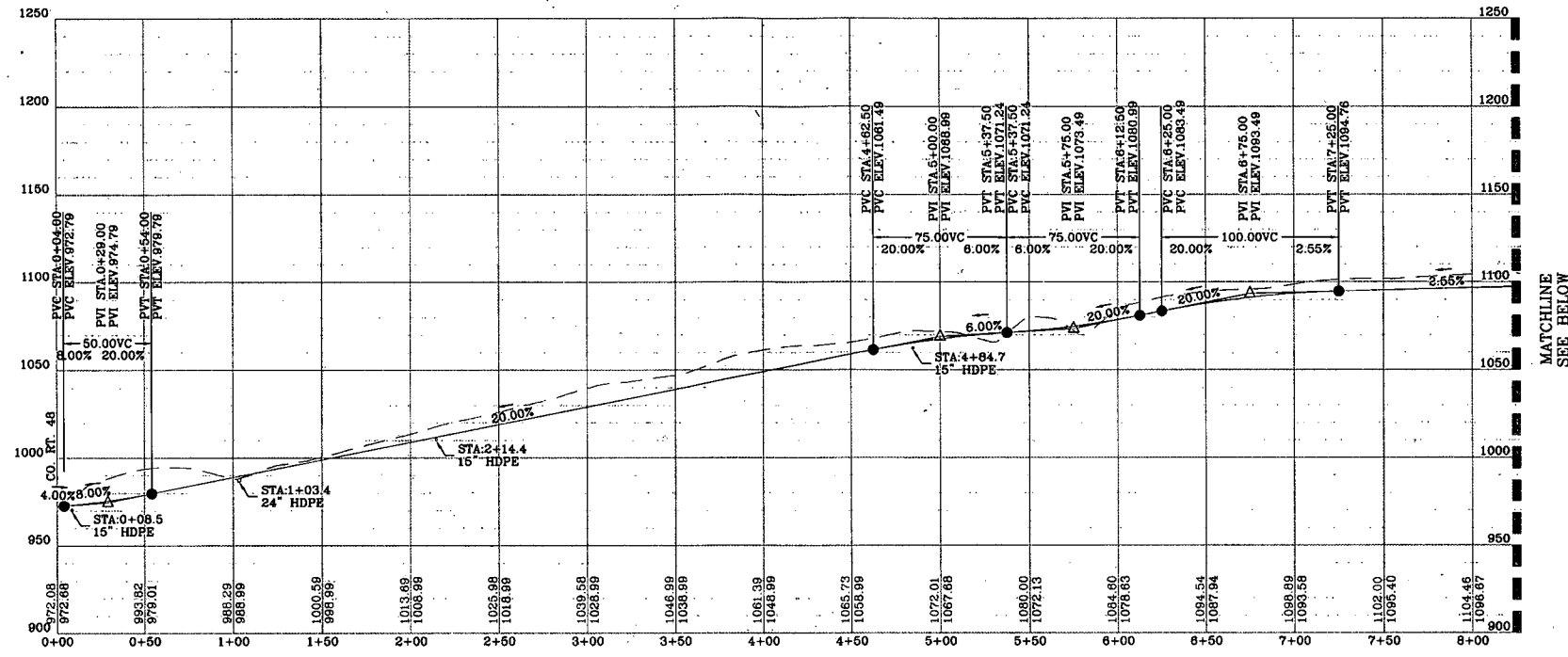
THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

FIRM EXHIBIT  
**HEFLIN**  
 CENTRALIZED FRESHWATER IMPOUNDMENT  
 GREENBRIER DISTRICT  
 DODDRIDGE COUNTY, WEST VIRGINIA

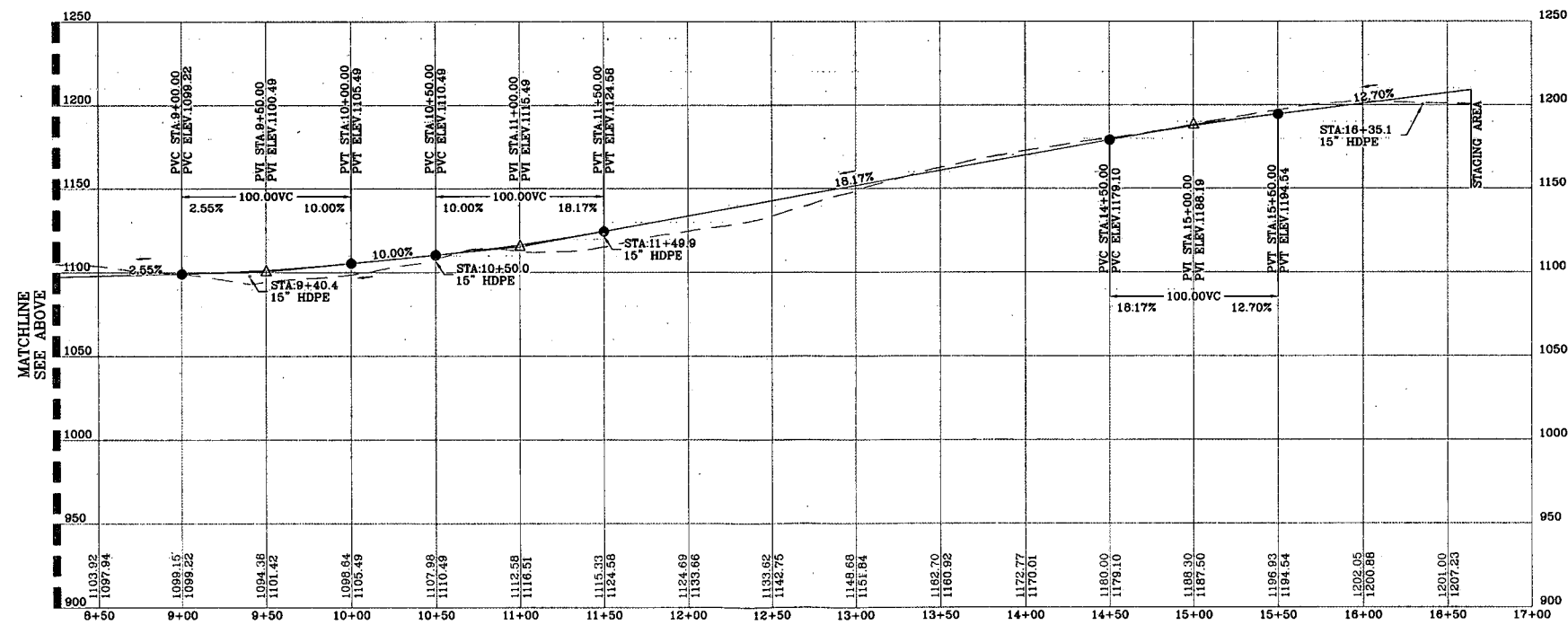


DATE: 12/13/2013  
 SCALE: 1" = 200'  
 SHEET 26 OF 26

# ACCESS ROAD PROFILES

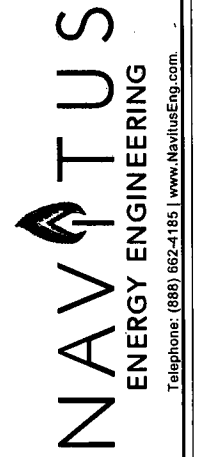


**ACCESS ROAD "A" PROFILE**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'



**ACCESS ROAD "A" PROFILE**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

LEGEND	
X-SECTION GRID INDEX	---
X-SECTION GRID INTERMEDIATE	---
X-SECTION PROPOSED GRADE	---
X-SECTION EXISTING GRADE	---
X-SECTION WATER SURFACE	---
MATCHLINE	---



Telephone: (888) 662-4185 | www.NavitusEng.com

DATE	REVISION	REVISE PER CLIENT REQUEST
02/21/2014		



THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

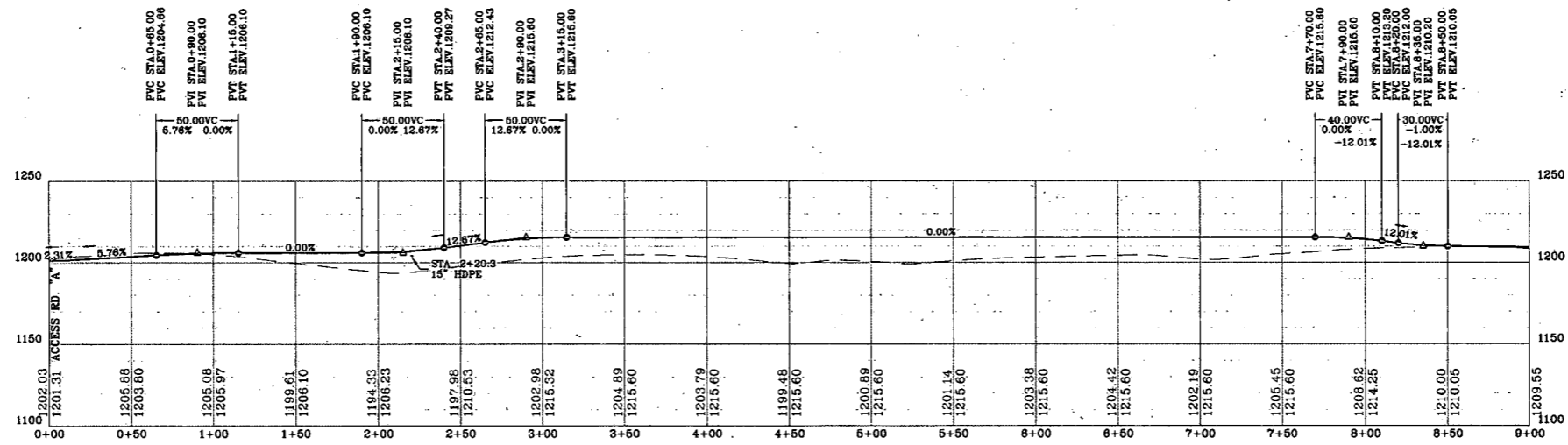
ACCESS ROAD PROFILES  
**HEFLIN**  
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 12/13/2013  
SCALE: AS SHOWN  
SHEET 8 OF 26



# ACCESS ROAD PROFILES



**ACCESS ROAD "B" PROFILE**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

DATE	REVISION
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ACCESS ROAD PROFILES  
**HEFLIN**  
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 12/13/2013  
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SHEET 9 OF 26

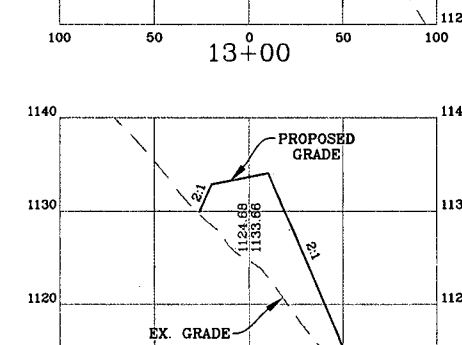
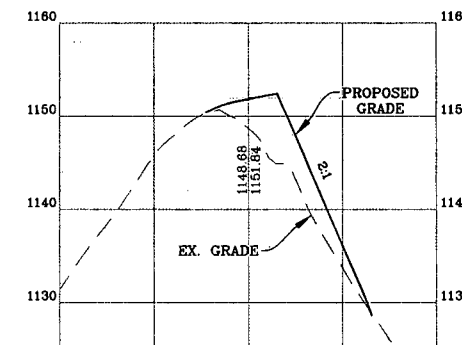
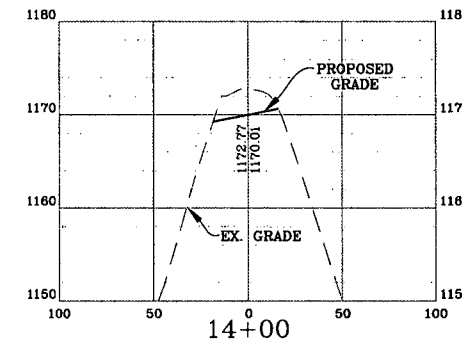
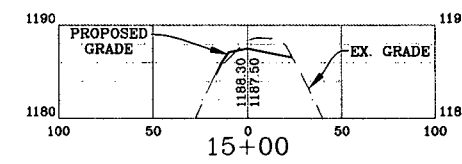
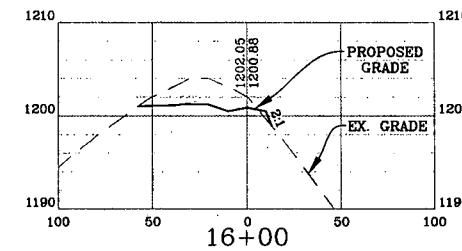
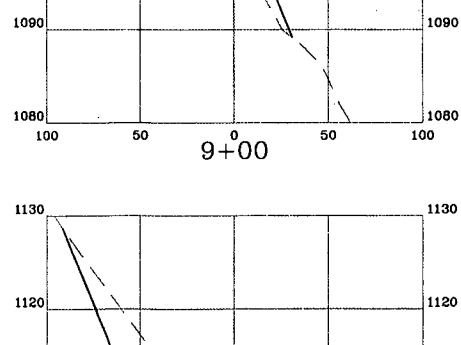
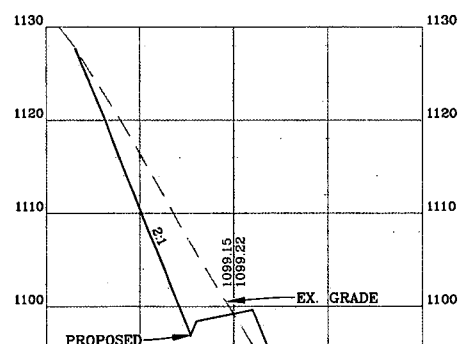
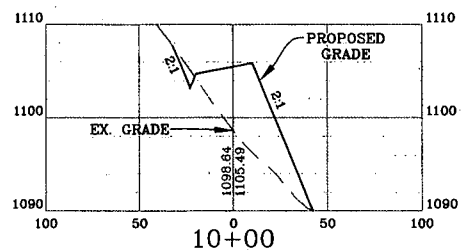
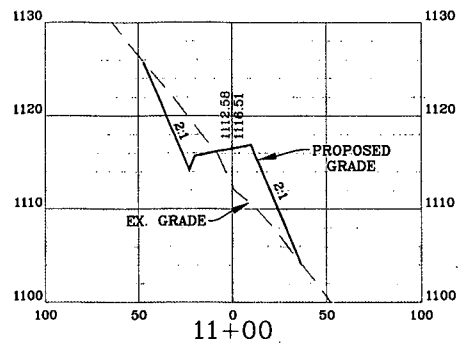
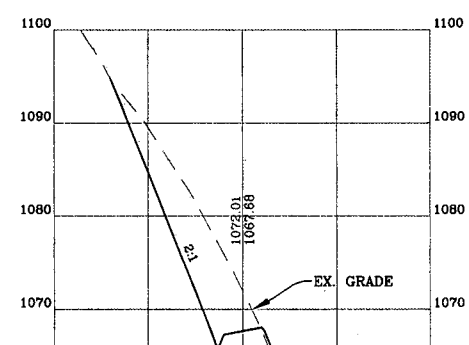
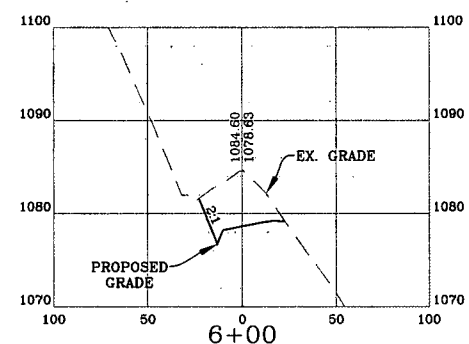
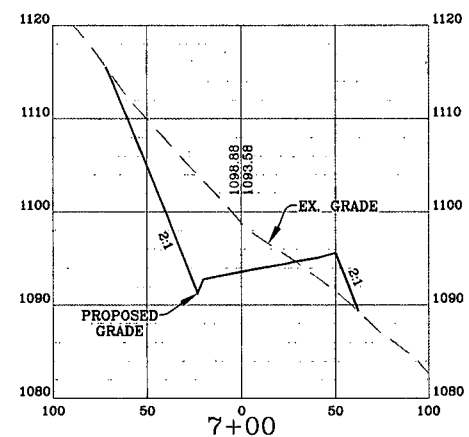
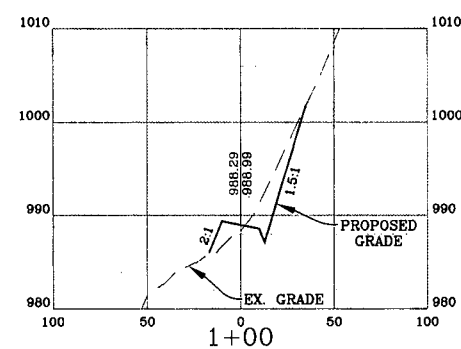
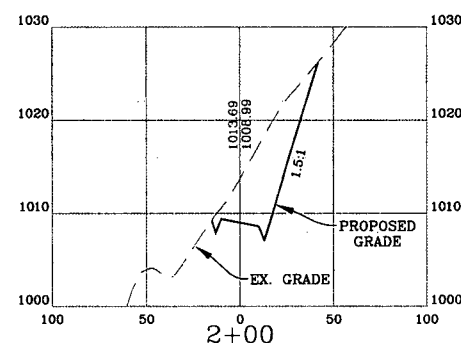
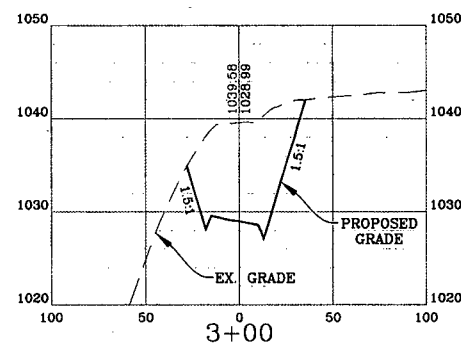
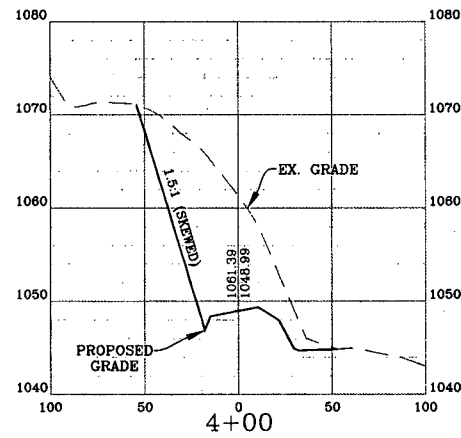
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X-SECTION GRID INTERMEDIATE	_____
X-SECTION PROPOSED GRADE	_____
X-SECTION EXISTING GRADE	_____
X-SECTION WATER SURFACE	_____
MATCHLINE	■ ■ ■

# ACCESS ROAD SECTIONS

## ACCESS ROAD "A" CROSS-SECTIONS

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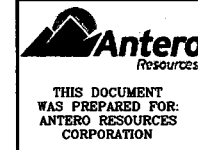


- NOTE:**
- ALL FILL AREAS, INCLUDING ACCESS ROADS AND EXCESS MATERIAL STOCKPILES, SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS.
  - ALL CUT & FILL SLOPES SHALL BE 2:1 UNLESS STATED OTHERWISE.

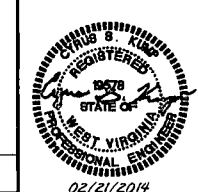
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X-SECTION EXISTING GRADE	---
X-SECTION WATER SURFACE	---
MATCHLINE	---

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ACCESS ROAD SECTIONS  
**HEFLIN**  
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



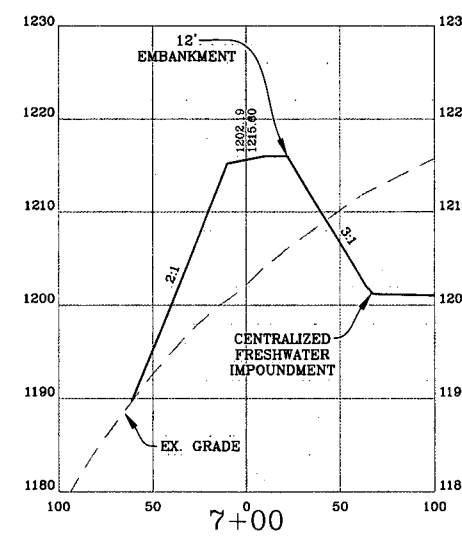
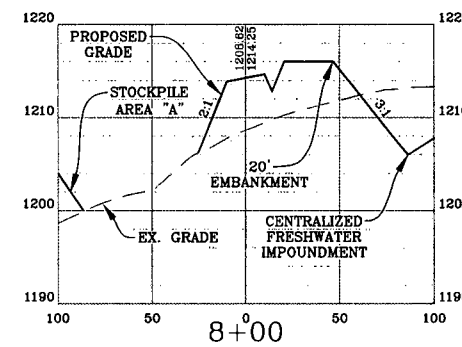
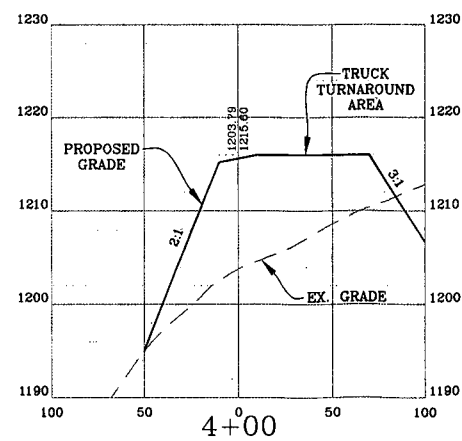
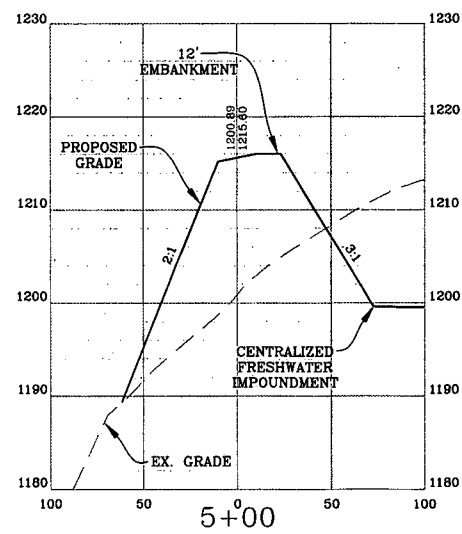
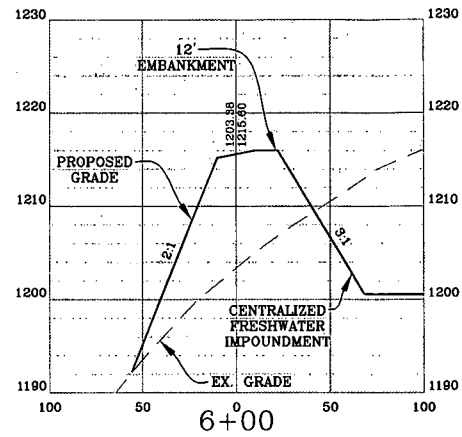
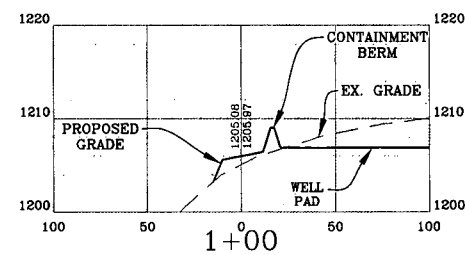
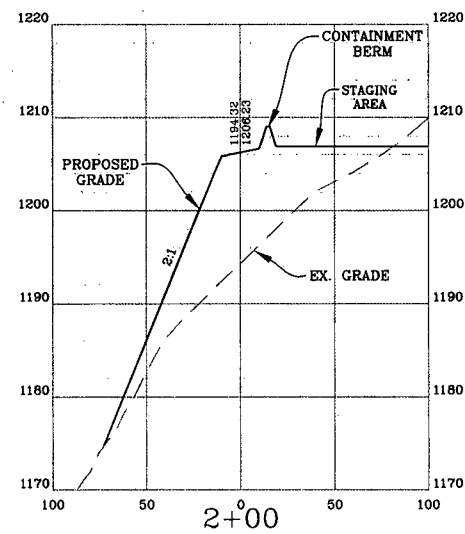
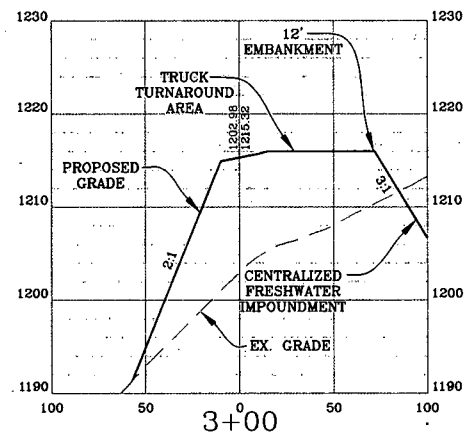
DATE: 12/13/2013  
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SHEET 10 OF 26

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# ACCESS ROAD SECTIONS

## ACCESS ROAD "B" CROSS-SECTIONS

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



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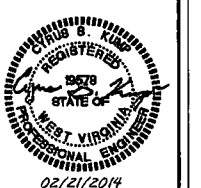
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X-SECTION WATER SURFACE	---
MATCHLINE	---

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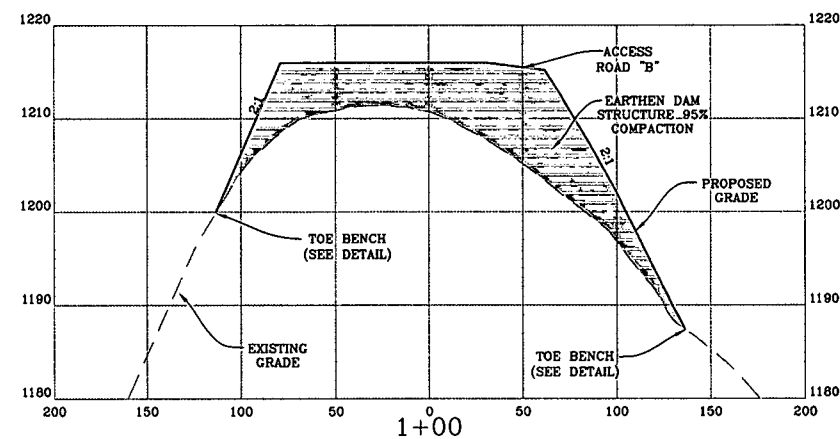
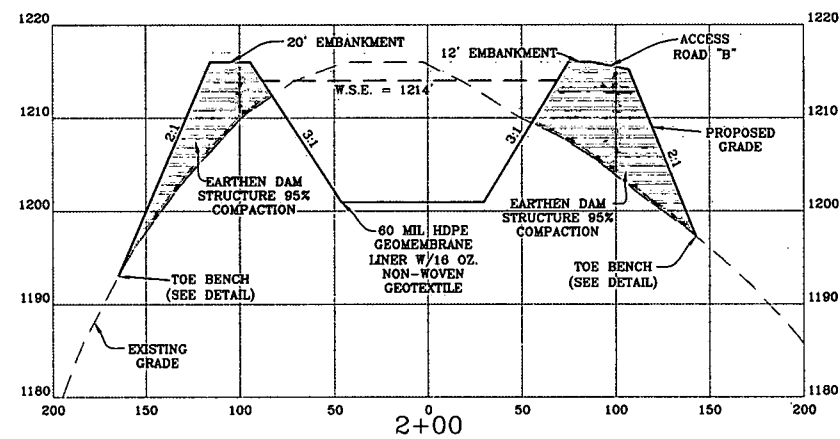
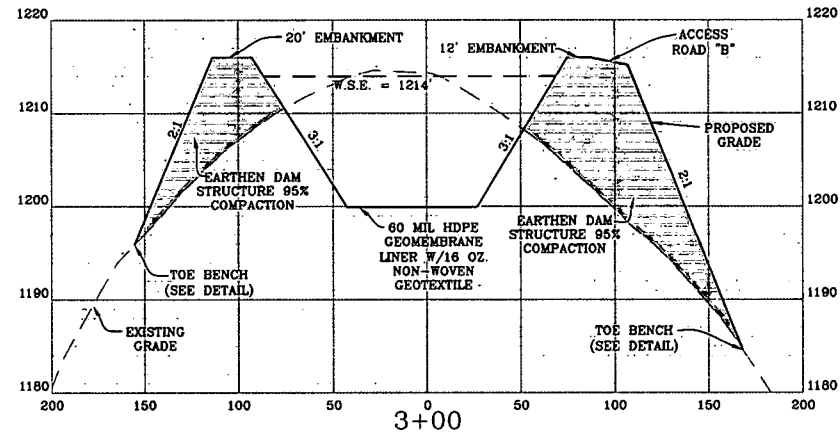
ACCESS ROAD SECTIONS  
**HEFLIN**  
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



# CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS

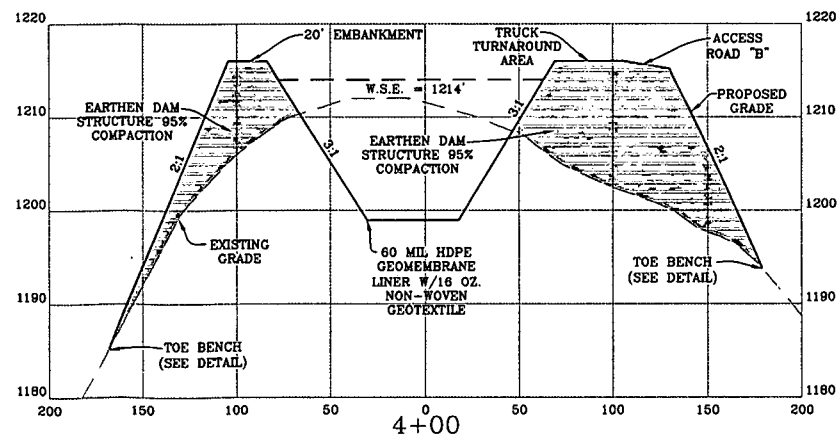
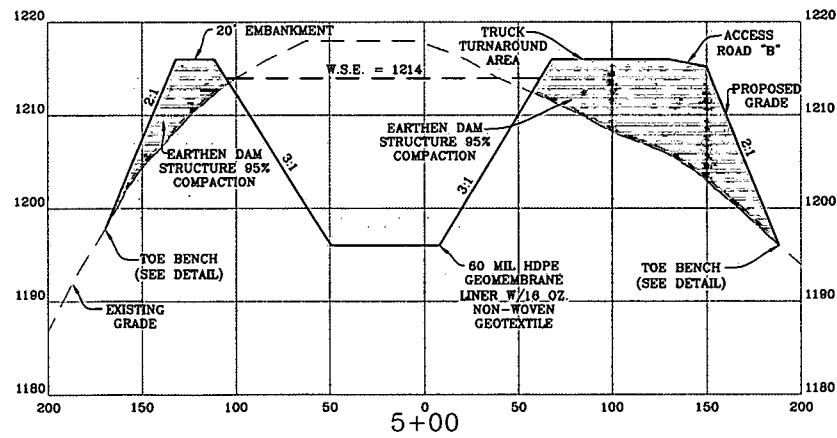
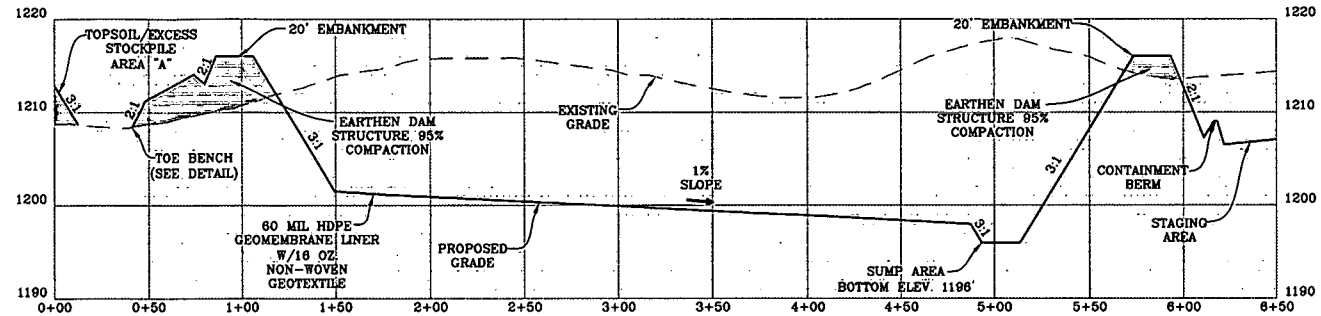
CENTRALIZED FRESHWATER IMPOUNDMENT CROSS-SECTIONS ALONG BASELINE "B-B"

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



CENTRALIZED FRESHWATER IMPOUNDMENT CROSS-SECTION "B-B"

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



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**LEGEND**

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X-SECTION WATER SURFACE	---
MATCHLINE	---

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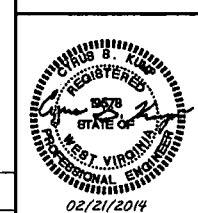
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CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS

**HEFLIN**

CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA

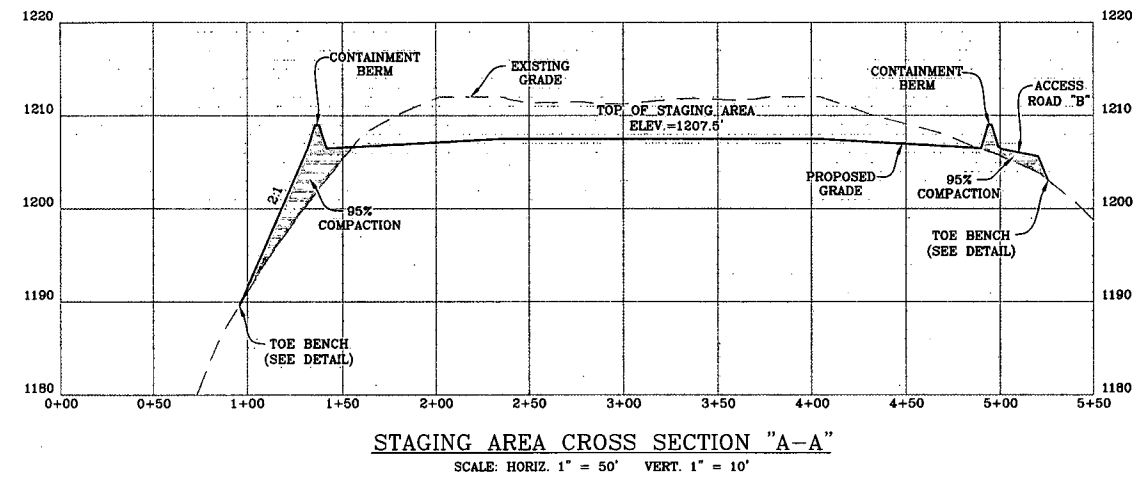
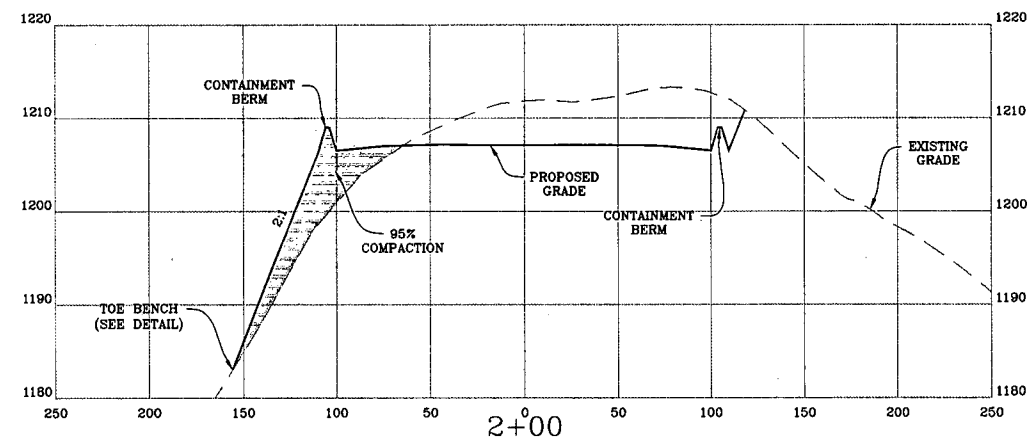
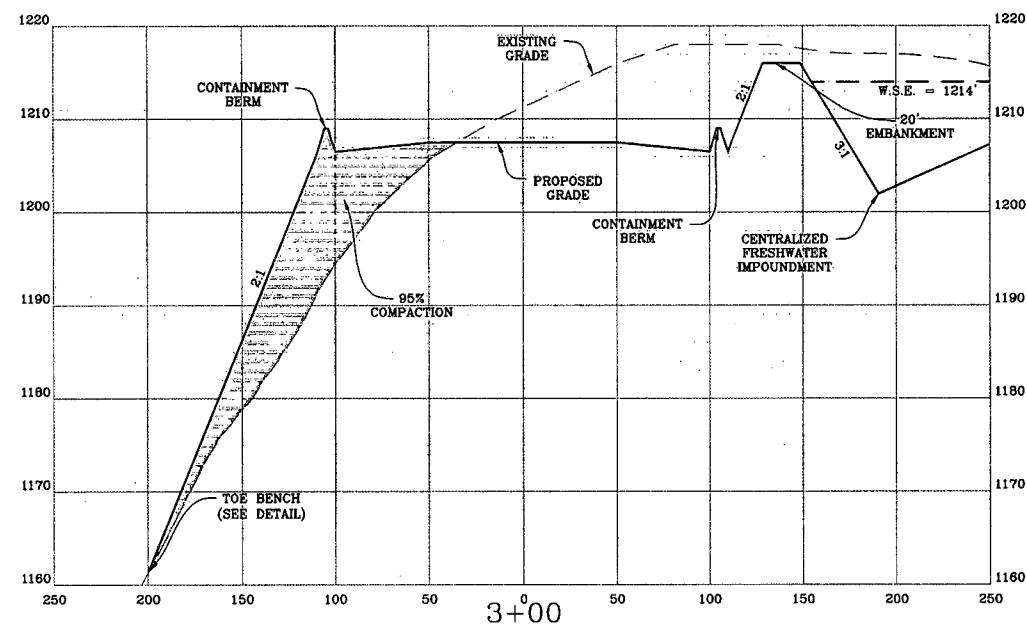
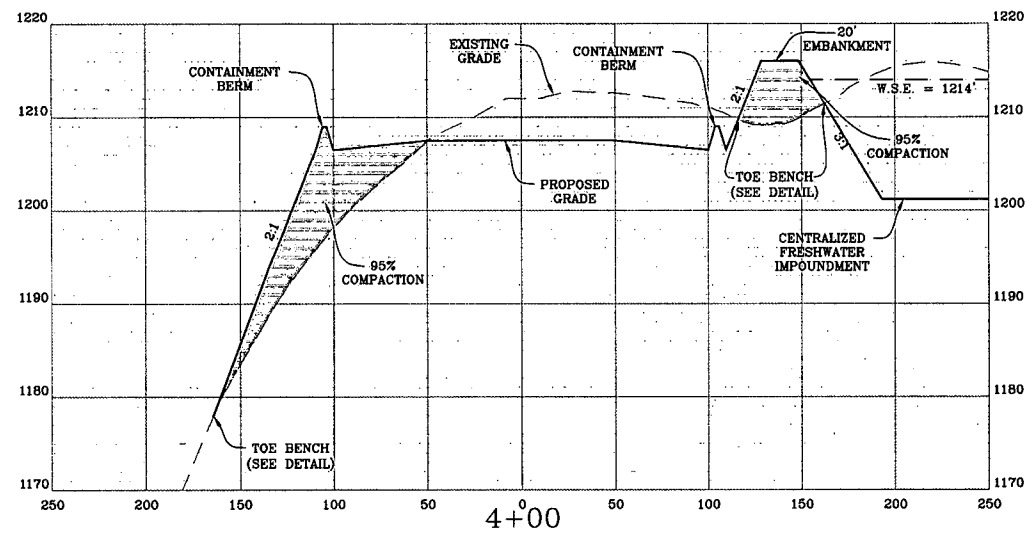


DATE: 12/13/2013  
SCALE: AS SHOWN  
SHEET 12 OF 26

# STAGING AREA SECTIONS

STAGING AREA CROSS-SECTIONS ALONG BASELINE "A-A"

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



STAGING AREA CROSS SECTION "A-A"

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

**NOTE:**

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**LEGEND**

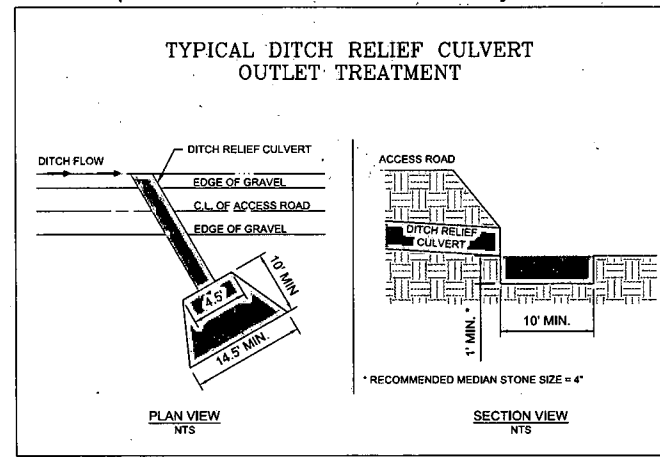
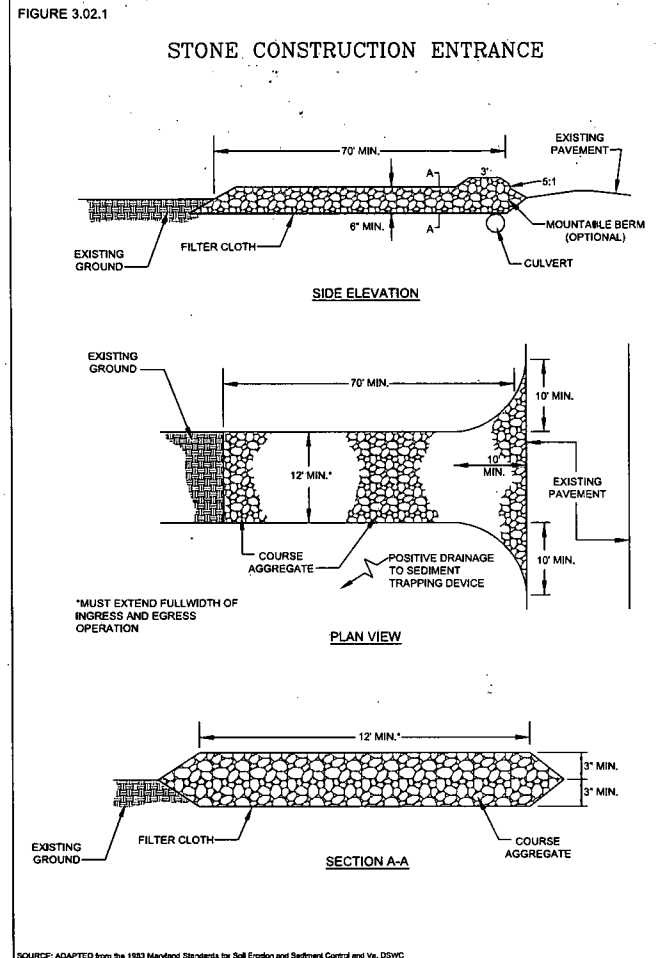
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MATCHLINE	---

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STAGING AREA SECTIONS  
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CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA

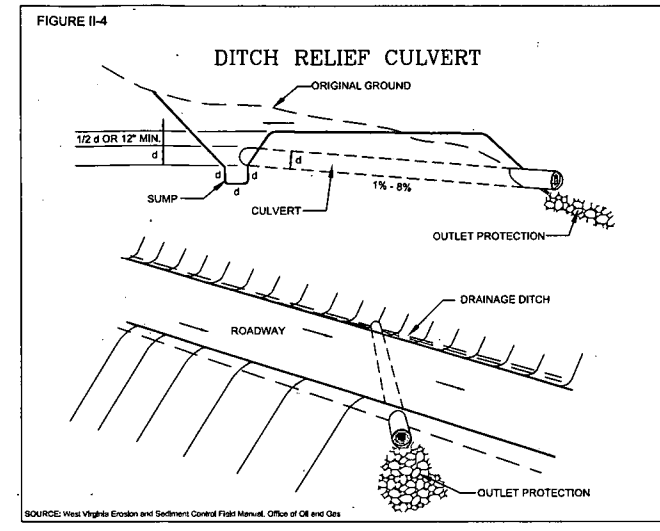
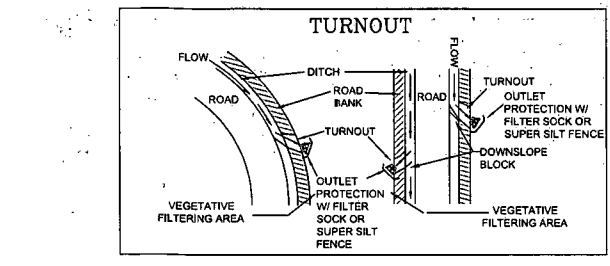
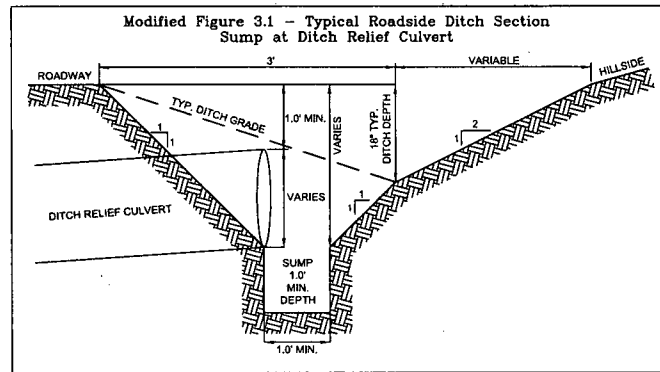




**NOTE:**  
ALL DITCH LINE PROTECTION SHALL BE INSTALLED AS RECOMMENDED IN THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL. DITCH LINE PROTECTION SHALL BE BASED ON THE FOLLOWING GRADES:

1. LESS THAN 3% - GRASSED
2. 3-9% - GRASS WITH ROLLED EROSION CONTROL PRODUCTS (RECP)
3. GREATER THAN 9% - RIPRAP OR EQUIVALENT GEOTEXTILE

IF HIGH EROSION SOILS ARE ENCOUNTERED DURING CONSTRUCTION, THE ENGINEER SHOULD BE CONTACTED FOR FURTHER EVALUATION.



**Table II-6**

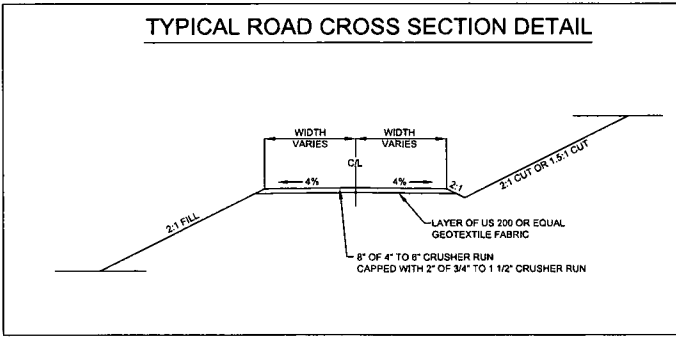
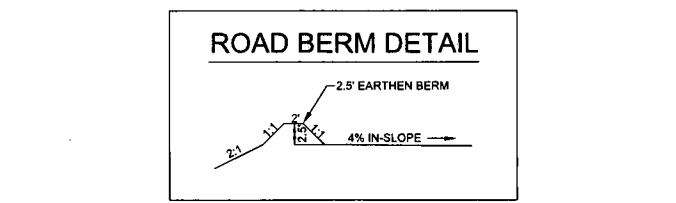
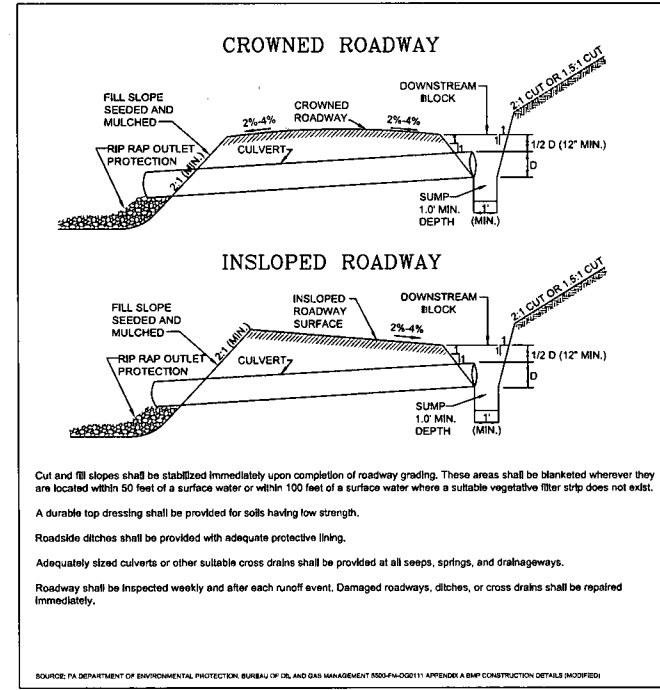
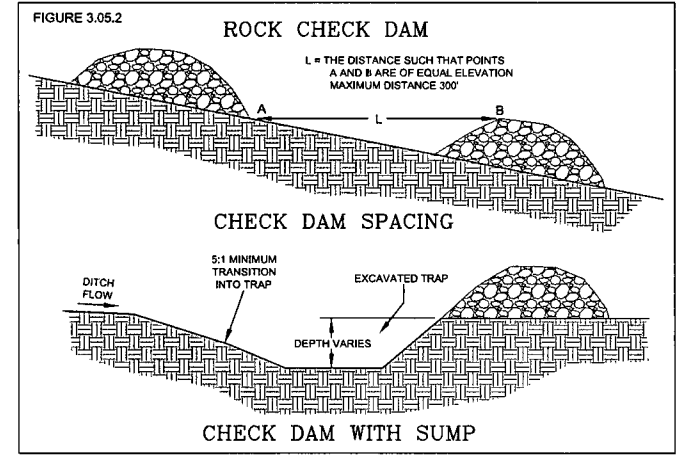
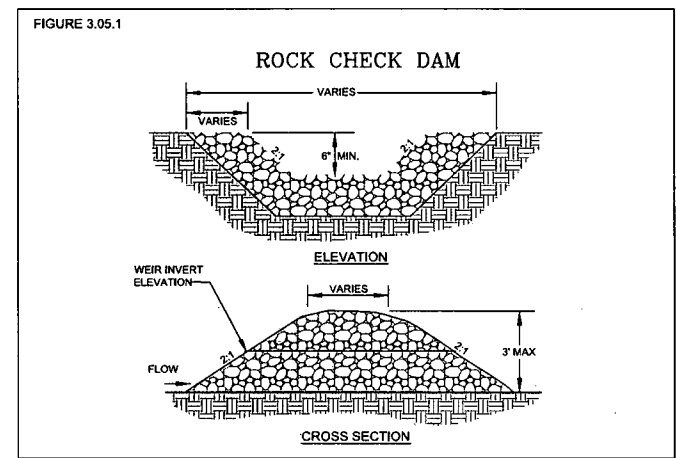
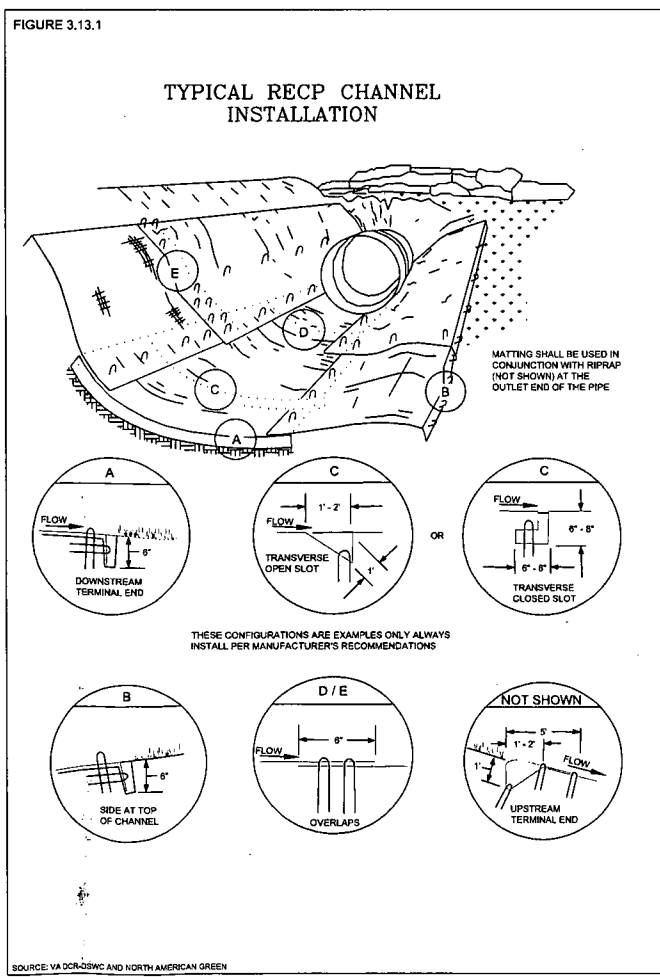
**Spacing of Culverts**

Road Grade %	Distance (Ft)
2-5	500-300
6-10	300-200
11-15	200-100
16-20	100

**Table II-5**

**Pipe Sizes for Culverts Across Roads**

Drainage Area (Ac)	Pipe Diameter (In)	Pipe Capacity (Cfs)
10	15	5
20	18	9
30	21	12
50	24	18
80	27	24
100	30	29
300	36	60
500	42	85



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**CONSTRUCTION DETAILS**

**HEFLIN**

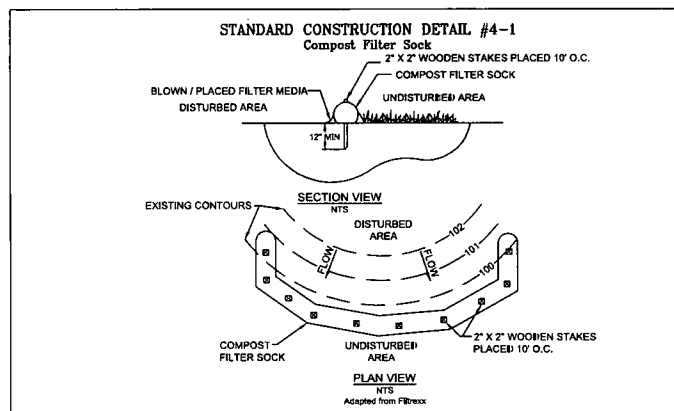
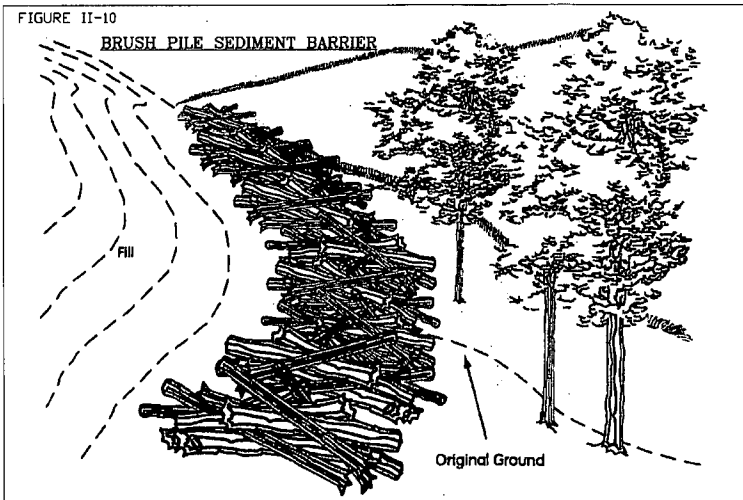
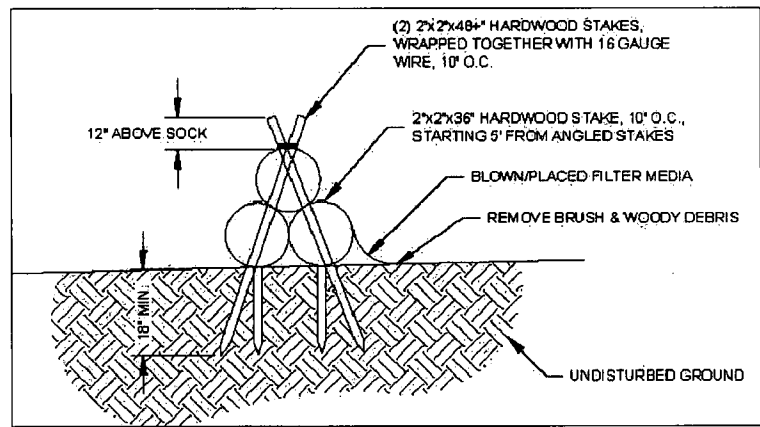
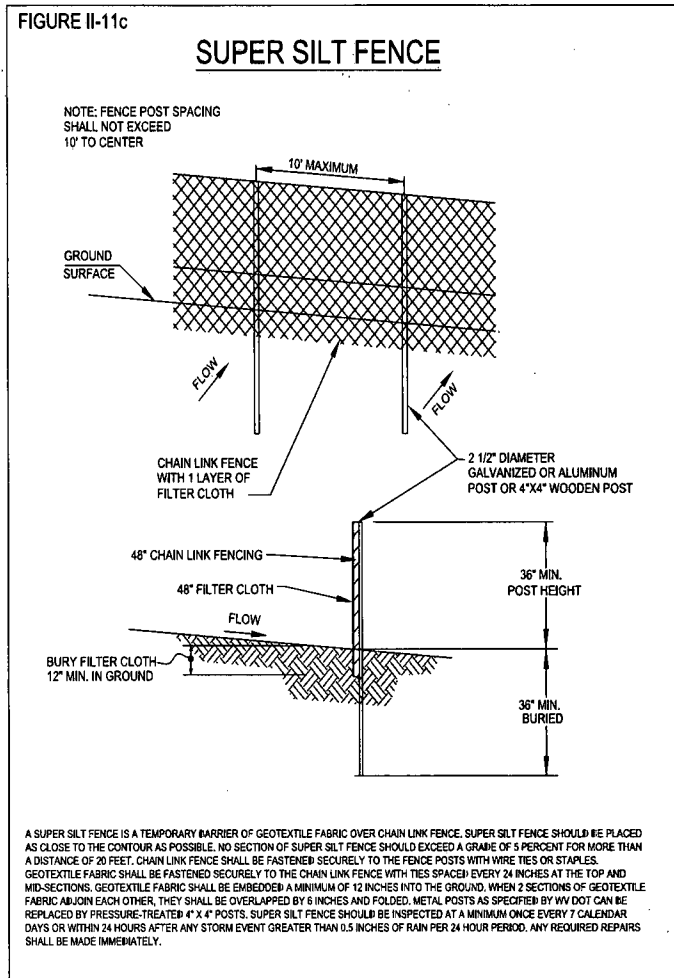
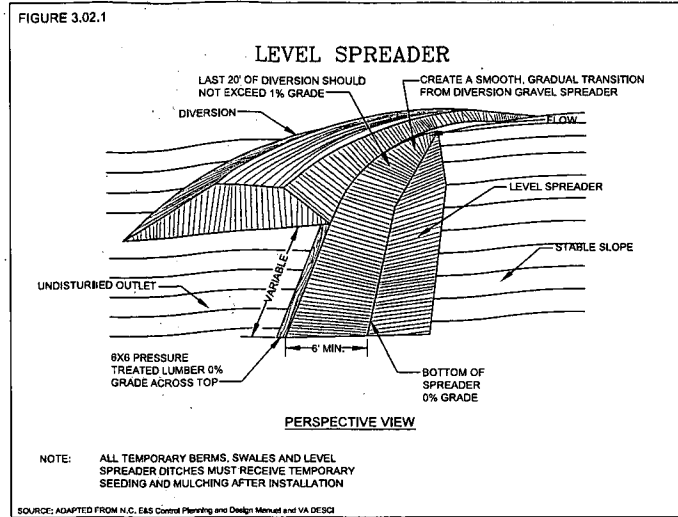
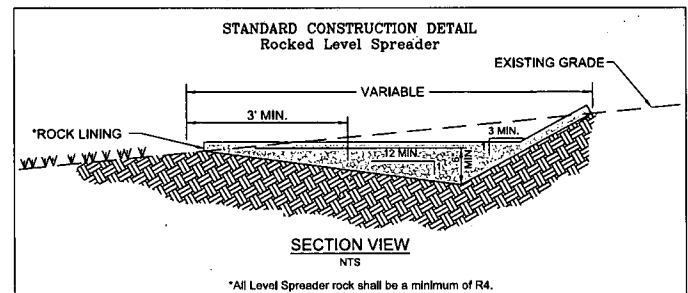
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 12/13/2013  
SCALE: N/A  
SHEET 18 OF 26

Table 4.1  
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE Photo-degradable	5 mil HDPE Photo-degradable	5 mil HDPE Bio-degradable	Multi-Filament Polypropylene (MPPF) Photo-degradable	Heavy Duty Multi-Filament Polypropylene (HDMPP) Photo-degradable
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength	28 psi	28 psi	28 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	25% at 1000 hr.	25% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	HDPE biaxial net continuously wound				
	Fusion-welded junctures				
Outer Filtration Mesh	3/4" x 3/4" Max. aperture size				
	Composite Polypropylene Fabric (woven layer & non-woven fleece mechanically fused via needle punch)				
3/16" Max. aperture size					
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					



Sock fabric shall meet standards of Table 4.1. Compost shall meet the following standards:

Organic Matter Content	80% -100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5-6.0
Moisture Content	35%-55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 ds Maximum

Compost Filter Sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 6 feet up the slope at 45 degrees to the main sock alignment. Maximum slope length above any sock shall not exceed manufacturer's maximum permissible slope length.

Traffic shall not be permitted to cross filter socks.

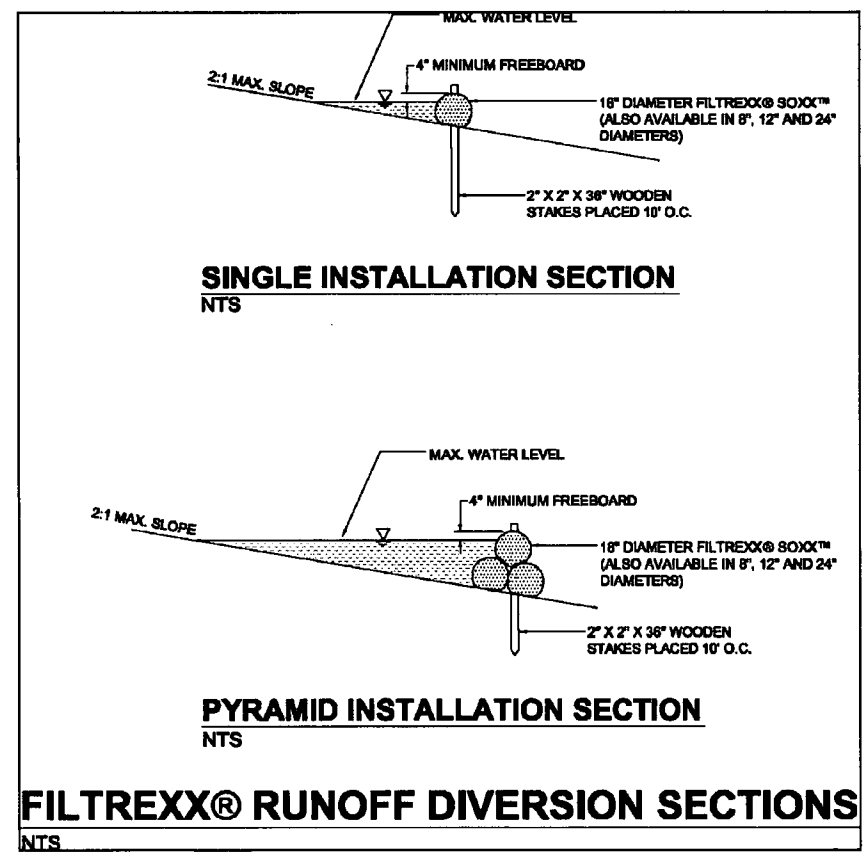
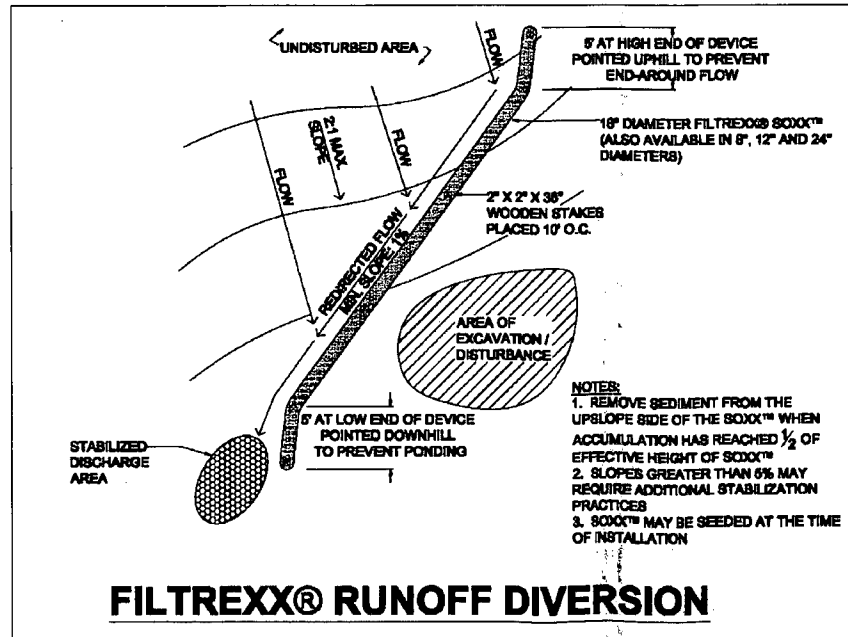
Accumulated Sediment shall be removed when it reaches 1/2 the above ground height of the sock and disposed in the manner described elsewhere in the plan.

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 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.

In the event the ground is frozen, #5 rebar with safety caps shall be used instead of wooden stakes to anchor the filter sock. Once the ground thaws the rebar anchors shall be removed and replaced with 2" x 2" wooden stakes and installed as shown in the detail above.



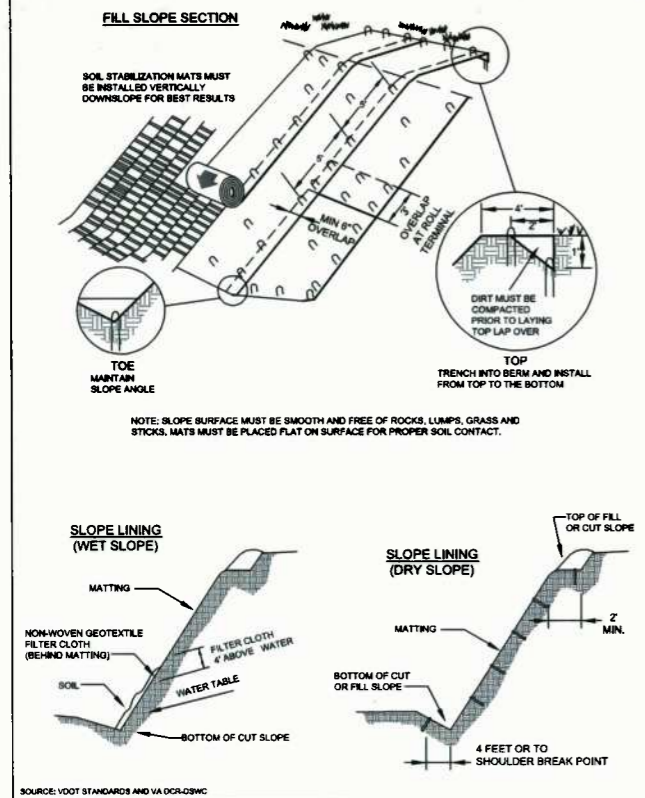
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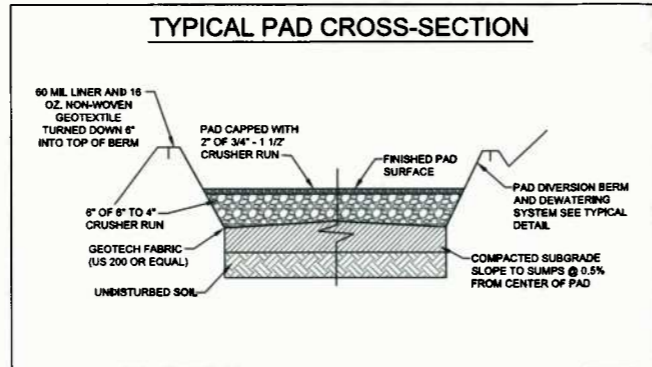
CONSTRUCTION DETAILS  
**HEFLIN**  
CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA



FIGURE 3.13.2 ROLLED EROSION CONTROL PRODUCTS



TYPICAL PAD CROSS-SECTION



PAD DIVERSION BERM DETAIL

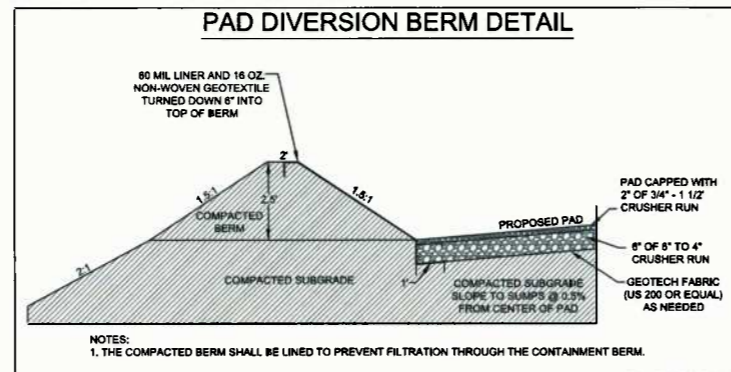
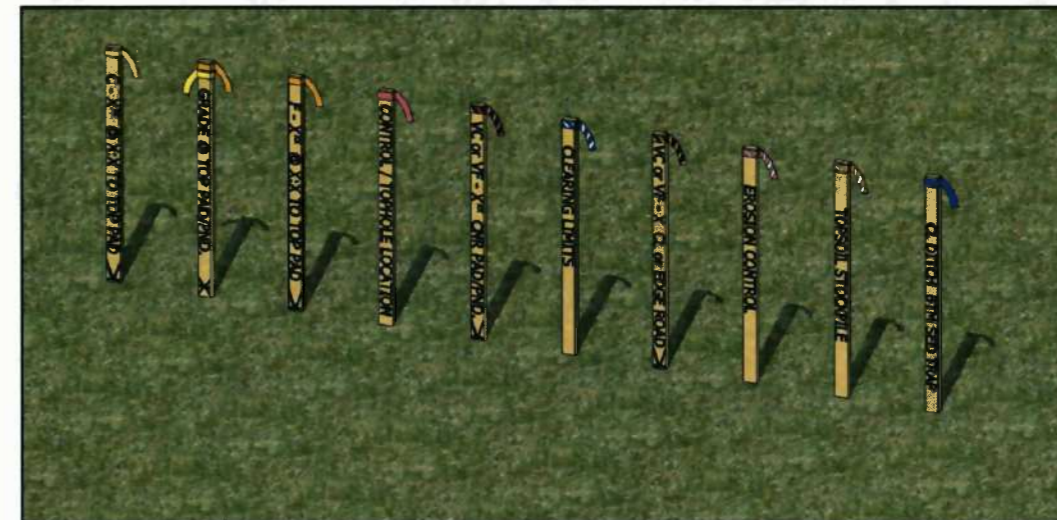
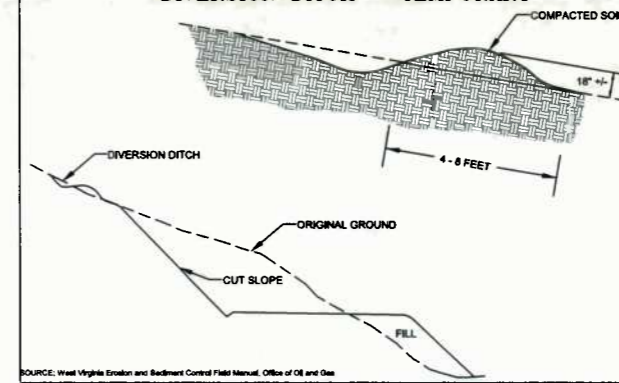
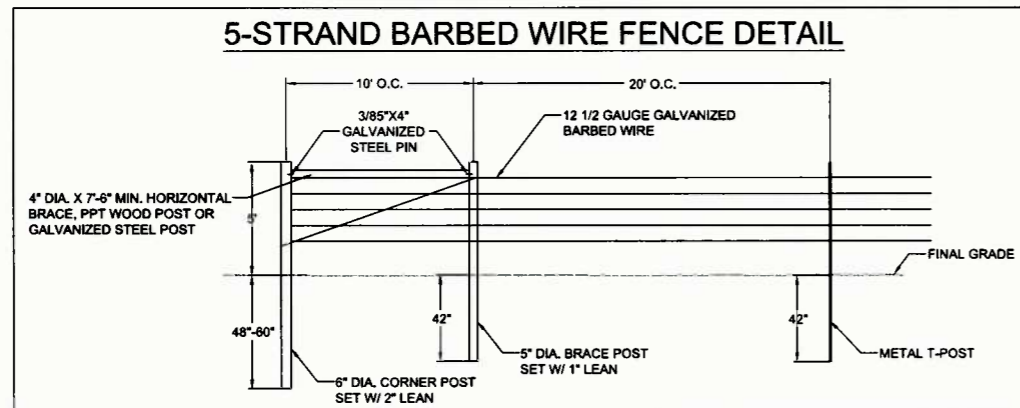


FIGURE II-3 DIVERSION DITCH - TEMPORARY

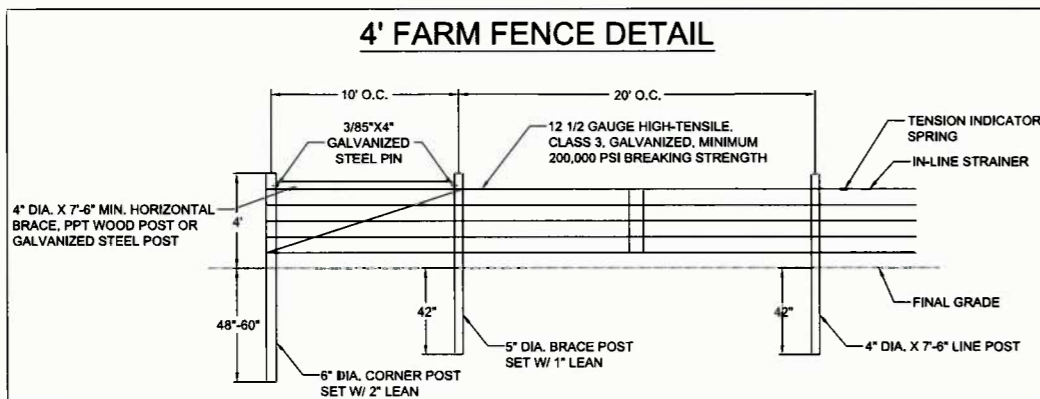


	<b>Yellow Ribbon:</b> Yellow Ribbon used to indicate top of Cuts (C) Cut to be determined at time of stakout Slope determined by site design
	<b>Yellow &amp; Orange Ribbon:</b> Yellow and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	<b>Orange Ribbon:</b> Orange Ribbon used to indicate toes of Fills (F) Fill to be determined at time of stakout Slope determined by site design
	<b>Pink Ribbon:</b> Pink Ribbon used to indicate Top Hole Location Pink Ribbon used to indicate Survey Control Location
	<b>Pink &amp; Black Stripe Ribbon:</b> 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 stakout
	<b>Blue &amp; White Stripe Ribbon:</b> Blue & White Stripe Ribbon used to indicate clearing limits/construction limits
	<b>Orange &amp; Black Stripe Ribbon:</b> 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
	<b>Pink &amp; White Stripe Ribbon:</b> 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)
	<b>Orange &amp; White Stripe Ribbon:</b> Orange & White Stripe Ribbon used to indicate Topsoil Stockpile Locations
	<b>Blue Ribbon:</b> Blue Ribbon used to indicate Centerline (Q) Ditch Blue Ribbon used to indicate Bottom (BTM) Sediment Traps

5-STRAND BARBED WIRE FENCE DETAIL



4' FARM FENCE DETAIL



ANTERO RESOURCES CORPORATION STANDARD RIBBON COLOR SCHEME PROVIDED BY ANTERO RESOURCES CORPORATION

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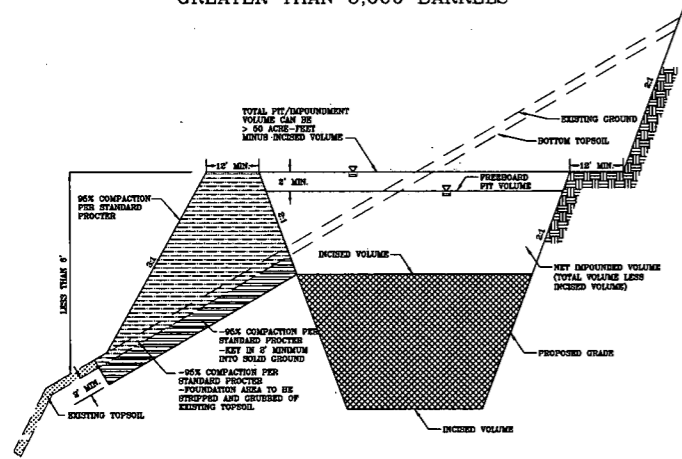
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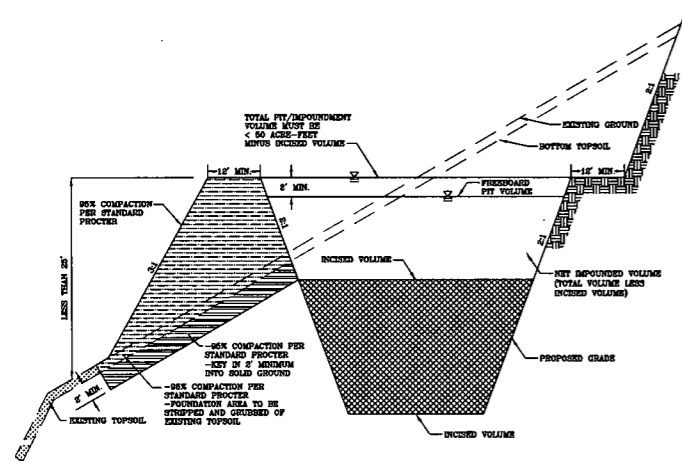




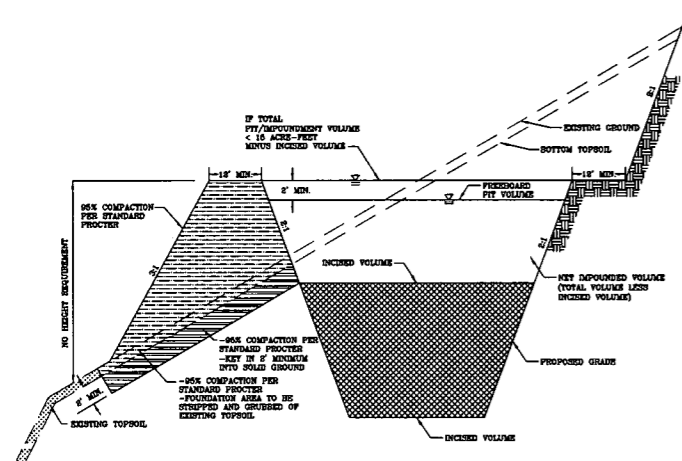
WEST VIRGINIA CODE 35 CSR 4  
DESIGN AND CONSTRUCTION REQUIREMENTS  
FOR ASSOCIATED PITS, ASSOCIATED IMPOUNDMENTS, &  
CENTRALIZED IMPOUNDMENTS  
GREATER THAN 5,000 BARRELS



SECTION VIEW



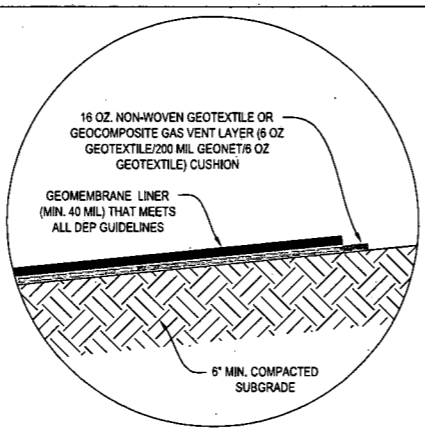
SECTION VIEW



SECTION VIEW

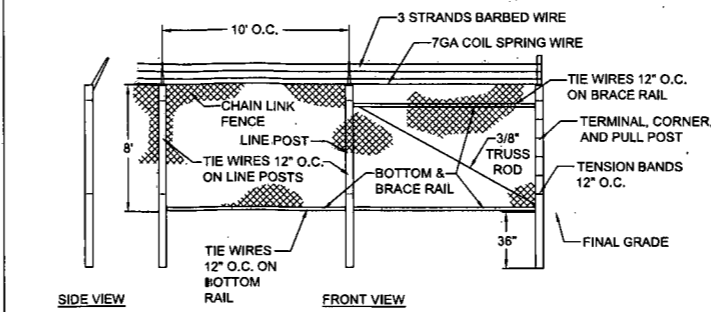
- NOTES:  
1. ALL FILL SHOULD BE KEYED IN TO ORIGINAL GROUND EVERY 2-5 VERTICAL FEET DEPENDING ON EXISTING GROUND SLOPE  
2. MINIMUM OUTSIDE AND INSIDE EMBANKMENT (FILL) SLOPES SHALL BE 2H:1V. THE INSIDE AND OUTSIDE SLOPES MUST ADD UP TO 5H:1V.

NTS

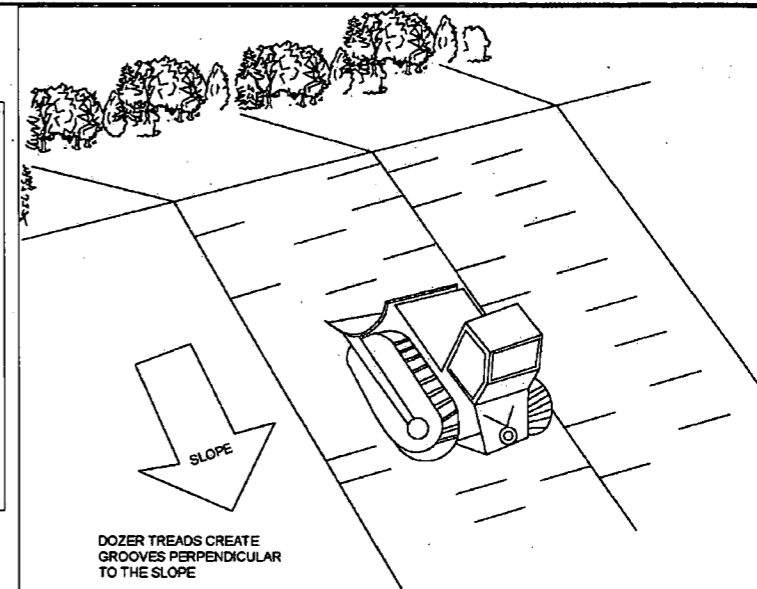


GEOMEMBRANE LINER SYSTEM  
NTS

8' CHAIN LINK W/ 3 STRAND BARBED WIRE  
PERIMETER SAFETY FENCE

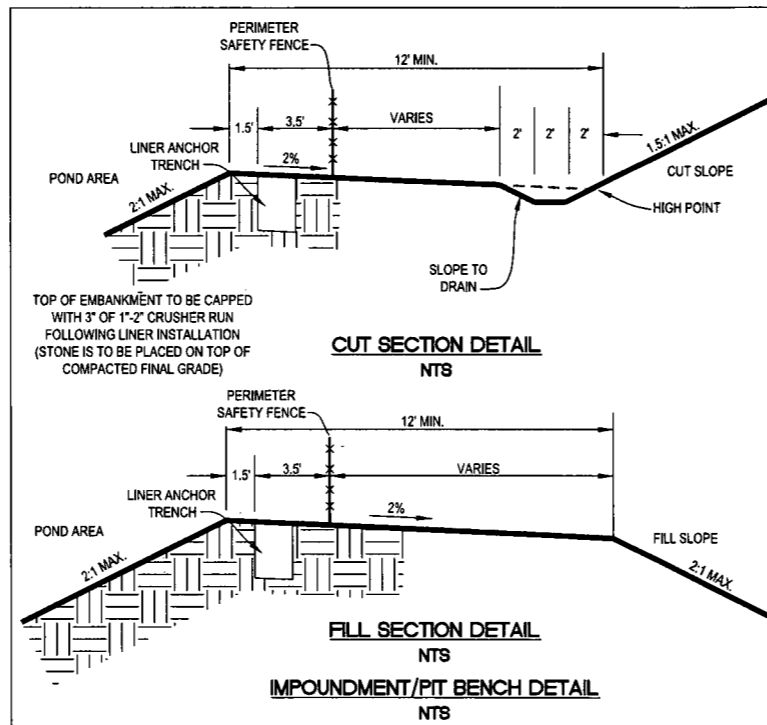


SIDE VIEW FRONT VIEW



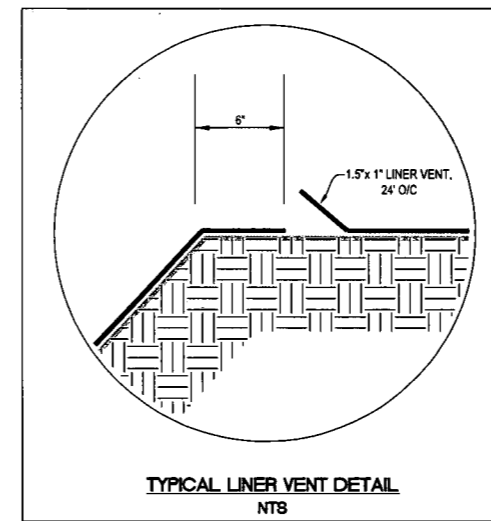
DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE

- NOTES:  
TRACKING SLOPES IS DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP.

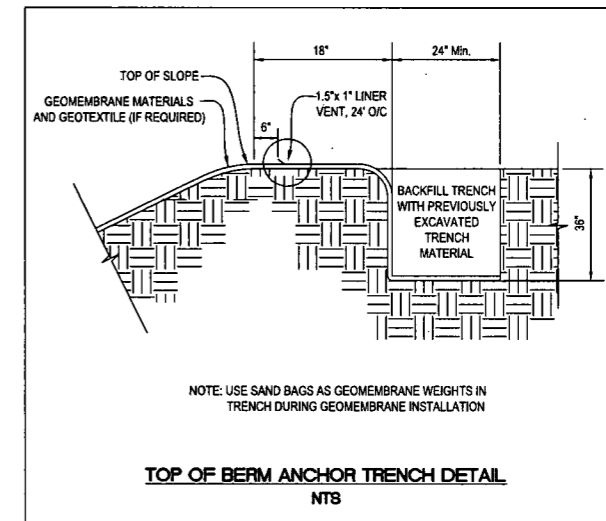


CUT SECTION DETAIL  
NTS

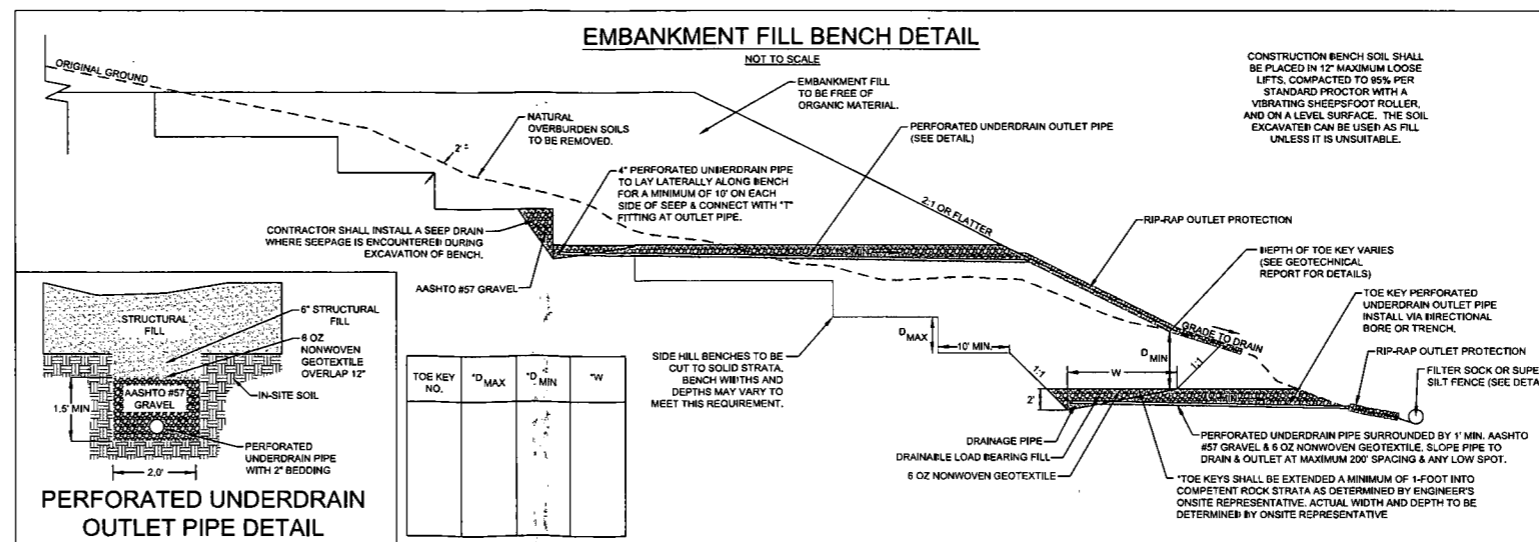
FILL SECTION DETAIL  
NTS  
IMPOUNDMENT/PIT BENCH DETAIL  
NTS



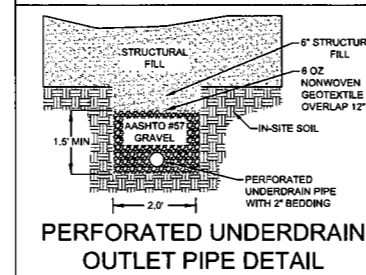
TYPICAL LINER VENT DETAIL  
NTS



TOP OF BERM ANCHOR TRENCH DETAIL  
NTS



EMBAKMENT FILL BENCH DETAIL  
NOT TO SCALE



PERFORATED UNDERDRAIN OUTLET PIPE DETAIL

TOE KEY NO.	D MAX	D MIN	T W

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CONSTRUCTION DETAILS  
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DODDRIDGE COUNTY, WEST VIRGINIA



**REVEGETATION**

Taken from the  
West Virginia Erosion and Sediment Control Field Manual  
West Virginia Division of Environmental Protection Office of Oil and Gas  
Charleston, W.Va.  
Section IV

**Temporary Seeding**

**a. General Conditions Where Practice Applies**  
Where exposed soil surfaces are not to be fine-graded or worked for periods longer than 21 days. Temporary vegetative cover with sediment controls must be established where runoff will go directly into a stream. Immediately upon construction of the site (site includes road and location), vegetation must be established on road bank and location slopes. A permanent vegetative cover shall be applied to areas that will be left un-worked for a period of more than six months.

**b. Seed Mixtures and Planting Dates**  
Refer to Tables 2 through 4 for recommended dates to establish vegetative cover and the approved lists of temporary and permanent plant species, and planting rates. Table 3 gives recommended types of temporary vegetation, rates of application, and optimum seeding dates. In situations where another cover is desired, contact the local soil conservation district for seeding recommendations.

**c. Seed Application**  
Apply seed by broadcasting, drilling, or by hydroseed according to the rates indicates in Table IV-3. Perform all planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

**Permanent Seeding**

**a. General**  
Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on all disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seedbed preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion.

All required seedbed preparation and loosening of soil by disking or dozer tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rates shown in Tables IV-3 and IV-4. When hydroseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydroseeding.

When hydroseeding, first mix the lime, fertilizer, and hydro-mulch in the recommended amount of water. Mix the seed and inoculants together within one hour prior to planting, and add to the slurry just before seeding. Apply the slurry uniformly over the prepared site. Assume that agitation is continuous throughout the seeding operation and the mix is applied within one hour of initial mixing.

**b. Lime and Fertilizer**

- Lime shall be applied to all permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.
- Fertilizer shall be applied in all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.
- Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

**c. Permanent Seed Mixtures**

Planners should take into consideration the species makeup of the existing pasture and the landowner's future pasture management plans when recommending seed mixtures. Selection: From Tables IV 4a and b. Permanent Seeding Mixtures Suitable for Establishment in West Virginia.

**Notes:**

- All legumes must be planted with the proper inoculants prior to seeding.
- Lathco Flatpea is potentially poisonous to some livestock.
- Only endophyte free varieties of Tall Fescue should be used. Tall Fescue and Crownvetch are also very invasive species, non-native to WV.
- For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures in Table 4b are more wildlife and farm friendly; those listed in bold are suitable for use in shaded woodland settings. Mixtures in italic are suitable for use in filter strips.

**d. Seeding for Wildlife Habitat**

Consider the use of the native plants or locally adapted plants when selecting cover types and species for wildlife habitat. Wildlife friendly species or mixes that have multiple values should be considered. See wildlife friendly species/mixtures in Table IV-4b. Consider selecting no or low maintenance long-lived plants adaptable to sites which may be difficult to maintain with equipment.

**NOTE:**

- NO FESCUE OR TIMOTHY GRASS SHALL BE USED.

**Mulching**

**a. General Organic Mulches**

The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made from wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged due to the risk of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas. Depending on site conditions, in critical areas such as waterways or steep slopes, additional or substitute soil protective measures may be used if deemed necessary. Examples include jute mesh and soil stabilization blankets or erosion control matting.

Areas that have been temporarily or permanently seeded should be mulched immediately following seeding. Mulches conserve desirable soil properties, reduce soil moisture loss, prevent crusting and sealing of the soil surface and provide a suitable microclimate for seed germination.

Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay should be used and the area then seeded as soon as weather or seasonal conditions permit. Do not use fiber mulch (cellulose-hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch. Wood cellulose fiber mulch is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over the top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover. Use straw mulch during these periods and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas and areas susceptible to wind.

**b. Chemical Mulches, Soil Binders and Tackifiers**

A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the mulch and to the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay. When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

**c. Specifications**

From Table IV-6 select the type of mulch and rate of application that will best suit the conditions at the site.

**d. Anchoring**

Depending on the field situation, mulch may not stay in place because of wind action or rapid water runoff. In such cases, mulch is to be anchored mechanically or with mulch netting.

**1. Mechanical Anchoring**

Apply mulch and pull mulch anchoring tool over the mulch. When a disk is used set the disk straight and pull across slope. Mulch material should be tucked into the soil about three inches.

**2. Mulch netting**

Follow manufacturer's recommendation when positioning and stapling the mulch netting in the soil.

**Table IV-1  
Recommended Seeding Dates**

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - December 1	HIGH RISK - freeze damage to young seedlings
December 1 - March 1	Good seeding period. Dormant seeding

**Table 2  
Acceptable Fertilization Recommendation**

Species	N (lbs/ac)	P2O5 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

**Table 3  
Temporary Cover**

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	96	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Sundagrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

**Table 4a**

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
Crownvetch / Tall Fescue	10 - 15	Well - Mod. Well	5.0 - 7.5
Crownvetch / Perennial Ryegrass	10 - 15	Well - Mod. Well	5.0 - 7.5
Flatpea or Perennial Pea / Tall Fescue	20	Well - Mod. Well	4.0 - 8.0
Ladino Clover / Serecia Lespedeza / Tall Fescue	15	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Ladino Clover / Redtop	30	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue / Redtop	20	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Birdsfoot Trefoil / Redtop	10	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue / Redtop	25	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue / Creeping Red / Tall Fescue	30	Well - Mod. Well	5.0 - 7.5
Perennial Ryegrass / Tall Fescue / Lathco Flatpea *	50	Well - Poorly	4.5 - 7.5
	10		
	15	Well - Poorly	5.8 - 8.0
	20		

\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table 4b**

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
KY Bluegrass / Redtop	20	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2 / 10		
Timothy / Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy / Birdsfoot Trefoil	12	Well - Poorly	5.5 - 7.5
Orchardgrass / Ladino Clover / Redtop	8	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Ladino Clover / Redtop	10	Well - Mod. Well	5.5 - 7.5
Perennial Ryegrass / Creeping Red Fescue / Perennial Ryegrass	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	5.5 - 7.5
Birdsfoot Trefoil / Redtop / Orchardgrass	10	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Perennial Ryegrass	5	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Orchardgrass	20	Well - Mod. Well	5.5 - 7.5
Orchardgrass	20	Well - Mod. Well	5.5 - 7.5

\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table IV-5  
Lime and Fertilizer Application Table**

pH of Soil	Lime In Tons per Acre	Fertilizer, Lbs. per Acre (10-20-20 or Equivalent)
Above 6.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

The pH can be determined with a portable pH testing kit or by sending the soil samples to a soil testing laboratory. When 4 tons of lime per acre are applied it must be incorporated into the soil by disking, backblading or tracking up and down the slope.

**Table IV-6**

Material	Minimum Rates per acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	100 to 150 bales	Cover all	For hydroseeding
Pulp Fiber	1000 to 1500 lbs	Disturbed Areas	
Wood - Cellulose			
Recirculated Paper			

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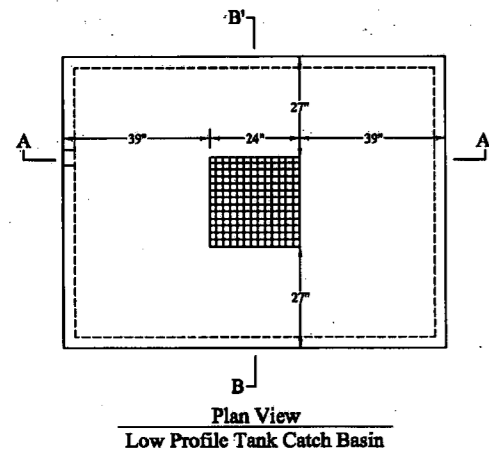
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DODDRIDGE COUNTY, WEST VIRGINIA

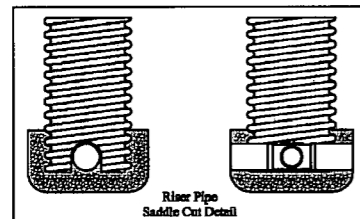
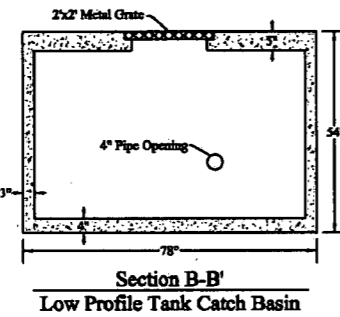
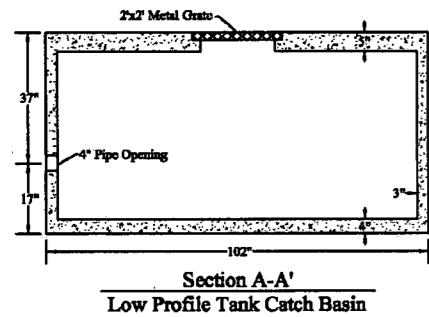
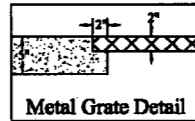
CONSTRUCTION DETAILS



# DEWATERING SYSTEM SPECIFICATIONS



Ritchie Concrete  
Low Profile Tank  
Catch Basin  
1,000 Gallon Capacity



**Size of Tank**

6 1/2' Wide  
8 1/2' Long  
4 1/2' Tall

**Hole Size**

7 1/2' Wide  
9 1/2' Long  
5'-2" Tall

**Mix Design**

4000 psi

	lbs. yd.	Ab. vol.
	563	2.86
	270	4.33
	5%+1	1.35
	1222	7.42
	1770	11.04
		27.00cf

**Outlet Lines**

Outlet 17" from bottom of tank  
Polylock Seals adaptable for 2, 3, & 4"

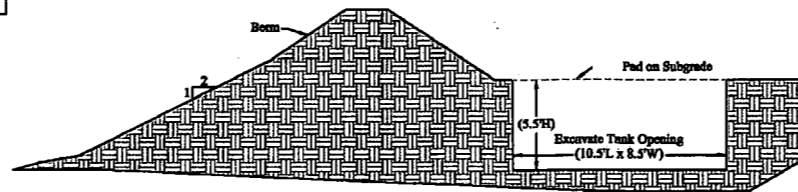
**Thickness**

Walls 3"  
6x6x10 gauge wire mesh  
3/8" Rebar on 18" Centers  
Bottom 4"

All tanks are of durable construction and are state approved

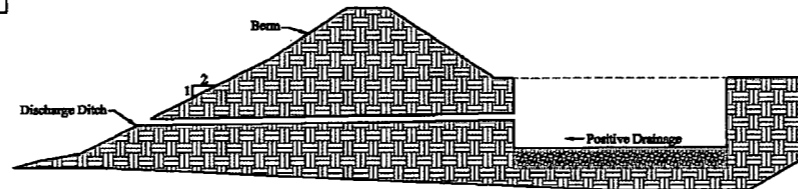
Tops with 1/2" Rebar on 14" Centers

**Step 1**



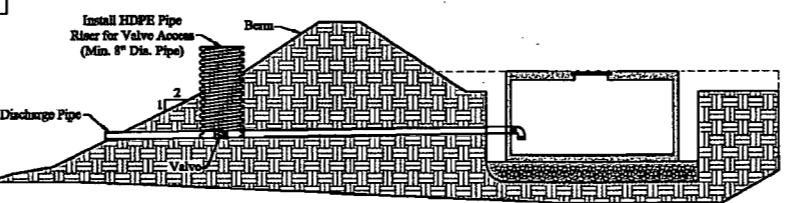
- 1.) Construct Pad to subgrade.
- 2.) Excavate sump hole 1' larger than the length, width, and height of tank.

**Step 2**



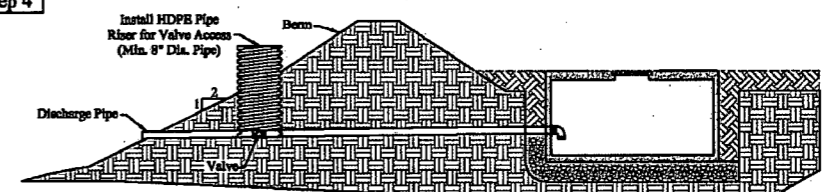
- 3.) Use crusher run stone to prepare the bottom of the excavation. Make sure to level the tank from side to side and have positive flow toward the outlet (approximately 1-2").
- 4.) Make certain the outlet on the tank lines up with the discharge ditch for installing the discharge pipe and valve

**Step 3**



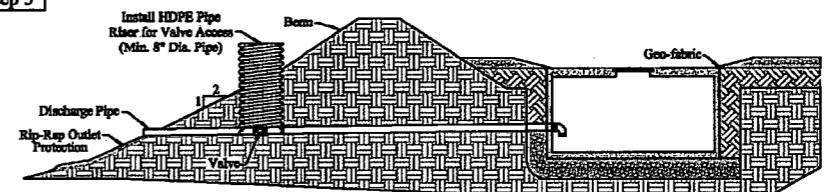
- 5.) Set the tank in the excavation and level.
- 6.) Install pipe section, (approximately 1-2' piece) into the outlet fitting on the tank. Use hydraulic cement around the connection to insure positive seal.
- 7.) Install 4" valve onto short section of the pipe with glue (make certain to clean and prime both valve and pipe before gluing connection).
- 8.) Install sections of pipe onto the outlet side of the valve until the pipe extends through the berm and slope approximately 1'. Leave the end of the pipe exposed (make certain to clean and prime the pipe and joints before gluing the connections).
- 9.) Make certain that the pipe is supported and maintains positive flow away from the valve. Use excavated soil from the discharge ditch to support the pipe.
- 10.) Install the riser for the valve. Use a section of HDPE pipe with a larger diameter than the valve (minimum 8" diameter HDPE pipe). Cut a "saddle" on the bottom of the riser pipe so that the riser pipe will rest on the discharge pipe, surrounding the valve and keeping dirt away from the operation of the valve.
- 11.) Fill around the valve with crusher run stone and 1' on the riser pipe to keep soil out.

**Step 4**



- 12.) Stabilize the riser pipe so that it remains perpendicular to the valve (Riser pipe needs to be perpendicular to allow smooth operation of handle and valve). Make sure to remove the factory handle on the valve and to fit "T" handle (alternate handle) onto the exposed lug on the top of the valve.
- 13.) Begin backfilling the tank excavation and discharge ditch, use the soil excavated from the tank hole to backfill the tank and discharge ditch. Do NOT backfill with any large rocks against the tank and be certain NOT to over-compact around the tank. Improper backfilling and over-compaction around the tank will lead to the tank collapsing. It is recommended that finer soils are used to backfill around the tank and discharge pipe to reduce voids and excessive settling.
- 14.) Once backfilling is complete, the top of the tank should be flush with the sub-grade.
- 15.) Cut the riser pipe off 2' above sub-grade to allow for the riser pipe to extend 1' above the final grade and keep surface water from entering the pipe.

**Step 5**



- 16.) Repair the pad berm and fill slope.
- 17.) Install Rip-Rap spillway from the discharge pipe outlet to the bottom of the slope. Depending on site conditions, the spillway will discharge through a level spreader to vegetation or E&S controls or discharge from the spillway into an access road ditch.
- 18.) With tank installation complete, the pad can then be stoned. When using Geo-fabric (Tytar), be sure to lap the fabric over the edge of the lid on the tank. This lap will help run-off to flow into the tank. Taper stone down from the pad to the tank, so there is not a "lip" or trip hazard on the edge of stone.
- 19.) Be sure NOT to run a smooth drum or sheeps-footed roller over the tank lid or vibrate too close to the sides of the tank. Compacting or operating heavy equipment near the tank may cause the walls on the tank to fail. Keep traffic off of the tank. It is recommended that barriers be installed to prevent traffic from driving over or parking on or near the tank.

**OPERATIONAL NOTE:**

1. THE DEWATERING VALVE WILL REMAIN CLOSED DURING OPERATIONS. ANY WATER CAPTURED DURING OPERATIONS WILL BE PUMPED BY A COMMERCIAL VENDOR. AFTER OPERATIONS ARE COMPLETE, THE VALVE WILL BE OPENED BY A DESIGNATED RESPONSIBLE PERSON ONLY.

**NOTE:**

1. THE DEWATERING SYSTEM DETAILS AND SPECIFICATIONS SHOWN ON THIS SHEET WERE PROVIDED BY ANTERO RESOURCES CORPORATION AND REFLECT THEIR CURRENT STANDARD TO CONTROL POTENTIAL SPILLS DURING OPERATIONS.

DATE	REVISION	REVISION PER CLIENT REQUEST
02/21/2014		



THIS DOCUMENT WAS PREPARED FOR:  
ANTERO RESOURCES CORPORATION

CONSTRUCTION DETAILS

**HEFLIN**

CENTRALIZED FRESHWATER IMPOUNDMENT  
GREENBRIER DISTRICT  
DODDRIDGE COUNTY, WEST VIRGINIA

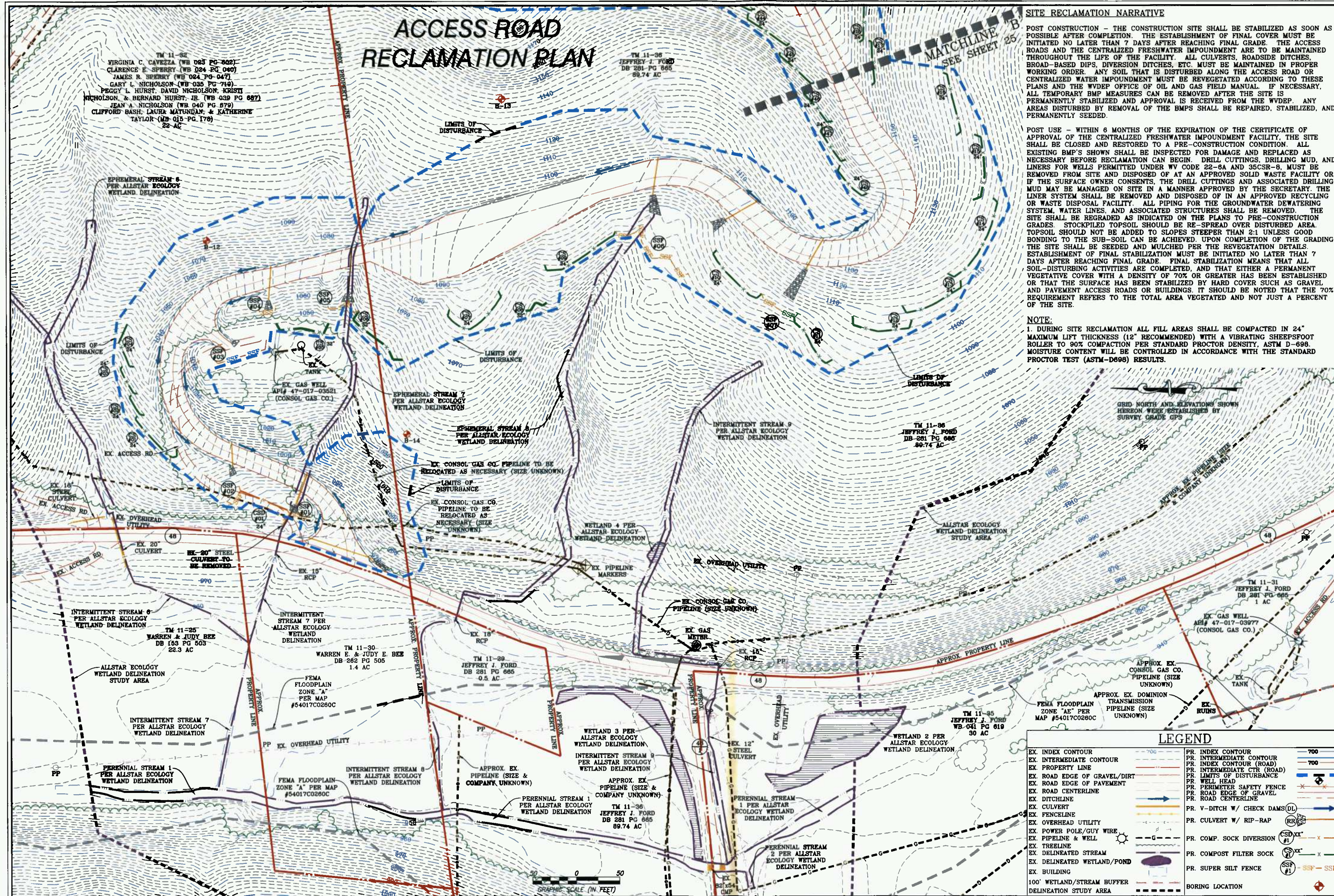


DATE: 12/13/2013

SCALE: N/A

SHEET 23 OF 26

# ACCESS ROAD RECLAMATION PLAN



## SITE RECLAMATION NARRATIVE

POST CONSTRUCTION - THE CONSTRUCTION SITE SHALL BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. THE ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. THE ACCESS ROADS AND THE CENTRALIZED FRESHWATER IMPOUNDMENT ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE FACILITY. ALL CULVERTS, ROADSIDE DITCHES, BROAD-BASED DIPS, DIVERSION FITCHES, ETC. MUST BE MAINTAINED IN PROPER WORKING ORDER. ANY SOIL THAT IS DISTURBED ALONG THE ACCESS ROAD OR CENTRALIZED WATER IMPOUNDMENT MUST BE REVEGETATED ACCORDING TO THESE PLANS AND THE WVDEP OFFICE OF OIL AND GAS FIELD MANUAL. IF NECESSARY, ALL TEMPORARY BMP MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP. ANY AREAS DISTURBED BY REMOVAL OF THE BMPs SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.

POST USE - WITHIN 6 MONTHS OF THE EXPIRATION OF THE CERTIFICATE OF APPROVAL OF THE CENTRALIZED FRESHWATER IMPOUNDMENT FACILITY, THE SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. ALL EXISTING BMP'S SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. DRILL CUTTINGS, DRILLING MUD, AND LINERS FOR WELLS PERMITTED UNDER WV CODE 22-8A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR, IF THE SURFACE OWNER CONSENTS, THE DRILL CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY. THE LINER SYSTEM SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED RECYCLING OR WASTE DISPOSAL FACILITY. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLANS TO PRE-CONSTRUCTION GRADES. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED. UPON COMPLETION OF THE GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS GRAVEL AND PAVEMENT ACCESS ROADS OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.

**NOTE:**  
 1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS.

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THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

ACCESS ROAD RECLAMATION PLAN  
**HEFLIN**  
 CENTRALIZED FRESHWATER IMPOUNDMENT  
 GREENBRIER DISTRICT  
 DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 12/13/2013  
 SCALE: 1" = 50'  
 SHEET 24 OF 26

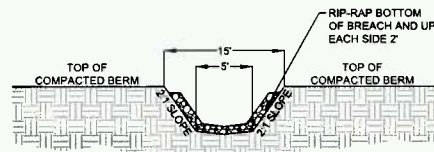
### LEGEND

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EX. INTERMEDIATE CONTOUR	PR. INTERMEDIATE CONTOUR	700
EX. PROPERTY LINE	PR. INDEX CONTOUR (ROAD)	700
EX. ROAD EDGE OF GRAVEL/DIRT	PR. INTERMEDIATE CTR (ROAD)	
EX. ROAD EDGE OF PAVEMENT	PR. LIMITS OF DISTURBANCE	
EX. ROAD CENTERLINE	PR. WELL HEAD	
EX. DITCHLINE	PR. PERIMETER SAFETY FENCE	
EX. CULVERT	PR. ROAD EDGE OF GRAVEL	
EX. FENCELINE	PR. ROAD CENTERLINE	
EX. OVERHEAD UTILITY	PR. V-DITCH W/ CHECK DAMS (DL)	
EX. POWER POLE/GUY WIRE	PR. CULVERT W/ RIP-RAP	
EX. PIPELINE & WELL	PR. COMP. SOCK DIVERSION	
EX. TREELINE	PR. COMPOST FILTER SOCK	
EX. DELINEATED STREAM	PR. SUPER SILT FENCE	
EX. DELINEATED WETLAND/POND		
EX. BUILDING		
100' WETLAND/STREAM BUFFER DELINEATION STUDY AREA		

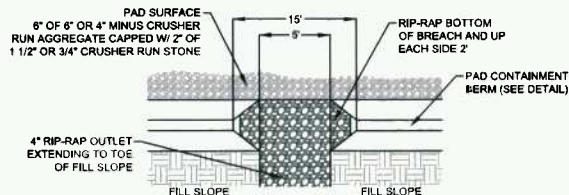


**PAD BERM BREACH DETAIL**

NTS



PROFILE VIEW



PLAN VIEW

**SITE RECLAMATION NARRATIVE**

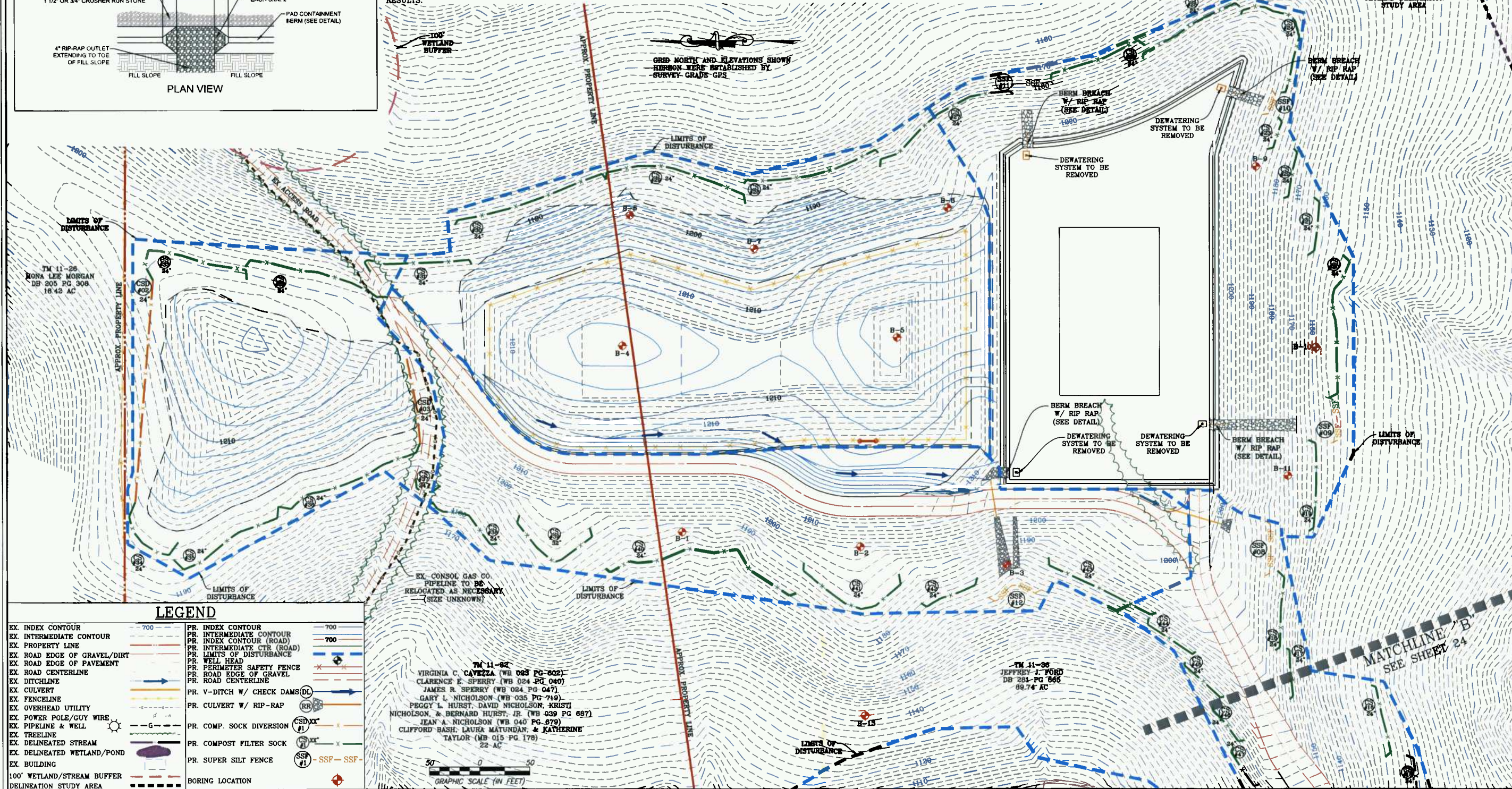
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**WELL PAD & CENTRALIZED FRESHWATER IMPOUNDMENT RECLAMATION PLAN**



**LEGEND**

EX. INDEX CONTOUR	PR. INDEX CONTOUR	EX. INTERMEDIATE CONTOUR	PR. INTERMEDIATE CONTOUR
EX. PROPERTY LINE	PR. INDEX CONTOUR (ROAD)	EX. ROAD EDGE OF GRAVEL/DIRT	PR. INTERMEDIATE CTR (ROAD)
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EX. DELINEATED WETLAND/POND	PR. BORING LOCATION	EX. BUILDING	
EX. DELINEATED WETLAND/POND		EX. BUILDING	
100' WETLAND/STREAM BUFFER		DELINEATION STUDY AREA	

TM 11-02  
 VIRGINIA C. CAVEZZA (WB 063 PG 602)  
 CLARENCE E. SPERRY (WB 024 PG 040)  
 JAMES R. SPERRY (WB 024 PG 047)  
 GARY L. NICHOLSON (WB 035 PG 719)  
 PEGGY L. HURST, DAVID NICHOLSON, KRISTI NICHOLSON & BERNARD HURST, JR. (WB 039 PG 697)  
 JEAN A. NICHOLSON (WB 040 PG 679)  
 CLIFFORD BASH, LAURA MATENDAN, & KATHERINE TAYLOR (WB 015 PG 178)  
 22 AC



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**Antero Resources**  
 THIS DOCUMENT WAS PREPARED FOR:  
 ANTERO RESOURCES CORPORATION

STAGING AREA & CENTRALIZED FRESHWATER IMPOUNDMENT RECLAMATION PLAN  
**HEFLIN**  
 CENTRALIZED FRESHWATER IMPOUNDMENT  
 GREENBRIER DISTRICT  
 DODDRIDGE COUNTY, WEST VIRGINIA



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