

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: #14-227 Spiker Freshwater Impoundment

Date Approved: 07/01/2014

Expires: N/A

Issued to: Antero Resources

**POC: Ashlie Mihalcin
303-357-7310**

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

Project Address: New Milton District

Firm: N/A Lat/Long: 39.242601N/80.745903W

Purpose of development: Pipeline. Project does not impact floodplain.

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

Date: 07/01/2014

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

Legal Advertisement:
Doddridge County
Floodplain Permit Application

Please take notice that on the 6th day of June, 2014 **Antero Resources**
filed an application for a Floodplain Permit to develop land located at or about:

NEW MILTON DISTRICT, 39.242601N / 80.745903W

Permit #14-227 SPIKER 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. Any interested persons who desire to
comment shall present the same in writing by **JULY 21, 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

14-227
Spiker FWI



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

June 6, 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 Corporation (Antero) would like to submit a Doddridge County Floodplain permit application for our Spiker Centralized Freshwater Impoundment. Per FIRM map #54017C0230C and the West Virginia Flood Tool Map, this location is **not** within the floodplain.

Attached you will find the following:

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

If you have any questions please feel free to contact me at (303) 357-6412.

Thank you in advance.

Sincerely,

A handwritten signature in cursive script that reads "Shaye Marshall".

Shaye Marshall
Permit Representative
Antero Resources Corporation

Enclosures

FILED
2014 JUN -9 PM 2:29
BETH A. ROFFERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

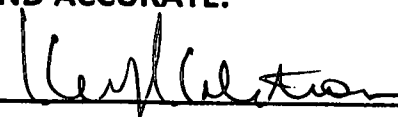
FILED DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

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 6/6/14

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 Resources Corporation

ADDRESS: 1615 Wynkoop Street, Denver, CO 80202

TELEPHONE NUMBER: Contact: Shaye Marshall 303-357-6412

BUILDER'S NAME: Antero Resources Corporation
ADDRESS: 1615 Wynkoop Street, Denver, CO 80202
TELEPHONE NUMBER: (303) 357-7310

ENGINEER'S NAME: Navitus Engineering Inc.
ADDRESS: 151 Windy Hill Lane, Winchester, Virginia 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: New Milton
DATE/FROM WHOM PROPERTY PURCHASED: N/A
LAND BOOK DESCRIPTION:
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: N/A
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 PLEASE SEE ATTACHED FIRM MAP WITH LANDOWNER TABULATION

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:

- Fill Mining Drilling Pipelining
- Grading
- Excavation (except for STRUCTURAL DEVELOPMENT checked above)
- Watercourse Altercation (including dredging and channel modification)
- Drainage Improvements (including culvert work)
- Road, Street, or Bridge Construction *Please see Spiker Construction Plans Attached
- Subdivision (including new expansion)
- Individual Water or Sewer System
- 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- Location is not 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 and 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 and common boundary
 ___ up or down stream due to the
 ___ location not being in floodplain

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

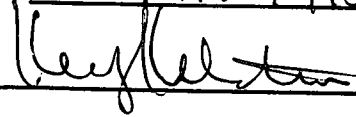
NAME: _____
ADDRESS: _____

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): Kevin Kiistrom
 SIGNATURE:  DATE: 6/6/14

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:

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** _____



View

Layers

Search

Tools

Public

Expert

Risk MAP

Flood

Reference

Basemap

Input your address



Spiker FWI

Center of FWI:
80.745903 W,
39.242601 N

Access Rd
Entrance:
80.748217 W,
39.241726 N

Flood Hazard Area: Selected site is NOT WITHIN any identified flood hazard area. Unmapped flood hazard areas may be present. [more info](#)

Watershed (HUC8): Little Musringum-Middle Island (503)

FEMA Issued Flood Map: 54017C0230C

Contacts: [Doddridge County](#)

CRS Information: N/A

Location (long, lat): (80.748222 W, 39.241730 N)

Location (UTM 17N): (521728, 4343632)

Elevation (Ground): About 1247 feet

Parcel Information: No parcel data [Disclaimer](#)



Zoom To

200 m

100 ft

Scale - 1:4,514

x:-80.752888, y:39.244934

@ESRI, Street Map





Edwin Wriston <doddridgecountyfpm@gmail.com>

Spiker Freshwater Impoundment FP Permit # 14-227 Approval

1 message

Edwin Wriston <doddridgecountyfpm@gmail.com>

Tue, Jul 1, 2014 at 2:32 PM

To: Ashlie M <amihalcin@anteroresources.com>

Cc: brett slater <blslater.4774@yahoo.com>

This email is to notify you that your project, **Spiker Freshwater Impoundment**, designated as **Doddridge County FP Permit # 14-227**, has been approved. This project shows no impact to the Doddridge County Floodplain as proposed, and therefore no Floodplain Permit is required. We have however included an electronic copy of an approved permit for your records in word document format. (Note: A PDF version can be provided upon request.)

A hard copy of this permit has been printed and laminated for you to post at your construction site if desired. While this is not required, it may help alleviate citizen inquiries or concerns that work is being done without approval. This hard copy may be picked up from the Doddridge County Clerk's office during normal business hours at your leisure. Should you require additional laminated copies, those can be provided at no charge.

Should you have any further questions regarding this permit approval, please feel free to contact my office at your convenience.


Respectfully,

--

Edwin L. "Bo" Wriston, Floodplain Manager
Doddridge County Commission
118 East Court Street
West Union, WV 26456
Work Phone: 1-304-873-2631
Mobile Phone: 1-304-629-3735
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

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CONFIDENTIALITY NOTE: This email message is for the sole use of the intended recipient(s) and may contain confidential, privileged, or sensitive information. Any unauthorized review, use, disclosure, or distribution is strictly prohibited and may be legally accountable.

 **PERMIT #14-227 APPROVED.docx**
372K

FILED

2014 JUL 11 AM 11:25

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

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
14-227

was published in said paper for ... *2*

successive weeks beginning with the issue

of ... *July 1st* 2014 and
ending with the issue of

..... *July 8th* 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

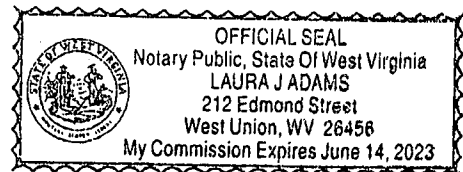
BEFORE ME THIS THE ... *10th* DAY
OF ... *July* 2014

NOTARY PUBLIC

Laura J Adams

LEGAL ADVERTISEMENT
Doddridge County
Floodplain Permit Application
Please take notice that on the 6th day of June, 2014
Antero Resources filed an application for a Floodplain
Permit to develop land located at or about: NEW
MILTON DISTRICT 39-242601N/80-745903W Permit
#14-227 SPIKER 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. Any interested persons who desire to
comment shall present the same in writing by July 21,
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

7-1-2xb



FIRM EXHIBIT



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0230C

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

PANEL 230 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

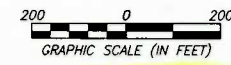
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540224	0230	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
54017C0230C
MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency



FLOODPLAIN NOTE
THE PROPOSED SITE IS LOCATED IN
FLOODZONE "X" PER FEMA FLOOD MAP
#54017C0230C

LANDOWNER TABULATION

- A** TM 3-1
SUE ANN SPIKER
DB 214 PG 675
872.83 AC
166 LINDEN LANE
JANE LEW WV, 26378
- B** TM 3-1.1
GEORGE W. & BARBARA B. ADRIAN,
NELSON W. & DONNA J. ELLMORE,
LARRY A. & CYNTHIA E. BASSETT,
PAUL S. & RHEMA M. CROWLEY &
RONNIE YOPP
DB 272 PG 655
290.67 AC
196 TRAILS END RD
WEST UNION WV, 26456
- C** TM 7-1
I.L. MORRIS
DB 230 PG 307
2331.51 AC
P.O. BOX 397
GLENVILLE WV, 26351
- D** TM 23-2
MARY H. HOLLAND ESTATE
DB 286 PG 313
1207.637 AC
225 WATCHUNG FRK
WESTFIELD NJ, 07090

NAVITUS
ENERGY ENGINEERING

Telephone: (888) 862-4185 | www.NavitueEng.com

DATE	REVISION	REVISED PER	CLIENT COMMENTS
5/21/2014			



THIS DOCUMENT
WAS PREPARED FOR:
ANTERO RESOURCES
MIDSTREAM LLC

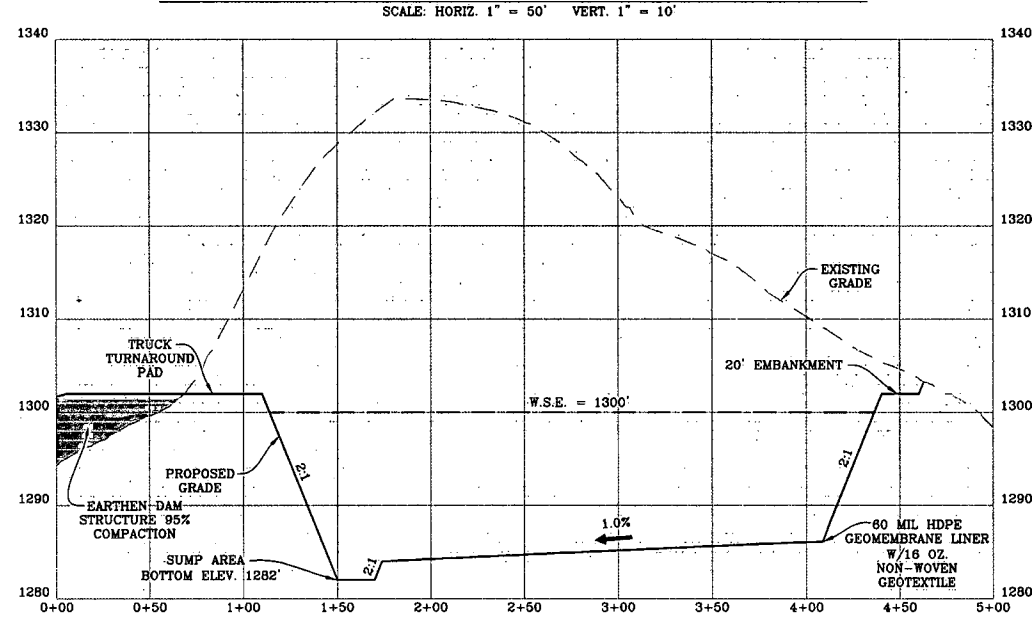
FIRM EXHIBIT
SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA



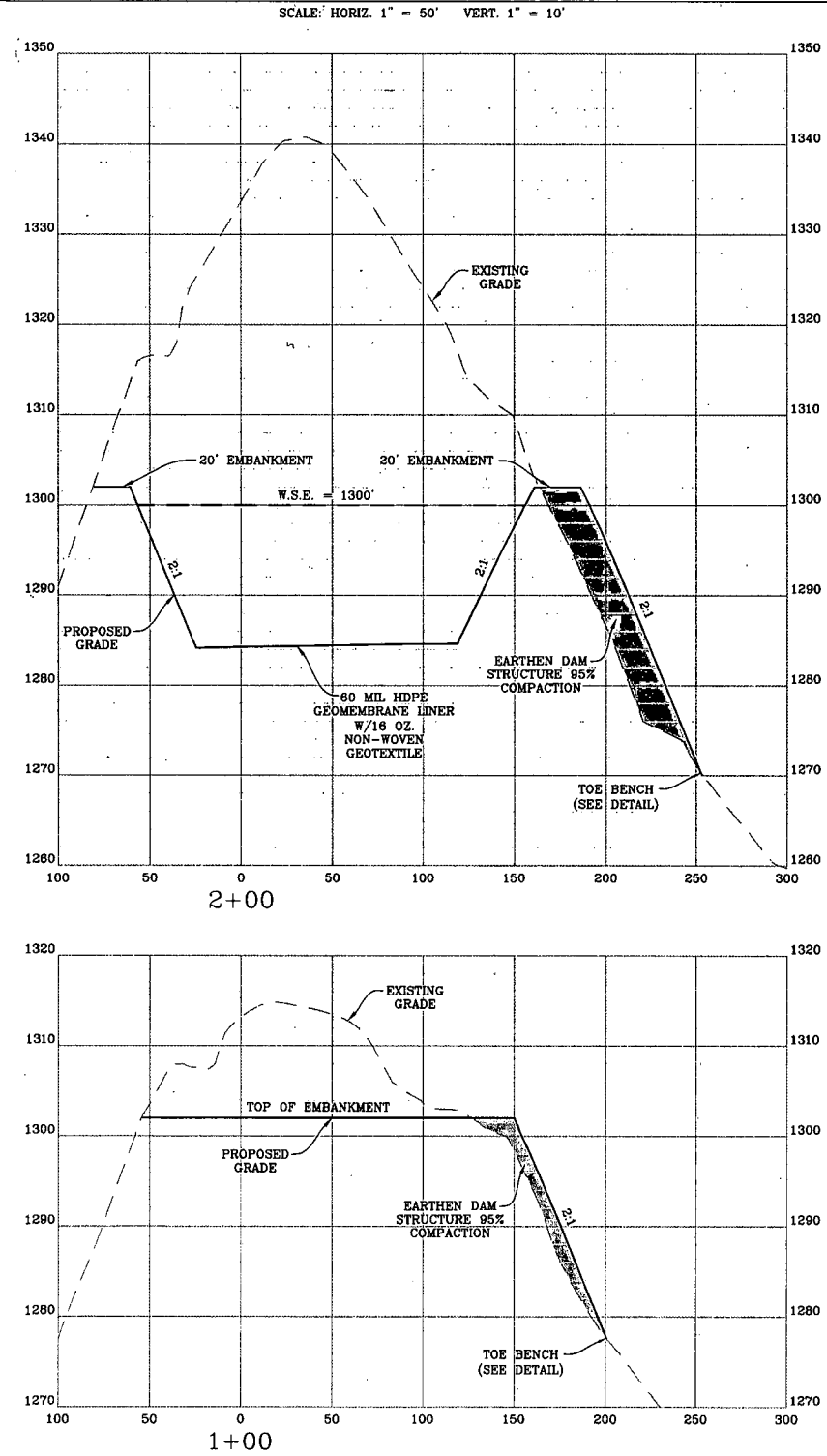
DATE: 03/13/2014
SCALE: 1" = 200'
SHEET 19 OF 19

CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS

CENTRALIZED IMPOUNDMENT CROSS-SECTION "A-A"



CENTRALIZED IMPOUNDMENT CROSS-SECTIONS ALONG BASELINE "A-A"



- 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.

LEGEND

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

DATE	REVISION	REVISION PER CLIENT COMMENTS
5/21/2014		



THIS DOCUMENT WAS PREPARED FOR:
ANTERO RESOURCES
MIDSTREAM LLC

CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS
SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA

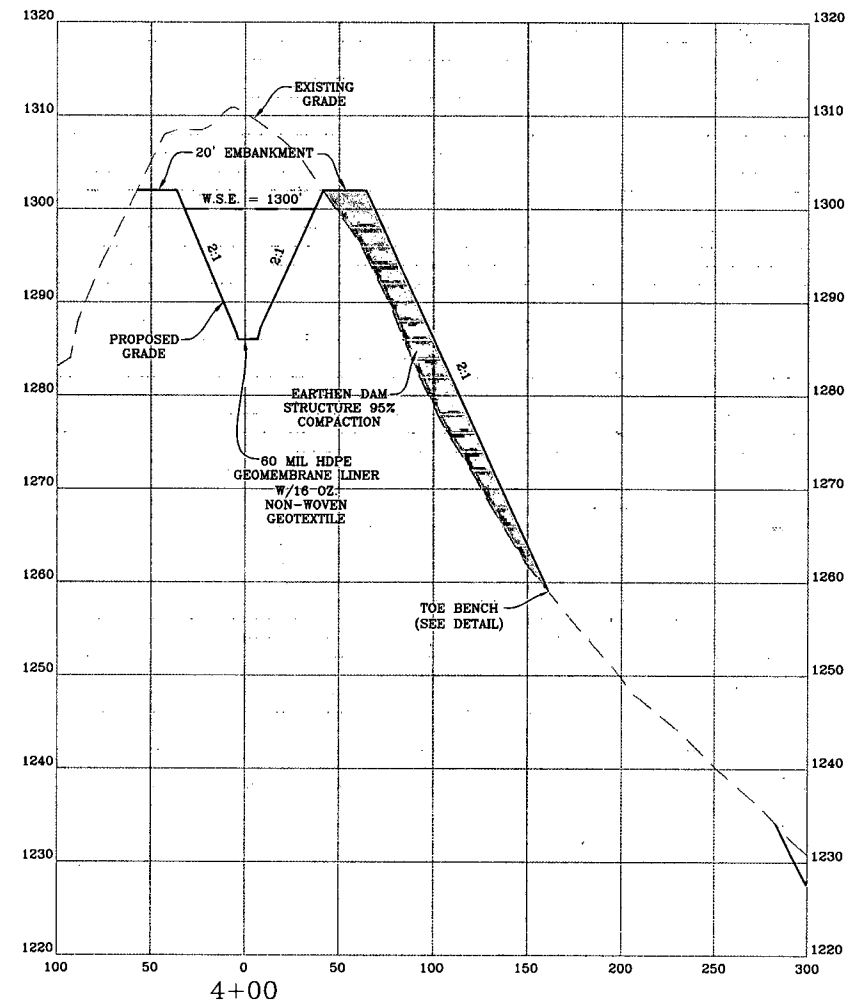
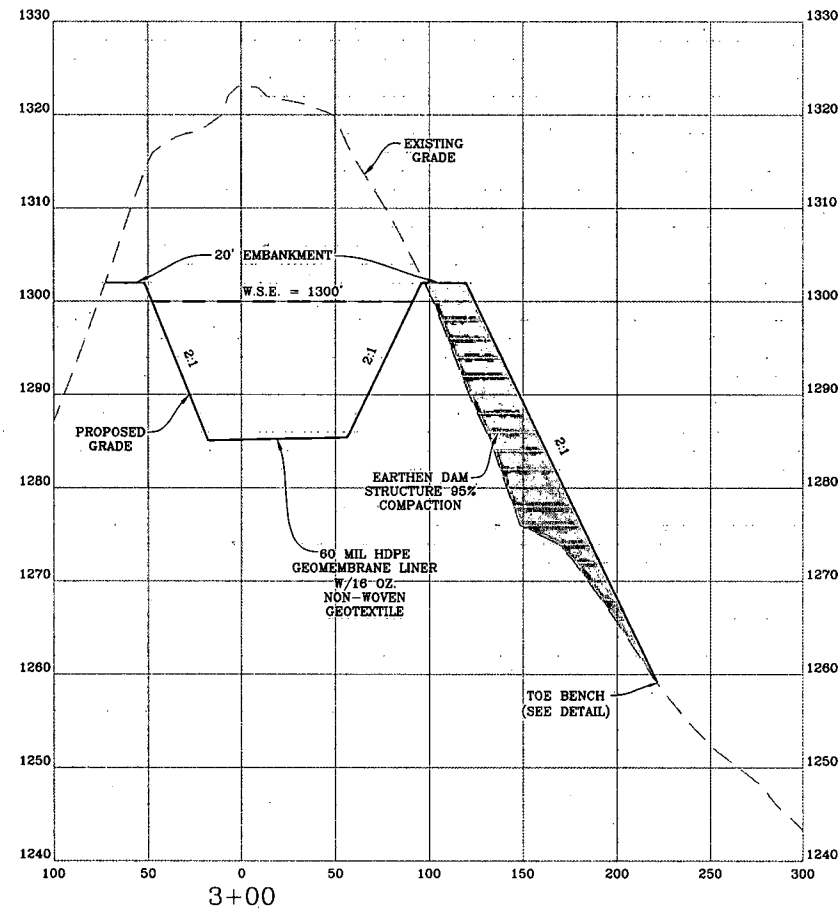


05/21/2014
DATE: 03/13/2014
SCALE: AS SHOWN
SHEET 10 OF 19

CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS

CENTRALIZED IMPOUNDMENT CROSS-SECTIONS ALONG BASELINE "A-A"

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



- 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.

LEGEND

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

REVISION	REVISED PER CLIENT COMMENTS
5/21/2014	

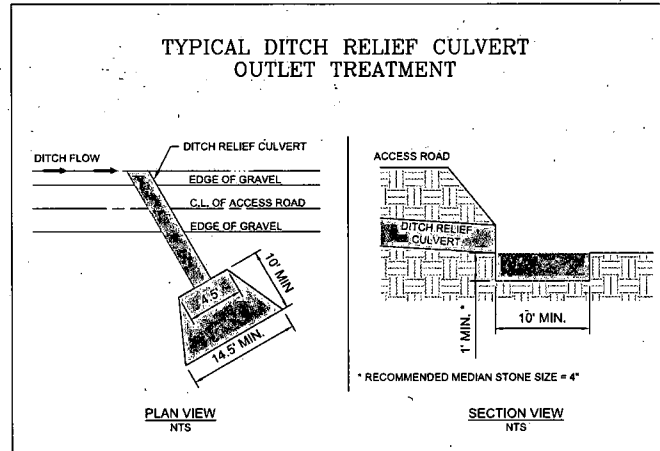
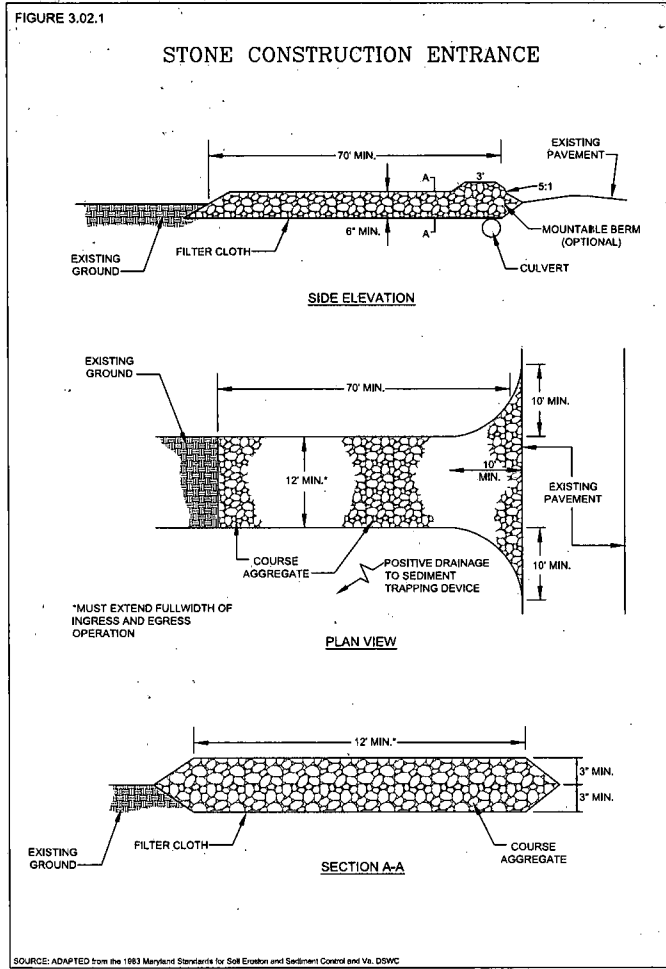


THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES MIDSTREAM LLC

CENTRALIZED FRESHWATER IMPOUNDMENT SECTIONS
SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 03/13/2014
SCALE: AS SHOWN
SHEET 11 OF 19



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.

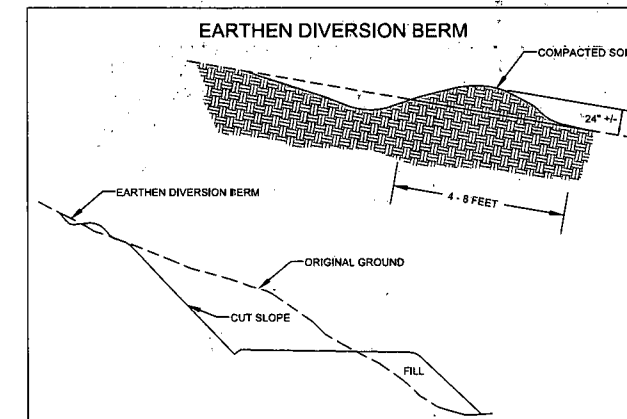
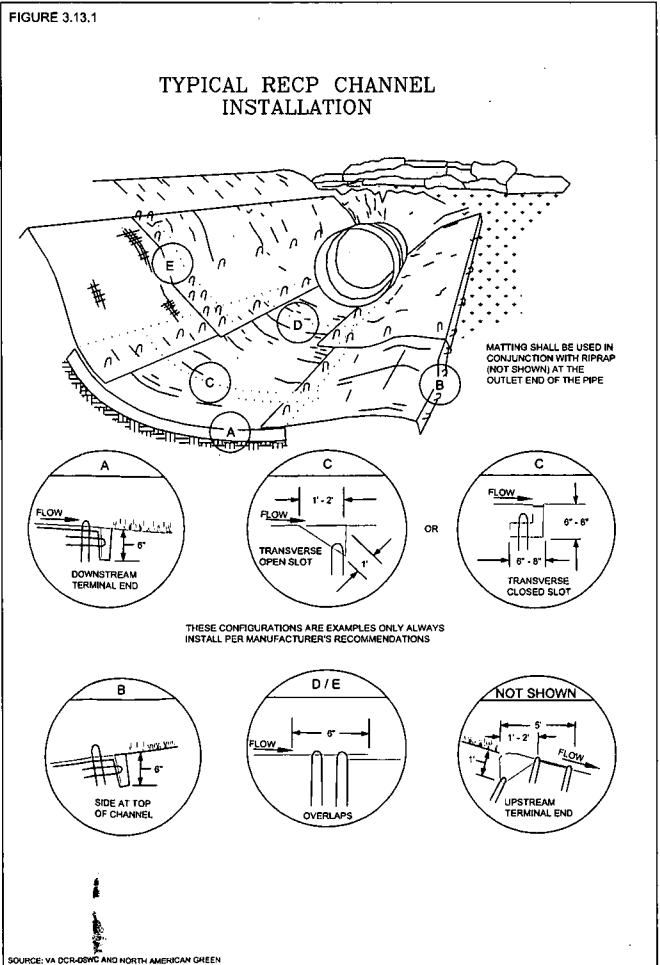
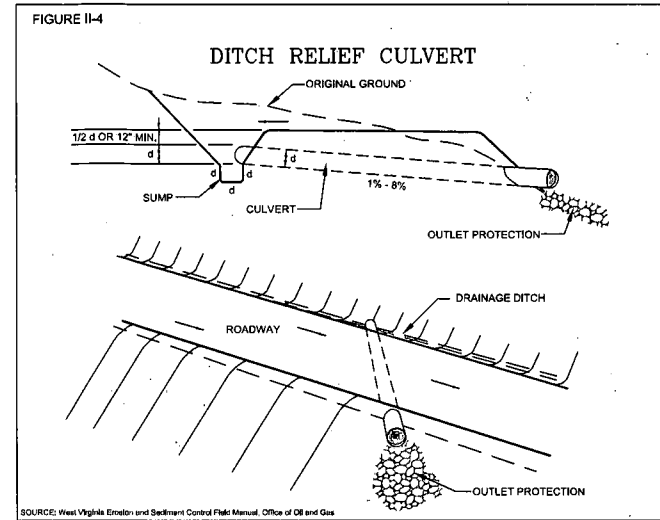
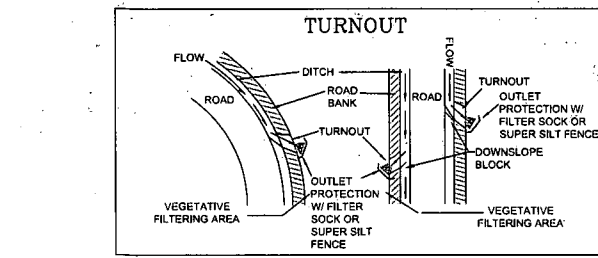
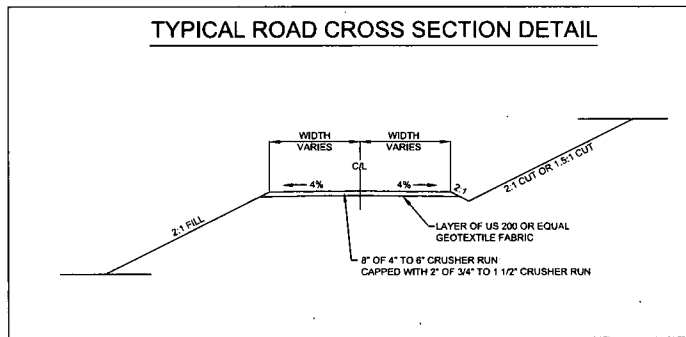
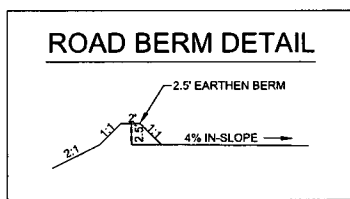
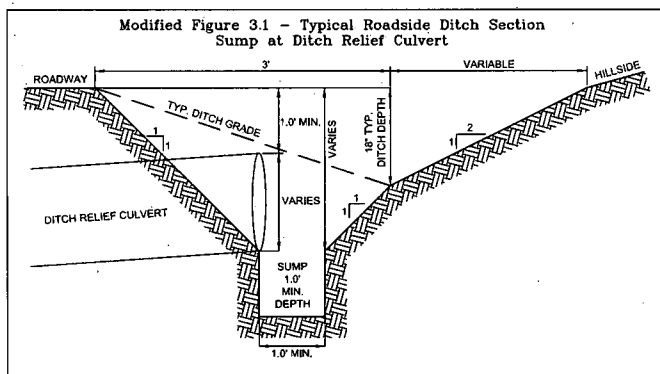


Table II-6

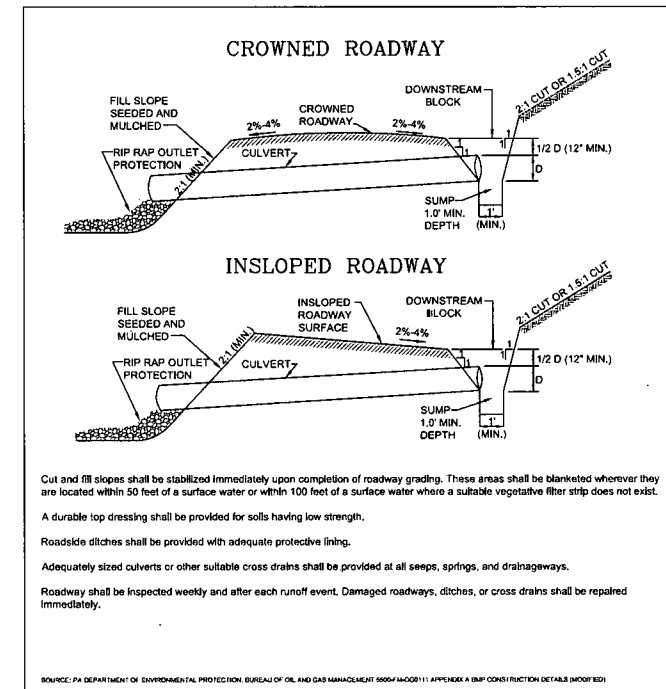
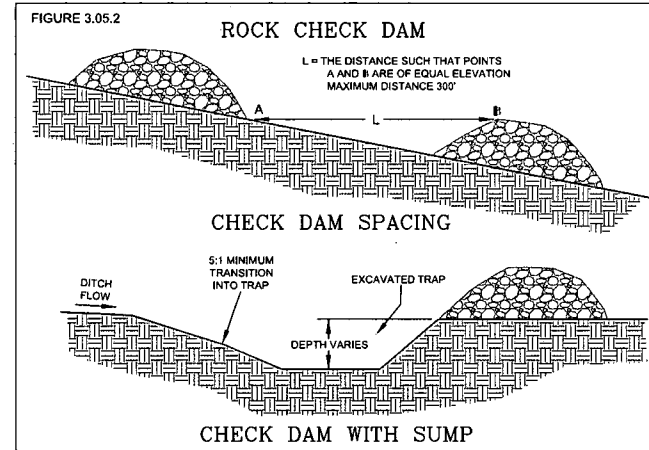
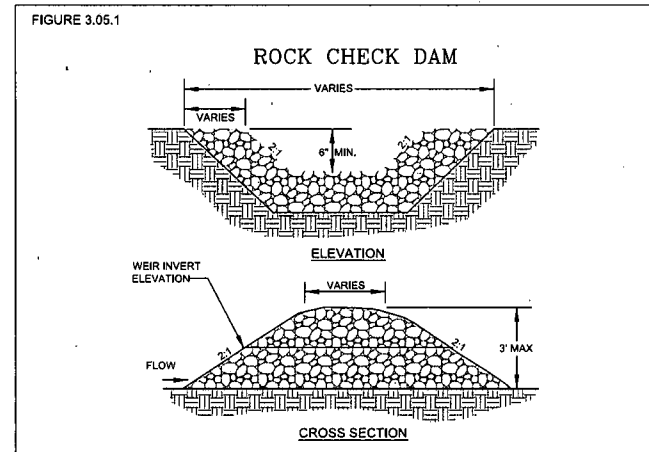
Spacing of Culverts

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

SPIKER

CENTRALIZED FRESHWATER IMPOUNDMENT
 NEW MILTON DISTRICT
 DODDRIDGE COUNTY, WEST VIRGINIA

PROFESSIONAL ENGINEER
 REGISTERED
 WEST VIRGINIA
 PROFESSIONAL ENGINEERING
 05/21/2014

DATE: 03/13/2014
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 SHEET 12 OF 19

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 (HDMPF) Bio-degradable
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Bio-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)	23% at 1000 hr.	23% 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				
Outer Filtration Mesh	Fusion-welded junctures				
	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.

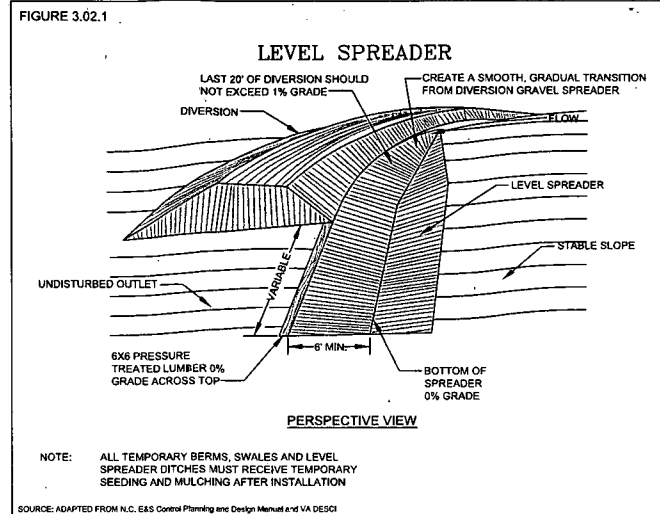
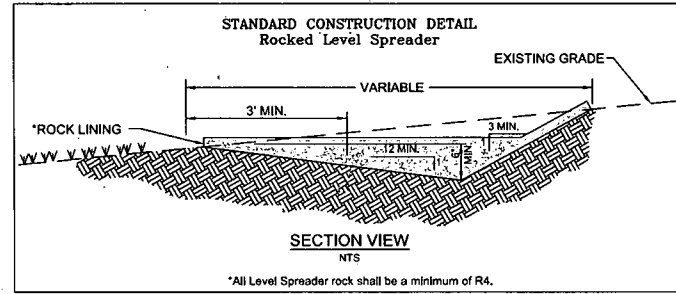
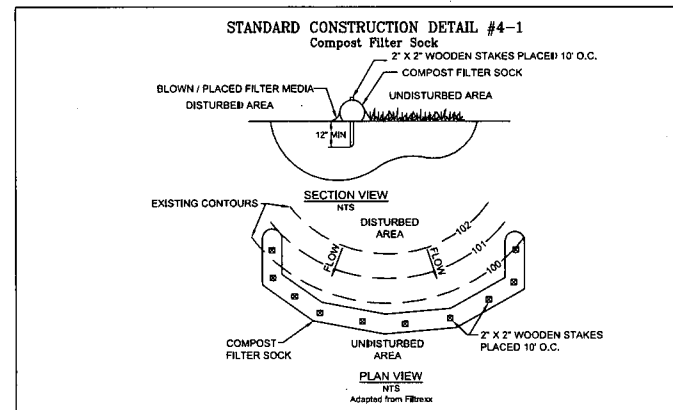
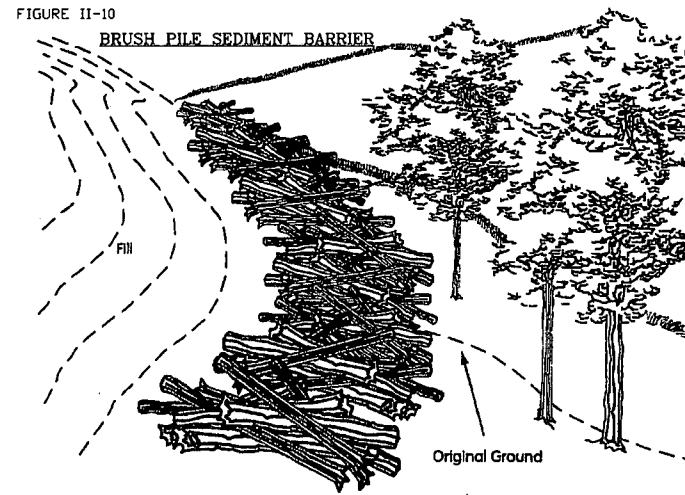
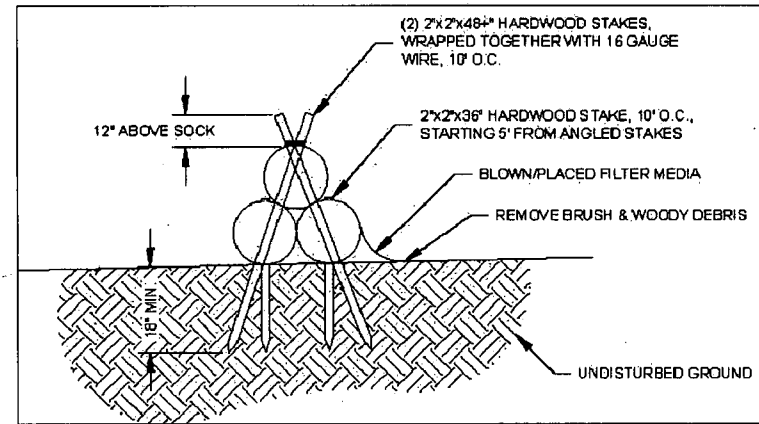
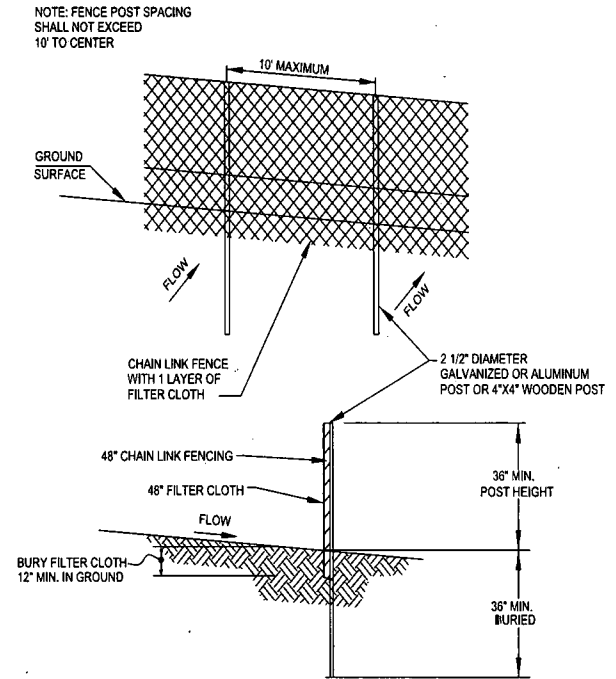


FIGURE II-11c
SUPER SILT FENCE



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	5.5-8.0
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 5 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.

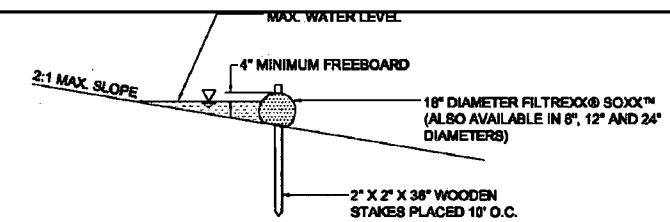
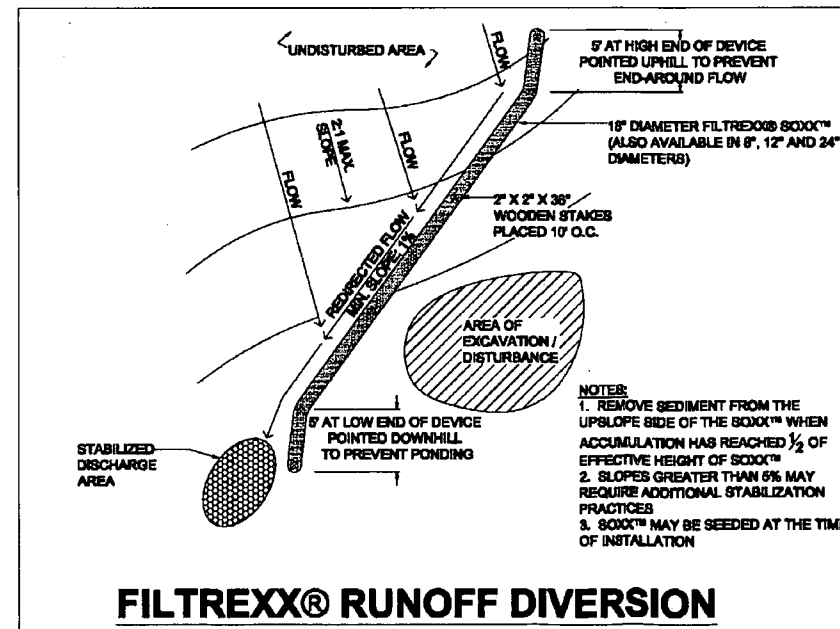
Accumulated Sediment shall be removed when it reaches 1/2 the above ground height of the sock and disposed in the manner described elsewhere in the plan.

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.

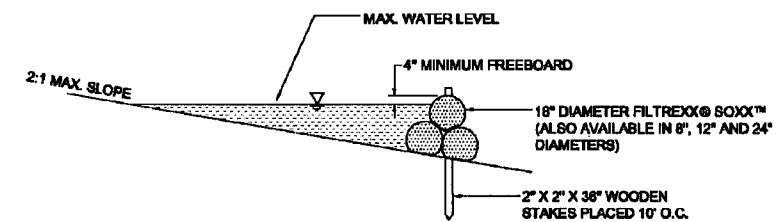
Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.

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.



SINGLE INSTALLATION SECTION
NTS



PYRAMID INSTALLATION SECTION
NTS

FILTREXX® RUNOFF DIVERSION SECTIONS
NTS

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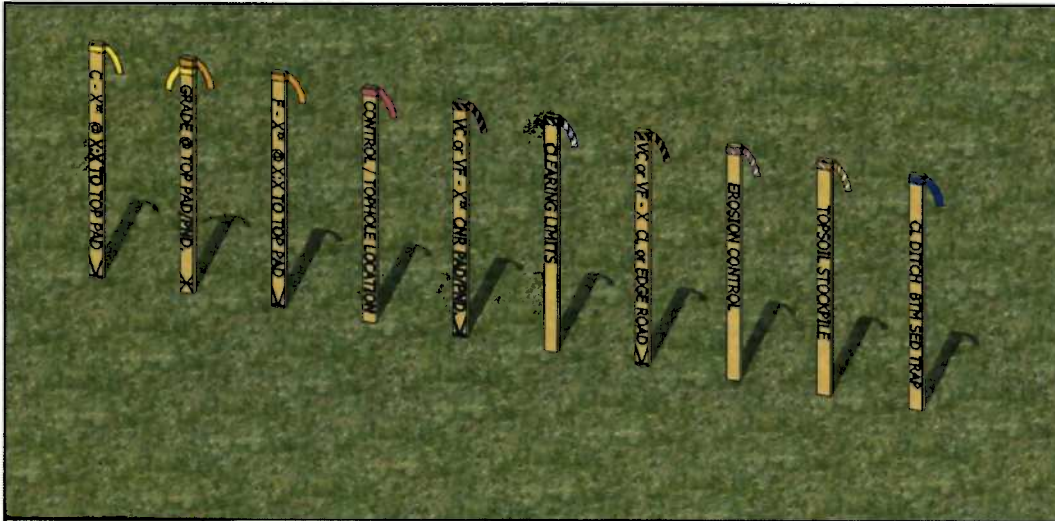
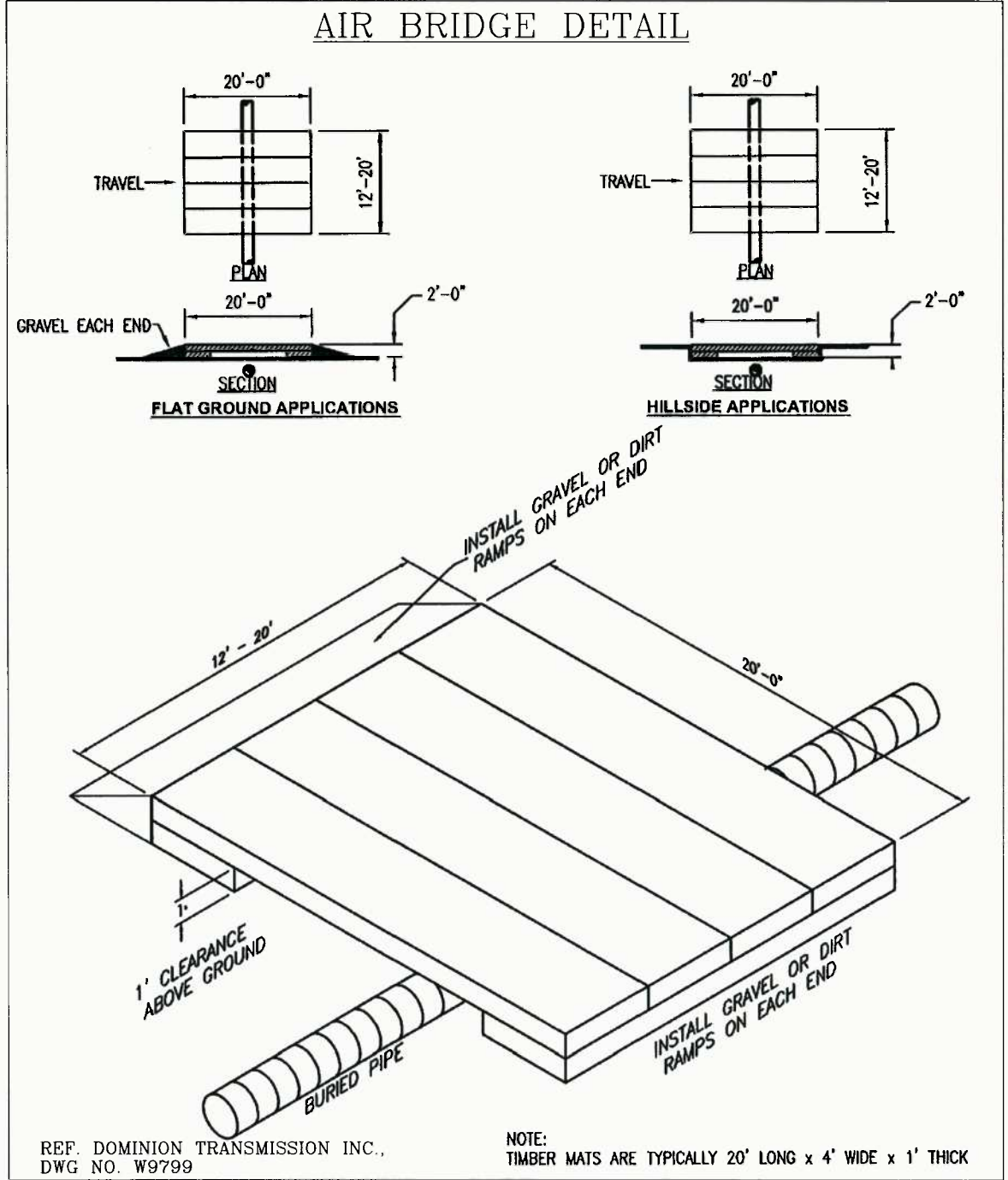
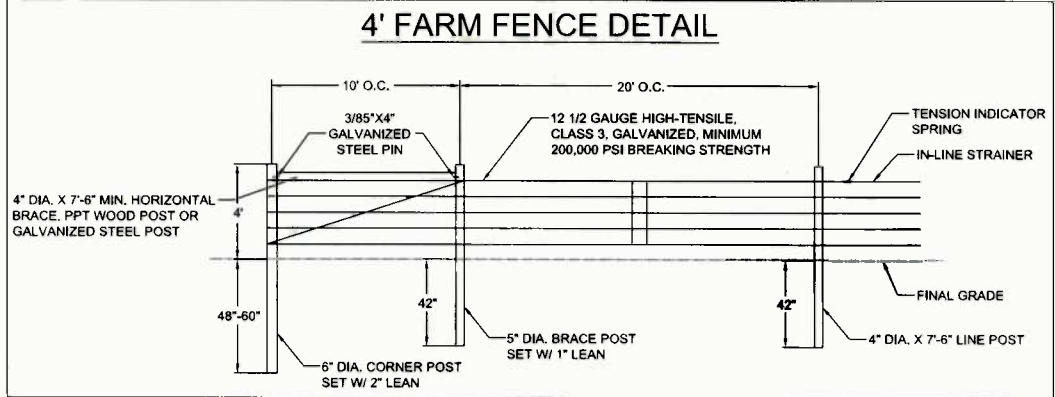
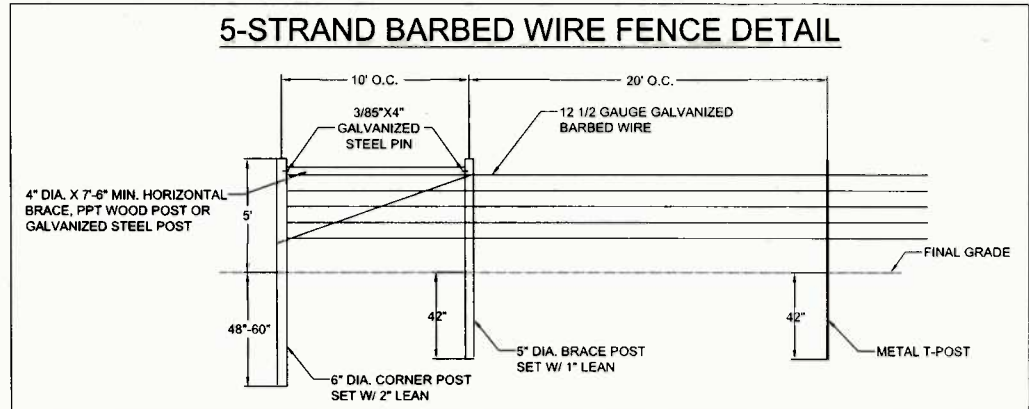


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CONSTRUCTION DETAILS
SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 03/13/2014
SCALE: N/A
SHEET 13 OF 19



	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 and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	Orange Ribbon: Orange Ribbon used to indicate toes of Fills (F) Fill to be determined at time of stakeout Slope determined by site design
	Pink Ribbon: Pink Ribbon used to indicate Top Hole Location Pink Ribbon used to indicate Survey Control Location
	Pink & Black Stripe Ribbon: Pink & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Pad/Pond/Pit corner or edge Pink & Black Stripe Ribbon used to indicate Vertical Fill (VF) at 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 limits
	Orange & Black Stripe Ribbon: Orange & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Centerline or edge of access road Orange & Black Stripe Ribbon used to indicate Vertical Fill (VF) at centerline or edge of access road
	Pink & White Stripe Ribbon: Pink & White Stripe Ribbon used to indicate Erosion and Sediment Control Structures Silt Fence (SF) Reinforced Filter 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 (C) Ditch Blue Ribbon used to indicate Bottom (BTM) Sediment Traps

ANTERO RESOURCES MIDSTREAM LLC STANDARD RIBBON COLOR SCHEME
PROVIDED BY ANTERO RESOURCES MIDSTREAM LLC

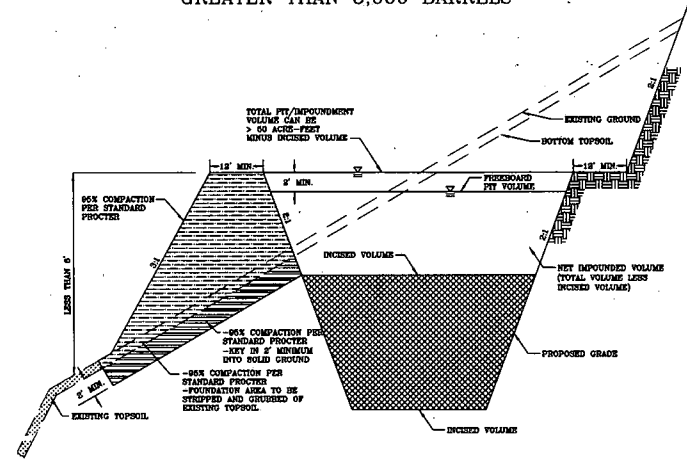
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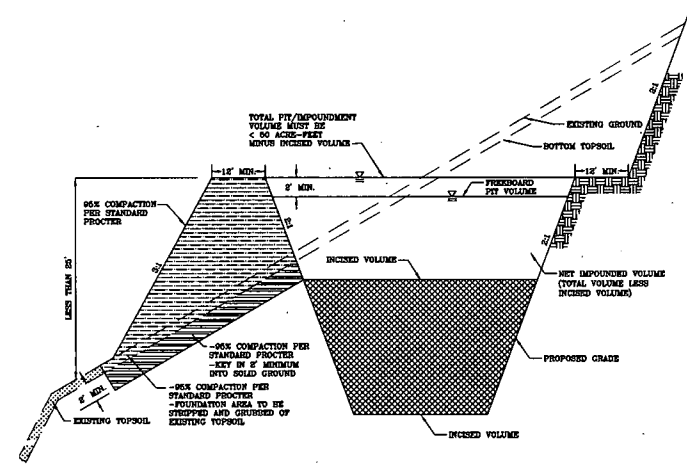
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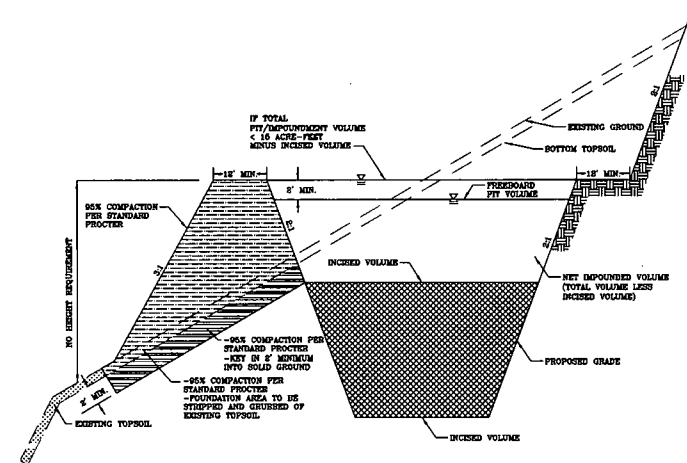
WEST VIRGINIA CODE 35 CSR 4
 DESIGN AND CONSTRUCTION REQUIREMENTS
 FOR ASSOCIATED PITS, ASSOCIATED IMPOUNDMENTS, &
 CENTRALIZED IMPOUNDMENTS
 GREATER THAN 5,000 BARRELS



SECTION VIEW



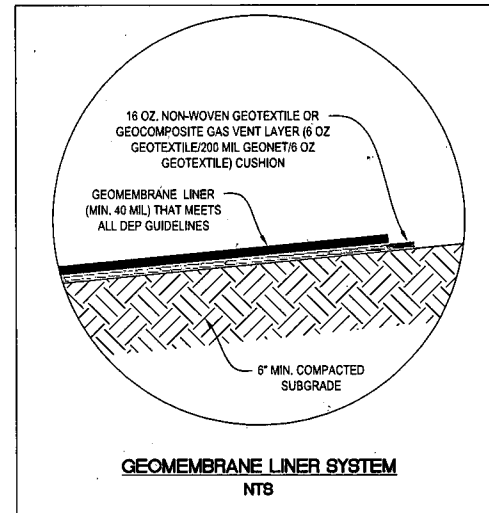
SECTION VIEW



SECTION VIEW

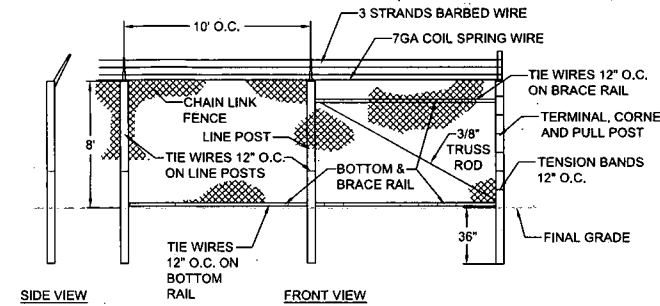
NOTES:
 1. ALL FILL SHOULD BE KEYED IN TO ORIGINAL GROUND EVERY 2-5 VERTICAL FEET DEPENDING ON EXISTING GROUND SLOPE
 2. MINIMUM OUTSIDE AND INSIDE EMBANKMENT (FILL) SLOPES SHALL BE 2H:1V. THE INSIDE AND OUTSIDE SLOPES MUST ADD UP TO 5H:1V.

NTS

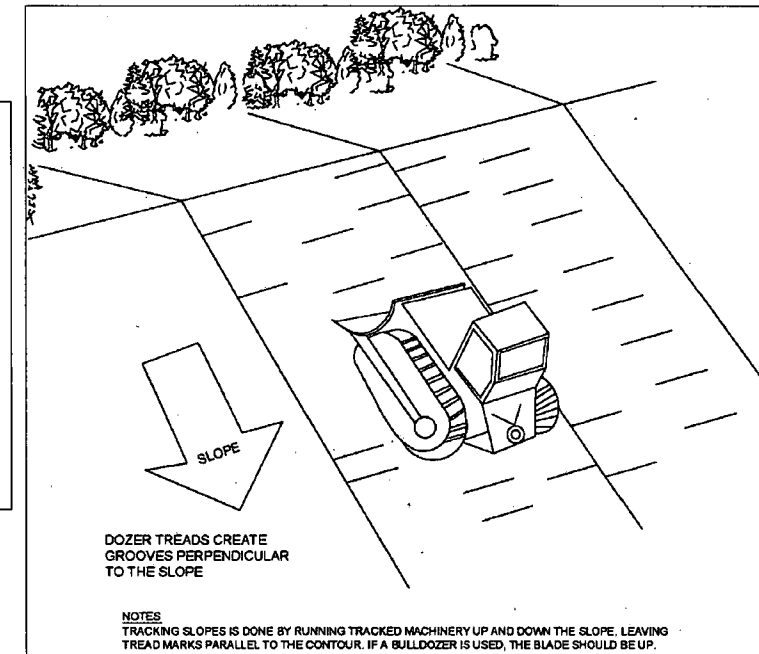


GEOMEMBRANE LINER SYSTEM
 NTS

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

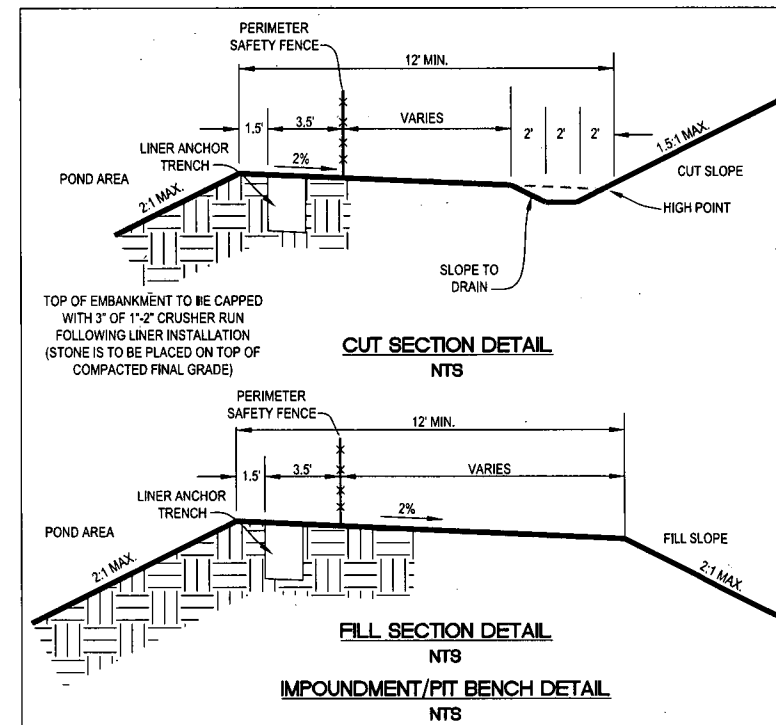


SIDE VIEW FRONT VIEW



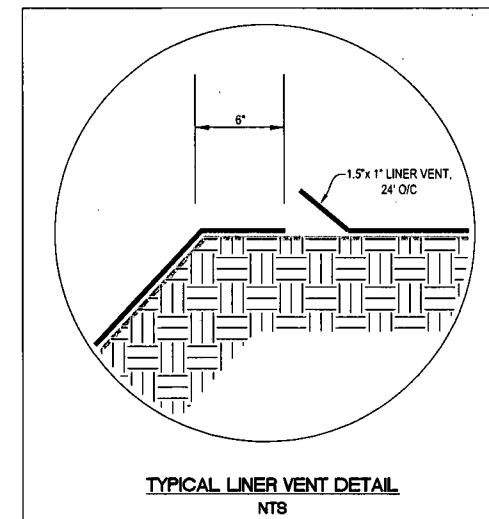
DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE

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.

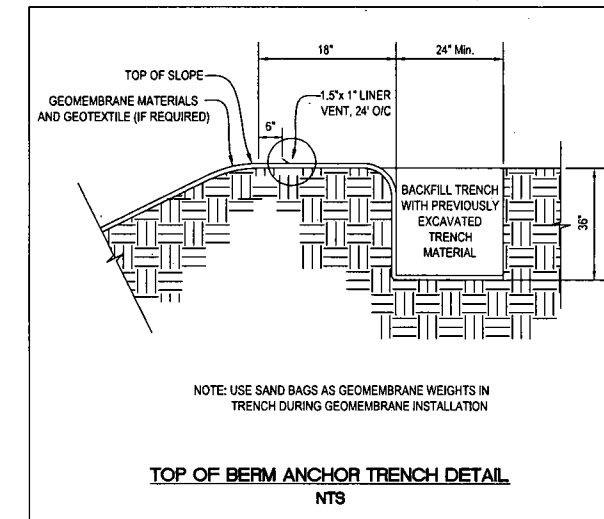


CUT SECTION DETAIL
 NTS

FILL SECTION DETAIL
 NTS
 IMPOUNDMENT/PIT BENCH DETAIL
 NTS



TYPICAL LINER VENT DETAIL
 NTS



TOP OF BERM ANCHOR TRENCH DETAIL
 NTS

NOTE: USE SAND BAGS AS GEOMEMBRANE WEIGHTS IN TRENCH DURING GEOMEMBRANE INSTALLATION

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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**
1. 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.
2. 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.
3. 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:**
1. All legumes must be planted with the proper inoculants prior to seeding.
2. Lathco Flatpea is potentially poisonous to some livestock.
3. Only endophyte free varieties of Tall Fescue should be used. Tall Fescue and Crownvetch are also very invasive species, non-native to WV.
4. 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:
1. 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-8 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
Sundangrass	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
Permanent Seeding Mixture

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
Ladino Clover / Redtop	30	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue / Redtop	10	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Redtop	20	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Redtop	40	Well - Mod. Well	5.0 - 7.5
Birdsfoot Trefoil / Redtop	10	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue / Redtop	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Redtop	30	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue / Creeping Red	3	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass / Tall Fescue	10	Well - Poorly	5.8 - 8.0
Lathco Flatpea *	15	Well - Poorly	5.8 - 8.0
Lathco Flatpea *	20	Well - Poorly	5.8 - 8.0

* 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
Wildlife and Farm Friendly Seed Mixtures

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	Well - Mod. Well	6.5 - 8.0
Timothy / Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy / Birdsfoot Trefoil	12	Well - Mod. Well	6.5 - 8.0
Birdsfoot Trefoil / Orchardgrass / Ladino Clover / Redtop	5	Well - Poorly	5.5 - 7.5
Orchardgrass / Ladino Clover / Redtop	8	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Ladino Clover	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass / Creeping Red Fescue / Perennial Ryegrass	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	3	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	30	Well - Mod. Well	5.5 - 7.5
Birdsfoot Trefoil / Redtop	10	Well - Mod. Well	6.0 - 7.5
Redtop / Orchardgrass	5	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Orchardgrass	30	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
Mulch Materials Rates and Uses

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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ANTERO RESOURCES
MIDSTREAM LLC

CONSTRUCTION DETAILS
SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 03/13/2014
SCALE: N/A
SHEET 16 OF 19

SITE RECLAMATION NARRATIVE

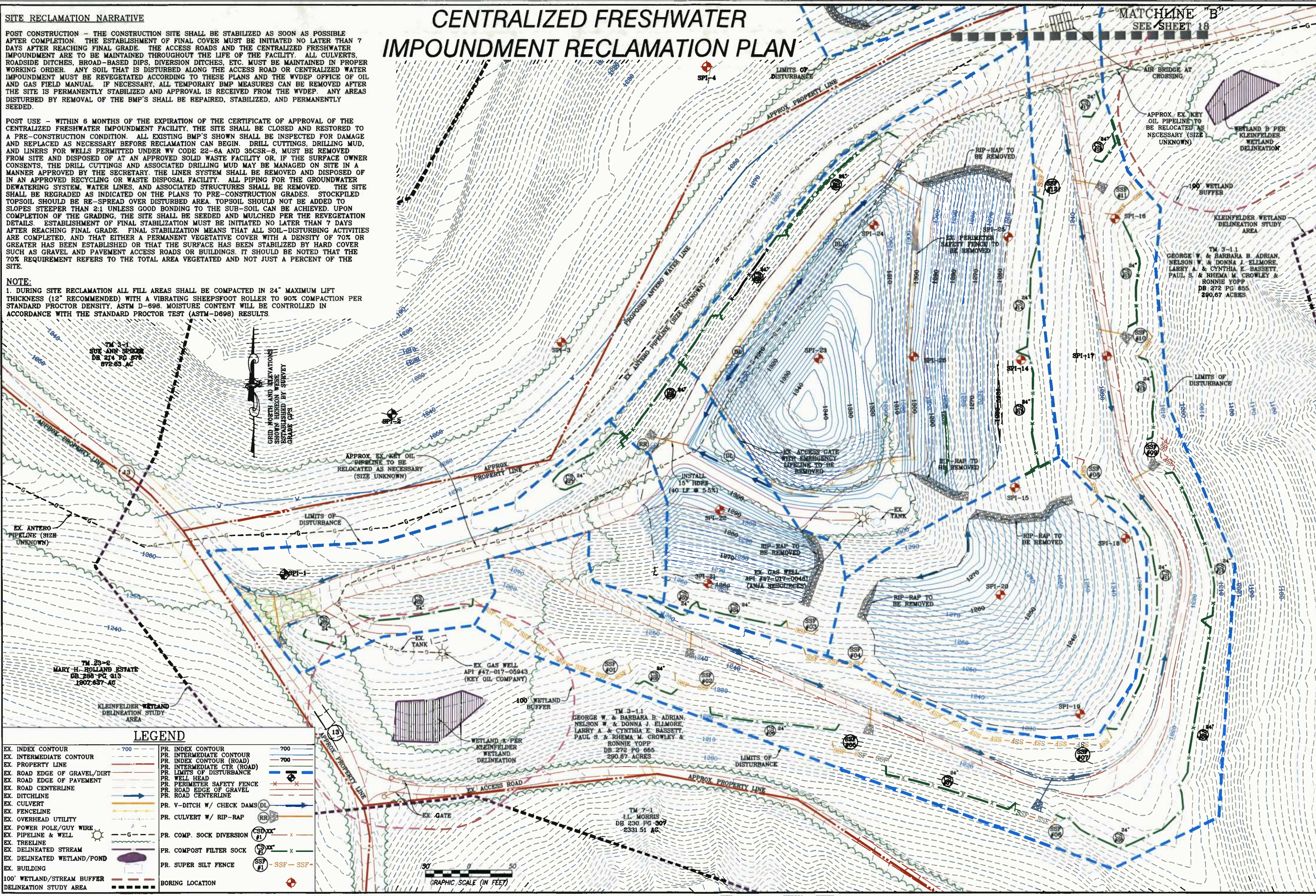
POST CONSTRUCTION - THE CONSTRUCTION SITE SHALL BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. THE ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. THE ACCESS ROADS AND THE CENTRALIZED FRESHWATER IMPOUNDMENT ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE FACILITY. ALL CULVERTS, ROADSIDE DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, 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 BMP'S 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 22-6A 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.

CENTRALIZED FRESHWATER IMPOUNDMENT RECLAMATION PLAN



LEGEND

EX. INDEX CONTOUR	700	PR. INDEX CONTOUR	700
EX. INTERMEDIATE CONTOUR	700	PR. INTERMEDIATE CONTOUR	700
EX. PROPERTY LINE		PR. INDEX CONTOUR (ROAD)	
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		BORING LOCATION	
EX. BUILDING			
100' WETLAND/STREAM BUFFER DELINEATION STUDY AREA			

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MIDSTREAM LLC

SPIKER
CENTRALIZED FRESHWATER IMPOUNDMENT
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 03/13/2014
SCALE: 1" = 50'
SHEET 17 OF 19

SITE RECLAMATION NARRATIVE

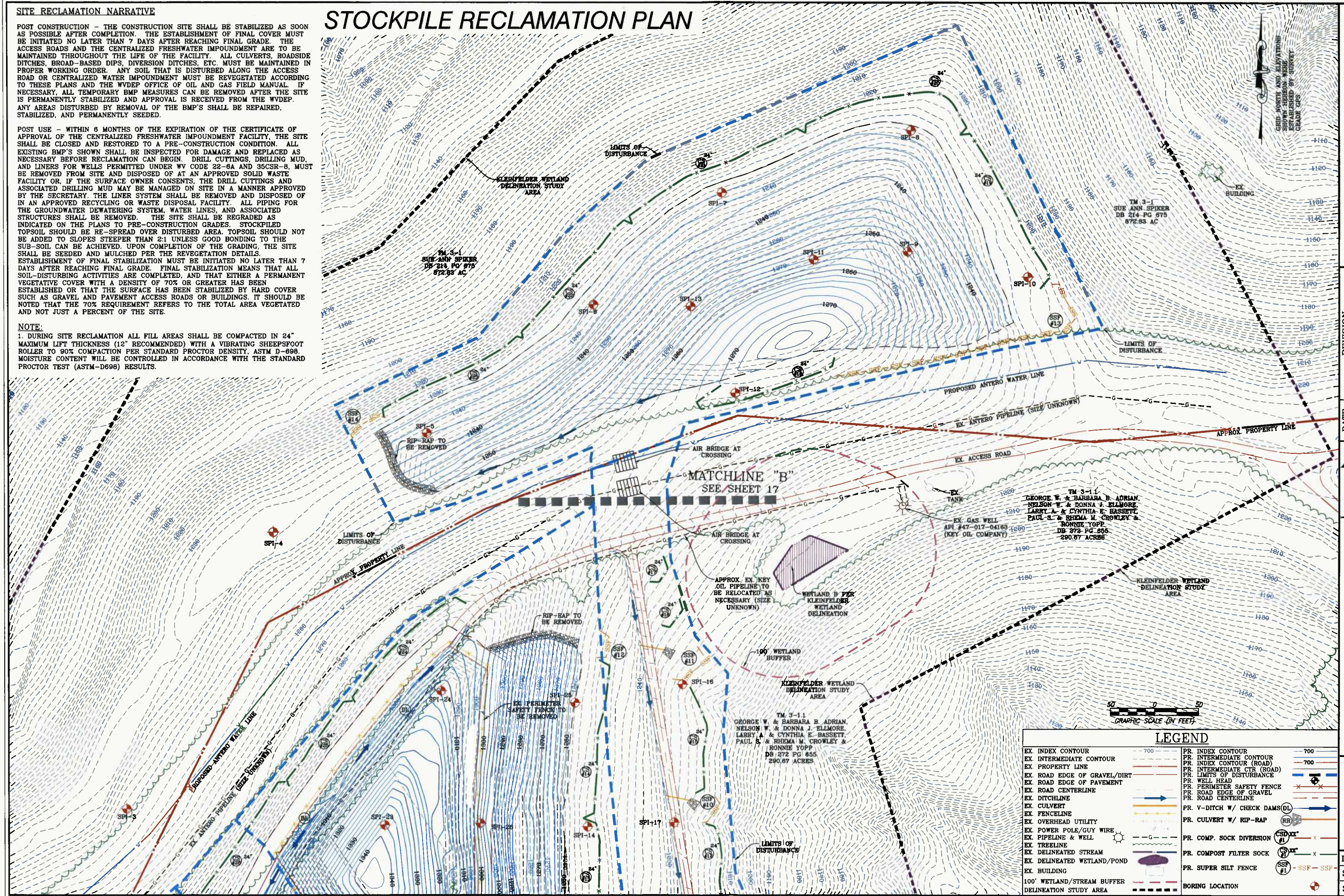
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STOCKPILE RECLAMATION PLAN



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SHEET 18 OF 19

LEGEND

EX INDEX CONTOUR	---	PR. INDEX CONTOUR	---
EX INTERMEDIATE CONTOUR	---	PR. INTERMEDIATE CONTOUR	---
EX PROPERTY LINE	---	PR. INTERMEDIATE CTR (ROAD)	---
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