Commercial/Industrial Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit has been issued to **CNX Gas Company, LLC**, 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: #14-256 ~ CNX Gas Company, LLC ~ Morris Tank Site No. 1

Date Approved: 08/08/2014 **Expires: N/A**

Issued to: CNX Gas Company, LLC

POC: Thomas Meeks, SLS
304-462-5634

Company Address: PO Box 150/12 Vanhorn Dr
Glenville, WV 26351

Project Address: Southwest District

Lat/Long: 39.16555N/80.74736W

Purpose of development: Tank site construction. ***Project does not impact floodplain.***

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

Date: 08/08/2014

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

Date: 08/08/2014

Legal Advertisement:

Doddridge County

Floodplain Permit Application

Please take notice that on the 8th day of August, 2014

CNX Gas Company, LLC

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

Southwest District 39.16555N / 80.74736W

Permit #14-256 Morris Tank Site No. 1

(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 **September 8, 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

LETTER OF TRANSMITTAL

SLS SMITH LAND SURVEYING, INC.
P.O. BOX 150, GLENVILLE, WV 26351
(304) 462-5634 • FAX (304) 462-5656

DATE	JOB NO.
8/6/14	7982
ATTENTION: Bo Wriston	
RE: CNX Gas Company, LLC - Morris Tank Site No. 1	

TO: Doddridge County Floodplain Manager
118 East Court Street
West Union, WV 26456

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			Cover Letter with Signed Application
1			Maps
1			Site Plans

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit_____copies for approval
☒ For your use ☐ Approved as noted ☐ Submit_____copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return_____corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 20_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO SLS Files; CNX Gas Company, LLC

SIGNED: Deanna McVicker

If enclosures are not as noted, kindly notify us at once.

SLS
PROFESSIONAL ENERGY CONSULTANTS
A DIVISION OF SMITH LAND SURVEYING, INC.

August 1, 2014

2014 AUG -8 PM 12: 15

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

Mr. Bo Wriston
Floodplain Coordinator
Doddridge County Commission
118 East Court Street
West Union, WV 26456

RE: CNX Gas Company, LLC
Morris Tank Site No. 1

Mr. Wriston,

On behalf of CNX, Smith Land Surveying, Inc. is asking for your concurrence that a Doddridge County floodplain/building permit is not required for this project. CNX has proposed an above ground storage tank pad with a containment berm and an access road to aid in the development of individual Marcellus Shale gas wells. The site is located in Doddridge County approximately 1.1 miles south of the junction of WV CR 54/1 and WV CR 40 near Porto Rico. The location of the tank pad is Latitude 39.16555, Longitude -80.74736 (NAD 83). The location of the access road is at the intersection of CR 40 Latitude 39.16434, Longitude -80.74830 (NAD 83). Total disturbance area of the site is approximately 14.8 acres.

This site does not impact a floodplain. Please see the attached project location map, site plans, and FEMA firmette.

On behalf of CNX, SLS is requesting your concurrence to begin construction on the Morris Tank Site No. 1 Project once the WVDEP's NPDES Storm Water Permit is received. Please feel to contact Thomas Meeks with SLS at 304-462-5634 or tmeeks@slssurveys.com, or Kelly Eddy with CNX at 304-884-2131 or KellyEddy@consolenergy.com should you have any questions or comments. Please send the permit and any other correspondence to Thomas Meeks or Leslie Pierce (lpierce@slssurveys.com) at Smith Land Surveying.

Respectfully submitted,

Thomas Meeks, P.S.

THOMAS M. MEEKS
LICENSED
No. 2236
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

cc: Kelly Eddy/CNX Gas Company LLC

P.O. Box 150, 12 Vanhorn Drive, Glenville, WV 26351
T: (304)-462-5634 F: (304)-462-5656

56065 Dilles Bottom Road, Shadyside, OH 43947
T: (740)-671-9911

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 Kelly Eddy

DATE 8-5-14

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: CNX Gas Company, LLC

ADDRESS: One Energy Drive Jane Lew, WV 26378

TELEPHONE NUMBER: 304-884-2131

BUILDER'S NAME: CNX Gas Company, LLC
ADDRESS: One Energy Drive Jane Lew, WV 26378
TELEPHONE NUMBER: 304-884-2027

ENGINEER'S NAME: Smith Land Surveying Professional Energy Consultants
ADDRESS: 12 Vanhorn Drive, P.O. Box 150, Glenville, WV 26351
TELEHONE NUMBER: 304-462-5634

PROJECT LOCATION: The Morris Tank Site No. 1 is located on a ridge east of County Route 40 approximately 1.1 miles south of the County Route 40 and County Route 54/1 intersection. The location of the tank pad is Latitude 39.16555, Longitude -80.74736 (NAD 83). The location of the access road is at the intersection of CR 40 is Latitude 39.16434, Longitude -80.74830 (NAD 83).

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) I.L. Morris
ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) P.O. Box 397 Glenville, WV 26351

DISTRICT: Southwest District
DATE/FROM WHOM PROPERTY PURCHASED
LAND BOOK DESCRIPTION:
DEED BOOK REFERENCE: Deed Book 230 Page 307
TAX MAP REFERENCE: Tax Map 10 Parcel 2
EXISTING BUILDINGS/USES OF PROPERTY:
NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY
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	
[]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVEOPLMENT ACTIVITIES:

[X] Fill [] Mining [] Drilling [] Pipelining
[X] 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
[] 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 $_____

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:_____ **NAME:**_____
ADDRESS:_____ **ADDRESS:**_____
_____ _____

NAME:_____ **NAME:**_____
ADDRESS:_____ **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:_____ **NAME:**_____
ADDRESS:_____ **ADDRESS:**_____
_____ _____

NAME:_____ **NAME:**_____
ADDRESS:_____ **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): Kelly Eddy

SIGNATURE: Kelly Eddy **DATE:** 8-5-14

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 FLOOPLAIN 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 proofing 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:_____

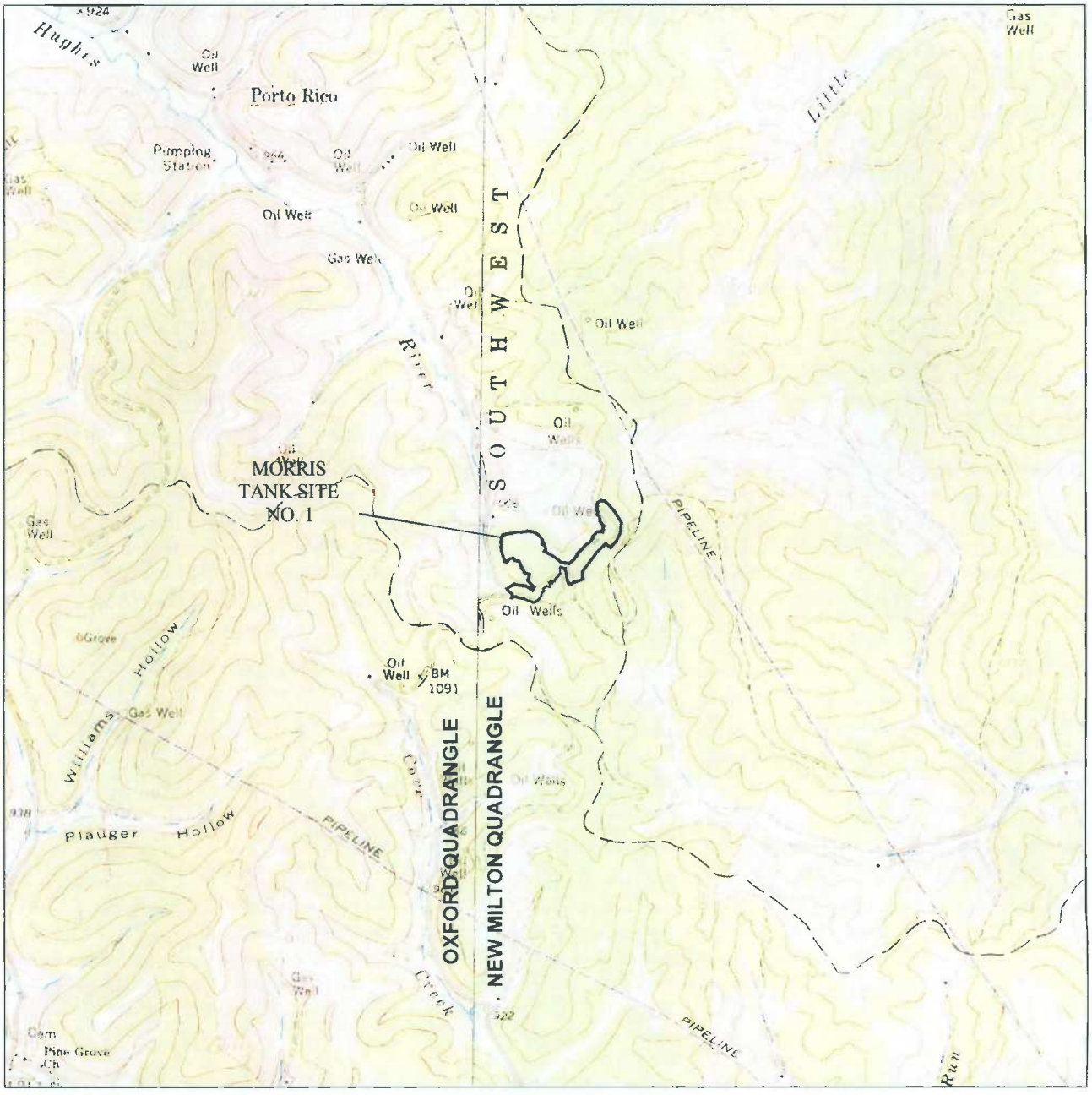
OWNER'S ADDRESS:_____
_____
_____

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**_____

MORRIS TANK SITE NO. 1
VICINITY MAP



NOTES
OXFORD AND NEW MILTON TOPO QUADRANGLES

SCALE
1 INCH = 2000-FEET

0′ 2000′ 4000′ 6000′

SCALE: 1" = 2000′
DATE: 6-04-14
DRAWN BY: CMH
JOB #: 7982T

MORRIS TANK SITE NO. 1

THIS DOCUMENT WAS PREPARED BY:
SMITH LAND SURVEYING, INC.
FOR: CNX

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
(304) 462-5634
WWW.SLSSURVEYS.COM

CONSOL ENERGY

CAD FILE: R:\Data\CADD\WORK 7900-7999\7982T (MORRIS TANK)\Environmental\Permits\7982T MORRISTANKSITE1 PERMITS.dwg LAYOUT: 2000 USER: CHittel

MORRIS TANK SITE NO. 1
FEMA MAP

FEMA FIRMETTE 54017C0225OC

FEMA FIRMETTE 54017C0250C

SCALE
1 INCH = 2000-FEET

0′ 2000′ 4000′ 6000′

SCALE: 1" = 2000′	DATE: 8-01-14	DRAWN BY: CMH	JOB #: 7982T

MORRIS TANK SITE NO. 1

THIS DOCUMENT WAS PREPARED BY:
SMITH LAND SURVEYING, INC.
FOR: CNX

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

CONSOL ENERGY

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 Application Permit # 14-256

was published in said paper for 3

successive weeks beginning with the issue of August 19th 2014 and ending with the issue of August 26th 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 28th DAY OF August 2014

NOTARY PUBLIC

Laura J Adams

OFFICIAL SEAL
Notary Public, State Of West Virginia
LAURA J ADAMS
212 Edmond Street
West Union, WV 26456
My Commission Expires June 14, 2023

LEGAL ADVERTISEMENT

Doddridge County

Floodplain Permit Application

Please take notice that on the 8th day of August, 2014 CNX Gas Company LLC filed an application for a Floodplain Permit to develop land located at or about Southwest District 39.16555N/80.74736W Permit #14-256 Morris Tank Site No. 1 (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 on or before September 8, 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

8-19-2xb

MORRIS TANK SITE #1 PLAN
CNX GAS COMPANY, LLC

SITUATE ON THE WATERS OF THE SOUTH FORK HUGHES RIVER IN SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA.

PROJECT INFORMATION

PROJECT NAME: MORRIS TANK SITE #1

TAX PARCEL:
SOUTHWEST DISTRICT
MAP 10-2

SURFACE OWNER:
J.L. MORRIS
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TOTAL PROPERTY AREA: 6,603.75 ± ACRES

OIL AND GAS ROYALTY OWNER:
LINDSAY A. EDMUNDSON ET AL
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TOTAL PROPERTY AREA: 1,427 ± ACRES

SITE LOCATION:
THE MORRIS TANK SITE #1 SITE IS LOCATED ON A RIDGE EAST OF CO. RT.40, APPROXIMATELY 5,780 FT SOUTH OF THE CO. RT. 40 AND CO. RT. 54/1 INTERSECTION.

LOCATION COORDINATES

MORRIS TANK SITE #1 ENTRANCE
LATITUDE: 39.16434 LONGITUDE: -80.74830 (NAD 83)

MORRIS TANK PAD-1
LATITUDE: 39.16555 LONGITUDE: -80.74736 (NAD 83)

MORRIS TANK PAD-2
LATITUDE: 39.16601 LONGITUDE: -80.74809 (NAD 83)

GENERAL DESCRIPTION

THE MORRIS TANK SITE #1 IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

SITE DISTURBANCE COMPUTATIONS

PAD AREA = 10.8 ± ACRES*
ACCESS ROAD = 4.0 ± ACRES
TOTAL SITE DISTURBANCE = 14.8 ± ACRES
*INCLUDES AREA OF THE TANK PAD & STOCKPILES

ENTRANCE PERMIT

CNX GAS CO. LLC WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

MISS UTILITY STATEMENT

MISS UTILITY OF WEST VIRGINIA WAS NOTIFIED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1309821529. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

FLOODPLAIN NOTE

THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT IS LOCATED IN FEMA FLOOD ZONE X, PER THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER 54017C0250C, DATED OCT. 04, 2011.

ENVIRONMENTAL NOTES

A WETLAND DELINEATION WAS PERFORMED ON APRIL 16, 2012 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE APRIL 21, 2014 REPORT WAS PREPARED BY ALLSTAR ECOLOGY, LLC SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION DESCRIBED BY THIS REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

GEOTECHNICAL NOTES

A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED IN THE FIELD BY TRIAD ENGINEERING, INC. BETWEEN SEPTEMBER 26, 2013, SEPTEMBER 27, 2013, SEPTEMBER 30, 2013 & OCTOBER 01, 2013 THROUGH OCTOBER 04, 2013. THE REPORT PREPARED BY TRIAD ENGINEERING, INC. DATED JULY 07, 2014, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY TRIAD ENGINEERING, INC. FOR RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION.

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!!

LIST OF DRAWINGS

1 - COVER SHEET
2 - NOTES
3 - OVERALL SHEET INDEX, VOLUMES & COMPUTATIONS
4 - EXISTING UTILITY LAYOUT
5 - TANK PAD & ACCESS ROAD DETAILS
6 - STOCKPILE DETAILS
7 - TANK PAD SECTION, ROAD & SLOPE DRAIN PROFILES
8 - ROAD SECTIONS
9 - TANK PAD RECLAMATION PLAN
10 - STOCKPILE RECLAMATION PLAN
11 - CONSTRUCTION DETAILS
12 - CONSTRUCTION DETAILS
13 - CONSTRUCTION DETAILS
14 - CONSTRUCTION DETAILS
15 - MATERIAL QUANTITIES
16 - RESERVED FOR GEOTECHNICAL NOTES AND DETAILS

LEGEND

EX. INDEX CONTOUR	PROP. INDEX CONTOUR
EX. INTERMEDIATE CONTOUR	PROP. INTERMEDIATE CONTOUR
EX. BOUNDARY LINE	PROP. GRADING LIMITS
EX. ROAD EDGE OF GRAVEL/DIRT	PROP. LIMITS OF DISTURBANCE
EX. ROAD EDGE OF PAVEMENT	PROP. WELL PAD
EX. ROAD CENTERLINE	PROP. WELL HEAD
EX. DITCHLINE	PROP. 4" PVC DRAIN PIPE
EX. CULVERT	PROP. SUMP DRAIN
EX. GUARDRAIL	PROP. CONTAINMENT BERM
EX. FENCELINE	PROP. PIT/IMPOUNDMENT CL
EX. GATE	PROP. PERIMETER SAFETY FENCE
EX. OVERHEAD UTILITY	PROP. ACCESS GATE WITH EMERGENCY LIFELINE
EX. OVERHEAD UTILITY R/W	
EX. POWER POLE	
EX. GUY WIRE	
EX. TELEPHONE LINE	
EX. GASLINE	PROP. ROCK CONSTRUCTION ENTRANCE
EX. GASLINE R/W	
EX. WATERLINE	PROP. ROAD EDGE OF GRAVEL
EX. WATER WELL	PROP. ROAD CENTERLINE
EX. GAS WELL	PROP. V-DITCH W/ CHECK DAMS
EX. TREELINE	PROP. DITCH RELIEF CULVERT (DRC)
EX. REFERENCE TREE	PROP. RIP-RAP OUTLET PROTECTION
EX. DELINEATED STREAM	PROP. GUARDRAIL
EX. DELINEATED WETLAND/POND	PROP. EARTHEN DIVERSION BERM
EX. BUILDING	PROP. ORANGE SAFETY FENCE
EX. BRIDGE	PROP. COMPOST FILTER SOCK
100' WETLAND/STREAM BUFFER	SECTION LINE "A" 0+00 "A" 0+50
EX. BORING LOCATION B-1	MATCHLINE
	X-SECTION GRID INDEX
	X-SECTION GRID INTERMEDIATE
	X-SECTION PROPOSED GRADE
	X-SECTION EXISTING GRADE
	X-SECTION WATER SURFACE
	SPOT ELEVATION 1000.0

OPERATOR

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ENGINEER

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PROFESSIONAL ENGINEER No. 11709 WEST VIRGINIA

THIS DOCUMENT WAS PREPARED BY NAVITUS ENGINEERING INC. FOR: CNX GAS COMPANY, LLC

COVER SHEET
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 2000'
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 1 OF 16

CONSTRUCTION NOTES:

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY NAVITUS ENGINEERING AT (888) 662-4185 OR SMITH LAND SURVEYING AT (304) 462-5634 IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FINDING OF SUCH DISCREPANCIES, SHALL BE DONE AT THE CONTRACTOR'S RISK.

2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL STANDARDS AND SPECIFICATIONS. SHOULD A CONFLICT BETWEEN THE DESIGN SPECIFICATIONS, AND PLANS OCCUR, THE MOST STRINGENT REQUIREMENT WILL APPLY. THE APPROVAL OF THESE PLANS IN NO WAY RELIEVES THE DEVELOPER OR HIS AGENT OF THE RESPONSIBILITIES CONTAINED IN THE WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.

4. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO INSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.

5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.

6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPE LINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.

7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WITHIN OR CONTIGUOUS TO THE EXISTING RIGHT-OF-WAY.

8. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.

9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.

10. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVESITES. GRAVESITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVESITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.

11. THE CONTRACTOR(S) SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.

12. CONTRACTOR TO CONTACT OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION.

13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE EROSION AND SEDIMENT CONTROL INSPECTOR, 2 DAYS PRIOR TO THE START OF CONSTRUCTION.

14. THE CONTRACTOR IS RESPONSIBLE FOR ALL FILL MATERIAL TESTING REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TEST SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND A CERTIFICATION OF THE MATERIALS TESTED SHALL BE PROVIDED BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TEST SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE CONSTRUCTED FACILITY.

15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE SITE PLAN, THE RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION FROM THE GEOTECHNICAL REPORT, AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.

CONSTRUCTION SEQUENCE

THE DEVELOPMENT OF THIS SITE SHALL BE CONSISTENT WITH THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN, AND OPERATE ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES TO EFFECTIVLY MITIGATE THE HAZARD OF ACCELERATED EROSION AND SEDIMENTATION TO ACCEPTABLE LEVELS. MINOR DEVIATIONS FROM THIS SEQUENCE SHALL BE EXECUTED BY THE PROJECT'S SUPERINTENDENT AS NEEDED TO ELIMINATE ANY POTENTIAL EROSIVE CONDITION THAT MAY ARISE FOR THE DURATION OF THE PROJECT. THE WVDEP OFFICE OF WATER AND WASTE SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1) A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE

2) STAKE THE LIMITS OF CONSTRUCTION.

3) INSTALL THE ROCK CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.

4) INSTALL ALL ORANGE SAFETY FENCE AS SHOWN AROUND ANY DELINEATED STREAMS AND WETLANDS TO CLEARLY IDENTIFY THOSE AREAS THAT ARE NOT TO BE DISTURBED.

5) INSTALL ALL BMP'S (COMPOST FILTER SOCKS, SUPER SILT FENCE, ETC) AS SHOWN ON THE PLANS AND DETAILS.

6) CLEAR AND GRUB THE ACCESS ROAD AND PAD AREA. ALL WOODY MATERIAL, BRUSH, TREES, STUMPS, LARGE ROOTS, BOULDERS, AND DEBRIS SHALL BE CLEARED FROM THE SITE AREA AND KEPT TO THE MINIMUM NECESSARY FOR PROPER CONSTRUCTION, INCLUDING THE INSTALLATION OF NECESSARY SEDIMENT CONTROLS. TREES SIX INCHES IN DIAMETER AND LARGER SHALL BE CUT AND LOGS STACKED. SMALLER TREES, BRUSH, & STUMPS SHALL BE CUT AND OR GRUBBED AND WINDROWED IN APPROPRIATE AREAS FOR USE AS WILDLIFE HABITAT, BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY DEP.

7) CONSTRUCT THE ACCESS ROAD. DITCH RELIEF CULVERTS SHALL BE INSTALLED AT A GRADE OF 1-8% TO MINIMIZE OUTLET VELOCITIES TO THE EXTENT POSSIBLE. INSTALL OUTLET PROTECTION AS SHOWN ON PLANS. STABILIZE THE ROAD WITH GEOTEXTILE FABRIC & STONE AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING. STOCKPILE AND STABILIZE EXCESS MATERIAL ALONG THE ACCESS ROAD, AS NEEDED.

8) STRIP THE TOPSOIL FROM THE PAD AREA. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN AREAS SHOWN IN THE PLANS AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURE SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.

9) ALL DITCH LINES SHALL BE CLEANED PRIOR TO INSTALLATION OF LINED PROTECTION. ALL DITCHES SHALL HAVE ROCK AND GEOTEXTILE FABRIC LINING. INSTALL OUTLET PROTECTION ONCE DITCH RELIEF CULVERTS ARE INSTALLED, AS SHOWN ON THIS PLAN.

10) GRADE THE PAD AREA AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE THE OUTER AREAS OF THE TANK PAD. THE TANK PAD AND TURNAROUND AREA(S) SHALL BE STABILIZED WITH GEOTEXTILE FABRIC & STONE AND THE SIDE SLOPES WITH COCONUT EROSION CONTROL BLANKETS ON ALL SLOPES. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL INCLUDE ALL AREAS THAT WILL NOT BE SUBJECT TO REGULAR TRAFFIC ACTIVITY (TO BE STABILIZED WITH STONE), OR ANY DISTURBED AREA THAT WILL NOT BE RE-DISTURBED BEFORE SITE RECLAMATION BEGINS.

11) PREVIOUSLY DISTURBED AREAS AND IMMEDIATE DOWN SLOPE AREAS SHALL BE INSPECTED AFTER EACH RAINFALL STORM EVENT AND MONITORED WEEKLY FOR SIGNS OF ACCELERATED EROSION. IMPLEMENT ADDITIONAL BMP'S AS DEEMED NECESSARY. THESE INSPECTIONS SHALL CONTINUE DURING THE DURATION OF THE PROJECT AND SUBSEQUENT SITE RECLAMATION.

12) COMMENCE THE DRILLING ACTIVITY.

13) ONCE DISTURBED AREAS HAVE BEEN RE-VEGETATED AND STABILIZED FOLLOWING RECLAMATION. THE TEMPORARY BMP'S IN THOSE AREAS MAY BE REMOVED. CONTINUE TO MONITOR THESE AREAS TO ENSURE A UNIFORM RATE OF 70% VEGETATIVE COVERAGE IS MAINTAINED. ANY AREAS FOUND TO BE DEFICIENT SHALL BE RE-SEEDED AND MULCHED.

SITE CLEANUP & RECYCLE PROGRAM

1. GARBAGE, FUELS OR ANY SUBSTANCE HARMFUL TO HUMAN, AQUATIC OR FISH LIFE, WILL BE PREVENTED FROM ENTERING SPRINGS, STREAMS, PONDS, LAKES, WETLANDS OR ANY WATER COURSE OR WATER BODY.

2. OILS, FUELS, LUBRICANTS AND COOLANTS WILL BE PLACED IN SUITABLE CONTAINERS AND DISPOSED PROPERLY.

3. ALL TRASH AND GARBAGE WILL BE COLLECTED AND DISPOSED PROPERLY.

4. ALL SEDIMENT REMOVED FROM SEDIMENT CAPTURING DEVICES SHALL BE PLACED ON THE TOPSOIL STOCKPILE, THEN SEEDED AND MULCHED, AS NECESSARY. ALTERNATIVELY, THE REMOVED SEDIMENT CAN BE TRANSPORTED TO A SITE WITH AN APPROVED PERMIT.

MAINTENANCE PROGRAM

1. INSPECTION OF EROSION & SEDIMENT CONTROLS WILL BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY.

2. ALL REVEGETATED ACCESS ROADS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF EACH STRUCTURE.

3. CULVERTS, ROAD DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, AND ROCK CHECK DAMS MUST BE MAINTAINED IN PROPER WORKING ORDER AND WILL BE CLEANED OUT, REPAIRED, OR REPLACED AS NECESSARY.

4. FILTER STRIPS AND/OR SILT FENCE WILL BE MAINTAINED.

5. ALL AREAS OF EARTH DISTURBANCE WILL BE REPAIRED WHERE SIGNS OF ACCELERATED EROSION ARE DETECTED.

6. SEEDING AND MULCHING WILL BE REPEATED IN THOSE AREAS THAT APPEAR TO BE FAILING OR HAVE FAILED.

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A TANK PAD TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS. THE SITE IS LOCATED ON A RIDGE EAST OF CO. RT. 40, 5,780 FT SOUTH OF THE CO. RT. 40 AND CO. RT. 54/1 INTERSECTION. SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 14.80 ACRES.

EXISTING SITE CONDITIONS: THE EXISTING SITE IS APPROXIMATELY 91.9% WOODED. THE TOPOGRAPHY RANGES FROM MODERATE TO STEEP TERRAIN (2% TO 60% SLOPES). PRESENT ON SITE ARE EXISTING GAS PIPELINES AND EXISTING GAS WELLS. ALSO PRESENT ARE ACCESS ROADS, STRUCTURES, OVERHEAD UTILITIES, THE SITE IS LOCATED ON A RIDGE AND DRAINS THE S FORK OF HUGHES RIVER.

ADJACENT PROPERTY: THE SITE IS BORDERED BY FORESTED LANDS ON ALL SIDES.

CRITICAL AREAS: THE AREA(S) SHOWN ALONG THE FIELD DELINEATED STREAMS, WETLANDS, AND PONDS, AS SHOWN ON THE PLANS, ARE DESIGNATED AS CRITICAL AREA(S), IF PRESENT. ALL 3:1 SLOPES AND STEEPER, DITCHES, AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED AND MAINTAINED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR GREATER. COMPOST FILTER SOCKS ARE TO BE USED TO PROTECT THESE FIELD DELINEATED AREA(S) FROM SEDIMENT LEAVING THE SITE. ADDITIONALLY, ORANGE SAFETY FENCE IS RECOMMENDED TO BE INSTALLED ABOVE/AROUND THESE AREA(S), TO SERVE AS A PHYSICAL BARRIER, ENSURING THE AREA(S) ARE NOT DISTURBED. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.

SOILS: A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED IN THE FIELD BY TRIAD ENGINEERING, INC. BETWEEN SEPTEMBER 26, 2013, SEPTEMBER 27, 2013, SEPTEMBER 30, 2013 & OCTOBER 01, 2013 THROUGH OCTOBER 04, 2013. THE REPORT PREPARED BY TRIAD ENGINEERING, INC. DATED JULY 07, 2014, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY TRIAD ENGINEERING, INC. FOR RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION.

OFF SITE AREAS: THERE ARE NO BORROW AREA(S) OR EXPORT STOCKPILE AREA(S) OUTSIDE OF THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

STRUCTURAL PRACTICES:

1. INSTALL ORANGE SAFETY FENCE TO ENSURE NO DISTURBANCE TO THE DELINEATED AREA(S).
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE AND E&S CONTROLS.
3. INSTALL COMPOST FILTER SOCKS, SUPER SILT FENCE, COMPOSITE DIVERSION SOCK AND TEMPORARY SLOPE DRAINS AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF. SELECTIVELY REMOVE TREES REQUIRED TO INSTALL COMPOST FILTER SOCK IN WOODED AREAS. CLEARING AND GRUBBING SHALL BE KEPT AT A MINIMUM TO INSTALL E&S CONTROLS.
4. EROSION CONTROL BLANKETS (JUTE MATTING) SHALL BE PLACED ON ALL CRITICAL SLOPES (3:1 OR GREATER) AND AS NEEDED TO STABILIZE DISTURBED AREAS.
5. FILL SLOPE SURFACE SHALL BE LEFT IN A ROUGHENED CONDITION TO REDUCE EROSION. CONTRACTOR SHALL REDIRECT RUNOFF AWAY FROM THE FILL SLOPE BY INSTALLING EARTHEN DIVERSION BERMS AND DIVERTING THE RUNOFF TO SEDIMENT TRAPPING DEVICES.
6. INSTALL DITCHES, DITCH RELIEF CULVERTS, AND OUTLET PROTECTION (RIP-RAP APRONS) AS SHOWN ON THE PLANS.

DEVICES LISTED ABOVE ARE CONSIDERED MINIMUM EROSION AND SEDIMENT CONTROLS. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY DUE TO CONTRACTOR PHASING OR OTHER UNFORESEEN CONDITIONS. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BMP'S TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION. ALL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN SEVEN (7) DAYS. AT NO TIME SHALL LAND LAY DORMANT LONGER THAN TWENTY-ONE (21) DAYS.

MAINTENANCE PROGRAM: DURING CONSTRUCTION ACTIVITIES, ALL CONTROL MEASURES SHALL BE INSPECTED DAILY BY THE SITE SUPERINTENDENT OR HIS REPRESENTATIVE AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY SIGNIFICANT RAIN EVENT, WHICH SHALL BE DEFINED AS RAINFALL OF TWO (2) INCHES OR MORE IN A SIX (6) HOUR PERIOD. ONCE CONSTRUCTION ACTIVITIES HAVE CONCLUDED, THE SITE SHALL BE INSPECTED EVERY TWO (2) WEEKS FOR THE LIFE OF THE FACILITY AND WITHIN TWENTY-FOUR (24) HOURS OF A SIGNIFICANT RAIN EVENT AS DEFINED ABOVE. ANY DAMAGED STRUCTURAL MEASURES ARE TO BE REPAIRED, BY THE END OF THE DAY, OR AT THE EARLIEST TIME IN WHICH IT IS SAFE TO DO SO. SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND OF GRASS IS MAINTAINED. ALL AREAS SHALL BE FERTILIZED AND RESEEDED AS NEEDED UNTIL GRASS IS ESTABLISHED.

TRAPPED SEDIMENT IS TO BE REMOVED AS REQUIRED TO MAINTAIN 50% TRAP AND/OR SOCK EFFICIENCY AND DISPOSED OF BY SPREADING ON THE STOCKPILE.

INLET OF DITCH RELIEF CULVERTS SHALL BE CHECKED REGULARLY FOR SEDIMENT BUILD-UP. IF THE GRAVEL OUTLET IS CLOGGED BY SEDIMENT, IT SHALL BE REMOVED AND CLEANED OR REPLACED IMMEDIATELY.

SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED OR SWEPT INTO ANY ROADSIDE DITCH, CULVERT OR SURFACE WATER.

ANY DISTURBED AREAS ALONG THE ACCESS ROAD SHALL BE STABILIZED PRIOR TO THE END OF EACH DAY WITH EITHER ROCK STABILIZATION OR SEEDING AND MULCHING METHODS.

NOTE: THE WV DEP RETAINS THE RIGHT TO ADD AND/OR MODIFY THESE EROSION AND SEDIMENT CONTROL MEASURES DURING THE CONSTRUCTION PROCESS, WITHIN REASON, TO ENSURE ADEQUATE PROTECTION TO THE PUBLIC AND THE ENVIRONMENT.

SEEDING (SOIL STABILIZATION):
1. CONTRACTOR SHALL APPLY SEED AND STABILIZATION IN ACCORDANCE WITH THE WV DEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL, BASED UPON SITE SPECIFIC SOIL CHARACTERISTICS.
2. WHEREVER SEEDING IS TO BE APPLIED TO STEEP SLOPES (≥ 3H:1V), SEED MIXTURES SHOULD BE SELECTED THAT ARE APPROPRIATE FOR STEEP SLOPES.

DUST CONTROL:
1. TEMPORARY SEEDING SHALL BE APPLIED TO ALL DISTURBED AREAS SUBJECT TO LITTLE OR NO CONSTRUCTION TRAFFIC.
2. ALL HAUL ROADS AND OTHER HEAVY TRAFFIC ROUTES SHALL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET AND REPEATED AS NEEDED TO CONTROL DUST.

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BRUCE A. MORRIS
No. 11709
WEST VIRGINIA
PROFESSIONAL ENGINEER
07/25/2014

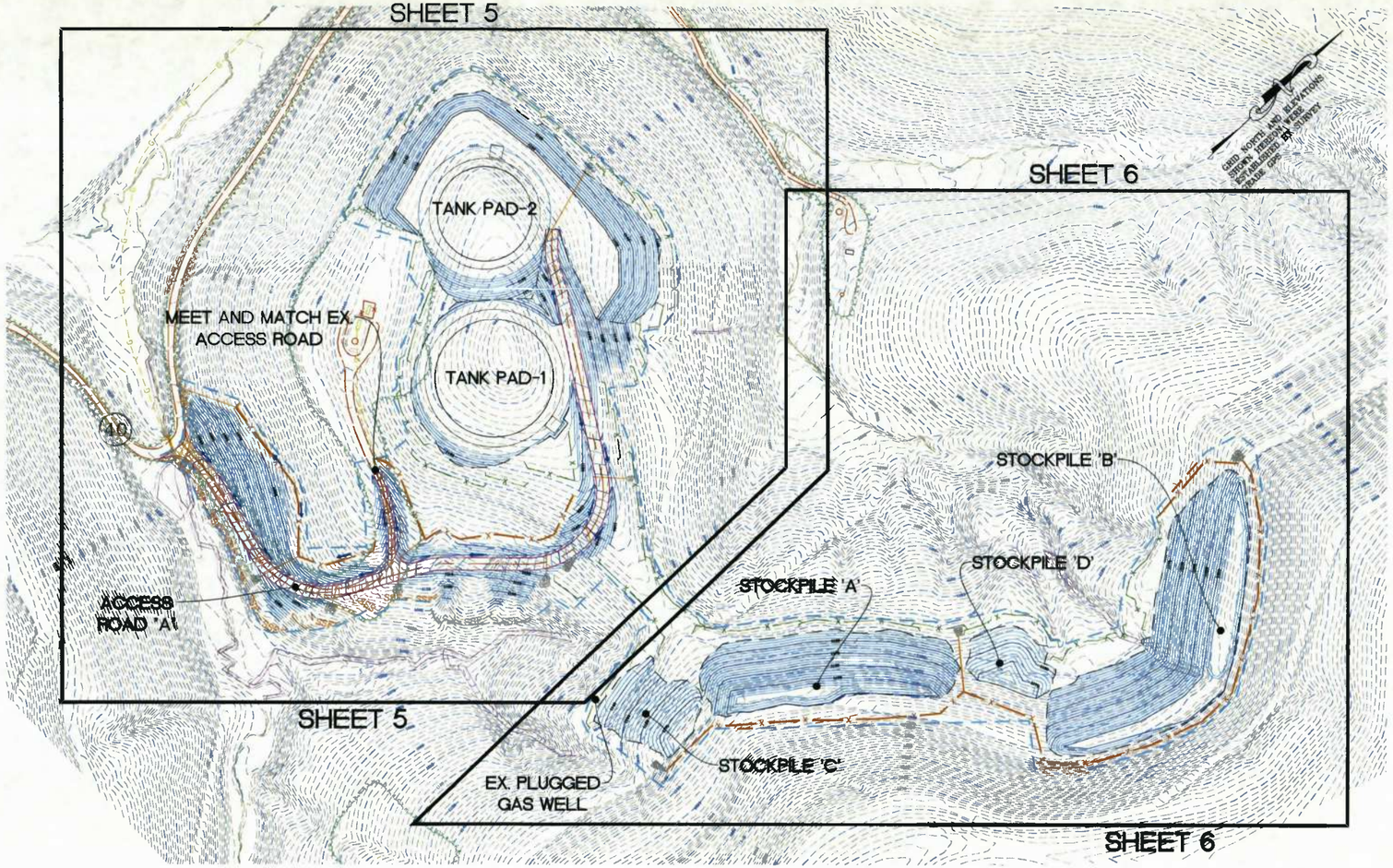
THIS DOCUMENT WAS PREPARED BY:
NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

NOTES
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/25/2014
SCALE: N/A
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 2 OF 16

OVERALL SHEET INDEX, VOLUMES & COMPUTATIONS

NOTE:
1. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.1 AND A FILL SHRINK FACTOR OF 1.0.
2. AERIAL TOPOGRAPHIC MAPPING WAS PREFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
4. TANK PAD SECTION TO UTILIZE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
5. ALL ACCESS ROADS ARE TO HAVE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
6. TOPSOIL DEPTH ASSUMED TO BE 12".
7. SUMPS WITH ROCK CHECK DAMS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
8. ALL PROPOSED DITCHES ARE TO HAVE GEOTEXTILE FABRIC LINING AND BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
10. SEE GEOTECHNICAL REPORT FOR FILL COMPACTION REQUIREMENTS.
11. SUB-GRADE RE-WORK AND TOE BENCH EXCAVATION VOLUMES ARE NOT INCLUDED WITHIN THIS SITE PLAN.
12. CULVERTS DISCHARGING ONTO THE SIDE OF ROAD FILL WILL USE GROUTED RIPRAP OUTLET PROTECTION.



Limits Of Disturbance Area (ac)	
Total Site	
Access Road	4.0
Tank Pads	5.2
Excess/Topsoil Material Stockpiles	5.6
Total Affected Area	14.8
Total Wooded Acres Disturbed	13.6

STREAM / WETLAND IMPACT	
Ephemeral Stream Impact (Linear Feet)	
Stream 4	158
Total Impact	158
Perennial Stream Impact (Linear Feet)	
Stream 1	36
Total Impact	36

MATERIAL STOCKPILES		
Name	Excess	Topsoil
A	11,780.0	0.0
B	19,802.0	0.0
C	0.0	2,055.0
D	0.0	1,587.6
TOTAL	31,582.0	3,642.6

MORRIS IMPOUNDMENT TANK PAD QUANTITIES

Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope (%)	Length of Slope (FT)
Access Road "A"	8,815.0	3,071.4	5,743.6	0.0		
Impoundment Pad-1	19,134.3	767.7	18,366.6	0.0	n/a	n/a
Impoundment Pad-2	20,060.3	18,688.9	1,371.4	0.0	n/a	n/a
Stripped Topsoil (12")	9,568.5	0.0	9,568.5	0.0	n/a	n/a
Material Stockpiles	0.0	35,224.6	0.0	35,224.6	n/a	n/a
Totals	57,578.1	57,752.6	35,050.1	35,224.6	n/a	n/a
	Total Soil (CY) =	-174.5				

DITCH COMPUTATIONS

Ditch No.	Starting Road Station	Ending Road Station	Length (ft)	Drainage Area (Ac.)	Runoff Coefficient (C factor)	10-year Rainfall Intensity (in/hr)	Tc, Time of Conc. (Min)	Total Discharge (cfs)	Channel Slope (%)	Channel Section	Channel Width (ft)	Left Side Slope	Right Side Slope	Channel Depth (ft)	Normal Depth (ft)	Freeboard (ft)	Velocity (ft/s)	Manning's "n"	Ditch Lining
1	0+00.00	1+53.00	150.80	1.05	0.64	6.5	5.0	4.40	11.8	Trapezoidal	2.0	2:1	2:1	1.50	0.30	1.20	5.56	0.035	R-3
2	1+53.00	2+84.79	124.30	0.22	0.52	6.5	5.0	0.74	11.8	Trapezoidal	2.0	2:1	2:1	1.50	0.11	1.39	3.08	0.035	R-3
3	2+84.79	3+76.14	91.35	0.09	0.57	6.5	5.0	0.33	18.0	Trapezoidal	2.0	2:1	2:1	1.50	0.06	1.44	2.62	0.035	R-3
4	3+76.14	4+58.83	82.49	0.18	0.56	6.5	5.0	0.64	18.0	Trapezoidal	2.0	2:1	2:1	1.50	0.09	1.41	2.39	0.035	R-3
5	n/a	n/a	146.70	0.22	0.48	6.5	5.0	0.65	18.0	Trapezoidal	2.0	2:1	2:1	1.50	0.09	1.41	3.37	0.035	R-3
6	4+83.10	6+98.48	211.87	0.25	0.55	6.5	5.0	0.87	13.4	Trapezoidal	2.0	2:1	2:1	1.50	0.12	1.39	3.39	0.035	R-3
7	6+98.48	8+05.22	95.45	0.11	0.56	6.5	5.0	0.41	15.0	Trapezoidal	2.0	2:1	2:1	1.50	0.07	1.43	2.69	0.035	R-3
8	7+48.20	9+44.29	207.70	0.19	0.49	6.5	5.0	0.59	15.0	Trapezoidal	2.0	2:1	2:1	1.50	0.09	1.41	3.06	0.035	R-3
9	8+05.22	8+94.95	78.60	0.10	0.58	6.5	5.0	0.36	15.0	Trapezoidal	2.0	2:1	2:1	1.50	0.07	1.43	2.55	0.035	R-3
10	8+94.95	10+49.00	155.10	0.23	0.55	6.5	5.0	0.83	10.2	Trapezoidal	2.0	2:1	2:1	1.50	0.12	1.38	3.05	0.035	R-3
11	11+46.31	12+73.20	130.22	0.20	0.54	6.5	5.0	0.70	11.1	Trapezoidal	2.0	2:1	2:1	1.50	0.11	1.39	2.06	0.035	R-3

DIVERSION COMPUTATIONS

Diversion No.	Length (ft)	Drainage Area (Ac.)	Runoff Coefficient (C factor)	10-year Rainfall Intensity (in/hr)	Tc, Time of Conc. (Min)	Total Discharge (cfs)	Channel Slope (%)	Channel Section	Channel Width (ft)	Left Side Slope	Right Side Slope	Channel Depth (ft)	Normal Depth (ft)	Freeboard (ft)	Velocity (ft/s)	Manning's "n"	Ditch Lining
1	161.90	1.00	0.34	6.5	5.0	2.22	14.0	Triangular	0.0	1:1	1:1	2.00	0.59	1.41	4.31	0.05	Grass Lined
2	121.00	0.31	0.29	6.5	5.0	0.59	11.7	Triangular	0.0	1:1	1:1	2.00	0.37	1.63	2.89	0.05	Grass Lined
3	135.40	0.11	0.36	6.5	5.0	0.25	27.1	Triangular	0.0	1:1	1:1	2.00	0.23	1.77	3.20	0.05	Grass Lined
4	161.90	0.30	0.40	6.5	5.0	0.78	14.0	Triangular	0.0	1:1	1:1	2.00	0.40	1.60	3.32	0.05	Grass Lined
5	250.30	0.60	0.40	6.5	5.0	1.56	27.3	Triangular	0.0	1:1	1:1	2.00	0.45	1.55	5.06	0.05	Grass Lined
6	342.50	1.40	0.25	6.5	5.0	2.28	9.2	Triangular	0.0	1:1	1:1	2.70	0.82	2.09	3.71	0.05	Grass Lined
7	187.60	0.70	0.25	6.5	5.0	1.14	0.9	Triangular	0.0	1:1	1:1	2.70	0.50	2.20	3.04	0.05	Grass Lined
8	464.10	2.20	0.25	6.5	5.0	3.58	4.8	Triangular	0.0	1:1	1:1	2.70	0.88	1.84	3.25	0.05	Grass Lined
9	445.10	3.40	0.25	6.5	5.0	5.53	7.6	Triangular	0.0	1:1	1:1	2.70	0.93	1.77	4.30	0.05	Grass Lined
10	168.20	0.22	0.40	6.5	5.0	0.57	23.0	Triangular	0.0	1:1	1:1	1.50	0.32	1.18	3.69	0.05	Grass Lined

CULVERT COMPUTATIONS

Culvert No.	Access Road Station	Drainage Area (Ac.)	Runoff Coefficient (C factor)	10-year Rainfall Intensity (in/hr)	Tc, Time of Conc. (Min)	Total Discharge (cfs)	Upstream Invert Elevation	Downstream Invert Elevation	Culvert Size (in)	Length (ft)	Culvert Slope (%)	Culvert Manning's "n"	Culvert Material	Inlet (Ke)	Maximum Headwater Elev. (ft)	Headwater Elevation (ft)	Headwater Depth (ft)	Outlet Flow Depth (ft)	Flow Type	Tailwater Elevation (ft)	Outlet Velocity (ft/s)
1	0+16.50	2.36	0.35	6.5	5.0	5.29	1033.10	1032.70	18	36.0	1.1	0.012	HDPE	0.2	1034.60	1033.10	0.00	0.89	Inlet Control	1033.59	4.87
2	1+42.81	0.22	0.52	6.5	5.0	0.74	1048.70	1048.00	15	47.0	1.5	0.012	HDPE	0.2	1049.95	1048.43	-0.27	0.34	Inlet Control	1048.34	2.76
3	2+86.73	0.42	0.36	6.5	5.0	0.96	1063.00	1062.00	18	33.0	3.0	0.012	HDPE	0.2	1064.50	1066.79	3.79	0.38	Inlet Control	1062.38	2.99
4	3+68.39	0.18	0.56	6.5	5.0	0.64	1084.20	1082.00	15	37.0	5.9	0.012	HDPE	0.2	1085.45	1082.37	-1.83	0.24	Inlet Control	1082.24	3.97
5	4+72.85	1.50	0.46	6.5	5.0	4.50	1103.70	1102.80	18	45.0	2.0	0.012	HDPE	0.2	1105.20	1102.84	-0.86	0.73	Inlet Control	1103.53	6.00
6	7+11.60	0.11	0.56	6.5	5.0	0.41	1123.40	1122.00	15	34.0	4.1	0.012	HDPE	0.2	1124.65	1120.31	-3.09	0.24	Inlet Control	1122.24	2.42
7	7+93.74	0.10	0.58	6.5	5.0	0.36	1136.70	1136.00	15	34.0	2.1	0.012	HDPE	0.2	1137.95	1136.86	-0.04	0.23	Inlet Control	1136.23	2.28
8	8+91.16	0.23	0.55	6.5	5.0	0.83	1150.10	1149.00	15	55.0	2.0	0.012	HDPE	0.2	1151.35	1149.45	-0.65	0.35	Inlet Control	1149.35	2.91
9	12+85.27	0.33	0.48	6.5	5.0	1.05	1150.70	1134.00	15	137.0	12.2	0.012	HDPE	0.2	1151.95	1149.21	-1.49	0.40	Inlet Control	1134.40	3.11

OUTLET PROTECTION COMPUTATIONS

Outlet Protection No.	Outlet Type	No.	Tailwater Condition	Velocity (ft/s)	Do (in)	Total Discharge (cfs)	D50 (ft)	3Do (ft) 5' Min.	La (ft)	W (ft)	Rip-Rap Size
1	Culvert	1	Tw>=0.5Do	4.87	18	5.29	0.5	5	14	8	R-3
2	Culvert	2	Tw<0.5Do	2.76	15	0.74	0.5	5	8	10	R-3
3	Culvert	3	Tw<0.5Do	2.99	18	0.96	0.5	5	8	10	R-3
4	Culvert	4	Tw<0.5Do	3.97	15	0.64	0.5	5	8	10	R-3
5	Culvert	5	Tw<0.5Do	6.00	18	4.50	0.5	5	8	10	R-3
6	Culvert	6	Tw<0.5Do	2.42	15	0.41	0.5	5	8	10	R-3
7	Culvert	7	Tw<0.5Do	2.28	15	0.36	0.5	5	8	10	R-3
8	Culvert	8	Tw<0.5Do	2.91	15	0.83	0.5	5	8	10	R-3
9	Culvert	9	Tw<0.5Do	3.11	15	1.05	0.5	5	8	10	R-3
10	Diversion	6	Tw<0.5Do	3.71	32	2.28	0.5	9	8	11	R-3
11	Diversion	8	Tw<0.5Do	4.72	32	3.58	0.5	9	8	11	R-3
12	Diversion	9	Tw<0.5Do	4.30	32	5.53	0.5	9	8	11	R-3

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No. 11709
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER
07/18/2014

THIS DOCUMENT WAS PREPARED BY: NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

OVERALL SHEET INDEX, VOLUMES & COMPUTATIONS

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014

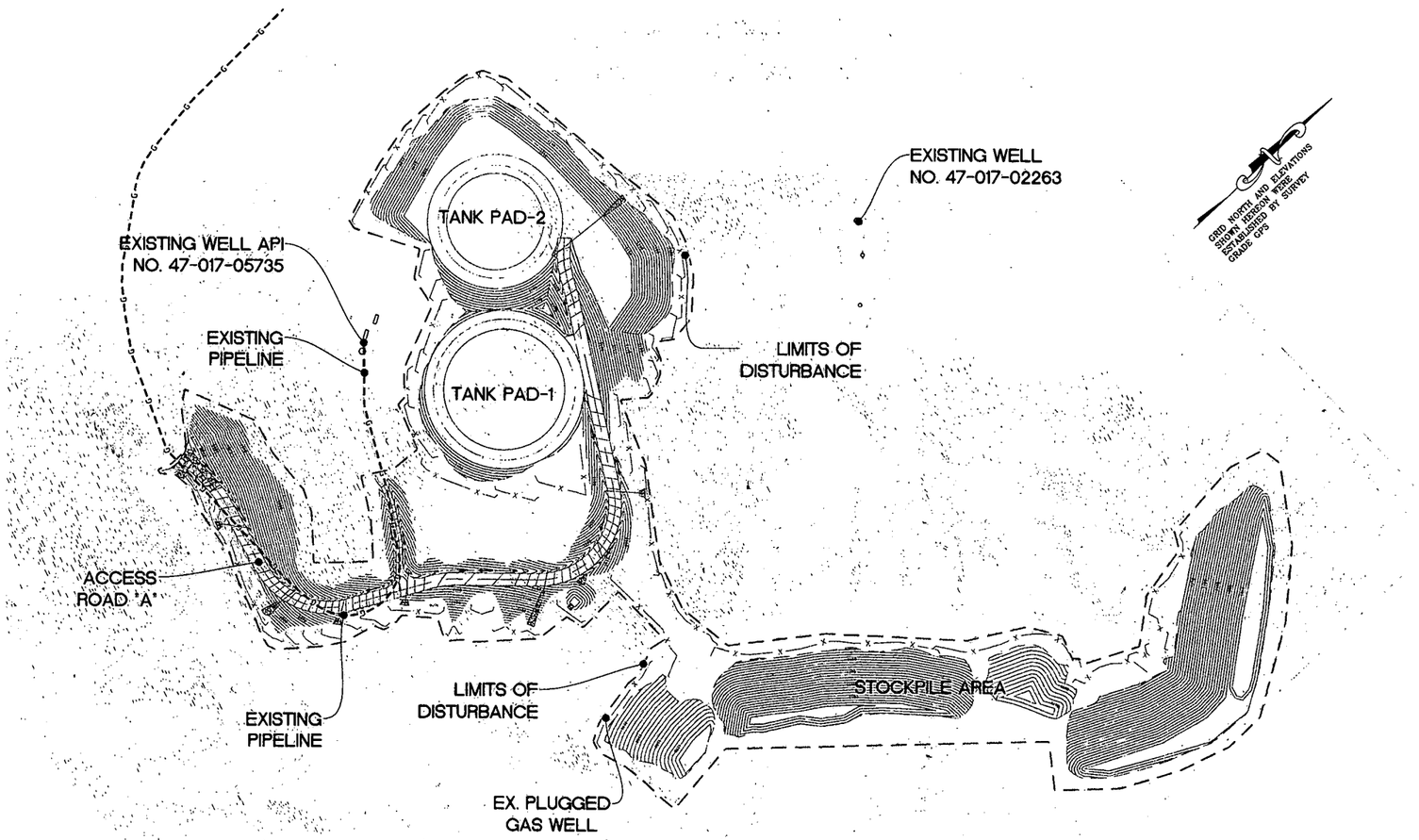
SCALE: 1" = 100'

DESIGNED BY: JMM

FILE NO. 7982-T

SHEET 3 OF 16

MORRIS TANK SITE #1 EXISTING UTILITY LAYOUT



GENERAL NOTES:

1. THE UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON: A) OBSERVABLE EVIDENCE OF THOSE VISIBLE, ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY SLS, INC. AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE WV 811 TICKET SUBMITTED BY SLS, INC. SLS, INC., NOR NAVITUS ENGINEERING CANNOT GUARANTEE THE ACCURACY OF THE UTILITY MARKINGS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO SLS, INC., NAVITUS ENGINEERING AND/OR CNX GAS COMPANY, LLC.

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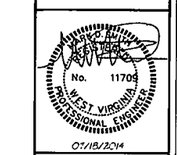

07/18/2014

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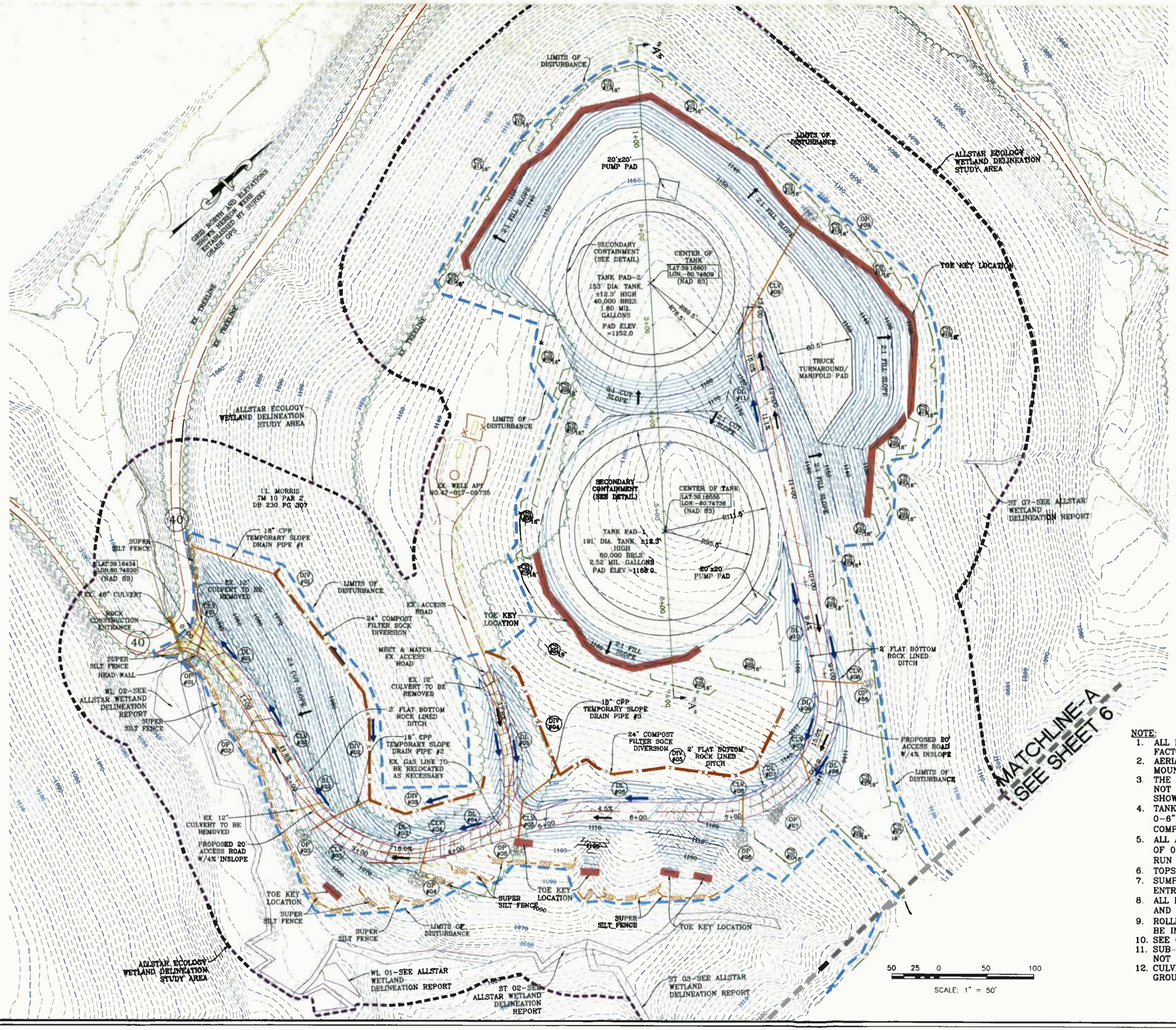
NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

EXISTING UTILITY LAYOUT
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 150'
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 4 OF 16

MORRIS TANK SITE #1 TANK PAD AND ACCESS ROAD DETAILS



LEGEND

- PR. INDEX CONTOUR — 700
- PR. INTERMEDIATE CONTOUR
- PR. INDEX CONTOUR (ROAD) — 700
- PR. INTERMEDIATE CTR (ROAD)
- PR. LIMITS OF DISTURBANCE
- PR. PERIMETER SAFETY FENCE
- PR. ROAD EDGE OF GRAVEL
- PR. ROAD CENTERLINE
- PR. CULVERT W/OUTLET PROTECTION — OP #1, CLV #1
- PR. TRAPEZOIDAL DITCH — DL #1
- PR. RIP-RAP TRAPEZOIDAL DITCH — DL #1
- PR. DIVERSION — DIV #1
- PR. COMPOST FILTER SOCK — CS #1 XX
- PR. SUPER SILT FENCE — SSF #1 — SSF — SSF —
- BORING LOCATION

LEGEND

TOE BENCH

NOTE:

1. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.1 AND A FILL SHRINK FACTOR OF 1.0.
2. AERIAL TOPOGRAPHIC MAPPING WAS PREFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
4. TANK PAD SECTION TO UTILIZE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
5. ALL ACCESS ROADS ARE TO HAVE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
6. TOPSOIL DEPTH ASSUMED TO BE 12".
7. SUMPS WITH ROCK CHECK DAMS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
8. ALL PROPOSED DITCHES ARE TO HAVE GEOTEXTILE FABRIC LINING AND BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
10. SEE GEOTECHNICAL REPORT FOR FILL COMPACTION REQUIREMENTS.
11. SUB-GRADE RE-WORK AND TOE BENCH EXCAVATION VOLUMES ARE NOT INCLUDED WITHIN THIS SITE PLAN.
12. CULVERTS DISCHARGING ONTO THE SIDE OF ROAD FILL WILL USE GROUTED RIPRAP OUTLET PROTECTION.

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TANK PAD & ACCESS ROAD DETAILS

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE:	07/18/2014
SCALE:	1" = 50'
DESIGNED BY:	JMM
FILE NO.	7982-T
SHEET	5 OF 16

MORRIS TANK SITE #1 STOCKPILE DETAILS

NOTE:
1. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.1 AND A FILL SHRINK FACTOR OF 1.0.
2. AERIAL TOPOGRAPHIC MAPPING WAS PREFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
4. TANK PAD SECTION TO UTILIZE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
5. ALL ACCESS ROADS ARE TO HAVE GEOTEXTILE FABRIC WITH 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
6. TOPSOIL DEPTH ASSUMED TO BE 12".
7. SUMPS WITH ROCK CHECK DAMS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
8. ALL PROPOSED DITCHES ARE TO HAVE GEOTEXTILE FABRIC LINING AND BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
10. SEE GEOTECHNICAL REPORT FOR FILL COMPACTION REQUIREMENTS.
11. SUB-GRADE RE-WORK AND TOE BENCH EXCAVATION VOLUMES ARE NOT INCLUDED WITHIN THIS SITE PLAN.
12. CULVERTS DISCHARGING ONTO THE SIDE OF ROAD FILL WILL USE GROUTED RIPRAP OUTLET PROTECTION.

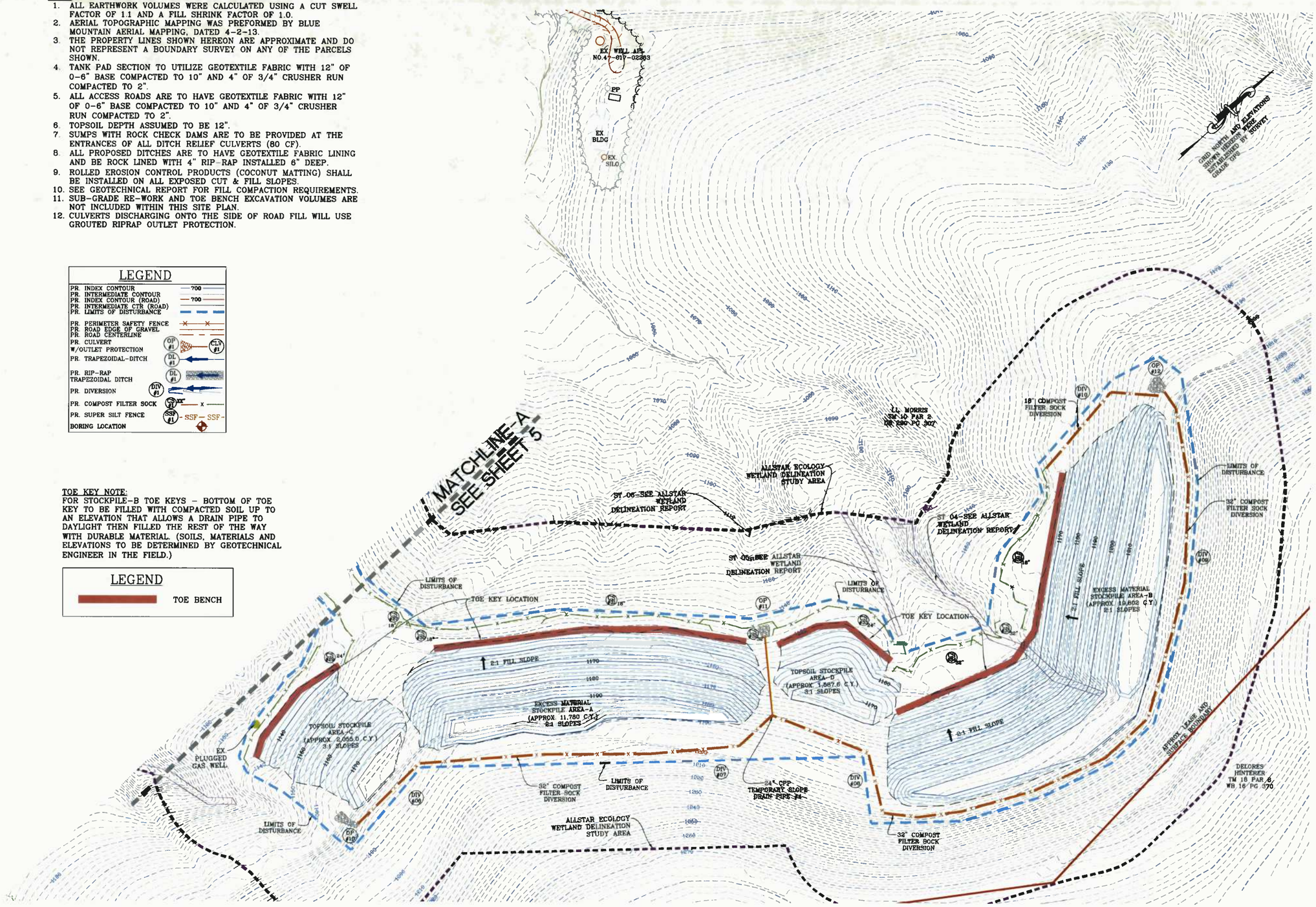
LEGEND

PR. INDEX CONTOUR	700
PR. INTERMEDIATE CONTOUR	
PR. INDEX CONTOUR (ROAD)	700
PR. INTERMEDIATE CTR (ROAD)	
PR. LIMITS OF DISTURBANCE	
PR. PERIMETER SAFETY FENCE	
PR. ROAD EDGE OF GRAVEL	
PR. ROAD CENTERLINE	
PR. CULVERT W/OUTLET PROTECTION	OP #1, CLV #1
PR. TRAPEZOIDAL-DITCH	DL #1
PR. RIP-RAP TRAPEZOIDAL DITCH	DL #1
PR. DIVERSION	DIV #1
PR. COMPOST FILTER SOCK	CSF #1
PR. SUPER SILT FENCE	SSF #1 - SSF - SSF -
BORING LOCATION	

TOE KEY NOTE:
FOR STOCKPILE-B TOE KEYS - BOTTOM OF TOE KEY TO BE FILLED WITH COMPACTED SOIL UP TO AN ELEVATION THAT ALLOWS A DRAIN PIPE TO DAYLIGHT THEN FILLED THE REST OF THE WAY WITH DURABLE MATERIAL. (SOILS, MATERIALS AND ELEVATIONS TO BE DETERMINED BY GEOTECHNICAL ENGINEER IN THE FIELD.)

LEGEND

TOE BENCH



50 25 0 50 100

SCALE: 1" = 50'

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No. 11709 WEST VIRGINIA PROFESSIONAL ENGINEER

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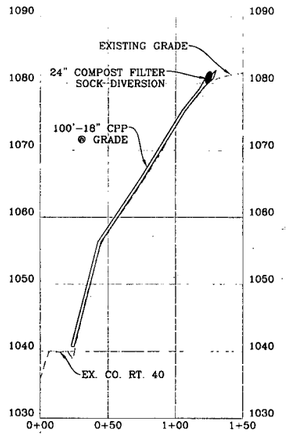
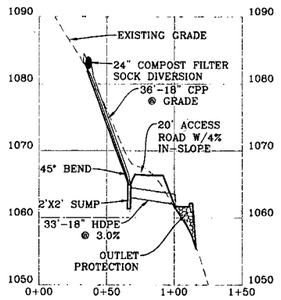
STOCKPILE DETAILS
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 50'
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 6 OF 16

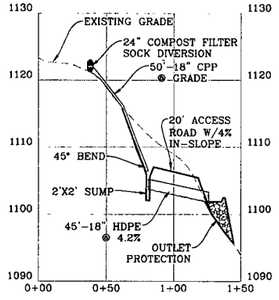
TANK PAD SECTION, ROAD & SLOPE DRAIN PROFILES



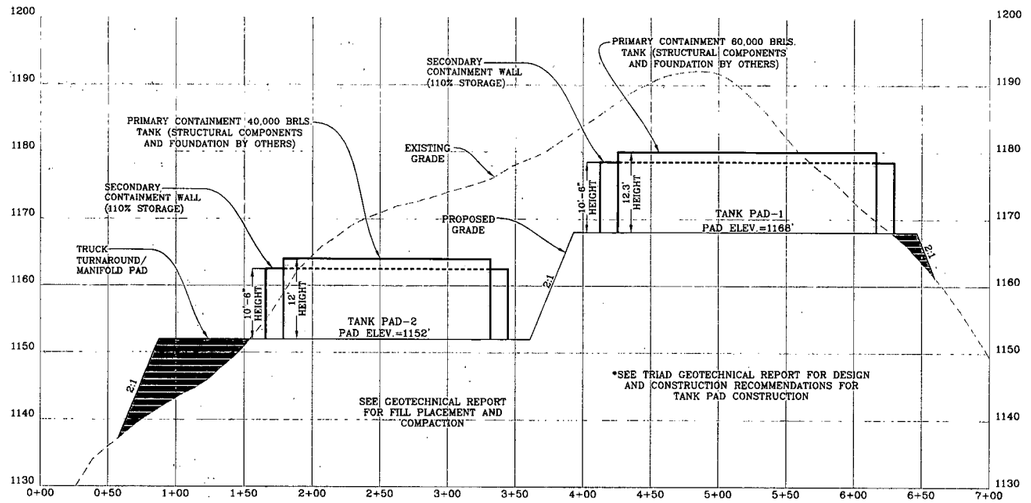
TEMPORARY SLOPE DRAIN PIPE #1
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



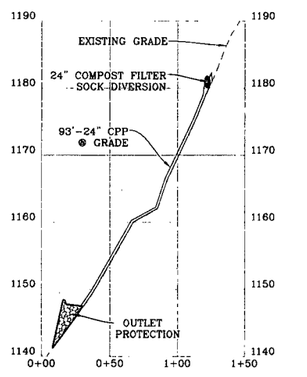
TEMPORARY SLOPE DRAIN PIPE #2
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



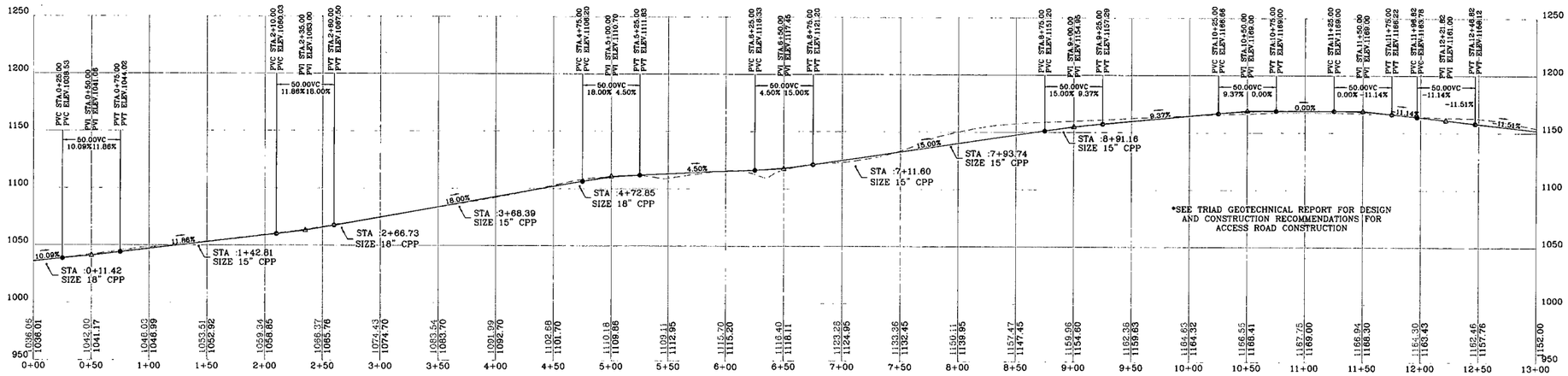
TEMPORARY SLOPE DRAIN PIPE #3
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



TANK PAD CROSS SECTION "A-A"
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



TEMPORARY SLOPE DRAIN PIPE #4
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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

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TANK PAD SECTION, ROAD & SLOPE DRAIN PROFILES

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/16/2014

SCALE: AS SHOWN

DESIGNED BY: JMM

FILE NO. 7982-T

SHEET 7 OF 16

ROAD SECTIONS

ACCESS ROAD "A" CROSS-SECTIONS

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

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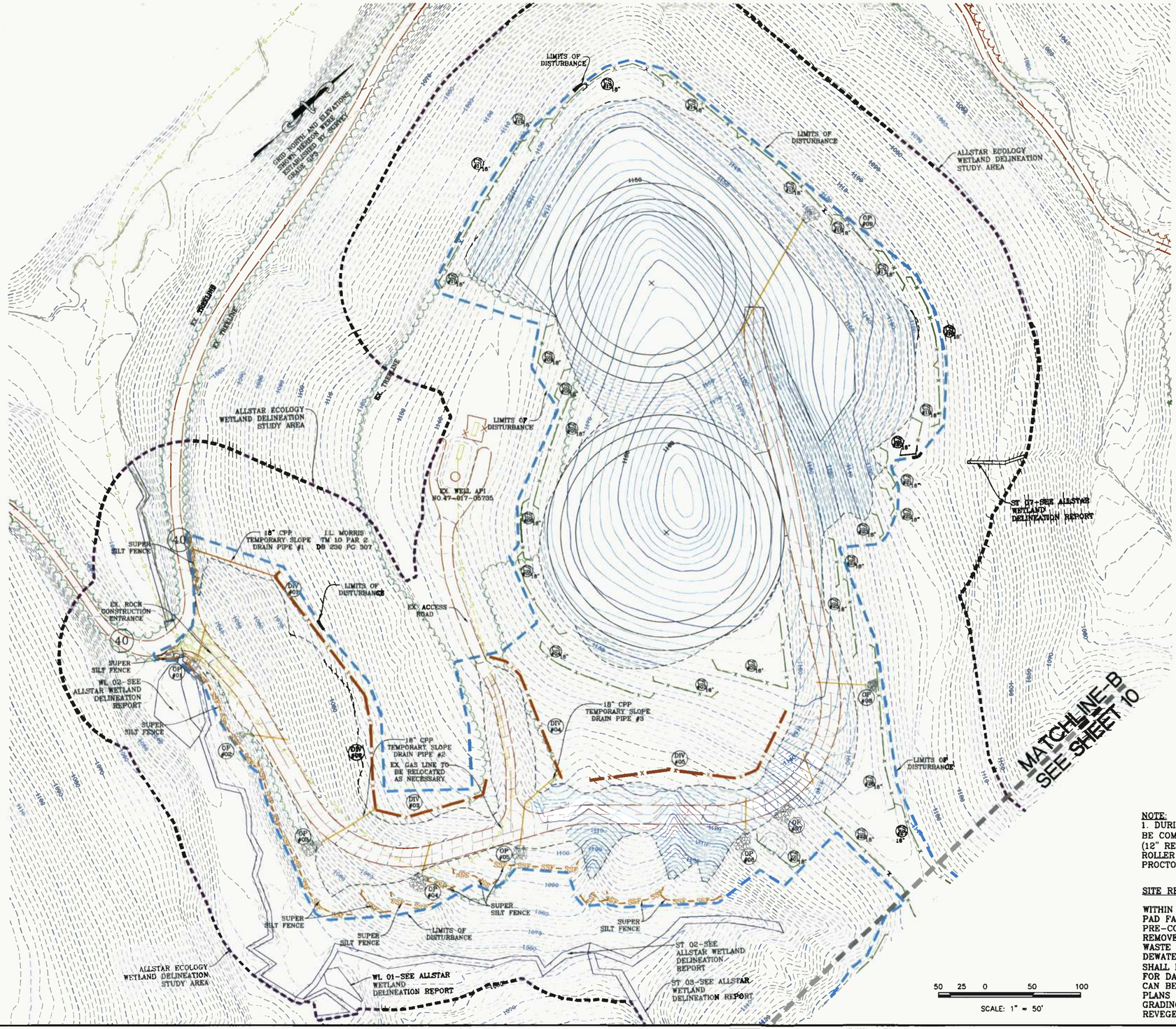
ROAD SECTIONS

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE:	07/16/2014
SCALE:	AS SHOWN
DESIGNED BY:	JMM
FILE NO.	7982-T
SHEET	8 OF 16

TANK PAD RECLAMATION PLAN



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.

SITE RECLAMATION NARRATIVE

WITHIN 6 MONTHS OF THE EXPIRATION OF APPROVAL OF THE TANK PAD FACILITY, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. 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. ALL EX. BMP'S SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON PLANS TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEETS 13 AND 14.

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WWW.SLSSURVEYS.COM

No. 11709 WEST VIRGINIA PROFESSIONAL ENGINEER
07/18/2014

THIS DOCUMENT WAS PREPARED BY:
NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

TANK PAD RECLAMATION PLAN
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE:	07/18/2014
SCALE:	1" = 50'
DESIGNED BY:	JMM
FILE NO.	7982-T
SHEET	9 OF 16

STOCKPILE RECLAMATION PLAN

SITE RECLAMATION NARRATIVE

WITHIN 6 MONTHS OF THE EXPIRATION OF APPROVAL OF THE TANK PAD FACILITY, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. 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. ALL EX. BMP'S SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON PLANS TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 13 AND 14.

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.

LEGEND

- PR. INDEX CONTOUR — 700
- PR. INTERMEDIATE CONTOUR
- PR. INDEX CONTOUR (ROAD) — 700
- PR. INTERMEDIATE CTR (ROAD)
- PR. LIMITS OF DISTURBANCE
- PR. PERIMETER SAFETY FENCE
- PR. ROAD EDGE OF GRAVEL
- PR. ROAD CENTERLINE
- PR. CULVERT W/OUTLET PROTECTION — OP #1, CLV #1
- PR. TRAPEZOIDAL-DITCH — DL #1
- PR. RIP-RAP TRAPEZOIDAL DITCH — DL #1
- PR. DIVERSION — DIV #1
- PR. COMPOST FILTER SOCK — CSF #1
- PR. SUPER SILT FENCE — SSF #1 — SSF — SSF —
- BORING LOCATION

EX. WELL API NO 47-017-02283
PP
EX BLDG
EX. SILO
MATCHLINE-B SEE SHEET 9
GRID POSTS AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GPS
ALLSTAR ECOLOGY WETLAND DELINEATION STUDY AREA
I.L. MORRIS TM 10 PAR 2 DB 230 PG 307
ST 06-SEE ALLSTAR WETLAND DELINEATION REPORT
ST 05-SEE ALLSTAR WETLAND DELINEATION REPORT
ST 04-SEE ALLSTAR WETLAND DELINEATION REPORT
LIMITS OF DISTURBANCE
EX PLUGGED GAS WELL
24" CPP TEMPORARY SLOPE DRAIN PIPE #4
DELORES HINTERER TM 18 PAR 8 WB 16 PG 370
APPROX. LEASE AND SURFACE BOUNDARY

50 25 0 50 100
SCALE: 1" = 50'

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No. 11709 WEST VIRGINIA PROFESSIONAL ENGINEER
07/18/2014

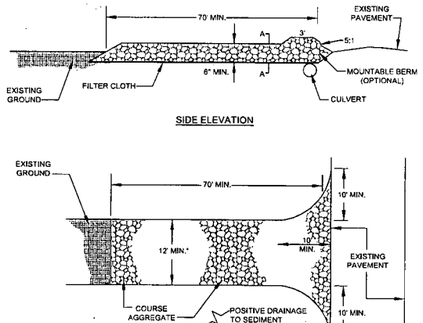
THIS DOCUMENT WAS PREPARED BY: NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

STOCKPILE RECLAMATION PLAN
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 50'
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 10 OF 16

FIGURE 3.02.1

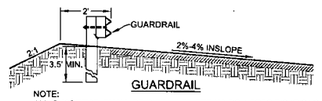
STONE CONSTRUCTION ENTRANCE



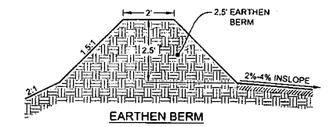
SOURCE: ADAPTED from the 1983 Maryland Standards for Soil Erosion and Sediment Control and Va. DSWC

ACCESS ROAD SAFETY BARRIERS

N.T.S.



NOTE:
ALL GUARDRAIL SHALL BE INSTALLED PER WVDOH SPECIFICATIONS.



Modified Figure 3.1 – Typical Roadside Ditch Section
Sump at Ditch Relief Culvert

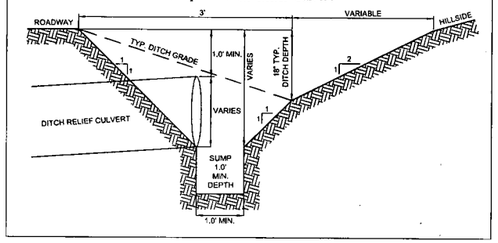
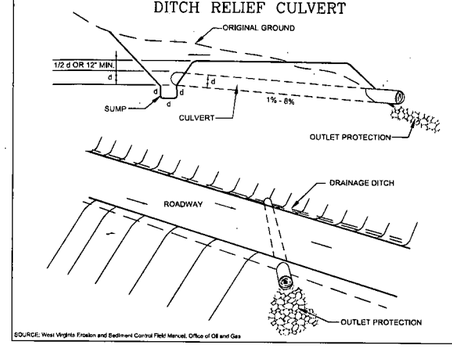


FIGURE II-4

DITCH RELIEF CULVERT



SOURCE: West Virginia Erosion and Sediment Control Field Manual, Office of Oil and Gas

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

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

FIGURE 3.05.1

ROCK CHECK DAM

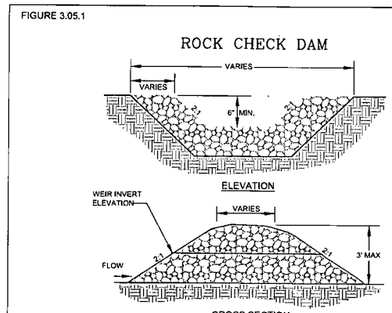
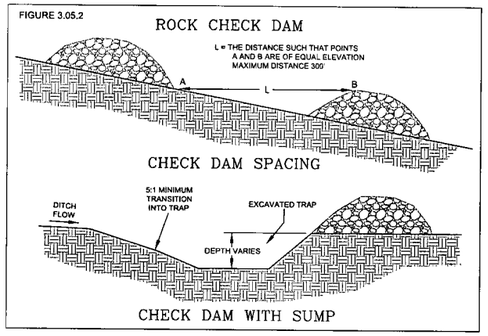
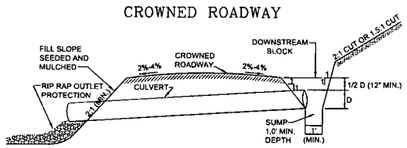


FIGURE 3.05.2

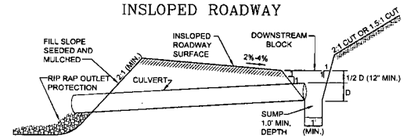
ROCK CHECK DAM



CROWNED ROADWAY



INSLOPED ROADWAY



Cut and fill slopes shall be stabilized immediately upon completion of roadway grading. These areas shall be blanketed wherever they are located within 50 feet of a surface water or within 100 feet of a surface water where a suitable vegetative filter strip does not exist.

A durable top dressing shall be provided for soils having low strength.

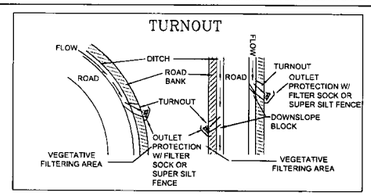
Roadside ditches shall be provided with adequate protective lining.

Adequately sized culverts or other suitable cross drains shall be provided at all seeps, springs, and drainageways.

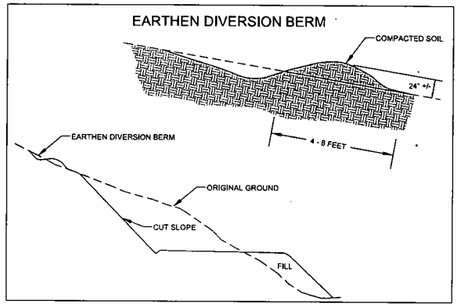
Roadway shall be inspected weekly and after each runoff event. Damaged roadways, ditches, or cross drains shall be repaired immediately.

SOURCE: PA DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF OIL AND GAS MANAGEMENT 5800-FM-OG0111 APPENDIX A BMP CONSTRUCTION DETAILS (MODIFIED)

TURNOUT



EARTHEN DIVERSION BERM



TYPICAL 2' FLAT BOTTOM DITCH

N.T.S.

DL #1

RIP-RAP LINED DITCH

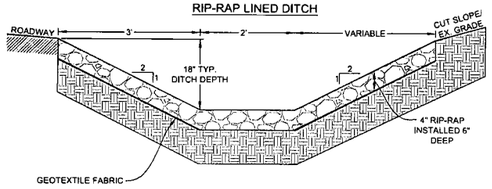
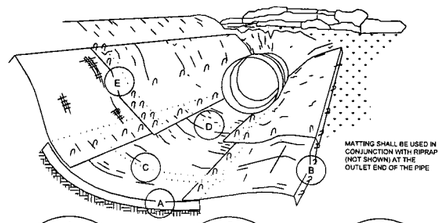
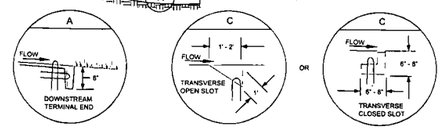


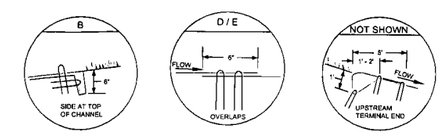
FIGURE 3.13.1

TYPICAL RECP CHANNEL INSTALLATION





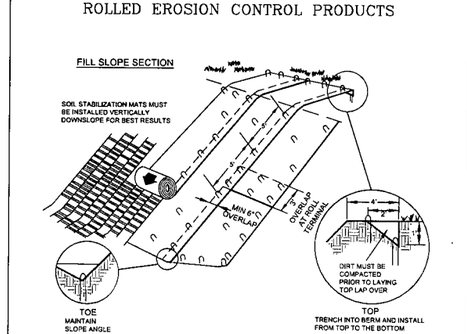
THESE CONFIGURATIONS ARE EXAMPLES ONLY ALWAYS INSTALL PER MANUFACTURER'S RECOMMENDATIONS



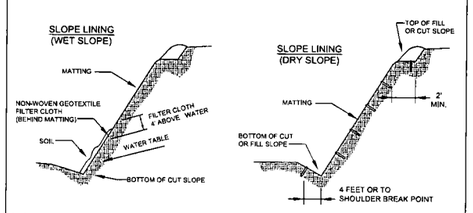
SOURCE: VA DCR-DSWC AND NORTH AMCRICAN GREEN

FIGURE 3.13.2

ROLLED EROSION CONTROL PRODUCTS



NOTE: SLOPE SURFACE MUST BE SMOOTH AND FREE OF ROCKS, LUMPS, GRASS AND STICKS. MATS MUST BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.



SOURCE: VDOT STANDARDS AND VA DCR-DSWC

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RICHARD ALAN SMITH
No. 11709
WEST VIRGINIA
PROFESSIONAL ENGINEER
07/18/2014

THIS DOCUMENT WAS PREPARED BY: NAVITUS ENGINEERING INC. FOR: CNX GAS COMPANY, LLC

CONSTRUCTION DETAILS

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014

SCALE: N/A

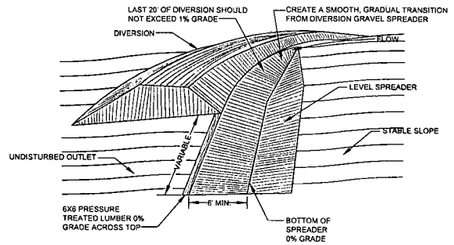
DESIGNED BY: JMM

FILE NO. 7982-T

SHEET 11 OF 16

FIGURE 3.02.1

LEVEL SPREADER



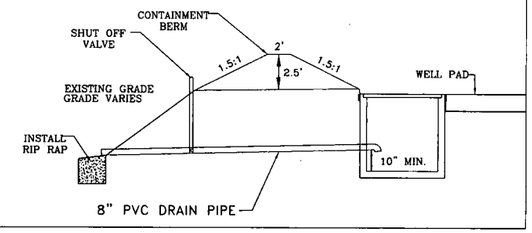
PERSPECTIVE VIEW

NOTE: ALL TEMPORARY BERMS, SWALES AND LEVEL SPREADER DITCHES MUST RECEIVE TEMPORARY SEEDING AND MULCHING AFTER INSTALLATION

SOURCE: ADAPTED FROM N.C. E&S Control Planning and Design Manual and VA DESCI

CONCRETE SUMP DETAIL

N.T.S.

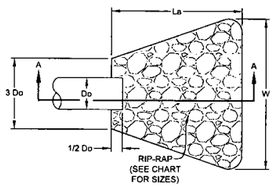


OUTLET PROTECTION

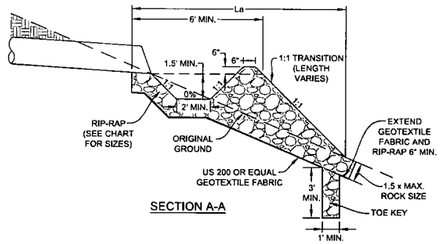
N.T.S.

OP #1

NOTES:
1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN IN CHART. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIP-RAP WITHIN THE APRON SHALL BE RESTORED IMMEDIATELY.
3. EXTEND RIP-RAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DIAMETER OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.

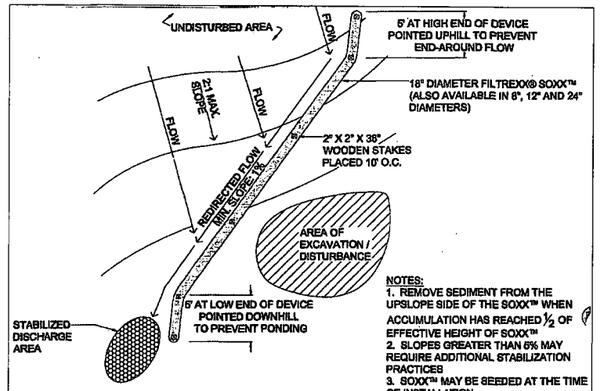


PLAN VIEW

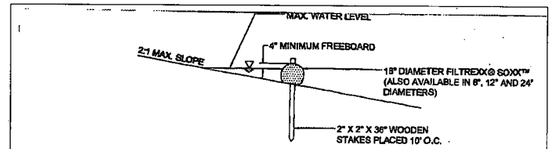


SECTION A-A

(MODIFIED) SOURCE: WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

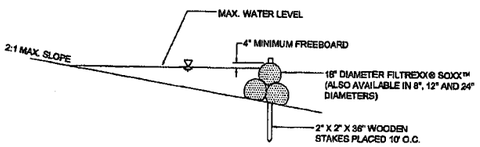


FILTREXX® RUNOFF DIVERSION



SINGLE INSTALLATION SECTION

NTS



PYRAMID INSTALLATION SECTION

NTS

FILTREXX® RUNOFF DIVERSION SECTIONS

NTS

MORRIS TANK PAD COMPOST SOCK SIZING CHART

COMPOST SOCK #	WATERSHED AREA (AC)	SLOPE %	EFFECTIVE FILTER LENGTH (FT)	REQUIRED SIZE (IN)	PROPOSED SIZE (IN)	SOCK LENGTH (FT)
1	0.19	26.61	46	12	18	63
2	0.19	15.18	78	12	18	170
3	0.24	21.01	64	12	18	79
4	0.34	23.72	129	12	18	144
5	0.20	21.87	95	12	18	112
6	0.16	21.81	59	12	18	76
7	0.34	22.3	120	12	18	135
8	0.09	22.95	29	12	18	44
9	0.15	22.3	38	12	18	55
10	0.52	23.99	101	12	18	114
11	0.27	26.23	68	12	18	79
12	0.11	24.82	35	12	18	48
13	0.21	23.69	149	12	18	160
14	0.27	24.45	96	12	18	110
15	0.48	25.74	130	12	18	144
16	0.27	25.07	62	12	18	78
17	0.16	25.71	42	12	18	56
18	0.24	25.32	95	12	18	108
19	0.43	26.6	59	12	18	74
20	0.29	32.04	34	18	18	63
21	0.23	34.22	39	12	18	53
22	0.11	33.75	23	12	18	39
23	0.08	32.75	20	12	18	32
24	0.12	21.88	47	12	18	58
25	0.16	21.21	77	12	18	87
26	0.26	20.93	172	12	18	188
27	0.10	18.98	144	12	18	159
28	0.20	19.53	196	12	18	207
29	0.62	29.46	155	12	24	169
30	0.56	32.93	167	12	18	189
31	0.60	35.6	190	12	18	203
32	0.22	39.67	59	12	24	73
33	0.51	28.22	176	12	24	195
34	1.05	32.71	216	12	18	229

COMPOST FILTER SOCK SIZED USING 301-SILT SOXX DESIGN TOOL-07-11-08 PROVIDED BY FILTREXX

CONSTRUCTION DETAIL
TYPICAL FENCE SECTION

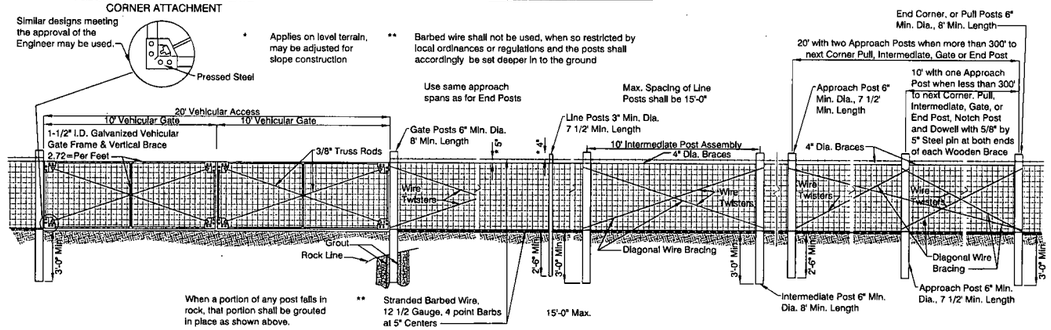
PEDESTRIAN AND VEHICULAR GATE CORNER ATTACHMENT

Similar designs meeting the approval of the Engineer may be used.

Pressed Steel

* Applies on level terrain, may be adjusted for slope construction

** Barbed wire shall not be used, when so restricted by local ordinances or regulations and the posts shall accordingly be set deeper in to the ground



NOTES:

Posts and braces may be either round or square shaped. Dimensions shown on the plans are for round posts and braces only. When square posts are used, line posts shall be 3" square (min.);braces 4" square (min.); corner, end, pull, gate, approach, and intermediate posts 6" square (min.).
The positioning of the fence fabric and barbed wire on the posts, as shown on the "Typical Fence Section" detail, applies for level and gentle sloping terrain. For fence erected on slopes, the positioning may be adjusted to meet the slope conditions as long as the adjustment is continued from post to post in a uniform manner. Trenching on slopes may be warranted. On slopes, posts will continue to be erected vertically, unless otherwise directed, and the ends of the fencing fabric shall be cut on a skew as may be necessary for proper connection to the posts.

Dumped rock channel protection will be used at channel crossings when called for on the plans.

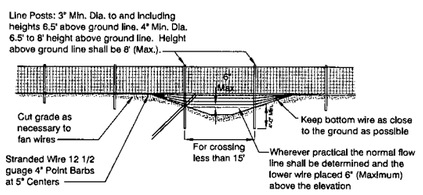
Install drainage structure terminal installation as called for on the plans and/or as shown on typical fence details.

Unless otherwise specified, or directed by the Engineer, the farm field fence may be installed with the fence fabric and barbed wire positioned on either side of the fence posts.

Hardware and miscellaneous fittings, not specifically designated herein as to type or dimensions, shall conform to the applicable requirements of Section 608 of the Specifications and shall be of good quality commerical design acceptable to the Engineer.

In lieu of the barbed wire detailed herein, the following additional types are acceptable, provided they retain the "4-point barb at 5-inch centers" requirement and provided they meet or exceed the strength and coating requirements for the standard, 12 1/2 gauge, barbed wire as called for in 712.10 of the Specifications.
(a) stranded, 15 1/2 gauge, high carbon steel barbed wire
(b) one strand, 12 gauge, steel barbed wire

Vehicular gate frames (and vertical braces) may be either galvanized steel pipe members as shown herein or may be triple-coated steel pipe members meeting the requirements specified on Standard Sheet F2. All other metal components of the gate shall be galvanized, with the exception of the die-cast aluminum corner fittings, or pressed steel corner fittings.

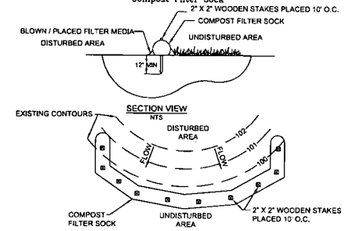


DETAIL SHOWING TYPICAL SECTION AT MINOR DEPRESSIONS AND WET WEATHER CROSSINGS

Table 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
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"
Textile Strength		26 psi	26 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 Fusion-welded junctures 3/4" x 3/4" Max. aperture size				
Outer Filtration Mesh	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.					

STANDARD CONSTRUCTION DETAIL #4-1
Compost Filter Sock



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 8 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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07/18/2014

THIS DOCUMENT WAS PREPARED BY: NAVITUS ENGINEERING INC. FOR: CNX GAS COMPANY, LLC

CONSTRUCTION DETAILS
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: N/A
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 12 OF 16

3.10 - TEMPORARY SEEDING

Introduction

Temporary erosion control measures consist of seeding and mulching, or matting used to produce a quick ground cover to reduce erosion on exposed soils that may be redisturbed or permanently stabilized at a later date.

Conditions Where Practice Applies

Use this method where exposed soil surfaces are not to be fine-graded for periods longer than 21 days. Such areas include denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, temporary road banks, etc. A permanent vegetative cover shall be applied to areas that will be left unworked for a period of more than six months.

Planning Considerations

Sheet erosion, caused by the impact of rain on bare soil, is the source of most fine particles in sediment. To reduce this sediment load in runoff, the soil surface itself should be protected. The most efficient and economical means of controlling sheet and rill erosion is to establish vegetative cover. Annual plants that sprout rapidly and survive for only one growing season are suitable for establishing temporary vegetative cover. Temporary seeding is encouraged whenever possible to aid in controlling erosion on construction sites.

Temporary seeding also reduces costly maintenance operations on sediment control systems. For example, sediment basin/trap clean-outs can be reduced if its drainage area is vegetated when grading is not taking place. Perimeter dikes are more effective if not choked with sediment. Silt fence does not need to be cleaned as often.

Temporary seeding is essential to preserve the integrity of earthen structures used to control erosion and sediment, such as dikes, diversions, and the banks and dams of sediment basins/traps. If the design life of the basin or trap is more than one year, permanent seeding should be used.

Proper seedbed preparation and the use of quality seed are important in this practice just as in permanent seeding. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.

Construction Specifications

Prior to seeding, install necessary erosion control practices such as dikes, waterways, and basins.

Plant Selection

Select plants appropriate to the season and site conditions.

Seedbed Preparation

To control erosion on bare soil surfaces, plants must be able to germinate and grow. Seedbed preparation is essential. If the area has been recently

loosened or disturbed, no further roughening is required. When the area is compacted, crusted, or hardened, the soil surface must be loosened by disking, raking, harrowing, or other acceptable means (see surface roughening section).

Seeding

Seed shall be evenly applied with a broadcast seeder, drill, cultipacker seeder or hydroseeder. Small grains shall be planted no more than 1.5 inches deep. Small seeds, such as annual rye, shall be planted no more than quarter inch deep. Other grasses and legumes shall be planted no more than half inch deep.

Mulching

Temporary seeding conducted in fall for winter cover and during hot and dry summer months shall be mulched with straw or hay according to the standard for mulching. Hydromulches (fiber mulch) may not provide adequate temperature and moisture control.

Maintenance

Areas that fail to establish a vegetative cover adequate to prevent rill erosion should be re-seeded as soon as such areas are identified.

Table 3.10.1 Temporary seed chart

PLANT NAMES		PLANTING DATES	APPLICATION RATE LBS/ACRE
COMMON	SCIENTIFIC		
Annual Ryegrass	*Lolium multiflorum*	2/16 – 5/15 8/1 – 11/1	40
Field Bromegrass	*Bromus ciliatus*	3/1 – 6/15 8/1 – 9/15	40
Spring Oats	*Avena sativa*	3/1 –6/15	100
Winter Rye	*Secale cereale*	8/15 – 2/28	170
Winter Wheat	*Triticum aestivum*	8/15 – 2/28	180
Japanese Millet	*Echinochloa crusgalli*	5/15 – 8/15	30
Redtop	*Agrostis alba*	3/1 – 6/15	10
Annual Ryegrass and Spring Oats	*Lolium multiflorum* *Avena sativa*	3/1 – 6/15	30 70
German/Foxtail Millet	*Setaria italica*	5/1 – 8/1	40
Hairy Vetch	*Vicia villosa*	8/15 – 4/1	60

*Inoculation is required. If a hydroseeder is utilized, the application rate is 3 times the recommended rate.

3.11 - PERMANENT SEEDING

Introduction

Permanent seeding is the establishment of perennial vegetative cover on disturbed areas by planting seed.

Purpose

1. To reduce erosion and decrease sediment yield from disturbed areas.
2. To permanently stabilize disturbed areas in a manner that is economical, adaptable to site conditions and allows selection of the most appropriate plant materials.

Conditions Where Practice Applies

1. Disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil.
2. Rough-graded areas that will not be brought to final grade for six months or more.

Planning Considerations

Vegetation controls erosion by reducing the velocity and the volume (by increasing infiltration) of overland flows, protecting the bare soil surface from raindrop impact and binding the soil particles together by the roots and rhizomes.

Advantages of seeding over other means of establishing plants include the small initial establishment cost, the wide variety of grasses and legumes available, low labor requirement and ease of establishment in difficult areas.

Disadvantages include the potential for erosion during the establishment stage, a need to reseed areas that fail to establish, limited periods during the year suitable for seeding, the potential need for weed control during the establishment phase, and a need for water and appropriate micro-climatic conditions during germination.

There are so many variables in plant growth that an end product cannot be guaranteed. Much can be done in the planning stages to increase the chances for successful seeding. Selection of the right plants for the site, good seedbed preparation, proper timing and conscientious maintenance are important. By meeting the requirement to seed and mulch your site within seven days, the seedbed preparation and timing components are easily met.

Selecting Plants

The factors affecting plant growth are climate, soils and topography. In West Virginia, there are three major physiographic regions that reflect changes in soil and topography. In selecting appropriate plant materials, one should take into account the characteristics of the physiographic region in which the project is located.

Physiographic Regions

Western Plateau- Characterized by steep slopes and narrow valleys drained by dendritic low gradient streams. Soils are highly variable and on the acidic side. Erosion can be catastrophic and almost impossible to control, especially in the western sections of the state. Clays and silty-clays predominate with rich well-drained soils in the major river valleys. Rainfall averages 40 inches a year and is spread evenly throughout the year. Rain events average every four days. Soil moisture is optimal in the spring and fall. Droughts of short duration can occur every summer. Both cool and warm season grasses will grow.

Ridge and Valley Region- This region is divided into plateaus, mountains, narrow valleys and wide fertile valleys near the major stems of the Potomac River. Streams have medium gradient. Soils tend to be shallow and acid, and may erode rapidly on steep slopes. The significant shalely slopes are often unstable and droughty. This area is significantly drier than the rest of the state; however, storm events are significantly greater. The rugged topography makes plant establishment difficult. Cool season grasses are normally specified in this region.

Mountains- This region consists of high mountains (up to 4,860 feet) and plateaus, deep, steep valleys, short summers and cold snowy winters, and fast flowing, steep gradient streams. Rainfall averages 50 to 60 inches with up to 240 inches of snow each winter in the highest elevations. Soil depths range from bedrock along areas of the Allegheny Front, to thin to moderate. The range of soil fertility is large and many are acidic. Erodibility ranges from low in the shalely soils common to the Ridge and Valley, to very high in the soils formed from the Mauch Chunk sandstones. Erosion can be a problem because of the extreme steepness of the slopes. Because of the shortness of the growing season, the timeliness of seeding is of utmost importance. However, summer drought is unusual.

Soils

Soils in West Virginia usually require some nitrogen fertilization along with phosphorus and potassium to establish plants. Except for shallow limestone soils in Greenbrier, Pocahontas, Jefferson and Berkeley counties, and some small pockets elsewhere, lime is universally needed.

Microclimates, or localized climate conditions, affect plant growth. A south-facing slope is drier and hotter than a north-facing slope, and may require drought-tolerant plants. Shaded areas require shade-tolerant plants; the windward side of a ridge will be drier than the leeward, etc. Shaley soils are droughty.

The addition of lime is equally as important as applying fertilizer. Lime is best known as a pH or acidity modifier, but it also supplies calcium and magnesium, which are plant nutrients. More importantly, the correct pH frees up nutrients to the plant. Soils with a pH that is too low will not allow a plant to utilize nitrogen and phosphorus properly. Raising the pH can also prevent aluminum toxicity by making aluminum less soluble in the soil. Many soils in West Virginia are high in aluminum, which can stunt the growth of plant roots. Also remember that rainfall is acidic, compounding the low pH problem in the soil.

Once the soil temperature is correct, the two key limiting factors of seed germination are pH and moisture. If you control these two factors, your chances of success are greatly enhanced.

Seed Mixtures

As previously noted, the establishment of high quality turf frequently involves planting one single species. However, in seedings for erosion control purposes, the inclusion of more than one species should always be considered. Mixtures need not be excessive in poundage or seed count. The addition of a quick-growing annual

provides early protection and facilitates establishment of one or two perennials in a mix. More complex mixtures might include a quick-growing annual, one or two legumes and more than one perennial grass. The addition of a nurse crop (quick-growing annuals added to permanent mixtures) is a sound practice for soil stabilization, particularly on difficult sites - those with steep slopes, poor, rocky, erosive soils, those seeded outside of the optimum seeding periods or in any situation where the permanent cover development is likely to be slow. The nurse crop germinates and grows rapidly, holding the soil until the slower-growing perennial (permanent) seedlings become established.

Maintenance

Even with careful, well-planned seeding operations, failures occur. When it is clear that plants have not germinated on an area or have died, these areas must be prepared and reseeded immediately to prevent erosion damage. It is extremely important to determine why germination did not take place and make any necessary corrective actions. Healthy vegetation is the most effective erosion control available. Some highly acidic soils (especially around various coal seams in the coalfields) will resist the best efforts to revegetate them. In these cases, topsoiling will be the only way to establish vegetation.

Table 3.11.1 Permanent seeding

SEED MIX.	PLANT NAMES		APPLICATION RATE - LBS/ACRE
	COMMON	SCIENTIFIC	
A	Kentucky 31 Fescue Red Fescue Birdsfoot Trefoil	*Festuca arundinacea* *Festuca rubra* *Lotus corniculatus*	65 20 5
B	Switchgrass Perennial Ryegrass Redtop Birdsfoot Trefoil	*Panicum virgatum* *Lolium perenne* *Agrostis alba* *Lotus corniculatus*	15 20 5 15
C	Red Fescue Kentucky Bluegrass Merion Bluegrass	*Festuca rubra* *Poa pratensis* *Poa pratensis*	20 40 30
D	Kentucky 31 Fescue Red Fescue Kentucky Bluegrass White Dutch Clover	*Festuca arundinacea* *Festuca rubra* *Poa pratensis* *Trifolium repens*	45 20 25 5
E	Perennial Ryegrass Switchgrass Crownvetch or Perennial Pea	*Lolium perenne* *Panicum virgatum* *Coronilla varia* *Lathyrus latifolius*	30 15 20 20
F	Orchardgrass Ladino Clover Redtop	*Dactylis glomerata* *Trifolium repens* *Agrostis alba*	20 5 5
G	Birdsfoot Trefoil Weeping Lovegrass Perennial Ryegrass	*Lotus corniculatus* *Eragrostis curvula* *Lolium perenne*	15 45 10
H	Crownvetch Orchardgrass	*Coronilla varia* *Dactylis glomerata*	25 40
I	Crownvetch Perennial Ryegrass	*Coronilla varia* *Lolium perenne*	25 20
J	Perennial Pea Orchardgrass	*Lathyrus latifolius* *Dactylis glomerata*	30 30
K	Deertongue Birdsfoot Trefoil Weeping Lovegrass	*Panicum clandestinum* *Lotus corniculatus* *Eragrostis curvula*	30 15 5
L	Orchardgrass Sericea Lespedeza Ladino Clover	*Dactylis glomerata* *Lespedeza cuneata* *Trifolium repens*	30 40 5
M	Perennial Ryegrass Ladino Clover Redtop	*Lolium perenne* *Trifolium repens* *Agrostis alba*	50 5 5
N	Crownvetch Orchardgrass Redtop	*Cornillis varia* *Dactylis glomerata* *Agrostis alba*	15 30 5

O	Perennial Ryegrass Birdsfoot Trefoil Redtop	*Lolium perenne* *Lotus corniculatus* *Agrostis alba*	40 15 5
P	Sereein Lespedeza Orchardgrass Redtop	*Lespedeza cuneata* *Dactylis glomerata* *Agrostis alba*	40 30 5
Q	Orchardgrass Reed Canarygrass[1] Redtop Ladino Clover	*Dactylis glomerata* *Phalaris arundinacea* *Agrostis alba* *Trifolium repens*	25 30 5 5
R	Kentucky Bluegrass Redtop White Clover or Birdsfoot Trefoil	*Poa pratensis* *Agrostis alba* *Trifolium repens* *Lotus corniculatus*	30 5 5 15
S	Reed Canarygrass[1] Weeping Lovegrass	*Phalaris arundinacea* *Eragrostis curvula*	40 5
T	Perennial Ryegrass Reed Canarygrass[1] Birdsfoot Trefoil	*Lolium perenne* *Phalaris arundinacea* *Lotus corniculatus*	30 15 5
U	Timothy Alfalfa	*Phleum pratense* *Medicago sativa*	10 15
V	Timothy Birdsfoot Trefoil	*Phleum pratense* *Lotus corniculatus*	10 15
W	Redtop Perennial Ryegrass Orchardgrass	*Agrostis alba* *Lolium perenne* *Dactylis glomerata*	5 30 25
X	Reed Canarygrass[1] Birdsfoot Trefoil Redtop	*Phalaris arundinacea* *Lotus corniculatus* *Agrostis alba*	30 20 5
Y	Switchgrass Birdsfoot Trefoil	*Panicum virgatum* *Lotus corniculatus*	30 20
Z	Switchgrass Sereein Lespedeza	*Panicum virgatum* *Lespedeza cuneata*	15 30
A-1	Orchardgrass Red Clover	*Dactylis glomerata* *Trifolium pratense*	30 10
A-2	Switchgrass Big Bluestem Indiangrass Little Bluestem Sidcoats Gmma[2]	*Panicum virgatum* *Andropogon gerardi* *Sorghastrum nutans* *Andropogon scoparius* *Bouteloua curtipendula*	15 5 5 5 5
A-3	Switchgrass Eastern Gamagrass[3]	*Panicum virgatum* *Tripsacum dactyloides*	20 15

NOTE: When utilizing a properly prepared seedbed, the rates of application can be reduced by 30 percent except for seed mixes A-2 & A-3.

[1] Reed Canarygrass shall not be used east of I-79 and/or south of Charleston.
[2] Use north and east of I-64 and I-79.
[3] Use south and west of I-64 and I-79.

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THIS DOCUMENT WAS PREPARED BY: NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

CONSTRUCTION DETAILS
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: N/A
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 13 OF 16

Table 3.11.2 Nurse crops

PLANT NAMES		PLANTING DATES	APPLICATION RATE LBS/ACRE
COMMON	SCIENTIFIC		
Annual Ryegrass	*Lolium multiflorum*	2/16 – 5/15 8/1 – 11/1	25
Field Bromegrass	*Bromus ciliatus*	3/1 – 6/15 8/1 – 9/15	20
Spring Oats	*Avena sativa*	3/1 –6/15	50
Winter Rye	*Secale cereale*	8/15 –2/28	85
Winter Wheat	*Triticum aestivum*	8/15 – 2/28	90
Japanese Millet	*Echinochloa crusgalli*	5/15 – 8/15	15
Redtop	*Agrostis alba*	3/1 – 6/15	10
Annual Ryegrass and Spring Oats	*Lolium multiflorum* *Avena sativa*	3/1 – 6/15	15 35
German/Foxtail Millet	*Setaria italica*	5/1 – 8/1	25
Hairy Vetch*	*Vicia villosa*	8/15 – 4/1	30

* Inoculation is required. If a hydroseeder is utilized, the application rate is five times the recommended rate

Table 3.11.3 Permanent seeding requirements

SEED MIX	FINE LAWN	COARSE LAWN	LOW MAINT.	NO MAINT.	PASTURE	SENSITIVE NATURAL AREAS	pH RANGE	DRAINAGE	SHADE TOLERANCE	PREFERRED PLANTING DATES			
										3/1 -5/15	5/16 -8/14	8/15 - 9/15	9/14 - 2/28
A			✓ 1				6.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
B				✓			5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
C	✓ 1						6.0 – 7.5	MOD. - WELL	FULL SUN	✓		✓	
D		✓ 1					6.0 – 7.5	MOD. - WELL	FULL SUN	✓		✓	
E				✓ 1			6.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
F			✓	✓	✓		5.5 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
G				✓	✓		5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
H			✓	✓ 1	✓		5.0 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
I			✓	✓ 1	✓		5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
J			✓	✓ 1	✓		4.0 – 8.0	MOD. - WELL	TOLERANT	✓	♦	✓	♦
K				✓			4.0 – 7.0	MOD. - WELL	FULL SUN	✓	♦	✓	♦
L				✓	✓		4.5 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
M			✓	✓	✓		5.0 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
N			✓	✓ 1	✓		5.0 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
O			✓	✓	✓		5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
P			✓	✓	✓		4.5 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
Q			✓	✓	✓		4.5 – 7.5	POOR - WELL	TOLERANT	✓	♦	✓	♦
R			✓	✓	✓		5.5 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
S			✓	✓	✓		4.5 – 7.5	POOR - WELL	FULL SUN	✓	♦	✓	♦
T					✓		5.5 – 7.5	POOR - WELL	FULL SUN	✓	♦	✓	♦
U					✓		6.5 – 8.0	MOD. - WELL	FULL SUN	✓	♦	✓	♦
V					✓		5.5 – 7.5	POOR - WELL	FULL SUN	✓	♦	✓	♦
W			✓	✓	✓		5.0 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
X					✓		5.5 – 7.5	POOR - WELL	FULL SUN	✓	♦	✓	♦
Y			✓	✓	✓		5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
Z			✓	✓	✓		5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
A-1					✓		4.5 – 7.5	MOD. - WELL	TOLERANT	✓	♦	✓	♦
A-2				✓	✓	✓	5.0 – 7.5	MOD. - WELL	FULL SUN	✓	♦	✓	♦
A-3				✓		✓	5.0 – 7.5	POOR - WELL	FULL SUN	✓	♦	✓	♦

♦ Nurse crop required – See Table B
1 Urban areas only

Seedbed Requirements

Vegetation should not be established on slopes that are unsuitable due to inappropriate soil texture, poor internal structure or internal drainage, volume of overland flow, or excessive steepness until measures have been taken to correct these problems.

To maintain a good stand of vegetation, the soil must meet certain minimum requirements as a growth medium.

The soil should have these characteristics:

1. Enough fine-grained material to maintain adequate moisture and nutrient supply.
2. Sufficient pore space to permit root penetration. A fine granular or crumb-like structure is favorable.
3. Sufficient depth of soil to provide an adequate root zone. The depth to rock or impermeable layers such as hardpans should be 12 inches or more, except on slopes steeper than 2:1 where the addition of soil is not feasible.
4. A favorable pH range for plant growth.
5. Freedom from toxic amounts of materials harmful to plant growth.
6. Freedom from excessive quantities of roots, branches, large stones, large clods of earth or trash of any kind.

Appropriate structural erosion control practices, such as berms, waterways, diversions, pipe slope drains, water bars or right of way diversions, needed to control overland flow to protect the seedbed should be installed prior to seeding.

Surfaces will be roughened in accordance with surface roughening section contained within this manual.

Soil Conditioners

In order to modify the texture, structure, or drainage characteristics of a soil, the following materials may be added to the soil:

1. Peat is a very costly conditioner, but works well. If added, it shall be sphagnum moss peat, hypnum moss peat, reed-sedge peat or peat humus, from freshwater sources.
2. Sand shall be clean and free of toxic materials. If this practice is considered, consult a professional authority to ensure that it is done properly.
3. Vermiculite shall be horticultural grade and free of toxic substances.
4. Manure, including poultry litter, in its composted form, is a viable soil conditioner. The use of manure should be based on site-specific recommendations offered by a professional in this field such as an agriculture extension agent or USDA employee.
5. Thoroughly rotted sawdust shall have six pounds of nitrogen added to each cubic yard and shall be free of stones, sticks, and toxic substances.
6. When composted, treated sewage sludge offers an alternative soil amendment. This practice should be thoroughly evaluated by a professional and used in accordance with any local, state, and federal regulations.

Lime and Fertilizer

Lime and fertilizer needs should be determined by soil tests. Soil tests may be performed by the WVU Extension Service soil testing laboratory or by a reputable commercial laboratory. Information concerning the WVU soil testing laboratory is available from county extension agents.

Under unusual conditions where it is not possible to obtain a soil test, the following soil amendments will be applied:

Lime

Two tons/acre (90 lbs./1,000 ft.^{2}) pulverized agricultural grade limestone.

Note: An agricultural grade of limestone should always be used except in inaccessible areas; lime may have to be applied separately in pelletized or liquid form.

Fertilizer

Mixed grasses and legumes: 1,000 lbs./acre nutrients (23 lbs./1,000 ft.^{2}) 10-20-10 or equivalent.

Legume stands only: 1,000 lbs./acre (23 lbs./ 1,000 ft.^{2}) 5-20-10 is preferred; however, 1,000 lbs./acre of 10-20-10 or equivalent may be used.

Grass stands only: 1,000 lbs./acre (23 lbs./1,000 ft.^{2})10-20-10 or equivalent nutrients.

Other fertilizer formulations, including slow-release sources of nitrogen (preferred from a water quality standpoint), may be used provided they can supply the same amounts and proportions of plant nutrients.

Lime and fertilizer shall be incorporated into the top 4 to 6 inches of the soil by disking or other means whenever possible. When applying lime and fertilizer with a hydroseeder, apply to a rough, loose surface.

Seeding

1. Appropriately labeled seed will be used for all permanent seeding whenever possible. Labeled seed is inspected by the West Virginia Department of Agriculture. The seed must be appropriately labeled or tagged as defined in the West Virginia Seed Law, Chapter 19 Article 16.
2. Legume seed should be inoculated appropriate to the species. Seed of the lespedezas, the clovers and crownvetch should be scarified to promote uniform germination.
3. Apply seed uniformly with a broadcast seeder, drill, culti-packer seeder or hydroseeder. See Seedbed Requirement above for seedbed preparation. Seeding depth should be a quarter to half inch.
4. To avoid poor germination rates as a result of seed damage during hydroseeding, it is recommended that if a machinery breakdown of 30

minutes to two hours occurs, 50 percent more seed be added to the tank, based on the proportion of the slurry remaining in the tank. Beyond two hours, a full rate of new seed may be necessary.

5. Surface roughening is particularly important when hydroseeding, as a roughened slope will provide some natural coverage for lime, fertilizer and seed.

Legume inoculants should be applied at five times the recommended rate when the inoculant is included in the hydroseeder slurry.

Mulching All permanent seeding must be mulched immediately upon completion of seed application. Refer to the mulching section contained within this manual.

Irrigation The newly seeded area should be supplied with adequate moisture. Supply water as seeded, especially late in the season, in abnormally hot or dry weather, or on adverse sites. Water application rates should be controlled to prevent excessive runoff. Inadequate amounts of water may be more harmful than no water by causing the seedlings roots to curve towards the surface of the ground looking for moisture.

Reseeding Inspect seeded areas for failure (less than 70 percent coverage) and make necessary repairs and reseeding within the same growing season, if possible.

a. If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results. If rills are large enough it may be necessary to regrade the rills out and reestablish a seedbed.
b. If a stand has less than 70 percent coverage, reevaluate choice of plant materials and quantities of lime and fertilizer. The soil must be tested to determine if acidity or nutrient imbalances are responsible. Reestablish the stand following seedbed preparation and seeding recommendations.

Fertilization Cool season grasses should be fertilized 90 days after planting to ensure proper stand and density. Warm season grasses should be fertilized 30 days after planting.

Apply maintenance levels of fertilizer as determined by soil test. In the absence of a soil test, fertilization should be as follows:

Cool Season Grasses

Apply 4 lbs. nitrogen, 1 lb. phosphorus, 2 lbs. potassium per 1,000 ft.^{2} per year. Seventy-five percent of the total requirements should be applied between September 1 and December 31. The balance should be applied prior to May 1 the following year. More than 1 lb. of soluble nitrogen per 1,000 ft.^{2} should not be applied at any one time.

Warm Season Grasses

Apply 4 to 5 lbs. nitrogen between May 1 and August 15 per 1,000 ft.^{2} per year. Phosphorus and Potassium should only be applied according to soil test.

Note: The use of slow-release fertilizer formulations for maintenance of turf is encouraged to reduce the number of applications and the impact on

groundwater.

Note: The permanent seeding section is not meant to be an all-inclusive list of possible seeding mixtures. There may be other purposes such as wildlife habitat or natural beauty that would require alternative mixtures. The DEP encourages the submission of enhanced vegetation plans for other purposes with your NPDES permit application.

NAVITUS ENERGY ENGINEERING
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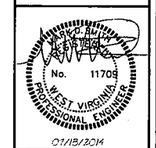

07/18/2014

THIS DOCUMENT WAS PREPARED BY:
NAVITUS ENGINEERING INC.
FOR: CNX GAS COMPANY, LLC

CONSTRUCTION DETAILS
MORRIS TANK SITE #1
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: N/A
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 14 OF 16

MATERIAL QUANTITIES
TANK PAD SITE: MORRIS

Item Description	Quantity	Unit	Unit Cost	Item Total
1.0 Clearing and Grubbing				
1.a Tree Clearing	13.6	AC	$	$
1.b. Mowing	0.7	AC	$	$
2.0 Compost Filter Sock				
2.a. 12" Compost Filter Sock		LF	$	$
2.b. 18" Compost Filter Sock	3,349	LF	$	$
2.c. 24" Compost Filter Sock	364	LF	$	$
2.d. 32" Compost Filter Sock	295	LF	$	$
2.e. Compost Sock Diversion	2,410	LF	$	$
2.f. Super Silt Fence	822	LF	$	$
3.0 Stone & Aggregate Surfacing			$	$
3.a. Pad 12" of 0"-6" Aggregate (Compacted to 10")*	6,712	TONS	$	$
3.b. Pad 4" of 3/4" Crusher Run (Compacted to 2")*	2,237	TONS	$	$
3.c. Access Road 12" of 0"-6" Aggregate (Compacted to 10")*	1,705	TONS	$	$
3.d. Access Road 4" of 3/4" Crusher Run (Compacted to 2")*	568	TONS	$	$
3.e. Geotextile	15,304	SY	$	$
3.f. Rock Level Spreader	0	TONS	$	$
4.0 Coconut Slope Matting	28,990	SY	$	$
5.0 Seed & Mulch	11.5	AC	$	$
6.0 Ditch Lining			$	$
6.a. Ditch Fabric	1,583	SY	$	$
6.b. R-3	264	TONS	$	$
7.0 CPP Culvert			$	$
7.a. 4"		LF	$	$
7.b. 15"	384	LF	$	$
7.c. 18"	264	LF	$	$
7.d. 24"	94	LF	$	$
7.e. 48"		LF	$	$
7.f. 60"		LF	$	$
7.g. Sump Drains		EA	$	$
8.0 Excavation				
8.a. Tank Pad (Cut w 10% Swell)	39,195	CY	$	$
8.b. Access Road "A"(Cut w 10% Swell)	8,815	CY	$	$
8.c. Topsoil (12")	9,569	CY	$	$
9.0 Ditch Length	1,636	LF	$	$
10.0 Rip Rap Aprons	205	TONS	$	$
11.0 Rip Rap Weir	0	TONS	$	$

*Gravel quantities shown have been increased by 10%

NOTE:

1. THE SQUARE YARDAGE FOR THE GEOTEXTILE FABRIC, COCONUT MATTING, AND THE LINER SYSTEM DO NOT ACCOUNT FOR MATERIAL OVERLAP AND WASTE.

2. SUB-GRADE RE-WORK AND TOE EXCAVATION VOLUMES ARE NOT INCLUDED WITHIN THIS SITE PLAN.

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07/15/2014

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MATERIAL QUANTITIES

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 50'
DESIGNED BY: JMM
FILE NO. 7982-T
SHEET 15 OF 16

RESERVED FOR GEOTECHNICAL NOTES AND DETAILS

MORRIS TANK SITE #1

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 07/18/2014
SCALE: 1" = 50'
DESIGNED BY: JMM
FILE NO. 7962-T
SHEET 16 OF 16