Commercial/Industrial Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit has been issued to **EQT Production Company**, 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: #15-344 OXF 44 Well Pad Modification

Date Approved: 04/10/2015 **Expires: N/A**

Issued to: EQT Production Company

POC: Locoa Corder
304-848-0066

Company Address: 115 Professional Place
Bridgeport, WV 26330

Project Address: Southwest District

Lat/Long: 39.135368N/80.820468W

Purpose of development: Well pad modification project. ***Project does not impact floodplain.***

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

Date: 04/10/2015

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

15-344

SLS

PROFESSIONAL ENERGY CONSULTANTS

A DIVISION OF SMITH LAND SURVEYING, INC.

March 20, 2015

FILED

2015 MAR 26 AM 11:43

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: EQT Production Company, OXF 44 Well Site
Doddridge County, WV, SLS Project No. 8226

Mr. Wriston,

On behalf of EQT Production Company, Smith Land Surveying, Inc. would like to notify you that the attached OXF 44 Site Plan Modification has been submitted to the WVDEP. The current site consists of an access road, well pad, and flow back pit. EQT is proposing to enlarge the existing well pad to aid in the development of 2 additional Marcellus Shale gas wells. The site entrance is located in Doddridge County, approximately 2.0 miles northwest of the junction of Co. Rt. 52/3 and 62/3. The entrance to the site is located at Latitude 39.135368, Longitude -80.820468 (NAD 83).

Based on the information presented on the site FIRM, this project is not located within FEMA Flood Zone. No fill shall be placed within the floodplain limits for this project. No other permitting is necessary for this project.

Included in the attachments are the following: cover letter, FEMA map with the site location, vicinity map, and site plans dated 1/14/15.

If you have any questions please feel free to contact me at (304) 462-5634 or Wes Wayne (Design Coordinator) with SLS at 304-904-9184 or wwayne@slssurveys.com, should you have any questions or comments.

Respectfully submitted,

C. Victor Moyers

C. VICTOR MOYERS
LICENSED
No. 849
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

C. Victor Moyers, P.S.

cc: Lacoa L. Corder, EQT Environmental Coordinator.

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

OXF 44 WELL SITE; FEMA MAP

NOTES
FEMA FIRM
MAP # 54017C0225C

SCALE
1 INCH = 2000-FEET

0' 2000' 4000' 6000'

SCALE: 1" = 2000'	DATE: 3-18-15	DRAWN BY: WAW	JOB #: 8226.

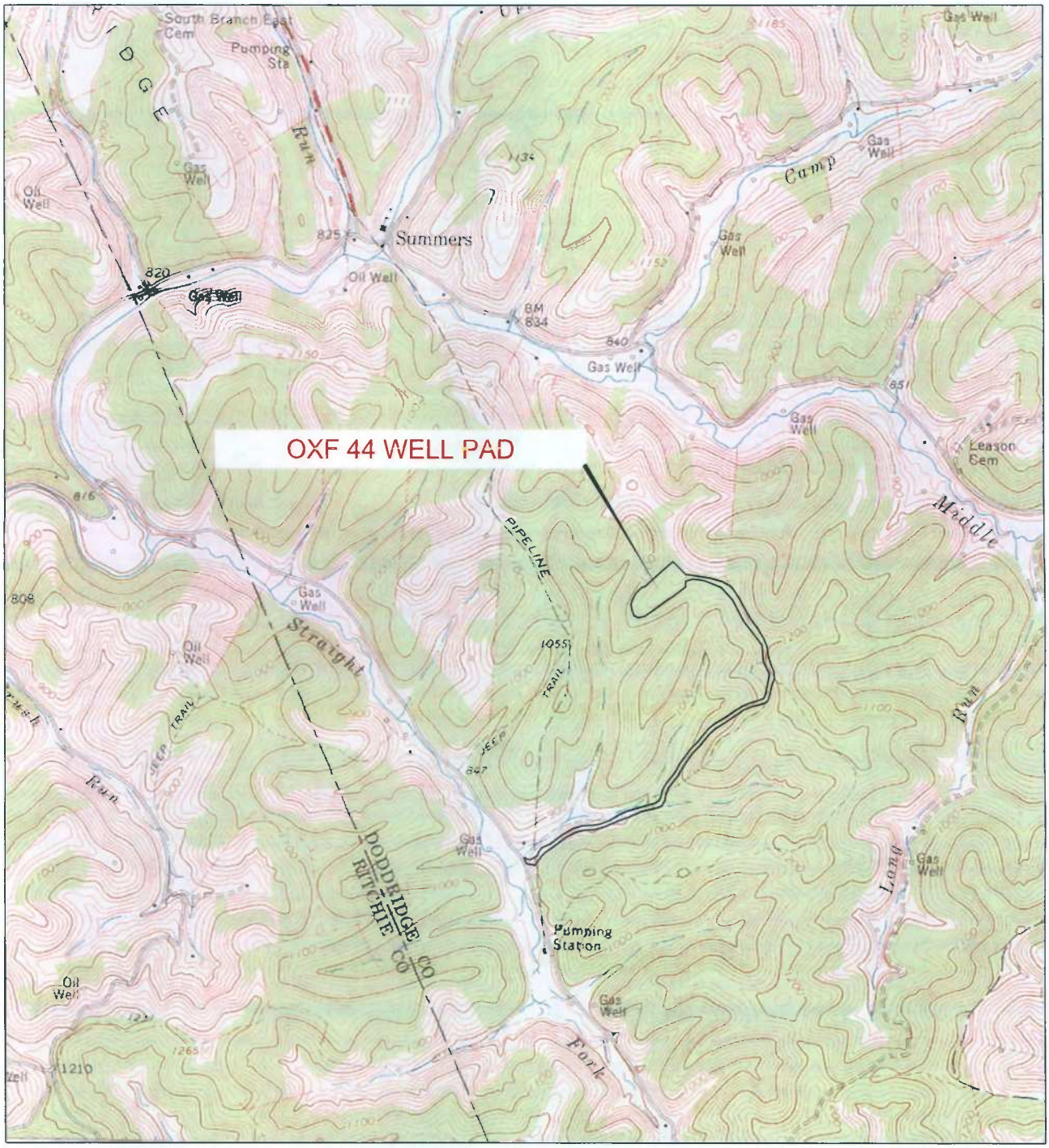
OXF 44 FEMA

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

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

EQT
Where energy meets innovation.

OXF 44 VICINITY MAP



N

SCALE
1 INCH = 2000-FEET

0' 2000' 4000' 6000'

NOTES

USGS OXFORD TOPO QUADRANGLE

SCALE: 1" = 2000'	
DATE: 3-18-15	
DRAWN BY: WAW	
JOB #: 8226	

OXF 44

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

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
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SURVEYORS
ENGINEERS
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Where energy meets innovation.

LEGAL ADVERTISEMENT:
Doddridge County
Floodplain Permit Application

Please take notice that on the 26th day of March, 2015 EQT Production Company filed an application for a Floodplain Permit to develop land located at or about: Southwest District 39.135368N/80.820468W Permit #15-344 OXF 44 Well Pad Expansion. (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 April 27, 2015.

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

4-7-2xb

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 #15-344

was published in said paper for 2 successive weeks beginning with the issue of April 7th 2015 and ending with the issue of April 14th 2015 and that said notice contains 210 WORD SPACE at 115 cents a word amounts to the sum of $24.15

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

$ 18.12

and each publication thereafter

$ 12.07 TOTAL

EDITOR

Virginia Nicholson

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 14th DAY OF April 2015

NOTARY PUBLIC

Laura J Stickel

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

The Doddridge Independent

The Doddridge Independent

PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

EQT Production Company
filed an application for a Floodplain Permit to develop land located at or about:
Southwest District
39.135368N/80.820468W
Permit #15-344 OXF 44 Well Pad Expansion
(Note: This project is not within the floodplain)

was published in The Doddridge Independent 2 times commencing on Friday, April 17, 2015 and Ending on Friday, April 24, 2015 at the request of:

Edwin Wriston, Doddridge County Floodplain Manager& Doddridge County Commission

Given under my hand this Friday, April 24, 2015

The publisher's fee for said publication is:

$ 25.27 1st Run/$ 18.95 Subsequent Runs

This Legal Ad Total: $ 44.22

Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on this date: 4/22/15

Notary Public in and for Doddridge County
My Commission expires on
The 17th day of May 2019

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
PAMELA R. STINESPRING
P. O. BOX 81
WEST UNION, WV 26456
My commission expires May 17, 2019

Legal Advertisement: 4/13 - 4/20
Doddridge County
Floodplain Permit Application

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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

EQT OXF 44 SITE PLAN MODIFICATION
EQT PRODUCTION COMPANY
(PROPOSED WELL NO. WV515939 (H6) AND WV515940 (H7))

SITUATE ON THE WATERS OF UNNAMED TRIBUTARIES TO STRAIGHT FORK IN SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WV

PROJECT INFORMATION

PROJECT NAME: EQT OXF 44

TAX PARCEL:
SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WV
TAX MAP 16

SURFACE OWNERS:

COASTAL FOREST RESOURCES
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TAX MAP 16 PARCEL 8.5
TOTAL PROPERTY AREA: 1.57 +/- ACRES
TOTAL DISTURBANCE AREA: 0.97 +/- ACRES

TAX MAP 16 PARCEL 8.3
TOTAL PROPERTY AREA: 3.51 +/- ACRES
TOTAL DISTURBANCE AREA: 0.55 +/- ACRES

TAX MAP 16 PARCEL 8.2
TOTAL PROPERTY AREA: 416.61 +/- ACRES
TOTAL DISTURBANCE AREA: 7.26 +/- ACRES

JIMMIE BURKE
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TAX MAP 16 PARCEL 8.1
TOTAL PROPERTY AREA: 9.68 +/- ACRES
TOTAL DISTURBANCE AREA: 0.04 +/- ACRES

ARDEN & CAROL COGAR
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TAX MAP 16 PARCEL 05
TOTAL PROPERTY AREA: 252.00 +/- ACRES
TOTAL DISTURBANCE AREA: 6.57 +/- ACRES

BETTY M. RYAN
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV
TAX MAP 16 PARCEL 6
TOTAL PROPERTY AREA: 217.00 +/- ACRES
TOTAL DISTURBANCE AREA: 0.05 +/- ACRES

TAX MAP 16 PARCEL 6.1
TOTAL PROPERTY AREA: 42.00 +/- ACRES
TOTAL DISTURBANCE AREA: 0.20 +/- ACRES

OIL AND GAS ROYALTY OWNER:
ADELE MCDOUGAL, ET AL (2000 +/- ACRES)
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

SITE LOCATION:
THE EQT OXF 44 SITE ENTRANCE IS LOCATED 2.0 MI +/- NORTHWEST OF THE JUNCTION OF CR 52/3 AND CR 62/3. THE WELL PAD IS LOCATED 3.2 MILES +/- NORTH OF THE SAME JUNCTION.

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

NORTH

LOCATION COORDINATES

EQT OXF 44 WELL PAD CENTER
LATITUDE: 39.145367 LONGITUDE: 80.814023 (NAD 83)

EQT OXF 44 ASSOCIATED FLOWBACK PIT CENTER
LATITUDE: 39.144800 LONGITUDE: 80.814907 (NAD 83)

EQT OXF 44 ACCESS ROAD AT CR 52/3
LATITUDE: 39.135368 LONGITUDE: 80.820468 (NAD 83)

GENERAL DESCRIPTION

THE WELL PAD, ACCESS ROAD, ASSOCIATED FLOWBACK PIT, AND ASSOCIATED IMPOUNDMENT ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

SITE DISTURBANCE COMPUTATIONS

WELL PAD AREA = 6.2 +/- ACRES
ACCESS ROAD = 9.4 +/- ACRES
TOTAL SITE DISTURBANCE AREA = 15.6 +/- ACRES

ENTRANCE PERMIT

EQT PRODUCTION COMPANY 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 NOTED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1433991057. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

ENVIRONMENTAL NOTES

A WETLAND DELINEATION WAS PERFORMED BY POTESTA & ASSOCIATES ON 4/4/2011, 9/3/2014, 9/17/2014, AND 11/20/2014 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 DECEMBER 8TH, 2014 REPORT FOR OXF 44 PREPARED BY POTESTA & ASSOCIATES, INC., 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 AFORMENTIONED 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 HAS NOT BEEN PERFORMED AS OF 11/14/14. THE ENGINEER AND SURVEYOR ARE NOT RESPONSIBLE FOR UNFORSEEN SUBSURFACE IRREGULARITIES CAUSING ADDITIONAL WORK OR ADDITIONAL CONSTRUCTION MEASURES REQUIRED BEYOND THOSE STANDARD PRACTICES SHOWN ON THIS PLAN AS A RESULT OF ANY OTHER GEOTECHNICAL COMPLICATIONS ENCOUNTERED DURING CONSTRUCTION.

OXFORD QUADRANGLE
WEST VIRGINIA
7.5 MINUTE SERIES

RESTRICTIONS NOTES

1. THERE ARE INTERMITTENT/EPHEMERAL/PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE PROJECT LOD. THERE ARE WETLANDS WITHIN 100 FEET OF THE LOD.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE PAD AND LOD.
4. THERE ARE NO KNOWN EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED. STANTEC AND SMITH LAND SURVEYING ARE NOT RESPONSIBLE FOR ANY EXISTING WATER WELL OR DEVELOPED SPRING DISCOVERED DURING CONSTRUCTION.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE PAD.

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

LEGEND

Existing	Symbol	Proposed	Symbol
EX. INDEX CONTOUR	1550	PROP. INDEX CONTOUR	1550
EX. INTERMEDIATE CONTOUR		PROP. INTERMEDIATE CONTOUR	
EX. BOUNDARY LINE		PROP. CUT LINE	C
EX. EDGE OF ROAD PAVEMENT		PROP. FILL LINE	F
EX. APPROVED LIMIT OF DISTURBANCE		PROP. LIMITS OF DISTURBANCE	
EX. GUARDRAIL		ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION	
EX. FENCELINE	X	PROP. WELL HEAD	
EX. GATE		PROP. CONTAINMENT BERM	
EX. OVERHEAD UTILITY	E	PROP. ROAD CENTERLINE	
EX. OVERHEAD UTILITY R/W		PROP. CULVERT	
EX. UTILITY POLE		PROP. RIP-RAP OUTLET PROTECTION	
EX. GUY WIRE		PROP. COMPOST FILTERSOCK	CF
EX. TELEPHONE LINE	T	PROP. ROCK CONSTRUCTION ENTRANCE	
EX. GASLINE	G	X-SECTION GRID INDEX	
EX. GASLINE R/W		X-SECTION GRID INTERMEDIATE	
EX. WATERLINE	W	X-SECTION PROPOSED GRADE	
EX. WATER WELL		X-SECTION EXISTING GRADE	
EX. GAS WELL			
EX. TREELINE			
EX. REFERENCE TREE			
EX. DELINEATED STREAM			
EX. DELINEATED WETLAND			
EX. BUILDING			

OPERATOR
EQT PRODUCTION COMPANY
OPERATOR ID: 306686
P.O. BOX 280
BRIDGEPORT, WV 26630
PHONE: (304) 348-3870

ENGINEER
STANTEC CONSULTING,INC.
111 ELKINS STREET
FAIRMONT, WV 26554
PHONE: (304) 367-9401

SURVEYOR
SMITH LAND SURVEYING, INC.
12 VANHORN DRIVE
PO BOX 150
GLENVILLE, WV 26351
PHONE: (304) 462-5634

Stantec
111 ELKINS STREET
FAIRMONT, WV 26554
PHONE: 304.367.9401

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

THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

TITLE SHEET
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY:RJH
FILE NO.:SLS-8226
SHEET 1 OF 30
REV:

CONSTRUCTION NOTES

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY STANTEC AT (304) 367-9401 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 ENSURE 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 EXCAVATING OR DEMOLITION.

12. THE CONTRACTOR IS TO CONTACT THE OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION. THE ENGINEER OR SURVEYOR IS NOT RESPONSIBLE FOR ANY BURIED WATER WELLS, SPRINGS OR ANY OTHER FEATURES UNCOVERED DURING CONSTRUCTION.

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

14. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.

MAINTENANCE PROGRAM

1. BMPS WILL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH MEASUREABLE RAINFALL EVENT DURING THE ACTIVE CONSTRUCTION PHASE OF THE PROJECT.

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

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. SEDIMENT SHOULD BE REMOVED FROM COMPOST FILTER SOCK WHERE ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FILTER SOCK. REPLACE SECTIONS OF FAILED FILTER SOCK IMMEDIATELY. REMOVE ENTIRE FILTER SOCK UPON COMPLETION OF PROJECT AND ESTABLISHMENT OF VEGETATIVE GROWTH.

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.

CONSTRUCTION SEQUENCE

THE DEVELOPMENT OF THE 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 EFFECTIVELY 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 OIL AND GAS SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1. HOLD 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 DRAWING AND PROVIDE ANY REQUESTED GUIDANCE.

2. STAKE THE LIMITS OF CONSTRUCTION.

3. INSTALL THE STONE CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.

4. INSTALL ALL BMPS NECESSARY TO BEGIN GRADING OF THE SITE AS SHOWN ON THE PLANS AND DETAILS.

5. UTILIZE THE EXISTING ACCESS ROAD TO ACCESS THE PROJECT SITE. UPGRADE THE EXISTING ACCESS ROAD WHERE NECESSARY AS DIRECTED BY EQT PRODUCTION COMPANY OR AN AUTHORIZED REPRESENTATIVE.

6. CLEAR AND GRUB THE WELL PAD EXPANSION AREA IF NECESSARY. 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 ANY NECESSARY SEDIMENT CONTROLS. TREES SIX INCHES IN DIAMETER AND LARGER SHALL BE CUT AND LOGS STACKED. SMALLER TREES, BRUSH, AND STUMPS SHALL BE CUT AND/OR GRUBBED AND WINDROWED IN APPROPRIATE AREAS FOR USE AS SEDIMENT BARRIERS AT WATER DRAINAGE OUTLETS, WINDROWED BELOW THE WELL SITE, USED FOR WILDLIFE HABITAT, BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM THE SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY DEP.

7. STRIP THE TOPSOIL FROM THE WELL PAD EXPANSION AREAS IF NECESSARY. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED ON SITE AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.

8. CONSTRUCT THE EXPANDED WELL PAD AND CONTAINMENT BERM AND ACCESS ROAD TO THE EXISTING FLOWBACK PIT. AS FILL SLOPES ARE CONSTRUCTED, INSTALL SLOPE INTERRUPTION COMPOST FILTER SOCK AS LABELED ON THE PLANS AND SHOWN ON THE DETAILS.

9. FINALIZE GRADING OF THE WELL PAD AND IMMEDIATELY STABILIZE THE OUTER AREAS OF THE WELL PAD. THE WELL PAD SHALL BE STABILIZED WITH GEOTEXTILE FABRIC AND STONE. STABILIZE ALL SIDE SLOPES WITH COCONUT EROSION CONTROL BLANKETS. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL BE INCLUDED IN 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.

10. 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 BMPS AS DEEMED NECESSARY. THESE INSPECTIONS SHALL CONTINUE DURING THE DURATION OF THE PROJECT AND SUBSEQUENT SITE RECLAMATION.

11. COMMENCE THE DRILLING ACTIVITY.

12. ONCE DISTURBED AREAS HAVE BEEN RE-VEGETATED AND STABILIZED FOLLOWING RECLAMATION, THE TEMPORARY BMPS 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 DEFFICIENT 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.

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(304) 462-5634
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RICHARD L. GAINES
REGISTERED
17220
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

GENERAL NOTES
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 2 OF 30
REV:

EQT OXF 44 WELL SITE EARTHWORK SUMMARY						
DESCRIPTION	CUT (CY)	FILL (CY)	SPOIL (CY)	BORROW (CY)	MAX SLOPE (%)	LENGTH OF SLOPE (FT)
WELL PAD	4,752	8,478	0	3,726	N/A	N/A
ASSOCIATED PIT	0	0	0	0	N/A	N/A
EXISTING ASSOCIATED IMPOUNDMENT	0	0	0	0	N/A	N/A
EXISTING ACCESS ROAD	0	0	0	0	N/A	N/A
STRIPPED TOPSOIL (0")	0	0	0	0	N/A	N/A
TOTAL	4,752	8,478	0	3,726		
TOTAL REQUIRED STOCKPILE VOLUME	0					
TOTAL AVAILABLE STOCKPILE VOLUME	0					
BORROW MATERIAL	3,726					

NOTES:
1. IT IS ASSUMED NO TOPSOIL WILL BE STRIPPED SINCE THIS IS AN EXISTING SITE.
2. THE EARTHWORK QUANTITIES PROVIDED ARE AN ESTIMATE FOR CONSIDERATION. THE QUANTITIES SHOWN ARE CALCULATED USING A 1:1 CUT/SWELL AND FILL/SHRINK FACTOR. THE QUANTITIES SHOWN MAY BE GREATER OR LESSER THAN ACTUALLY EXCAVATED. THE ENGINEER IS NOT RESPONSIBLE FOR VARIANCES FROM THE ESTIMATED QUANTITIES AND DOES NOT CERTIFY TO THEIR ACCURACY.

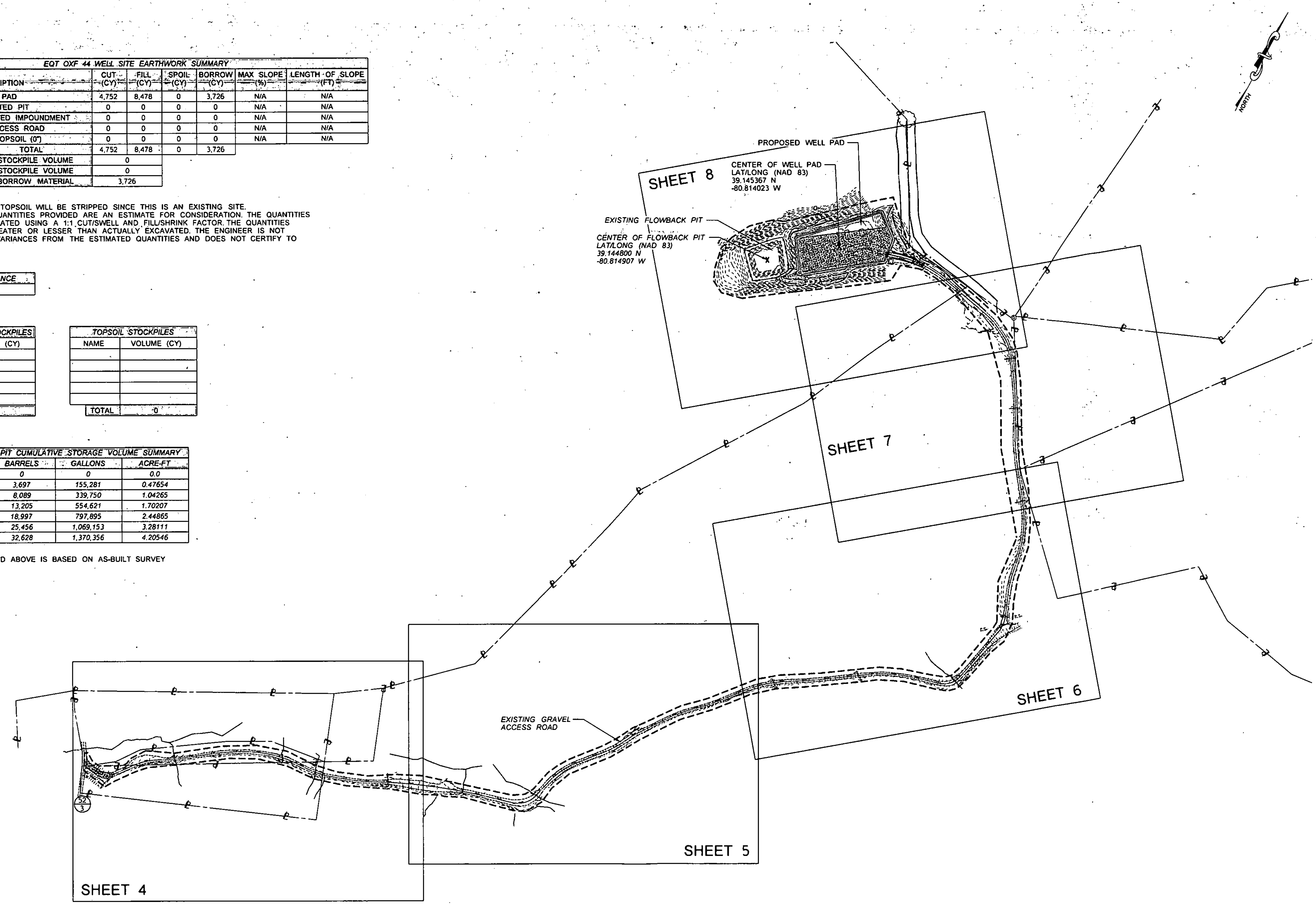
LIMIT OF DISTURBANCE
15.6 AC

EXCESS MATERIAL STOCKPILES	
NAME	VOLUME (CY)
TOTAL	0

TOPSOIL STOCKPILES	
NAME	VOLUME (CY)
TOTAL	0

EXISTING FLOWBACK PIT CUMULATIVE STORAGE VOLUME SUMMARY			
ELEVATION	BARRELS	GALLONS	ACRE-FT
1140.00	0	0	0.0
1142.00	3,697	155,281	0.47654
1144.00	8,089	339,750	1.04265
1146.00	13,205	554,621	1.70207
1148.00	18,997	797,895	2.44865
1150.00	25,456	1,069,153	3.28111
1152.00	32,628	1,370,356	4.20546

NOTE:
VOLUME DATA PROVIDED ABOVE IS BASED ON AS-BUILT SURVEY



0' 200' 400' 600'
HORIZONTAL SCALE

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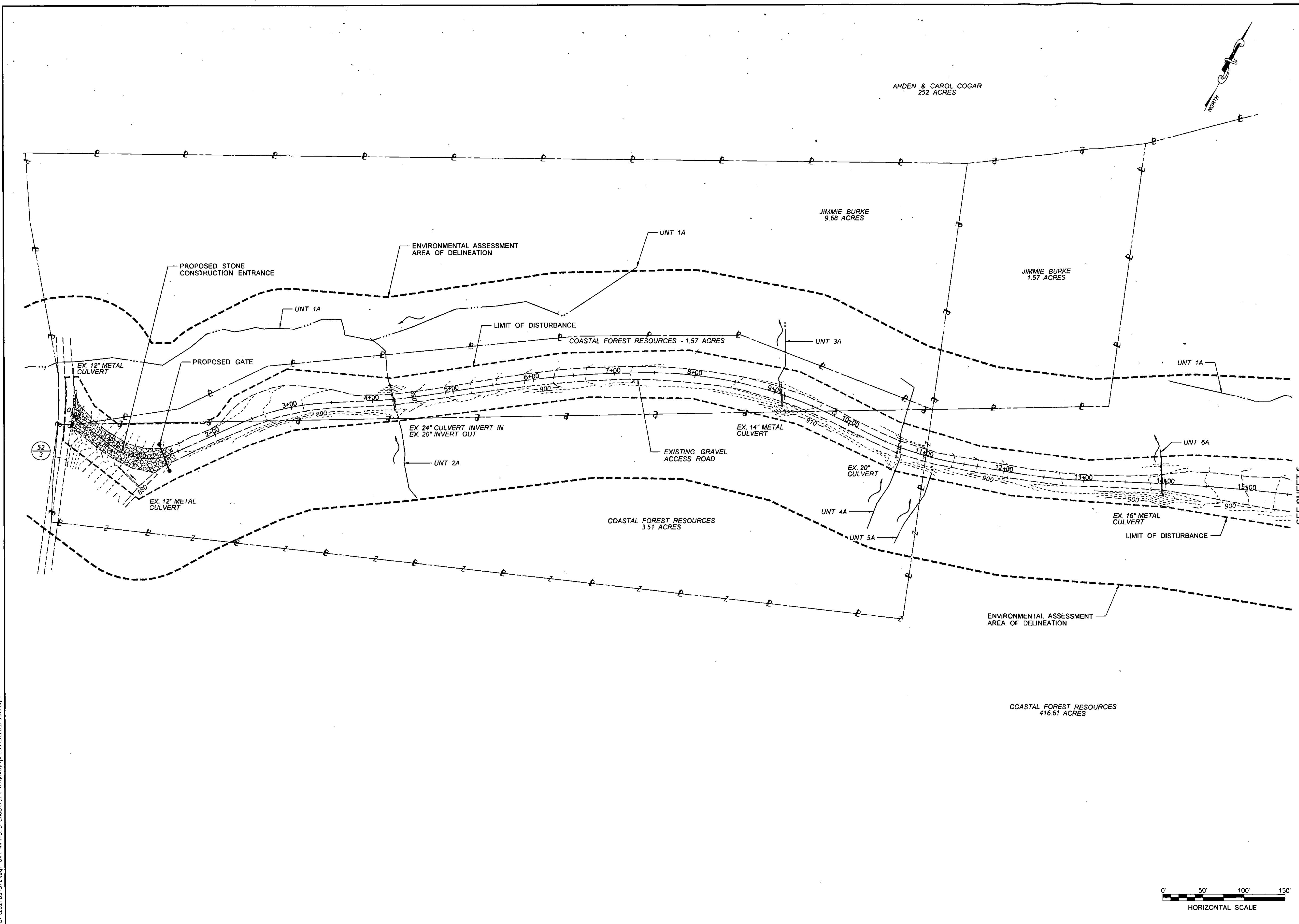
OVERAL PLAN SHEET INDEX
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 3 OF 30
REV:


NORTH
ARDEN & CAROL COGAR
252 ACRES
JIMMIE BURKE
9.68 ACRES
JIMMIE BURKE
1.57 ACRES
UNT 1A
ENVIRONMENTAL ASSESSMENT
AREA OF DELINEATION
PROPOSED STONE
CONSTRUCTION ENTRANCE
UNT 1A
LIMIT OF DISTURBANCE
COASTAL FOREST RESOURCES - 1.57 ACRES
UNT 3A
UNT 1A
EX. 12" METAL
CULVERT
PROPOSED GATE
EX. 24" CULVERT INVERT IN
EX. 20" INVERT OUT
EX. 14" METAL
CULVERT
EXISTING GRAVEL
ACCESS ROAD
UNT 6A
UNT 2A
EX. 20"
CULVERT
EX. 12" METAL
CULVERT
UNT 4A
EX. 16" METAL
CULVERT
LIMIT OF DISTURBANCE
SEE SHEET 5
COASTAL FOREST RESOURCES
3.51 ACRES
UNT 5A
ENVIRONMENTAL ASSESSMENT
AREA OF DELINEATION
COASTAL FOREST RESOURCES
416.61 ACRES
52
3
0' 50' 100' 150'
HORIZONTAL SCALE

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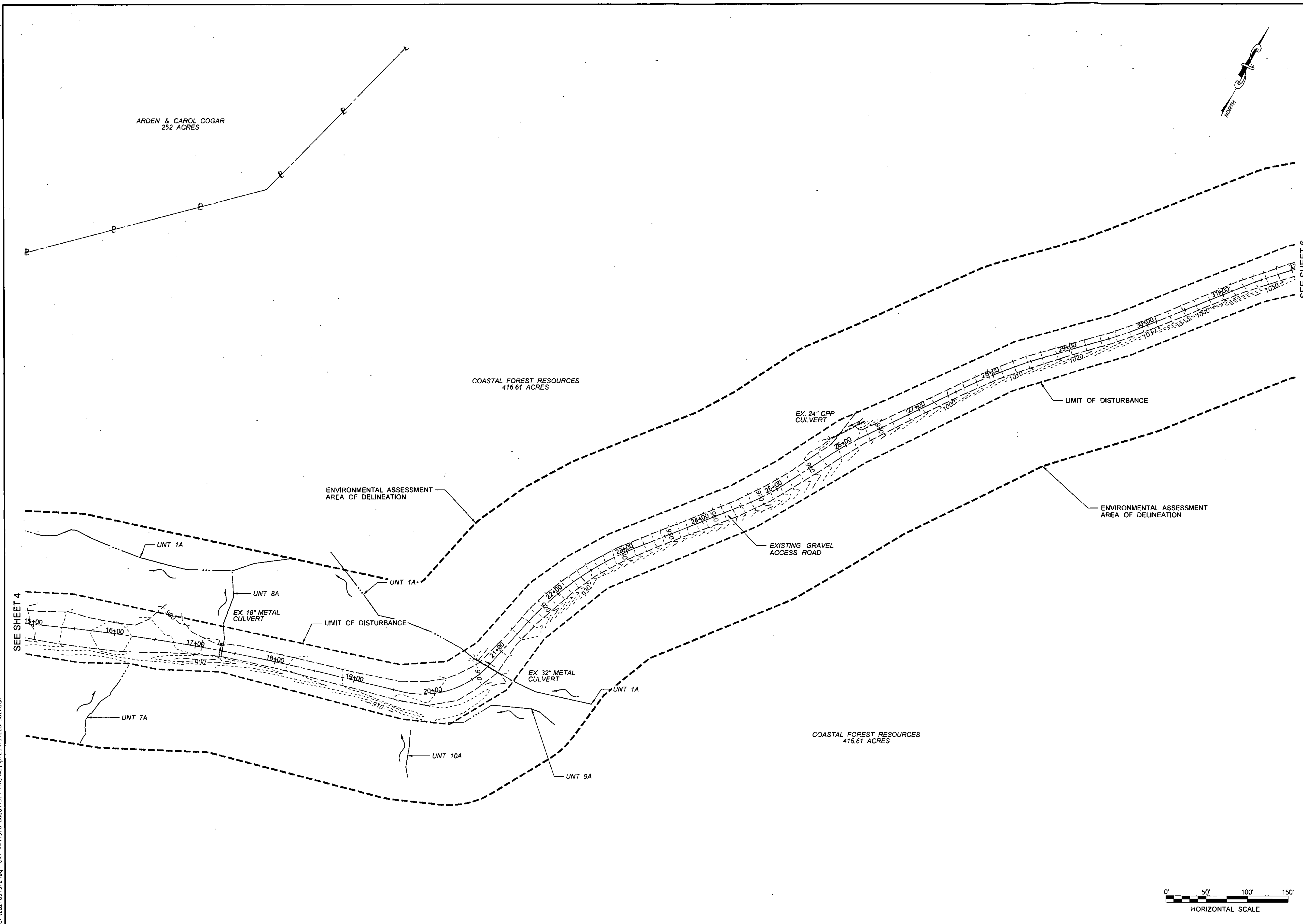
EXISTING ACCESS ROAD

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 4 OF 30
REV:


ARDEN & CAROL COGAR
252 ACRES
NORTH
COASTAL FOREST RESOURCES
416.61 ACRES
SEE SHEET 6
SEE SHEET 4
LIMIT OF DISTURBANCE
EX. 24" CPP
CULVERT
ENVIRONMENTAL ASSESSMENT
AREA OF DELINEATION
EXISTING GRAVEL
ACCESS ROAD
UNT 1A
UNT 8A
EX. 18" METAL
CULVERT
UNT 7A
EX. 32" METAL
CULVERT
UNT 10A
UNT 9A
COASTAL FOREST RESOURCES
416.61 ACRES
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
0' 50' 100' 150'
HORIZONTAL SCALE

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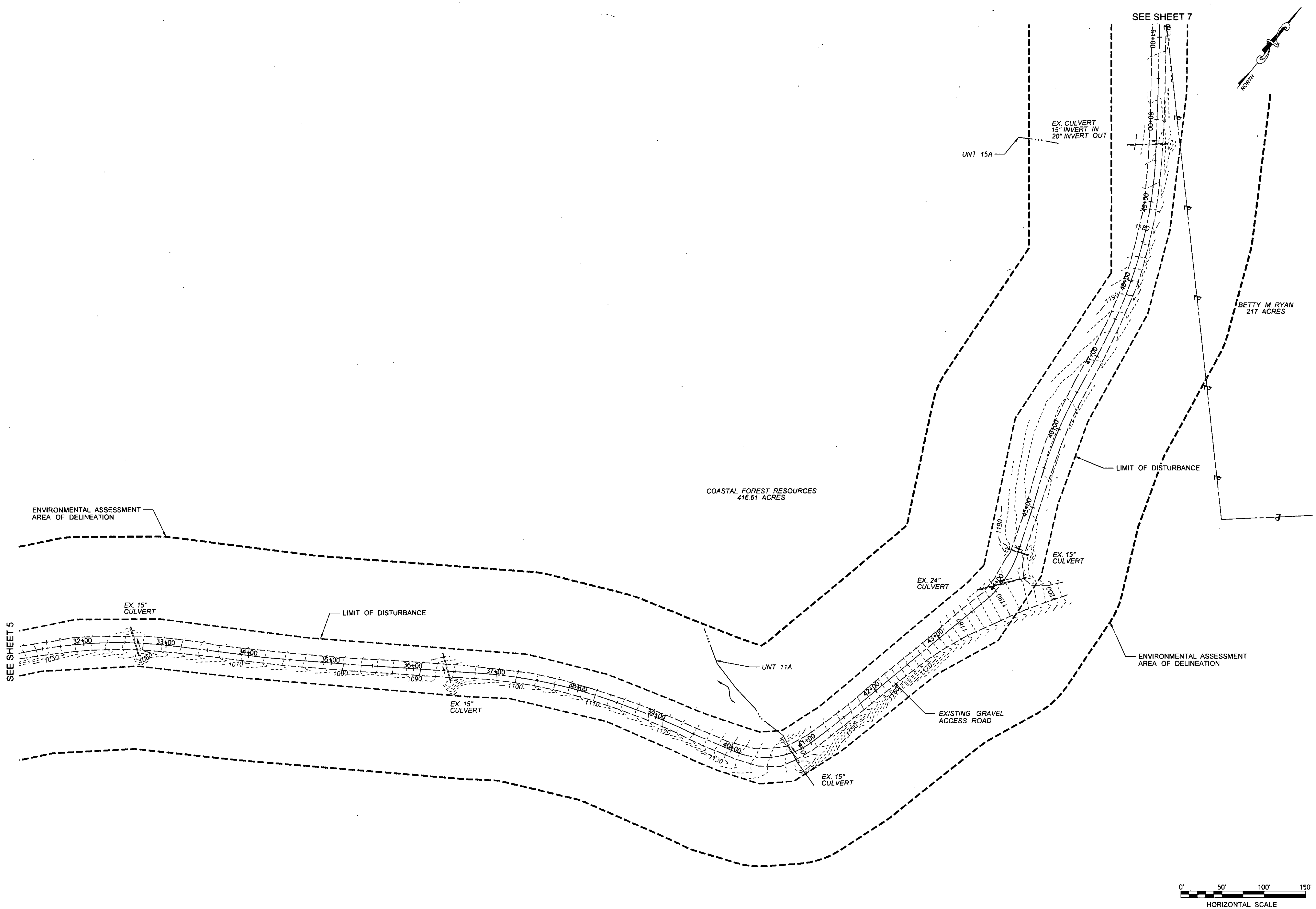
FOR:
EQT PRODUCTION COMPANY

EXISTING ACCESS ROAD
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY:RJH
FILE NO.:SLS-8226
SHEET 5 OF 30
REV:


SEE SHEET 7
NORTH
EX. CULVERT 15" INVERT IN 20" INVERT OUT
UNT 15A
BETTY M. RYAN 217 ACRES
LIMIT OF DISTURBANCE
COASTAL FOREST RESOURCES 416.61 ACRES
ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
EX. 15" CULVERT
EX. 24" CULVERT
LIMIT OF DISTURBANCE
SEE SHEET 5
EX. 15" CULVERT
EX. 15" CULVERT
UNT 11A
EXISTING GRAVEL ACCESS ROAD
EX. 15" CULVERT
ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
0' 50' 100' 150'
HORIZONTAL SCALE

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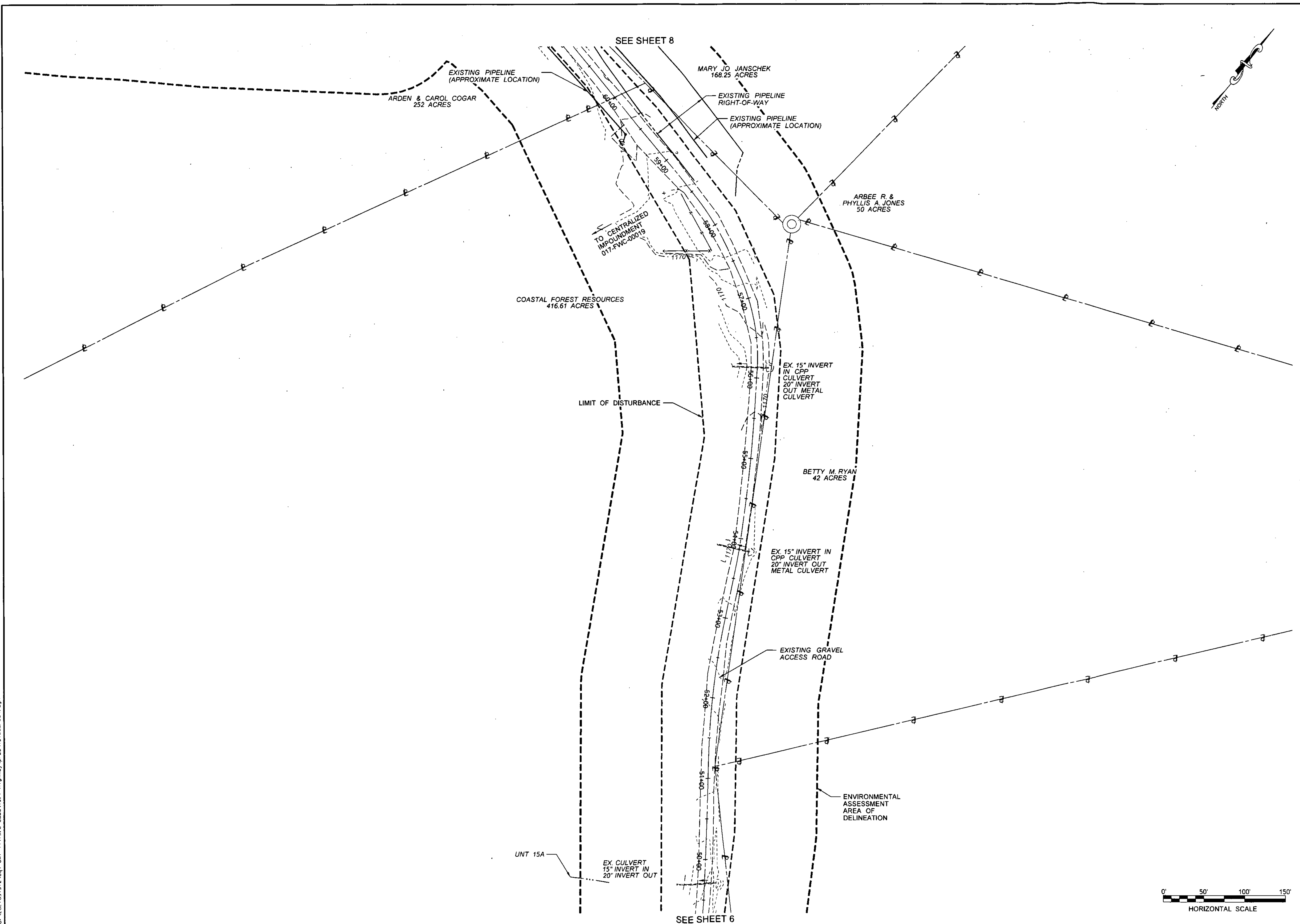
EXISTING ACCESS ROAD
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015	
SCALE: AS SHOWN	
DESIGNED BY: RJH	
FILE NO.: SLS-8226	
SHEET	6 OF 30
REV:	



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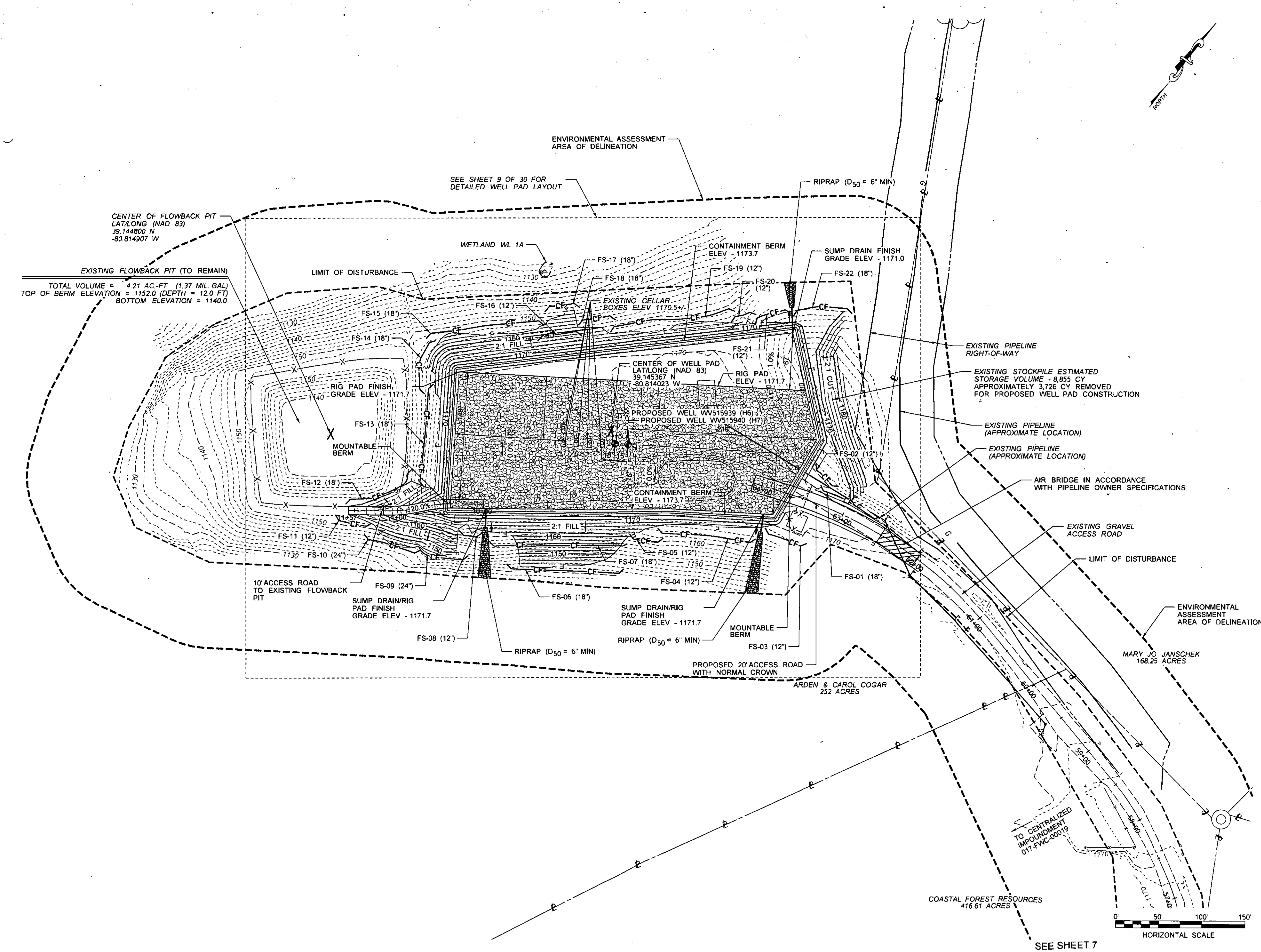
EX. ACCESS ROAD AND COMPLETION PIT
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 7 OF 30
REV:

Energy_Legacy
Color_Oblock.tbl
OILGAS_FullSize_PDF.plt

1/14/2015
WORKSPACE: DOT_2006 (SURVEY FEET)
u:\202705137\2\eqt oxf 44\13.0 cadd\13.1 highway\prES\1372esPS04.dgn



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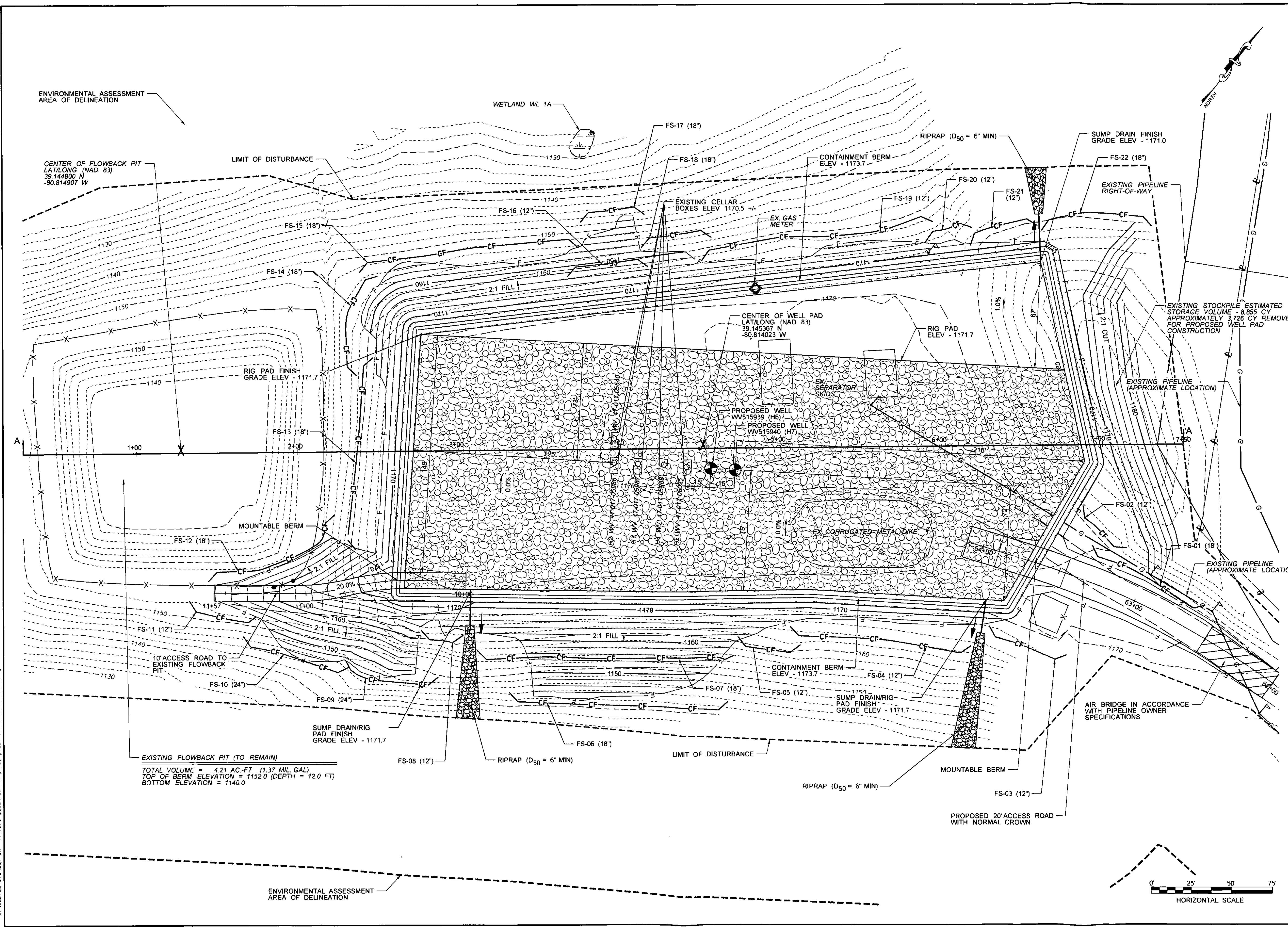
WELL PAD AND EXISTING FLOWBACK PIT LAYOUT
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 8 OF 30
REV:


ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
WETLAND WL 1A
CENTER OF FLOWBACK PIT LAT/LONG (NAD 83) 39.144800 N -80.814907 W
LIMIT OF DISTURBANCE
FS-17 (18")
FS-18 (18")
RIPRAP (D50 = 6" MIN)
SUMP DRAIN FINISH GRADE ELEV - 1171.0
FS-22 (18")
CONTAINMENT BERM ELEV - 1173.7
EXISTING PIPELINE RIGHT-OF-WAY
FS-20 (12")
FS-21 (12")
FS-19 (12")
EXISTING CELLAR BOXES ELEV 1170.5 +/-
EX. GAS METER
FS-16 (12")
FS-15 (18")
FS-14 (18")
2:1 FILL
CENTER OF WELL PAD LAT/LONG (NAD 83) 39.145367 N -80.814023 W
RIG PAD ELEV - 1171.7
EXISTING STOCKPILE ESTIMATED STORAGE VOLUME - 8,855 CY APPROXIMATELY 3,726 CY REMOVED FOR PROPOSED WELL PAD CONSTRUCTION
2:1 CUT
RIG PAD FINISH GRADE ELEV - 1171.7
EX. SEPARATOR SKIDS
EXISTING PIPELINE (APPROXIMATE LOCATION)
PROPOSED WELL WV515939 (H6)
PROPOSED WELL WV515940 (H7)
FS-13 (18")
MOUNTABLE BERM
EX. CORRUGATED METAL DIKE
FS-02 (12")
FS-12 (18")
FS-01 (18")
EXISTING PIPELINE (APPROXIMATE LOCATION)
FS-11 (12")
10' ACCESS ROAD TO EXISTING FLOWBACK PIT
FS-10 (24")
FS-09 (24")
CONTAINMENT BERM ELEV - 1173.7
FS-04 (12")
FS-07 (18")
FS-05 (12")
SUMP DRAIN/RIG PAD FINISH GRADE ELEV - 1171.7
AIR BRIDGE IN ACCORDANCE WITH PIPELINE OWNER SPECIFICATIONS
SUMP DRAIN/RIG PAD FINISH GRADE ELEV - 1171.7
FS-06 (18")
LIMIT OF DISTURBANCE
EXISTING FLOWBACK PIT (TO REMAIN)
TOTAL VOLUME = 4.21 AC.-FT (1.37 MIL GAL)
TOP OF BERM ELEVATION = 1152.0 (DEPTH = 12.0 FT)
BOTTOM ELEVATION = 1140.0
FS-08 (12")
RIPRAP (D50 = 6" MIN)
MOUNTABLE BERM
RIPRAP (D50 = 6" MIN)
FS-03 (12")
PROPOSED 20' ACCESS ROAD WITH NORMAL CROWN
ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
NORTH
0' 25' 50' 75'
HORIZONTAL SCALE

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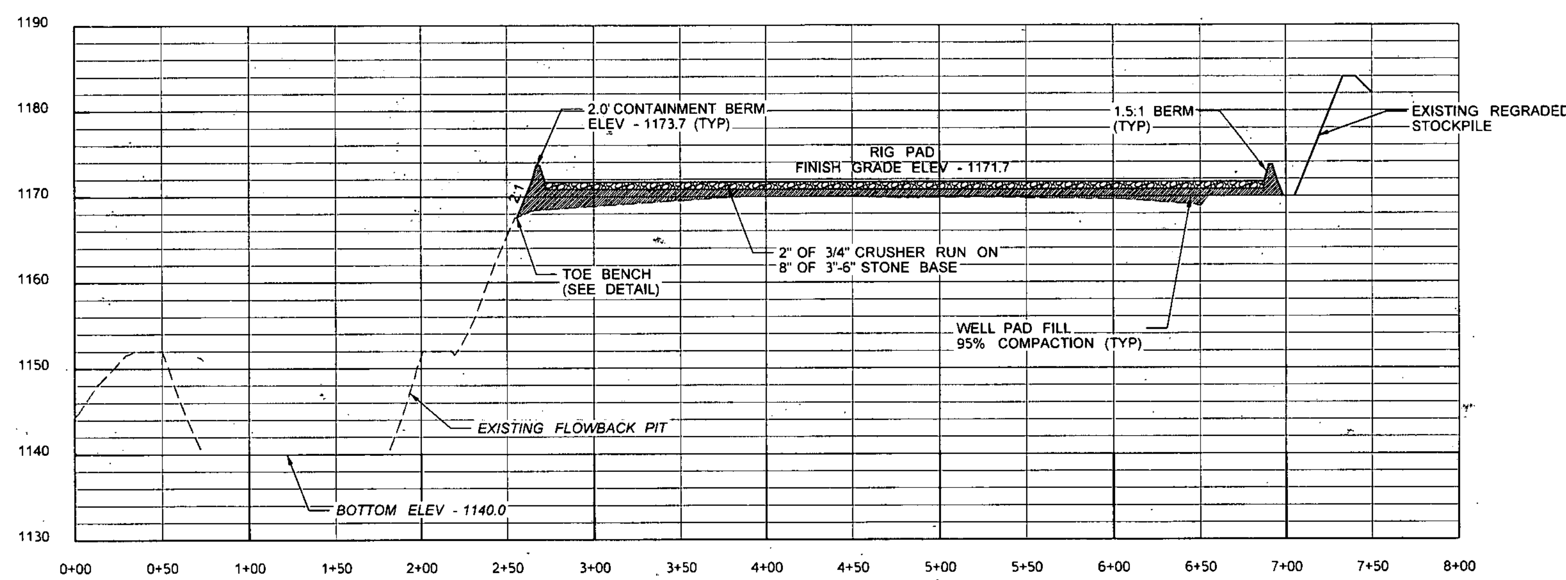
THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

DETAILED WELL PAD LAYOUT
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015	
SCALE: AS SHOWN	
DESIGNED BY: RJH	
FILE NO.: SLS-8226	
SHEET 9 OF 30	
REV:	



WELL PAD SECTION A-A

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - - EXISTING GRADE
——— PROPOSED GRADE

0' 50' 100' 150'
HORIZONTAL SCALE

0' 10' 20' 30'
VERTICAL SCALE

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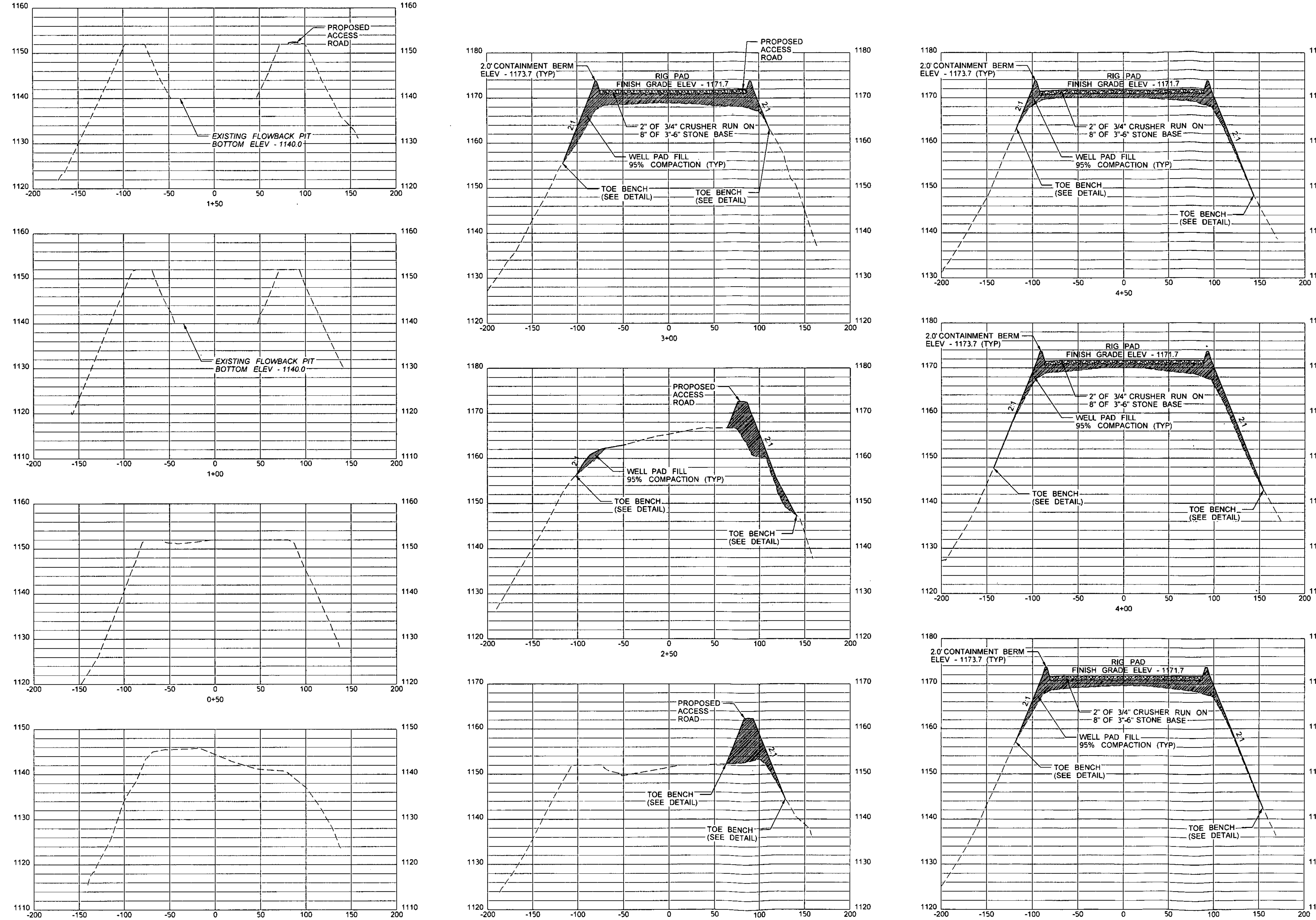
WELL PAD SECTION A-A

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO: SLS-8226
SHEET 10 OF 30
REV:



NOTE:

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WELL PAD CROSS SECTIONS ALONG SECTION LINE A-A

LEGEND

- - - - - EXISTING GRADE
——— PROPOSED GRADE

HORIZONTAL SCALE: 0' 50' 100' 150'

VERTICAL SCALE: 0' 10' 20' 30'

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WELL PAD CROSS SECTIONS ALONG SECTION LINE A-A

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
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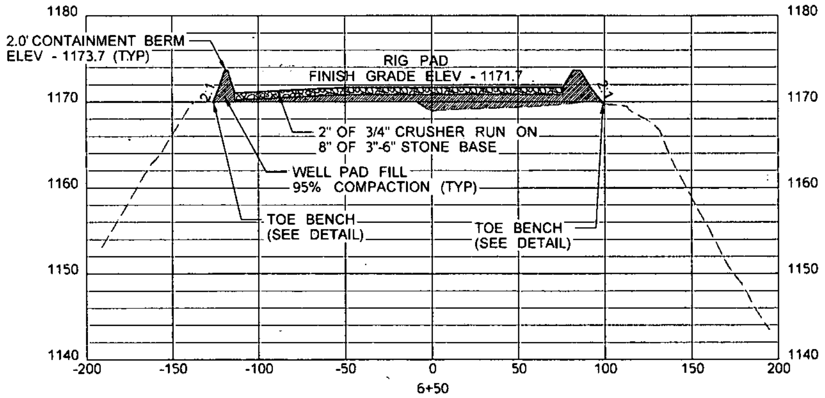
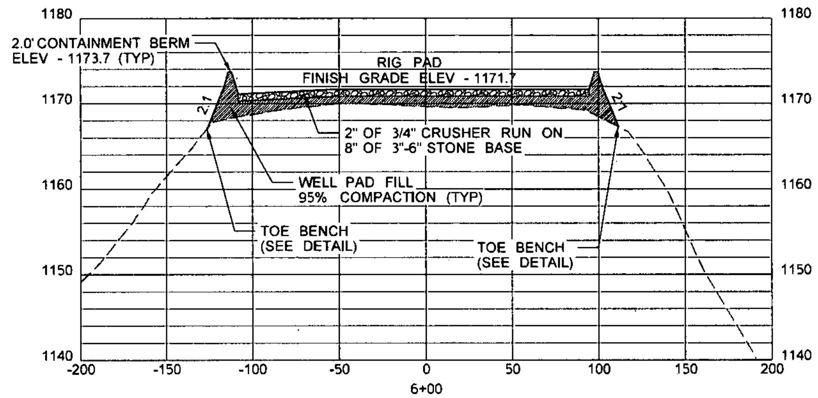
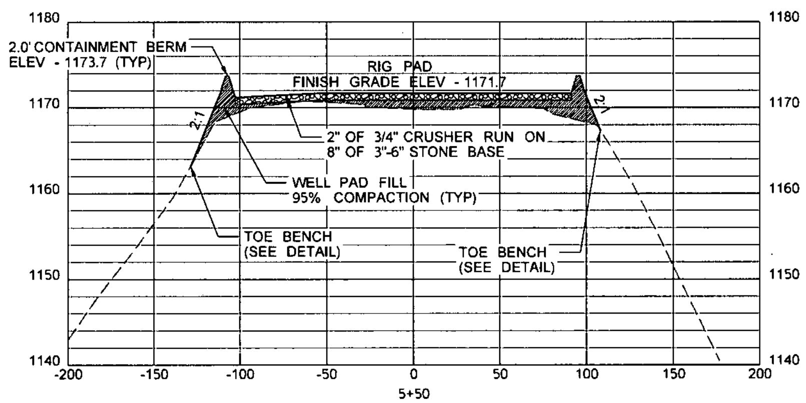
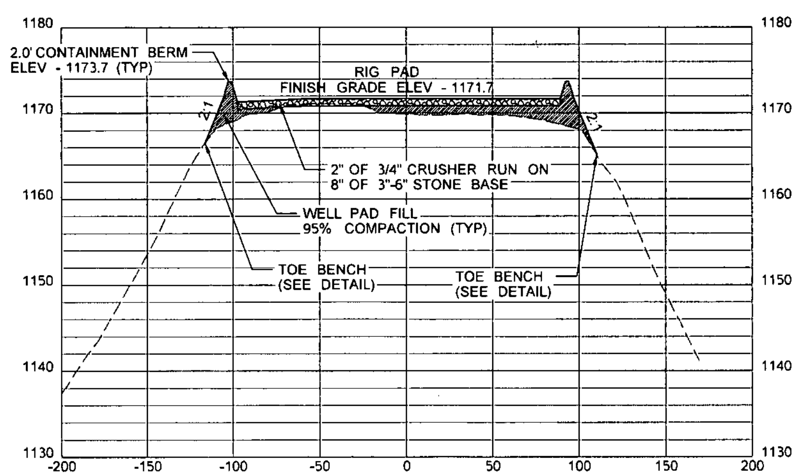
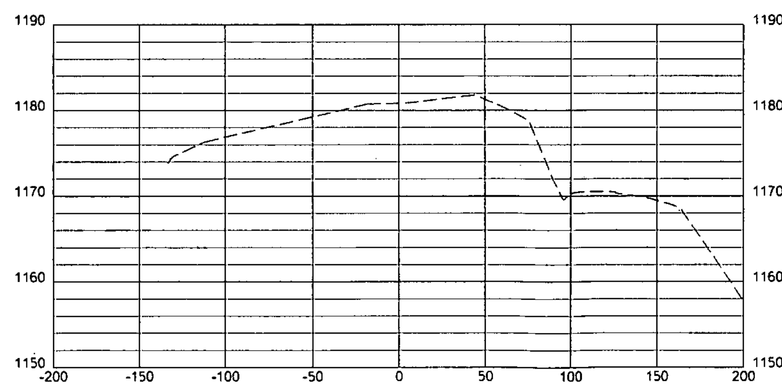
SHEET 11 OF 30
REV:

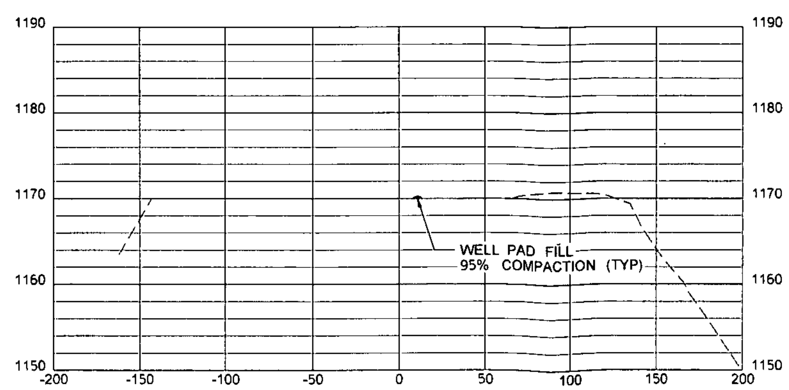












WELL PAD CROSS SECTIONS ALONG SECTION LINE A-A

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - - EXISTING GRADE
——— PROPOSED GRADE

HORIZONTAL SCALE: 0' 50' 100' 150'

VERTICAL SCALE: 0' 10' 20' 30'

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RICHARD L. GAINES — REGISTERED 17220 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER

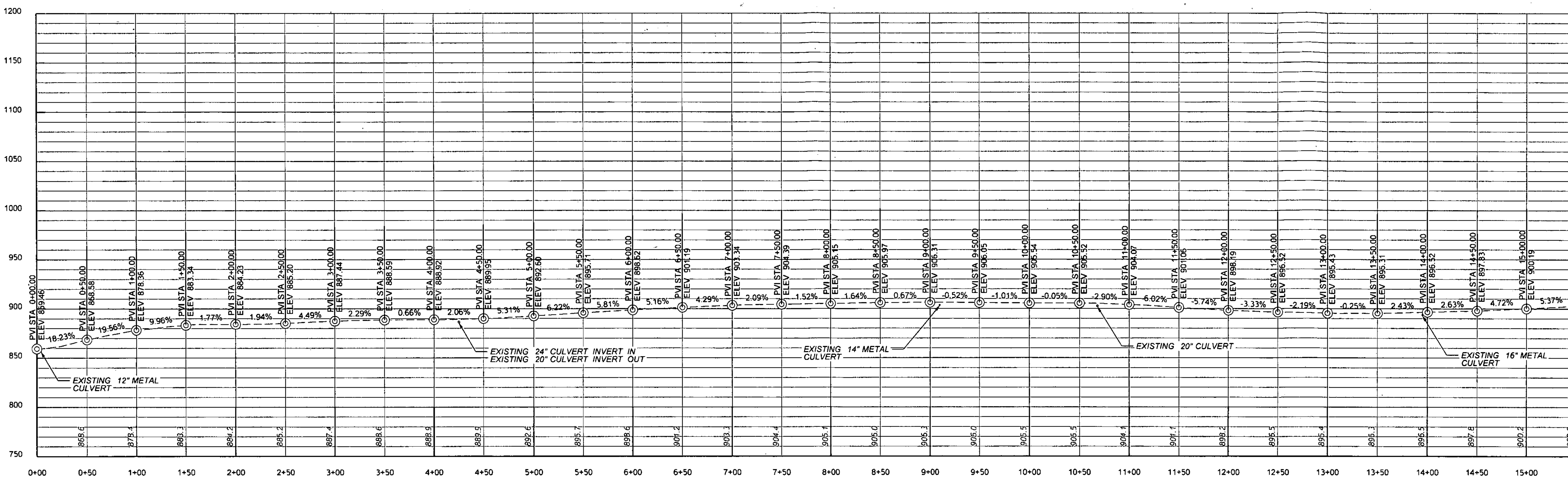
THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

WELL PAD CROSS SECTIONS ALONG SECTION LINE A-A

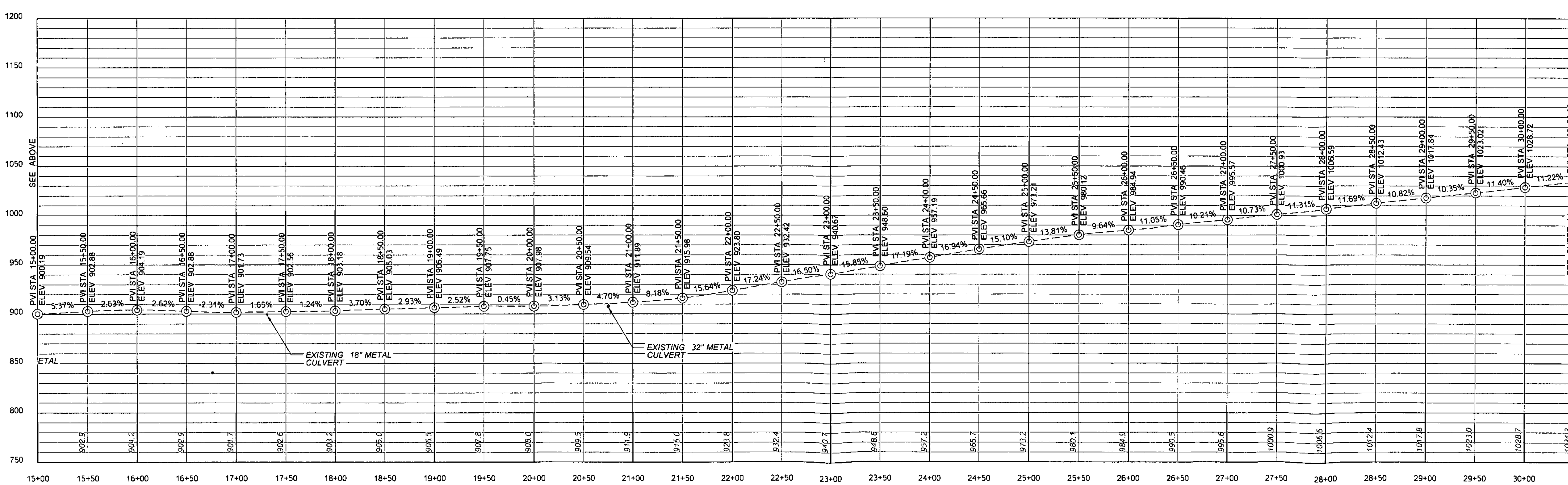
EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 12 OF 30
REV:



EXISTING ACCESS ROAD TO WELL PAD PROFILE



EXISTING ACCESS ROAD TO WELL PAD PROFILE

HORIZONTAL & VERTICAL SCALE 0' 50' 100' 150'

Stantec
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RICHARD L. GAINES
REGISTERED
17220
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

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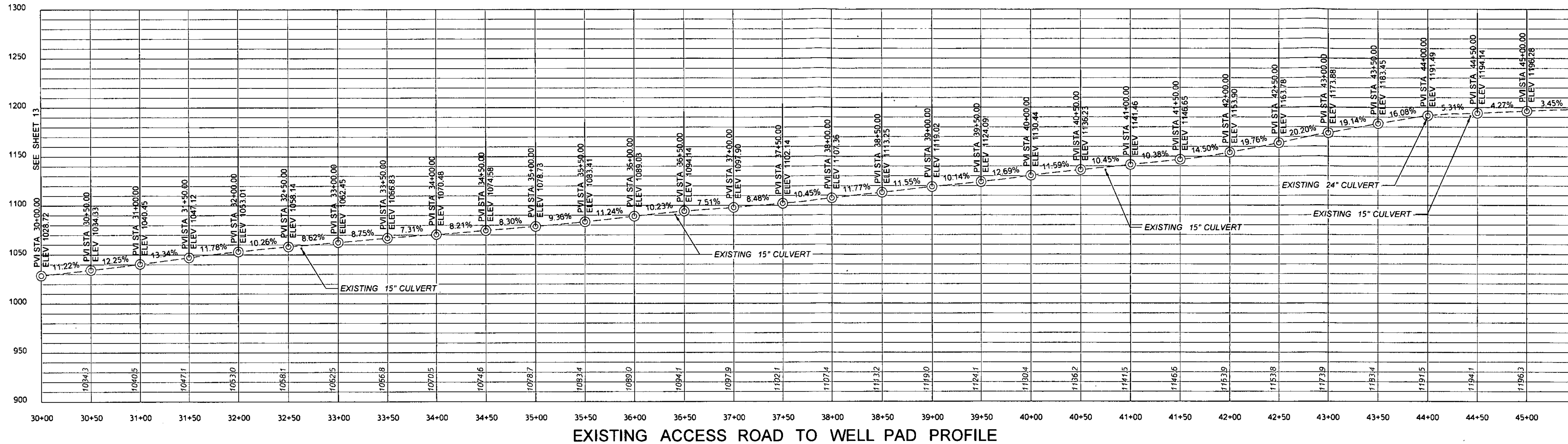
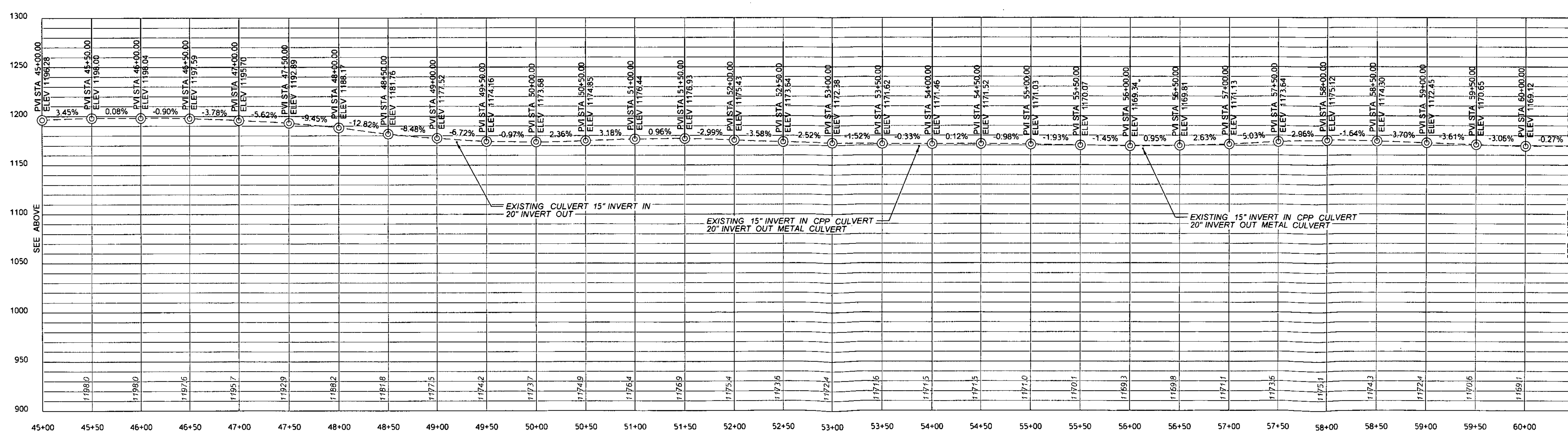
ACCESS ROAD PROFILES
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 13 OF 30
REV:



EXISTING ACCESS ROAD TO WELL PAD PROFILE



EXISTING ACCESS ROAD TO WELL PAD PROFILE

HORIZONTAL & VERTICAL SCALE 0' 50' 100' 150'

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RICHARD L. GAINES
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WEST VIRGINIA
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THIS DOCUMENT WAS PREPARED BY:
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FOR:
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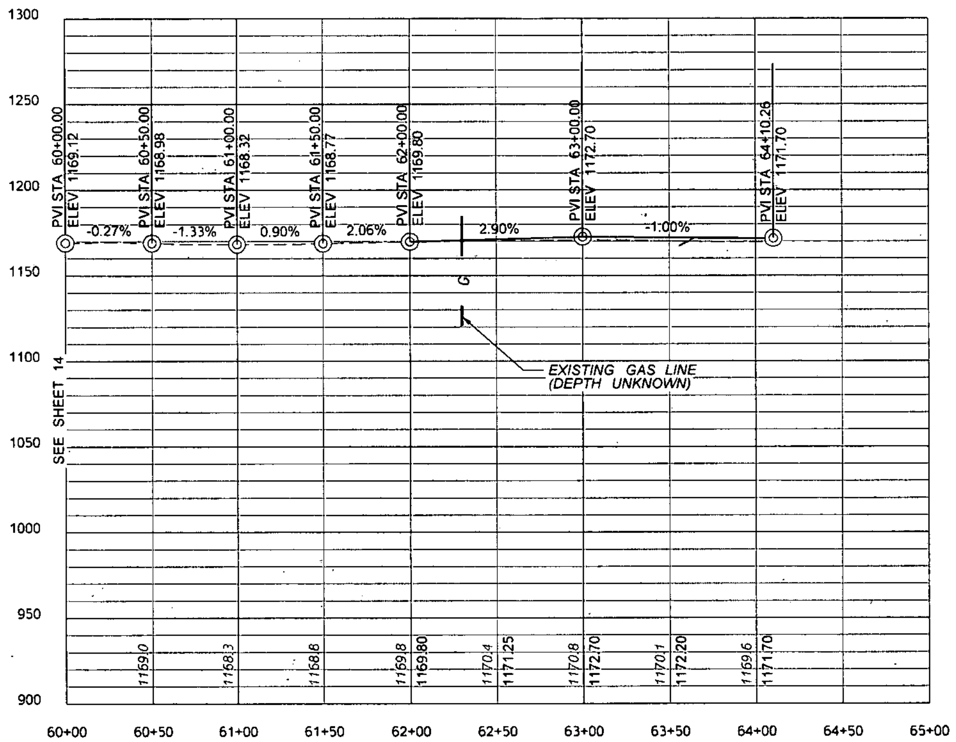
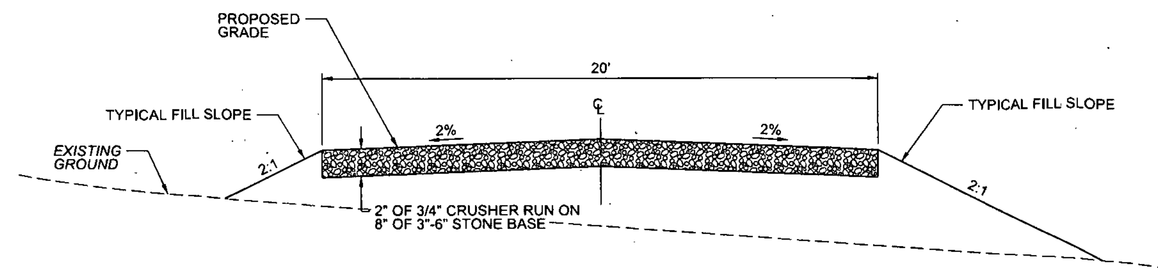
ACCESS ROAD PROFILES
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015	
SCALE: AS SHOWN	
DESIGNED BY: RJH	
FILE NO.: SLS-8226	
SHEET 14 OF 30	
REV:	



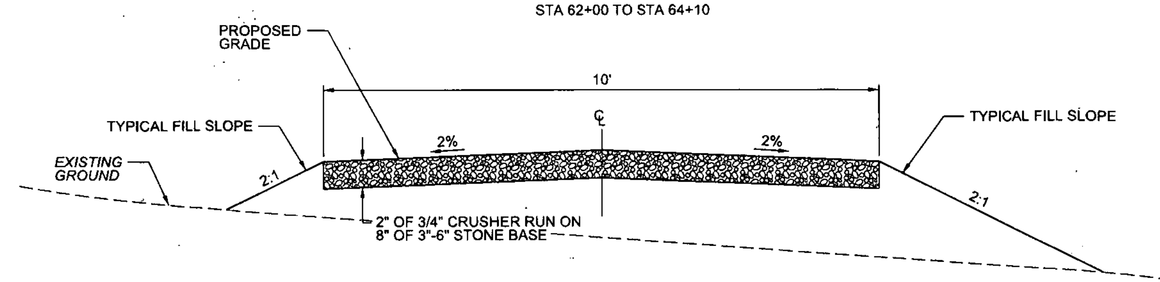
EXISTING ACCESS ROAD TO WELL PAD PROFILE



ACCESS ROAD TO WELL PAD TYPICAL SECTION - CROWNED

NOT TO SCALE

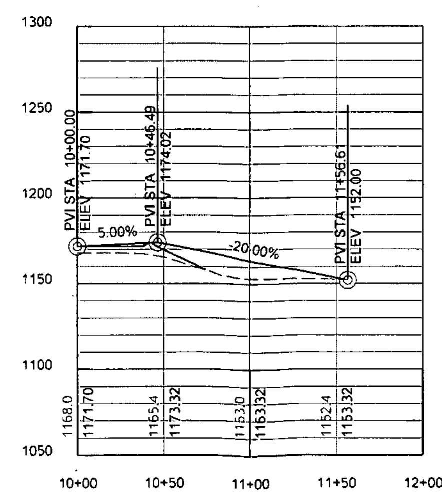
STA 62+00 TO STA 64+10



ACCESS ROAD TO EXISTING FLOWBACK PIT TYPICAL SECTION - CROWNED

NOT TO SCALE

STA 10+00 TO STA 11+57



ACCESS ROAD TO EXISTING FLOWBACK PIT PROFILE

HORIZONTAL & VERTICAL SCALE 0' 50' 100' 150'

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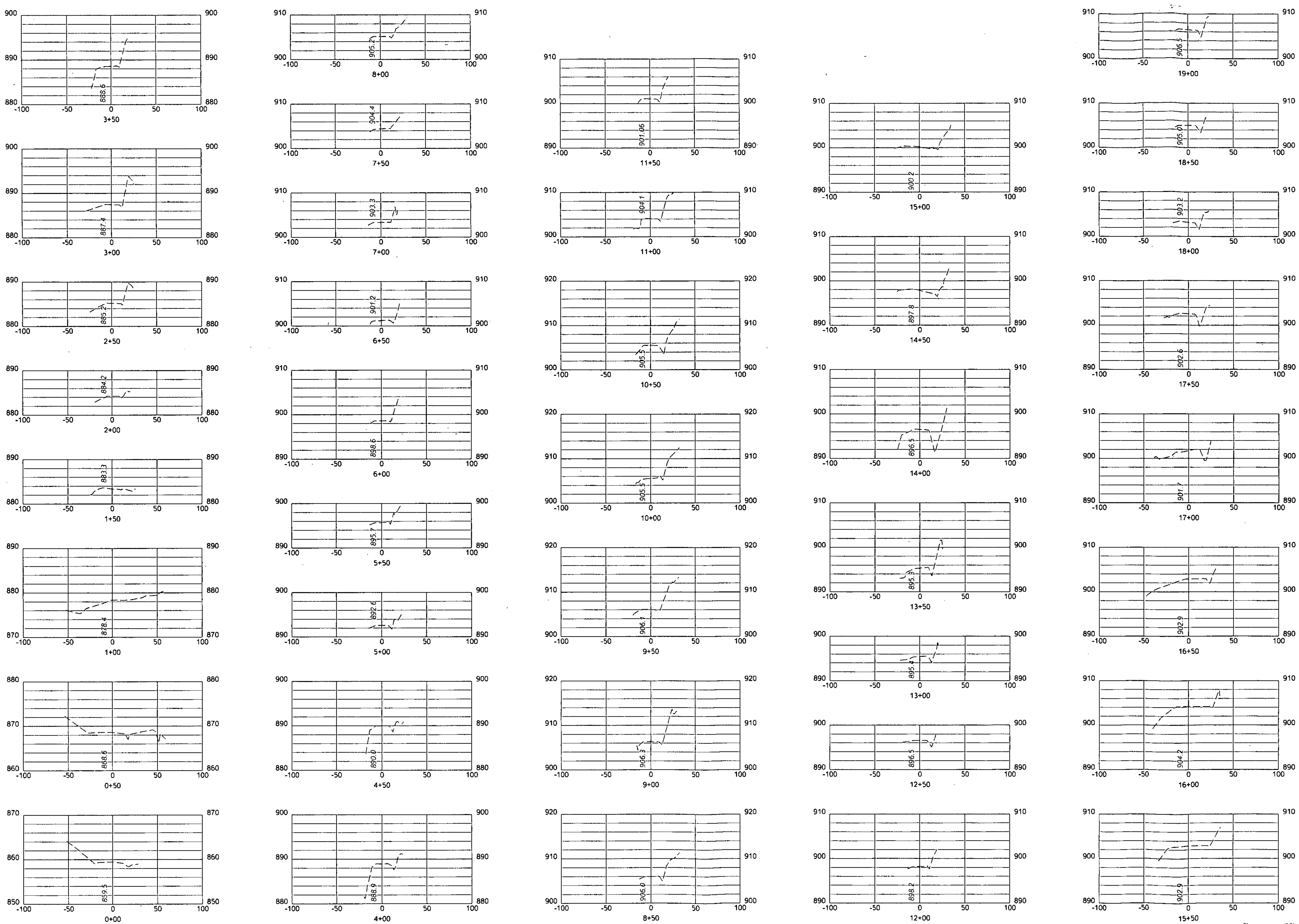
ACCESS ROAD PROFILES AND TYPICAL SECTIONS
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 15 OF 30
REV:



EXISTING ACCESS ROAD TO WELL PAD

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - EXISTING GRADE

——— PROPOSED GRADE

0' 50' 100' 150'

HORIZONTAL SCALE

0' 10' 20' 30'

VERTICAL SCALE

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ACCESS ROAD CROSS SECTIONS

EQT OXF 44

SOUTHWEST DISTRICT

DODDRIDGE COUNTY, WV

DATE: 01/14/2015

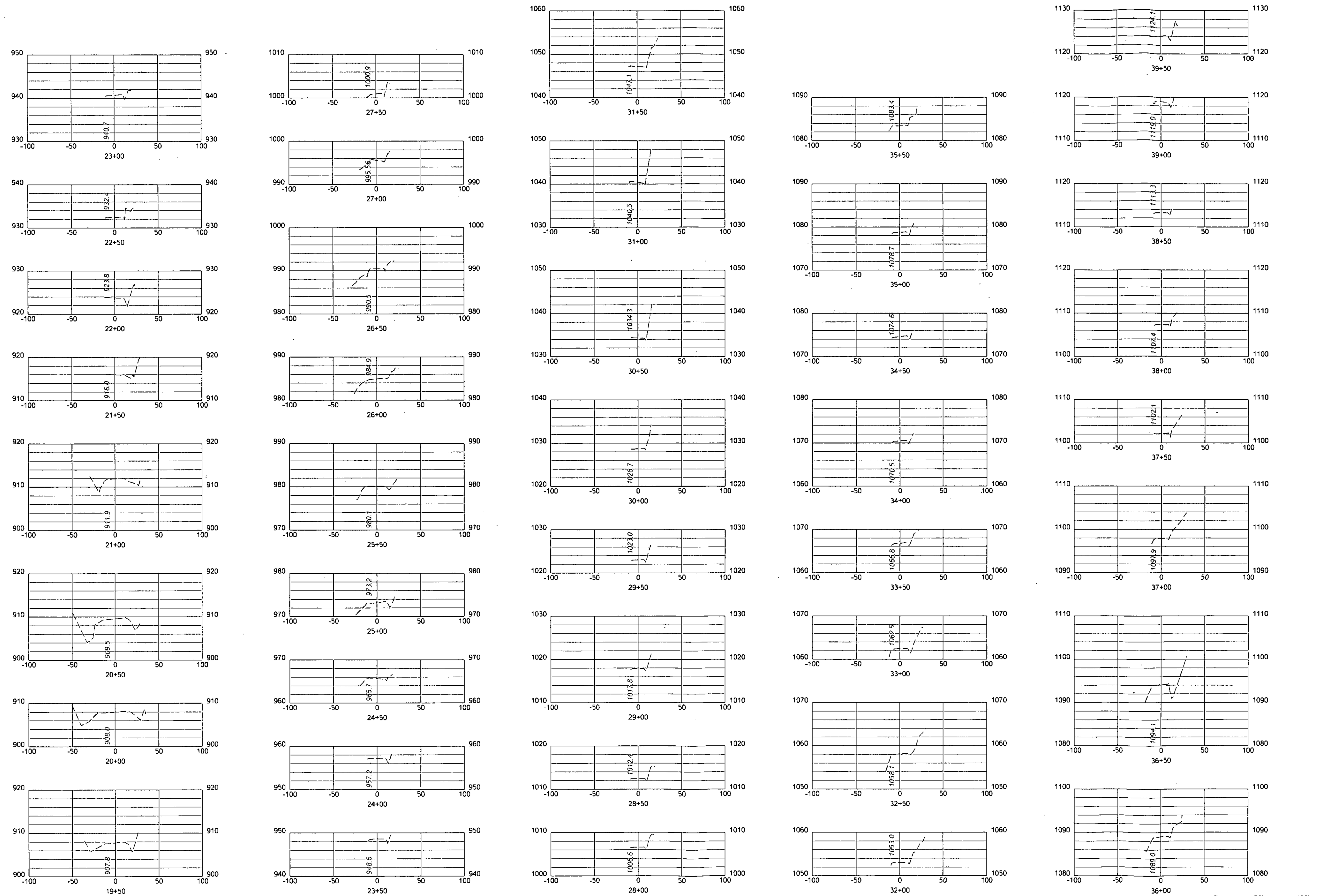
SCALE: AS SHOWN

DESIGNED BY:RJH

FILE NO.:SLS-8226

SHEET 16 OF 30

REV:



NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

EXISTING ACCESS ROAD TO WELL PAD

LEGEND

- - - - EXISTING GRADE

——— PROPOSED GRADE

0' 50' 100' 150'

HORIZONTAL SCALE

0' 10' 20' 30'

VERTICAL SCALE

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ACCESS ROAD CROSS SECTIONS

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015

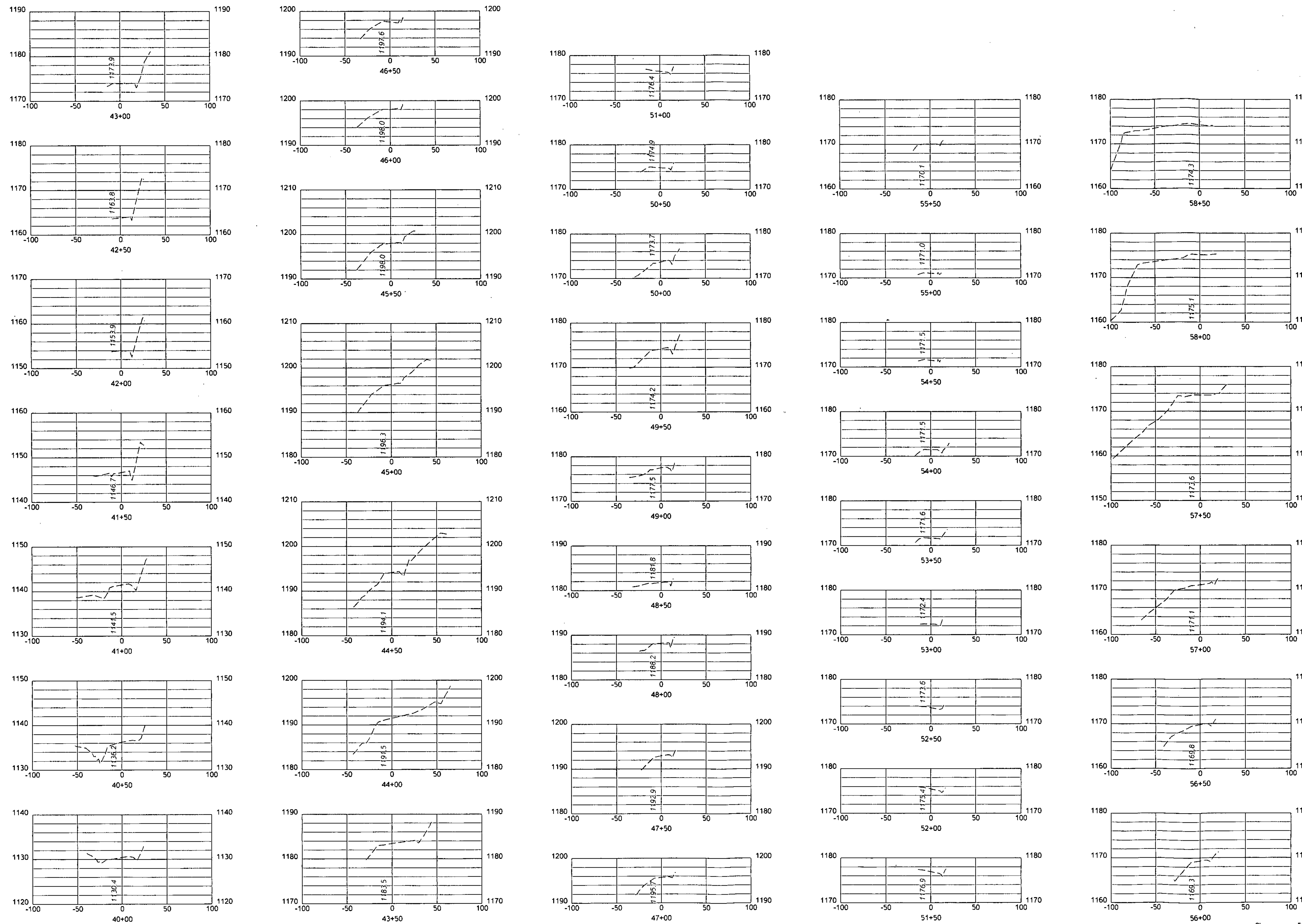
SCALE: AS SHOWN

DESIGNED BY: RJH

FILE NO.: SLS-8226

SHEET 17 OF 30

REV:



EXISTING ACCESS ROAD TO WELL PAD

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - EXISTING GRADE

——— PROPOSED GRADE

0' 50' 100' 150'
HORIZONTAL SCALE

0' 10' 20' 30'
VERTICAL SCALE

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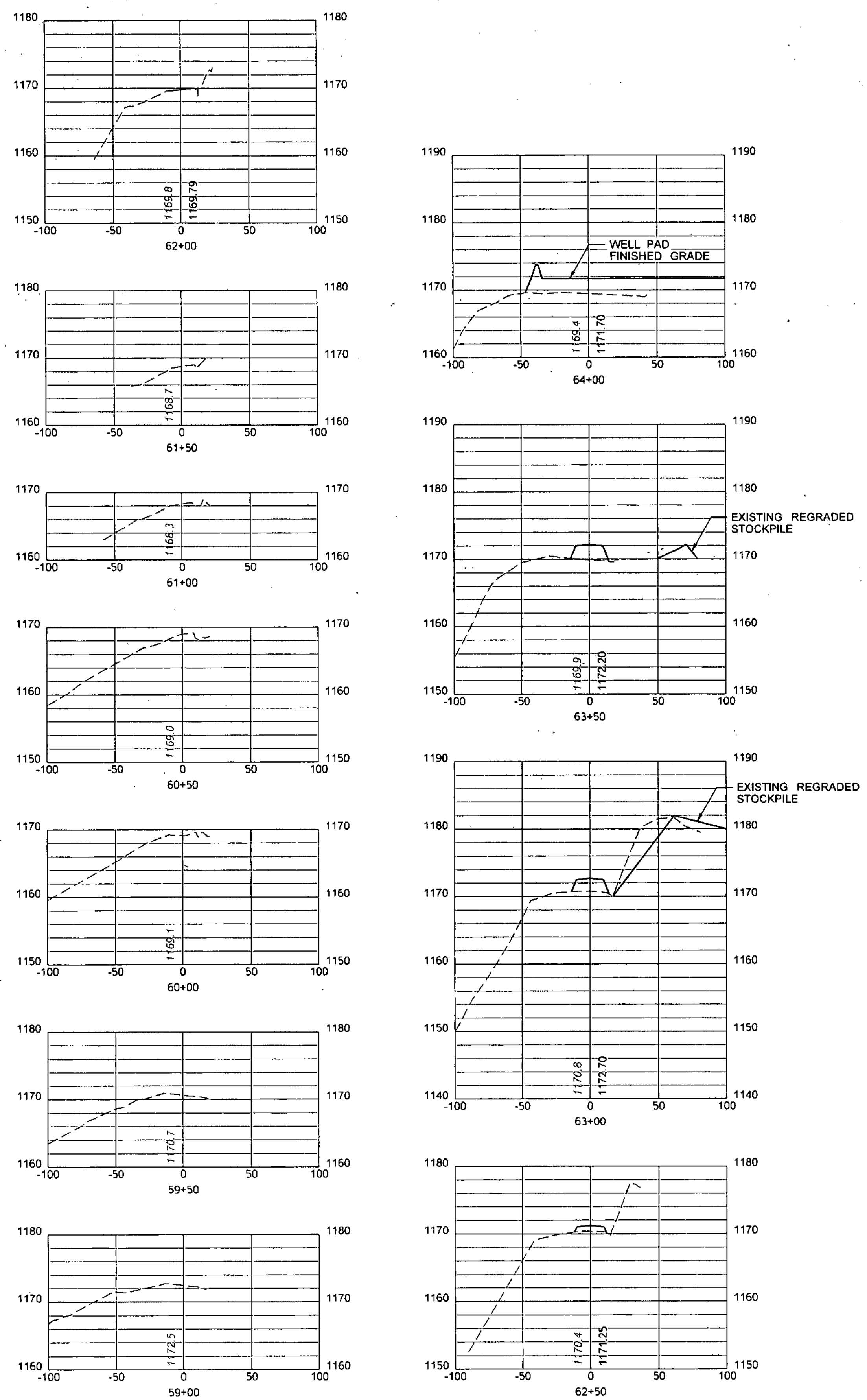
ACCESS ROAD CROSS SECTIONS

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 18 OF 30
REV:



EXISTING ACCESS ROAD TO WELL PAD

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - - EXISTING GRADE

——— PROPOSED GRADE

HORIZONTAL SCALE: 0' 50' 100' 150'

VERTICAL SCALE: 0' 10' 20' 30'

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ACCESS ROAD CROSS SECTIONS

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015

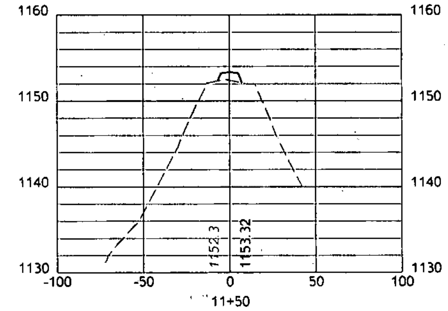
SCALE: AS SHOWN

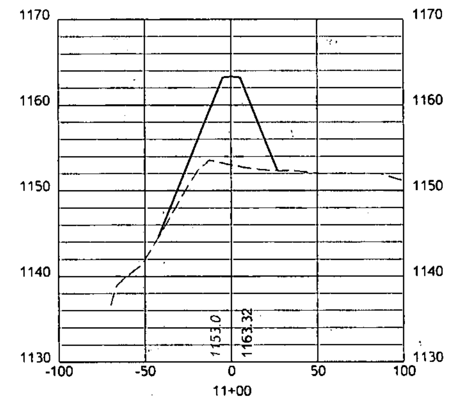
DESIGNED BY: RJH

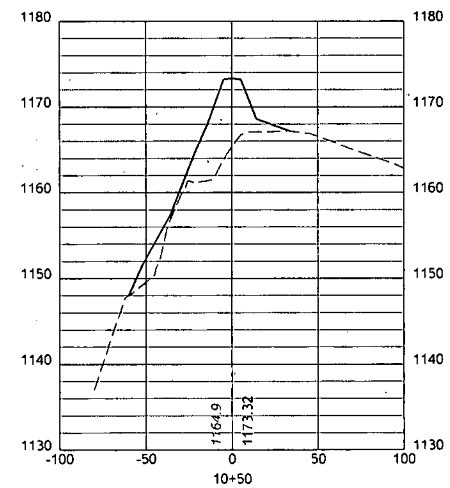
FILE NO.: SLS-8226

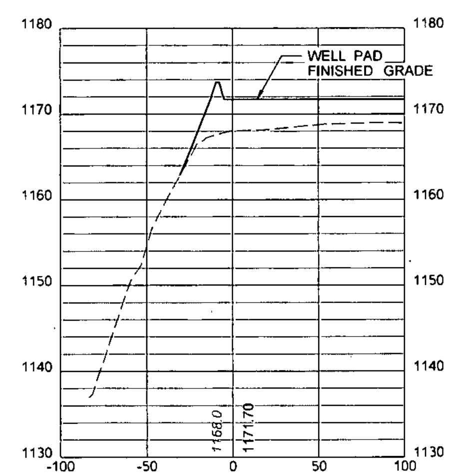
SHEET 19 OF 30

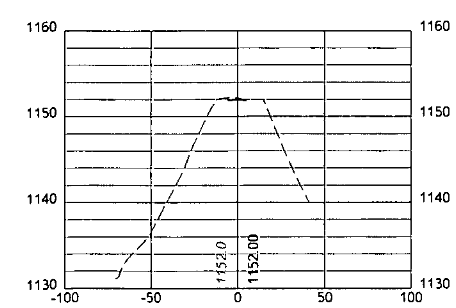
REV:











ACCESS ROAD TO EXISTING FLOWBACK PIT

NOTE:

1. ALL FILL AREAS WILL UTILIZE A TOE BENCH AND WILL BE "KEYED IN". FILL WILL BE PLACED IN 12" MAXIMUM LOOSE LIFTS, MAXIMUM PARTICLE SIZE OF 6", COMPACTED TO 95% PER STANDARD PROCTOR (ASTM D-698) WITH A VIBRATING SHEEPSFOOT ROLER, AND ON A LEVEL SURFACE. SEE TOE BENCH DETAIL.

LEGEND

- - - - EXISTING GRADE
——— PROPOSED GRADE

0' 50' 100' 150'
HORIZONTAL SCALE

0' 10' 20' 30'
VERTICAL SCALE

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PHONE: 304-367-9401

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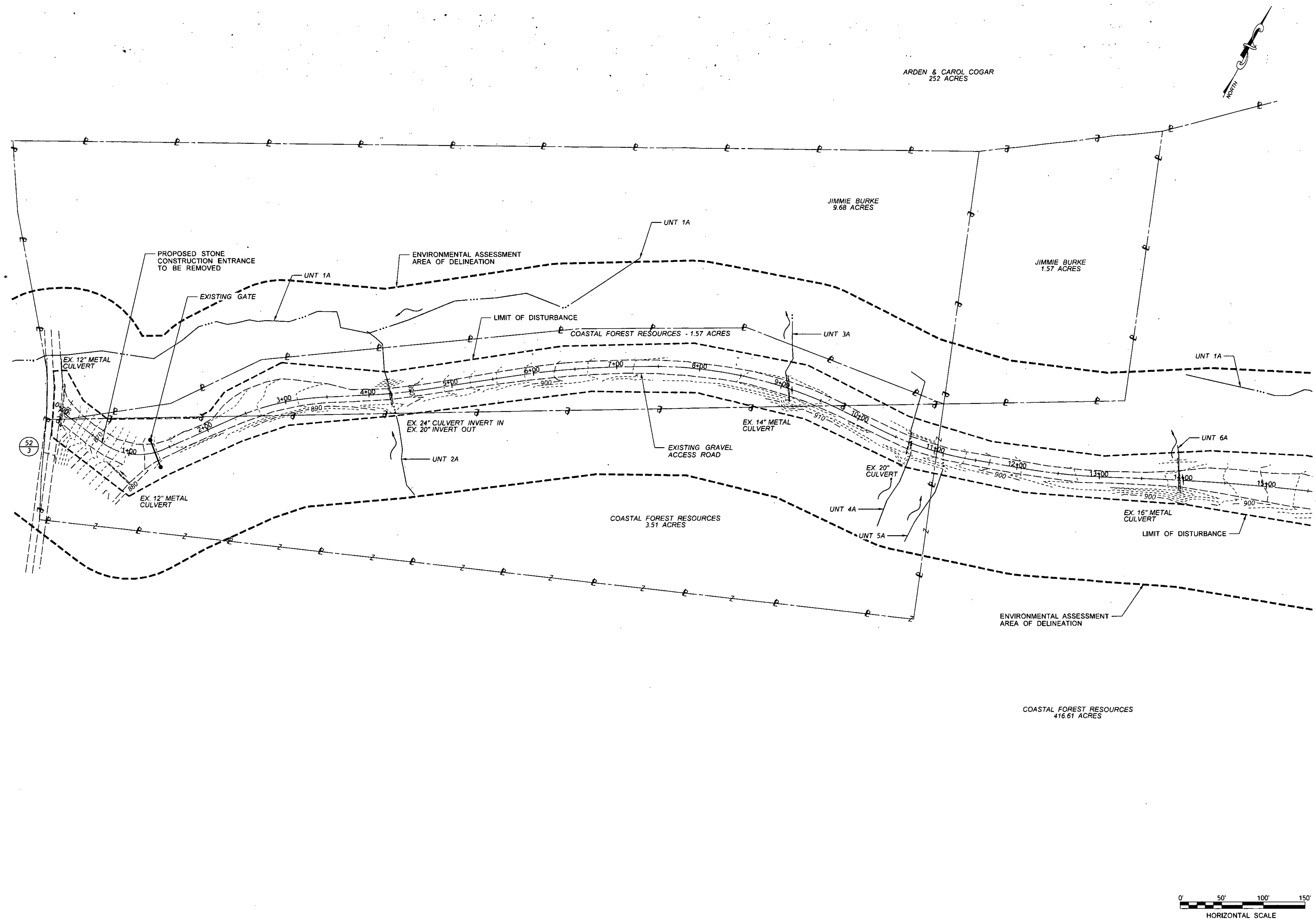
ACCESS ROAD CROSS SECTIONS

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 20 OF 30
REV:



NORTH
ARDEN & CAROL COGAR
252 ACRES
JIMMIE BURKE
9.68 ACRES
JIMMIE BURKE
1.57 ACRES
UNT 1A
PROPOSED STONE CONSTRUCTION ENTRANCE TO BE REMOVED
ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
EXISTING GATE
LIMIT OF DISTURBANCE
COASTAL FOREST RESOURCES - 1.57 ACRES
UNT 3A
EX. 12" METAL CULVERT
EX. 24" CULVERT INVERT IN
EX. 20" INVERT OUT
EXISTING GRAVEL ACCESS ROAD
EX. 14" METAL CULVERT
UNT 2A
UNT 6A
EX. 20" CULVERT
EX. 12" METAL CULVERT
COASTAL FOREST RESOURCES
3.51 ACRES
UNT 4A
UNT 5A
EX. 16" METAL CULVERT
LIMIT OF DISTURBANCE
SEE SHEET 22
ENVIRONMENTAL ASSESSMENT AREA OF DELINEATION
COASTAL FOREST RESOURCES
416.61 ACRES
52
3
HORIZONTAL SCALE

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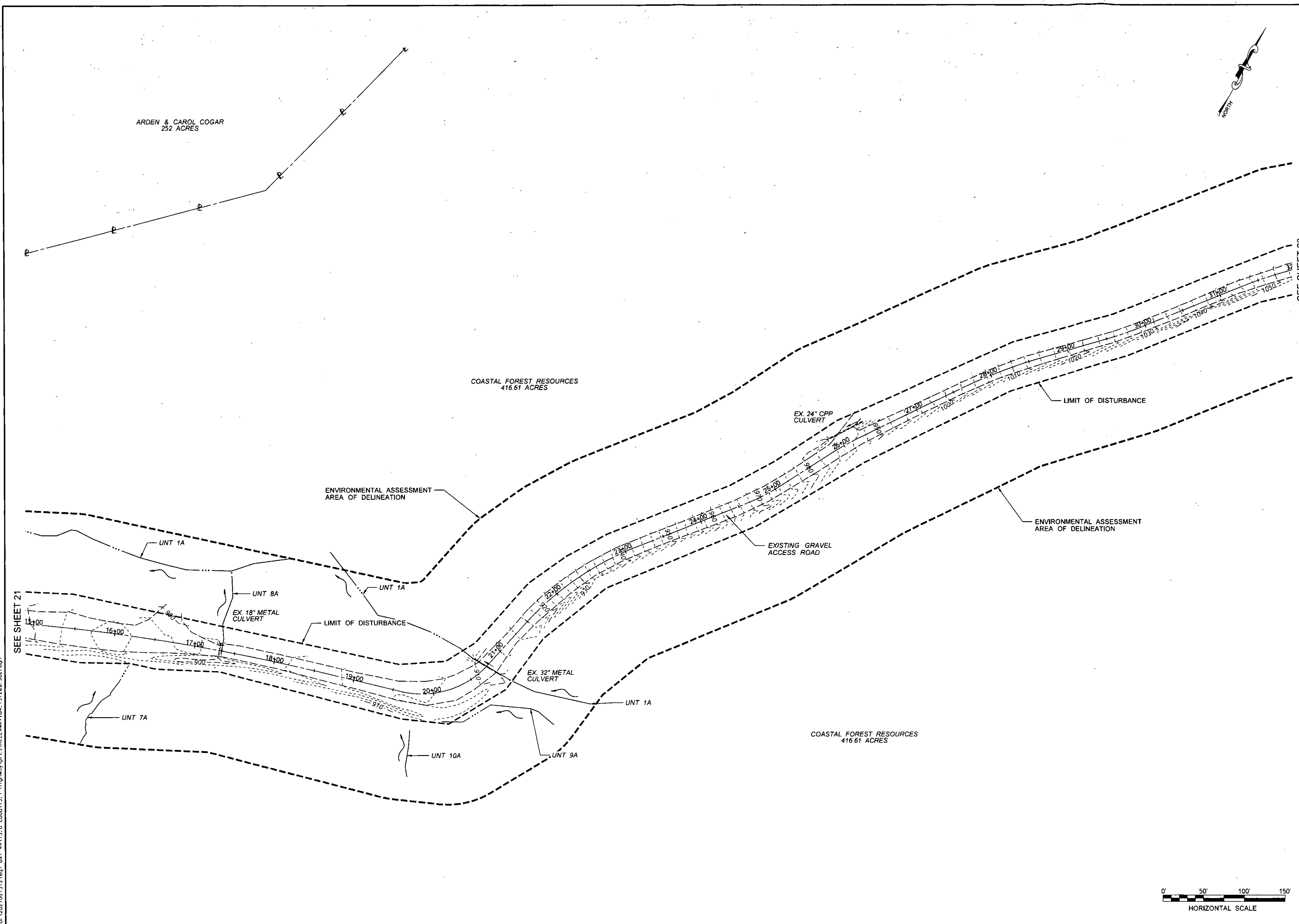
EXISTING ACCESS ROAD RECLAMATION PLAN

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 21 OF 30
REV:



ARDEN & CAROL COGAR
252 ACRES
NORTH
COASTAL FOREST RESOURCES
416.61 ACRES
SEE SHEET 23
LIMIT OF DISTURBANCE
EX. 24" CPP
CULVERT
ENVIRONMENTAL ASSESSMENT
AREA OF DELINEATION
EXISTING GRAVEL
ACCESS ROAD
UNT 1A
UNT 8A
EX. 18" METAL
CULVERT
LIMIT OF DISTURBANCE
SEE SHEET 21
EX. 32" METAL
CULVERT
UNT 7A
UNT 10A
UNT 9A
COASTAL FOREST RESOURCES
416.61 ACRES
0' 50' 100' 150'
HORIZONTAL SCALE

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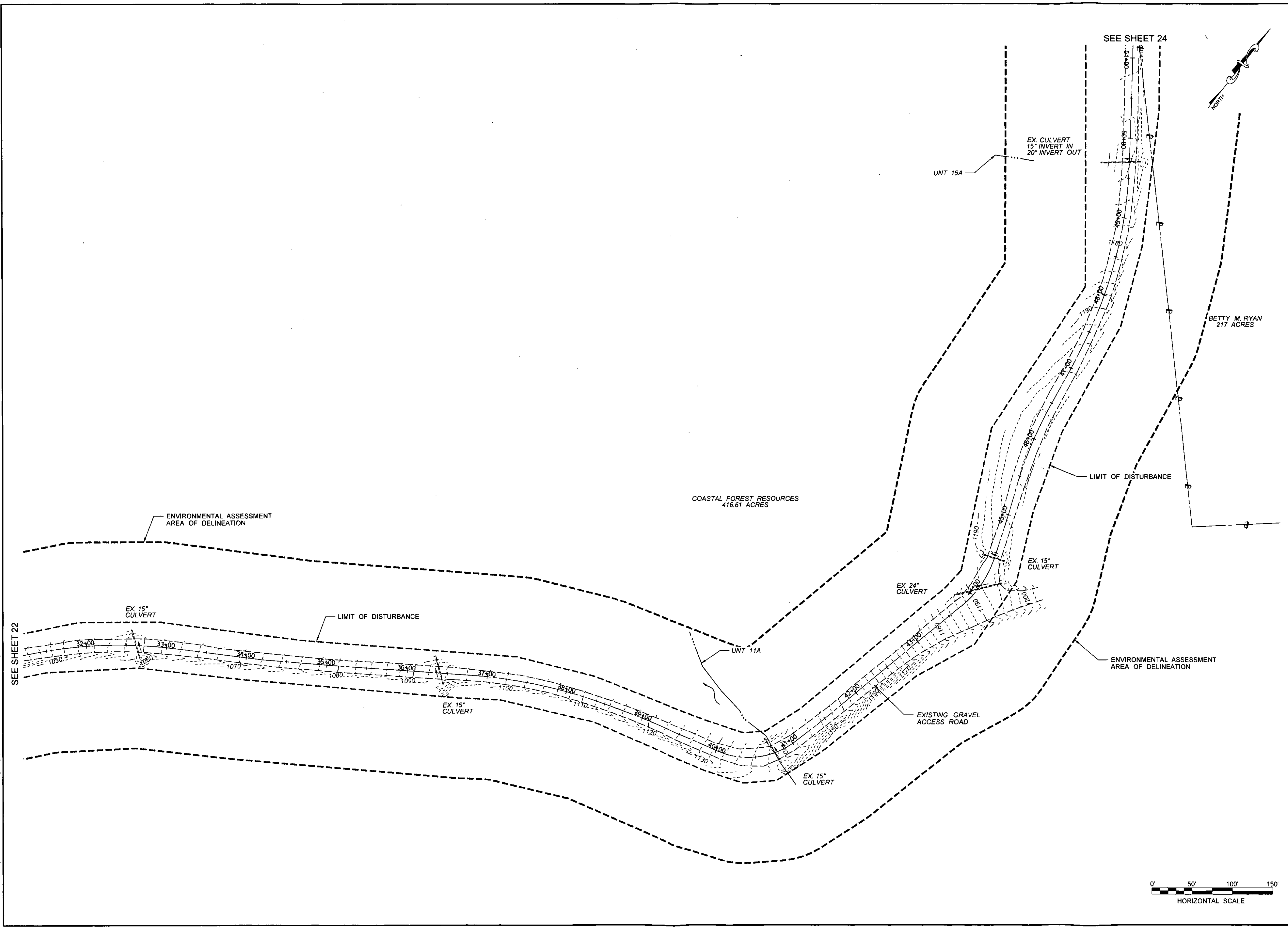
EXISTING ACCESS ROAD RECLAMATION PLAN

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 22 OF 30
REV:



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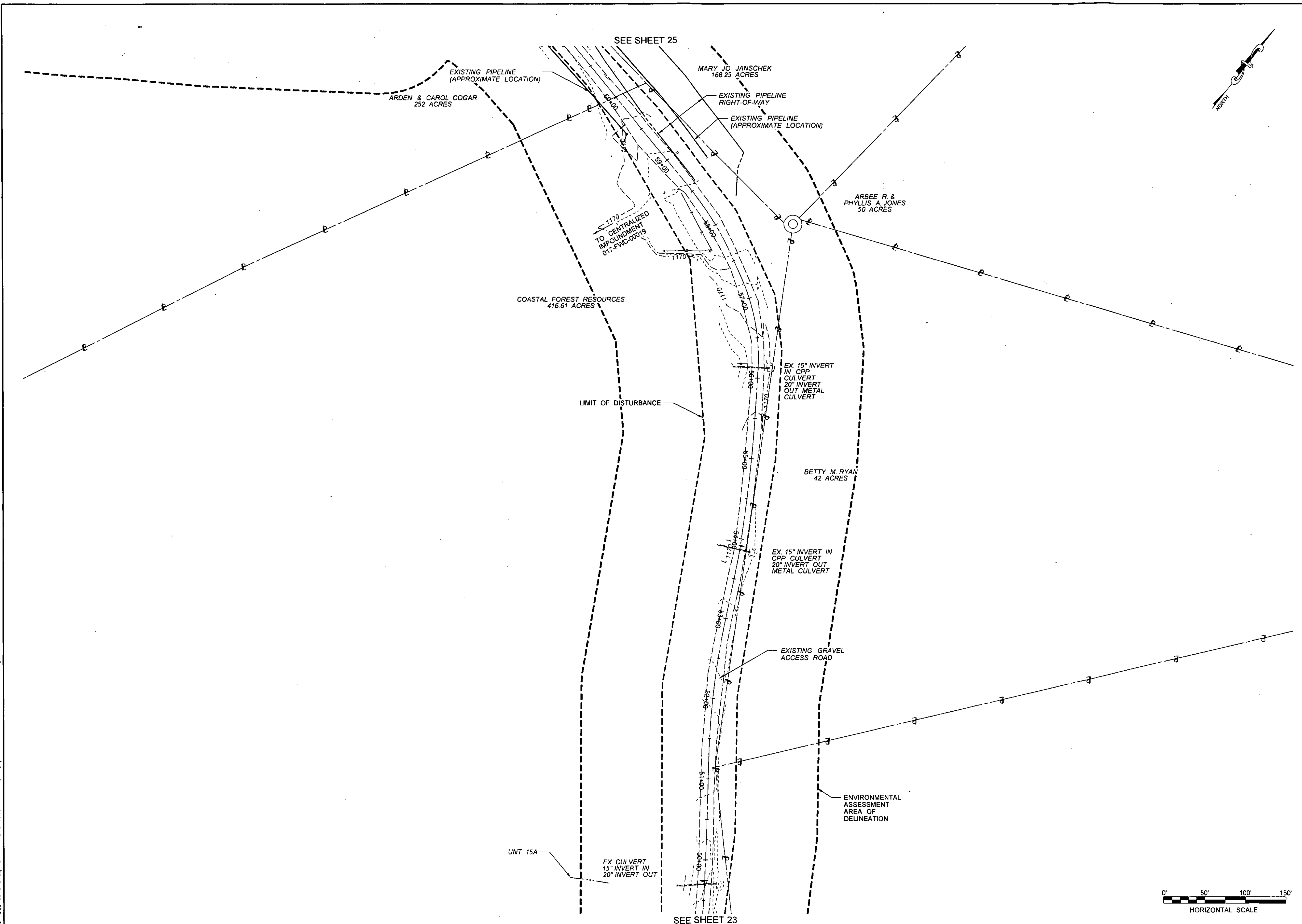
EXISTING ACCESS ROAD RECLAMATION PLAN

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY:RJH
FILE NO.:SLS-8226
SHEET 23 OF 30
REV:



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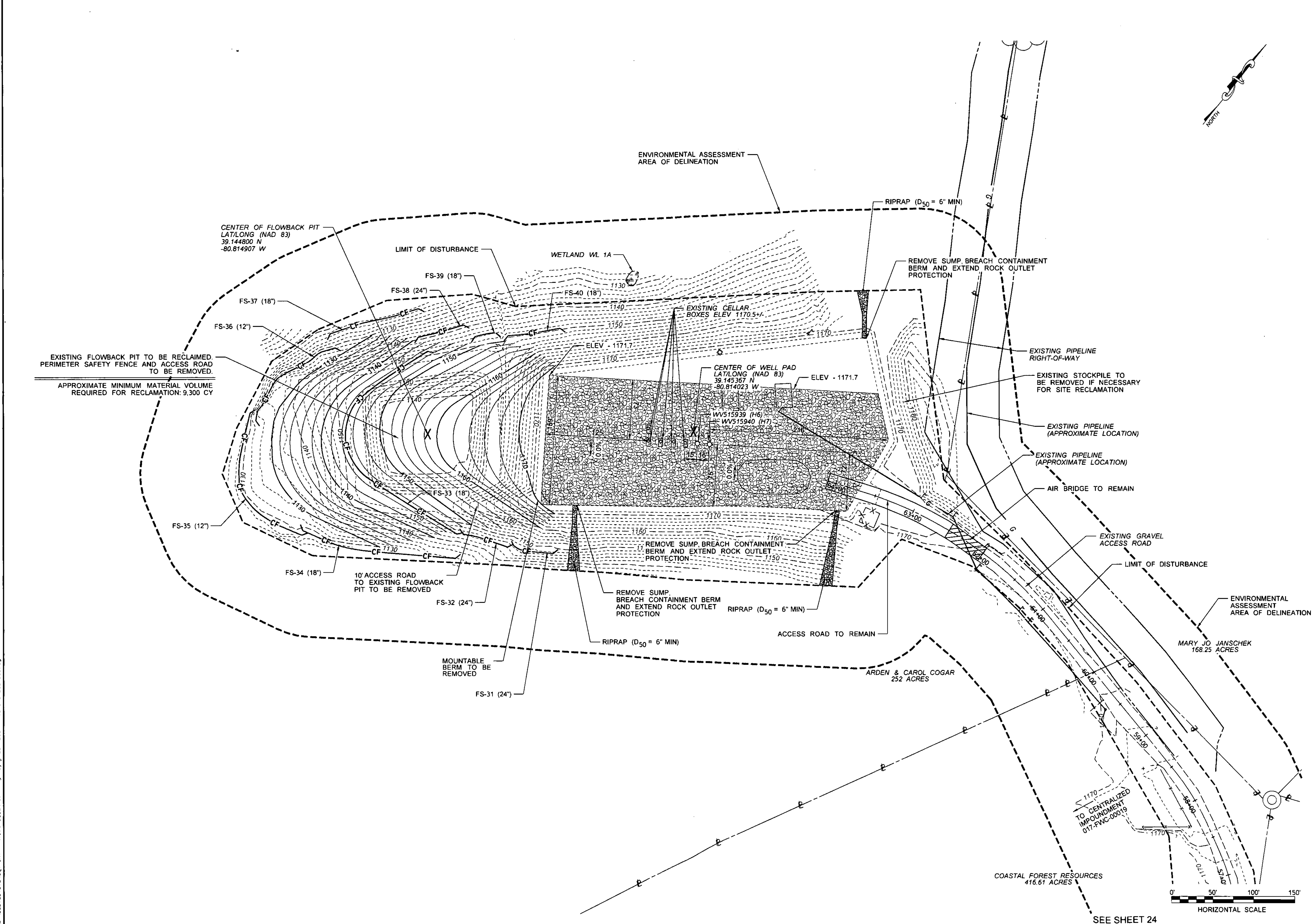
COMPLETION PIT RECLAMATION PLAN
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 24 OF 30
REV:



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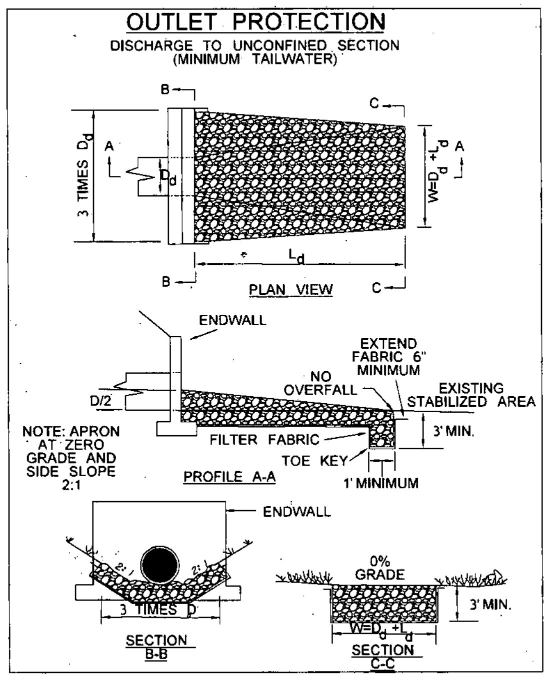
WELL PAD AND FLOWBACK PIT RECLAMATION PLAN
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 25 OF 30
REV:

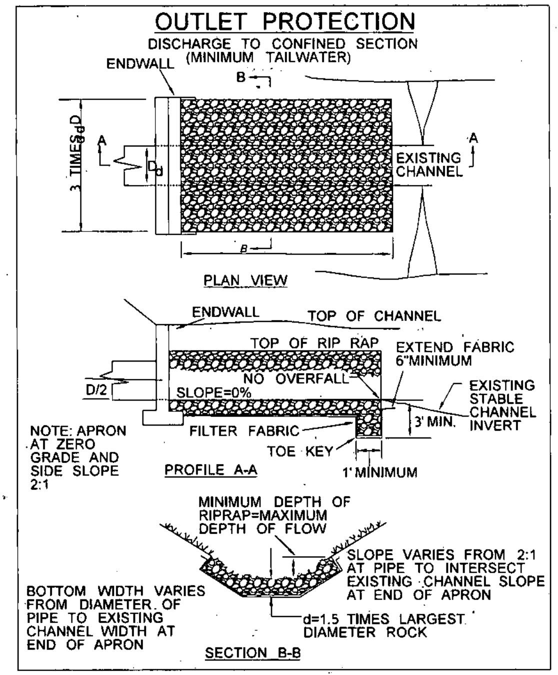
OUTLET PROTECTION

DISCHARGE TO UNCONFINED SECTION (MINIMUM TAILWATER)



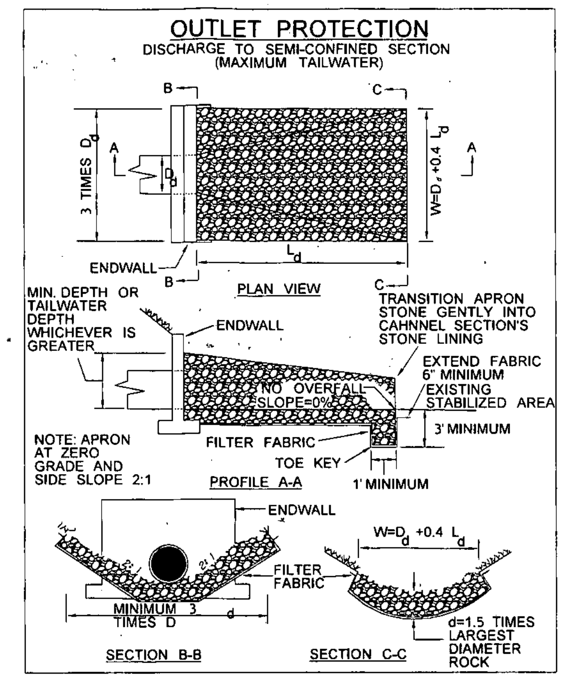
OUTLET PROTECTION

DISCHARGE TO CONFINED SECTION (MINIMUM TAILWATER)

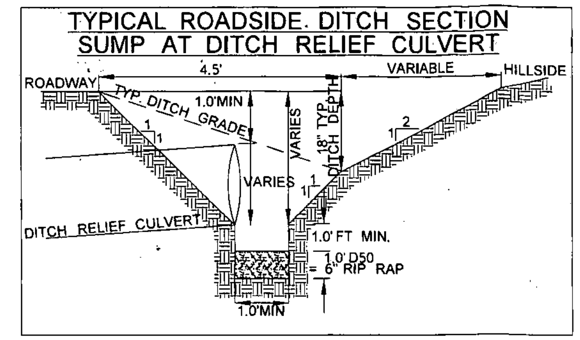


OUTLET PROTECTION

DISCHARGE TO SEMI-CONFINED SECTION (MAXIMUM TAILWATER)

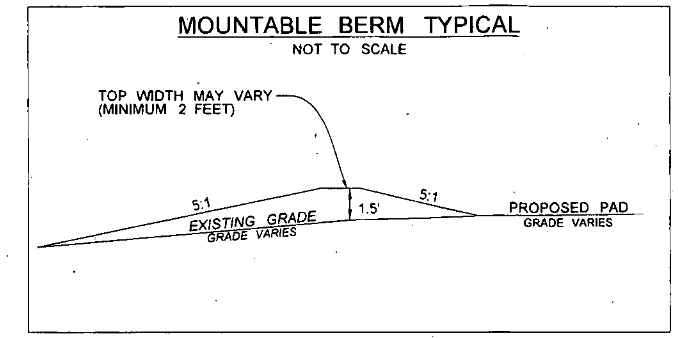


TYPICAL ROADSIDE DITCH SECTION SUMP AT DITCH RELIEF CULVERT



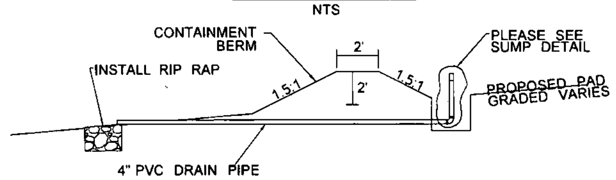
MOUNTABLE BERM TYPICAL

NOT TO SCALE



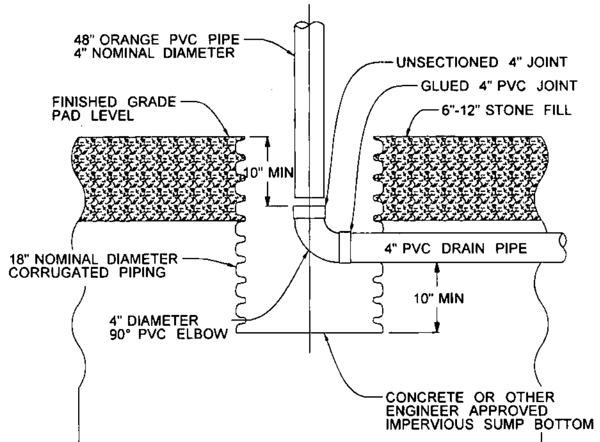
BERM TYPICAL

NTS



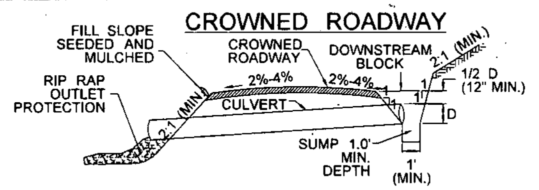
SUMP TYPICAL

NTS

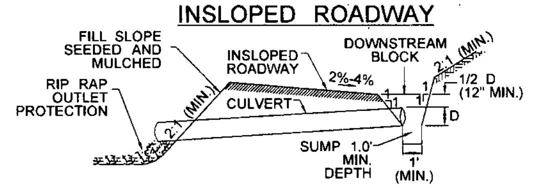


1. ALL CONTAINMENT SUMPS SHALL BE CLOSED DURING ALL WELL PAD ACTIVITIES.
2. SUMP AREAS SHALL BE LINED AS NECESSARY TO PREVENT FILTRATION THROUGH THE CONTAINMENT BERM. SUMP BASE SHALL BE CONSTRUCTED WITH ENGINEER APPROVED IMPERVIOUS BOTTOM.

CROWNED ROADWAY



INSLOPED ROADWAY



CUT AND FILL SLOPES SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF ROADWAY GRADING. THESE AREA SHALL BE BLANKETED WHEREVER THEY ARE LOCATED WITHIN 50 FEET OF A SURFACE WATER OR WITHIN 100 FEET OF 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.

ROADWAY SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED ROADWAYS, DITCHES OR CROSS DRAINS SHALL BE REPAIRED IMMEDIATELY.

DITCH RELIEF CULVERT

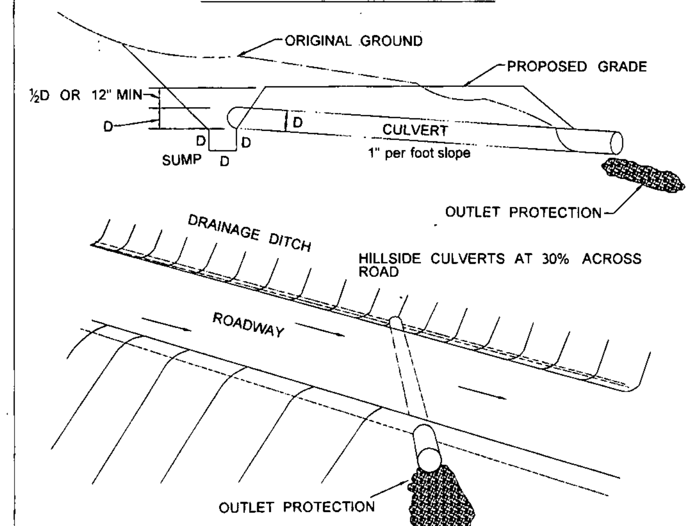


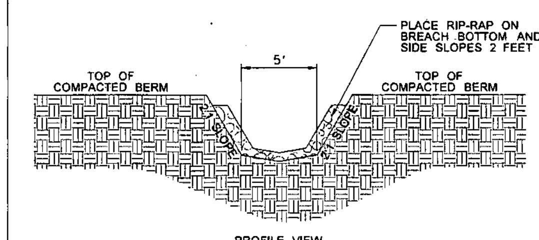
TABLE 11-5 PIPE SIZES FOR CULVERTS ACROSS ROADS

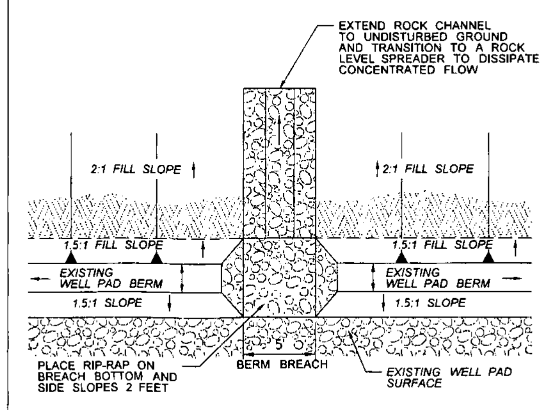
DRAINAGE AREA (Ac)	PIPE DIAMETER (In)	PIPE CAPACITY (Cfs)
10	15	5
20	18	9
30	21	12
50	24	18
80	27	24
100	30	29
300	36	60
500	42	85

TABLE 11-6 SPACING OF CULVERTS

ROAD GRADE (%)	DISTANCE (Ft)
2-5	500-300
6-10	300-200
11-15	200-100
16-20	100

BERM BREACH DETAIL FOR RECLAMATION





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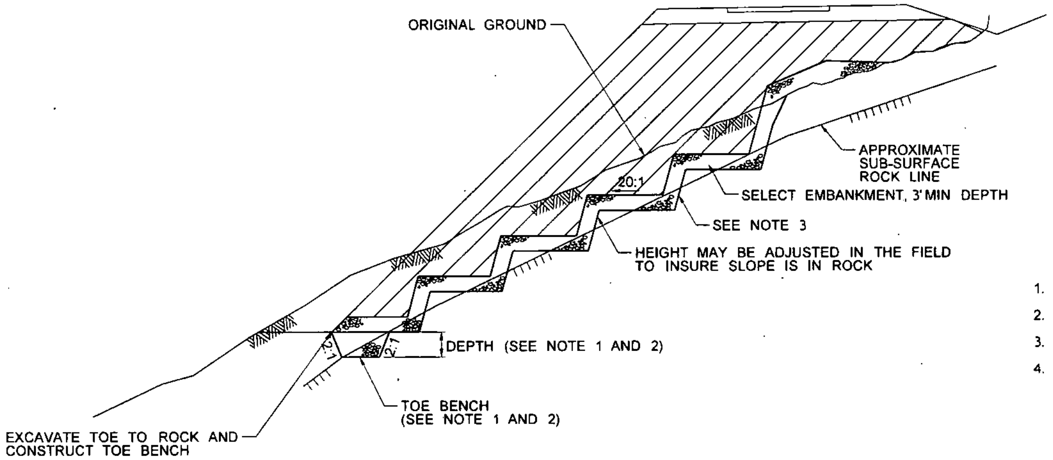
PROFESSIONAL ENGINEER

THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

CONSTRUCTION DETAILS
EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

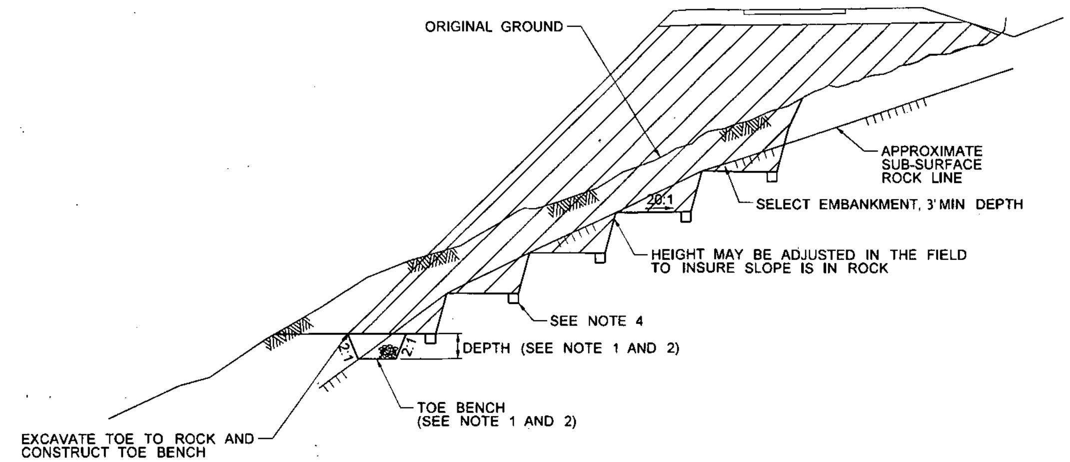
DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 26 OF 30
REV:

Energy_Legacy
Color_D_block.tbl
OilGas_FullSize_PDF.plt
1/14/2015
WORKSPACE: 001_2006 (SURVEY FEET)
U:\202705137\EQT OXF 44\13_0 CADD\13_1 Highway\pFES\1372es0T01.dgn



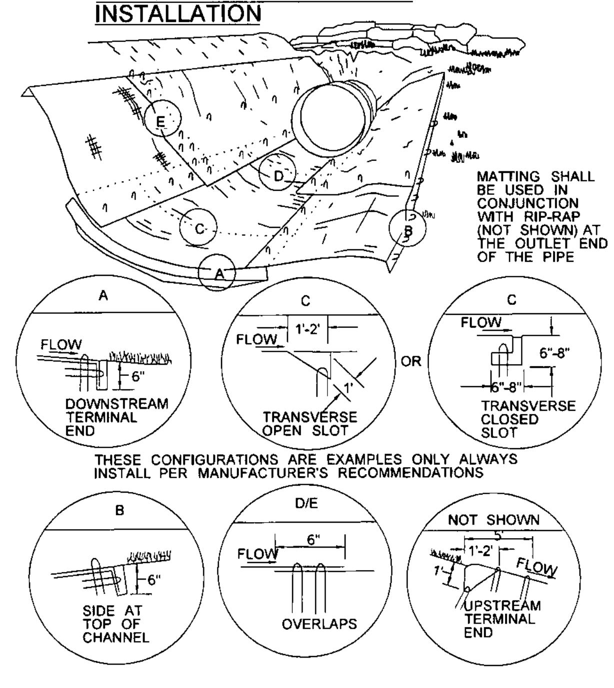
1. 0-10' DEPTH - ROCK TOE BUTTRESS WITH 10' WIDE BOTTOM AND 12" SHOT ROCK
2. 10' DEPTH OR GREATER - ROCK TOE BUTTRESS WITH 15' WIDE BOTTOM AND 18" SHOT ROCK
3. SLOPE IN SOIL IS VARIABLE, BUT SHOULD BE FLAT ENOUGH TO PREVENT FAILURE DURING CONSTRUCTION
4. PLACE LONGITUDINAL DRAINS TO OUTLET WHERE FILL MEETS EXISTING GROUND (PREFERRED METHOD) OR USE INTERMEDIATE LATERAL DRAINS TO FACE OF FILL SLOPE (ALTERNATE METHOD). DRAIN OUTLETS MUST BE PROTECTED WITH ROCK TO PREVENT EROSION.

TYPICAL TOE AND FILL BENCH DETAIL (STANDARD)

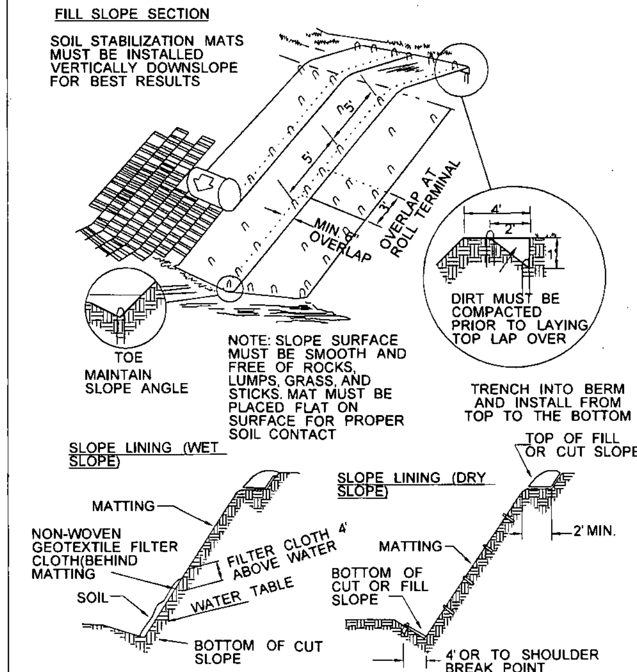


TYPICAL TOE AND FILL BENCH DETAIL (ALTERNATE)

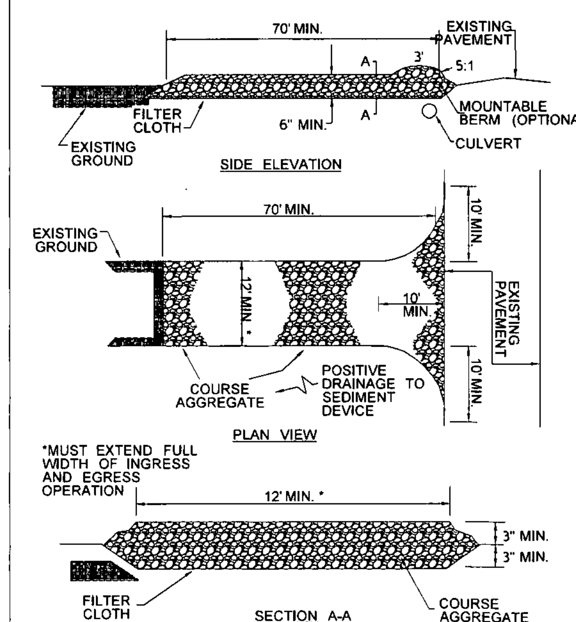
TYPICAL RECP CHANNEL INSTALLATION



ROLLED EROSION CONTROL PRODUCTS



STONE CONSTRUCTION ENTRANCE



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EQT OXF 44
SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015	
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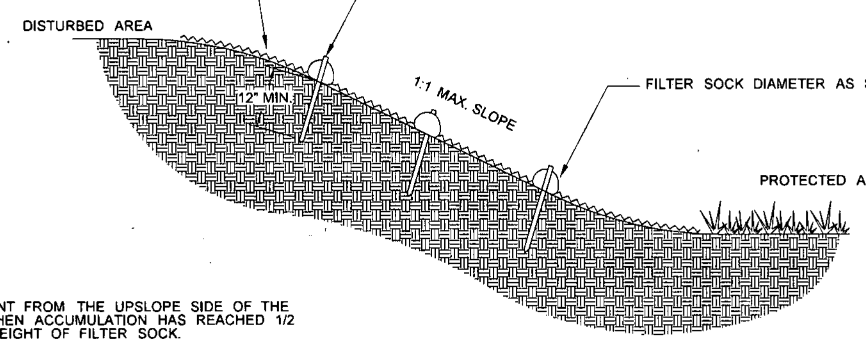
FILE NO.:SLS-8226	
SHEET 27 OF 30	
REV:	

Energy,Legacy Color,0,block,TBL OilGAS,FullSize,PDF,plt

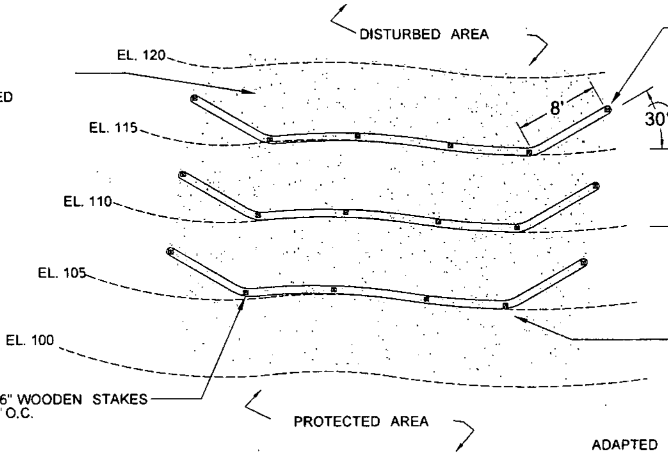
1/14/2015
WORKSPACE: DOT_2006 (SURVEY FEET)



NOTES:

1. REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE FILTER SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF EFFECTIVE HEIGHT OF FILTER SOCK.
2. LOOSE FILTER MEDIA MAY BE BACKFILLED ON THE UPSLOPE SIDE OF THE FILTER SOCK TO ENHANCE PERFORMANCE.

SECTION

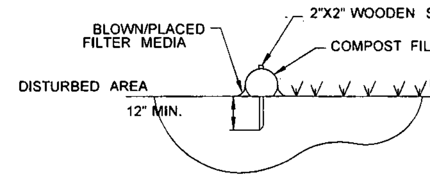


ADAPTED FROM FILTREXX

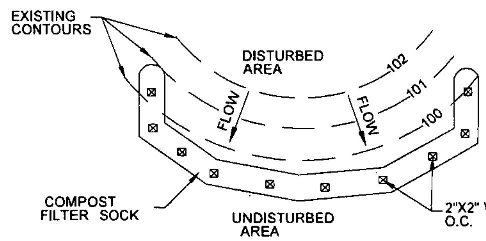
PLAN

COMPOST FILTER SOCK SLOPE INTERRUPTION

NTS
(ADAPTED FROM FILTREXX)



SECTION VIEW
NTS



PLAN VIEW
NTS
ADAPTED FROM FILTREXX

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 (SEE FIGURE 4.1).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.

MINIMUM FUNCTIONAL LONGEVITY SHALL BE DETERMINED BY THE MANUFACTURER. REPLACE COMPOST FILTER SOCK 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.

STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK

NTS
(ADAPTED FROM FILTREXX)

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OILGAS_Full Size_PDF.plt
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WORKSPACE: DOT_2006 (SURVEY FEET)
U:\202705137\2\EQT OXF 44\3.0 CADD\3.1 Highway\prES\1372eaDT01.dgn

Table 2
Acceptable Fertilization Recommendation

Species	N (lbs/ac)	P205 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

Table 3
Temporary Cover

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

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

Table IV-5
Lime and Fertilizer Table

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

Table IV-6
Mulch Materials Is Rates and Used

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

Tables IV 1-4 taken from Natural Resources Conservation Service Manual 'Critical Area Planting'

Table IV-1
Recommended Seeding Dates

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

Table 4a
Permanent Seeding Mixture

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
Crownvetch/ Tall Fescue	10 - 15 30	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Perennial Ryegrass	10 - 15 20	Well - Mod. Well	5.0 - 7.5
Ladino Clover/ Serecia Lespedeza/ Tall Fescue	30 25 2	Well - Mod. Well	4.5 - 7.5
Tall Fescue/ Ladino Clover/ Redtop	40 3 3	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Tall Fescue/ Redtop	10 20 3	Well - Mod. Well	5.0 - 7.5
Tall Fescue/ Birdsfoot Trefoil/ Redtop	40 10 3	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza/ Tall Fescue/ Redtop	25 30 3	Well - Mod. Well	4.5 - 7.5
Redtop/ Tall Fescue/ Creeping Red	30 3 50	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5

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

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

Table 4b
Wildlife and Farm Friendly Seed Mixtures

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
KY Bluegrass/ Redtop/ Ladino or Birdsfoot Trefoil	20 3 2/10	Well - Mod. Well	5.5 - 7.5
Timothy/ Alfalfa	5 12	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdsfoot Trefroil	5 8	Well - Poorly	5.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10 2 3	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	10 2	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	20 10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	30 10	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil/ Redtop/ Orchardgrass	10 5 20	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea*/ Perennial Ryegrass	30 20	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea*/ Orchardgrass	30 20	Well - Mod. Well	5.5 - 7.5

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

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

REVEGETATION

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

Temporary Seeding

A. General Conditions Where Practice Applies

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

B. Seed Mixtures and Planting Dates

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

C. Seed Application

Apply seed by broadcasting, drilling, or by hydroseed according to the rates indicates in Table IV-3. Perform a11 planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

Permanent Seeding

A. General

Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on a11 disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seedbed preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion. .

All required seedbed preparation and loosening of soil by disking or dozer tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rates shown in Tables IV-3 and IV-4.

When hydroseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydroseeding.

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

B. Lime and Fertilizer

1. Lime shall be applied to a11 permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.
2. Fertilizer shall be applied in all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.
3. Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

C. Permanent Seed Mixtures

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

Notes:

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

D. Seeding for Wildlife Habitat

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

Mulching

A. General Organic Mulches

The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made from wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged due to the risk of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas.

Depending on site conditions, in critical areas such as waterways or steep slopes, additional or substitute soil protective measures may be used if deemed necessary. Examples include jute mesh and soil stabilization blankets or erosion control matting.

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

Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay should be used and the area then seeded as soon as weather or seasonal conditions permit. Do not use fiber mulch (cellulose -hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch.

Wood cellulose fiber mulch is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over the top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover. Use straw mulch during these periods and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas and areas susceptible to wind.

B. Chemical Mulches, Soil Binders and Tackifiers

A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the mulch and to the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay.

When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

C. Specifications

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

D. Anchoring

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

1. Mechanical Anchoring

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

2. Mulch netting

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

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SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
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DESIGNED BY:RJH
FILE NO.:SLS-8226
SHEET 29 OF 30
REV:

EQT OXF 44 MATERIAL QUANTITIES				
ACCESS ROADS AND WELL PAD				
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL
1.0 CLEARING AND GRUBBING				
1.a. TREE CLEARING	0	AC	$	$
1.b. MOWING	0	AC	$	$
2.0 COMPOST FILTER SOCK				
2.a. 12" COMPOST FILTER SOCK	626	LF	$	$
2.b. 18" COMPOST FILTER SOCK	993	LF	$	$
2.c. 24" COMPOST FILTER SOCK	137	LF	$	$
3.0 AGGREGATE SURFACING				
3.a. 8" of 3"-6" BASE	5,185	TONS	$	$
3.b. 2" of 3/4" CRUSHER RUN	840	TONS	$	$
3.c. GEOTEXTILE	8,166	SY	$	$
4.0 COCONUT SLOPE MATTING	3,758	SY	$	$
5.0 SEED & MULCH				
5.a. SEEDING (INCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	0.8	AC	$	$
5.b. MULCH (EXCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	0.0	AC	$	$
6.0 EXCAVATION				
6.a. WELL PAD (CUT W/ NO SWELL) - INCLUDES EXC. FOR AGGREGATE	4,752	CY	$	$
6.b.TOPSOIL (ESTIMATED 6")	0	CY	$	$
7.0 KEYWAY EXCAVATION	3,120	CY	$	$
8.0 WELL PAD SUMP DRAIN				
8.a. 4" CORRUGATED OUTLET PIPE	75	LF	$	$
8.b. d50 = 6" MIN (RIPRAP APRONS)	155	TON	$	$
8.c. GEOTEXTILE (RIPRAP APRONS)	227	SY	$	$
9.0 RECLAMATION QUANTITIES				
9.a. 12" COMPOST FILTER SOCK	364	LF	$	$
9.b. 18" COMPOST FILTER SOCK	814	LF	$	$
9.c. 24" COMPOST FILTER SOCK	210	LF	$	$
9.d. SEEDING	2.4	AC	$	$
9.e. MULCH	2.4	AC	$	$

NOTE:

GEOTEXTILE FABRIC, ROLLED EROSION CONTROL PRODUCT AND LINER SYSTEM QUANTITIES DO NOT ACCOUNT FOR OVERLAP.

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THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

CONSTRUCTION QUANTITIES

EQT OXF 44

SOUTHWEST DISTRICT
DODDRIDGE COUNTY, WV

DATE: 01/14/2015
SCALE: AS SHOWN
DESIGNED BY: RJH
FILE NO.: SLS-8226
SHEET 30 OF 30
REV: