September 5, 2023

Tennessee Department of Environmental Conservation
Knoxville Environmental Field Office
Attn: ARAP Processing
3711 Middlebrook Pike
Knoxville, TN 37921

Delivered electronically to water.permits@tn.gov

Aquatic Resource Alteration Permit Application
General permit for maintenance

To Whom it May Concern:

Products (SE) Pipe Line Corporation (PPL) has prepared the attached Aquatic Resource Alteration Permit (ARAP) application for remediation of an exposed pipe in an unnamed tributary of Town Creek in Lenoir City, Tennessee. The proposed Project is necessary to maintain the integrity of the pipeline according to standards determined by the Pipeline and Hazardous Materials Safety Administration (PHMSA).

The project includes the excavation of approximately 22 feet of PPLs 8-inch petroleum products pipeline, inspect the coating and recoat if needed, cover the pipeline with geotextile fabric and install articulating concrete mats over the pipeline and right-of way within the stream bed and bank, and installation if rip rap downstream of the pipeline crossing to prevent additional erosion at an existing culverted driveway crossing. The proposed workspace consists of existing PPL right-of-way (ROW) and approximately 47 feet downstream of the edge of ROW. Access to the workspace will be through existing ROW and residential areas.

The project footprint, including temporary workspace, will be approximately 0.5 acre with ground disturbance limited to 0.02 acre. GPS coordinates for the exposed pipeline are 35.810791, -84.286441. Additional details regarding the proposed Project are attached. This project is being conducted to maintain the integrity of the PPL products pipeline.

Please see the attached ARAP application form and associated attachments. Payment of $500.00 will be submitted electronically.

PPL has a compliance deadline of 10/9/2023 to complete the pipeline protection and will begin as soon as all permits and clearances are issued. Please contact me at 404-386-7383 if you have questions or concerns.

Sincerely,

Melanie S. Wiggins
Senior Permitting Specialist

Attachments:
ARAP Application
Signature Delegation
ARAP application Additional Information
--Design drawings
--Maps
--Site photographs
--Hydrologic determination data sheet
--Erosion and Sediment control typicals

cc: Wes Melton (PPL)

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor,
Nashville, Tennessee, 37243
1-888-891-8332 (TDEC)

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Certification

OFFICIAL STATE USE ONLY	Site #:		Permit #:	

Section 1. Applicant Information (individual responsible for site, signs certification below)

Applicant Name (company or individual): Products (SE) Pipe Line Corporation (PPL)		SOS #:	Status: N/A
Primary Contact/Signatory: Wes Melton		Signatory's Title or Position: Director of Operations	
Mailing Address: 1000 Windward Concourse, Suite 450		City: Alpharetta	State: GA / Zip: 30005
Phone: 770-751-4194	Fax:	E-mail: wes_melton@kindermorgan.com	

Section 2. Alternate Contact/Consultant Information (a consultant is not required)

Alternate Contact Name: Melanie Wiggins			
Company: Kinder Morgan		Title or Position: Sr. Permitting Specialist	
Mailing Address: 1000 Windward Concourse, Suite 450		City: Alpharetta	State: GA / Zip: 30005
Phone: 404-386-7383	Fax:	E-mail: melanie_wiggins@kindermorgan.com	

Section 3. Fee (application will be incomplete until fee is received)

☐ No Fee ☒ Fee Submitted with Application Amount Submitted: $ 500.00

Current application fee schedules can be found at the Division of Water Resources webpage at:
https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap-.html
or by calling (615) 532-0625. Please make checks payable to "Treasurer, State of Tennessee".

Billing Contact (if different from Applicant): Name: Melanie Wiggins Email: melanie_wiggins@kindermorgan.com

Address: 1000 Windward Concourse, Suite 450, Alpharetta, GA 30005 Phone: 404-386-7383

Section 4. Project Details (fill in information and check appropriate boxes)

Site or Project Name: Lenoir City exposed pipe		Nearest City, Town or Major Landmark: Lenoir City
Street Address or Location (include zip): near intersection of Old Hwy 95 and Benjamin Drive		
County(ies): Loudon	MS4 Jurisdiction:	Latitude (dd.dddd): 35.810791 Longitude (dd.dddd): -84.286441

Resources Proposed for Alteration: ☑ Stream / River ☐ Wetland ☐ Reservoir

Name of Water Resource (for more information, access *http://tdeconline.tn.gov/dwr*): wet weather conveyance

Brief Project Description (a more detailed description is required under Section 8):
protection of exposed petroleum product pipeline

Does the proposed activity require approval from the U.S. Army Corps of Engineers, the Tennessee Valley Authority, or any other federal, state, or local government agency? ☒ Yes ☐ No

If Yes, provide the permit reference numbers: NWP 3 - No PCN required

Will the activity require a 401 Water Quality Certification: ☐ Yes ☐ No

If Yes, attach any 401 WQC pre-filing meeting request documentation

Is the proposed activity associated with a larger common plan of development: ☐ Yes ☒ No

If Yes, submit site plans and identify the location and overall scope of the common plan of development.

Plans attached? ☐ Yes ☐ No

If applicable, indicate any other federal, state, or local permits that are associated with the overall project site (common plan of development) that have been obtained in the past (e.g., construction general permit and/or other ARAP):

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Certification

Section 5. Project Schedule (fill in information and check appropriate boxes)		
Proposed start date: 09/28/2023	Estimated end date: 10/09/2023	
Is any portion of the activity complete now?	☐ Yes	■ No
If yes, describe the extent of the completed portion: Not Applicable		

The required information in Sections 6-11 must be submitted on a separate sheet(s) and submitted in the same numbered format as presented below. If any question in not applicable, state the reason why it is not applicable.

Section 6. Description		Attached Yes	Attached No
6.1	A narrative description of the scope of the project	■	☐
6.2	USGS topographic map indicating the exact location of the project (can be a photographic copy)	■	☐
6.3	Photographs of the resource(s) proposed for alteration with location description (photo locations should be noted on map)	■	☐
6.4	A narrative description of the **existing** stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	■	☐
6.5	A narrative description of the **proposed** stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	■	☐
6.6	In the case of wetlands, include a wetland delineation with delineation forms and site map denoting location of data points	☐	■
6.7	A copy of all hydrologic or jurisdictional determination documents issued for water resources on the project site	■	☐

Section 7. Project Rationale	Attached Yes	Attached No
Describe the need for the proposed activity, including, but not limited to the purpose, alternatives considered and rationale for selection of least impactful alternative, and what will be done to avoid or minimize impacts to water resources	■	☐

Section 8. Technical Information		Attached Yes	Attached No
8.1	Detailed plans, specifications, blueprints, or legible sketches of present site conditions and the proposed activity. Plans must be 8.5.x 11 inches. Additional larger plans may also be submitted to aid in application review. The detailed plans should be superimposed on existing and new conditions (e.g., stream cross sections where road crossings are proposed)	■	☐
8.2	For the proposed activity and compensatory mitigation, provide a discussion regarding the sequencing of events and construction methods and any proposed monitoring	■	☐
8.3	Depiction and narrative on the location and type of erosion prevention and sediment control (EPSC) measures for the proposed alterations and any other measures to treat, control, or manage impacts to waters	■	☐

Section 9. Water Resources Degradation (degree of proposed impact)

Note that in most cases, activities that exceed the scope of the General Permit limitations are considered greater than *de minimis* degradation to water quality.

Please provide your basis for concluding the proposed activity will cause one of the following levels of water quality degradation:

- ■ a. *De minimis* degradation, no appreciable permanent loss of resource values
- ☐ b. Greater than *de minimis* degradation (if greater than *de minimis* complete Sections 10-11)

For information and guidance on the definition of de minimis and degradation, refer to the Antidegradation Statement in Chapter 0400-40-03-.06 of the Tennessee Water Quality Criteria Rule:
https://publications.tnsosfiles.com/rules/0400/0400-40/0400-40.htm
For more information on specifics on what General Permits can cover, refer to the Natural Resources Unit webpage at:
https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap-.html

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Certification

Section 10. Detailed Alternatives Analysis		Attached Yes	Attached No
10.1	Analyze all reasonable alternatives and describe the level of degradation and permanent loss of resource value caused by each alternative. Assessment must consider options other than the "Preferred" and "No Action" alternatives. Provide associated rationale for selecting or rejecting all alternatives considered and demonstration that the least impactful practicable alternative was selected.	☐	☒
10.2	Discuss the social and economic consequences of each alternative	☐	☒
10.3	Demonstrate that the degradation associated with the preferred alternative will not violate water quality criteria for uses designated in the receiving waters, and is necessary to accommodate important economic and social development in the area	☐	☒

Section 11. Compensatory Mitigation		Attached Yes	Attached No
11.1	A detailed discussion of the proposed compensatory mitigation. Provide evidence of credit reservation if proposing to utilize a third-party provider.	☐	☒
11.2	Analysis of any proposed appreciable loss of resource value using the TN Stream Mitigation Guidelines. Provide Stream Quantification Tool (SQT) results if applicable. Include Existing Condition Score (ECS) and debit/credit calculations.	☐	☒
11.3	Describe how the compensatory mitigation would result in no net loss of resource value	☐	☒
11.4	Provide a detailed monitoring plan for the compensatory mitigation site if permittee-responsible project is proposed	☐	☒
11.5	Describe the long-term protection measures for the compensatory mitigation site if permittee-responsible project is proposed (e.g., deed restrictions, conservation easement)	☐	☒

Certification and Signature

An application submitted by a corporation must be signed by a principal executive officer; from a partnership or proprietorship, by the partner or proprietor respectively; from a municipal, state, federal or other public agency or facility, the application must be signed by either a principal executive officer, ranking elected official, or other duly authorized employee. ***I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury. The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.***

Printed Name	Official Title	Signature	Date
J. W. Melton	Operations Director	J. W. Melton	8/30/2023

Note that this form must be signed by the principal executive officer, partner or proprietor, or a ranking elected official in the case of a municipality; for details see **Certification and Signature** statement above. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed ARAP Application form (keep a copy for your records) to the appropriate EFO for the county(ies) where the proposed activity is located, addressed to **Attention: ARAP Processing**. You may also electronically submit the complete application and all associated attachments to water.permits@tn.gov.

EFO	Street Address	Zip Code	EFO	Street Address	Zip Code
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	Cookeville	1221 South Willow Ave.	38506
Jackson	1625 Hollywood Drive	38305-4316	Chattanooga	1301 Riverfront Pkwy., Ste. 206	37402
Nashville	711 R S Gass Boulevard	37243	Knoxville	3711 Middlebrook Pike	37921
Columbia	1421 Hampshire Pike	38401	Johnson City	2305 Silverdale Road	37601

Signature Delegation

KINDER MORGAN

Interoffice Memo

Date: January 3, 2023

To: File

Cc: Jessica Toll, Director of Operations, Director of Engineering, Director of Project Management, and Director of EHS

From: Wayne Simmons
Chief Operating Officer

RE: Responsible Corporate Official under Clean Water Act

As Chief Operating Officer of Kinder Morgan's Products business unit, I hereby authorize and delegate responsible corporate officer authority for the purposes of 40 CFR Part 122 and related Clean Water Act programs and state-specific certification requirements including permit applications, reports and submittals, and compliance certifications, to the individuals listed below. This delegation is effective for all companies listed in Attachment A and their affiliates and subsidiaries.

The position of Director of Operations, Director of Engineering, Director of Project Management, and Director of EHS meet the definition of Responsible Corporate Officer because, among other reasons, they are authorized to make management decisions which govern the operation of regulated facilities and directing measures to assure environmental compliance. This delegation memorandum memorializes their authority and can be provided to a state or federal agency should there be any question about whether a Director is duly authorized to sign a document.

W. H. Simmons

Wayne Simmons
Chief Operating Officer

Attachment A
Calnev Pipe Line LLC
Camino Real Gathering Company, L.L.C.
CDE Pipeline LLC
Central Florida Pipeline LLC
Colton Processing Facility
Copano Double Eagle LLC
Copano/Webb-Duval Pipeline LLC
Double Eagle Pipeline LLC
Guilford County Terminal Company, LLC
Hiland Crude, LLC
Independent Trading & Transportation Company I, L.L.C.
Kinder Morgan Crude & Condensate LLC
Kinder Morgan Crude Marketing LLC
Kinder Morgan KMAP LLC
Kinder Morgan Las Vegas LLC
Kinder Morgan Pipeline LLC
Kinder Morgan Portland Jet Line LLC
Kinder Morgan Portland Liquids Terminals LLC
Kinder Morgan Products Terminals LLC
Kinder Morgan Southeast Terminals LLC
Kinder Morgan Transmix Company, LLC
KM Phoenix Holdings LLC
Lomita Rail Terminal LLC
Petroleum (SE) Services LLC
Products (SE) Pipe Line Corporation
SFPP, L.P.

ARAP Application

Additional Information

SECTION 6: PROJECT DESCRIPTION

A section of pipeline was discovered as exposed in the dry channel during a routine inspection. Subsequent inspections noted that the pipeline had been recovered with sediment. PPL is proposing to excavate approximately 22 feet of petroleum products pipeline in the existing right-of-way (ROW), inspect the coating and recoat if necessary. Excavated soils will be returned after the pipeline is inspected and recoated and articulating concrete mats/tied concrete block mats will be placed over the pipeline ROW in the channel and adjacent areas. Each mat consists of concrete blocks (6.5-inch by 6.5-inch by 2.25-inch profile) locked together and embedded into a high strength geogrid. There is 1.5-inch spacing between the blocks to give the mat flexibility and allow for vegetation growth. A driveway culvert downstream has also been impacted by high flows and sediment movement. To protect the culvert, approximately nine cubic yards of rip rap will be installed in the channel to minimize additional erosion (See Attachment A – Design Drawings). The total project footprint is approximately 0.04 acres, including temporary workspace. The proposed workspace will be accessed through the PPL ROW and adjacent off ROW areas off Old Highway 45. GPS coordinates for the pipeline location in the workspace are 35.810791, -84.286441.

Site topography at the Project area is flat, with an elevation of 910 feet above mean sea level (MSL). The land cover in the project area consists of grassland, herbaceous, mixed forest, and residential and transportation land uses.

6.2 USGS topographical map indicating the exact location of the project is in Attachment B.

6.3 Photographs of the resource proposed for alteration may be found in Attachment C.

6.4 A narrative description of the existing stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate, and riparian vegetation.

The channel average width at top of bank is 12 feet and average depth is approximately three to five feet deep. The substrate is fine gravel and sand, soil, and sediment. Riparian vegetation in the project area is primarily mowed grasses, much up to the top of the bank. Several small shrubs and landscape vegetation are adjacent to the channel.

6.5 A narrative description of the proposed stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate, and riparian vegetation.

The channel width will remain 12 feet from top pf bank to top pf bank after completion of the pipeline exposure mitigation. The pipe protection is designed to maintain the depth of the channel at preconstruction depths. The area downstream of the pipeline right-of-way will have rip rap installed to minimize downstream erosion and impacts to a driveway culvert. Approximately 9 CY of rip rap will be installed over a 47-foot distance of the channel. The rip rap will start immediately downstream of the concrete mats and will terminate at the existing driveway culvert. Attachment A contains the design drawings for the installation of the articulating concrete mats and rip rap.

6.6 In the case of wetlands, Include a wetland delineation report with delineation forms and site map denoting location of data points.

Not applicable.

6.7 A copy of all hydrologic or jurisdictional determination documents issued for water resources on the project site. Is included in Attachment D.

SECTION 7: PROJECT RATIONALE

7.0 Describe the need for the proposed activity, including, but not limited to, the purpose, alternatives considered, and what will be done to minimize impacts to streams or wetlands.

The proposed project is necessary to maintain the integrity of the pipeline according to the standards determined by the Pipeline and Hazardous Materials Safety Administration (PHMSA).

No alternatives have been considered for the proposed Project because the exact location of the pipeline maintenance activity has been determined by the location of the exposure in the existing pipeline.

SECTION 8: TECHNICAL INFORMATION

8.1 Detailed plans, blueprints, or legible sketches of present site conditions and the proposed activity.

Attachment A contains the design drawings for the installation of the concrete mats and rip rap for pipeline and culvert protection.

Attachment B contains the following maps that illustrate the present site conditions and proposed activity.

Figure 1 – Topographic map
Figure 2 – Soils map
Figure 3 – Aerial map

8.2 For both the proposed activity and mitigation, provide a discussion regarding the sequencing of events.

- Mobilization
- Site preparation:
    - Installation of temporary sediment/erosion control structures
    - Installation of filter sock or hay bales for dewatering, if water is present at time of maintenance activities
- Excavate existing pipeline
    - Soils excavate from the existing pipeline trench will be stockpiled within the ROW with topsoil and subsoil maintained in different stockpiles
- If necessary, remove existing coating from the pipeline and replace with new coating
- Refill the trench, with topsoil being placed on top
- After soils are replaced in the channel, articulating concrete mats/tied concrete block mats will be placed over the pipeline ROW in the channel and adjacent areas.
    - Each mat consists of concrete blocks (6.5-inch by 6.5-inch by 2.25-inch profile) locked together and embedded into a high strength geogrid. There is 1.5-inch spacing between the blocks to give the mat flexibility and allow for vegetation growth.

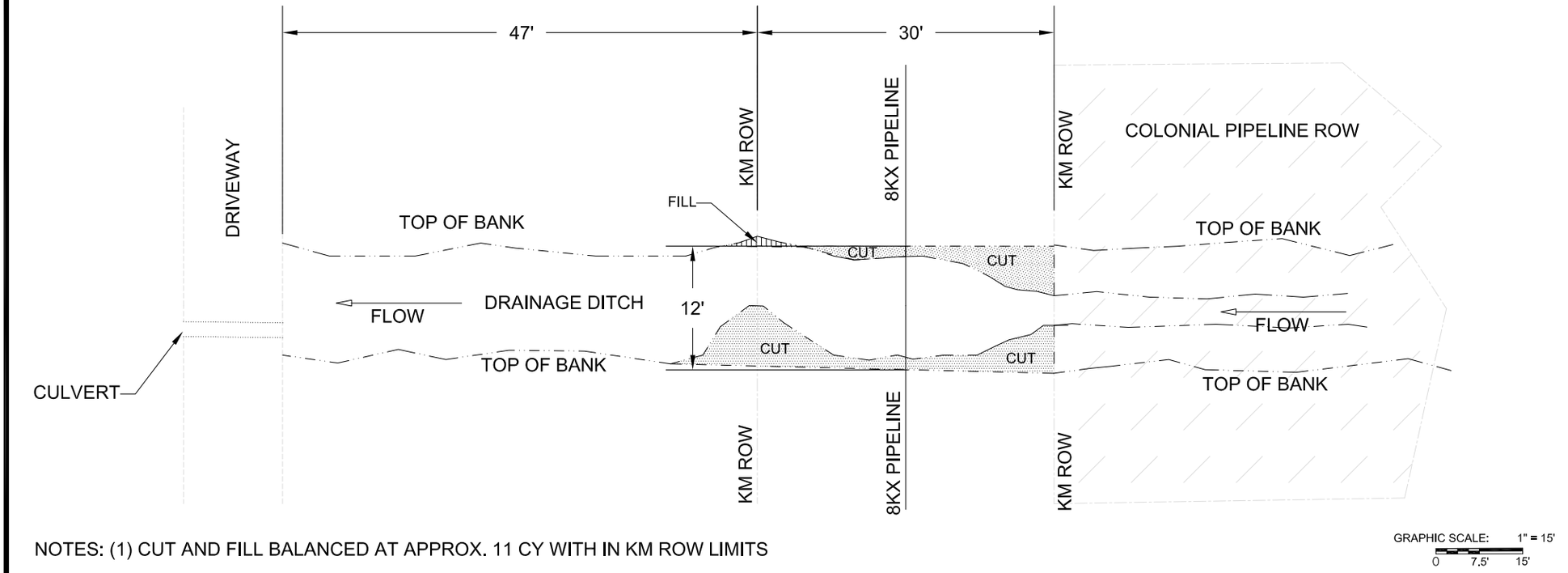
- A driveway culvert downstream has also been impacted by high flows and sediment movement. To protect the culvert, approximately nine cubic yards of rip rap will be installed in the channel to minimize additional erosion.
- Clean up and restoration
    - Removal of temporary sediment/erosion control measures
    - Regrade/contour of right-of-way to preconstruction contours
    - Seeding/mulching
        - No fertilizer or mulch will be utilized in or near drainage channel

8.3 Depiction and narrative on the location and type of erosion prevention and sediment control measures for the proposed Project activities

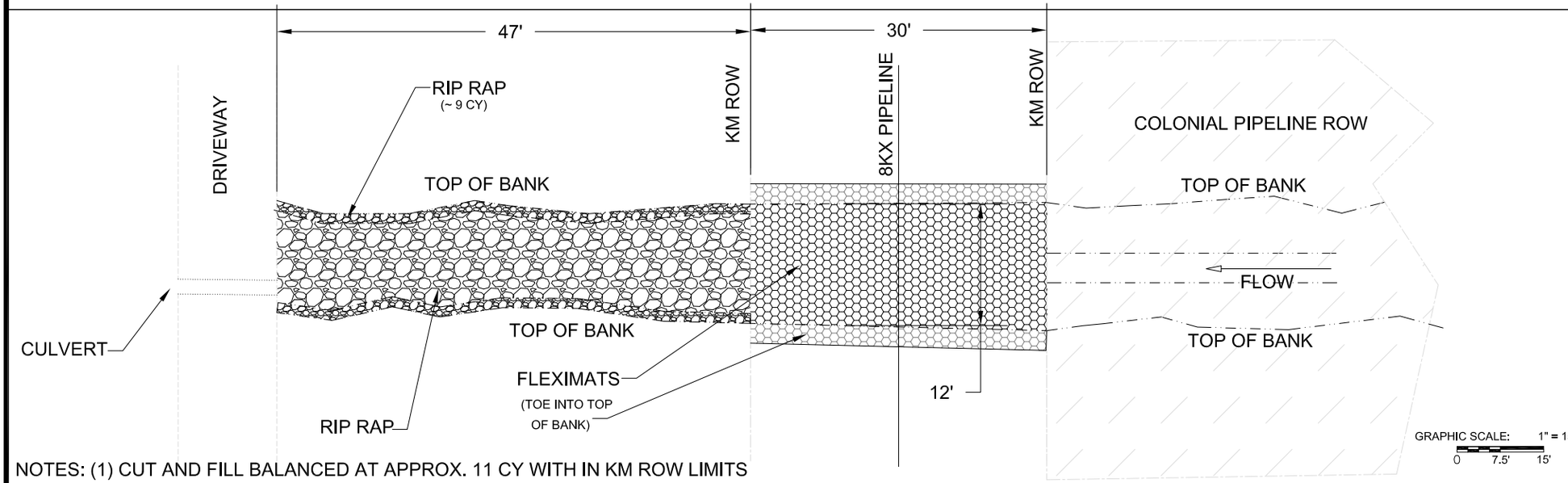
The Project will follow the PPL construction procedures. Erosion and Sediment control best management practices to be in place at the site as needed are included in Attachment E.
A PPL inspector will inspect and ensure maintenance of temporary erosion control measures on a daily basis in areas of active construction or equipment operation. The project area will continue to be inspected within 24 hours of any rain event greater than one-half inch of rain. At a minimum, sediment will be removed when accumulation reaches one-half the height of the sediment barrier. The erosion control measures will not be removed, and the area will be monitored until the disturbed area achieves a 70% uniform vegetative growth. Soil conditioning, fertilization, reseeding, and mulching will be performed as required.

Attachment A

Design Drawings



NOTES: (1) CUT AND FILL BALANCED AT APPROX. 11 CY WITH IN KM ROW LIMITS



NOTES: (1) CUT AND FILL BALANCED AT APPROX. 11 CY WITH IN KM ROW LIMITS

NO.	DATE	DRAWN	CHECKED	APP.	DESC.

REVISIONS

KINDER MORGAN
PRODUCTS (SE) PIPE LINE COMPANY

8KX PIPELINE

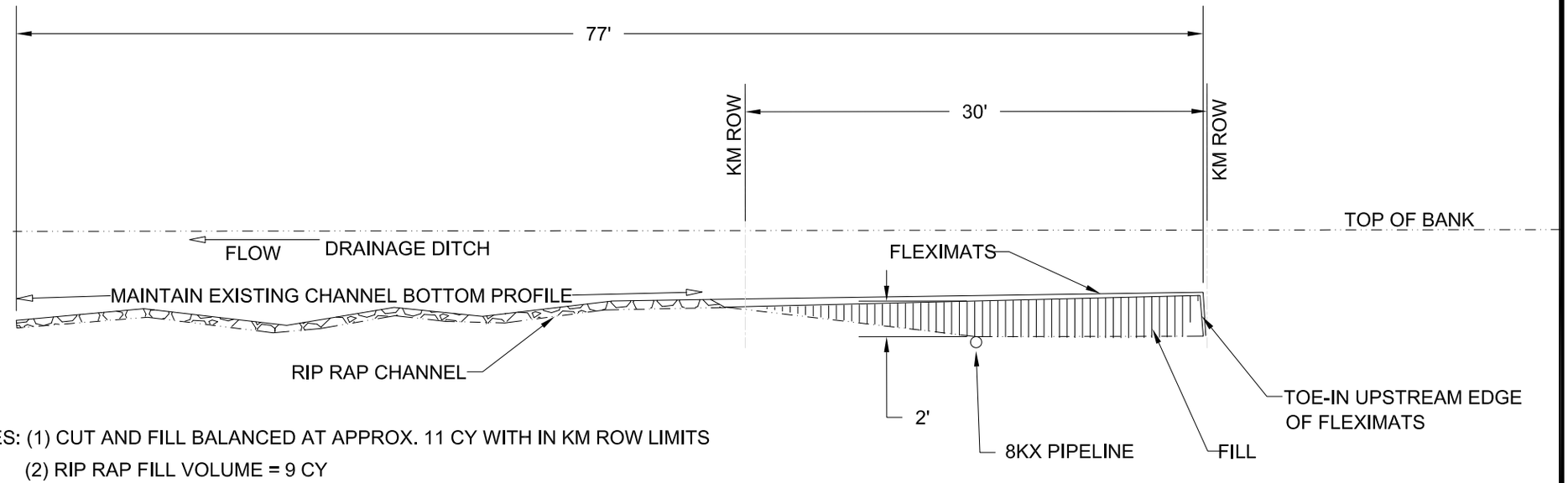
DRAINAGE DITCH CROSSING REPAIRS

LENIOR CITY TN

DATE: 08/09/2023 SCALE: AS SHOWN
DRAWN: JSW PLTSCALE:
CHECKED:
APPROVED:
APPROVED:

A—

DRAINAGE DITCH PROFILE



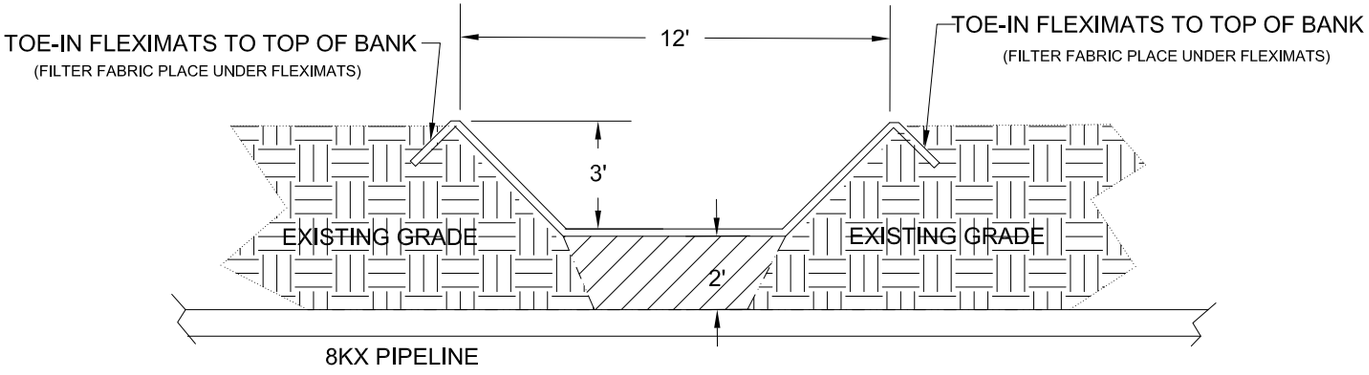
NOTES: (1) CUT AND FILL BALANCED AT APPROX. 11 CY WITH IN KM ROW LIMITS

(2) RIP RAP FILL VOLUME = 9 CY

(3) CLEAN OUT DRAINAGE DITCH DOWNSTREAM, INSTALL FILTER FABRIC AND RIP RAP

(4) PROPERTY OWNER PERMISSION REQUIRED FOR WORK OUTSIDE KM ROW

GRAPHIC SCALE: 1" = 10'
0 5' 10'



DRAINAGE DITCH X-SECTION

GRAPHIC SCALE: 1" = 5'
0 2.5' 5'

NO.	DATE	DRAWN	CHECKED	APP.	DESC.

REVISIONS

KINDER MORGAN
PRODUCTS (SE) PIPE LINE COMPANY

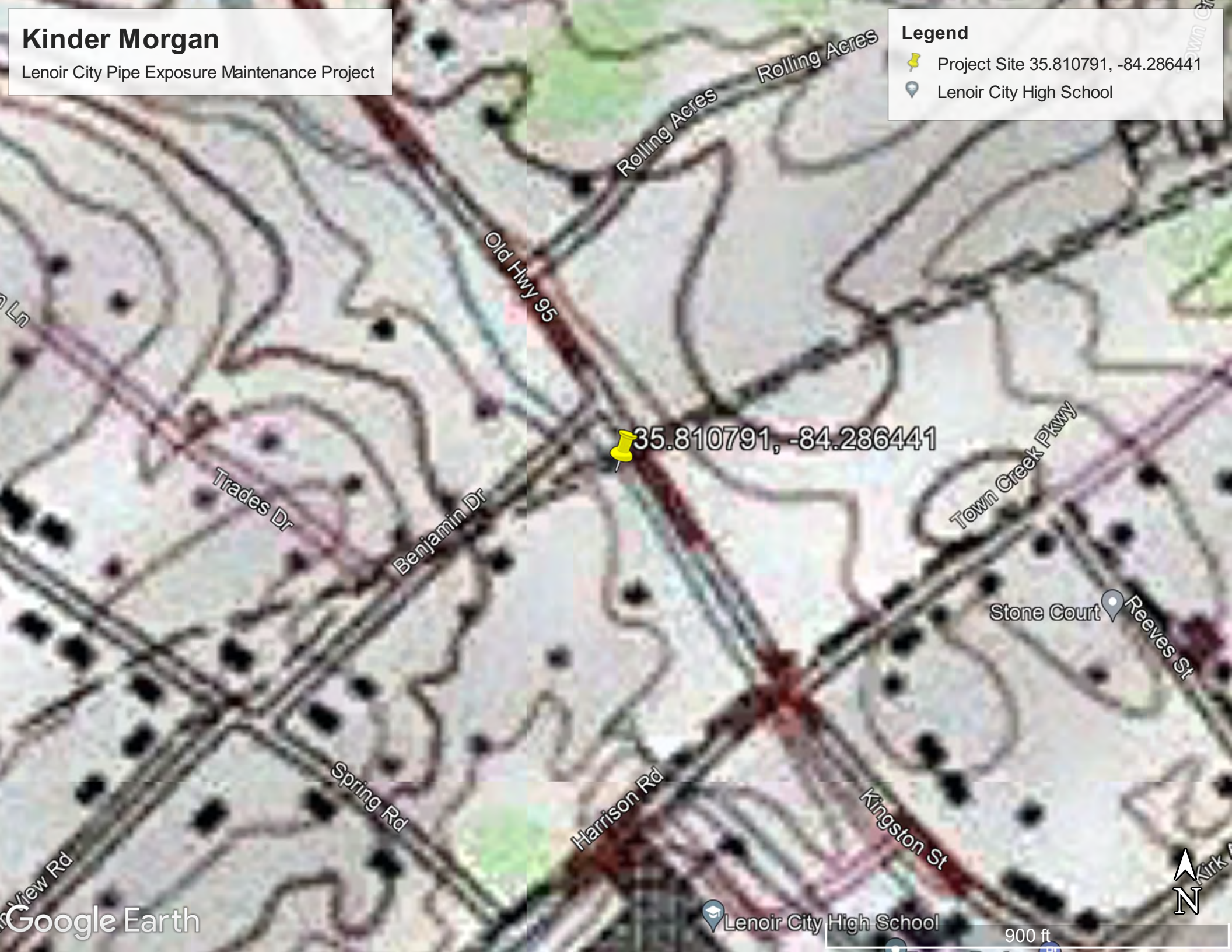
8KX PIPELINE
DRAINAGE DITCH CROSSING REPAIRS
LENIOR CITY TN

DATE: 08/09/2023 SCALE: AS SHOWN
DRAWN: JSW PLTSCALE:
CHECKED:
APPROVED:
APPROVED:

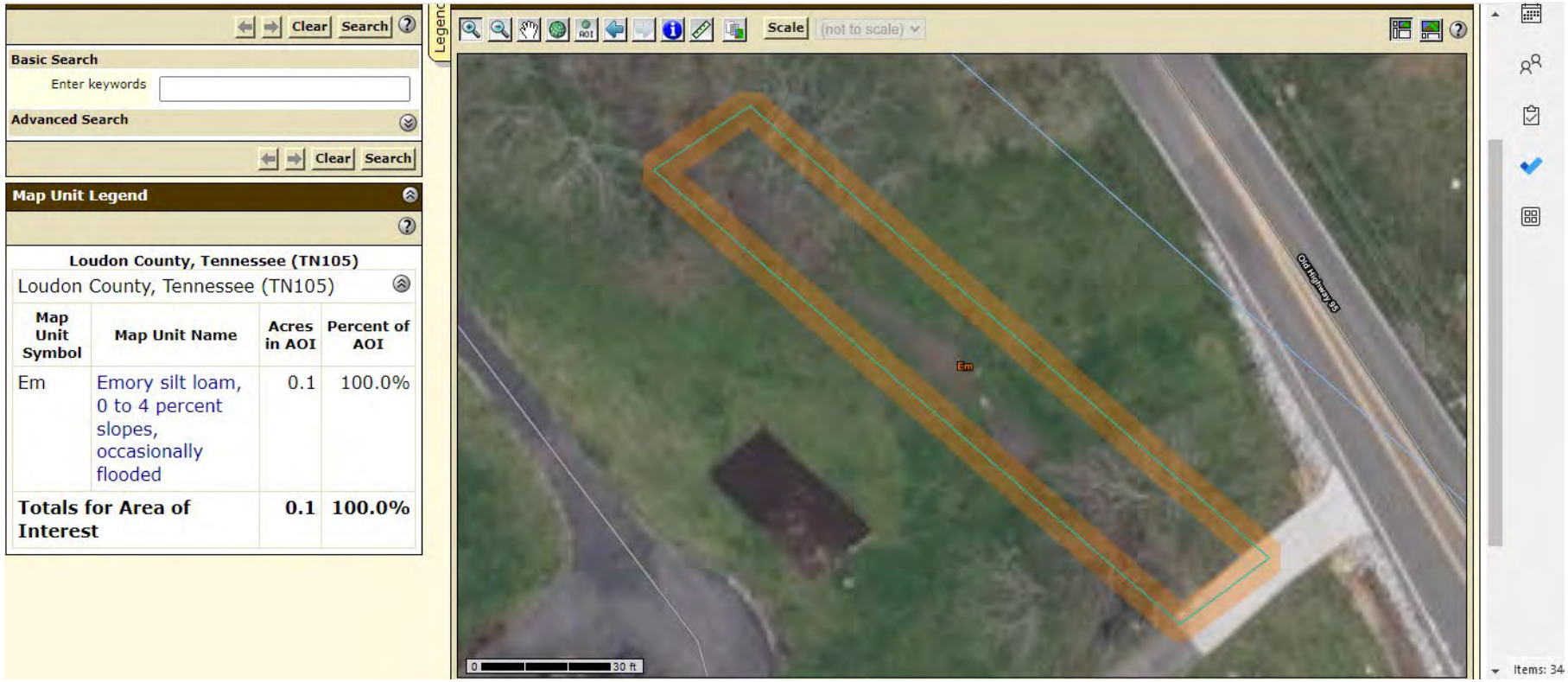
A—

Attachment B

Maps--Topgraphic, Soils and Aerial


Kinder Morgan
Lenoir City Pipe Exposure Maintenance Project
Legend
Project Site 35.810791, -84.286441
Lenoir City High School
Rolling Acres
Rolling Acres
Old Hwy 95
35.810791, -84.286441
Trades Dr
Benjamin Dr
Town Creek Pkwy
Stone Court
Reeves St
Spring Rd
Harrison Rd
Kingston St
Lenoir City High School
N
900 ft
Google Earth

Web Soil Survey



Source: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed August 30, 2023.


Kinder Morgan
Lenoir City Pipe Exposure Maintenance Project
Legend
Project Site 35.810791, -84.286441
Old Hwy 95
Google Earth
Image © 2023 Maxar Technologies
35.810791, -84.286441
N
100 ft

Attachment C

Project Area Photographs

Lenoir City Pipe Exposure

Photo 1 – Facing downstream

Photo 2 – Facing upstream

Photo 3 – Facing upstream at the exposed pipe location.

Photo 4 – Location of exposed pipe. Pipe is exposed and gets recovered by periodic high flows.

Photo 5- Facing downstream from pipeline.

Attachment D

Hydrologic DeterminationField Data Sheet

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody: unnamed tributary to Town Creek	Date/Time: 6/28/2023 0613
Assessors/Affiliation: Melanie Wiggins/Kinder Morgan	Project ID :
Site Name/Description: Lenoir City Pipeline Exposure	
Site Location: near intersection of Old Hwy 95 and Benjamin Drive	
HUC (12 digit): 060102010302 (Tennessee River-Town Creek)	Latitude: 35.810791
Previous Rainfall (7-days) : 6/24/2023	Longitude: -84.286441
Precipitation this Season vs. Normal : abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip. data :	
Watershed Size :	County: Loudon
Soil Type(s) / Geology :	Source:
Surrounding Land Use : Residential	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate (Slight) Absent	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		(WWC)
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall no records		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except *Gambusia*)	✓	Stream
7. Presence of naturally occurring ground water table connection	✓	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 17.5

Justification / Notes :

Slight change in channel → possibly straightened in the past?

*Shown on topo as blue line stream. Visual observation of field indicators score as WWC.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	1	2	3

8

B. Hydrology (Subtotal = 5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

5

C. Biology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed [1]	3	2	1	0
21. Rooted plants in the thalweg [1]	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed [2]	0	0.5	1	1.5

4.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

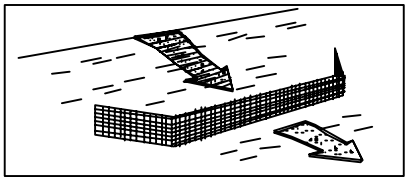
Total Points = 17.5

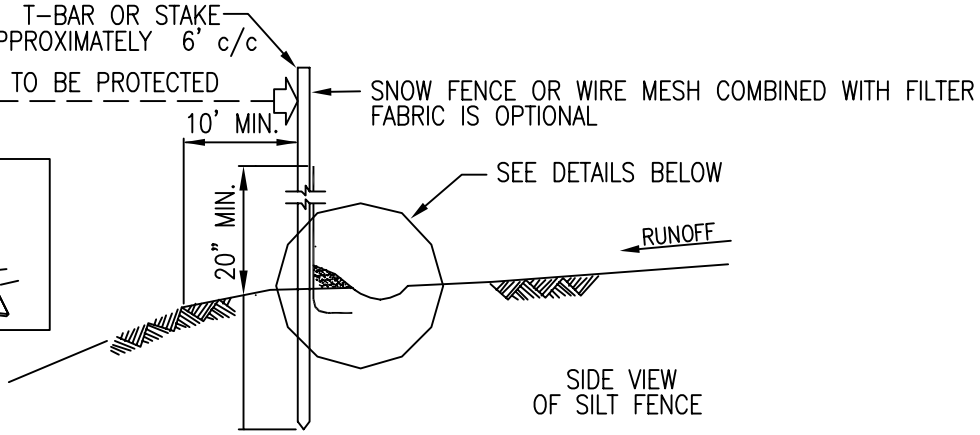
Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

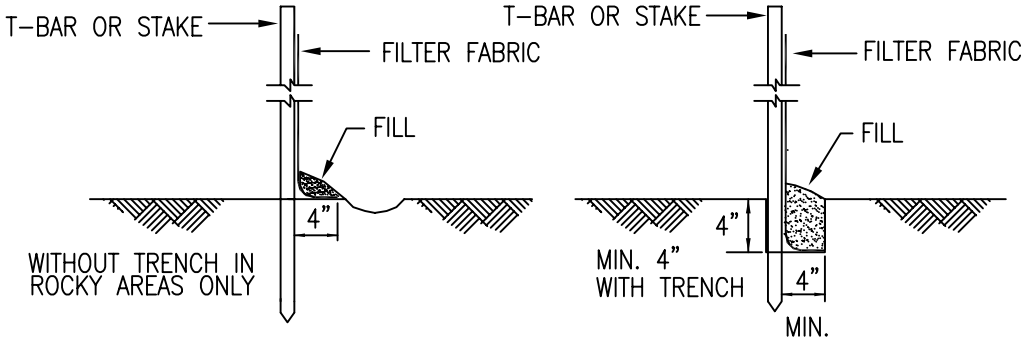
Notes : Weak hydrophytic vegetation present in the channel.

Attachment E

Erosion and Sediment Control Typicals







NOTES:

1. GENERALLY WHEN A LONG SEDIMENT BARRIER IS REQUIRED, SILT FENCE WILL BE UTILIZED RATHER THAN STRAW BALES AT:
   - THE BASE OF ALL SLOPES ABOVE ROADS, SPRINGS, WETLANDS, IMPOUNDMENTS AND PERENNIAL AND INTERMITTENT STREAMS.
   - THE DOWN SLOPE RIGHT-OF-WAY EDGE WHERE ANY OF THE ABOVE MENTIONED LOCATIONS ARE ADJACENT TO THE RIGHT-OF-WAY.
   - BETWEEN TOPSOIL/SPOIL STOCKPILES AND PERENNIAL OR INTERMITTENT STREAMS OR WETLANDS WHERE BUFFER ZONE REQUIREMENTS CANNOT BE MET.
   - ALONG R.O.W. BOUNDARIES OF WETLAND CONSTRUCTION.
   - AS SPECIFIED IN THE SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN.
   - AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
2. THE SILT FENCE SHALL BE CONSTRUCTED AS FOLLOWS:
   - FABRIC USED FOR THE SILT FENCE SHALL BE A "STANDARD STRENGTH" GEOTEXTILE, SUCH AS MIRAFI 100X OR AN APPROVED EQUIVALENT.
   - THE FABRIC SHALL BE CUT FROM A CONTINUOUS FABRIC ROLL.
   - THE HEIGHT OF THE FENCE SHALL NOT EXCEED 24".
   - SPLICES SHALL ONLY BE DONE AT POSTS AND SHALL CONSIST OF A MINIMUM OF 6" OF OVERLAP WITH BOTH ENDS SECURED TO THE POST.
   - POSTS SHALL BE POSITIONED A MAXIMUM OF 10' APART.
   - POSTS SHALL CONSIST OF 2"X2" WOODEN STAKES, OR EQUIVALENT, OF SUFFICIENT LENGTH TO EXTEND A MINIMUM OF 12" INTO THE GROUND.
   - FABRIC SHALL BE STAPLED OR WIRED TO POSTS A MAXIMUM OF EVERY 9".
3. THE SILT FENCE SHALL BE INSTALLED AS SPECIFIED BY THE MANUFACTURER OR AS FOLLOWS:
   - A TRENCH, 4" WIDE AND 4" DEEP, SHALL BE EXCAVATED ALONG THE CONTOUR. THE POST SHALL BE DRIVEN INTO THE BOTTOM OF THE TRENCH ON THE DOWNSTREAM SIDE OF THE FILTER FABRIC. THE TRENCH SHALL BE BACK FILLED AND COMPACTED, ENSURING 4" OF FENCE IS BURIED WITHIN THE TRENCH.
   - IN AREAS WHERE THE TERRAIN IS TOO ROCKY FOR TRENCHING, A 4" GROUND FLAP WITH ROCK FILL TO HOLD IT IN PLACE SHALL BE USED.

DRAWING DEPICTED IS SUPERSEDED BY WRITTEN STANDARD, SCOPE OF WORK OR LINE LIST.

REVISIONS

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3	07/01/05	ENG REWRITE RELEASE	WS		

KINDER MORGAN INC

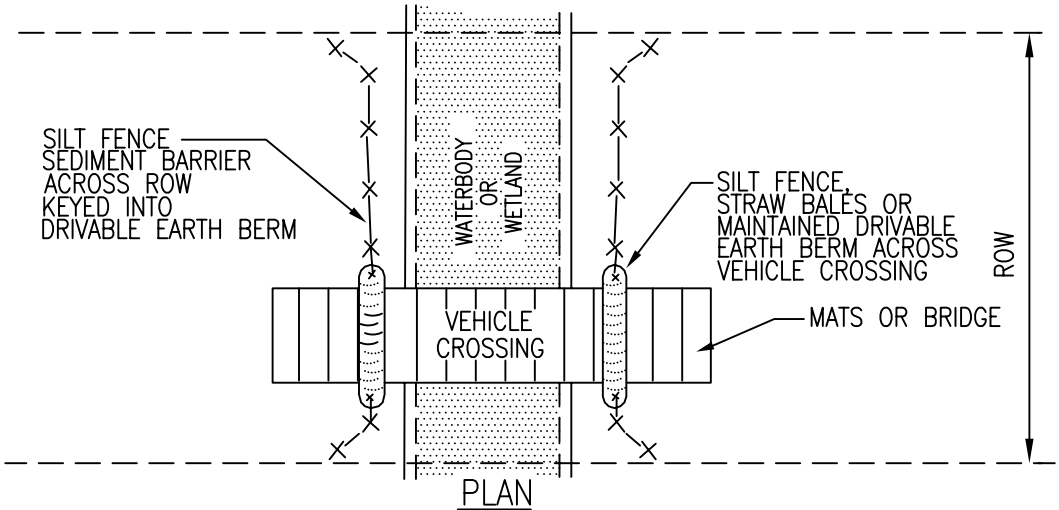
TYPICAL SILT FENCE SEDIMENT BARRIER
EROSION CONTROL

DATE: 07/01/05		APPROVED BY:
SCALE: N.T.S.	CST-P-1260-A180.1	SH. 1 OF 2

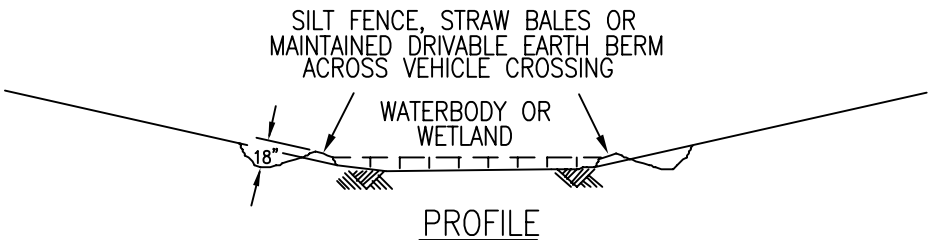
NOTES:

- SILT FENCES PLACED AT THE TOE OF A SLOPE SHALL BE SET AT LEAST 6' DOWN GRADIENT FROM THE TOE OF THE SLOPE (WHERE POSSIBLE) IN ORDER TO INCREASE PONDING.
- SILT FENCE PLACED AT THE TOP OF SLOPES SHALL BE AT LEAST 10' BELOW THE CREST.
- SILT FENCES PLACED AT THE BASE OF SPOIL OR TOPSOIL STOCKPILES SHALL EXTEND AROUND THE BASE OF THE PILES IN ORDER TO CONTAIN ANY SEDIMENTS AND/OR PREVENT FLOW-AROUND.
- WHEN INSTALLING SILT FENCES IN DRAINAGES, EXTEND THE FENCE UP THE CHANNEL BANKS AND TURN BOTH ENDS AT A SLIGHT ANGLE TOWARDS THE CENTER OF THE RIGHT-OF-WAY.
- UPON THE REQUEST OF THE COMPANY'S INSPECTOR, SNOW FENCE, STRAW BALE OR WIRE MESH SHALL BE USED IN CONJUNCTION WITH THE SILT FENCE. IF WIRE MESH OR SNOW FENCE IS USED, THE WIRE SHALL BE ATTACHED TO THE POSTS USING WIRE TIES OR HEAVY DUTY STAPLES PRIOR TO INSTALLATION OF THE FABRIC. THE WIRE OR SNOW FENCE SHALL BE "KEYED" INTO THE TRENCH AT LEAST 2" AND EXTEND UP THE POSTS TO THE TOP OF THE FABRIC.
- IF REQUIRED, A 15' GAP SHALL BE LEFT IN THE SILT FENCE TO ACCOMMODATE TRAFFIC ON TEMPORARY CONSTRUCTION ROADS. HOWEVER, A SECTION OF SILT FENCE OR A DRIVABLE EARTH BERM TIED INTO ADJACENT SILT FENCE SHALL BE USED TO CLOSE THE GAP AT THE END OF EACH DAY. THE SILT FENCE USED TO CLOSE THE GAP MUST OVERLAP THE ENDS OF THE PERMANENT SILT FENCE FOR A MINIMUM OF 24", AND SHALL BE "KEYED" INTO THE GROUND THE SAME AS THE FILTER FABRIC ON EITHER SIDE OF THE GAP.

4. SILT FENCES SHALL BE CHECKED AND MAINTAINED ON A REGULAR BASIS. THE DEPTH OF THE ANCHOR TRENCH SHALL BE ADJUSTED IF UNDERMINED. SHOULD INSPECTION REVEAL SEDIMENT LOADING AT OR NEAR 40% CAPACITY, THE SEDIMENT SHALL BE REMOVED AND PLACED IN AN AREA WHERE IT SHALL NOT REENTER THE SILT FENCE IMPOUNDMENT OR A WATERWAY.
5. SILT FENCE SHALL BE REMOVED ONLY AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
6. EROSION CONTROL STRUCTURES SHALL BE INSPECTED DAILY IN AREAS OF ACTIVE CONSTRUCTION. STRUCTURES SHALL BE INSPECTED WEEKLY AT INACTIVE CONSTRUCTION AREAS AND WITHIN 24 HOURS OF EACH 0.5 INCH RAINFALL EVENT. STRUCTURES SHALL BE REPAIRED AS NECESSARY.



PLAN



PROFILE

DRIVABLE BERM NOTES:

1. A MAINTAINED DRIVABLE EARTH BERM MAY BE INSTALLED ACROSS THE VEHICLE CROSSING IN LIEU OF SILT FENCE OR STRAW BALES.
2. BERM MUST BE TIED INTO SILT FENCE.
3. BERM MUST BE MAINTAINED TO ENSURE SEDIMENT TRAPPING CAPACITY.

DRAWING DEPICTED IS SUPERSEDED BY WRITTEN STANDARD, SCOPE OF WORK OR LINE LIST.

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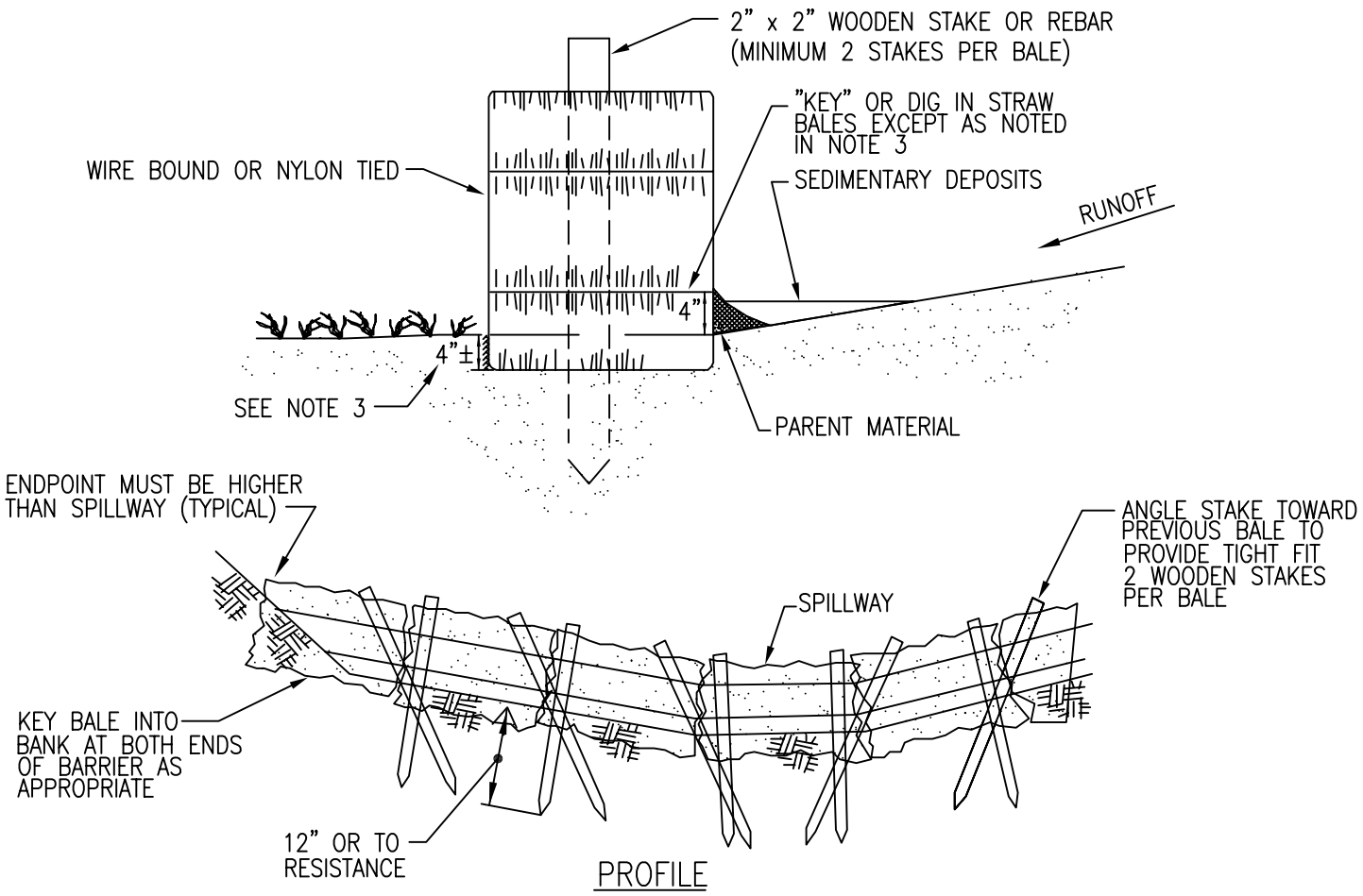
KINDER MORGAN INC

TYPICAL SILT FENCE SEDIMENT BARRIER
EROSION CONTROL

DATE: 07/01/05		APPROVED BY:
SCALE: N.T.S.	CST-P-1260-A180.2	SH. 2 OF 2



PROFILE

NOTES:

1. STRAW BALE SEDIMENT BARRIERS SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
   - THE BASE OF ALL SLOPES ABOVE ROADS, SPRINGS, WETLANDS, IMPOUNDMENTS AND FLOWING STREAMS.
   - THE DOWNSLOPE RIGHT-OF-WAY EDGE WHERE ANY OF THE ABOVE-MENTIONED LOCATIONS ARE ADJACENT TO THE RIGHT-OF-WAY.
   - BETWEEN TOPSOIL/SPOIL STOCKPILES AND STREAMS OR WETLANDS AS NEEDED.
   - ALONG R.O.W. BOUNDARIES IN WETLAND CONSTRUCTION.
   - AS SPECIFIED IN THE SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN.
   - AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
2. STRAW BALE SEDIMENT BARRIERS SHALL CONSIST OF A ROW OF STRAW BALES, PLACED ON THE FIBER-CUT EDGE (TIES NOT IN CONTACT WITH THE GROUND). BALES SHALL BE TIGHTLY ABUTTED TO ONE ANOTHER. THE BARRIER SHALL BE ONE BALE HIGH. ONLY CERTIFIED "NOXIOUS WEED-FREE" STRAW SHALL BE USED WHENEVER POSSIBLE.
3. ENTRENCH ("KEY") STRAW BALES INTO THE GROUND TO A DEPTH OF 4" EXCEPT IN FROZEN, SATURATED, OR EXTREMELY ROCKY SOILS. PLACE PARENT MATERIAL ON UPSTREAM SIDE OF STRAW BALES TO PREVENT UNDERMINING.
4. WALK ON STRAW BALES TO INSURE ADEQUATE BALE-TO-SOIL CONTACT.
5. ANCHOR STRAW BALES SECURELY IN PLACE WITH TWO WOODEN OR STEEL REBAR STAKES DRIVEN THROUGH THE TOPS OF THE BALES. THE STAKES SHALL PENETRATE THE GROUND A DISTANCE OF 12" UNLESS ROCK OR AN IMPERMEABLE LAYER IS ENCOUNTERED:
   - THE FIRST, CENTER AND END BALES OF THE BARRIER SHALL HAVE STAKES DRIVEN VERTICALLY THROUGH THE BALE.
   - BALES, OTHER THAN THOSE LOCATED AT THE ENDS OR CENTER OF THE BARRIER, SHALL HAVE THE FIRST STAKE DRIVEN THROUGH THE TOP OF THE BALE AT AN ANGLE SO THAT THE STAKE PASSES THROUGH THE PREVIOUSLY PLACED BALE, IN ORDER TO PROVIDE TIGHT CONTACT BETWEEN BALES. THE SECOND STAKE SHALL BE DRIVEN VERTICALLY THROUGH THE TOP OF THE BALE.

DRAWING DEPICTED IS SUPERSEDED BY WRITTEN STANDARD, SCOPE OF WORK OR LINE LIST.

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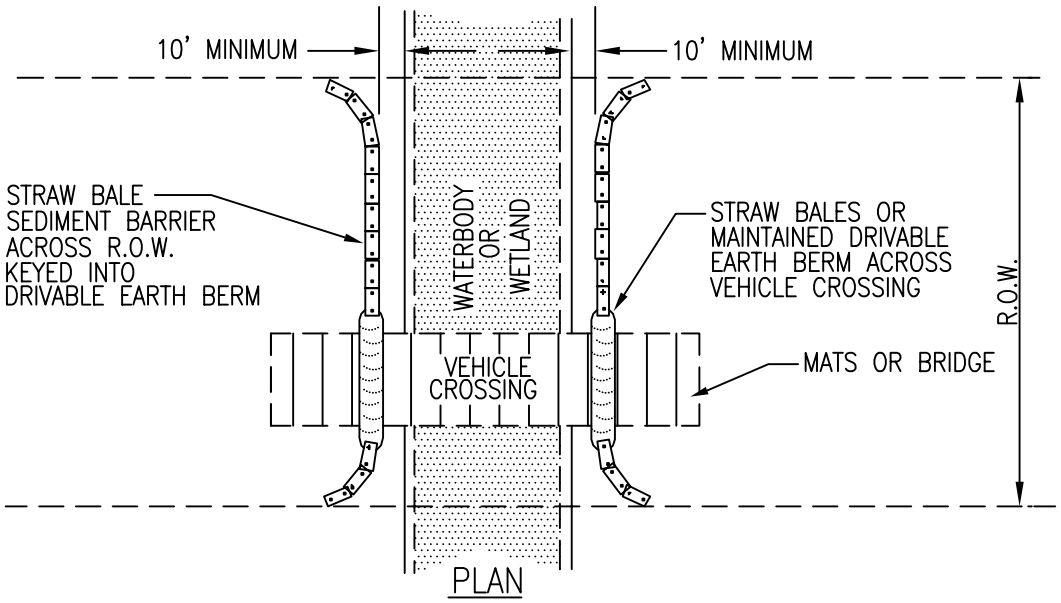
KINDER MORGAN INC

TYPICAL STRAW BALE SEDIMENT BARRIER
EROSION CONTROL

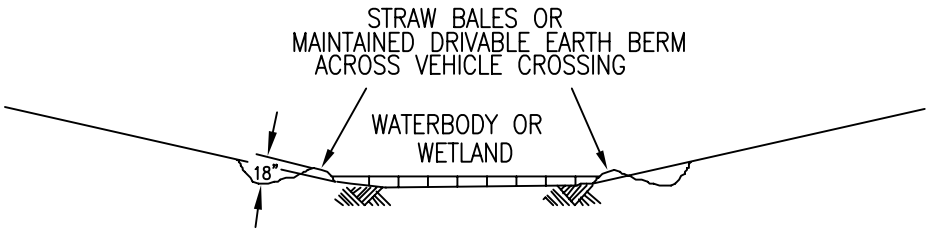
DATE: 07/01/05		APPROVED BY:
SCALE: N.T.S.	CST-P-1260-A190.1	SH. 1 OF 2

NOTES:

6. PLACE STRAW BALES SO THEY ARE EFFECTIVE BUT DO NOT HINDER CONSTRUCTION. IF NECESSARY A 15' GAP IN STRAW BALE BARRIERS SHALL BE PROVIDED AS NEEDED TO ACCOMMODATE TRAFFIC ON TEMPORARY CONSTRUCTION ROADS. THE GAP SHALL BE CLOSED AT THE END OF EACH WORK DAY, USING STRAW BALE BARRIERS, OR A DRIVABLE EARTH BERM TIED INTO ADJACENT STRAW BALES. THE BALES USED TO CLOSE THE GAP SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE BARRIER, THE END BALES OF THE GAP SEGMENT SHALL OVERLAP A MINIMUM OF 12".
7. MONITOR FOR UNDERMINING OR FLOW-AROUND. INSPECT BALE POSITION TO ASSURE THAT THEY REMAIN CLOSE TOGETHER. MAINTAIN STRAW BALE BARRIERS BY REPLACING DAMAGED BALES AND REMOVING SEDIMENT LOAD. WHEN SEDIMENT LOAD IS GREATER THAN 60% BEHIND THE BARRIER, SEDIMENT SHALL BE REMOVED AND PLACED IN AN AREA WHERE IT SHALL NOT REENTER THE BARRIER OR A WATERWAY. IF SEDIMENT BEHIND STRAW BALE BARRIERS CANNOT BE REMOVED, A SECOND ROW OF BALES SHALL BE INSTALLED UPSLOPE OF THE BARRIER.
8. WHERE STRAW BALES AND SILT FENCE ARE INSTALLED AS A UNIT, THE STRAW BALES SHALL BE INSTALLED ON THE DOWN SLOPE SIDE OF THE SILT FENCE.
9. EROSION CONTROL STRUCTURES SHALL BE INSPECTED DAILY IN AREAS OF ACTIVE CONSTRUCTION. STRUCTURES SHALL BE INSPECTED WEEKLY AT INACTIVE CONSTRUCTION AREAS AND WITHIN 24 HOURS OF EACH 0.5 INCH RAINFALL EVENT. STRUCTURES SHALL BE REPAIRED AS NECESSARY.
10. STRAW BALE BARRIERS SHALL BE REMOVED ONLY AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.



PLAN



PROFILE

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3. BERM MUST BE MAINTAINED TO ENSURE SEDIMENT TRAPPING CAPACITY.

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KINDER MORGAN INC

TYPICAL STRAW BALE SEDIMENT BARRIER EROSION CONTROL

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