Line 5 Wisconsin Segment Relocation Project

Ashland, Bayfield, Douglas, and Iron Counties Wisconsin

Water Resources Application for Project Permits

Environmental Impact Report

Revised August 2020

EIR Attachment N

Stream Restoration Typicals

ENBRIDGE PIPELINES INC.
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LINE 5 WSRP
AFE# 20009293
SELECTED CHANNELS AND APPLICABLE REMEDIATION DRAWING(S)
CWP XXX
ISSUED FOR 60% REVIEW

Drawings	
Index 1	Index of Selected Channels And Applicable Remediation Drawing
Table 1	Channel Remediation Methods
Exhibit 1	Stream Remediation Decision Process
Figure 1	Typical Final Stream Bank Stabilization Rip Rap & Erosion Control
Figure 2	Typical Biolog Stream Bank Stabilization
Figure 3-1	Typical Rootwad Stream Bank Stabilization (Plan View)
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Figure 9	Typical Silt Fence Installation
Figure 10	Typical Straw Bale Installation

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INDEX OF SELECTED CHANNELS AND APPLICABLE REMEDIATION DRAWINGS

BY: ASM	CHK: JMO	ENG. : NIN	ENB APPR: M. STATTERS
DATE: 2020-07-27		SCALE: NTS	STATUS: DESIGN
DWG NO.: INDEX 1			REV NO: 0.A

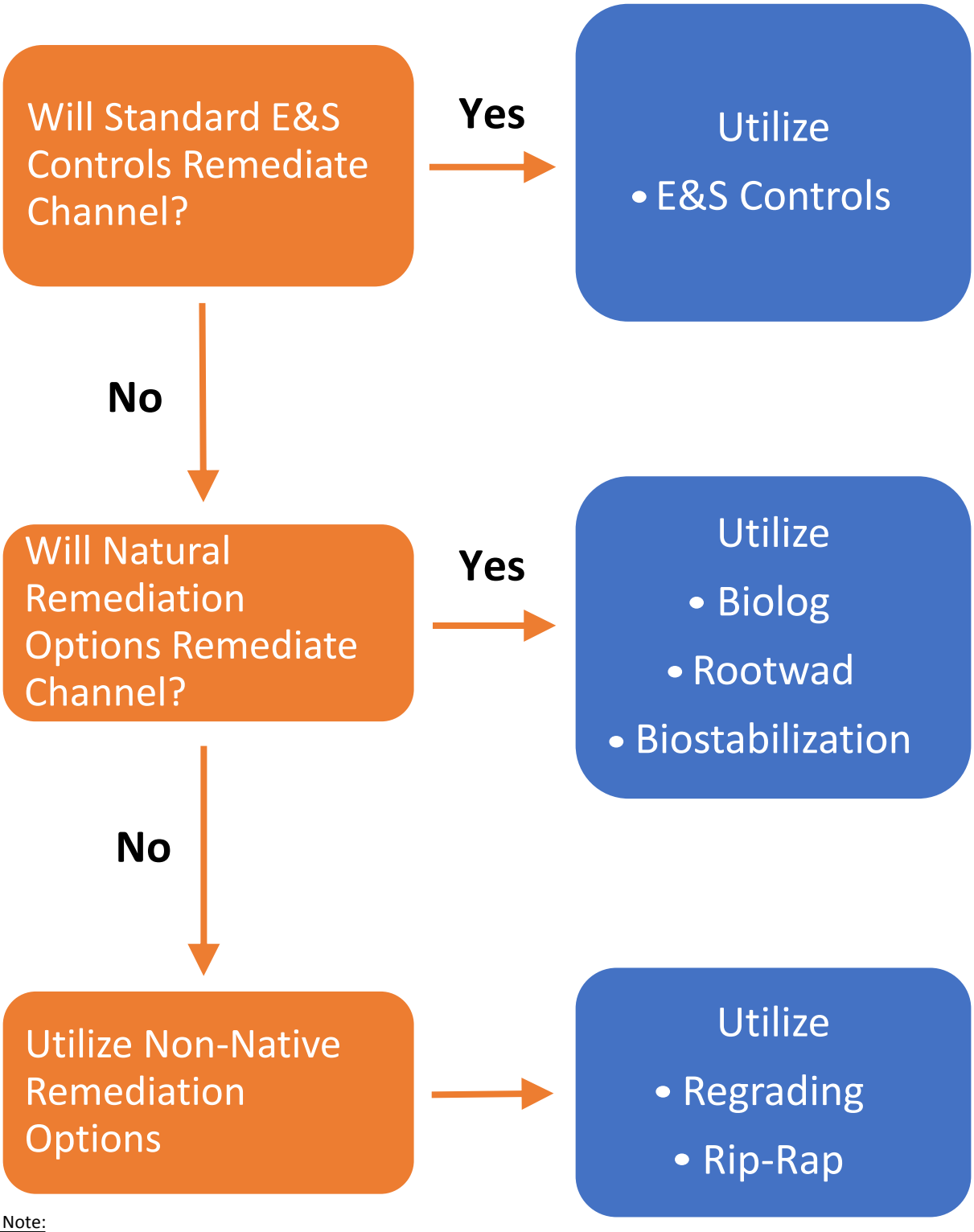
Table 1 Channel Remediation Methods

Selected Channels And Applicable Remediation Drawing(s)	MP	Channel Remediation Methods										
		Additional Bank Remediation Options Beyond Standard E&S Controls					Standard E&S Controls					
		Rip-Rap	Biolog	Rootwad	Biostabilization	Re-Grading	Erosion Control Blanket	Berms	Biolog	Silt Fence	Straw Bales
		Figure 1	Figure 2	Figure 3	Figure 4	Figure 5	Figure 6	Figure 7	Figure 8	Figure 9	Figure 10
Bay City Creek	0.6	X			X		X	X	X	X	X
Little Beartrap Creek	2.2			X		X	↓	↓	↓	↓	↓
Beartrap Creek	2.9	X		X	X		↓	↓	↓	↓	↓
Rock Creek	5.0		X		X		↓	↓	↓	↓	↓
UNT Deer Creek	5.9	X		X			↓	↓	↓	↓	↓
UNT Marengo River	12.8		X			X	↓	↓	↓	↓	↓
UNT Brunsweiler River	14.7				X	X	↓	↓	↓	↓	↓
UNT Trout Brook	15.9			X	X		↓	↓	↓	↓	↓
UNT Silver Creek	19.8		X		X		↓	↓	↓	↓	↓
UNT Gehrman Creek	28.6		X			X	↓	↓	↓	↓	↓
Camp Four Creek	29.8						↓	↓	↓	↓	↓
Feldcher Creek	31.7						↓	↓	↓	↓	↓

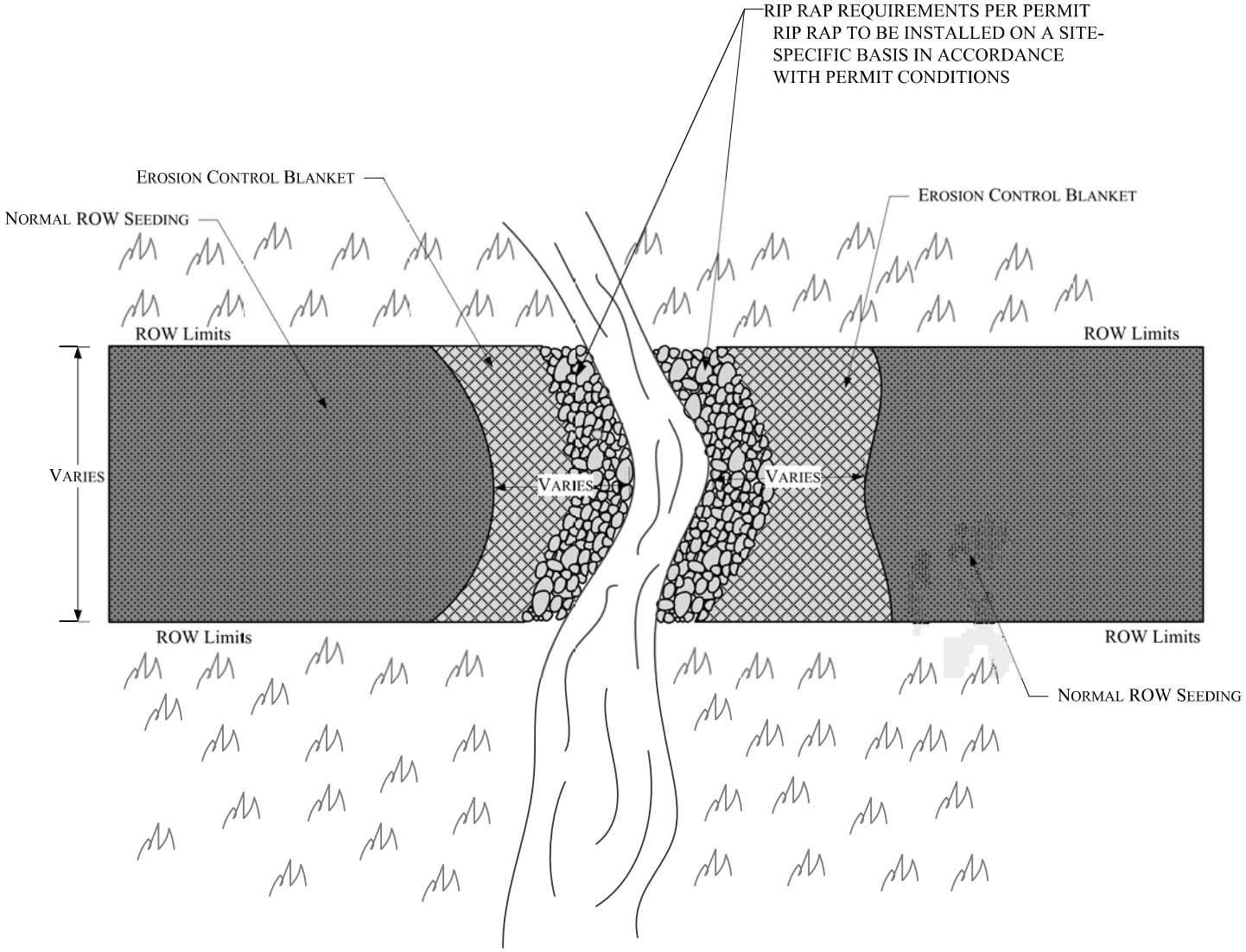
This table summarizes the type of drawing(s) applicable for the remediation of selected channels whose method of remediation may not be immediately clear. The selected typical drawings in this table are suggestions to aid in the determination of method for remediation, are not mutually inclusive or exclusive with one another, and do not constitute a restriction of methods to be used in the proper remediation and stabilization of channel banks.

Figure 1	Typical Rip Rap & Erosion Control Stream Bank Stabiliation	Figure 6	Typical Erosion Control Blanket
Figure 2	Typical Biolog Stream Bank Stabilization	Figure 7-1	Typical Temporary or Permanent Berm (Perspective View)
Figure 3-1	Typical Rootwad Stream Bank Stabiliztion (Plan View)	Figure 7-2	Typical Temporary or Permanent Berm (Side View)
Figure 3-2	Typical Rootwad Stream Bank Stabiliztion (Side View)	Figure 8	Typical Biolog Installation
Figure 4	Typical Soil Wraps W/ Branch Layering & Willow Stake Biostabilization	Figure 9	Typical Silt Fence Installation
Figure 5	Typical Stream Bank Regrading (Side View)	Figure 10	Typical Straw Bale Installation

Exhibit 1
Stream Remediation Decision Process



Note:
Standard E&S Controls shall be utilized in conjunction with the Natural and Non Native stream remediation options.



NOTE:
PLACE BLANKET A MINIMUM OF ONE (1) FOOT UNDER RIP RAP. EXTEND BLANKET FROM MEAN HIGH WATER LEVEL TO SEVERAL FEET BEHIND HIGH BANK.

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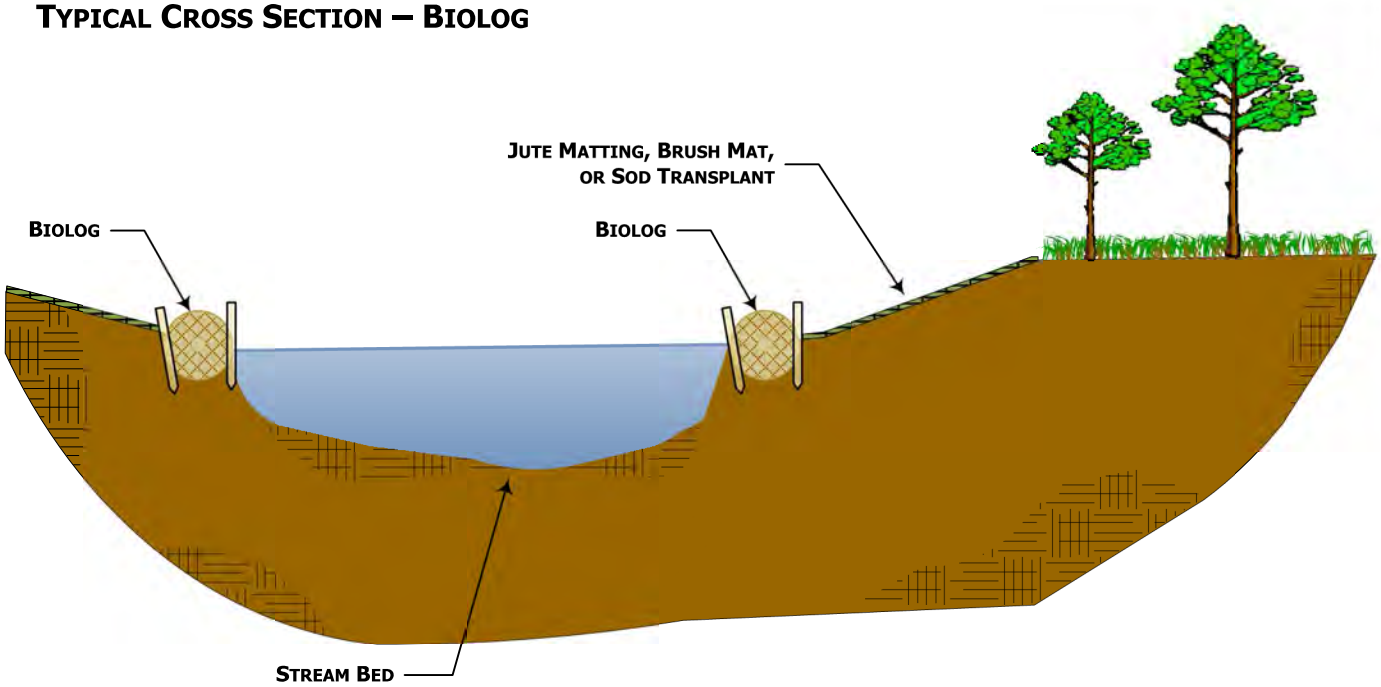
Figure 1

Typical For Remediation

Typical Final Stream Bank Stabilization
Rip Rap & Erosion Control

Scale: NTS
Date: 11/30/2016
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\

TYPICAL CROSS SECTION – BIOLOG



TYPICAL PLAN VIEW – BIOLOG

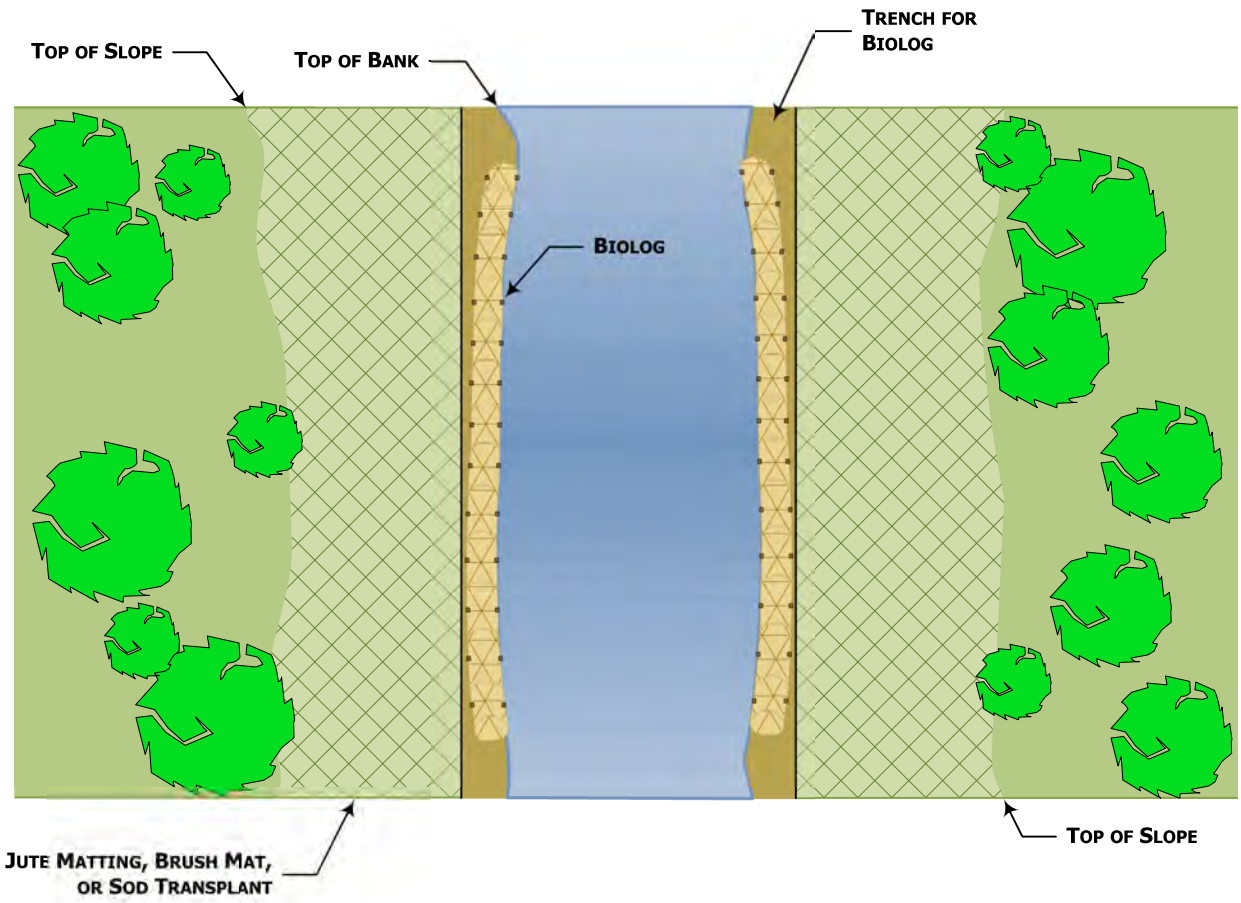


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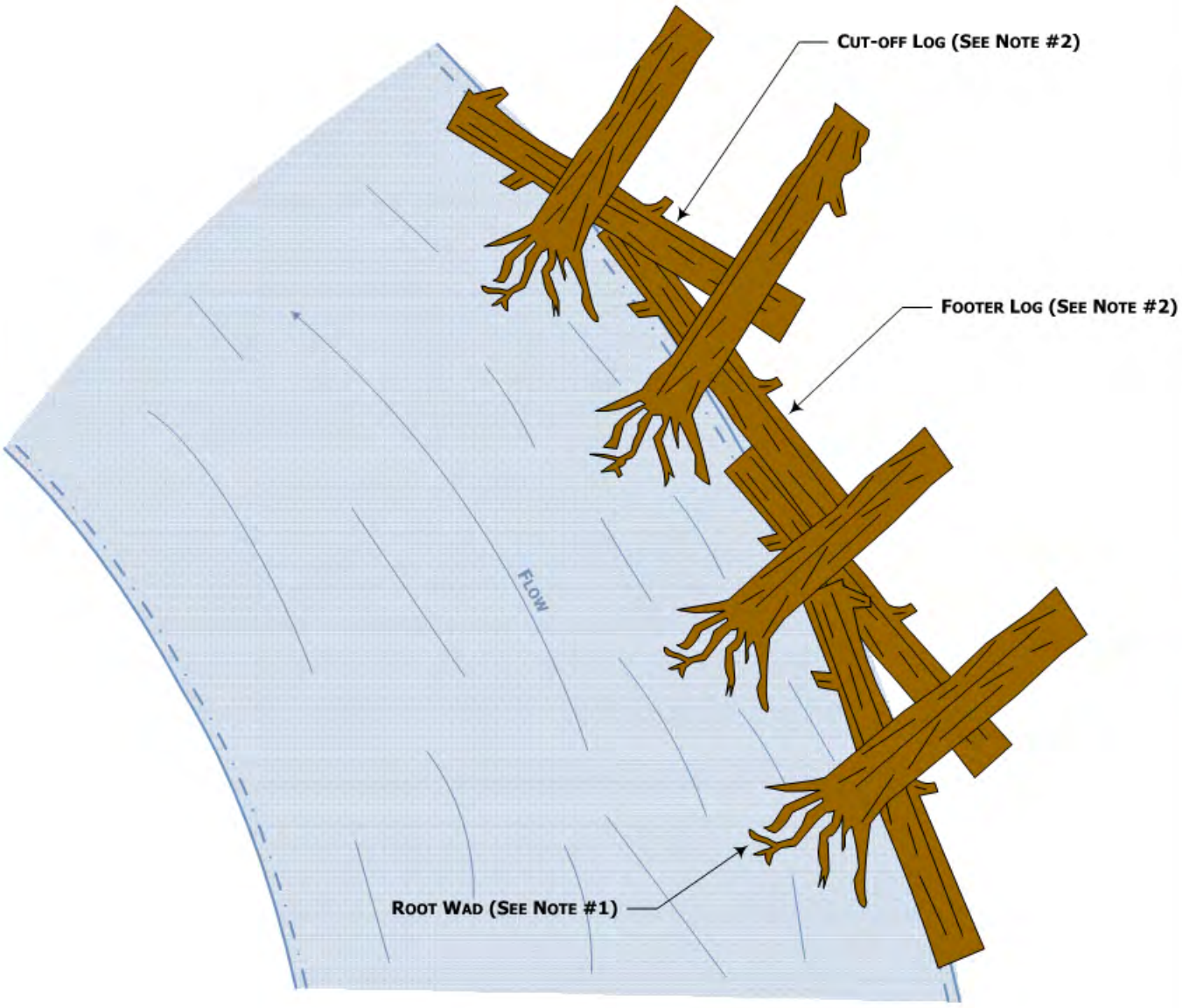
Figure 2

Typical For Remediation

Biolog Stream Bank Stabilization

04/17/2013

TYPICAL PLAN VIEW – NATURAL MATERIAL REVETMENT



Notes:

#1 – Root wad logs to be used on steep banks or based on agency recommendations.
#2 - Root wad logs to be anchored appropriately based on site-specific conditions or agency recommendations.

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Figure 3-1

Typical For Remediation

Typical Rootwad Stream Bank Stabilization (Plan View)

04/17/2013

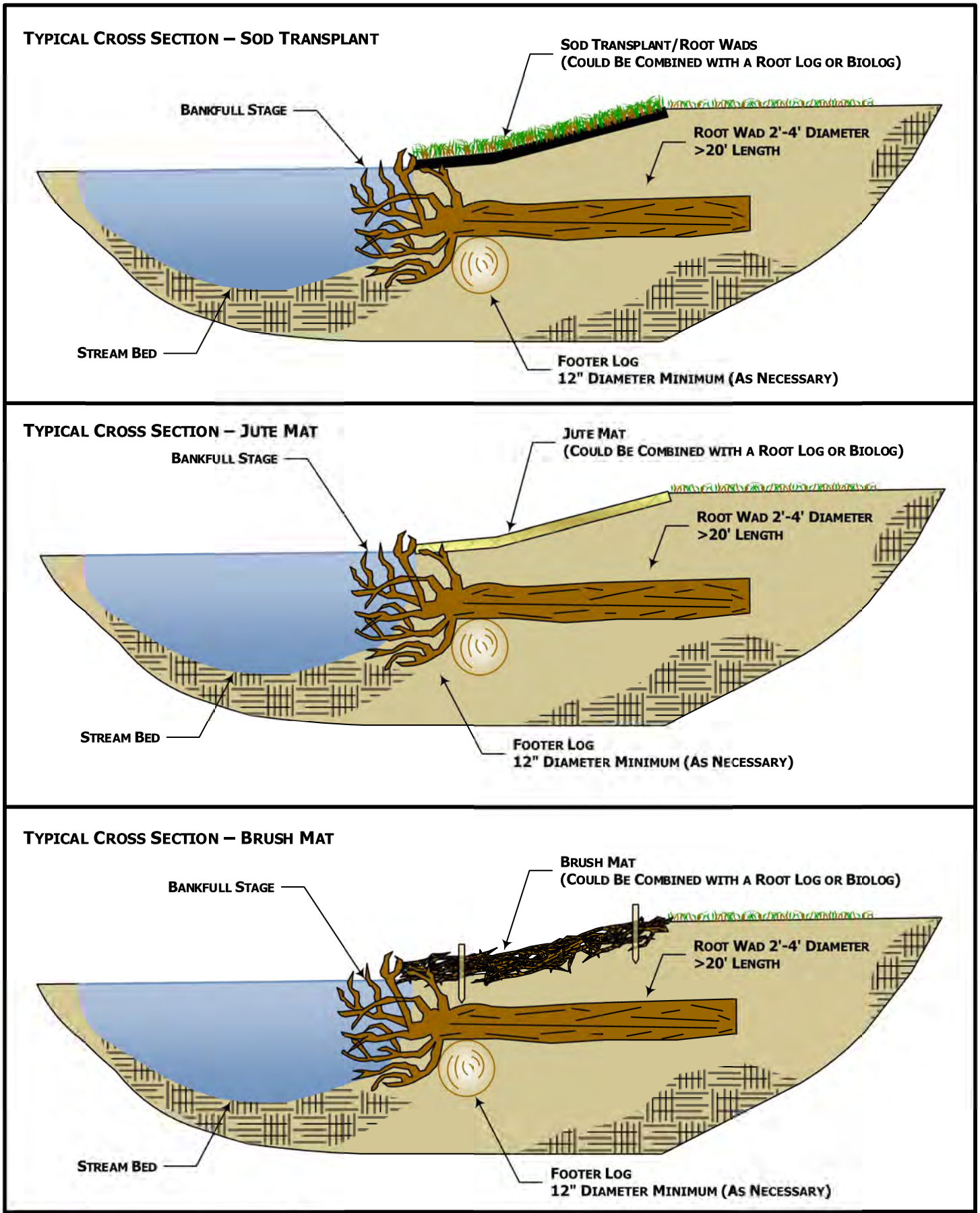

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Figure 3-2

Typical For Remediation

Typical Rootwad Stream Bank Stabilization (Side View)

8/25/2015

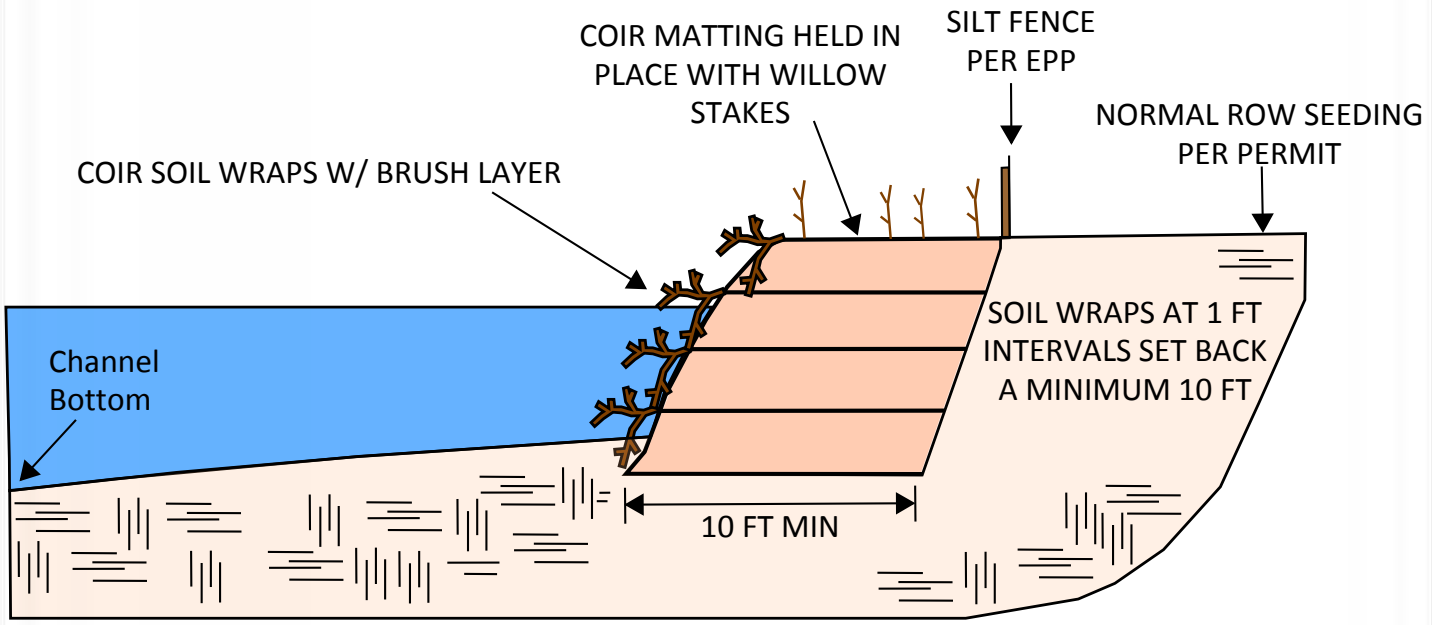

Figure 4

Typical For Remediation

Typical Soil Wraps With Branch Layering & Willow Stake Biostabilization

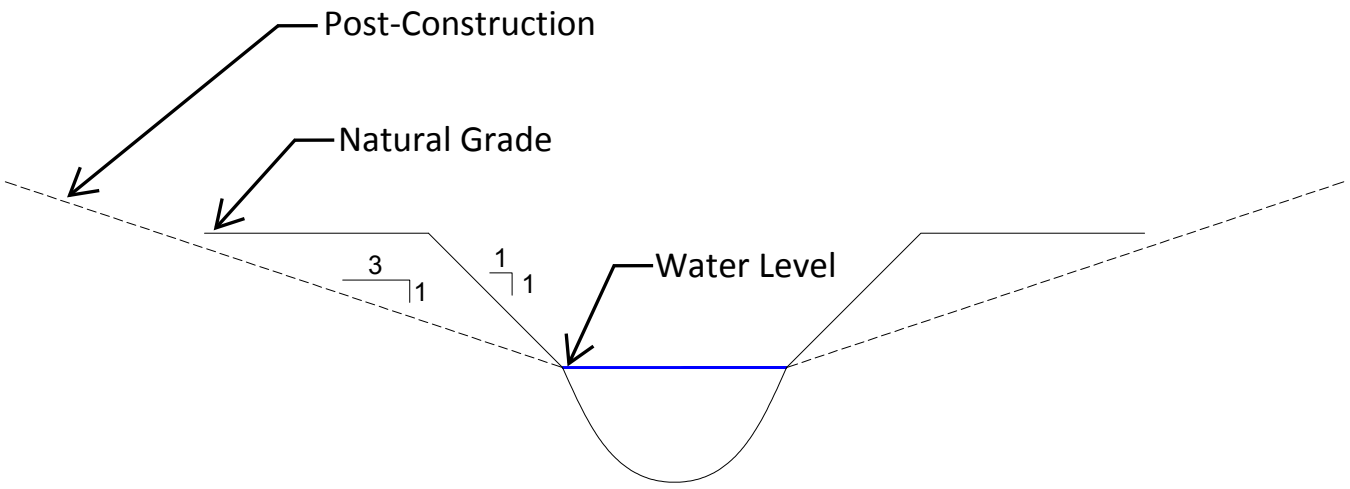

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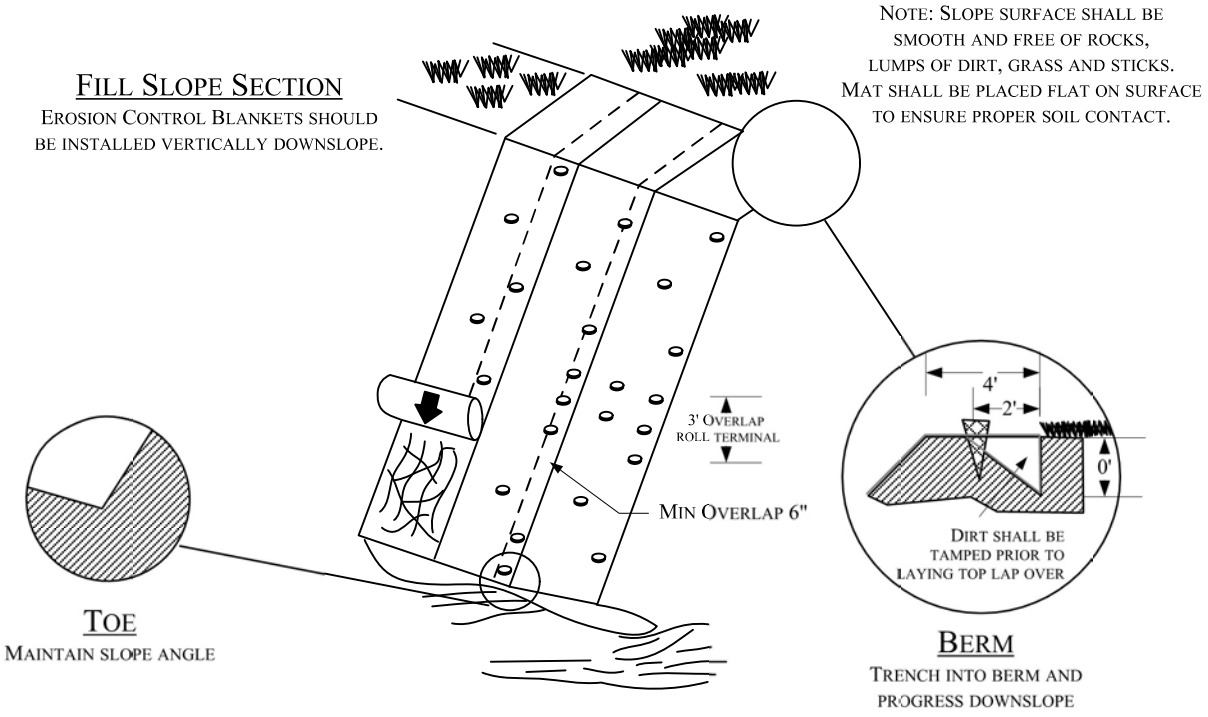
Figure 5

Typical For Remediation

Typical Stream Bank Regrading (Side View)

Scale: NTS
Date: 11/14/2000
Revised: 7/23/2020



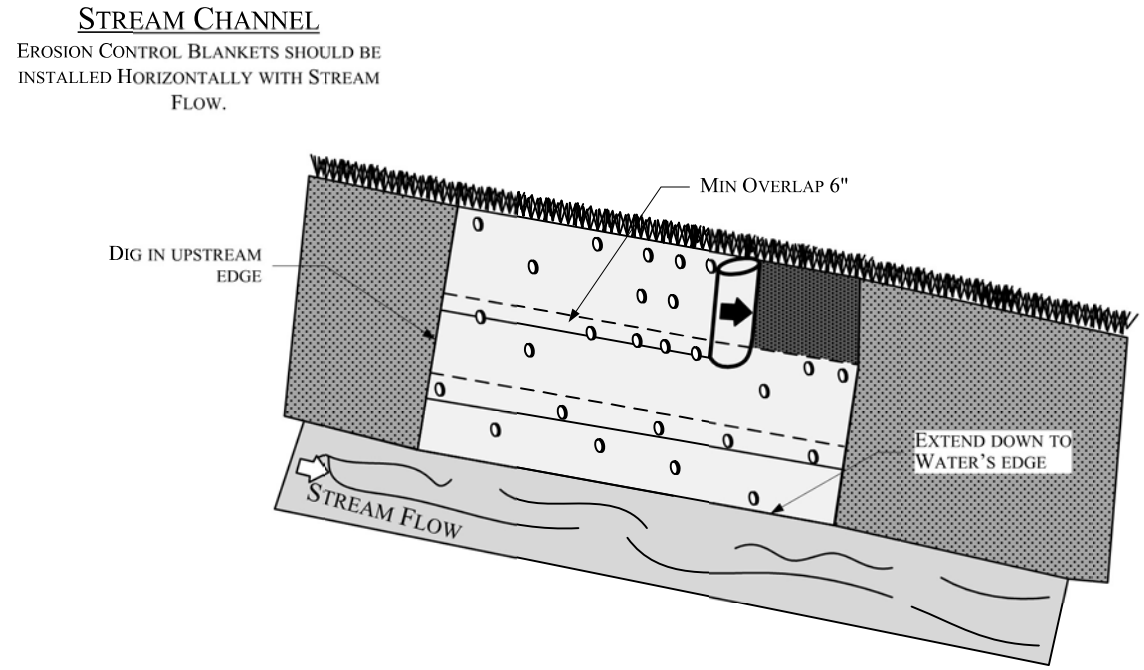


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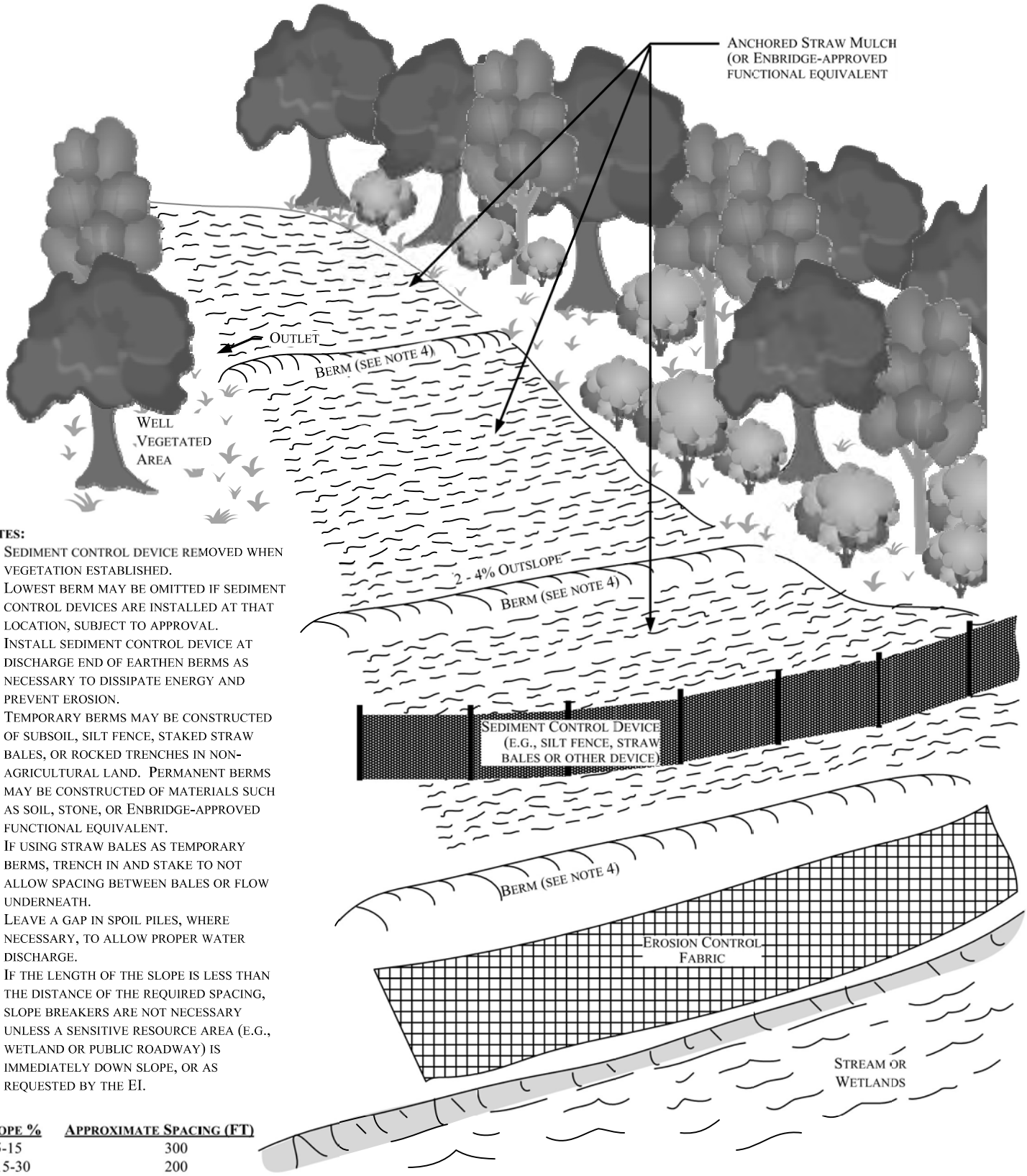
Figure 6

Typical For Remediation

Typical Erosion Control Blanket Installation

Scale: NTS
Date: 11/3/2016
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\



NOTES:

1. SEDIMENT CONTROL DEVICE REMOVED WHEN VEGETATION ESTABLISHED.
2. LOWEST BERM MAY BE OMITTED IF SEDIMENT CONTROL DEVICES ARE INSTALLED AT THAT LOCATION, SUBJECT TO APPROVAL.
3. INSTALL SEDIMENT CONTROL DEVICE AT DISCHARGE END OF EARTHEN BERMS AS NECESSARY TO DISSIPATE ENERGY AND PREVENT EROSION.
4. TEMPORARY BERMS MAY BE CONSTRUCTED OF SUBSOIL, SILT FENCE, STAKED STRAW BALES, OR ROCKED TRENCHES IN NON-AGRICULTURAL LAND. PERMANENT BERMS MAY BE CONSTRUCTED OF MATERIALS SUCH AS SOIL, STONE, OR ENBRIDGE-APPROVED FUNCTIONAL EQUIVALENT.
5. IF USING STRAW BALES AS TEMPORARY BERMS, TRENCH IN AND STAKE TO NOT ALLOW SPACING BETWEEN BALES OR FLOW UNDERNEATH.
6. LEAVE A GAP IN SPOIL PILES, WHERE NECESSARY, TO ALLOW PROPER WATER DISCHARGE.
7. IF THE LENGTH OF THE SLOPE IS LESS THAN THE DISTANCE OF THE REQUIRED SPACING, SLOPE BREAKERS ARE NOT NECESSARY UNLESS A SENSITIVE RESOURCE AREA (E.G., WETLAND OR PUBLIC ROADWAY) IS IMMEDIATELY DOWN SLOPE, OR AS REQUESTED BY THE EI.

SLOPE %	APPROXIMATE SPACING (FT)
5-15	300
>15-30	200
>30	100

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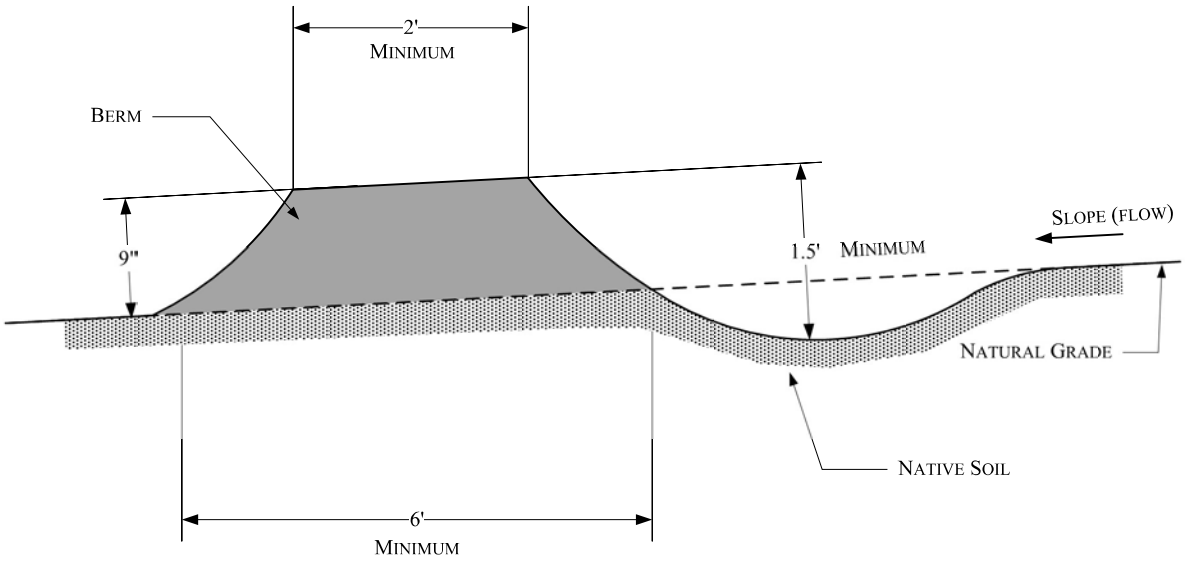
Figure 7-1

Typical For Remediation

Typical Temporary or Permanent Berm
(Perspective View)

Scale: NTS
Date: 11/14/2000
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\



NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL-VEGETATED STABLE AREAS, SEDIMENT CONTROL DEVICES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.
5. DIMENSIONS ARE GUIDELINES AND MAY BE MODIFIED SUBJECT TO FIELD CONDITIONS.

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Figure 7-2

Typical For Remediation

Typical Temporary or Permanent Berm
(Side View)

Scale: NTS
Date: 11/14/2000
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\

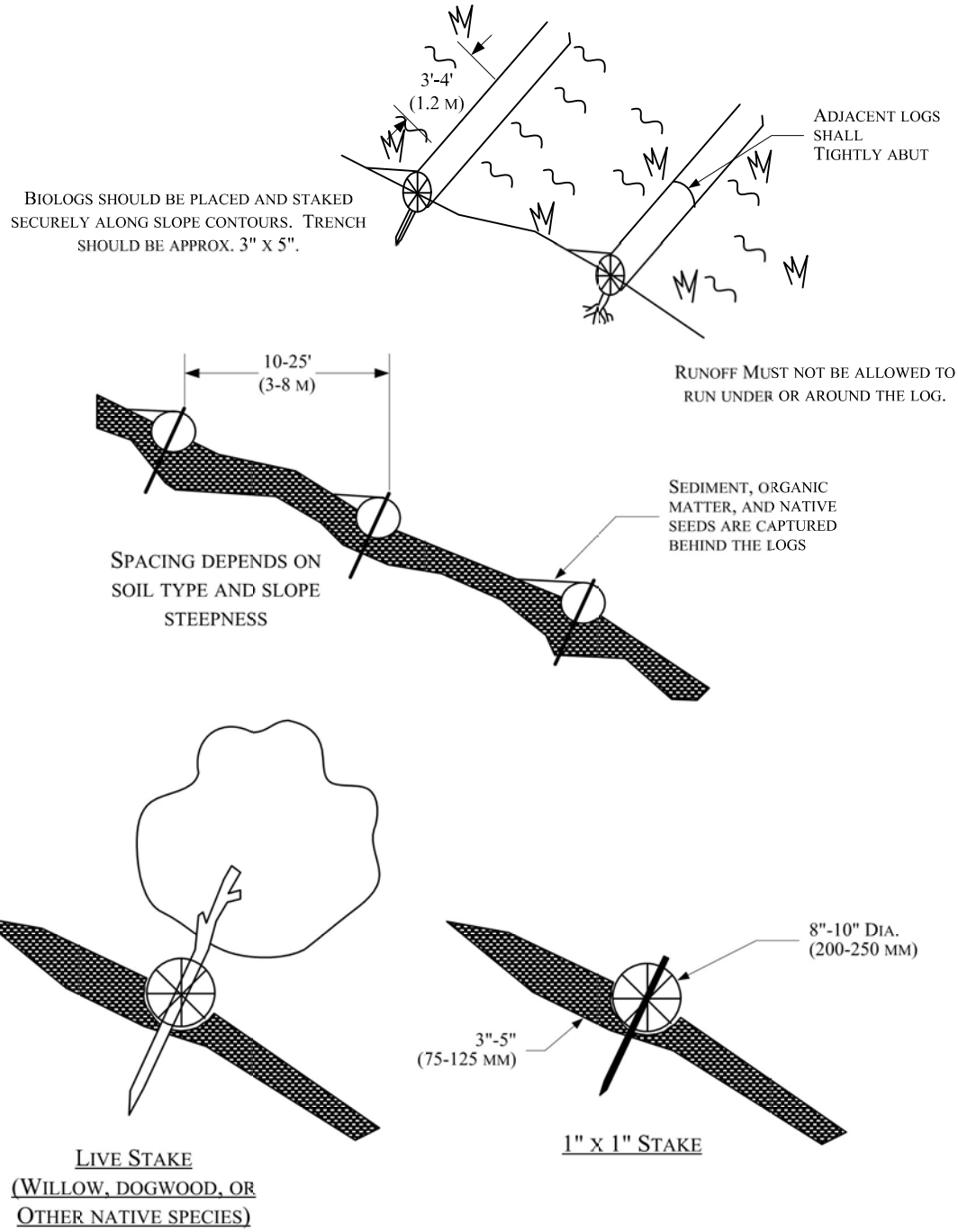

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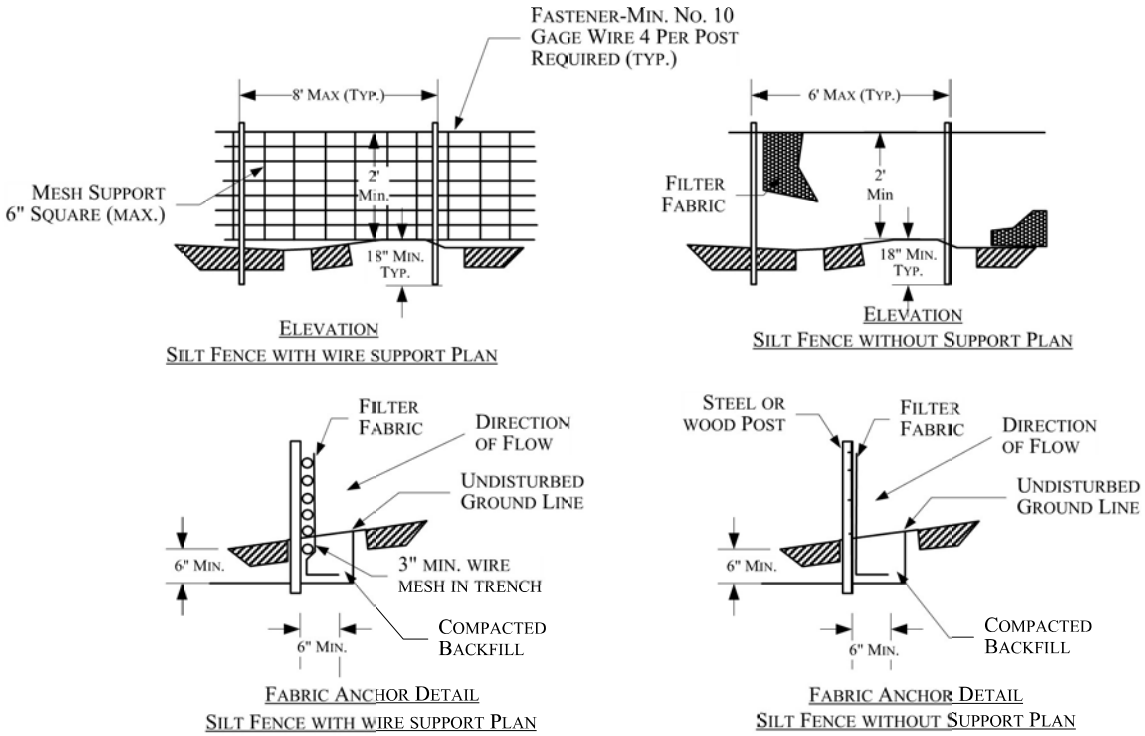
Figure 8

Typical For Remediation

Typical Biolog Installation

Scale: NTS
Date: 11/3/2016
Revised: 3/21/2017
Location: M:\Clients\D-F\EEL\BadRiver\Documents\

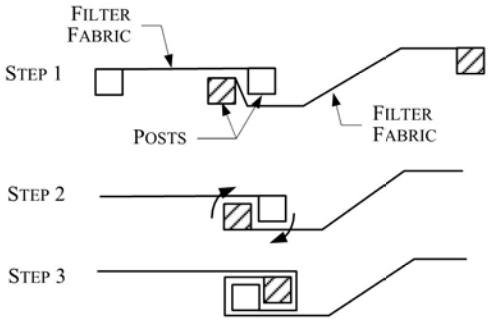
SILT FENCE PLAN (NTS)



NOTES:

1. WIRES OF MESH SUPPORT SHALL BE MIN. GAGE NO. 12.
2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF THE SPECIFICATION WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN. (SIEVE NO.)
3. THE POSTS USED TO SUPPORT THE SILT FENCE SHOULD BE HARDWOOD MATERIAL WITH A MINIMUM CROSS SECTIONAL AREA OF 4 INCHES SQUARE AND 4 FEET LONG. METAL POSTS SHOULD BE USED IN AREAS THAT POND WATER.

ATTACHING TWO SILT FENCES



NOTES:

1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS A MINIMUM OF 18 INCHES IN THE GROUND AND BURY THE FLAP.

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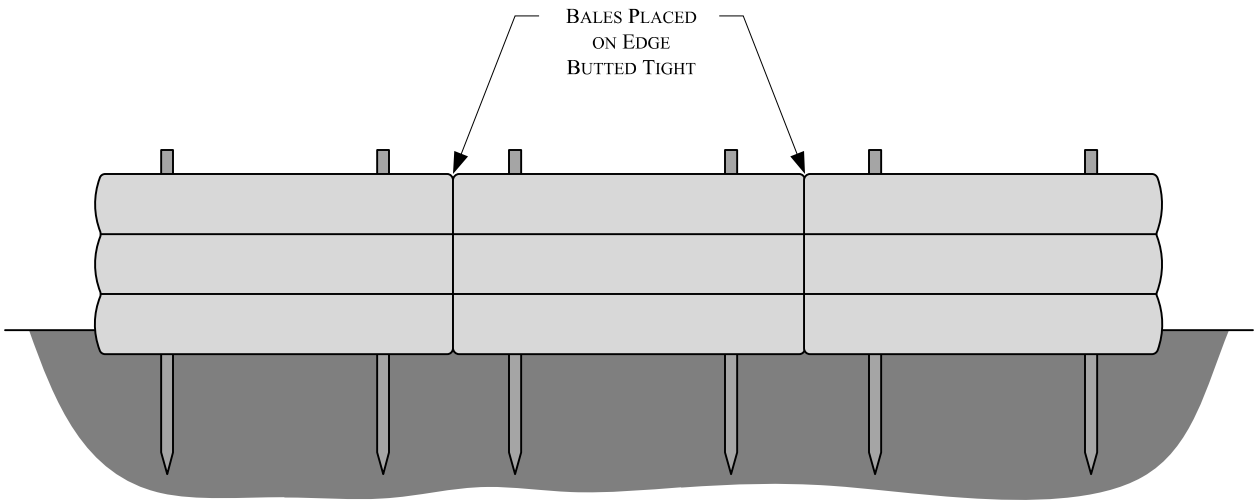
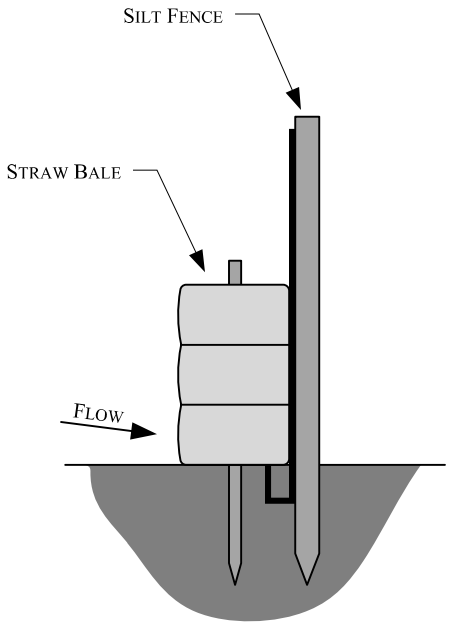
Figure 9

Typical For Remediation

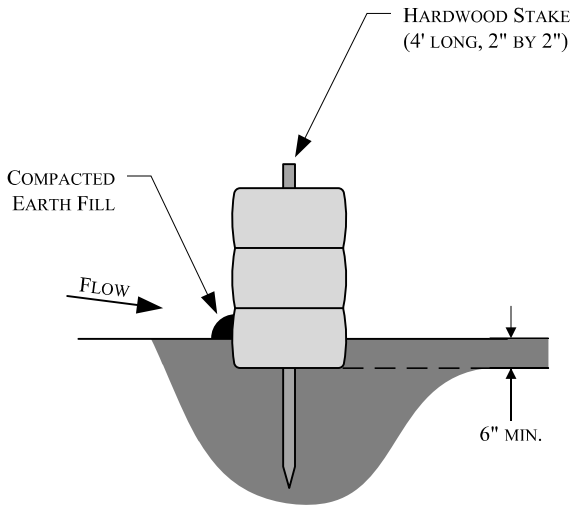
Typical Silt Fence Installation

Scale: NTS
Date: 5/25/2001
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\





STRAW BALES AND SILT FENCE



STRAW BALES ONLY

Figure 10

Typical For Remediation

Typical Straw Bale Installation

Scale: NTS
Date: 10/28/2016
Revised: 3/21/2017
Location: M:\Department Tasks\EPP Figures wBorders\

Line 5 Wisconsin Segment Relocation Project

Ashland, Bayfield, Douglas, and Iron Counties Wisconsin

Water Resources Application for Project Permits

Environmental Impact Report

Revised August 2020

EIR Attachment O

Protected Species Survey Reports

Privileged and Confidential Information

Line 5 Wisconsin Segment Relocation Project

Ashland, Bayfield, Douglas, and Iron Counties Wisconsin

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Revised August 2020

EIR Attachment O

Protected Species Survey Reports

2019 Habitat Assessment Report

Privileged and Confidential Information

Habitat Assessment Report

Line 5 Wisconsin Segment Relocation Project

Enbridge Energy, Limited Partnership

January 2020

Project No.: 0506456

CONFIDENTIAL

The business of sustainability

Prepared by: ERM

Signature Page

January 2020

Habitat Assessment Report

Line 5 Wisconsin Segment Relocation Project

Kimberley Corwin
Scientist II

Prepared by: Environmental Resource Management

CONTENTS

List of Figures

Acronyms and Abbreviations

DNR	Department of Natural Resources
ERM	Environmental Resources Management
GPS	Global Positioning System
IPAC	Information for Planning and Consultation
NHI	Natural Heritage Inventory
USFWS	U.S. Fish and Wildlife Service

1. INTRODUCTION

Environmental Resource Management, Inc. (“ERM”), on behalf of Enbridge Energy, Limited Partnership (“Enbridge”), was contracted to conduct an assessment of suitable habitat for federally and state listed plant and animal species as part of Enbridge’s Line 5 Wisconsin Segment Relocation Project (“Project”). Surveys were completed along a proposed route corridor in Ashland and Iron Counties. Figure 1 (Appendix A) shows the survey corridor.

2. HABITAT ASSESSMENT APPROACH AND METHODS

Habitat data were assessed through a combination of desktop review and pedestrian field surveys.

2.1 Protected Species Desktop Review

Prior to field surveys, a desktop review was completed to identify protected species and critical habitats with potential to occur within the Project area. Data were reviewed from the U.S. Fish and Wildlife Service's ("USFWS") Information for Planning and Consultation ("IPaC") data and the Wisconsin Natural Heritage Inventory ("NHI").

2.2 Pedestrian Field Surveys

Wetland teams conducted pedestrian field surveys from 29 August through 25 October 2019 to delineate wetland and waterbody features within the Project area. The number of wetland teams in the field varied from five to eight through the season. In addition to delineating wetland and waterbody features, wetland teams were tasked with completing a habitat assessment for state- and federal-listed species.

The biologists were provided with a list of protected species and critical habitats generated from the desktop review. Species occurrences and/or potential habitat were recorded using sub-meter global positioning ("GPS") units and documented with photographs when possible. In addition, field survey teams were asked to document raptor stick nests (including potential bald eagle nests) that were visible from the survey corridor by recording GPS habitat points. Field data sheets were completed for each plant or animal species or stick nest occurrence when observations were made.

Cultural resource survey teams also recorded any incidental observations of protected species.

3. HABITAT ASSESSMENT RESULTS

Incidental pedestrian field surveys resulted in observations of one protected animal species and three protected plant species. Figure 2 (Appendix A) illustrates the location of these observations and each is discussed in detail below.

3.1 Protected Animal Species

Bald eagles (*Haliaeetus leucocephalus*) were reported by a cultural survey team on 30 and 31 October 2019 by field teams near GPS coordinates 46.521616° N, -90.897010° W. Three adults were observed in the area over the course of the 2 days. An NHI-mapped bald eagle nest is approximately 2.1 miles southwest of this location on Rock Creek, a tributary of the White River. Though the species is no longer included on the endangered species list, it is protected by the Migratory Bird Treaty Act and by the Bald and Golden Eagle Protection Act. Bald eagles are found near large bodies of water such as rivers and reservoirs where they can obtain fish, their favored food item. Nesting occurs in large trees that can support the weight of their extensive nests. During the winter, bald eagles gather to roost in groves of trees near open water (USFWS 2019).

No incidental observations of raptor stick nests were reported during field surveys.

3.2 Protected Plant Species

Butternut (*Juglans cinerea*) was reported by a wetland survey team on 9 September 2019 near GPS coordinates 46.344489° N, -90.684435° W. This tree is listed as Special Concern in Wisconsin. Butternut is a wetland-associated tree that is found in mesic hardwood forests and riparian hardwood forests. The blooming period is April to June and fruiting occurs in October (Department of Natural Resources [“DNR”] 2019a).

Braun's holly-fern (*Polystichum braunii*) was reported by a wetland survey team on 1 October 2019 near GPS coordinates 46.356965° N, -90.600006° W. This fern is listed as Threatened in Wisconsin. It is known in several counties in northern Wisconsin, including Ashland County. Braun’s holly-fern is found in rich, hardwood or mixed conifer-hardwood forests and is typically associated with ravine bottoms. The fruiting season is mid- to late-summer (DNR 2019b).

Arrowleaf sweet coltsfoot (*Petasites sagittatus*) was reported by a wetland survey team on 20 September 2019 near GPS coordinates 46.412183° N, -90.528203° W. This wildflower is listed as Threatened in Wisconsin. It is known to occur several counties in northern Wisconsin, but has not been previously reported in Ashland County. Arrowleaf sweet coltsfoot is found in cool wetlands. The blooming period begins in early spring through May (DNR 2019c).

Photographs of these protected plant species as they were observed during field surveys are provided in Appendix B.

4. CONCLUSION

Field teams observed one protected animal species and three protected plant species within the current survey corridor. Additional targeted species and habitat surveys will occur in 2020.

5. REFERENCES

Department of Natural Resources (DNR). 2019a. *Butternut (Juglans cinerea). Wisconsin Department of Natural Resources: Wisconsin's Rare Plants*. Available at https://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PDJUG02030. Accessed November 22, 2019.

DNR. 2019a. *Braun's holly-fern (Polystichum braunii). Wisconsin Department of Natural Resources: Wisconsin's Rare Plants*. Available online at https://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PPDRY0R040. Accessed November 21, 2019.

DNR. 2019b. *Sweet colt's-foot (Petasites sagittatus). Wisconsin Department of Natural Resources: Wisconsin's Rare Plants*. Available online at https://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PDAST71040. Accessed November 21, 2019.

U.S. Fish and Wildlife Service. 2019. *Bald & Golden Eagle Information*. Available online at https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php.

APPENDIX A FIGURES

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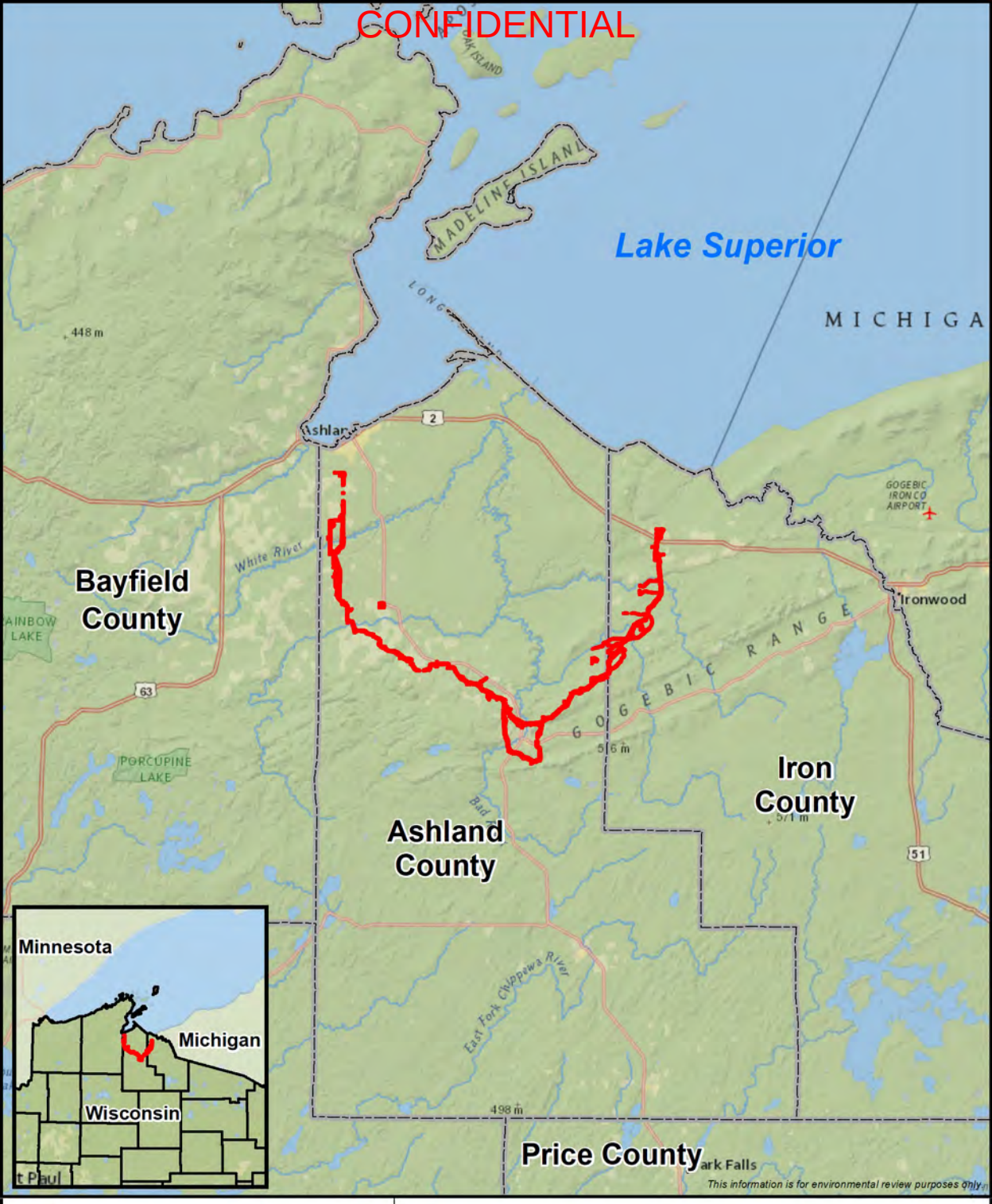

Surveyed Area
County Boundary

1:600,000
0 2.5 5 Miles

Figure 1
Project Overview
Line 5 Wisconsin Segment Relocation Project
Enbridge Energy, L.P.

ENBRIDGE
ERM

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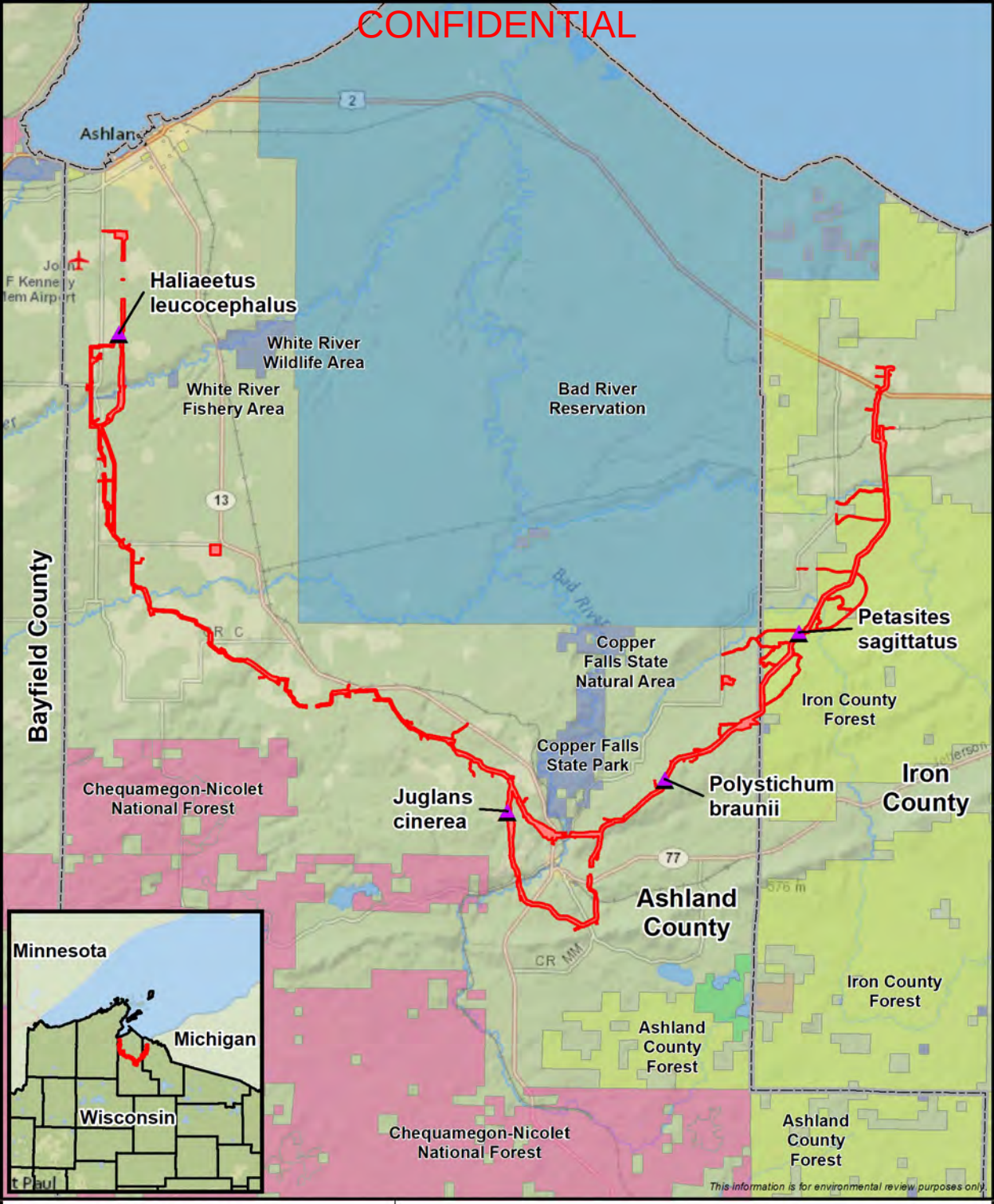
CONFIDENTIAL



Species Observation
Surveyed Area
County Boundary
Federal Land
Reservation
State Land
County/Local Land
Joint Ownership
Private Conservation

1:250,000 0 1 2 Miles

Figure 2
Protected Species Observations
Line 5 Wisconsin Segment Relocation Project
Enbridge Energy, L.P.

ENBRIDGE ERM

MPLS M:\Clients\D-F\EEL\BadRiver_ArcGIS\2020\01\SpeciesReport_SpeciesObservations.mxd | REVISED: 01/06/2020 | SCALE: 1:250,000 DRAWN BY: RCutting

APPENDIX B REPRESENTATIVE PHOTGRAPHS

Butternut, *Juglans cinerea*
Observed at 46.344489° N, -90.684435° W on 9 September 2019

Butternut, *Juglans cinerea*
Observed at 46.344489° N, -90.684435° W on 9 September 2019