APPENDIX B. GRINDSTONE RIVER DAM REMOVAL DRAFT ENVIRONMENTAL IMPACT STATEMENT

Technical Memorandum – Routine Level 1 Wetland Delineation



TECHNICAL MEMORANDUM

Subject:	Routine Level 1 Wetland Delineation
Project:	Grindstone Dam Removal Project – Hinckley, MN
Client:	Minnesota Department of Natural Resources
Date:	April 27, 2021

Anderson Engineering of Minnesota, LLC (Anderson) was retained to provide professional services to identify areas of wetland utilizing the United States Army Corps of Engineers (USACE) Guidance for Offsite Hydrology/Wetland Determinations (July 2016) to support Minnesota Department of Natural Resources planning and analysis associated with the potential removal of the Grindstone Dam located in Hinckley, Pine County, Minnesota.

The Environmental Clearance Boundary (ECB) developed as the limits of the Routine Level 1 Wetland Delineation consists of approximately 131 aces generally riparian to the Grindstone Reservoir and the Grindstone River. Routine Level 1 Wetland Delineation consisted of an examination of available mapping resources (soils, topography, National Wetlands Inventory, aerial photographs, historic aerials) to determine the potential presence of wetlands. The boundaries of the digitized wetlands were determined based on topographic relief (2-foot LiDAR derived contours) and wetland signatures identified on aerial photograph.

The Level 1 Offsite Delineation was field verified on April 20, 2021 to confirm the validity of offsite wetland determination, the general accuracy of the offsite wetland boundary, and document the wetland habitat community types. The onsite review consisted of visual evaluation of the offsite delineated boundary, verification of vegetative community types, and documentation of wetland parameters including representative vegetation, soil profile, and hydrology characteristics on standard USACE Wetland Determination Data Forms for the Northcentral and Northeast Region.

Field observations witnessed a microtopographic relief wetland-upland mosaic consisting of 15 percent to 100 percent wetland characterized as floodplain forest/alder thicket communities. Field investigation was not exhaustive and only areas reasonably accessible from public lands were reviewed.

A total of 15 potential aquatic resources, or portions thereof, were identified and delineated within the ECB, as depicted in detail on attached Figure 5 Level 1 Offsite Wetland Delineation and summarized in the following table:

Resource ID	Resource Type	Circular 39 Classification	Cowardin Classification	Eggers & Reed Classification	Resource Area (Acres)
1	Tributary	Type 90	R2UBG	Riverine	1.02
2	Wetland	Type 1/2	PEM1B/FO1A	Floodplain Forest/Fresh Wet Meadow	1.91
3	Wetland	Type 2/6	PSS/EM1B	Sedge Meadow/Alder Thicket	0.40
4	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	15.72
5	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	13.44
6	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	0.31
7	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	1.51
8	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	0.79
9	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	12.68
10	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	0.12
11	Wetland	Type 1/6	PSS1B/FO1A	Floodplain Forest/Alder Thicket	0.87
12	Wetland	Type 2/6	PSS/EM1B	Sedge Meadow/Alder Thicket	0.05
13	Tributary	Type 90	R2UBG	Riverine	29.03
14	Wetland	Туре 1/2/6	PSS/EM1B/FO1A	Floodplain Forest/Fresh Wet Meadow/Alder Thicket	3.26
15	Wetland	Type 80	PUBK	Freshwater Pond	0.11

This Level 1 Wetland Delineation is intended to inform and support project planning and based on readily available data. Regulatory agencies may require more detailed Level-2 Wetland Delineation as part of any permits that may be required by a future project and should be coordinated with appropriate agencies.

Respectfully, Anderson Engineering of Minnesota, LLC.

Beyin & Hodapp

Benjamin J Hodapp, PWS Environmental Services Manager MN Certified Wetland Delineator #1016



Attachments:

Figure 1 Project Location Figure 2 National Wetland Inventory Figure 3 Pine County Soil Survey Figure 4 MnDNR Public Water Inventory Figure 5 Level 1 Wetland Delineation Photo Layout Wetland Determination Data Forms – Northcentral and Northeast Region: Point A and Point B Attachments - Grindstone Dam Removal Project – Routine Level 1 Wetland Delineation



Figure 1 shows the town of Hinckley, Minnesota, and the location of the Grindstone Dam marked with a yellow star. The Grindstone Reservoir, and the North Fork and South Fork of the Grindstone Rivers are also shown.



Figure 2 shows the town of Hinckley, Minnesota, and the area of interest for the level 1 wetland delineation, which is represented by the environmental clearance boundary (shown in red polygon). The national wetland inventory is shown in green.



Figure 3. Figure 3 shows the environmental clearance boundary (ECB) (spatial extent of the wetland study) which encompasses both the Grindstone Dam and the Grindstone Reservoir, along with surround areas with the Hinckley Aquatic Management Area. Pine County soil survey soil types are also shown.



Figure 4. Figure 4 shows the environmental clearance boundary (ECB) in red (spatial extent of the wetland study) which encompasses both the Grindstone Dam and the Grindstone Reservoir, along with surrounding areas with the Hinckley Aquatic Management Area. The Grindstone Reservoir and the North and South forks of the Grindstone River are also shown.



Figure 5. Figure 5 shows the environmental clearance boundary (ECB) in red (spatial extent of the wetland study) along with the wetland types (in pink) and the Grindstone Reservoir (in blue) present as shown in the table on page 2.

Photo layout



Photo 1. Sample point A, viewing east.



Photo 2. Sample point B, viewing west.



Photo 3. Grindstone River (Resource 13) viewing northwest.



Photo 4. Resource 14 viewing southwest



Photo 5. Freshwater pond (Resource 15) viewing southeast.



Photo 6. Grindstone Dam, viewing northwest

Wetland Delineation Data Forms – Northcentral and Northeast Region Point A and Point B

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Grindstone Dam Rem	noval Project	City/County: Hinckley/Pine Sampling D					
Applicant/Owner: Minnesota De	epartment of Natural	atural Resources State: MN Sampling Point: A					
Investigator(s): A. Yellick, M. Pries			Section, Township, Ran	ge: <u>24,</u> 41N	I, 21W		
Landform (hillside, terrace, etc.): Moraine Local relief (concave, convex, none): Concave Sle							
Subregion (LRR or MLRA): LRR K	C Lat:	Lat: 46.020316 Long: -92.943443 Datum: WG					
Soil Map Unit Name: Pomroy			NWI cl	assification	:		
Are climatic / hydrologic conditions of	on the site typical for	this time of year?	Yes No	(If no,	explain in Remark	.s.)	
Are Vegetation, Soil	, or Hydrology	significantly disturbed?	Are "Normal Circumst	ances" pres	sent? Yes	No	
Are Vegetation, Soil	, or Hydrology	naturally problematic?	(If needed, explain an	y answers i	n Remarks.)		
SUMMARY OF FINDINGS -	Attach site map	showing sampling	point locations, trar	isects, in	nportant featu	res, etc.	
Hydrophytic Vegetation Present?	Yes X	No Is 1	he Sampled Area				
Hydric Soil Present?	Yes X	No wit	hin a Wetland?	Yes X	No		
Wetland Hydrology Present?	Yes <u>X</u>	No If y	es, optional Wetland Site ID):			
Remarks: (Explain alternative proc Area is representative of a sedge n	edures here or in a s neadow/alder thicket	separate report.) (type 2/6, PEM/SS1B).					

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is requ		Surface Soil Cracks (B6)		
Surface Water (A1)		Drainage Patterns (B10)		
X High Water Table (A2)	Moss Trim Lines (B16)			
X Saturation (A3)	Marl Deposits (B15)		Dry-Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)		Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Re	oots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)		Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soil	s (C6)	X Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)		Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B	7) Other (Explain in Remarks)		Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		X FAC-Neutral Test (D5)	
Field Observations:				
Surface Water Present? Yes	No X Depth (inches):			
Water Table Present? Yes X	No Depth (inches): 2			
Saturation Present? Yes X	No Depth (inches): 0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe)	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m	No Depth (inches): onitoring well, aerial photos, previous inspe	Wetland ections), if a	d Hydrology Present? Yes X No vailable:	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m	No Depth (inches): onitoring well, aerial photos, previous inspe	Wetland ections), if a	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches): onitoring well, aerial photos, previous inspe	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches): onitoring well, aerial photos, previous inspe	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches): onitoring well, aerial photos, previous inspe	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	
Saturation Present? Yes X (includes capillary fringe) Describe Recorded Data (stream gauge, m Remarks:	No Depth (inches):0	Wetland	d Hydrology Present? Yes X No	

VEGETATION – Use scientific names of plants.

VEGETATION – Use scientific names of pla	Sampling Point: A			
Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Populus tremuloides	50	Yes	FAC	Number of Dominant Spacing
2. Pinus resinosa	3	No	FACU	That Are OBL, FACW, or FAC: 5 (A)
3		·		
0				Total Number of Dominant
+		·		
5.		·		Percent of Dominant Species
6				That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
7				Prevalence Index worksheet:
	53	=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				OBL species 90 x 1 = 90
1. Ulmus rubra	15	Yes	FAC	FACW species 25 x 2 = 50
2. Alnus incana	15	Yes	FACW	FAC species 65 x 3 = 195
3. Cornus sericea	10	Yes	FACW	FACU species 3 x 4 = 12
4.				UPL species $0 \times 5 = 0$
5				Column Totals: 183 (A) 347 (B)
6				$\frac{100}{100} = \frac{100}{100} = \frac{100}{100} = \frac{100}{100}$
0		·		Ludenshutia Vagatatian Indiastara
1.				
	40	= I otal Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5')				X 2 - Dominance Test is >50%
1. Carex lacustris	90	Yes	OBL	X 3 - Prevalence Index is ≤3.0'
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				¹ Indicators of hydric soil and wetland hydrology must
6.				be present, unless disturbed or problematic.
7				Definitions of Vegetation Strata:
8				Tree – Woody plants 3 in. (7.6 cm) or more in
9				diameter at breast height (DBH), regardless of height.
10				Sapling/shrub – Woody plants less than 3 in DBH
11				and greater than or equal to 3.28 ft (1 m) tall.
12.				Harb All borbaccous (non woody) plants, regardless
	90	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30')				We advertise All we advertise a support of them 2, 20, 4 in
1.				height.
2				
3				Hydrophytic
		·		Vegetation Present? Yes Y No
4		Tatal Osuar		
		= I otal Cover		
Remarks: (Include photo numbers here or on a separ	rate sheet.)			

Profile Desc	cription: (Describe	to the de	pth needed to doc	ument t	he indica	ator or c	onfirm the absence of inc	licators.)
Depth	Matrix		Redo	x Featur	es			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	7.5YR 3/2	95	7.5YR 4/6	5	С	М	Loamy/Clayey	SiL, Prominent Redox
6-16	7.5YR 3/2	60	7.5YR 4/6	40	С	М	Loamy/Clayey	SiL, Prominent Redox
16-17	7.5YR 4/6	100					Loamy/Clayey	Rock Fragments
		·						
		·						
		·						
		·					·	
1		. <u> </u>					2	
'Type: C=Co	oncentration, D=Dep	letion, RN	Reduced Matrix, N	/IS=Mas	ked Sand	d Grains.	² Location: PL=P	ore Lining, M=Matrix.
Histosol	(A1)		Polyvalue Belo	w Surfa	ce (S8) (I RR R	2 cm Muck (A10) (I RR K I MI RA 149B)
Histic Ep	pipedon (A2)		MLRA 149B)))	00 (00) (LINI I 1,	Coast Prairie	Redox (A16) (LRR K, L, R)
Black Hi	stic (A3)		Thin Dark Surf	, ace (S9) (LRR R	, MLRA [,]	149B) 5 cm Mucky	Peat or Peat (S3) (LRR K, L, R
Hydroge	n Sulfide (A4)		High Chroma S	Sands (S	511) (LRI	R K, L)	Polyvalue Be	low Surface (S8) (LRR K, L)
Stratified	d Layers (A5)		Loamy Mucky	Mineral	(F1) (LR	R K, L)	Thin Dark Su	ırface (S9) (LRR K, L)
Depleted	d Below Dark Surface	e (A11)	Loamy Gleyed	Matrix (F2)		Iron-Mangan	ese Masses (F12) (LRR K, L, F
Thick Da	ark Surface (A12)		Depleted Matri	x (F3)			Piedmont Flo	oodplain Soils (F19) (MLRA 14 9
Sandy M	lucky Mineral (S1)		X Redox Dark Su	urface (F	-6)		Mesic Spodi	c (TA6) (MLRA 144A, 145, 149
Sandy G	Bleyed Matrix (S4)		Depleted Dark	Surface	e (F7)		Red Parent I	Material (F21)
Sandy R	Redox (S5)		Redox Depres	sions (F	8)		Very Shallow	/ Dark Surface (F22)
Stripped	Matrix (S6)		Marl (F10) (LR	(R K, L)			Other (Expla	in in Remarks)
Dark Su	nace (S7)							
³ Indicators o	f hydrophytic vegetat	tion and w	etland hydrology mu	ust be pi	resent, ui	nless dist	urbed or problematic.	
Restrictive	Layer (if observed):		, , , , , , , , , , , , , , , , , , , ,		,			
Туре:	Roo	ck						
Depth (ii	nches):	17					Hydric Soil Present?	Yes No
Remarks:								

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Grindstone Dam Removal Project	Istone Dam Removal Project City/County: Hinckley/Pine						
Applicant/Owner: Minnesota Department of Na	Minnesota Department of Natural Resources State: MN						
Investigator(s): A. Yellick, M. Pries		Section, Township, Range: 24, 41	N, 21W				
Landform (hillside, terrace, etc.): Moraine	Local re	elief (concave, convex, none): <u>Concave</u>	Slope %: 1				
Subregion (LRR or MLRA): LRR K	Lat: 46.020728	Long: <u>-92.943950</u>	Datum: WGS 84				
Soil Map Unit Name: Pomroy		NWI classification	n:				
Are climatic / hydrologic conditions on the site typic	al for this time of year?	Yes No (If no	, explain in Remarks.)				
Are Vegetation, Soil, or Hydrology	significantly disturb	ed? Are "Normal Circumstances" pre	esent? Yes No				
Are Vegetation, Soil, or Hydrology	naturally problemat	ic? (If needed, explain any answers	in Remarks.)				
SUMMARY OF FINDINGS – Attach site	map showing samp	oling point locations, transects, i	mportant features, etc.				
Hydrophytic Vegetation Present? Yes	X No	Is the Sampled Area					
Hydric Soil Present? Yes	X No	within a Wetland? Yes X	No				
Wetland Hydrology Present? Yes	X No	If yes, optional Wetland Site ID:					
Remarks: (Explain alternative procedures here or Area is representative of a floodplain forest/alder t	in a separate report.) nicket (type 1/6, PSS1B/F	O1A).					

HYDROLOGY						
Wetland Hydrology Indica	itors:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimu	m of one is requi	red; check a	l that apply)		Surface Soil Cracks (B6)	
Surface Water (A1)		X Drainage Patterns (B10)				
X High Water Table (A2)		Moss Trim Lines (B16)				
X Saturation (A3)		Dry-Season Water Table (C2)				
Water Marks (B1)		Hydro	gen Sulfide Odor (C1	1)	Crayfish Burrows (C8)	
Sediment Deposits (B2	.)	Oxidiz	ed Rhizospheres on	Living Ro	pots (C3) Saturation Visible on Aerial Imagery (C9)	
Drift Deposits (B3)		Prese	Presence of Reduced Iron (C4) Stunted or Stressed Plants (D			
Algal Mat or Crust (B4)		Recer	t Iron Reduction in T	illed Soils	s (C6) X Geomorphic Position (D2)	
Iron Deposits (B5)		Thin N	luck Surface (C7)		Shallow Aquitard (D3)	
Inundation Visible on A	erial Imagery (B7) Other	(Explain in Remarks)	X Microtopographic Relief (D4)	
? Sparsely Vegetated Co	ncave Surface (E	38)			X FAC-Neutral Test (D5)	
Field Observations:						
Surface Water Present?	Yes	No X	Depth (inches):			
Water Table Present?	Yes X	No	Depth (inches):	1		
Saturation Present?	Yes X	No	Depth (inches):	0	Wetland Hydrology Present? Yes X No	
(includes capillary fringe)						
Describe Recorded Data (s	tream gauge, mo	nitoring well	, aerial photos, previ	ous inspe	ections), if available:	

Remarks:

Drainage patterns and microtopographic relief was observed. Wetland mosaic consists of 75% at this general location. Wetland mosaic in other areas range from 15% to 100%.

VEGETATION – Use scientific names of plants.

Sampling Point:

В

<u>Tree Stratum</u> (Plot size:30')	Absolute <u>%</u> Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Acer saccharinum	70	Yes	FACW	Number of Dominant Species
2. Fraxinus nigra	15	No	FACW	That Are OBL, FACW, or FAC:(A)
3				Total Number of Dominant
4				Species Across All Strata: 2 (B)
5				Percent of Dominant Species
6				That Are OBL, FACW, or FAC: 100.0% (A/B)
7				Prevalence Index worksheet:
	85	= I otal Cover		Iotal % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15)	45	Vee	540	$\begin{array}{c} \text{OBL species} \\ \hline 0 \\ \hline x \\ 1 \\ \hline 0 \\ \hline 1 \\ \hline 0 \\ \hline 1 \\ \hline 0 \\ \hline 1 \\ \hline 1 \\ \hline 0 \hline \hline 0 \\ \hline 0 \\ \hline 0 \hline \hline 0 \\ \hline 0 \hline \hline 0 \\ \hline 0 \hline \hline $
1. Rhamnus cathartica	15	Yes	FAC	FACW species 85 $x^2 = 170$
2				FAC species 15 x $3 = 45$
3				FACU species x 4 =
4				UPL species x 5 =
5				Column Totals: 100 (A) 215 (B)
6				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
	15	=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5')				X 2 - Dominance Test is >50%
1				X_3 - Prevalence Index is $\leq 3.0^1$
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
7				Definitions of Vegetation Strata:
8				Tree – Woody plants 3 in. (7.6 cm) or more in
9				diameter at breast height (DBH), regardless of height.
10				Sapling/shrub – Woody plants less than 3 in. DBH
11				and greater than or equal to 3.28 ft (1 m) tall.
12				Herb – All herbaceous (non-woody) plants, regardless
		=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30')				Woody vines – All woody vines greater than 3.28 ft in
1				height.
2				
3				Hydrophytic Vegetation
4				Present? Yes X No
		=Total Cover		
Remarks: (Include photo numbers here or on a separ	rate sheet.)			
The herbaceous stratum was sparsely vegetated.				

Profile Desc	ription: (Describe	to the dep	oth needed to docu	ument t	he indica	ator or c	onfirm the absence of	indicators.)	
Depth	Matrix		Redo	x Featur	es	0			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-4	7.5YR 2.5/2	100					Loamy/Clayey	L	
4-7	7.5YR 6/2	80	5YR 5/4	20	С	М	Sandy	fS, frags, prominent redox	
7-12	5YR 5/4	60	7.5YR 6/2	40	D	М	Sandy	fS, frags, prominent redox	
12-16	5YR 5/4	80	7.5YR 6/2	20	D	M	Sandy	fS, frags, prominent redox	
1		<u> </u>							
Type: C=Co	oncentration, D=Depl	etion, RM	=Reduced Matrix, N	/IS=Mas	ked San	d Grains.	² Location: PL:	=Pore Lining, M=Matrix.	
Histosol	(A1)		Polyvalue Belo	w Surfa	ce (S8) (2 cm Muc		
Histic Ep	ipedon (A2)		MLRA 149B)	00 (00) (LIXIX IX,	Coast Pra	airie Redox (A16) (LRR K. L. R)	
Black His	stic (A3)		Thin Dark Surf	, ace (S9) (LRR R	. MLRA	149B) 5 cm Muc	kv Peat or Peat (S3) (LRR K. L. R)	
Hvdroger	n Sulfide (A4)		High Chroma	Sands (S	, (611) (LR I	, R K. L)	, Polvvalue	Below Surface (S8) (LRR K. L)	
Stratified	Lavers (A5)		Loamv Muckv	Mineral	(F1) (LR	R K. L)	Thin Dark	Surface (S9) (LRR K. L)	
X Depleted	Below Dark Surface	e (A11)	Loamy Gleved	Matrix ((, (<u>-</u> F2)	, _,	Iron-Mand	anese Masses (F12) (LRR K. L. R)	
Thick Da	rk Surface (A12)	, (, (, i, j)	Depleted Matri	x (F3)	12)		Piedmont	Floodplain Soils (F19) (MLRA 149B)	
Sandy M	ucky Mineral (S1)		Redox Dark Su	urface (F	-6)		Mesic Spo	odic (TA6) (MLRA 144A, 145, 149B)	
Sandy G	leved Matrix (S4)		Depleted Dark	Surface	e (F7)		Red Parer	nt Material (F21)	
Sandy R	edox (S5)		Redox Depress	sions (F	8)		Verv Shall	low Dark Surface (F22)	
Stripped	Matrix (S6)		Marl (F10) (I R		0)		Other (Explain in Remarks)		
Dark Sur	face (S7)							plain in Romancey	
³ Indicators of Restrictive I	hydrophytic vegetat	ion and w	etland hydrology mu	ust be pi	resent, u	nless dist	turbed or problematic.		
Туре:									
Depth (in	nches):						Hydric Soil Present	? Yes X No	
Remarks:							-		