

MITIGATION SITE PLAN

DE-51: BETTY BROOK ROAD

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SITE ID:	DE-51
SITE NAME:	Betty Brook Road Property
LOCATION:	South Kortright, Delaware County, New York
WATERSHED:	Upper Delaware – 02040101
SITE TYPE:	Wetland Mitigation
LANDOWNER:	Mary Ruther and Jesse Wheeler

SITE DESCRIPTION

The proposed mitigation site is located west of Betty Brook Road in South Kortright, New York. The property encompasses a perennial stream (Betty Brook) with emergent, scrub-shrub, and forested wetlands bordering it on both sides. All of the wetlands on the property are part of a large (more than 100 acres) wetland regulated by the New York State Department of Environmental Conservation. Betty Brook, a Class C trout stream, runs north to south through the property. The property is used for dairy farming, and most of the area that is not wetland and some area that is wetland is used for grazing livestock. Electric fences running the entire length of the parcel from north to south along both sides of the stream exclude most of the wetland on the property from grazing. The farm buildings are located on the eastern side of the stream, and two fords allow livestock and vehicles to cross the stream to the western side of the property. The fords are unarmored with muddy bottoms (Photo 1). Sediment is mixed into the water column and transported downstream several times daily when cattle cross the brook.

Invasive species, particularly reed canary grass, become prominent towards the southern end of the property. Several isolated clusters of reed canary grass (Photo 2) and multiflora rose occur throughout the property, and a virtual monoculture of more than 1 acre of reed canary grass exists at the southernmost portion of the property (Photos 3 and 4).

A confining glacial till hardpan ranging in thickness from to less than 5 inches to several feet below the ground surface underlies a significant portion of the property, including most of the wetland area. Other areas of the property have a layer of clay underlying the till hardpan. The upland areas are a mixture of Lewbeach and Lewbath soils, Tunkhannock gravelly loam, and Willowemoc and Willdin soils. The wetland areas are a mixture of fluvaquents-udifluvents (soils with a parent material of recent alluvial deposits), Wellsboro channery silt loam, and Morris flaggy silt loam.

The wetlands within the property total approximately 28.7 acres. Approximately 5.4 acres are forested (PFO) wetland; 14.0 acres are emergent (PEM) wetland, and 9.3 acres are scrub/shrub (PSS) wetland. The invasive species reed canary grass (*Phalaris arundinacea*) dominates some areas of the southern portion of the property.

PROJECT DESCRIPTION

The proposed mitigation includes enhancing approximately 5.4 acres of forested wetland, 5.7 acres of scrub-shrub wetland, and 5.9 acres of emergent wetland; establishing 4.7 acres of upland buffer; installing fencing to exclude cattle; and stabilizing two stream crossings.

The primary components of the plan are as follows:

- Enhance emergent, scrub-shrub, and forested floodplain wetland in the grazed area on the western side of the property — The proposed area has been degraded by cattle browsing and trampling. Exclusion fencing will be installed to protect these areas from further disturbance by cattle. Native wetland species will be planted in areas that lack vegetation or are degraded by invasive species; the plantings will allow these areas to function at a higher level. This wetland system is expected to regain its functions and services via natural succession in most areas.
- Modify topography in one cattle-degraded area to create a seasonal pool (depression) and diversify habitat — During a site visit, NYSDEC Region 4 representatives suggested they would like to see a vernal pool-like feature incorporated into the design for the degraded area. The presence of obligate wetland species in adjacent reference wetlands indicates an elevation that supports seasonal ponds. The electric fencing near the stream adjacent to this degraded wetland will be moved to protect the enhanced wetland and allow a full native community to be reestablished. The wetland surrounding the area to be enhanced also will be preserved within the fencing.
- Enhance Betty Brook's 50-foot wetland riparian zone to forested wetland — Isolated forested areas occur along the stream on the southern portion of the property, confirming the possibility of wetland forest habitat in the area. Planting native riparian forest species and excluding cattle will encourage the expansion of wetland forest habitat.
- Enhance emergent wetland and scrub-shrub wetland areas by controlling invasive species — The southern portion of the property exhibits a near monoculture of reed canary grass. This entire area will be treated and re-planted with native species. Over time, as woody plant communities develop, the dominance of reed canary grass will diminish due to shading.
- Establish a 50-foot minimum upland forested buffer where possible throughout the property.
- Improve the fords by excavating approximately 6 inches within the bankfull dimensions and backfilling with a combination of anchored geogrid with stone bedding fill to minimize sediment disturbance.

BENEFITS

Protecting, restoring, and enhancing these wetlands and associated buffers will improve and protect the following functions and services: wildlife habitat, flood attenuation, and water quality.

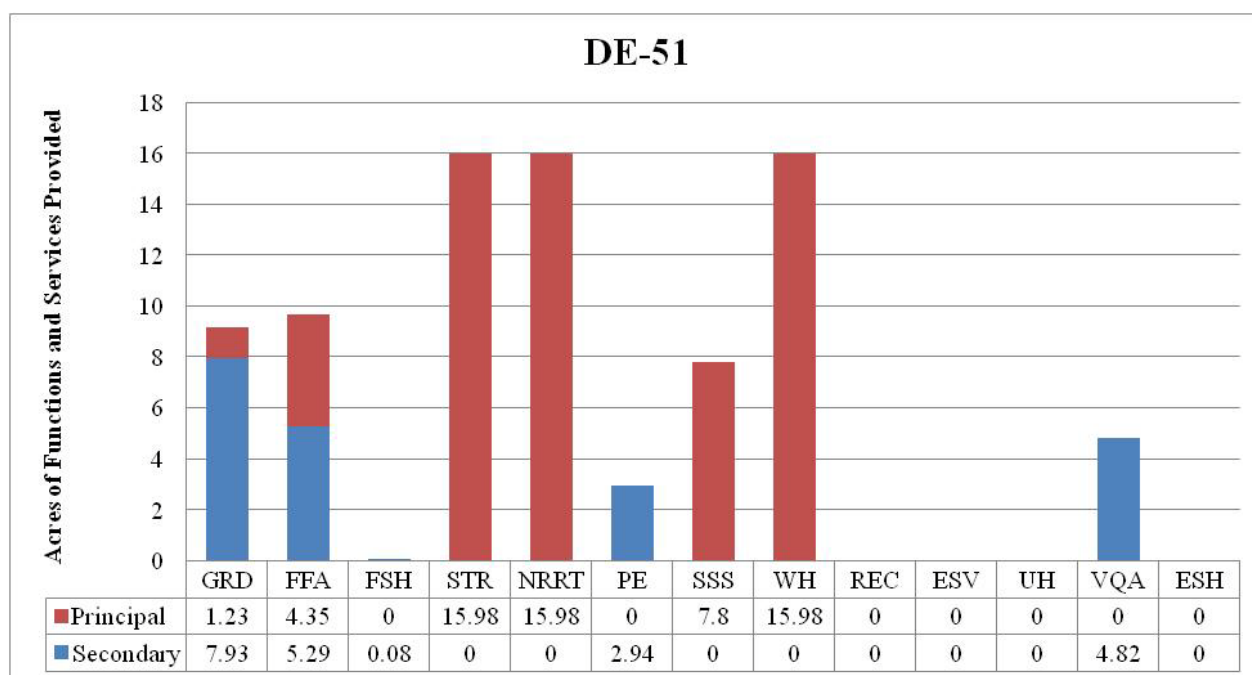
The existing wetlands provide valuable wildlife habitat for aquatic and wetland species. Enhancing the disturbed wetlands along the stream will increase the total area of continuous wildlife habitat. Preserving this wetland from development also will protect the valuable trout

habitat that the stream provides. Installing fencing to permanently exclude cattle will prevent future damage due to browsing and trampling. The Conservation Reserve Program (CRP), which is temporary and voluntary, has been used to protect some of the site in recent years. The proposed mitigation approach provides significant functional lift; furthermore, the mitigation opportunity applies to a larger area than the CRP has protected.

Improving the stream crossings will enhance downstream water quality in Betty Brook by reducing the amount of nutrient-laden sediment that is disturbed and moved into the water column. The depression to be created in the floodplain will trap sediments and associated nutrients and pollutants during floods. The design will diversify the topography and increase the time that floodwaters remain in contact with soil and vegetation. It will also provide seasonal ponding that will create potential breeding habitat for amphibians.

Figure 1 summarizes the functions and services provided by the proposed mitigation.

FIGURE 1. FUNCTIONS AND SERVICES PROVIDED BY THE PROPOSED MITIGATION.*



Groundwater Recharge/Discharge (GRD), Floodflow Alteration (FFA), Fish and Shellfish Habitat (FSH), Sediment/Toxicant Retention (STR), Nutrient Removal and Retention (NRRT), Production Export (PE), Sediment/Shoreline Stabilization (SSS), Wildlife Habitat (WH), Recreation (REC), Educational/Scientific Value (ESV), Uniqueness/Heritage (UH), Visual Quality and Aesthetics (VQA), Endangered Species Habitat (ESH)

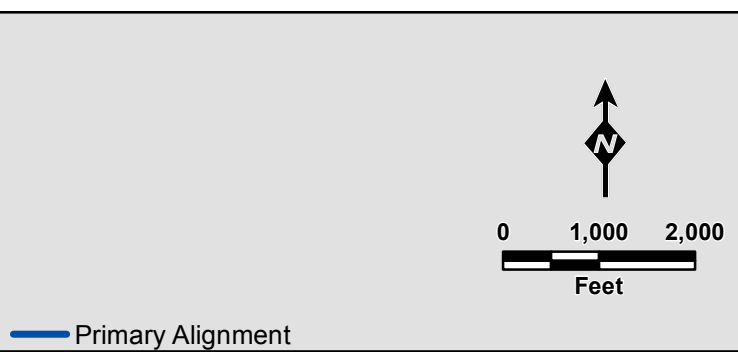
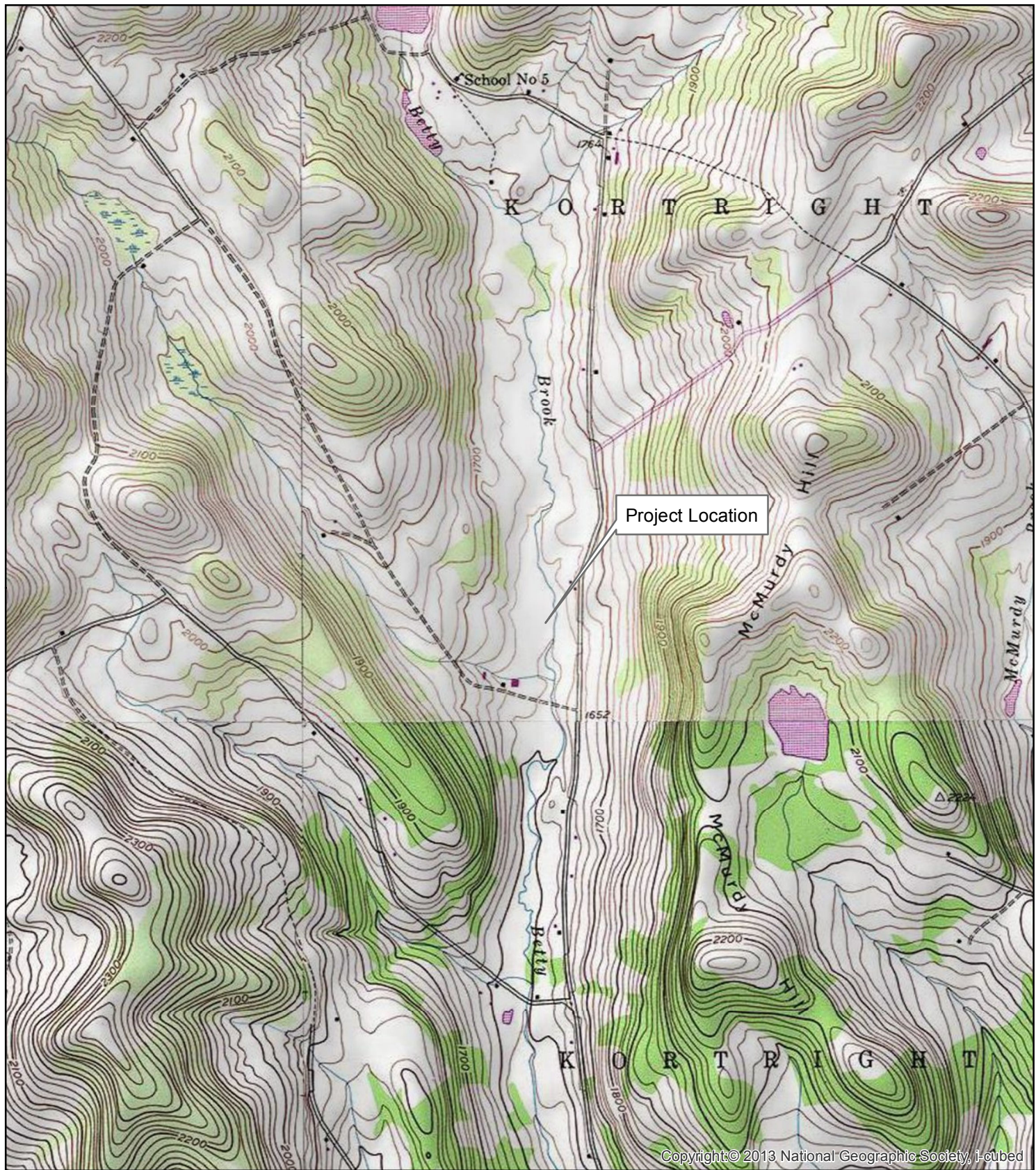
*** Functions and services shown do not include additional acreage of preservation of wetlands within the existing NYDEC wetland.**

FEASIBILITY

- The invasive species reed canary grass dominates some areas of the southern portion of the wetland. Several years may be required for woody species to shade out the reed canary grass and relegate it to a subdominant species.
- An easement from the landowner will be required to complete the proposed work. The landowners will need to approve access to and use of the property.
- A Phase I Environmental Site Assessment (ESA) was conducted to identify recognized environmental conditions (RECs), historical RECs, or de minimis conditions associated with the property. Two de minimis conditions were identified: the use of herbicides and pesticides on the fields, and the presence of an area used for dumping small farm equipment. Neither condition poses a threat sufficient to be considered an REC; however, the farm equipment should be removed before implementing enhancements.
- A Phase 1b archaeological assessment of the site revealed no archaeological artifacts on the property. A geotechnical study of the site included drilling three soil boring pits around the wetland mitigation area. The observed soil types and depths to groundwater are consistent with the soil survey results. The surficial soil was identified as sandy silt, which is compatible with the proposed wetland plantings.

MAP

Path: G:\Client_Data\Constitution_Pipeline\Welland_Mitigation\ MXD\Concept Plan Figures\Site_Location_Maps\DE-51.mxd



CONSTITUTION PIPELINE

DE-51 POTENTIAL MITIGATION SITE



Prepared on 11/5/2013 by:

Kleinschmidt

Coordinate System: NAD 1983 UTM Zone 18N

PHOTOGRAPHS



PHOTOGRAPH 1. A VIEW OF STREAM FORD TO BE IMPROVED WITH ARMORING.



PHOTOGRAPH 2. EXAMPLE OF PORTION OF WETLAND DOMINATED BY NATIVE WETLAND SPECIES THAT WOULD UNDERGO NATURAL SUCCESSION BUT NOT BE PLANTED; ADJACENT UPLAND WILL BE PLANTED TO A FORESTED RIPARIAN BUFFER.



PHOTOGRAPH 3. NORTHERN EDGE OF REED CANARY GRASS MONOCULTURE.



PHOTOGRAPH 4. MONOCULTURE OF REED CANARY GRASS.

WETLAND REPORT

WETLAND DELINEATION REPORT

SITE ID: DE-51
SITE NAME: Mary Ruther and Jesse Wheeler Property
LOCATION: South Kortright, Delaware County, New York
WATERSHED: Upper Delaware – 02040101
SITE TYPE: Wetland Mitigation
LANDOWNER: Mary Ruther and Jesse Wheeler

SITE DESCRIPTION

The site is located west of the Betty Brook Road in South Kortright, New York. The property boundary contains a stream with palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands bordering it on both sides. Approximately 15 acres of the northern portion of the property is part of an 81.3 acre New York State Department of Environmental Conservation (NYDEC) regulated wetland. The stream running north to south through the property is named Betty Brook and is a NYDEC Class C trout stream. The property contains a dairy farm and most of the property that is not wetland is currently used for grazing livestock. Most of the wetlands on the property are excluded from grazing by electric fences, which run the entire length of the parcel from north to south along both sides of the stream. The farm buildings are located on the eastern side of the stream and there are two stream crossings which allow livestock and vehicles to ford the stream to the western side of the property (these are wet crossings). The fords are currently unarmored with muddy bottoms. When livestock cross the brook, which is several times daily, sediment is mixed into the water column and transported downstream.

The wetlands within the property account for approximately 26 acres in total area. Approximately 3 acres are PFO, 11 acres are PSS, and 12 acres are PEM wetland. The invasive species reed canary grass (*Phalaris arundinacea*) and multiflora rose (*Rosa multiflora*) were observed on portions of the property.

METHODS

Field surveys were completed on November 19, 2013. Wetlands were field delineated by using the methodology and standard practices outlined in the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (USACE, 2012). The Corps Manual provides technical guidance and procedures for identifying and delineating wetlands that may be subject to jurisdiction under Section 404 of the Clean Water Act (33 U.S.C. 1344) or Section 10 of the Rivers and Harbors Act (33 U.S.C. 403). According to the Corps Manual, identification of wetlands is based on a three factor approach involving indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. USACE

data forms are included as Attachment A. Wetland functions and values were assessed for each wetland based on the USACE Highway Methodology Workbook Supplement "Wetland Functions and Values a Descriptive Approach" (USACE, 2001); data forms are included as Attachment B. All wetland features were delineated with sub-meter accuracy using a Trimble GEO Explorer-6000 GPS. GPS positions were differentially corrected using Trimble Pathfinder software (Ver. 5.40).

RESULTS

HYDROLOGY

The large wetland complex is associated with the Betty Brook stream running through the central portion on the site. Some areas of the wetland likely receive hydrologic input directly from the stream during periods of high water during the spring and fall. Throughout the wetland complex areas of surface saturation and inundation are present. Within several of the delineated emergent and scrub shrub wetlands indicators of wetland hydrology included saturated soils and oxidized rhizospheres.

VEGETATION

Wetlands on the site are dominated by shrub layer and herbaceous vegetation. Shrub layer vegetation is mostly associated with the stream and is dominated by speckled alder and steplebush, with occasional hawthorn present in areas of higher micro-topography. Herbaceous vegetation on the site is dominated by soft rush, wool grass, and tussock sedge. In some areas wetland vegetation has been impacted by cattle grazing and trampling. These degraded areas are often dominated by sparse emergent vegetation consisting of soft rush and skunk cabbage (Photo 1). In some locations herbaceous vegetation is dominated by large monocultures of invasive reed canary grass (Photo 2). PFO wetlands are generally dominated by green ash, red maple, and willow.

TABLE 2. DOMINANT VEGETATION.

SCIENTIFIC NAME	COMMON NAME	STRATUM	INDICATOR STATUS
<i>Alnus incanna</i>	Speckled alder	Shrub	FACW
<i>Salix sp.</i>	Willow spp.	Shrub/tree	-
<i>Fraxinus pennsylvanica</i>	Green ash	Tree	FACW
<i>Acer rubrum</i>	Red maple	Tree	FAC
<i>Prunus serotina</i>	Black cherry	Shrub	FACU
<i>Picea abies</i>	Norway spruce	Tree	UPL
<i>Pinus strobus</i>	White pine	Tree	FACU
<i>Ulmus americana</i>	American elm	Tree	FACW
<i>Juncus effusus</i>	Soft rush	Herb	OBL
<i>Carex lurida</i>	Lurid sedge	Herb	OBL
<i>Carex stricta</i>	Tussock sedge	Herb	OBL
<i>Phalaris arundinacea*</i>	Reed-canary grass	Herb	FACW
<i>Osmunda cinnamomea</i>	Cinnamon fern	Herb	FACW
<i>Onoclea sensibilis</i>	Sensitive fern	Herb	FACW
<i>Solidago spp.</i>	Goldenrod spp.	Herb	-
<i>Cornus stolonifera</i>	Red-osier dogwood	Shrub	FACW
<i>Euthamia graminifolia</i>	Flat-top goldentop	Herb	FAC
<i>Lysimachia nummularia</i>	Creeping Jenny	Herb	FACW
<i>Spiraea tomentosa</i>	Steeplebush	Shrub	FACW
<i>Scirpus cyperinus</i>	Wool grass	Herb	OBL
<i>Crataegus Spp.</i>	Hawthorn	Shrub	-
<i>Ulmus americana</i>	American elm	Tree	FACW
<i>Symplocarpus foetidus</i>	Skunk cabbage	Herb	OBL

SOILS

A significant portion of the property, including most of the wetland area, is underlain by a layer of confining glacial till and/or dense, red clay. The confining layers vary from more than 1 foot to less than 5 inches below the ground surface. The upland areas are a mixture of Lewbeach and Lewbath soils, Tunkhannock gravelly loam, and Willowemoc and Willdin soils. The wetland areas are a mixture of fluvaquents-udifluvents (soils with a parent material of recent alluvial deposits), Wellsboro channery silt loam, and Morris flaggy silt loam. Soils within delineated wetlands were depleted (F3) and generally consisted of a matrix color of 10 YR 5/2 with high chroma redox features (10 YR 5/8).

FUNCTIONS AND SERVICES

The wetlands on the site are adjacent to a perennial stream which flows through the center of the wetland complex. Wetlands associated with permanent water bodies provide important wildlife habitat and connectivity. In addition the presence of wetland vegetation increases the potential for stabilization of the stream shoreline and a reduction in the potential for sedimentation and erosion. The wetlands on the site provide an important buffer from adjacent agricultural activity, and therefore provide important water quality functions in the form of nutrient retention and/or sediment retention (Photo 3).



PHOTOGRAPH 1. EXISTING DEGRADED WETLAND ON PROPERTY.



PHOTOGRAPH 2. REED CANARY GRASS MONOCULTURE.



PHOTOGRAPH 3. SHORELINE WETLAND COMMUNITY.

DISCUSSION

Wetlands on the site are in fair condition, some areas of the wetland complex are impacted by agricultural uses (grazing, trampling, etc.) which have degraded the natural wetlands that once occurred on the site. In some locations mono-cultures of reed canary grass have reduced the function of some emergent wetlands by excluding native vegetation. Several wetlands located on the subject property could be enhanced through permanent exclusion of livestock, planting of native species, and treatment of invasive species (e.g., reed canary grass).

REFERENCES

- U.S. Army Corps of Engineers (USACE). January 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Ver. 2.0). U.S. Army Corps of Engineers. Vicksburg, MS. No. ERDC/EL TR-12-1. 176 Pp.
- U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. U.S. Army Corps of Engineers. 143 pp.
- USACE. 2001. The Highway Methodology Workbook. U.S. Army Corps of Engineers New England District. 29 pp. NAEEP-360-1-30a.

ATTACHMENT A
USACE DATA SHEETS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DE-51 City/County: DElaware Sampling Date: 11/19/13
 Applicant/Owner: Constitution State: NY Sampling Point: DE 51 WET
 Investigator(s): ITC - Klein Schmidt Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3%
 Subregion (LRR or MLRA): Mid Atlantic Lat: _____ Long: _____ Datum: NAD 1983
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) <u>Active pasture land</u>	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present? Yes _____ No _____	Depth (inches): _____	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>6"</u>	
(includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: <u>PEM/PSS complex</u> <u>Adjacent to Betty Brook</u>		

VEGETATION – Use scientific names of plants.

Sampling Point: DESI WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																																																																							
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7. _____	_____	_____	_____																																																																							
				Dominance Test worksheet:																																																																						
				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)																																																																						
				Total Number of Dominant Species Across All Strata: <u>2</u> (B)																																																																						
				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																																																																						
				Prevalence Index worksheet:																																																																						
				Total % Cover of: _____ Multiply by: _____																																																																						
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				Hydrophytic Vegetation Indicators:																																																																						
				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation																																																																						
				<input checked="" type="checkbox"/> 2 - Dominance Test is >50%																																																																						
				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹																																																																						
				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)																																																																						
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																																																																						
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																																																						
				Definitions of Vegetation Strata:																																																																						
				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.																																																																						
				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.																																																																						
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.																																																																						
				Woody vines – All woody vines greater than 3.28 ft in height.																																																																						
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																																						
Sapling/Shrub Stratum (Plot size: _____) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Sapling/Shrub Stratum (Plot size: _____)</th> <th style="width: 10%;">Absolute % Cover</th> <th style="width: 10%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> <th style="width: 30%;"></th> </tr> </thead> <tbody> <tr><td>1. <u>Spiraea tomentosa</u></td><td><u>15.0</u></td><td><u>YES</u></td><td></td><td></td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td><td></td></tr> <tr> <td colspan="4"></td> <td>= Total Cover</td> </tr> </tbody> </table>					Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		1. <u>Spiraea tomentosa</u>	<u>15.0</u>	<u>YES</u>			2. _____	_____	_____	_____		3. _____	_____	_____	_____		4. _____	_____	_____	_____		5. _____	_____	_____	_____		6. _____	_____	_____	_____		7. _____	_____	_____	_____						= Total Cover																									
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Remarks: (Include photo numbers here or on a separate sheet.)																																																																										

Sampling Point: DE S / WET

Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DESI City/County: DElaware Sampling Date: DESI upland
 Applicant/Owner: Constitution State: NY Sampling Point: 11/19/13
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): Midatlantic Lat: _____ Long: _____ Datum: NAD 1983
 Soil Map Unit Name: _____ NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.) <u>Active farmland pasture / corn</u>	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: DESI Upland

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
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OBL species _____	x 1 = _____																			
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Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ = Total Cover																				
Herb Stratum (Plot size: _____)																				
1. <u>MAize</u>	<u>97%</u>	<u>yes</u>	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
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8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
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2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.) <div style="text-align: center; font-size: 1.2em; color: blue;">CORN FIELD</div>																				

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ☒

Sampling Point: DESI upland

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Redox (S5) | | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | | <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

ATTACHMENT B

FUNCTIONS AND SERVICES

Wetland Function-Value Evaluation Form

Total area of wetland_____ Human made?_____ Is wetland part of a wildlife corridor?_____ or a "habitat island"?_____

Adjacent land use_____ Distance to nearest roadway or other development_____

Dominant wetland systems present_____ Contiguous undeveloped buffer zone present_____

Is the wetland a separate hydraulic system?_____ If not, where does the wetland lie in the drainage basin?_____

How many tributaries contribute to the wetland?_____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D._____

Latitude_____ Longitude_____

Prepared by:_____ Date_____

Wetland Impact:
Type_____ Area_____

Evaluation based on:
Office_____ Field_____

Corps manual wetland delineation
completed? Y_____ N_____

Function/Value	Suitability Y N		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge					
 Floodflow Alteration					
 Fish and Shellfish Habitat					
 Sediment/Toxicant Retention					
 Nutrient Removal					
 Production Export					
 Sediment/Shoreline Stabilization					
 Wildlife Habitat					
 Recreation					
 Educational/Scientific Value					
 Uniqueness/Heritage					
 Visual Quality/Aesthetics					
ES Endangered Species Habitat					
Other					

Notes:

* Refer to backup list of numbered considerations.

HYDROLOGY REPORT

WETLAND HYDROLOGY ANALYSIS

SITE ID: DE-51
SITE NAME: Mary Ruther and Jesse Wheeler Property
LOCATION: South Kortright, Delaware County, New York
WATERSHED: Upper Delaware – 02040101
SITE TYPE: Wetland Mitigation
LANDOWNER: Mary Ruther and Jesse Wheeler

The following is a summary of the hydrology at the DE-51 property for wetland mitigation relating to the wetland disturbance along the Constitution Pipeline corridor. Kleinschmidt conducted several site visits to evaluate the existing and proposed wetlands and this memorandum summarizes the hydrologic conditions that assisted in the final design.

GROUNDWATER

A significant portion of the property is a DEC regulated wetland, which Kleinschmidt is proposing to enhance, so it is evident that the hydrology required to sustain wetland habitat is already present. Enhancements will be done by excluding cattle grazing and planting the wetland areas that are currently pasture. Excavation of up to 18" in a small area of the western pasture is proposed in order to diversify habitat.

Because of the degradation due to extensive cattle grazing on the property, the wetlands in the pasture have not fully developed their natural characteristics. Therefore, an investigation of soil characteristics as well as elevations of reference wetlands on the property was required to determine what wetland types Kleinschmidt will plant in the enhanced areas.

Soil boring and soil pit tests were conducted on the site to investigate soil characteristics and hydrology. In areas of proposed wetland enhancement, redoximorphic features (indicative of saturated soils at least during a portion of the year) were found between 0.0' and 0.6' below ground surface. Elevations of redoximorphic features range between 1619.2' to 1630.5' across the site. The groundwater table was encountered between 0.9' and 1.1' below ground surface in the proposed enhancement area. These redoximorphic feature elevations and groundwater levels were used as a guide to determine the wetland types that would be planted to facilitate the enhancements.

To observe the trends in groundwater data, soil boring and soil pit test data for DE-51 was also analyzed using reference data observed over the past five years at a USGS well approximately 5.1 miles away. This analysis compared the reading at the USGS well on the day of the soil boring to the well's overall dataset, and was applied to the water level at the site observed through the soil boring and soil pit tests. This made it possible to normalize the range of water

depths on the site to the USGS well data, providing a surrogate for on-site long-term data. Comparison with the long-term data validated the chosen wetland types and ensured groundwater can function as a viable primary source of hydrology for the site.

SURFACE RUNOFF

Runoff from higher elevations to the west of the site will provide a secondary contribution to the wetland's hydrology. The proposed area of enhancement has a contributing overland flow runoff area of approximately 43 acres. During larger storm events, this will produce a significant amount of overland flow, providing a reliable secondary source of hydrology to the wetland.

BETTY BROOK OVERBANK FLOW

The 100-year FEMA flood map for the site shows that much of the wetland area on the property will be inundated. Betty Brook's shallow banks indicate easy connectivity to its floodplains, allowing access to the proposed wetlands which will receive significant hydrology during large storm events. Depressional features within the wetland retain overbank flows and ensure that the wetlands have an alternate source of hydrology. Therefore, overbank flow can be considered a supplemental tertiary source for the wetlands.

GROUNDWATER ANALYSIS

Site Identifier: DE-51

Geotech:

Haley and Aldrich

Drill Rig:

GeoLogic NY, Inc./North Star Drilling

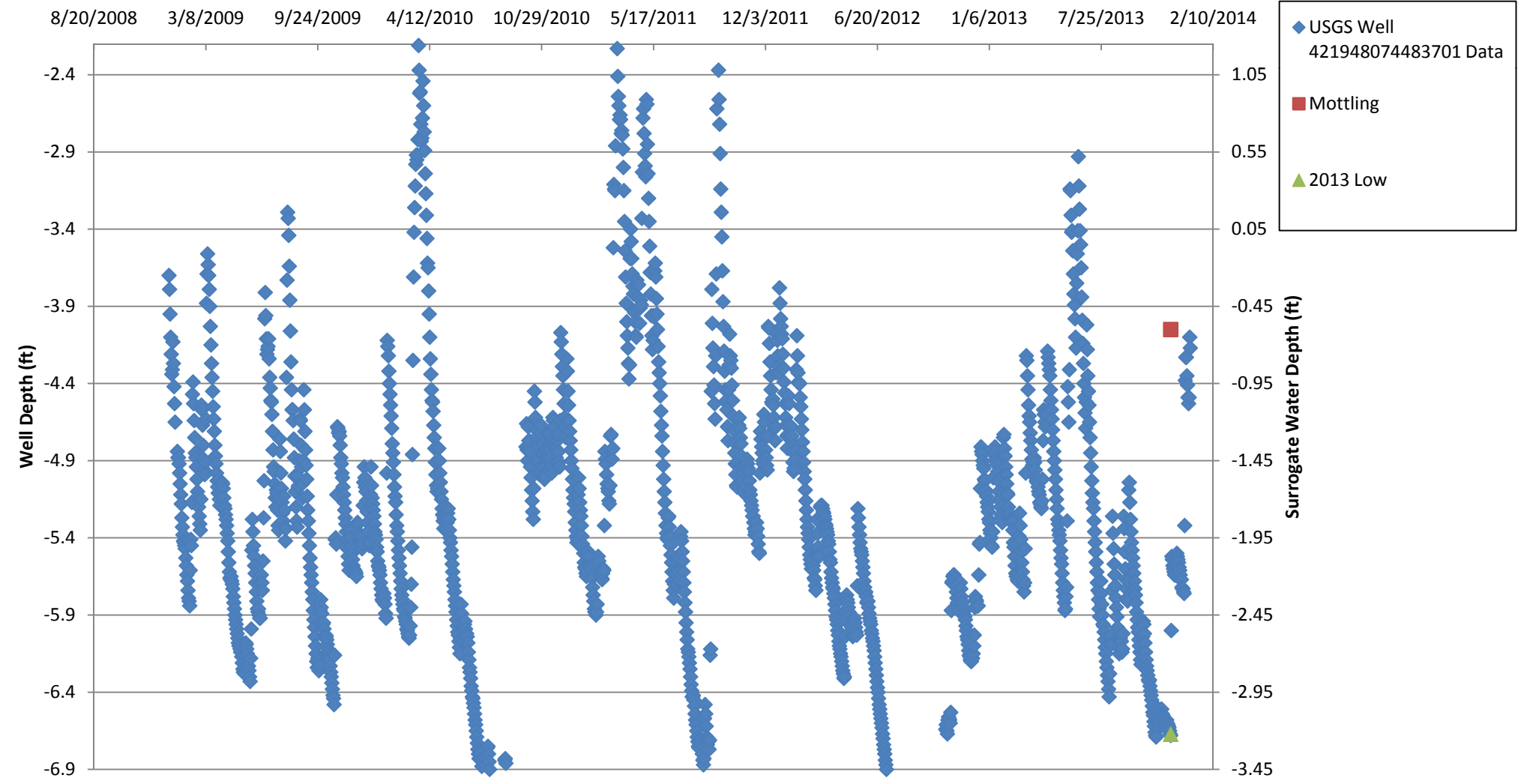
					Groundwater Depth					
					24-hr Reading at Boring ¹		BLS: Below Land Surface (Negative BLS is above ground surface)			
Boring ID	Longitude	Latitude	Ground Surface Elevation	Approximate Depth to Observed Mottled Soil (ft. BLS)	Standing Water at Time of Boring (ft BLS)	Elevation (ft)	10th percentile Depth (ft BLS)	25th Percentile Depth (ft BLS)	75th Percentile Depth (ft BLS)	90th Percentile Depth (ft BLS)
DE-51-1	74° 44' 12.780" W	42° 22' 52.302" N	1633.1	4	2.7	1630.4	1.3	1.9	3.2	4.0
DE-51-2	74° 44' 4.470" W	42° 22' 38.958" N	1622.9	0	1.5	1621.4	0.0	0.7	2.0	2.8
DE-51-3	74° 44' 6.882" W	42° 22' 34.986" N	1626.2	0	1.4	1624.8	-0.1	0.6	1.9	2.7

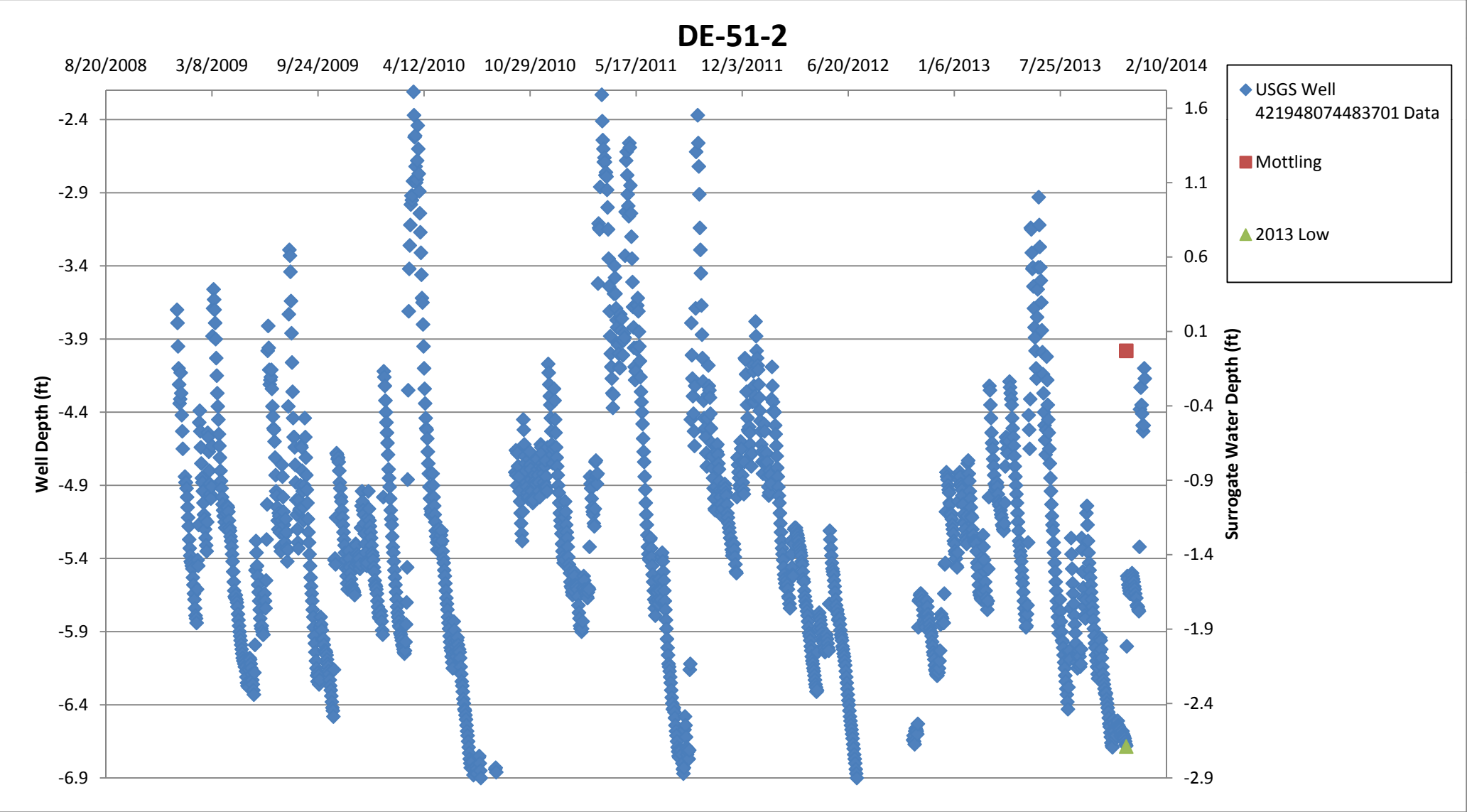
- Notes:
1. Geotech reading collected on 31 October 2013.
2. 10th-90th percentile water depths calculated based on a comparison of a same day reading at a nearby USGS well and its data set from the past 5 years

USGS Well ID	Longitude	Latitude	Date	Distance from Project Site	Water depth at time of survey (ft BLS)	10th percentile water depth (ft BLS)	25th percentile water depth (ft BLS)	75th percentile water depth (ft BLS)	90th percentile water depth (ft BLS)
421948074483701	74°48'36.7" W	42°19'47.7" N	12/6/2013	5.1 miles	5.57	4.12	4.81	6.03	6.84
421948074483701	74°48'36.6" W	42°19'47.8" N	12/11/2013	5.1 miles	5.59	4.12	4.81	6.03	6.84

	USGS Well	USGS Well	DE-51-2	DE-51-3	Soil Pit 7	Soil Pit 9
Mottling:	-4.12	-4.12	0.0	0.0	-0.6	0.0
Measured Water Level:	-5.57	-5.59	-1.5	-1.4	0.9	-
2013 Low:	-6.69	-6.69	-2.66	-2.48	-3.22	-
Date:	6-Dec-13	6-Dec-13	6-Dec-13	6-Dec-13	11-Dec-13	11-Dec-13

Soil Pit 7





DESIGN DRAWINGS

22x34 = FULL SCALE

3"
2"
1"
0

PRINTED: Jul. 31, 2014 - 10:06 AM J:\3786\001\05 Wetland Mitigation\002 Final Plans\DE-51\Drawings\3786-001-DE-51 Coversheet - NY.dwg

SITE DE-51: BETTY BROOK ROAD WETLAND MITIGATION PROJECT CONSTITUTION PIPELINE, LLC

DRAWING LIST	
SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	EXISTING CONDITIONS
4	WETLANDS METES AND BOUNDS TABLES
5	DEMOLITION PLAN
6	SITE PLAN
7	SITE PLAN – S7
8	SITE PLAN – S8
9	SITE PLAN – S9
10	SITE PLAN – S10
11	SECTIONS
12	EASEMENT PLAN
13	CONSERVATION EASEMENT METES AND BOUNDS TABLES
14	PLANTING NOTES AND TABLES
15	PLANTING PLAN
16	DETAILS
17	EROSION AND SEDIMENT CONTROL DETAILS

OWNER: JESSE & MARY RUTH WHEELER

TAX PARCEL ID: 67.-1-17.2

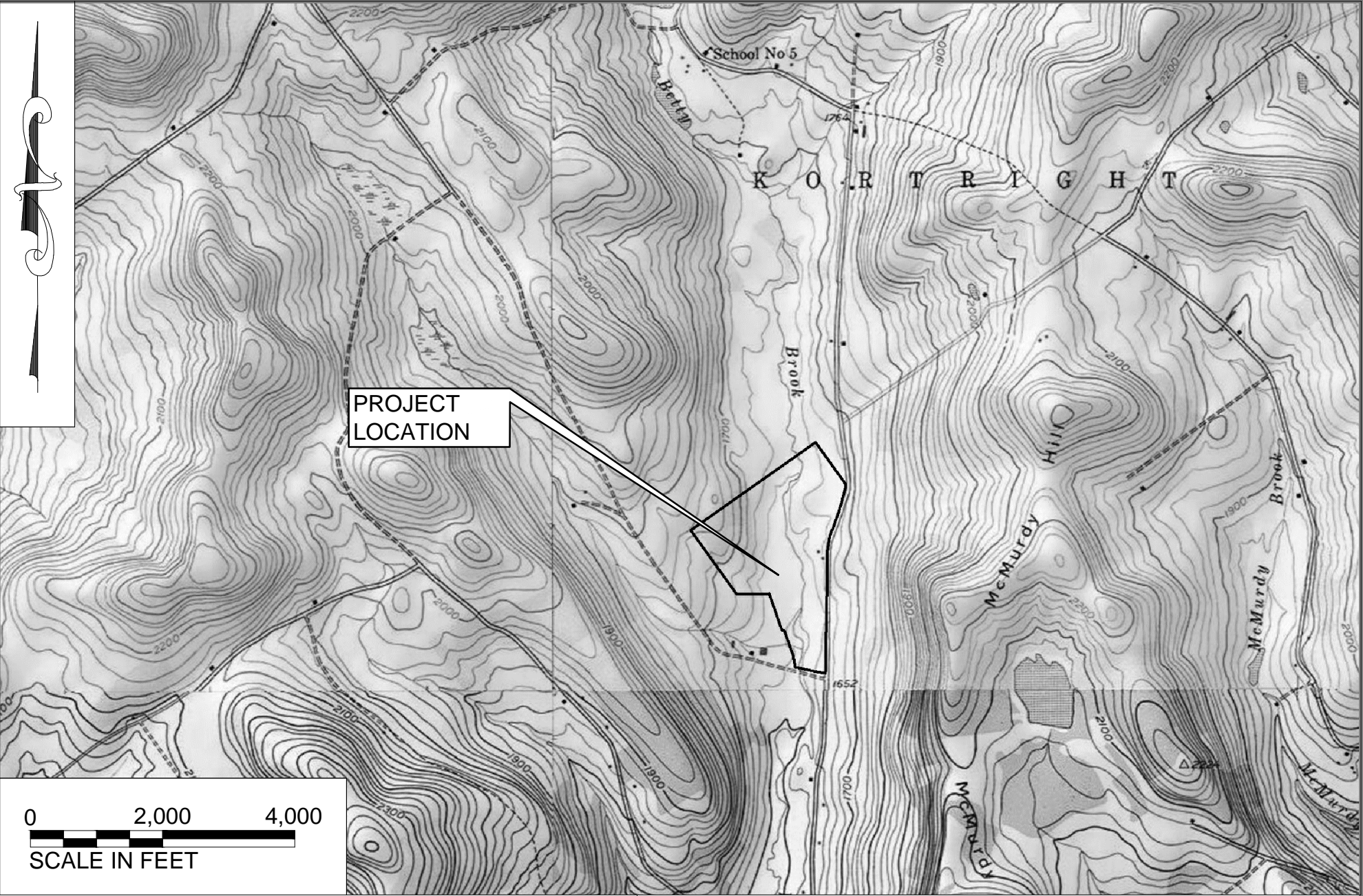
ACREAGE OF PARCEL: 93.4 ACRES

DISTURBED ACREAGE: 13.6 ACRES

ADDRESS: 2533 BETTY BROOK ROAD

KORTRIGHT, NY 13842

HUC 8: UPPER DELAWARE – 02040101



VICINITY MAP
(ELEVATIONS ARE IN METERS)



- NOTES:
- TOPOGRAPHIC AND PARCEL BOUNDARY SURVEY DATA BASED ON 2013/2014 SURVEY FROM MICHAEL BAKER CORPORATION. COORDINATES SHOWN ARE EXPRESSED IN US SURVEY FEET AND REFERENCED TO NORTH AMERICAN DATUM OF 1983 (NAD 83), UTM ZONE 18.
 - WETLAND BOUNDARIES BASED ON 2013/2014 DELINEATION BY KLEINSCHMIDT ASSOCIATES

- NOTES:
- SECTIONS ARE ALPHABETICAL.
 - DETAILS ARE NUMERICAL.
 - VIEWS ARE DOUBLE ALPHABETICAL.

SECTION/DETAIL IDENTIFICATION SYMBOLS					



					CONSTITUTION PIPELINE, LLC WETLAND MITIGATION		
					SITE DE-51: BETTY BROOK ROAD		
					COVER SHEET		
					141 Main Street P.O. Box 650 Pittsfield, Maine 04967 Telephone: (207) 487-3328 Fax: (207) 487-3124 www.KleinschmidtUSA.com		
No.	Revision	Date	Drawn	Checked	Project No.	Date Revised	Drawing No.
					3786-001	7-31-2014	1
					Designed	Drawn	Checked
					DDW	DDW	TAK

GENERAL NOTES

- SUBCONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THESE DRAWINGS AND THE PROJECT SPECIFICATIONS.
- IT IS THE RESPONSIBILITY OF THE SUBCONTRACTOR TO REVIEW ALL OF THE DRAWINGS, SPECIFICATIONS, AND REFERENCED DOCUMENTS ASSOCIATED WITH THE PROJECT PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE SUBCONTRACTOR FIND ANY CONFLICT WITH THE DOCUMENTS, IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO NOTIFY KLEINSCHMIDT AND THE ENGINEER OF RECORD, IN WRITING, PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE SUBCONTRACTOR TO NOTIFY KLEINSCHMIDT AND THE ENGINEER OF RECORD SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE SUBCONTRACTOR TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND SPECIFICATIONS AND IN FULL COMPLIANCE WITH LOCAL REGULATIONS AND CODES.
- IT IS THE RESPONSIBILITY OF THE SUBCONTRACTOR TO FULFILL ALL REQUIREMENTS OF THE CONTRACT AND ALL AMENDMENTS THERETO, INCLUDING BUT NOT LIMITED TO GENERAL CONDITIONS, SPECIAL CONDITIONS, TECHNICAL SPECIFICATIONS AND THESE DRAWINGS IN ORDER TO COMPLETE THIS PROJECT.
- ALL EXISTING AND PROPOSED DIMENSIONS, FEATURES, UTILITIES AND ELEVATIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR PRIOR TO CONSTRUCTION. SUBCONTRACTOR SHALL NOTIFY KLEINSCHMIDT, IN WRITING, IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH THE CONSTRUCTION TO OBTAIN NECESSARY PLAN CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE SUBCONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO ERRORS & OMISSIONS SHOWN ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN. KLEINSCHMIDT RESERVES THE RIGHT TO MODIFY THESE PLANS.
- SUBCONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, LAYOUT AND EXISTING CONDITIONS SHOWN PRIOR TO SHOP DRAWING SUBMITTAL, ORDERING MATERIAL, START OF FABRICATION, OR START OF CONSTRUCTION. SUBCONTRACTOR SHALL NOTIFY KLEINSCHMIDT OF DISCREPANCIES.
- THE SUBCONTRACTOR SHALL BE FAMILIAR WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL APPROVALS AND PERMITS FOR THE PROJECT AND SHALL HAVE A COPY OF RELEVANT PLANS AND PERMITS ON SITE AT ALL TIMES. THE SUBCONTRACTOR SHALL NOT PROCEED WITH THEIR WORK UNTIL ALL RELEVANT PERMITS ARE OBTAINED.
- THE SUBCONTRACTOR IS RESPONSIBLE FOR PROTECTING THE ENVIRONMENT.
- SUBCONTRACTOR SHALL SCHEDULE WORK IN COOPERATION WITH THE OWNER AND KLEINSCHMIDT.
- SUBCONTRACTOR SHALL PROVIDE SUBMITTALS AND RECEIVE KLEINSCHMIDT'S APPROVAL FOR ALL STRUCTURAL AND MISCELLANEOUS METAL ITEMS AND CONCRETE REINFORCEMENT PRIOR TO FABRICATION.
- SUBCONTRACTOR SHALL CLEAN UP ANY SPILLS OR DEBRIS CAUSED BY CONSTRUCTION.
- SUBCONTRACTOR SHALL REPAIR ANY PORTIONS OF THE SITE THAT ARE DAMAGED DURING CONSTRUCTION, AND PERFORM LANDSCAPING AND SITE REMEDIATION AS NECESSARY TO LEAVE THE WORK AREA AS CLOSE TO ORIGINAL CONDITION AS POSSIBLE.
- ALL WORK SHALL BE CONDUCTED PER THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
- THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUE AND PROCEDURE OF CONSTRUCTION; INCLUDING, BUT NOT LIMITED TO, BRACING OF THE WORK AS REQUIRED TO PROTECT THE WORK UNTIL THE PROJECT IS COMPLETE. SUBCONTRACTOR SHALL NOT PLACE EQUIPMENT OR MATERIALS OUTSIDE OF THE LIMIT OF WORK SHOWN ON THE PLANS WITHOUT WRITTEN CONSENT FROM KLEINSCHMIDT AND THE CONSERVATION DISTRICT.
- ATTENTION ALL SUBCONTRACTORS: LOCATIONS OF ALL EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS AND ACCURACY OF TYPE, SIZE, DEPTH OR HORIZONTAL LOCATION OF UNDERGROUND FACILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTORS MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES. SEE STATE SPECIFIC REQUIREMENTS, THIS PAGE.
- THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR AND PROVIDE ALL CONSTRUCTION STAKEOUT AND SURVEY WORK NECESSARY FOR THEIR WORK, UNLESS ARRANGED OTHERWISE WITH KLEINSCHMIDT. ANY DISCREPANCIES FOUND DURING THE COURSE OF THE SURVEY WORK SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF KLEINSCHMIDT.
- THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
- THE SUBCONTRACTOR SHALL BE RESPONSIBLE TO SECURE ALL MATERIAL, EQUIPMENT, SUPPLIES, ETC., STORED AT THE SITE.
- THE SUBCONTRACTOR SHALL BE RESPONSIBLE TO CLEAN PROJECT SITE OF ALL WASTE, FILL, DEBRIS, ETC. DAILY AND PRIOR TO LEAVING THE SITE.
- ANY DAMAGE TO THE UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE SUBCONTRACTOR, AND ALL COST FOR REPAIRS SHALL BE BORNE BY THE SUBCONTRACTOR.
- NO TREES SHALL BE DISTURBED UNLESS INDICATED ON THE PLANS THAT THEY ARE TO BE REMOVED.
- NO WETLANDS SHALL BE DISTURBED UNLESS INDICATED ON THE PLANS AND ALL APPROPRIATE PERMITS ARE IN PLACE.
- THE SUBCONTRACTOR SHALL COMPLY WITH ALL CONDITIONS CONTAINED IN RELEVANT PERMITS ISSUED FOR THIS PROJECT.

- SURVEY DATA ARE BASED ON TOPOGRAPHIC SURVEY BY MICHAEL BAKER CORPORATION. COORDINATES SHOWN ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), UTM ZONE 18.
- WETLAND BOUNDARIES BASED ON 2013/2014 DELINEATION BY KLEINSCHMIDT. WETLANDS WERE DELINEATED BASED ON THE USACE 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (VERSION 2.0).
- THE SUBCONTRACTOR SHALL BE ADVISED THAT THE PROJECT MAY BE LOCATED IN AN AREA PRONE TO FLOODING AND SEVERE WEATHER. THE SUBCONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE PROJECT WHILE UNDER CONSTRUCTION, WHICH MAY INCLUDE SEQUENCING THE PROJECT TO PROTECT TEMPORARY AND PERMANENT STRUCTURES. THIS INCLUDES, BUT IS NOT LIMITED TO, PROTECTION FROM STORMS, FLOODS, WIND, AND RECREATIONAL USERS. THE SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE PROJECT SITE, TEMPORARY FACILITIES, FALSEWORK, EQUIPMENT, PERSONNEL, WORK, MATERIALS, AND OTHER PROPERTIES, THE PUBLIC, OR INDUSTRY.
- EVERY SUBCONTRACTOR SHALL COOPERATE WITH AND MAKE ALLOWANCES FOR OTHER SUBCONTRACTORS.
- SUBCONTRACTOR SHALL PARK IN DESIGNATED AREAS ONLY.
- TO THE GREATEST EXTENT POSSIBLE ALL TRAFFIC SHALL REMAIN ON DESIGNATED TRAVELWAYS. ANY DAMAGE TO TURF OR FIELDS SHALL BE REPORTED AND REPAIRED IMMEDIATELY BY THE SUBCONTRACTOR.
- ALL SUBCONTRACTORS SHALL SUBMIT THE FOLLOWING FOR APPROVAL:
 - PHASING AND SEQUENCING PLAN: SUBMIT PLAN NO LESS THAN 14 DAYS PRIOR TO COMMENCING WORK.
 - POLLUTION PREVENTION AND CONTROL PLAN: SUBMIT SITE SPECIFIC PLAN NO LESS THAN 14 DAYS PRIOR TO COMMENCING WORK.
 - SITE SPECIFIC SAFETY PLAN: SUBMIT PLAN NO LESS THAN 14 DAYS PRIOR TO COMMENCING WORK.
- ALL EQUIPMENT IS TO BE IN COMPLIANCE WITH ALL OSHA AND DOSH SAFETY SPECIFICATIONS INCLUDING, FUNCTIONING BACKUP ALARMS AND MIRRORS FOR SAFE BACKING.
- ALL HEAVY EQUIPMENT IS TO BE PROPERLY MAINTAINED SUCH THAT ALL ACCESSORIES ARE FUNCTIONING ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
- THE SUBCONTRACTOR SHALL IMMEDIATELY NOTIFY KLEINSCHMIDT AND CONSTRUCTION MANAGER OF ANY UNINTENTIONAL RELEASE OF ANY CHEMICAL (INCLUDING BUT NOT LIMITED TO, DIESEL FUEL, HYDRAULIC OIL, HERBICIDE) WHILE ON THE PROJECT SITE AND SHALL IMMEDIATELY TAKE MEASURES TO CONTAIN AND CLEAN UP SUCH SPILLED MATERIALS, INCLUDING THE REMOVAL OF CONTAMINATED SOIL. THE SUBCONTRACTOR SHALL, AT ALL TIMES, HAVE EQUIPMENT AND SUPPLIES READILY AVAILABLE TO ADEQUATELY CONTROL AND CLEAN UP ANY CHEMICAL SPILLS. THE SUBCONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFICATION OF ALL APPLICABLE AGENCIES IN THE EVENT OF AN UNCONTROLLED CHEMICAL RELEASE. THE SUBCONTRACTOR IS SOLEY RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE SPILL, INCLUDING SITE CLEANUP, DISPOSAL OF MATERIAL, AND COSTS FOR DELAYS TO THE PROJECT SCHEDULE CAUSED BY THE SPILL.

NEW YORK GENERAL NOTES

- THE SUBCONTRACTOR WILL BE RESPONSIBLE FOR CONDUCTING UNDERGROUND UTILITY CHECKS, IN ACCORDANCE WITH STATE REGULATIONS. THE SUBCONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING WITH DIG SAFELY NEW YORK (1-800-962-7962) A MINIMUM OF THREE (3) FULL WORKING DAYS IN ADVANCE OF ANY DIGGING ACTIVITY. SHOULD ANY UTILITIES BE LOCATED THAT ARE IN CONFLICT WITH THE DESIGN, THE SUBCONTRACTOR SHALL IMMEDIATELY REPORT THESE CONFLICTS IN WRITING TO KLEINSCHMIDT.
- ALL MATERIALS SHALL BE PROVIDED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS UNLESS NOTED OTHERWISE.
- ALL MATERIALS SHALL BE PROVIDED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REQUIREMENTS FOR SOIL AND EROSION PROTECTION.

EXCAVATION CONTRACTOR NOTES

- EXCAVATION SUBCONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION. THIS AND ALL OTHER SITE WORK MUST BE IN ACCORDANCE WITH CURRENT OSHA STANDARDS.
- NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE EXCAVATION SUBCONTRACTOR THOROUGHLY REVIEWS AND UNDERSTANDS ALL PLANS AND OTHER DOCUMENTS BY ALL PERMITTING AUTHORITIES.
- CONSERVATION DISTRICT EROSION AND SEDIMENT CONTROL ADEQUACY LETTER TO BE APPROVED PRIOR TO SITE DISTURBANCE, AS REQUIRED BY THE CONSERVATION DISTRICT.
- NO EARTH MOVING ACTIVITIES SHALL BEGIN PRIOR TO THE INSTALLATION OF THE TREE OR RESTRICTED AREA PROTECTIVE FENCING, AS REQUIRED BY THESE PLANS.
- ANY SOLID WASTE FROM THE SITE SHALL BE DISPOSED OF BY EXCAVATION SUBCONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
- WATER THAT ACCUMULATES IN OPEN TRENCHES WILL BE COMPLETELY REMOVED BY PUMPING BEFORE CONSTRUCTION AND/OR BACKFILLING BEGINS. WATER MUST BE PUMPED THROUGH A FILTER BAG ON TO A STABLE SURFACE OR INTO THE SEDIMENT BASIN. CONCRETE SHALL BE PLACED IN A CLEAN DRY TRENCH ONLY.

- EXCAVATIONS OR TRENCHING WITHIN THE CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE. THE COST TO PROVIDE THE PROTECTION WILL BE BORNE BY THE EXCAVATION SUBCONTRACTOR.
- COMPACTION IN FILL AREAS BENEATH ALL PROPOSED STRUCTURES SHOULD MEET ALL MANUFACTURER AND TOWNSHIP REQUIREMENTS AND BE EQUAL TO THE 98% MODIFIED PROCTOR DENSITY, AT A MINIMUM.
- ALL CONCRETE UTILIZED ON SITE SHALL BE 4,000 PSI (MINIMUM 28 DAY COMPRESSIVE STRENGTH) WITH 5% AIR ENTRAINMENT, UNLESS OTHERWISE NOTED.

DE-51 SOILS DATA							
SOIL SYMBOL	SOIL NAME	SLOPE (%)	HSG	FROST ACTION	KF (WHOLE SOIL)	RESTRICTIVE LAYER	
						DEPTH TO FRAGIPAN (IN)	DEPTH TO LITHIC BEDROCK (IN)
Ff	FLUVAQUENTS-UDIFLUVENTS COMPLEX, FREQUENTLY FLOODED		A/D	HIGH	0.10	>78.7	>78.7
LhC	LEWBEACH CHANNERY LOAM	8-15	D	MODERATE	0.20	20.1	>78.7
LkE	LEWBEACH AND LEWBATH SOILS	15-35	D	MODERATE	0.20	20.1	>78.7
MaB	MAPLECREST GRAVELLY SILT LOAM	3-8	B	MODERATE	0.24	>78.7	>78.7
MrA	MORRIS FLAGGY SILT LOAM	0-3	D	HIGH	0.24	14.2	>78.7
TkC	TUNKHANNOCK GRAVELLY LOAM	8-15	A	LOW	0.20	>78.7	>78.7
VIB	VLY CHANNERY SILT LOAM	2-8	C	MODERATE	0.24	>78.7	31.1
WeB	WELLSBORO CHANNERY SILT LOAM	3-8	C/D	HIGH	0.24	25.2	>78.7
WnC	WILLOWEMOC AND WILLDIN SOILS	2-15	D	HIGH	0.24	22.0	>78.7

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CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

GENERAL NOTES

Kleinschmidt

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Project No. 3786-001

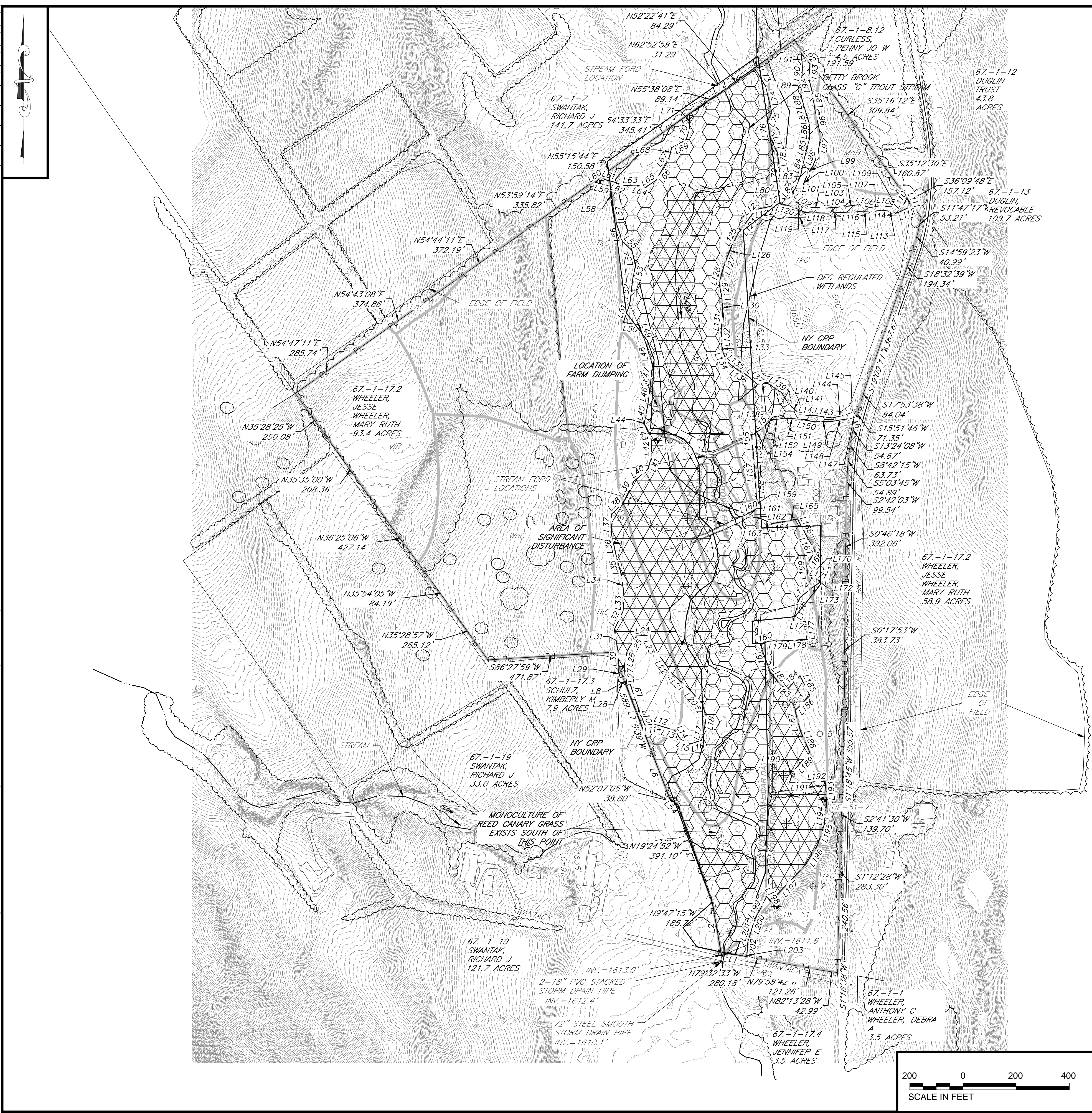
Date Revised 7-31-2014

Drawing No.

2



22x34 = FULL SCALE



LEGEND

PALUSTRINE FORESTED WETLAND
EXISTING AREA: 13 ACRES

PALUSTRINE SCRUB-SHRUB WETLAND
EXISTING AREA: 9.9 ACRES

PALUSTRINE EMERGENT WETLAND
EXISTING AREA: 11.1 ACRES

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

CATTLE EXCLUSION FENCE

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

EXISTING CONDITIONS

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No.	Revision	Date	Drawn	Checked
-	-	-	-	-
Designed	Drawn	Checked	Project No.	Date Revised
DDW	DDW	TAK	3786-001	7-31-2014
			Drawing No.	

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WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L201	87.269	N17° 04' 58.89"E
L1	97.756	N79° 32' 33.30"W
L2	185.720	N9° 47' 15.30"W
L3	381.646	N19° 36' 58.64"W
L4	16.605	N40° 32' 07.53"W
L5	29.715	N47° 30' 54.69"W
L6	225.912	N20° 58' 26.73"W
L7	231.774	N21° 05' 38.25"W
L8	33.910	N8° 52' 51.13"E
L9	140.920	S18° 56' 05.01"E
L10	54.570	S21° 13' 13.29"E
L11	35.552	N83° 54' 16.75"E
L12	40.200	S73° 32' 50.20"E
L13	42.296	S72° 18' 29.94"E
L14	36.857	S31° 37' 03.45"E
L15	43.134	S64° 35' 55.95"E
L16	42.250	N71° 16' 29.35"E
L17	49.310	N13° 49' 27.29"E
L18	39.536	N9° 56' 53.09"E
L19	55.201	N16° 57' 44.45"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L20	77.528	N43° 02' 52.61"W
L21	78.290	N47° 57' 08.56"W
L22	90.295	N35° 14' 35.59"W
L23	80.196	N25° 30' 57.11"W
L24	49.185	S86° 15' 22.46"W
L25	66.193	S31° 30' 13.05"W
L26	58.964	S10° 42' 37.11"W
L27	70.108	S5° 24' 43.40"E
L28	31.948	N63° 26' 26.47"W
L29	56.690	N2° 08' 46.31"E
L30	55.750	N3° 28' 35.17"W
L31	82.438	N9° 44' 51.54"W
L32	77.221	N25° 12' 54.40"E
L33	61.109	N2° 45' 35.35"E
L34	70.503	N6° 28' 36.33"W
L35	77.220	N15° 14' 16.55"W
L36	84.047	N12° 21' 40.77"W
L37	74.848	N0° 30' 25.21"E
L38	69.780	N42° 09' 44.83"E
L39	82.655	N26° 23' 06.59"E

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L40	66.479	N50° 02' 09.61"E
L41	48.960	N18° 00' 20.99"E
L42	68.762	N1° 21' 47.28"W
L43	63.880	N24° 18' 27.11"W
L44	0.573	N47° 03' 10.75"E
L45	71.461	N10° 48' 31.95"E
L46	73.690	N7° 06' 25.45"E
L47	76.023	N6° 13' 28.32"E
L48	98.309	N16° 52' 46.70"W
L49	63.275	N21° 51' 56.84"W
L50	58.099	N82° 36' 18.40"W
L51	74.117	N19° 29' 03.20"E
L52	89.193	N6° 46' 15.32"E
L53	61.135	N10° 52' 10.27"E
L54	55.809	N15° 56' 01.78"W
L55	46.732	N46° 25' 15.12"W
L56	67.392	N18° 45' 56.85"W
L57	77.659	N14° 15' 51.55"W
L58	68.830	N4° 27' 33.10"W
L59	59.063	N75° 07' 47.91"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L60	24.141	N54° 09' 21.35"E
L61	53.266	S75° 22' 01.50"E
L62	41.665	S71° 31' 14.43"E
L63	45.430	N88° 10' 12.46"E
L64	34.483	S76° 20' 22.27"E
L65	47.341	N56° 10' 32.16"E
L66	59.839	N30° 05' 31.88"E
L67	41.742	N29° 01' 51.58"E
L68	35.577	N13° 53' 44.03"E
L69	62.419	N61° 02' 59.13"E
L70	43.067	N17° 33' 49.12"E
L71	53.538	N0° 35' 03.11"E
L72	298.954	N55° 26' 55.96"E
L73	76.419	S30° 39' 11.09"E
L74	100.441	S13° 16' 42.69"E
L75	37.532	S27° 15' 12.81"W
L76	63.260	S10° 45' 10.09"E
L77	61.611	S25° 17' 24.22"E
L78	53.244	S6° 45' 06.89"E
L79	60.256	S3° 16' 06.92"E

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L80	59.037	S1° 28' 23.18"E
L81	32.444	N85° 28' 20.25"E
L82	46.034	N32° 07' 08.98"E
L83	50.348	N22° 27' 05.54"E
L84	63.715	N12° 08' 33.95"E
L85	75.711	N14° 39' 55.34"E
L86	56.627	N0° 04' 58.83"E
L87	67.499	N16° 31' 33.54"W
L88	46.152	N16° 06' 20.15"W
L89	52.106	N3° 00' 32.71"E
L90	54.750	N3° 42' 09.52"E
L91	50.152	N5° 42' 13.57"W
L92	52.116	S39° 03' 41.35"E
L93	53.668	S4° 17' 16.80"W
L94	45.547	S13° 54' 39.94"E
L95	82.086	S9° 15' 08.86"E
L96	94.831	S12° 28' 16.24"E
L97	64.227	S9° 32' 02.13"W
L98	51.696	S22° 01' 36.76"W
L99	39.520	S32° 14' 37.30"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L100	65.262	S22° 44' 30.31"W
L101	43.908	S22° 45' 36.93"W
L102	35.861	S55° 13' 57.23"E
L103	88.921	S88° 10' 31.21"E
L104	64.672	N85° 13' 33.26"E
L105	48.944	N82° 04' 51.87"E
L106	49.925	S78° 29' 55.21"E
L107	38.668	N79° 36' 38.01"E
L108	35.181	S81° 59' 23.83"E
L109	47.911	N86° 45' 21.34"E
L110	33.958	N28° 14' 55.45"E
L111	34.663	S27° 02' 18.15"E
L112	52.879	S64° 44' 41.95"W
L113	62.643	N82° 10' 45.55"W
L114	41.180	S80° 48' 54.96"W
L115	46.392	N89° 21' 26.86"W
L116	62.419	S88° 08' 40.57"W
L117	55.003	S86° 34' 46.64"W
L118	84.591	N88° 05' 19.25"W
L119	52.118	N65° 28' 44.86"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L120	45.817	N75° 17' 17.80"W
L121	48.595	S74° 54' 14.40"W
L122	37.446	S78° 23' 37.51"W
L123	29.125	S49° 41' 52.79"W
L124	90.281	S36° 26' 04.49"W
L125	48.526	S25° 36' 20.34"W
L126	46.805	S23° 59' 47.62"W
L127	56.890	S19° 13' 57.03"W
L128	51.415	S13° 44' 35.26"W
L129	66.200	S10° 55' 28.00"E
L130	52.485	S0° 18' 48.43"E
L131	57.448	S5° 21' 36.39"W
L132	53.094	S1° 54' 13.53"E
L133	33.316	S10° 42' 39.51"E
L134	44.030	S29° 27' 27.39"E
L135	35.622	S53° 20' 16.83"E
L136	40.130	S59° 17' 51.46"E
L137	60.410	S50° 00' 13.27"E
L138	35.224	N79° 27' 37.87"E
L139	65.453	S56° 33' 04.95"E

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L140	43.996	S30° 13' 06.77"E
L141	65.682	S46° 40' 10.33"E
L142	53.122	S87° 26' 30.24"E
L143	66.190	S82° 15' 05.08"E
L144	60.409	N77° 43' 55.20"E
L145	34.369	S83° 30' 53.48"E
L146	14.944	S34° 25' 57.58"E
L147	41.735	N89° 17' 58.19"W
L148	61.890	S80° 32' 15.09"W
L149	65.317	S89° 08' 23.69"W
L150	53.096	N80° 26' 00.58"W
L151	62.668	N85° 50' 36.99"W
L152	52.036	S80° 06' 09.62"W
L153	43.754	S45° 20' 27.28"W
L154	45.664	S57° 09' 46.63"W
L155	40.077	S4° 24' 29.70"E
L156	69.178	S5° 53' 54.89"E
L157	58.035	S4° 13' 49.09"E
L158	74.793	S2° 15' 22.14"E
L159	42.384	S12° 41' 02.44"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L160	26.035	S66° 19' 23.59"W
L161	19.680	S47° 25' 07.31"E
L162	36.951	S78° 51' 12.40"E
L163	46.251	S67° 13' 59.94"E
L164	50.837	N80° 22' 13.03"E
L165	45.160	N78° 57' 07.02"E
L166	74.298	S27° 49' 10.92"E
L167	63.197	S29° 53' 56.05"E
L168	62.410	S30° 37' 27.48"W
L169	32.411	S5° 37' 46.71"E
L170	29.779	S50° 48' 20.42"E
L171	23.485	S75° 52' 17.07"E
L172	8.449	S9° 51' 57.95"W
L173	45.128	S54° 31' 16.99"W
L174	49.278	S49° 51' 49.62"W
L175	87.484	S15° 33' 20.44"W
L176	46.428	S85° 53' 06.33"E
L177	66.596	S4° 01' 44.67"E
L178	77.688	S84° 51' 54.09"W
L179	63.724	S89° 35' 42.73"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L180	35.991	S70° 43' 00.73"W
L181	110.218	S19° 41' 50.95"E
L182	59.081	S38° 18' 21.58"E
L183	34.972	S63° 52' 44.98"E
L184	64.789	N42° 48' 26.31"E
L185	83.265	S26° 39' 22.26"E
L186	79.445	S44° 36' 01.83"W
L187	79.453	S14° 44' 48.06"E
L188	87.446	S23° 32' 30.37"E
L189	91.571	S41° 18' 06.54"W
L190	46.483	S19° 44' 32.11"W
L191	72.150	N89° 44' 16.15"E
L192	61.706	N86° 34' 45.73"E
L193	75.618	S4° 46' 28.09"E
L203	9.124	S10° 27' 26.70"W
L202	42.497	S2° 59' 05.99"W
L200	16.325	S18° 06' 06.62"W
L199	102.145	S26° 42' 47.25"W
L198	23.878	N37° 21' 38.15"W
L197	188.177	S43° 44' 42.73"W

WETLAND METES AND BOUNDS TABLE		
Line #	Length	Direction
L196	89.224	S31° 48' 24.00"W
L195	82.385	S17° 52' 41.77"W
L194	86.721	S6° 02' 14.93"W

BORINGS AND SOIL PIT TESTS						
BORING/ SOIL PIT ID	EXIST. SURFACE	REDDX FEATURE DEPTH (BLS)	DEPTH TO SATURATED SOIL (BLS)	DEPTH TO STANDING WATER (BLS)	SOIL TYPE (SURFACE FIRST)	DATE OF SAMPLE
DE-51-1	1633.0'	1629.0' (4.0')		1630.3' (2.7')	SILT	12/6/2013
DE-51-2	1622.9'	1622.9' (0')		1621.4' (1.5')	SILT, SAND, GRAVEL	12/6/2013
DE-51-3	1626.1'	1626.1' (0')		1624.7' (1.4')	SILT, SAND, GRAVEL	12/6/2013
SOIL PIT 1	1618.2'			1617.7' (0.5')	ORGANIC MATERIAL, GLACIAL TILL, STONES, CLAY	12/11/2013
SOIL PIT 2	1638.1'				SILT LOAM	12/11/2013
SOIL PIT 3	1619.2'			1619.2' (0')	ORGANIC MATERIAL, STONES, CLAY	12/11/2013
SOIL PIT 4	1620.5'	1619.9' (0.6')	1619.4 (1.1')	1619.1' (1.4')	ORGANIC SOIL MATERIAL, CLAY	12/11/2013
SOIL PIT 5	1627.5'				CLAY LOAM, CLAY	12/11/2013
SOIL PIT 6	1623.3'	1622.7' (0.6')	1622.2' (1.1')	1621.9' (1.4')	ORGANIC SOIL MATERIAL, CLAY	12/11/2013
SOIL PIT 7	1619.2'	1618.6' (0.6')	1618.4' (0.8')	1618.3' (0.9')	ORGANIC MATERIAL, FINE SANDY SILT	12/11/2013
SOIL PIT 8	1629.9'		1629.0 (0.9')	1628.8' (1.1')	ORGANIC MATERIAL, FINE SANDY CLAY, COARSE SANDY CLAY	12/11/2013
SOIL PIT 9	1630.5	1630.5' (0.0')			VERY FINE SANDY CLAY, FINE SANDY CLAY	12/11/2013
SOIL PIT 10	1632.0		1631.2' (0.8')	1630.6' (1.4')	HISTIC EPIPEDON	12/11/2013

-	-	-	-	-
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		Designed	Drawn	Checked
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CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

WETLANDS METES AND BOUNDS TABLES

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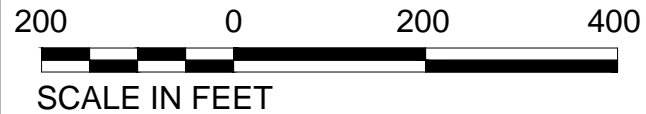
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3786-001


Date Revised
7-31-2014




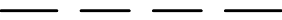






Drawing
No.

4



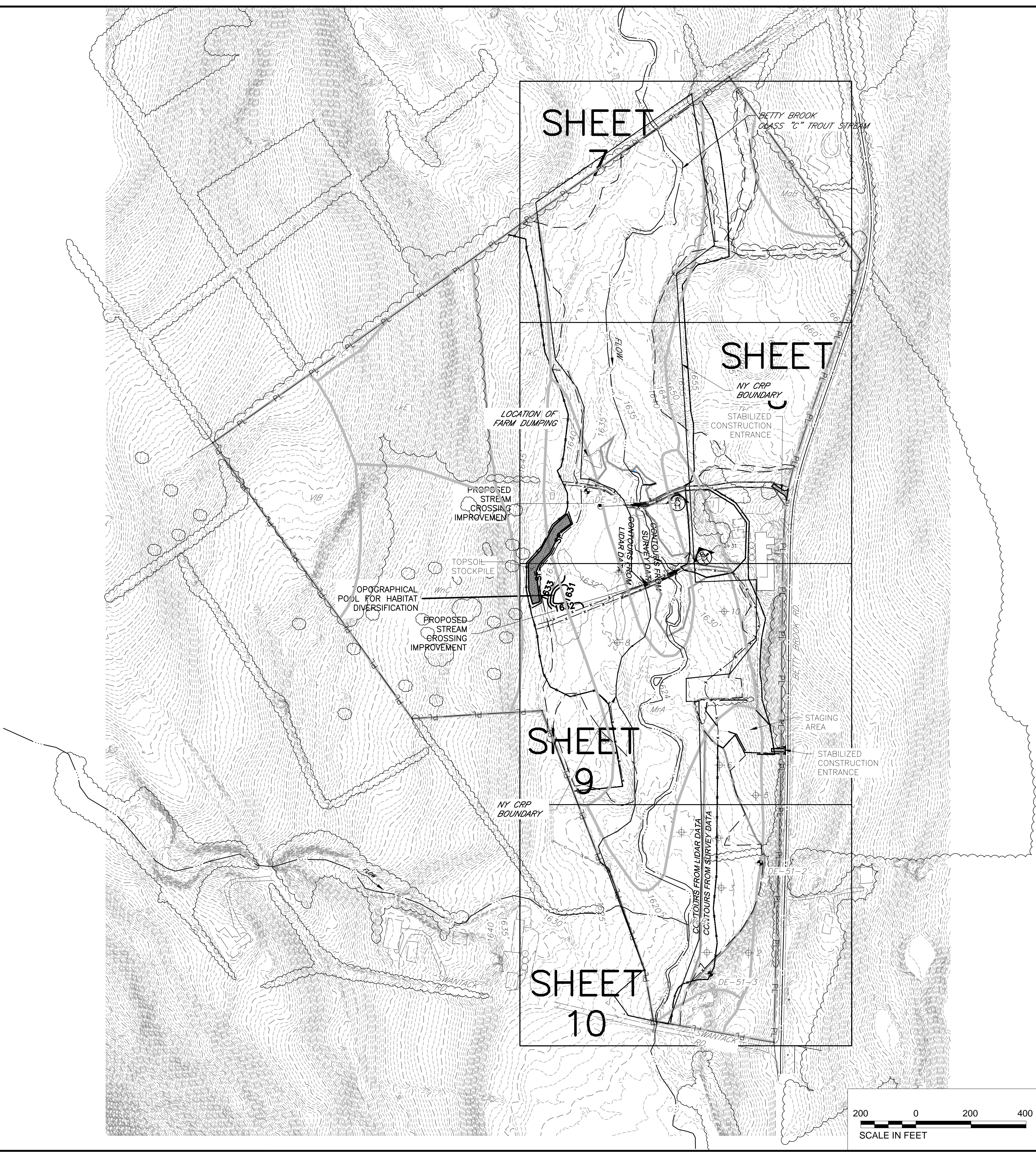
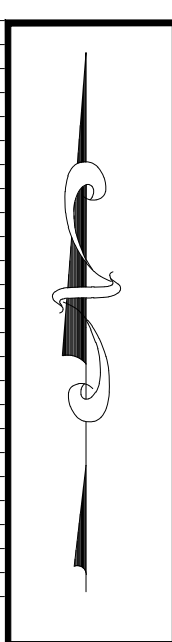


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Project No. 3786-001	Date Revised 7-31-2014	Drawing No. 5

	MAJOR CONTOUR (5' INTERVALS)
	MINOR CONTOUR (1' INTERVALS)
	PROPERTY LINE
	WETLAND BOUNDARY
	TREELINE
	PERENNIAL STREAM
	CATTLE EXCLUSION FENCE
	SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4
	GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4
	LOCATION OF INVASIVE SPECIES

NOTE
1. TREAT FOR INVASIVE PLANT SPECIES WHERE FOUND WITHIN THE PROPOSED PLANTING AND CONSTRUCTION AREAS.





LEGEND

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

CATTLE EXCLUSION FENCE

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

PROPOSED CONTOURS

TEMPORARY EASEMENT/LIMIT OF DISTURBANCE

TOTAL EASEMENT AREA: 39.2 ACRES

SOIL BOUNDARY

NOTE
1. APPROXIMATELY 6,620 LF OF NEW CATTLE EXCLUSION FENCE TO BE INSTALLED.



CONSTITUTION PIPELINE, LLC WETLAND MITIGATION				
SITE DE-51: BETTY BROOK ROAD				
SITE PLAN				
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LEGEND

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL

PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

-x-x-x-x-

CATTLE EXCLUSION FENCE

14

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

XX-00-1

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

PROPOSED CONTOURS

TEMPORARY EASEMENT/LIMIT OF DISTURBANCE

VmC

SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

SITE PLAN - S7

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LEGEND

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL

PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

CATTLE EXCLUSION FENCE

14

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

XX-00-1

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

PROPOSED CONTOURS

TEMPORARY EASEMENT/LIMIT OF DISTURBANCE

VmC

SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC WETLAND MITIGATION				
SITE DE-51: BETTY BROOK ROAD				
SITE PLAN - S8				
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3786-001	7-31-2014			



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LEGEND

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL

PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

-x-x-x-x-

CATTLE EXCLUSION FENCE

14

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

XX-00-1

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

PROPOSED CONTOURS

TEMPORARY EASEMENT/LIMIT OF DISTURBANCE

VmC

SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

SITE PLAN - S9

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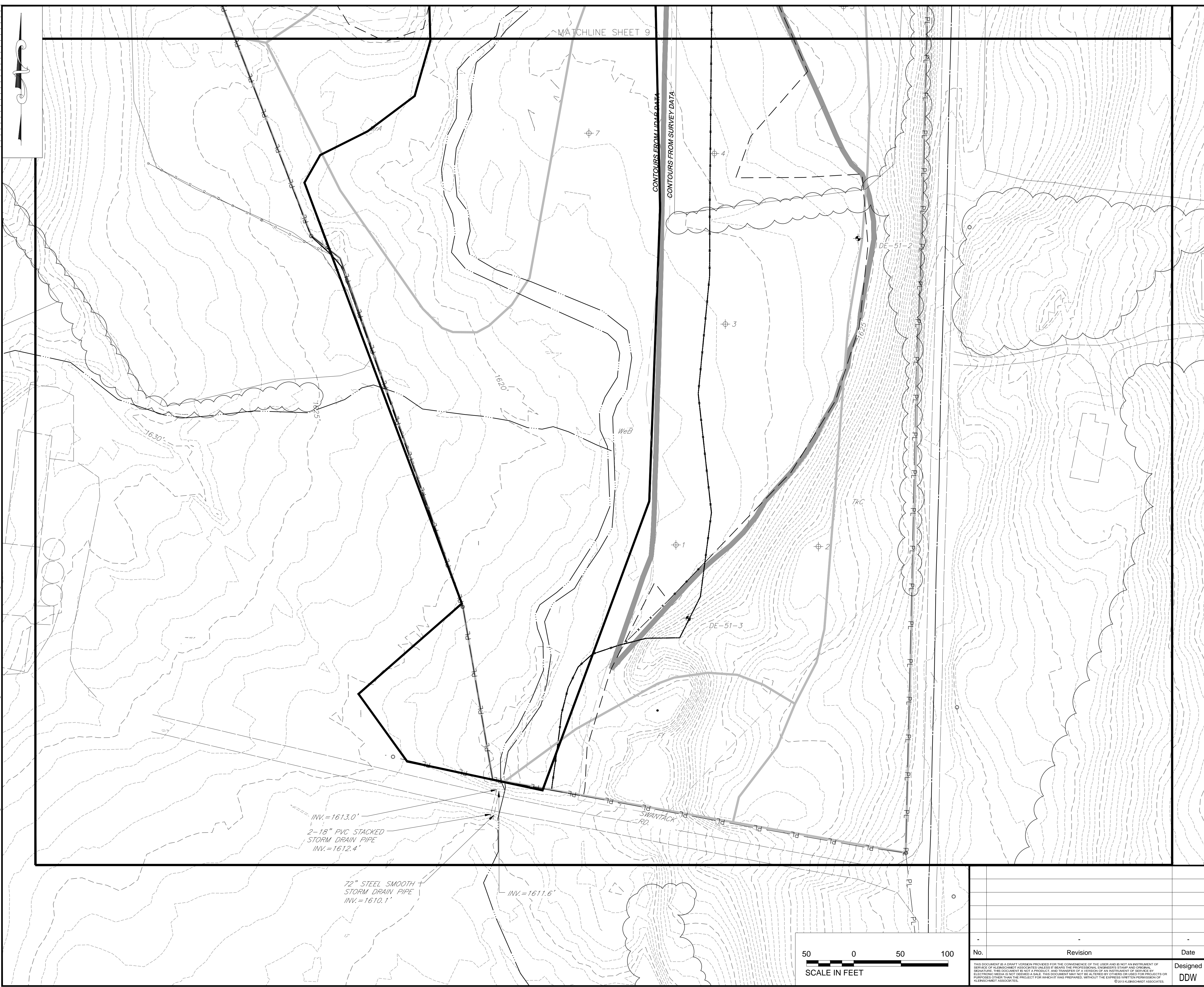
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LEGEND

MAJOR CONTOUR (5' INTERVALS)

MINOR CONTOUR (1' INTERVALS)

PL

PROPERTY LINE

WETLAND BOUNDARY

TREELINE

PERENNIAL STREAM

-x-x-x-x-

CATTLE EXCLUSION FENCE

⊕ 14

SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4

⊕ XX-00-1

GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4

PROPOSED CONTOURS

TEMPORARY EASEMENT/LIMIT OF DISTURBANCE

VmC

SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC
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SITE DE-51: BETTY BROOK ROAD

SITE PLAN - S10

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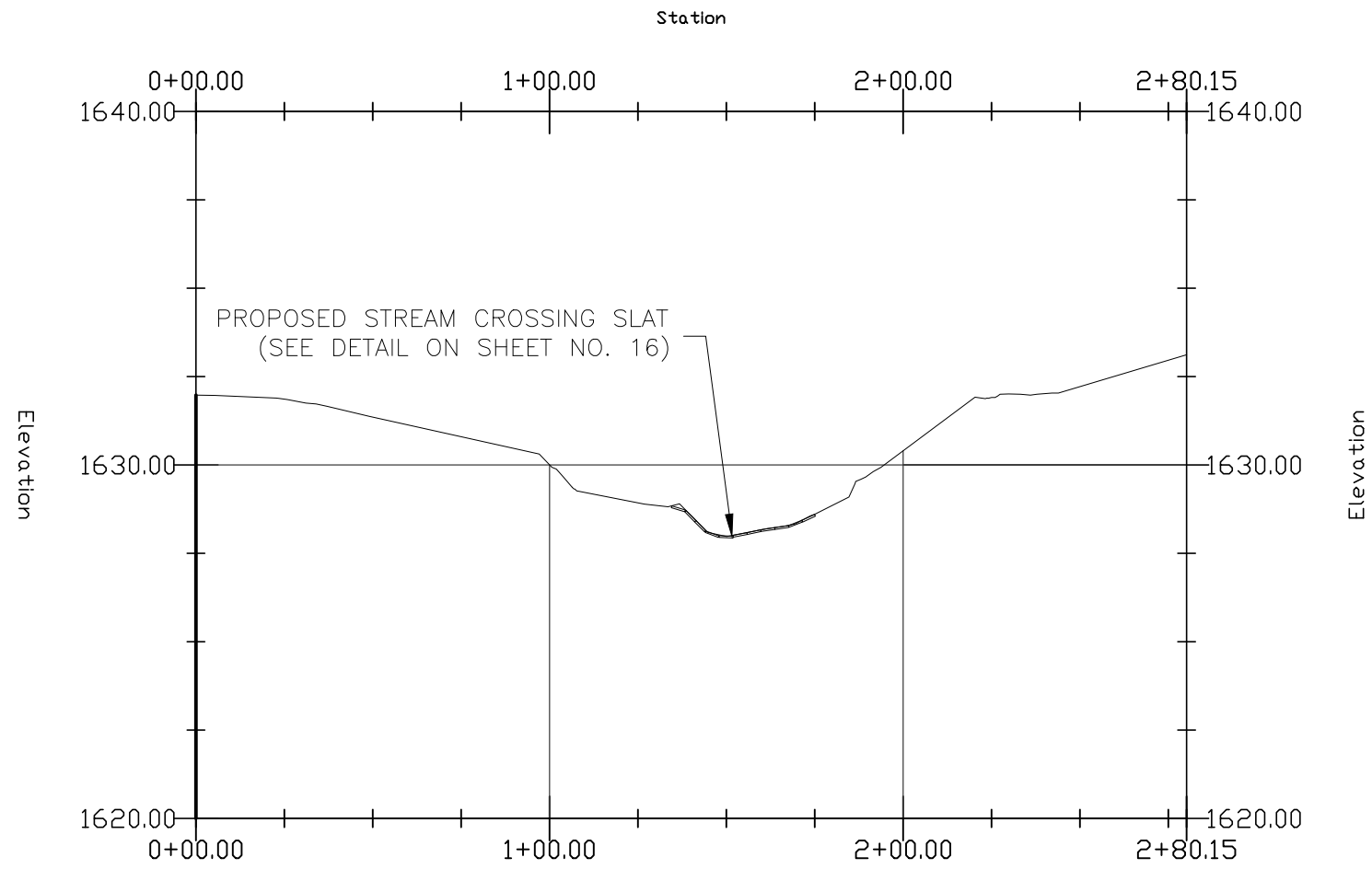
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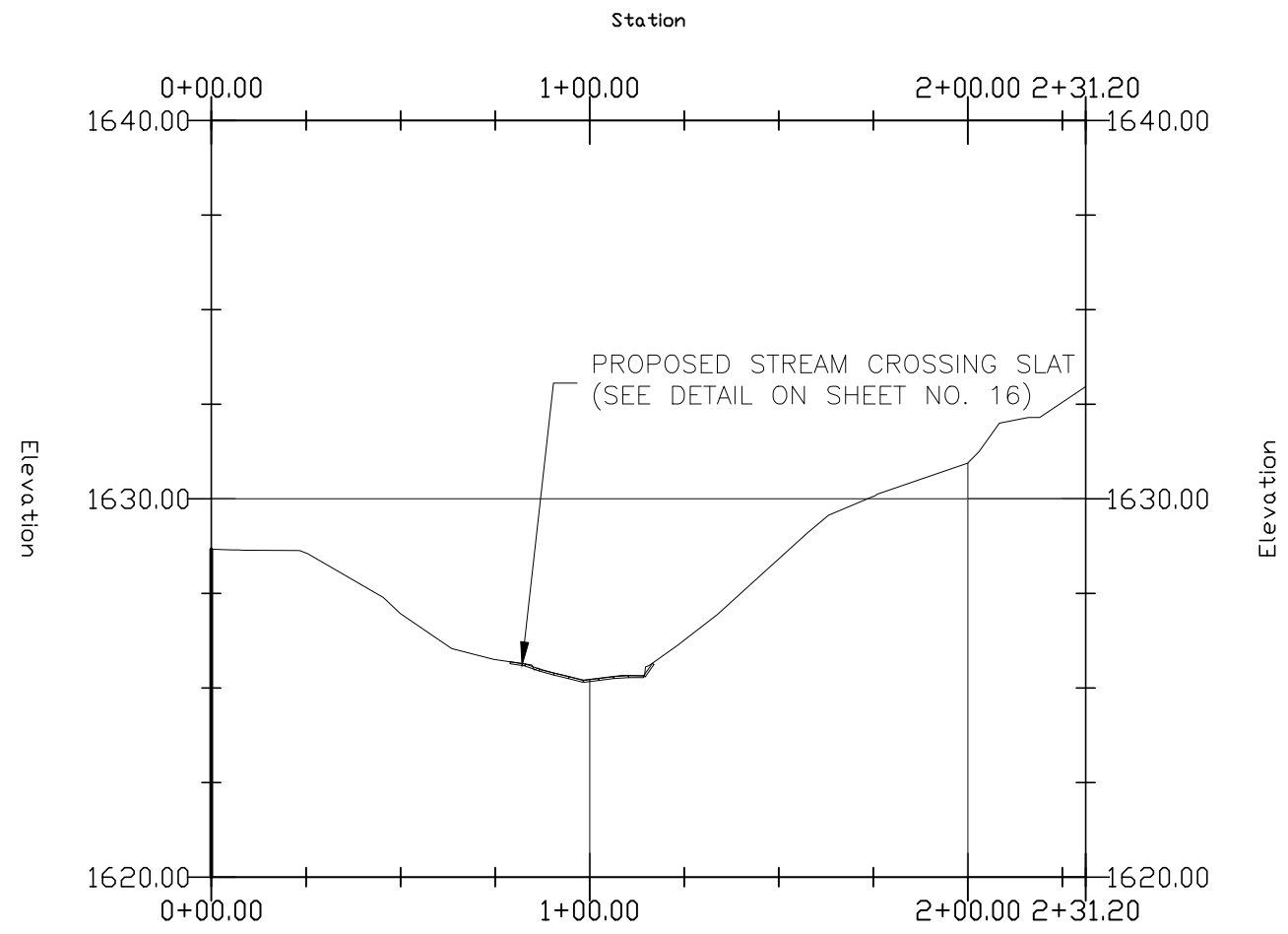
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22x34 = FULL SCALE

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SECTION A
HORIZONTAL: 1"= 50'
VERTICAL: 1"= 5'



SECTION B
HORIZONTAL: 1"= 50'
VERTICAL: 1"= 5'



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					SECTIONS			
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-	-	-	-	-	3786-001	7-31-2014		11
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CONSERVATION EASEMENT METES AND BOUNDS		
Line #	Length	Direction
L201	203.08'	N2° 19' 01"W
L203	45.72'	N12° 19' 45"W
L204	459.43'	N3° 51' 50"W
L205	85.04'	N35° 45' 04"E
L206	124.86'	N73° 34' 43"E
L207	146.89'	N0° 27' 32"W
L208	227.78'	N7° 20' 57"W
L209	126.54'	N13° 16' 43"W
L210	94.09'	N30° 39' 11"W
L211	95.78'	S53° 55' 23"W
L212	75.70'	S52° 22' 41"W
L213	178.19'	S55° 26' 56"W
L214	86.29'	S56° 37' 28"W
L218	143.81'	S54° 15' 19"W
L219	65.87'	S55° 13' 20"W
L220	211.30'	S54° 53' 44"W
L221	65.00'	S75° 07' 48"E
L222	419.16'	S10° 29' 01"E
L223	243.07'	S20° 34' 22"E
L224	206.46'	S11° 22' 23"W
L225	43.61'	S24° 19' 50"E
L226	162.63'	S83° 50' 11"E
L227	113.19'	S57° 32' 13"E
L228	51.89'	N87° 55' 58"E
L229	193.45'	N64° 55' 50"E
L230	158.91'	S66° 34' 50"W
L231	60.11'	N90° 00' 00"W
L232	98.56'	N55° 11' 31"W
L233	101.17'	N78° 26' 17"W
L234	56.68'	N85° 39' 08"W

CONSERVATION EASEMENT METES AND BOUNDS		
Line #	Length	Direction
L235	81.61'	S10° 16' 32"E
L236	85.82'	S40° 45' 47"W
L237	166.48'	S34° 04' 11"W
L238	99.51'	S0° 30' 25"W
L239	130.66'	S12° 15' 20"E
L240	52.23'	N74° 40' 23"E
L241	326.20'	N68° 47' 55"E
L242	222.08'	N65° 44' 41"E
L243	42.38'	N12° 41' 02"E
L244	86.19'	N1° 57' 27"W
L245	142.80'	N5° 12' 22"W
L246	33.82'	N61° 08' 01"E
L247	87.36'	N64° 15' 46"E
L248	404.79'	N68° 44' 20"E
L249	54.88'	N73° 40' 29"E
L250	197.66'	N8° 00' 27"W
L251	108.57'	N63° 44' 50"W
L252	92.18'	S75° 58' 10"W
L253	70.61'	N45° 04' 52"W
L254	302.74'	N9° 42' 50"W
L255	180.98'	N84° 24' 57"E
L256	276.16'	N21° 00' 03"W
L258	397.20'	N20° 28' 18"W
L259	185.72'	N9° 47' 15"W
L260	63.32'	N79° 32' 33"W
L261	110.45'	S9° 52' 16"W
L262	192.29'	S48° 46' 32"W
L263	58.74'	S5° 47' 10"W
L264	771.55'	S0° 14' 29"W
L265	95.85'	S6° 23' 52"E

CONSERVATION EASEMENT METES AND BOUNDS		
Line #	Length	Direction
L266	45.28'	S44° 38' 22"E
L267	50.65'	S2° 14' 54"E
L268	117.77'	S51° 54' 35"W
L269	124.86'	S45° 44' 55"W
L270	73.03'	S5° 52' 18"W
L271	186.22'	S29° 43' 29"E
L272	95.99'	N79° 42' 11"E
L273	86.32'	S71° 18' 07"E



					CONSTITUTION PIPELINE, LLC WETLAND MITIGATION			
					SITE DE-51: BETTY BROOK ROAD			
					CONSERVATION EASEMENT METES AND BOUNDS TABLES			
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PLANTING NOTES

1. THE PLANTING CONTRACTOR SHALL FOLLOW GENERAL INDUSTRY STANDARDS AND THE PLANTING DENSITY TABLE PROVIDED IN THE PLANS FOR PLANTING IN APPROVED CLUMPS OR GROUPS NEAR THE HIGHER END OF THE SPECIFIED ELEVATION RANGES.
2. THE PLANTING CONTRACTOR IS RESPONSIBLE FOR PLANTING AT APPROPRIATE ELEVATIONS AND WATER DEPTHS.
3. THE PLANTING CONTRACTOR SHALL PRESERVE AND MAINTAIN THE PLANTS IN A HEALTHY CONDITION DURING THE ESTABLISHMENT PERIOD. THE ESTABLISHMENT PERIOD WILL END AS SPECIFIED IN THE SPECIFICATIONS.
4. ALL PLANTING MATERIAL SHALL BE FREE OF UNWANTED SEED OR INVASIVE PLANT MATERIAL.
5. THE PLANTING CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING PRIOR TO PLANT INSTALLATION IF CONFLICTS BETWEEN THE CONTRACT DOCUMENTS AND FIELD CONDITIONS ARE FOUND.
6. THE PLANTING CONTRACTOR IS RESPONSIBLE TO GROW OR ACQUIRE THE REQUIRED PLANT MATERIAL. THE PLANT MATERIAL SHALL BE OF THE SIZE SPECIFIED AT THE TIME OF PLANTING. KLEINSCHMIDT ASSOCIATES SHALL BE AFFORDED THE OPPORTUNITY TO INSPECT THE PLANT MATERIAL PERIODICALLY AND PRIOR TO INSTALLATION. ANY PLANT MATERIAL REJECTED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE TO START THE PLANTS TO ENABLE PLANTING WITHIN THE TIMEFRAME ESTABLISHED BY THE CONTRACT FOR THIS WORK.
7. THE PLANTING CONTRACTOR WILL PLANT IN SPECIFIED AREAS PER PLANS, AFTER THE EXCAVATION CONTRACTOR HAS GRADED THE SITE, AND COMPLETED THEIR WORK ON THE SITE AREA TO BE PLANTED. AFTER KLEINSCHMIDT NOTIFIES THE CONTRACTOR THAT THE AS-BUILT SURVEY HAS BEEN APPROVED, THE PLANTING CONTRACTOR MAY BEGIN PLANTING THE SITE.

		Trees		Seed		Herbaceous
Zone	Type	Acres	(200/acre)	Shrubs	(20 lbs/acre)	Plugs (1,000/acre)
Upland Buffer	Establishment	4.9		(50/acre)		
Tree	#3	90%	882			
Tree	#7	10%	98			
Shrub	#1	100%		245		
Seed	lbs	100%			98	
Forested Wetland	Enhancement	5.4		(50/acre)		
Tree	#3	90%	972			
Tree	#7	10%	108			
Shrub	#1	100%		270		
Seed	lbs	100%			108	
Scrub Shrub Wetland	Enhancement	1.2		(150/acre)		
Shrub	#3	100%		180		
Seed	lbs	100%			24	
Herbaceous	plugs	100%				1,200
Emergent Wetland	Enhancement	0.5				
Seed	lbs	100%			10	
Herbaceous	plugs	100%				500
TOTALS:		2,040		695	240	1,700

UPLAND BUFFER: TREES			
Scientific name	Common Name	NCNE	mix ratio
<i>Acer saccharinum</i>	Silver maple	FACW	60%
<i>Acer saccharum</i>	Sugar maple	FACU	
<i>Betula alleghaniensis</i>	Yellow birch	FAC	
<i>Betula papyrifera</i>	Paper birch	FACU	
<i>Betula populifolia</i>	Gray birch	FAC	
<i>Carpinus caroliniana</i>	American hornbeam	FAC	
<i>Nyssa sylvatica</i>	Black gum	FAC	
<i>Platanus occidentalis</i>	American sycamore	FACW	
<i>Populus deltoides</i>	Cottonwood	FAC	
<i>Prunus serotina</i>	Black cherry	FACU	
<i>Quercus bicolor</i>	Swamp white oak	FACW	40%
<i>Larix laricina</i>	Eastern larch	FACW	
<i>Acer rubrum</i>	Red maple	FAC	
<i>Quercus alba</i>	White oak	FACU	
<i>Quercus montana</i>	Chestnut oak	UPL	
<i>Quercus rubra</i>	Northern red oak	FACU	

UPLAND BUFFER: SHRUBS			
Scientific name	Common Name	NCNE	mix ratio
<i>Amelanchier canadensis</i>	Serviceberry	FAC	100%
<i>Aronia arbutifolia</i>	Red Chokeberry	FACW	
<i>Aronia melanocarpa</i>	Black Chokeberry	FAC	
<i>Prunus virginiana</i>	Chokecherry	FACU	
<i>Viburnum acerifolium</i>	Maple Leaf Viburnum	UPL	
<i>Viburnum lentago</i>	Nannyberry	FAC	
<i>Viburnum prunifolium</i>	Blackhaw	FACU	

UPLAND BUFFER: SEED MIX			
Scientific name	Common Name	NCNE	mix ratio
<i>Andropogon virginicus</i>	Broomsedge	FACU	17.50%
<i>Asclepias syriaca</i>	Common Milkweed		0.94%
<i>Asclepias tuberosa</i>	Butterfly Milkweed		1.25%
<i>Aster lateriflorus</i>	Calico Aster	FAC	0.63%
<i>Bouteloua curtipendula</i>	Sideoats Grama		5.00%
<i>Senna marilandica</i>	Maryland Senna	FACW	0.63%
<i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	FACU	0.63%
<i>Coreopsis tinctoria</i>	Plains Coreopsis	FACU	0.63%
<i>Desmodium canadense</i>	Showy Tickleaf	FAC	0.63%
<i>Elymus hystrix</i>	Bottlebrush Grass	FACU	5.00%
<i>Elymus virginicus</i>	Virginia Wildrye	FACW	5.00%
<i>Eragrostis hirsuta</i>	Bigtop Lovegrass	FACU	5.00%
<i>Gaillardia aristata</i>	Perennial Gaillardia		0.31%
<i>Helenium flexuosum</i>	Purplehead Sneezeweed	FAC	1.25%
<i>Helopsis helianthoides</i>	Oxeye Sunflower	FACU	0.93%
<i>Lespedeza virginica</i>	Slender Bushclover		1.24%
<i>Liatris spicata</i>	Marsh Blazing Star	FAC	0.31%
<i>Panicum virgatum</i>	Switchgrass	FAC	5.00%
<i>Penstemon laevisgatus</i>	Appalachian Beardtongue	FACU	0.62%
<i>Rudbeckia triloba</i>	Browneyed Susan	FACU	1.87%
<i>Schizachyrium scoparium</i>	Little Bluestem	FACU	27.50%
<i>Solidago juncea</i>	Early Goldenrod		1.25%
<i>Solidago rugosa</i>	Wrinkleleaf Goldenrod	FAC	1.25%
<i>Symphytichum novae-angliae</i>	New England Aster	FACW	0.63%
<i>Tridens flavus</i>	Purpletop	UPL	15.00%

FORESTED WETLAND: TREES			
Scientific name	Common Name	NCNE	mix ratio
<i>Acer rubrum</i>	Red maple	FAC	80%
<i>Acer saccharinum</i>	Silver maple	FACW	
<i>Betula populifolia</i>	Gray birch	FAC	
<i>Nyssa sylvatica</i>	Black gum	FAC	
<i>Platanus occidentalis</i>	Sycamore	FACW	
<i>Populus deltoides</i>	Cottonwood	FAC	
<i>Quercus bicolor</i>	Swamp white oak	FACW	
<i>Quercus palustris</i>	Pin oak	FACW	
<i>Betula alleghaniensis</i>	Yellow birch	FAC	
<i>Betula nigra</i>	River birch	FACW	
<i>Carpinus caroliniana</i>	American hornbeam	FAC	20%
<i>Larix laricina</i>	Eastern larch	FACW	
<i>Salix nigra</i>	Black willow	OBL	

FORESTED WETLAND: SHRUBS			
Scientific name	Common Name	NCNE	mix ratio
<i>Alnus serrulata</i>	Smooth Alder	OBL	60%
<i>Cornus amomum</i>	Silky Dogwood	FACW	
<i>Cornus racemosa</i>	Gray Dogwood	FAC	
<i>Lindera benzoin</i>	Spicebush	FACW	
<i>Sambucus canadensis</i>	Elderberry	FACW	
<i>Vaccinium corymbosum</i>	Highbush Blueberry	FACW	
<i>Clethra alnifolia</i>	Sweet Pepperbush	FAC	
<i>Ilex verticillata</i>	Winterberry	FACW	
<i>Viburnum cassinoides</i>	Wild Raisin	FACW	
<i>Viburnum dentatum</i>	Arowwood	FAC	
<i>Viburnum lentago</i>	Nannyberry	FACW	40%

FORESTED WETLAND: SEED MIX			
Scientific name	Common Name	NCNE	mix ratio
<i>Asclepias incarnata</i>	Swamp Milkweed	OBL	3%
<i>Carex folliculata</i>	Northern Long Sedge	OBL	1%
<i>Carex infumescens</i>	Bladder Sedge	FACW	1%
<i>Carex lupulina</i>	Hop Sedge	OBL	5%
<i>Carex lurida</i>	Lurid Sedge	OBL	10%
<i>Carex squarrosa</i>	Squarrose Sedge	OBL	3%
<i>Carex vulpinoidea</i>	Fox Sedge	OBL	25%
<i>Cinna arundinacea</i>	Wood Reedgrass	FACW	1%
<i>Doellingeria umbellata</i>	Flat Topped White Aster	FACW	1%
<i>Elymus virginicus</i>	Virginia Wildrye	FACW	20%
<i>Eupatorium fistulosum</i>	Joe Pye Weed	FACW	1%
<i>Eupatorium perfoliatum</i>	Boneset	FACW	2%
<i>Glyceria canadensis</i>	Rattlesnake Grass	OBL	2%
<i>Helopsis helianthoides</i>	Oxeye Sunflower	FACU	2%
<i>Juncus effusus</i>	Soft Rush	OBL	3%
<i>Lilium superbum</i>	Turk's Cap Lily	FACW	1%
<i>Lobelia siphilitica</i>	Great Blue Lobelia	FACW	1%
<i>Mimulus ringens</i>	Square Stemmed Monkeyflower	OBL	1%
<i>Onoclea sensibilis</i>	Sensitive Fern	FACW	2%
<i>Panicum rigidulum</i>	Redtop Panicgrass	FACW	4%
<i>Polygonum pensylvanicum</i>	Pennsylvania Smartweed	FACW	1%
<i>Pycnanthemum tenuifolium</i>	Slender Mountainmint	FAC	1%
<i>Scirpus polyphyllus</i>	Many Leaved Butrush	OBL	1%
<i>Sisyrinchium angustifolium</i>	Narrowleaf Blue Eyed Grass	FAC	1%
<i>Symphytichum novae-angliae</i>	New England Aster	FACW	1%
<i>Symphytichum prenanthoides</i>	Zigzag Aster, P.A Ecotype	FAC	1%
<i>Symphytichum puniceum</i>	Purplestem Aster	OBL	1%
<i>Verbena hastata</i>	Blue Vervain	FACW	3%
<i>Vernonia noveboracensis</i>	New York Ironweed	FACW	1%

EMERGENT WETLAND: HERBACEOUS PLUGS			
Scientific name	Common Name	NCNE	mix ratio
<i>Acorus americanus</i>	Sweetflag	OBL	60%
<i>Calamagrostis canadensis</i>	Blue joint grass	OBL	
<i>Carex crinita</i>	Fringed sedge	OBL	
<i>Carex intumescens</i>	Bladder sedge	FACW	
<i>Carex stricta</i>	Tussock sedge	OBL	
<i>Eleocharis palustris</i>	Spike rush	OBL	
<i>Eupatorium perfoliatum</i>	Common Boneset	FACW	
<i>Eutrochium maculatum</i>	Spotted Joe-pye weed	OBL	
<i>Glyceria canadensis</i>	Manna grass	OBL	
<i>Helenium autumnale</i>	Fall Sneezeweed	FACW	
<i>Helianthus angustifolius</i>	Swamp Sunflower	FACW	40%
<i>Juncus effusus</i>	Soft rush	OBL	
<i>Liatris spicata</i>	Dense Gayleather	FAC	
<i>Lobelia cardinalis</i>	Cardinal flower	OBL	
<i>Lobelia siphilitica</i>	Great Blue Lobelia	FACW	
<i>Mimulus ringens</i>	Monkey flower	OBL	
<i>Onoclea sensibilis</i>	Sensitive fern	FACW	
<i>Scirpus atrovirens</i>	Dark green butrush	OBL	
<i>Scirpus cyperinus</i>	Woolgrass	OBL	
<i>Symphytichum novae-angliae</i>	New England aster	FACW	
<i>Symphytichum novi-belgii</i>	New York Aster	FACW	
<i>Verbena hastata</i>	Blue vervain	FACW	
<i>Asclepias incarnata</i>	Swamp Milkweed	OBL	40%
<i>Carex comosa</i>	Bristly Sedge	OBL	
<i>Carex lacustris</i>	Lake Sedge	OBL	
<i>Carex lupulina</i>	Hop Sedge	OBL	
<i>Carex lurida</i>	Lurid Sedge	OBL	
<i>Carex vulpinoidea</i>	Fox Sedge	OBL	
<i>Iris versicolor</i>	Blueflag Iris	OBL	
<i>Liatris pycnostachya</i>	Cat-Tail Gayleather	FAC	
<i>Sagittaria latifolia</i>	Arrowhead	OBL	
<i>Schoenoplectus fluviatilis</i>	River Bulrush	OBL	
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	OBL	
<i>Sparganium americanum</i>	Eastern Burreed	OBL	
<i>Sparganium eurycarpum</i>	Giant Burreed	OBL	
<i>Spartina pectinata</i>	Fraire Cordgrass	FACW	

EMERGENT WETLAND: SEED MIX			
Scientific name	Common Name	NCNE	mix ratio
<i>Aisma subcordatum</i>	Water Plantain	OBL	1%
<i>Asclepia incarnata</i>	Swamp Milkweed	OBL	3%
<i>Bidens cernua</i>	Nodding Bur Marigold	OBL	1%
<i>Carex crinita</i>	Fringed Sedge	OBL	2%
<i>Carex folliculata</i>	Northern Long Sedge	OBL	1%
<i>Carex gynandra</i>	Nodding Sedge	OBL	9%
<i>Carex lupulina</i>	Hop Sedge	OBL	5%
<i>Carex lurida</i>	Lurid Sedge	OBL	10%
<i>Carex stricta</i>	Tussock Sedge	OBL	1%
<i>Carex vulpinoidea</i>	Fox Sedge	OBL	29%
<i>Chelone glabra</i>	Turtlehead	OBL	1%
<i>Eutrochium fistulosum</i>	Joe Pye Weed	FACW	1%
<i>Eupatorium perfoliatum</i>	Boneset	FACW	2%
<i>Glyceria canadensis</i>	Rattlesnake Grass	OBL	3%
<i>Juncus effusus</i>	Soft Rush	OBL	3%
<i>Mimulus ringens</i>	Monkeyflower	OBL	2%
<i>Panicum rigidulum</i>	Redtop Panicgrass	FACW	5%
<i>Penthorum sedoides</i>	Ditch Stonewort	OBL	1%
<i>Scirpus cyperinus</i>	Woolgrass	OBL	2%
<i>Scirpus polyphyllus</i>	Many Leaved Butrush	OBL	2%
<i>Sparganium americanum</i>	Eastern Bur Reed	OBL	10%
<i>Symphytichum puniceum</i>	Purplestem Aster	OBL	2%
<i>Verbena hastata</i>	Blue Vervain	FACW	3%
<i>Vernonia noveboracensis</i>	New York Ironweed	FACW	1%



CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

PLANTING NOTES AND TABLES

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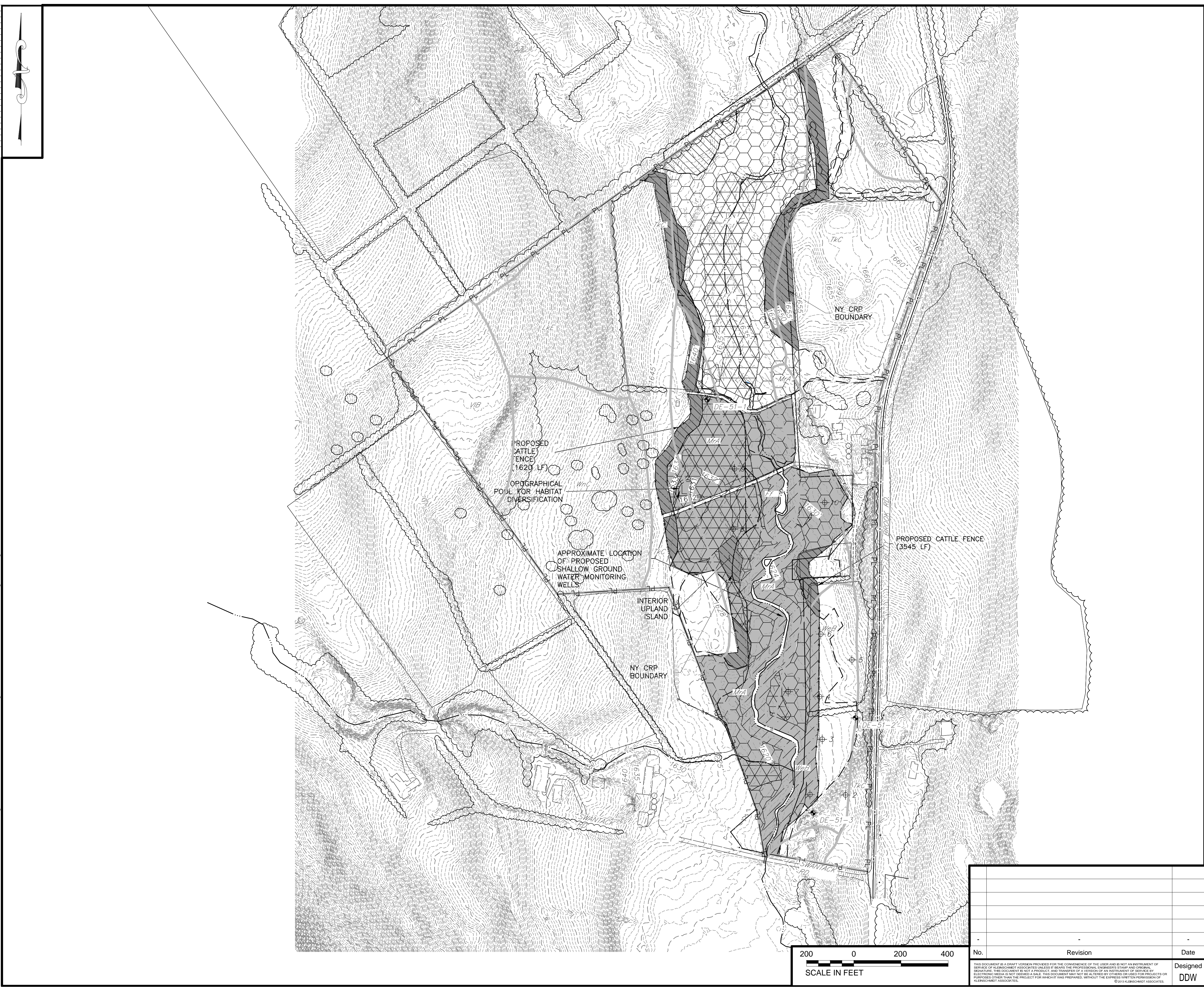
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		Designed	Drawn	Checked
		DDW	DDW	TAK

Project No.	Date Revised	Drawing No.
3786-001	7-31-2014	

22x34 = FULL SCALE

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LEGEND

		UPLAND BUFFER (50 FT WIDE) PRESERVATION AREA: 0.8 ESTABLISHMENT AREA: 4.9 ACRES
		PALUSTRINE FORESTED WETLAND ENHANCEMENT AREA: 5.4 ACRES
		PALUSTRINE SCRUB-SHRUB WETLAND PRESERVATION AREA: 3.6 ACRES ENHANCEMENT AREA: 5.7 ACRES
		PALUSTRINE EMERGENT WETLAND PRESERVATION AREA: 8.1 ACRES ENHANCEMENT AREA: 5.9 ACRES
		TOPOGRAPHICAL POOL FOR HABITAT DIVERSIFICATION ENHANCEMENT AREA: 0.1 ACRES

NOTE:
1. ENHANCED AREAS INCLUDE AREAS PROTECTED BY CATTLE EXCLUSION FENCE INSTALLED AS PART OF THIS MITIGATION PLAN.

	MAJOR CONTOUR (5' INTERVALS)
	MINOR CONTOUR (1' INTERVALS)
	PROPERTY LINE
	WETLAND BOUNDARY
	TREELINE
	PERENNIAL STREAM
	CATTLE EXCLUSION FENCE
	SOIL PIT TEST CORRESPONDING TO TABLE ON SHEET NO. 4
	GEOTECH BORING CORRESPONDING TO TABLE ON SHEET NO. 4
	SOIL BOUNDARY



CONSTITUTION PIPELINE, LLC
WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

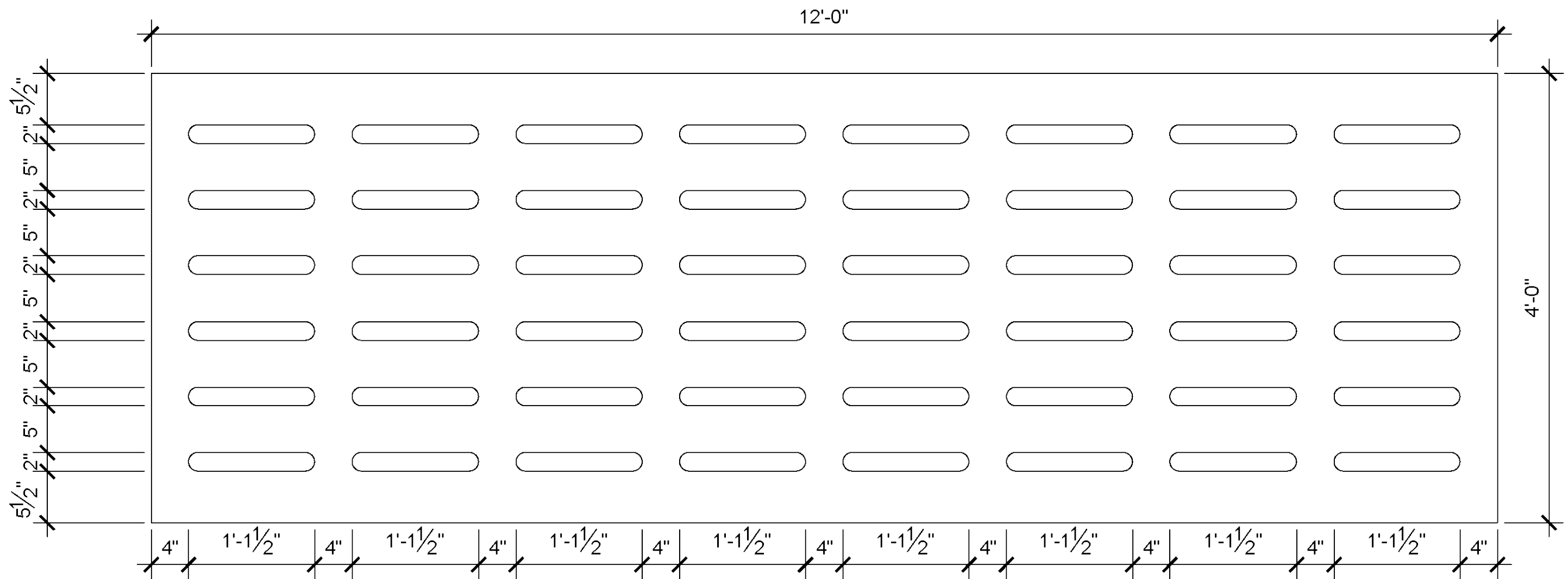
PLANTING PLAN

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Project No.	3786-001	Date Revised	7-31-2014	Drawing No.	15

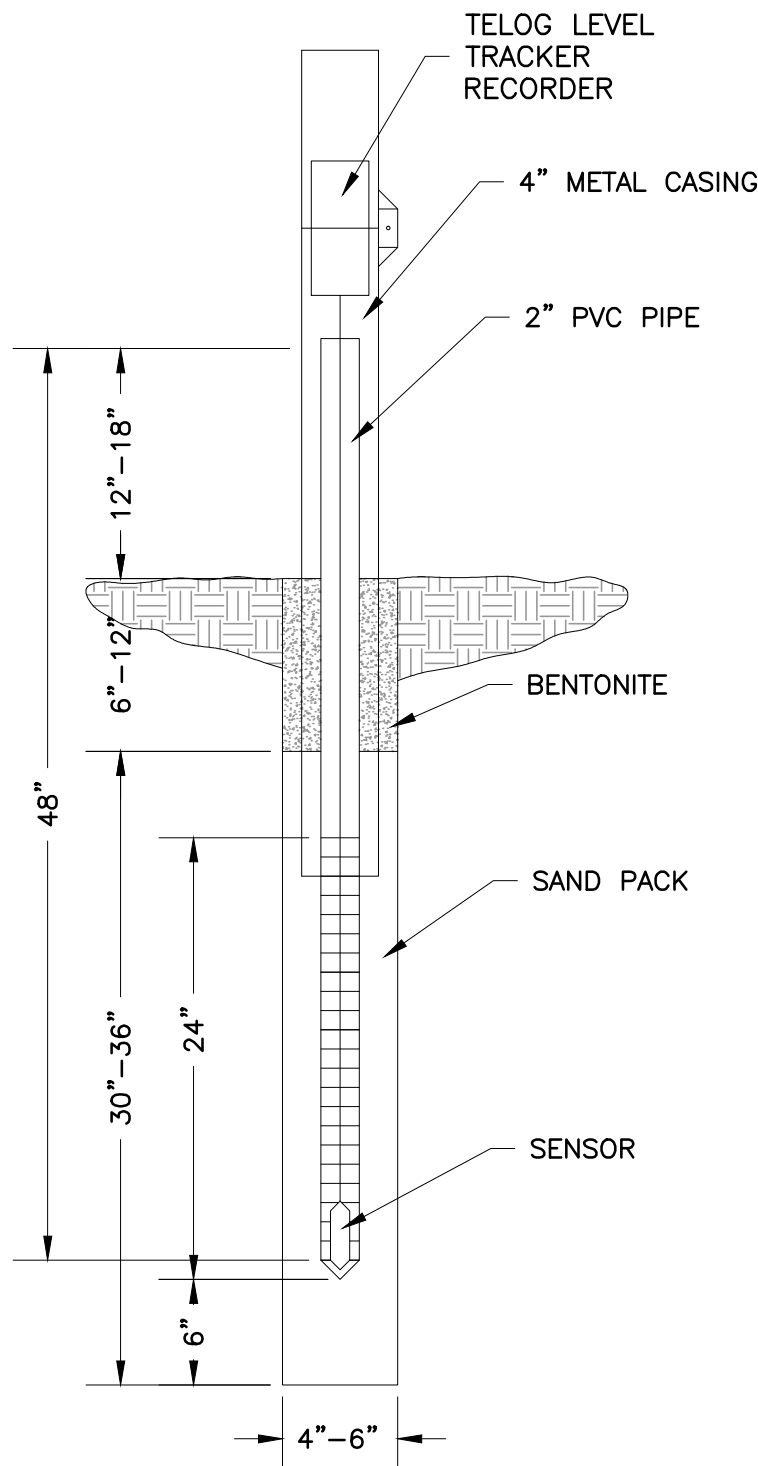
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STREAM CROSSING SLAT

NTS



SHALLOW GROUNDWATER MONITORING WELL

(N.T.S)



					CONSTITUTION PIPELINE, LLC WETLAND MITIGATION			
					SITE DE-51: BETTY BROOK ROAD			
					DETAILS			
					Kleinschmidt 141 Main Street P.O. Box 650 Pittsfield, Maine 04967 Telephone: (207) 487-3328 Fax: (207) 487-3124 www.KleinschmidtUSA.com			
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Figure 5A.8
Silt Fence

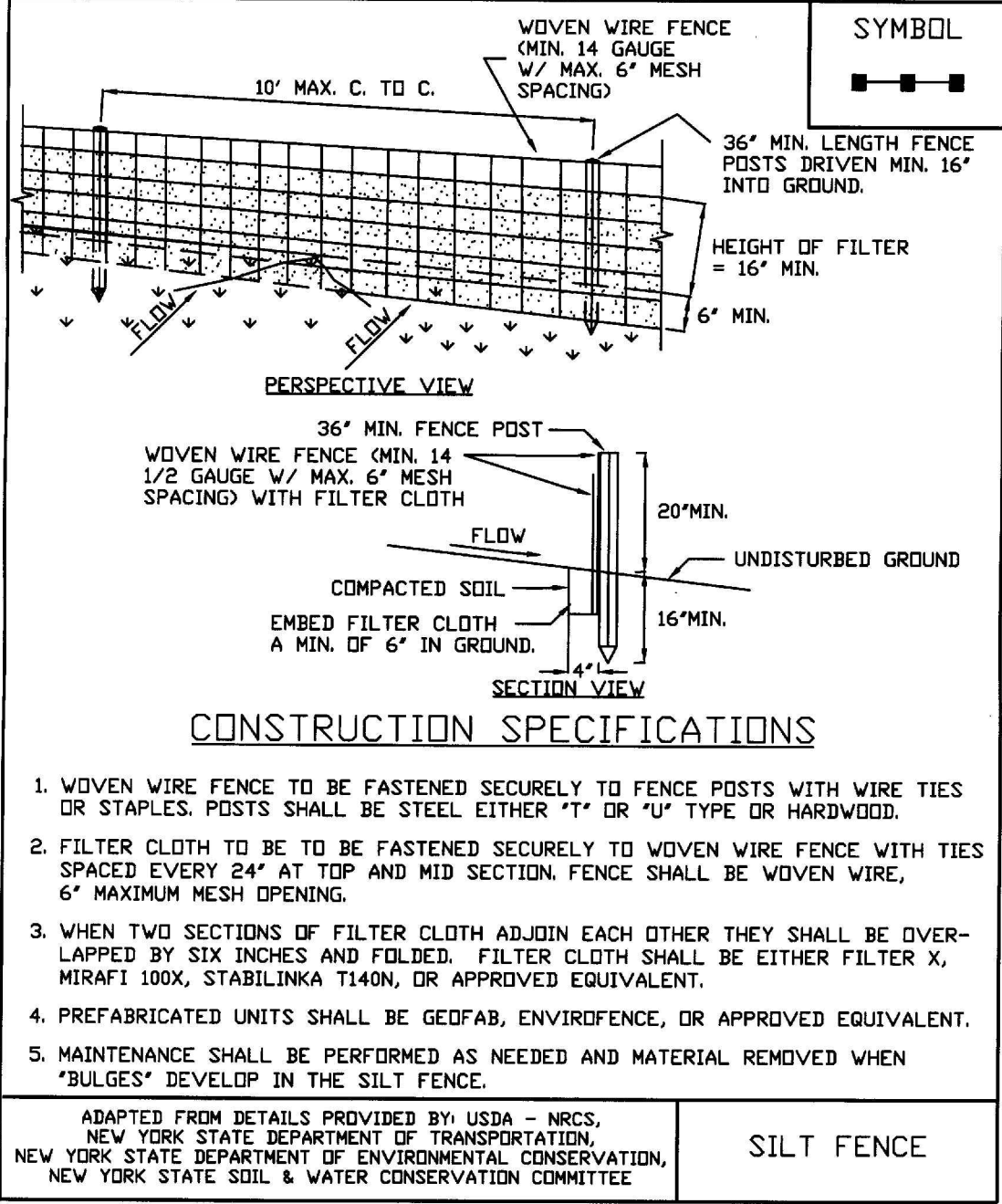


Figure 5A.38
Temporary Access Ford

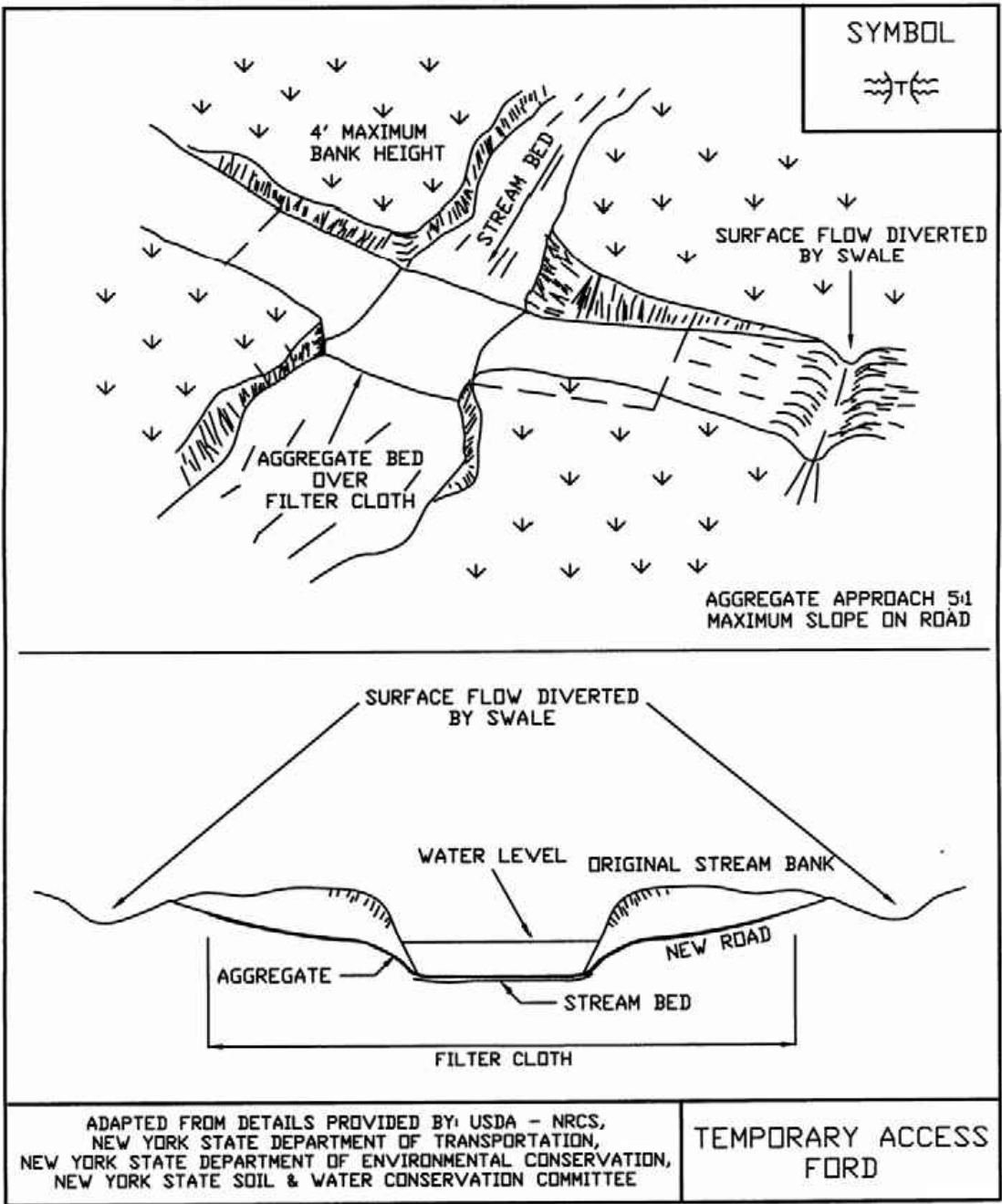


Figure 5A.37
Temporary Access Culvert

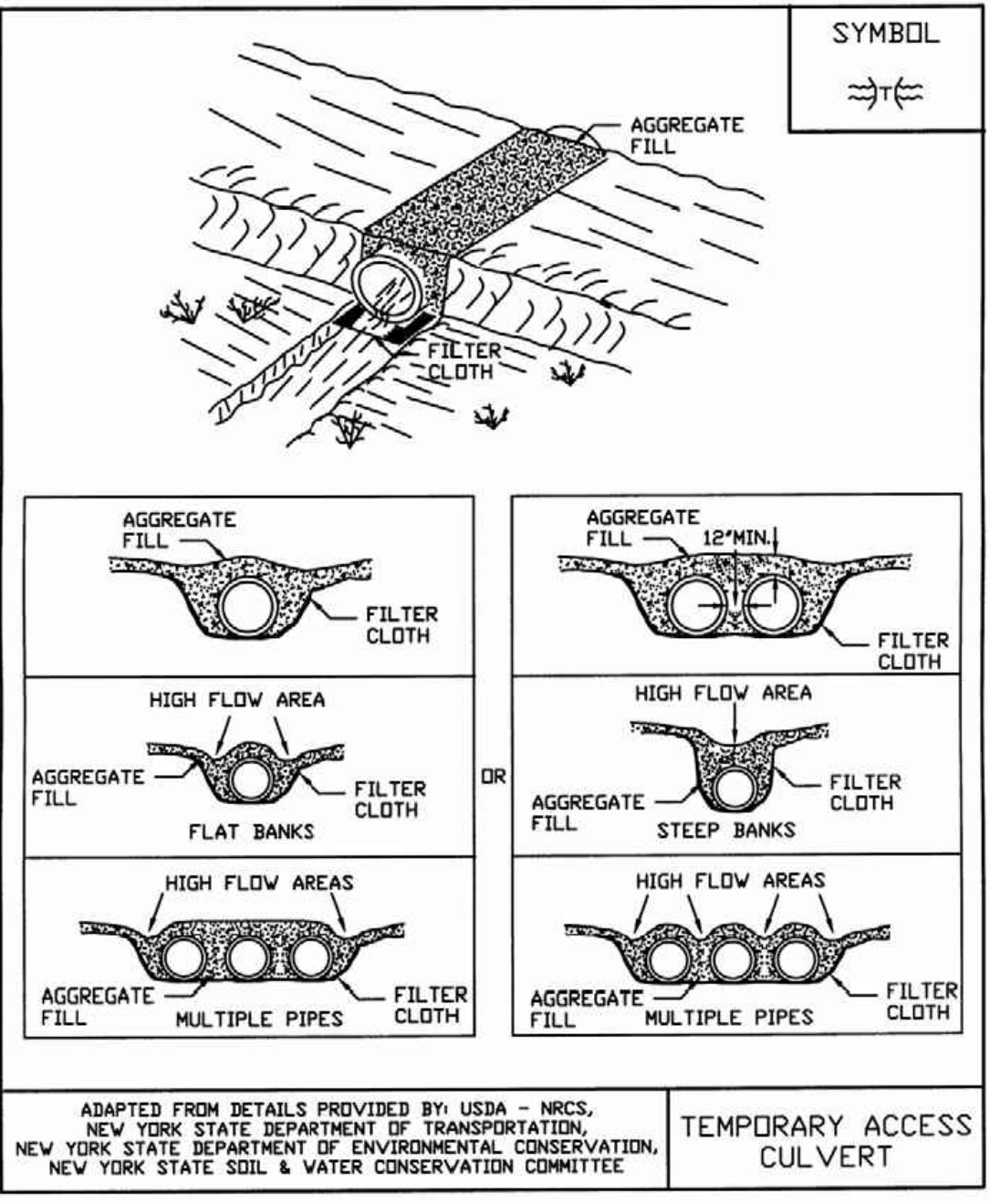


Figure 5A.36
Temporary Access Bridge

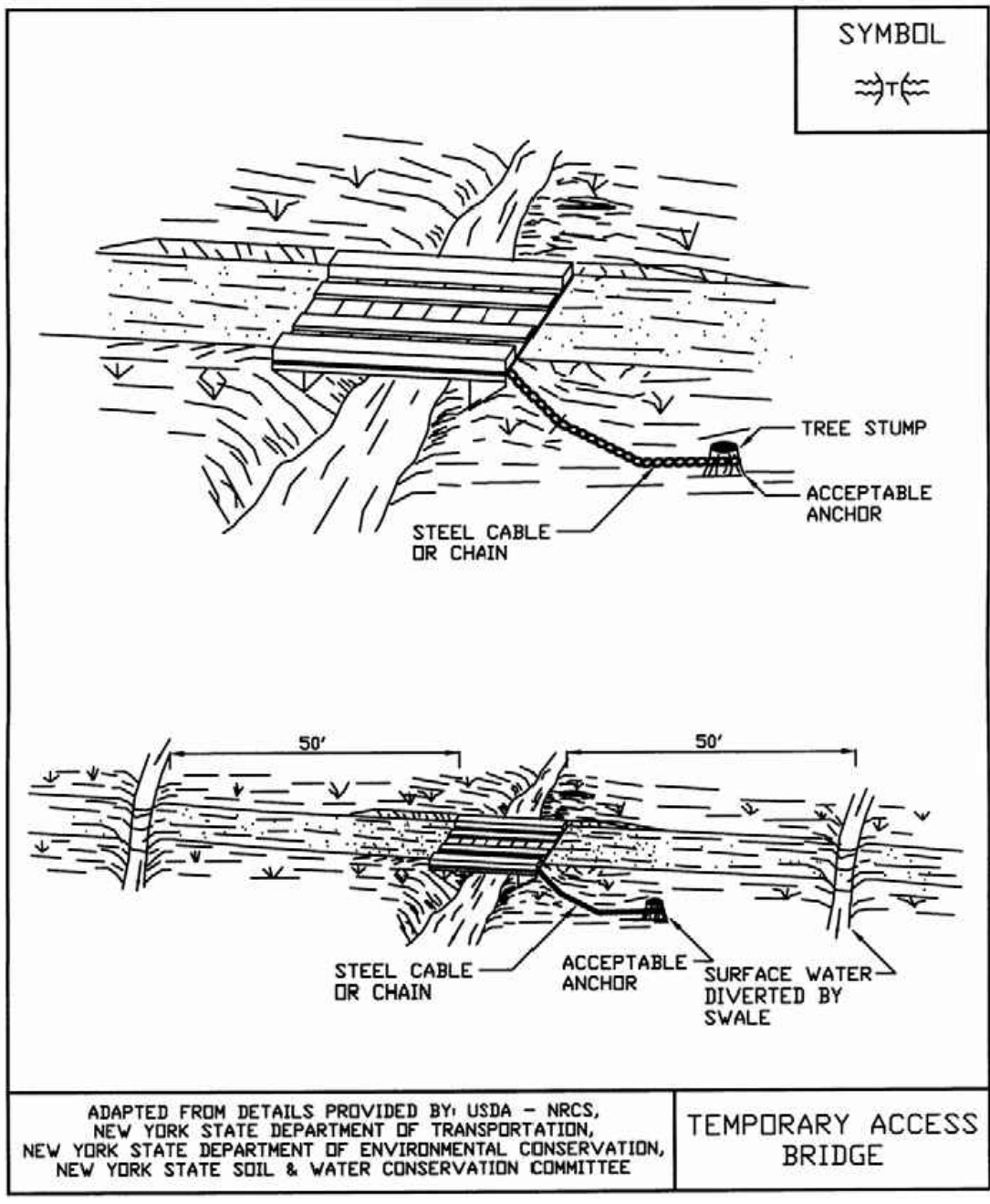
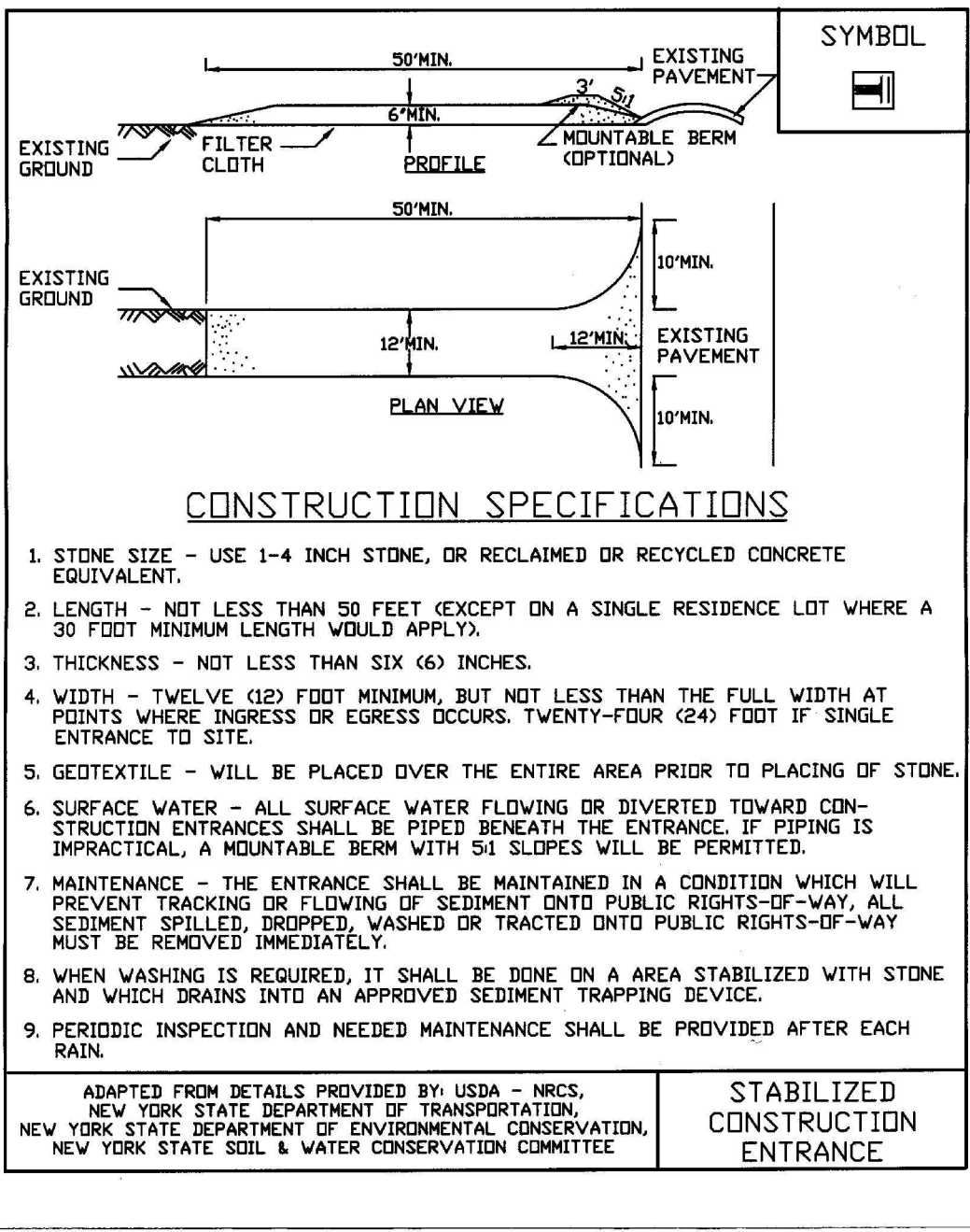


Figure 5A.35
Stabilized Construction Entrance



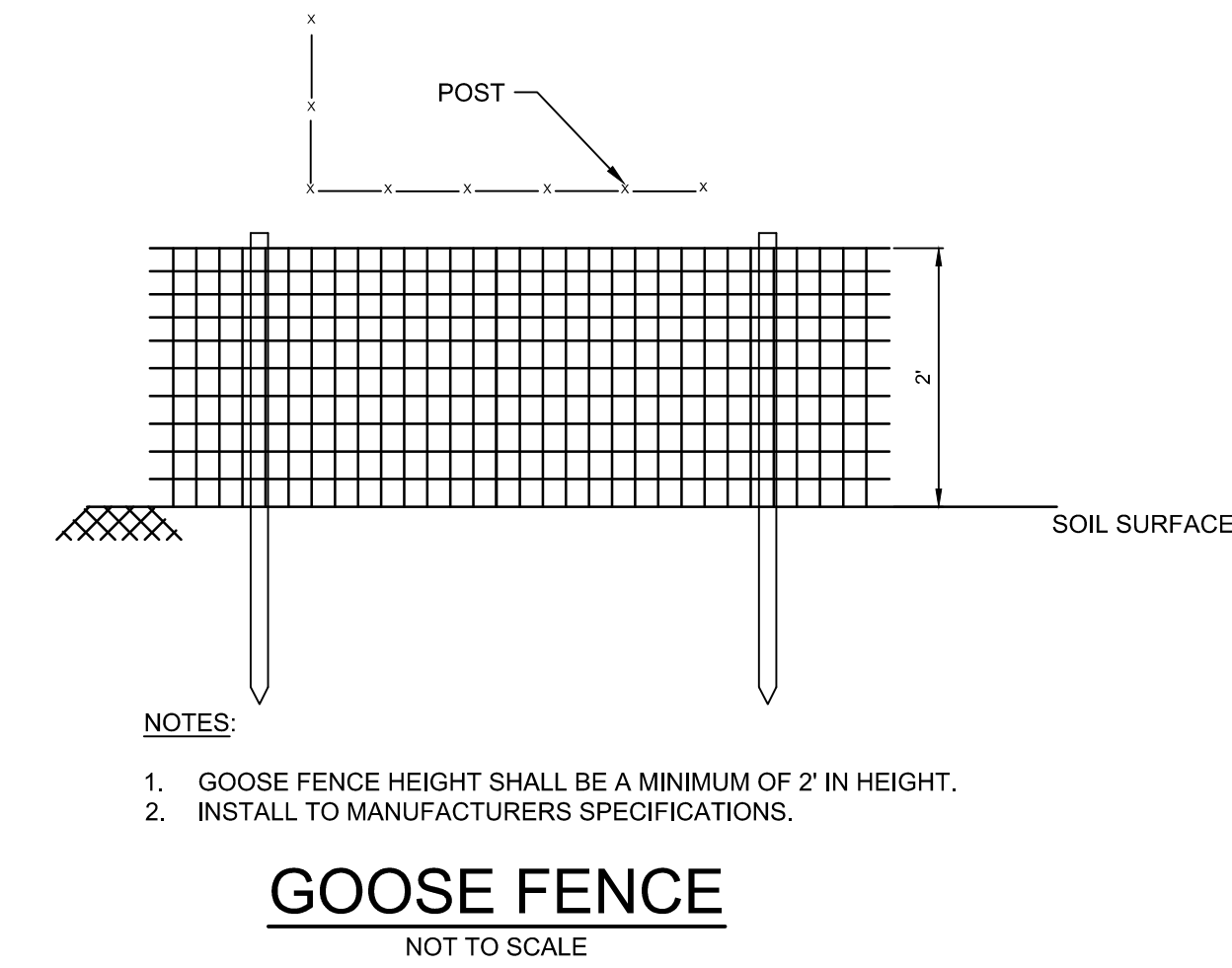
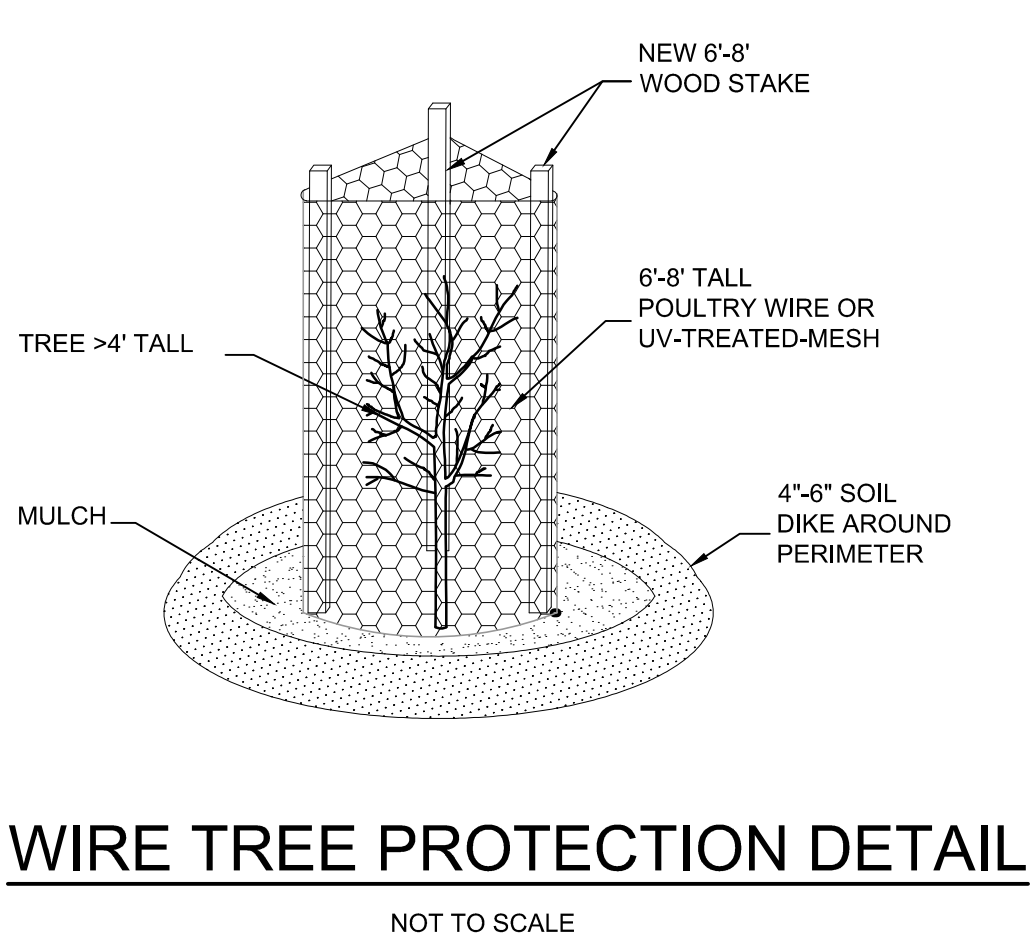
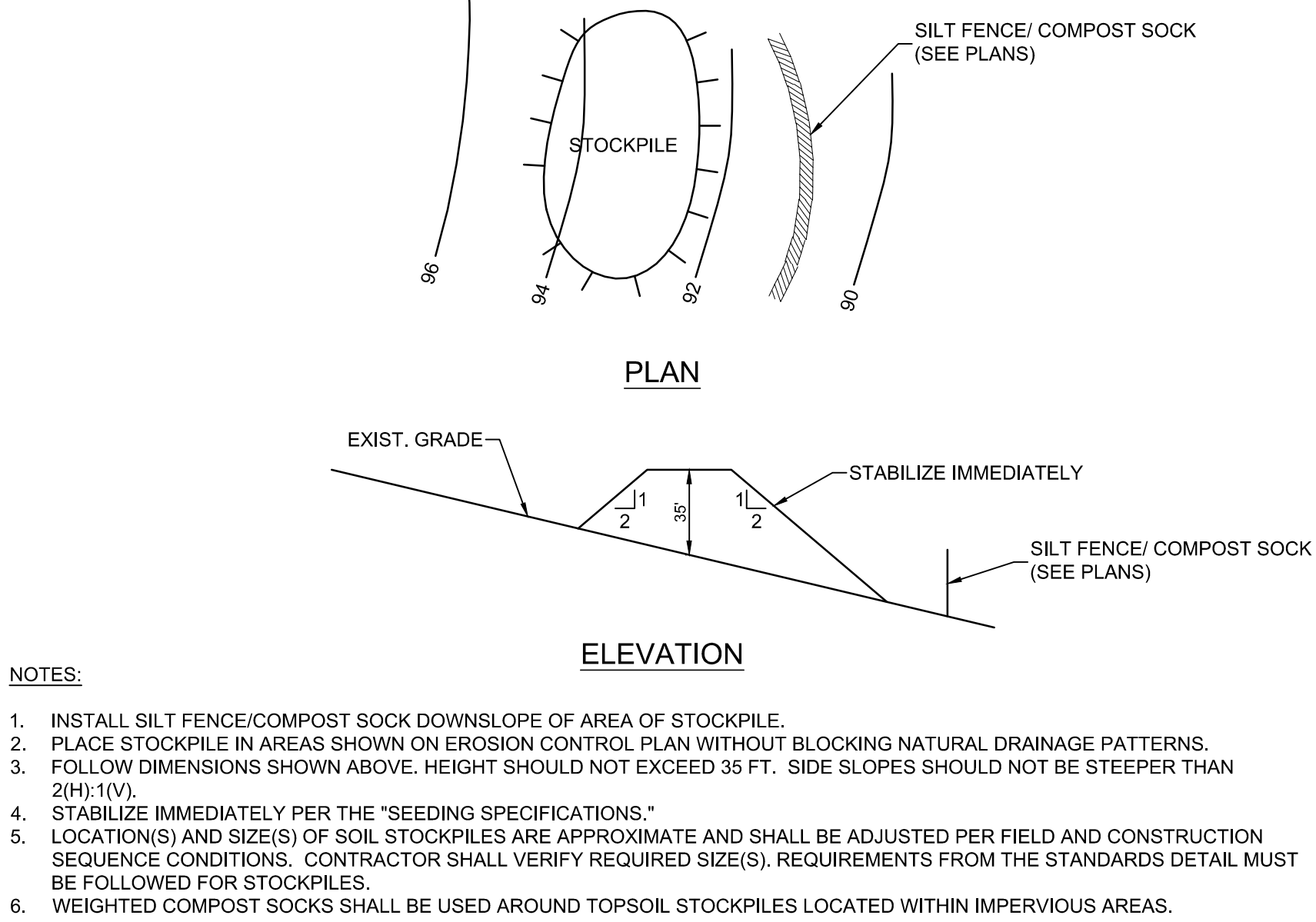
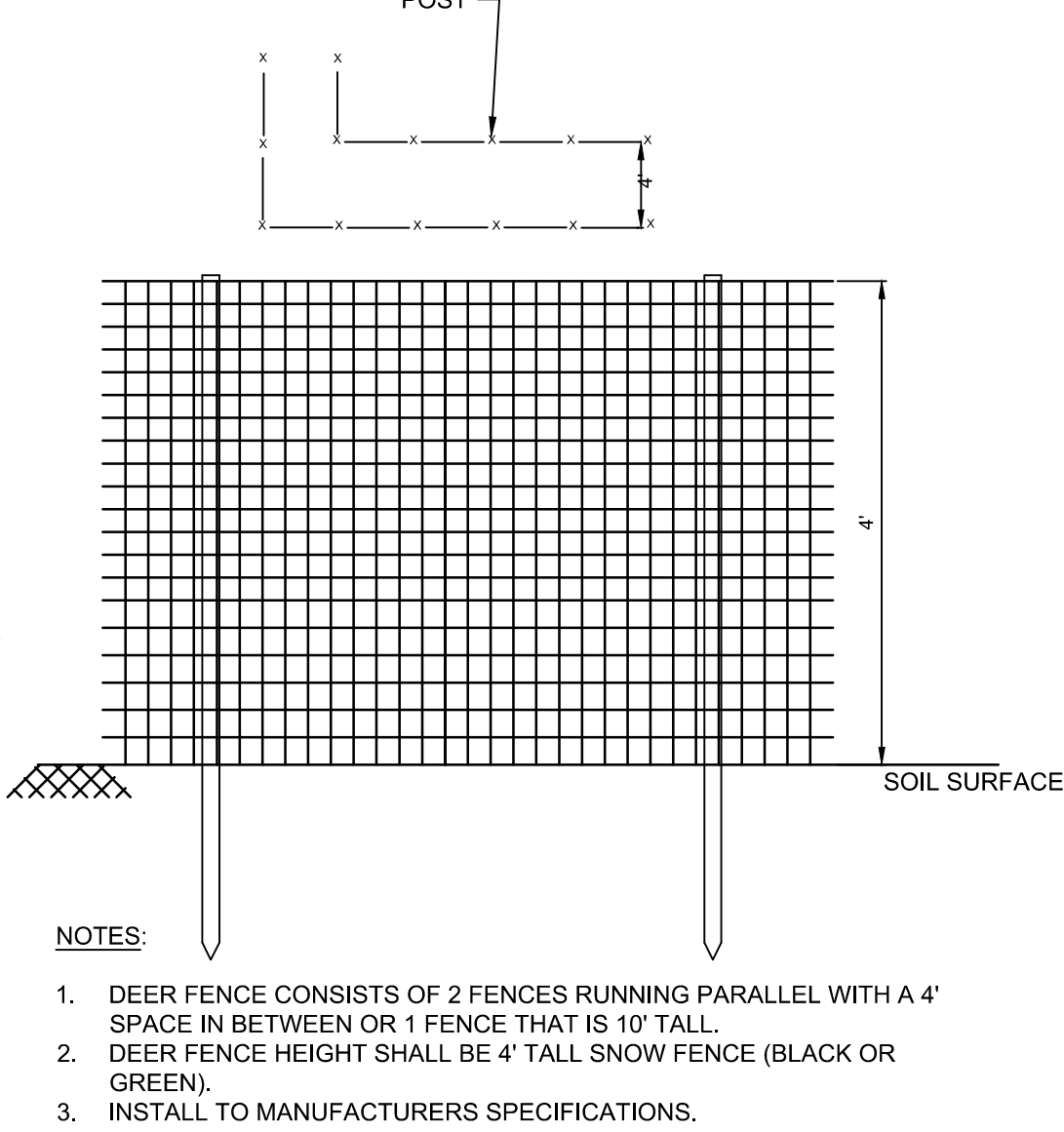
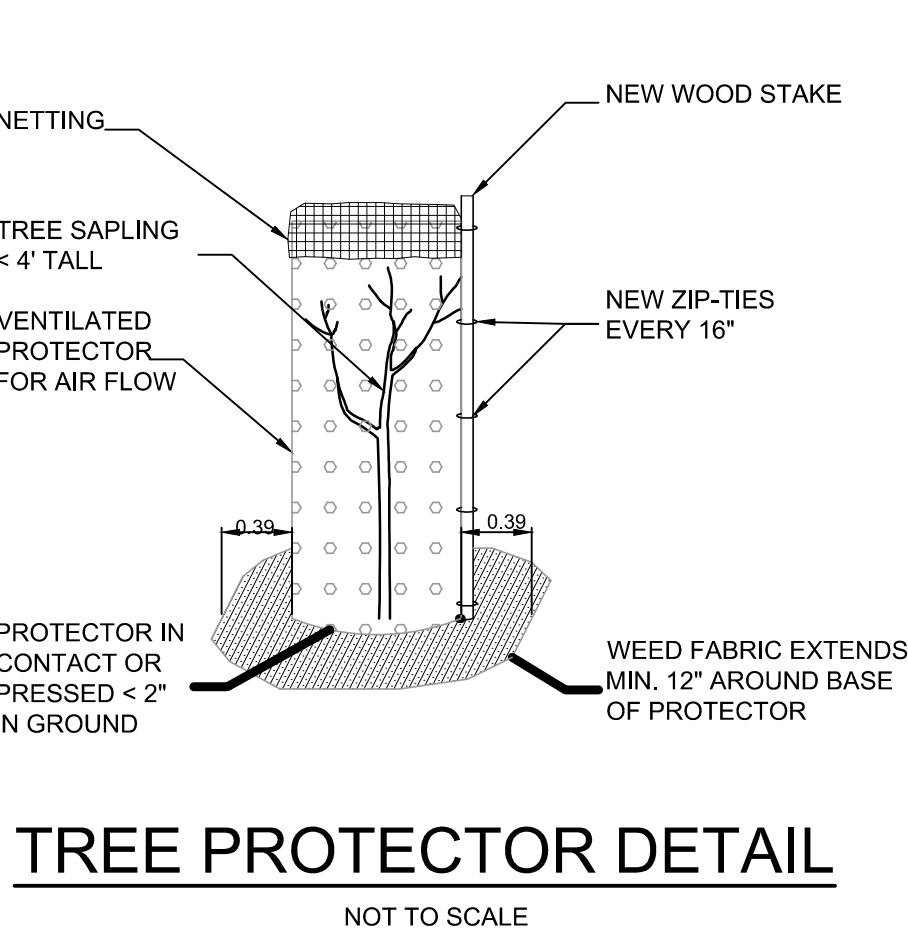
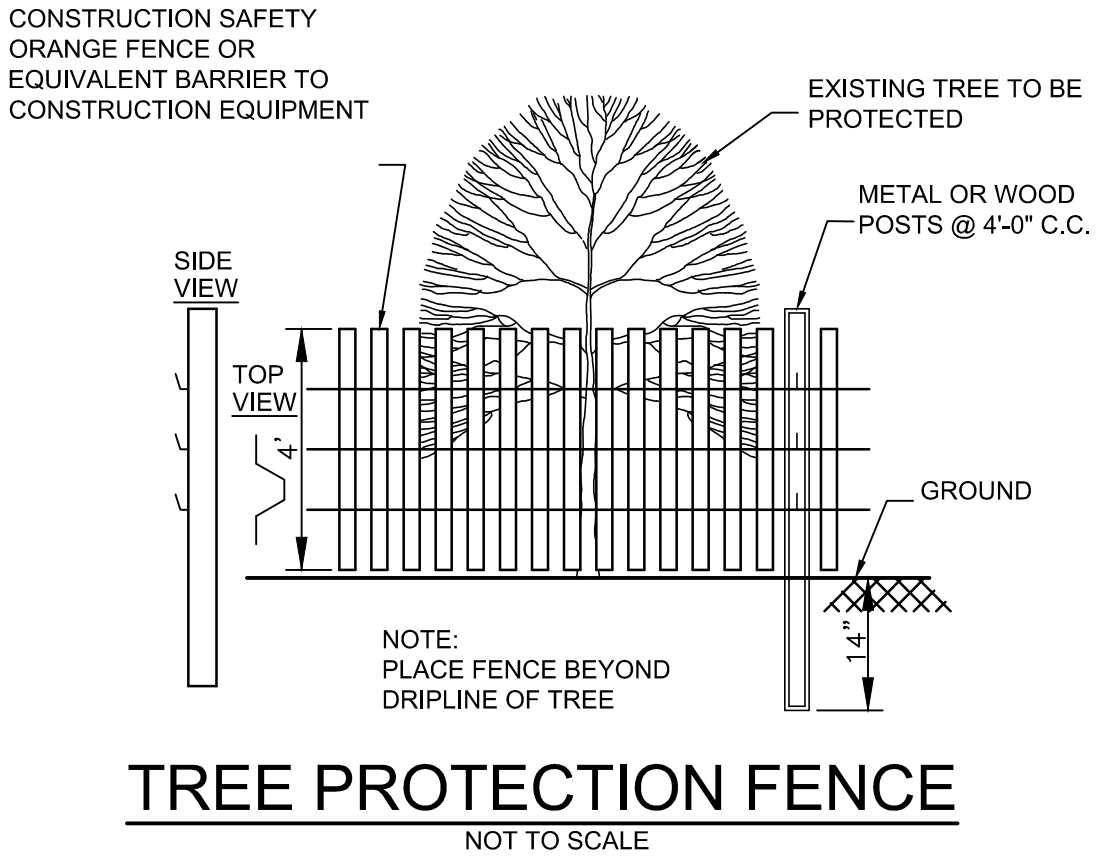
August 2005 Page 5A.21 New York Standards and Specifications For Erosion and Sediment Control

August 2005 Page 5A.36 New York Standards and Specifications For Erosion and Sediment Control

August 2005 Page 5A.37 New York Standards and Specifications For Erosion and Sediment Control

August 2005 Page 5A.34 New York Standards and Specifications For Erosion and Sediment Control

August 2005 Page 5A.76 New York Standards and Specifications For Erosion and Sediment Control



DEER FENCE
NOT TO SCALE

TOPSOIL STOCKPILE AND MAINTENANCE
NOT TO SCALE

WIRE TREE PROTECTION DETAIL
NOT TO SCALE

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WETLAND MITIGATION

SITE DE-51: BETTY BROOK ROAD

EROSION AND SEDIMENT CONTROL DETAILS

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