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SWANWICK CREEK MITIGATION BANK PROSPECTUS IN ACCORDANCE WITH REGULATORY GUIDANCE MITIGATION BANKING INSTRUMENT OUTLINE FOR PROJECTS WITHIN THE ST. LOUIS DISTRICT

Prepared for
Lyme Illinois Mitigation Holdings LLC
Atlanta, Georgia

Prepared by
Alliance Consulting, Inc.

ALLIANCE PROJECT NO. B19-525-1760
APRIL 2020

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MITIGATION BANK PROSPECTUS IN ACCORDANCE WITH MITIGATION BANKING INSTRUMENT OUTLINE FOR PROJECTS WITHIN THE ST. LOUIS DISTRICT
SWANWICK CREEK STREAM AND WETLAND MITIGATION BANK

1.0 INTRODUCTION

1.1 Project Description

On behalf of Lyme Illinois Mitigation Holdings LLC ("Bank Sponsor") (LIMH), Alliance Consulting Inc. (Alliance) is pleased to provide the Prospectus for the Swanwick Creek Mitigation Bank (the "Bank"). This document follows the previously submitted Draft Prospectus which was developed in August 2019. The Bank has been identified as having potential to help meet the compensatory mitigation requirements and needs for stream and/or wetland impacts in the 8-digit USGS hydrologic unit 07140106 of the Big Muddy watershed and surrounding secondary service areas. The combination of the stream and wetland restoration, establishment, enhancement, and preservation within the Big Muddy watershed will provide significant benefits to surrounding and to downstream aquatic resources. The purpose of the Bank is to provide offsite compensation for the unavoidable impacts to streams, wetlands, and their aquatic functions as a result from development projects authorized under Section 401 and 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, provided such activities have met all applicable requirements and are authorized by the appropriate agencies.

1.1.1 Swanwick Creek and its Unnamed Tributaries

The Bank is located near the incorporated town of Pinckneyville in Perry County, Illinois within a parcel totaling approximately 157 acres. Streams occurring within the Bank include Swanwick Creek and multiple unnamed tributaries of Swanwick Creek. Swanwick Creek runs through the southwest corner of the project area and drains south off the property until its confluence with Beacoup Creek. Beacoup Creek flows to the Big Muddy River, a principal tributary of the Mississippi River. The approximate center of the Bank is located at 38.198247° N Latitude, and -89.447307° W Longitude. Site location and U.S. Geological Survey topographic maps are provided in Drawings B19-525-A2 and B19-525-A7, respectively. An aerial map is provided in Drawing B19-525-A9 that illustrates the locations of Swanwick Creek, the unnamed tributaries of Swanwick Creek (UNTs), and the location of the Bank. A plat of survey for the property can be found in Appendix E.

There are approximately 11,355 linear feet of existing perennial and intermittent streams and approximately 15.33 acres of PEM and PFO wetlands within the Bank. A majority of these streams exhibit impairments to physical, biological, and/or chemical functions. The past anthropogenic impacts have left Swanwick Creek and its unnamed tributaries channelized, which has disrupted riffle/run and pool/glide complexes and created high near bank stress and erodibility.

The Bank involves the preservation of Swanwick Creek and the restoration, enhancement, and preservation of UNTs of Swanwick Creek that have been disturbed by agricultural and

silvicultural activities, primarily corn/soybean production. The conceptual design presented herein provides 16,273 linear feet of stream mitigation activities generating an approximate 110,312.8140 stream credits. The Illinois Stream Mitigation Method worksheets can be found in Appendix C of this document. In addition to stream mitigation activities, the Bank is proposing to provide an additional 3.79 acres of wetland mitigation and 4.91 acres of wetland preservation which will generate additional wetland credits. The functional lift generated by the proposed work will greatly enhance the overall function of the aquatic resources onsite and the existing wide valleys onsite provide a means for timely and cost-efficient construction.

1.2 Directions to the Bank

The Bank is located in Perry County, approximately 8.68 miles northwest of Pinckneyville, Illinois (Drawing No. B19-525-A2). Directions to the Bank from St. Louis, Missouri have been included below:

- Head east on Spruce Street toward S. Tucker Blvd.
- Turn right onto S. Tucker Blvd.
- Turn left at the first cross street onto Chouteau Avenue/Historic US 66E
- Continue straight onto Chouteau Avenue
- Turn left onto S. 6th Street
- Take the ramp onto I-64E
- Keep left to continue on I-55N/I-64E
- Keep right at the fork to continue on I-64E/IL-3N, follow signs for Louisville/St. Clare Avenue
- Take Exit 50 for IL-127 toward Carlyle/Nashville IL
- Keep right at the fork and merge onto IL-127S
- Merge onto IL-127S
- Turn right onto Swanwick Rice Road
- Continue straight onto Sawmill Road

1.3 Service Area

The location of the Bank will provide compensatory mitigation options to Illinois counties within the surrounding area. Equally important is land conservation which will provide ecological benefits, including improvements to water quality, fish and wildlife habitat, erosion control, and flood conveyance and storage within the watershed. The primary Geographic Service Area (GSA) is the Big Muddy Watershed as defined by Hydrologic Units Code (HUC) 07140106.

Primary GSA: Big Muddy – 07140106

The proposed secondary GSA includes the following six (6) 8 digit Hydrologic Unit Code (HUCs) for the site. The secondary GSAs can only be utilized if there are no available credits or existing mitigation banks within the GSAs and the purchase of credits will have to be approved by the St. Louis District. The secondary service areas that fall within the Louisville District will not be included.

Secondary GSA: Middle Kaskeskia – 07140202
Lower Kaskaskia – 07140204
Upper Mississippi – Cape Girardeau – 07140105

A HUC map illustrating the GSAs of the proposed project is included as Drawing No. B19-525-A8.

1.4 Project Goals and Objectives

The goal of the Bank is to establish, restore, and preserve self-sustaining, functional stream corridors to replace the aquatic functions and values lost due to unavoidable adverse impacts to streams and wetlands primarily from current and historic agricultural and silvicultural activities which include corn and soybean production. The Bank, as proposed, includes the channel of Swanwick Creek and multiple unnamed tributaries to Swanwick Creek, adjacent wetlands, and riparian buffers. Some of the targeted functions include improvements to wildlife habitat, water quality, construction or reconnection to floodplain, flood retention and temporary surface water storage, long-term subsurface water storage and nutrient cycling, and erosion control through the implementation of natural channel design, wetland establishment and the reestablishment of riparian buffers.

The Bank Sponsor proposes to meet the Bank's goals through 1) establishment, restoration, enhancement, and/or preservation of contributing perennial, intermittent, and ephemeral stream channels; 2) the establishment and preservation of riverine wetlands; and, 3) the reestablishment and preservation of riparian and wetland buffers. Establishment and restoration modifications include, but are not limited to, natural channel design techniques (connection to historic floodplain or flood prone zone; re-establishment of appropriate channel, dimension, pattern, and profile), bank stabilization and bioengineering techniques, grade control and in-stream structures, reestablishment of forested riparian buffers, and removal of detrimental land use activities (i.e. farming) in appropriate riparian corridors. The Bank Sponsor also proposes to establish, restore, enhance, and/or preserve riparian buffers along both streams and wetlands throughout the site. The size of the riparian buffer varies throughout the project site; however, the Bank Sponsor proposes to reestablish this buffer, with an average width of no less than 50 feet for ephemeral streams, and 125 feet for intermittent and perennial streams.

The project goals address stressors identified in the watershed, and include the following:

- Excess sediment removal;
- Invasive species removal;
- Filtration of runoff and enhancement of nutrient cycling;
- Flood retention and storage of surface and ground water; and,
- Improved aquatic and terrestrial habitat.

The project goals will be addressed through the following project objectives:

- Elimination and/or attempted maximum control of non-native exotic invasive species;
- Restoration of riparian forested stream buffers;
- Stabilization of eroding stream banks caused by the lack of vegetation and channelization;

- Addition of large woody debris such as log grade control vanes, log vanes, toe wood, and root wads;
- Restoration of appropriate dimension, pattern and profile in impaired stream reaches;
- Enhancement of hydrology in existing wetlands;
- Rehabilitation of existing wetlands by restoring shrub and forested wetland canopy; and,
- Establishment of forested, scrub-shrub and herbaceous riverine wetlands within the floodplain of Swanwick Creek.

1.5 Watershed Needs

Located in southern Illinois, the Big Muddy watershed (HUC 8: 07140202) is approximately 2,385 square miles (1.5 million square acres) and encompasses six (6) counties in Illinois. Currently, 160 streams are 303 (d) listed in the Big Muddy watershed for parameters that include aluminum, iron, manganese, fecal coliform, mercury, phosphorus, turbidity, chloride, and dissolved oxygen. Additionally, sedimentation has been identified as the causative stressor for biologically impaired streams (Illinois EPA, 2018) within the watershed.

Sediment sources identified in the watershed included forestry operations, coal, oil and gas operations, roads, agriculture, and construction and urban/residential storm water. Additionally, streambank erosion represented a significant sediment source throughout the watershed.

The Bank's proposed restoration, establishment, and enhancement activities will reduce excess sediment by eliminating streambank erosion within the impaired reaches. The restoration and establishment of a proper forested riparian buffer will provide filtration of runoff further reducing contaminants within the stream. The mitigation work proposed would reduce the overall TSS, further reducing the amount of sediment in the Big Muddy River Watershed, as well as other pollutants.

1.6 Technical Feasibility

Streams occurring within the Bank consist of smaller first and second-order channels that are highly conducive to restoration using natural channel design techniques. There are no roads, gas lines, transmission lines or other utilities that would prevent or otherwise interfere with the proposed restoration work. Further, as discussed in Section 2.0 (Qualifications), the Bank Sponsor has successfully restored similar aquatic resources throughout the country. The Bank Sponsor and Alliance have worked together on five mitigation banks in the State of West Virginia. Four of the five mitigation banks have been successfully restored and are now in the post-construction, performance monitoring phase. The specific projects amount to a total of approximately 54 miles of restored, enhanced, established, or constructed channels. Additionally, these projects restored and enhanced ±22.5 acres of wetlands.

1.7 Site Ownership

The land required for construction and management of the Bank are found in Section 8, Township UN, Range 3E and F District of Perry County, Illinois, as outlined below. The current owner is Lyme Illinois Mitigation Holdings LLC. A redacted title policy can be found in

Appendix G of this report.

2.0 QUALIFICATIONS

2.1 Bank Sponsor

The Bank shall be established by Lyme Illinois Mitigation Holdings LLC, who will serve as the Bank Sponsor.

Bank Sponsor Name:	Lyme Illinois Mitigation Holdings LLC
Sponsor Address:	c/o Eco-Capital Advisors, LLC Six Concourse Parkway, Suite 2140 Atlanta, Georgia 30328
Contact Name:	Brian Normanly
Telephone:	(770) 400-9682
Email:	normanly@ecocapitaladvisors.com

2.2 Bank Sponsor Qualifications

Lyme Illinois Mitigation Holdings LLC ("Bank Sponsor") is a partnership between The Lyme Timber Company LP ("Lyme") and Eco-Capital Advisors, LLC ("ECA"). Lyme is a private timberland investment manager that focuses on the acquisition and sustainable management of lands with unique conservation values. ECA is a real estate firm focused on the development, implementation, and management of wetland and stream mitigation projects and endangered species habitat conservation projects. The Lyme-ECA partnership is currently operating 12 mitigation properties throughout the United States, eight of which have been approved and constructed. Both companies also developed multiple banks prior to forming the partnership. In addition to mitigation banks developed in conjunction with Lyme, ECA principals have developed and managed over 100 discrete mitigation and conservation projects occurring in 17 different U.S. Army Corps of Engineer (USACE) districts. Mitigation projects include mitigation banks that have entered the long-term management phase and have, therefore, been determined to be ecologically self-sustaining. Descriptions are provided for four mitigation banks that have been developed with Alliance in West Virginia.

Hayes Run Mitigation Bank (Roane County, West Virginia) – One of the first approved stream and wetland banks in West Virginia. The service area of the Bank is the Little Kanawha watershed (HUC Watershed - 05030203). The Bank UMBI was approved in August 2012 (USACE File No. LRH-2009-150-LKR). The Bank consists of 5,411 linear feet of stream restoration and enhancement on unnamed tributaries to Hayes Run. The Bank also contains 22,174 linear feet of preservation of unnamed tributaries of Hayes Run and 21,171 linear feet of preservation of Simmons Fork and unnamed tributaries of Simmons Fork. Hayes Run Mitigation Bank will begin its Year 8 of mitigation monitoring during 2020.

Spanishburg Mitigation Bank (Mercer County, West Virginia) – Approved on October 1, 2013 (USACE File No. LRH-2016-116-NEW) and located in the Upper New

watershed (HUC Watershed – 05050002). The Bank consists of 11,178 linear feet of stream restoration and a 100 foot riparian buffer along both banks of Rich Creek and its tributaries with a few minor exceptions at the landowner's request. The Bank also contains 5,690 linear feet of preservation and 1,168 linear feet of enhancement of stream channel as well as a 50 foot riparian buffer on average. Construction and enhancement of wetland areas cover an additional 9.81 acres. Spanishburg Mitigation Bank will begin its Year 7 of mitigation monitoring during 2020.

Kincheloe Creek Mitigation Bank (Harrison and Lewis Counties, West Virginia) – The Bank's NWP 27 (Permit No. 2014-1128) was approved by the USACE on August 15, 2014. The Bank consists of approximately 21,600 linear feet of stream restoration/creation/enhancement on Kincheloe Creek and unnamed tributaries of Kincheloe Creek. Additionally, the Bank has approximately 51,032 linear feet of stream preservation on Kincheloe Creek and unnamed tributaries of Kincheloe Creek, as well as an average 150-foot riparian corridor. Construction and enhancement of wetland areas cover approximately 4.46 acres. The Kincheloe Creek Mitigation Bank will begin its Year 4 of mitigation monitoring during 2020.

Bearwallow Run Mitigation Bank (Ritchie County, West Virginia) – The Bearwallow Run Mitigation Bank was constructed in the winter of 2019. The total estimated stream and wetland credits generated by the Bearwallow Run Stream and Wetland Mitigation Bank include 24,308 linear feet of stream mitigation activities resulting in 12,151.27 stream credits and 6.18 acres of wetland mitigation activities generating 4.985 wetland credits. The Bearwallow Run Mitigation Bank will begin its Year 2 of mitigation monitoring in 2020.

2.3 Primary Consultant

The Designer and Engineering firm for the Bank will be Alliance.

Consultant Name:	Alliance Consulting, Inc.
Consultant Address:	124 Philpott Lane Beaver, West Virginia 25813
Contact Name:	Braden Hoffman
Telephone:	(304) 255-0491
Email:	bhoffman@aci-wv.com

2.4 Primary Consultant Qualifications

Alliance is a multi-disciplinary civil and environmental engineering firm founded in 2001. Alliance integrates engineering, environmental, ecological, and permitting services to complete turnkey projects for a variety of clients. The environmental department at Alliance specializes in both stream and wetland mitigation projects.

Alliance is the project engineer/designer for five (5) mitigation banks in the state of West Virginia, with more to come. These four banks have included over 50,000+ linear feet of stream restoration and 20+ acres of wetland restoration/establishment.

Alliance is also the project engineer/designer for multiple permittee responsible stream and wetland mitigation projects throughout West Virginia and Illinois. In the last five (5) years, Alliance has completed over 35,000+ linear feet of stream restoration and 150+ acres in wetland restoration/establishment. Our excellent reputation, developed skill sets, and significant project experience enables Alliance to provide a mitigation design that is proven to function at current mitigation banking standards.

3.0 EXISTING CONDITIONS

3.1 Swanwick Creek

3.1.1 Existing Jurisdictional Waters of the United States

The Bank was delineated during 2019-2020 and was found to contain 22,871 linear feet of potentially jurisdictional stream channels (Figures, Drawing No. B19-525-A1). Of these delineated streams, there are approximately 11,516 linear feet of non-jurisdictional ephemeral channel, and 11,455 linear feet of intermittent channel. All identified stream segments eventually discharge to Swanwick Creek. Swanwick Creek flows to Beaucoup Creek, a tributary of the Big Muddy River, a principal tributary of the Mississippi River.

Wetlands were also delineated during 2019-2020 by Alliance personnel. All identified wetlands consist of one of the wetland habitat types or a complex of one or more of the following wetland habitat types per the classification system developed by Cowardin et al. (1979). In total, approximately 0.066 acres of PEM wetlands and 14.6 acres of PFO wetlands were delineated within the Bank.

A detailed Request for Jurisdictional Determination for the Bank can be found in Appendix A of this document. Table 1 summarizes the estimated streams and wetlands (see Appendix B of the Jurisdictional Determination).

Table 1. Estimated Ecological Resources Identified Within the Swanwick Creek Mitigation Bank

Feature	Total (Linear Feet)	Bank Totals (Linear Feet/Acres)
Jurisdictional Streams (L.F.)	11,355	22,871
Non-Jurisdictional Streams (L.F.)	*11,516*	
Jurisdictional Wetlands (Ac.)	15.09	23.18
Non-Jurisdictional Wetlands (Ac.)	*8.09*	
Jurisdictional Open Waters (Ac.)	0.00	0.00
Non-Jurisdictional Open Waters (Ac.)	*0.00*	

3.1.2 General Soil Characteristics and Bank Mapped Soil Series

Eleven (11) soil series are mapped in the Perry County soil survey as occurring within the Bank, of which one (1) soil series, Bonnie silt loam (3108A), was listed as hydric for Perry County

under hydric criterion #2. Other mapped soils include: Blair silty clay loam (5C3), Atlas silty clay loam (7D3), Hickory silt loam (8F), Hickory clay loam (8F3), Bluford silt loam (13A), Bluford silt loam (13B), Ava silt loam (14B), Ava silty clay loam (14C3), Hickory-Ava silty clay loam (929D3), Bonnie silt loam (3108A), and Belknap silt loam (3382A) (Table 2) (Figures, Drawing No. B19-525-A6). The NRCS Web Soil Survey report for the Bank is provided in Appendix D of the Jurisdictional Determination found within Appendix A of this report.

Table 2. Description of Soils Occurring within the Mitigation Area

County	Map Symbol	Soil Name	Slope	Hydrologic Soil Group	Landform	Drainage Class	Ponding	Flooding
Perry	5C3	Blair silty clay loam	5-10%	C/D	Hillslopes	Somewhat poorly drained	None	None
	7D3	Atlas silty clay loam	10-18%	D	Till plains	Somewhat poorly drained	None	None
	8F	Hickory silt loam	18-35%	B	Ground Moraines	Well drained	None	None
	8F3	Hickory clay loam	18-35%	B	Ground Moraines	Well drained	None	None
	13A	Bluford silt loam	0-2%	C/D	Ground Moraines	Somewhat poorly drained	None	None
	13B	Bluford silt loam	2-5%	C/D	Ground Moraines	Somewhat poorly drained	None	None
	14B	Ava silt loam	2-5%	C	Ridges	Moderately well drained	None	None
	14C3	Ava silty clay loam	5-10%	C	Till Plains	Moderately well drained	None	None
	929D3	Hickory-Ava silty clay loam	10-18%	B	Till Plains	Well drained	None	None
	3108A	Bonnie silt loam	0-2%	C/D	Flood Plains	Poorly drained	Frequent	Frequent
	3382A	Belknap silt loam	0-2%	B/D	Flood Plains	Somewhat poorly drained	None	Frequent

3.1.3 Threatened and Endangered Species (IPaC and EcoCAT)

The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) was reviewed in order to generate a list of species, or other resources such as Critical Habitat that are known or expected to occur in or near the bank area (Appendix D). Currently, two (2) threatened and endangered species are identified as believed to or known to occur within the Bank boundary. The two (2) species include the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*). It is important to note that the Bank is

not considered critical habitat in the IPaC. No migratory birds were noted due to their occurrence on the USFWS Birds of Conservation Concern (BCC) list. The details of species believed to occur in or near the Bank are provided in Table 3, while the IPaC is provided in Appendix D.

Table 3. Description of Threatened and Endangered Species at Swanwick Creek Mitigation Bank

Location	Common Name	Scientific Name	Species Type	Listing Status	Potential Habitat Present
Swanwick Creek Mitigation Bank	Indiana Bat	*Myotis sodalis*	Mammal	Endangered	Yes
	Northern Long-eared Bat	*Myotis septentrionalis*	Mammal	Threatened	Yes

The proposed project offers potential to improve or to create suitable habitat for several Federal Species of Concern. Currently, much of the bank area has been disturbed due to land management activities. Planting trees and shrubs will allow for further habitat lift for threatened and endangered bat species, including the Indiana bat and northern long-eared bat, both of which utilize these resources for roost habitat and foraging. Based on initial field investigations, impacts to threatened and endangered (T&E) species are not anticipated as a result of the bank establishment. Consultation will be conducted with the USFWS to confirm the above findings prior to or during the site plan development for the proposed Bank.

The Ecological Compliance Assessment Tool (EcoCAT) was utilized to determine if any state endangered or threatened species occur within the Bank. The EcoCAT listed no state species occurrences within the Bank. The results of the EcoCAT can be found in Appendix D.

3.1.4 Vegetation

The Bank is characterized by corn/soybean agricultural fields on ridgetops that are dissected by tributaries of Swanwick Creek. Patches of mature and maturing forests occur predominately within Swanwick Creek's floodplain and sporadically along buffers of the unnamed tributaries. Dominant tree species identified during site evaluation include red maple (*Acer rubrum)*, tulip poplar (*Liriodendron tulipifera*), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), and sycamore (*Platanus occidentalis*). Exotic and invasive species, including multiflora rose (*Rosa multiflora*), autumn olive (*Elaeagnus umbellata*), Amur honeysuckle *(Lonicera maackii*) and Japanese stiltgrass (*Microstegium vimineum*) are also present.

3.1.5 Cultural Resources

Cultural resources include historic and archeological resources located in or near the project area. In order to gain information regarding the presence of historical and cultural resources within the project study limits, a Phase 1 Cultural Resources Survey and Assessment was performed. An archaeological and architectural evaluation of the project area was completed during the site plan development of the Bank. The Phase 1 Cultural Resource Survey and Assessment can be found within Appendix F of this report.

3.1.6 Long Term Site Protection

Upon approval of the Bank, the Bank Sponsor, who is also the landowner, will record a conservation easement or declaration of restrictive covenants to protect the Bank in perpetuity. The Bank Sponsor will also designate a 3rd party long-term manager, who will be the grantee of the conservation easement. The 3rd party who will act as a long-term manager will be identified in the final mitigation instrument. At this time, the Bank Sponsor is currently in negotiations with the HeartLands Conservancy in Belleville, Illinois to act as the long-term steward.

4.0 PROPOSED BANK CONDITIONS

4.1 Mitigation Bank Credit Summary

The Bank conceptual mitigation plan will provide approximately 16,273 linear feet of restoration, establishment, enhancement, and preservation. This mitigation work will provide approximately 110,312.8140 stream and riparian buffer credits. Wetland restoration and establishment is proposed for additional acres of wetland mitigation activities generating an additional 3.79 wetland credits, and 4.91 acres of wetland preservation credits which will generate an additional 0.491 credits. The combined 4.281 total credit estimation will be approximately 110,317.095 credits.

4.2 Conceptual Scope of Work

The primary ecological goal of the proposed Bank is to restore impaired headwater streams and wetlands, and convert the existing denuded riparian buffers into hardwood-dominated, riparian forests. Ecological design and construction will transform the existing degraded landscape into a healthy and self-sustaining headwater stream system.

The implementation of this goal would include the completion of in-stream restoration, creation, and enhancement of channel cross-sectional dimensions. Coinciding with the restoration, creation, and enhancement of channel dimensions would be the construction of a stable pattern along reaches that have been previously channelized. Several reaches appear to have irregular meanders with eroding banks, which indicates the presence of extreme sheer stress during high-magnitude flows. These reaches would be constructed with more stable meanders within the restored stream's adjacent historic floodplain. The restoration, creation, and enhancement of channel profile would correlate with the pattern. The objective would be to create riffle, run, pool, and glide features (where applicable) with characteristics specific to each restored channel. The items discussed above would be designed to promote proper sediment transport which will result in sustainable streams capable of maintaining their dimensions, patterns and profiles in a manner that does not aggrade or degrade over time.

A conceptual design for the restoration is provided in Drawing Nos. B19-525-T1 through B19-525-D23, which can be found in the "Site Plan Drawings" Section of this report. Upon receipt of the USACE's initial evaluation letter, Alliance will collect additional baseline and reference data, which will then be used to refine and finalize the restoration design.

The scope of work would also include restoring floodplain connectivity, where applicable. This would include either elevating the bed of a restored channel so that bankfull stage is set to the elevation of the historic floodplain or constructing a new active floodplain at an elevation below the historic floodplain. Under either scenario, the objective would be to allow for the dissipation of energy, as well as, proper sediment deposition.

The design of the previously mentioned parameters would be based on Rosgen's Natural Channel Design principles, including the installation of Rosgen-type structures throughout each restored reach. The purposes of these structures include in-stream feature stability, bank stability, and habitat creation. The types of structures that could potentially be used include, but are not limited to, log vanes, log cross vanes, toe wood, soil lifts, and root wads. A table detailing the parameters used in designing the streams has been included in Appendix B and is labeled as Table 01.

The establishment or enhancement of a sufficient riparian buffer would also be implemented as part of the project. Establishment of vegetation would serve as a critical piece to the restoration efforts. The vegetation would prove valuable for channel stability and habitat.

The establishment and enhancement of wetland areas on the Bank would be done by regrading, where necessary, and planting the wetland areas with a native seed mix. Floodplain connectivity will also be established to allow for groundwater recharge to occur naturally and enhance the wetland areas. The design plans and planting plans can be found on Drawing Nos. B19-525-T1 through B19-525-D23, which are located in the "Site Plan Drawings" section of this document.

In conclusion, the specified reaches are within an impaired system that needs attention. The restoration and enhancement activities discussed above would greatly benefit the streams, wetlands, riparian buffers and wildlife occurring within the proposed Bank. The proposed actions would also greatly benefit the overall Big Muddy River watershed.

5.0 BANK ESTABLISHMENT AND OPERATION

5.1 Establishment and Operation of the Bank

The Bank shall be established under the terms and conditions outlined in a Mitigation Banking Instrument (MBI) that is approved by the USACE and other Interagency Review Team (IRT) member agencies.

5.2 Proposed Ownership and Long-Term Management

The Bank Sponsor currently owns the Bank property and will, therefore, record the conservation easement or declaration of restrictions upon the USACE's approval of the MBI and issuance of the Nationwide Permit 27. The Bank Sponsor is currently in negotiations with the HeartLands Conservancy to act as the long-term steward for the Bank.

The Bank Sponsor will submit a long-term management plan with the MBI that will describe how the Bank will be managed after ecological performance standards have been achieved in

order to ensure long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for implementing the long-term management plan. At this time, the Bank Sponsor proposes to serve as the long-term steward responsible for implementing the long-term management plan. During the permitting and monitoring phases, the Bank Sponsor intends to identify land trusts and other qualified entities that may be willing to serve as the long-term steward upon bank closure, which will occur once the Bank has met its ecological performance standards and received its final credit release. The Bank Sponsor is currently in negotiations with the HeartLands Conservancy to act as the long-term steward for the Bank. The long-term steward will need to be approved by the USACE before the Bank Sponsor is permitted to transfer its long-term management responsibilities.

6.0 REFERENCES

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SECTION A

JURISDICTIONAL DETERMINATION

Alliance Consulting, Inc.
Engineers • Constructors • Scientists

U.S. ARMY CORPS OF ENGINEERS REQUEST FOR JURISDICTIONAL DETERMINATION

SWANWICK CREEK MITIGATION BANK PERRY COUNTY, ILLINOIS

Prepared for
Lyme Illinois Mitigation Holdings LLC
Atlanta, Georgia

Prepared by
Alliance Consulting, Inc.

ALLIANCE PROJECT NO. B19-525-1760
MARCH 2020
REVISED JUNE 2020

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Engineers · Constructors · Scientists

March 25, 2020

Project No. B19-525-1760

Mr. Keith McMullen
U. S. ARMY CORPS OF ENGINEERS
St. Louis District
1222 Spruce Street
St. Louis, MO 63103-2833

Request for United States Army Corps of Engineers'
Jurisdictional Determination
Stream and Wetland Delineation Report
Lyme Illinois Mitigation Holdings LLC
Perry County, Illinois

Dear Mr. McMullen:

On behalf of our client, Lyme Illinois Mitigation Holdings LLC (LIMH), this letter has been prepared to transmit the stream and wetland delineation of the proposed project area. Alliance Consulting, Inc. (Alliance) and LIMH acknowledge that jurisdictional determinations are made solely by the U.S. Army Corps of Engineers (USACE) and are submitting this request accordingly. This document has been prepared in general accordance with the December 2, 2008, Revised Guidance for Preparing a Jurisdictional Determination and subsequent Post-Rapanos Protocols.

1.0 PURPOSE

The purpose of this stream and wetland delineation report is to identify "Waters of the United States" (WOTUS) within and adjacent to the proposed Swanwick Creek Mitigation Bank in Perry County, Illinois. This project will involve restoration, enhancement, and creation of streams and wetland areas in order to generate mitigation credits, which can then be sold to Clean Water Act permittees as compensation for unavoidable jurisdictional impacts resulting from permitted development projects. The Swanwick Creek Mitigation Bank will provide credits for the Big Muddy watershed as a primary service area and adjacent watersheds (Lower Kaskaskia, Middle Kaskaskia, Skillet, Saline, Lower Ohio, and the Upper Mississippi-Cape Girardeau) as secondary service areas. Both Alliance and LIMH realize that all determinations are preliminary until verified by the USACE; however, this document represents our interpretation of current USACE jurisdictional determination guidelines.

2.0 INTRODUCTION

The project area is located in Perry County, Illinois and has an approximate center at Latitude

38.198247° and Longitude -89.447307°. The project area is approximately 157.17 acres. Drawing No. B19-525-A2, entitled "Project Location Map - Topo", documents the boundaries of the project area and shows its location. The proposed project aims to restore, enhance, and create healthy, well-functioning aquatic resources in order to obtain credits, which could later be purchased for mitigation purposes.

3.0 METHODS

Field investigations of the project area were conducted on the following dates: December 10-11, 2019; January 15, 2020; February 4-6, 2020; and on February 25, 2020. The project area was traversed, and all potential aquatic resources occurring in or adjacent to the project area were identified, documented, and delineated.

3.1 Stream Resources

All streams were delineated, and all points identified within the proposed project area were located using a TRIMBLE GEO 7X (sub foot accuracy) GPS unit. Any streams encountered had stream measurements conducted in order to determine the total acreage of streams currently existing within the project area. Stream lengths were calculated using Geographic Information Systems (GIS) utilities. All stream locations are shown on Drawing No. B19-525-A1, entitled "Stream and Wetland Delineation Map", which can be found in the "Figures" section of this report. Representative site overview photos of potential stream and wetland resources are presented in Appendix A.

3.2 Wetland Resources

Existing wetland resources within the project were identified and their boundaries delineated per the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) utilizing the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region version 2.0* (USACE, 2010). The 1987 Manual was followed in which wetlands are identified based on three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland determination forms have been provided in Appendix B. Additionally, a U.S.D.A - Soil Conservation Service report documenting a total of 18.7 acres of farmed wetland has been provided within Appendix C.

All points identified within the proposed permit area were located using a TRIMBLE GEO 7X (subfoot accuracy) GPS unit. In areas determined to be potential wetlands, the boundaries were flagged in the field and flag locations were surveyed using the aforementioned GPS unit. The GPS flag points were then converted into a shapefile to be displayed using GIS technology to create a graphic showing the site resources. The wetland areas were calculated using GIS area utility.

3.3 Open Water Resources

Open water resources within the project area, if encountered, were identified and surveyed using a Global Positioning System (GPS) unit. The GPS flag points are then converted into a shape

file which is then displayed using Geographic Information Systems (GIS) technology to create a graphic showing the site resources. The open water areas are then calculated using the GIS area utility.

4.0 SITE DESCRIPTION

4.1 Physical Characteristics and Land Use

The project area's northern boundary borders Sawmill Road located northwest of the town of Pinckneyville, which is in Perry County, Illinois (Figures, Drawing No. B19-525-A2). The Project is considered to be within the Midwest region (LRR M) subregion per the *Midwest Regional Supplement* (v 2.0) (2010). It is generally characterized as slightly hilly terrain that is largely cropland, with lesser acreages of deciduous forest, and even less acreage of woody wetlands. The area has a history of farming. Current land use is predominantly cropland, deciduous forest, and woody wetlands.

4.2 Drainage and Topography

Swanwick Creek flows through the southwest corner of the project area (Figures, Drawing No. B19-525-A2). Drainage of the project area occurs primarily through unnamed tributaries of Swanwick Creek, which flow into Swanwick Creek. Swanwick Creek flows into Beaucoup Creek, which flows into the Big Muddy River (TNW). The Big Muddy River flows into the Mississippi River (TNW).

The project area consists primarily of gently sloping hills, farmland, and flood plains. The undulating topography present in the project area is characteristic of till plains and ground moraines, which compose a sizable portion of the project area (see Table 1: Soils Table). Evidence of sheet flow, discontinuous channels, and erosional features, such as gullies, are present in the project area.

4.3 Soils

The soils mapped within the project area consist of eleven (11) soil map units within Perry County (Table 1) (Drawing No. B19-525-A6). Refer to Appendix D, "Natural Resources Conservation Service Soil Report" for additional detail.

Table 1: Soil Map Units Found Within Project Area

Map Symbol	Soil Name	Slope	Hydrologic Soil Group	Landform	Drainage Class	Ponding	Flooding
5C3	Blair silty clay loam	5-10%	C/D	Hillslopes	Somewhat poorly drained	None	None
7D3	Atlas silty clay loam	10-18%	D	Till plains	Somewhat poorly drained	None	None

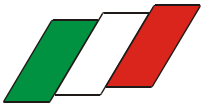
Map Symbol	Soil Name	Slope	Hydrologic Soil Group	Landform	Drainage Class	Ponding	Flooding
8F	Hickory silt loam	18-35%	B	Ground Moraines	Well-drained	None	None
8F3	Hickory clay loam	18-35%	B	Ground Moraines	Well-drained	None	None
13A	Bluford silt loam	0-2%	C/D	Ground Moraines	Somewhat poorly drained	None	None
13B	Bluford silt loam	2-5%	C/D	Ground Moraines	Somewhat poorly drained	None	None
14B	Ava silt loam	2-5%	C	Ridges	Moderately well-drained	None	None
14C3	Ava silty clay loam	5-10%	C	Till Plains	Moderately well-drained	None	None
929D3	Hickory-Ava silty clay loam	10-18%	B	Till Plains	Well-drained	None	None
3108A	Bonnie silt loam	0-2%	C/D	Flood Plains	Poorly drained	Frequent	Frequent
3382A	Belknap silt loam	0-2%	B/D	Flood Plains	Somewhat poorly drained	None	Frequent

5.0 STREAM DELINEATION

Alliance conducted the delineation in December of 2019 and January – February of 2020 in order to determine and quantify the potential stream resources within the project boundary for this jurisdictional determination. Potential streams were delineated within the project area. However, delineations exceeded the project area. The total linear footage of stream that was delineated was 22,871, which includes 11,355 lf of jurisdictional stream and 11,516 lf of likely non-jurisdictional streams. This large amount of non-jurisdictional stream channel is due to the June 22, 2020 Navigable Water Protection Rule making all ephemeral streams non-jurisdictional. Additionally, 722 lf of discontinuous channel was delineated. Five (5) potentially jurisdictional streams were found in the area of interest (Figures, Drawing No. B19-525-A1). All delineated potential stream resources and more information is included in the table below.

Table 2: Stream Resources Delineated

Stream ID	Stream Name	Length (L.F.)	Stream Hydrology Type	Corps Jurisdictional Determination (Yes or No)	Waters Type	PER	INT	EPH
Swanwick Creek	Swanwick Creek	2515	Perennial	Yes	RPW	2515		
C1	UNT of Swanwick Creek	957	Intermittent	Yes	RPW		957	
C1	UNT of Swanwick Creek	971	Ephemeral	No	NRPW			971
C2	UNT of Swanwick Creek	3004	Intermittent	Yes	RPW		3004	
C3	UNT of Swanwick Creek	1969	Intermittent	Yes	RPW		1969	
LT1 of C1	UNT of UNT of Swanwick Creek	1158	Ephemeral	No	NRPW			1158
RT1 of C2	UNT of UNT of Swanwick Creek	660	Ephemeral	No	NRPW			660
RT1 of RT1 of C2	UNT of UNT of UNT of Swanwick Creek	530	Ephemeral	Yes	NRPW			530
RT2 of C2	UNT of UNT of Swanwick Creek	455	Ephemeral	No	NRPW			455
RT-3 of C2	UNT of UNT of Swanwick Creek	110	Ephemeral	No	NRPW			110
RT4 of C2	UNT of UNT of Swanwick Creek	121	Ephemeral	No	NRPW			121
RT5 of C2	UNT of UNT of Swanwick Creek	664	Ephemeral	No	NRPW			664
LT1 of C2	UNT of UNT of Swanwick Creek	585	Ephemeral	No	NRPW			585
LT-2 of C2	UNT of UNT of Swanwick Creek	39	Ephemeral	No	NRPW			39
RTA of C3	UNT of UNT of Swanwick Creek	493	Ephemeral	No	NRPW			493
RT1 of C3	UNT of UNT of Swanwick Creek	2910	Intermittent	Yes	RPW		2910	
RT1 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	279	Ephemeral	No	NRPW			279
RT2 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	285	Ephemeral	No	NRPW			285
RT3 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	292	Ephemeral	No	NRPW			292
RT4 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	316	Ephemeral	No	NRPW			316



Stream ID	Stream Name	Length (L.F.)	Stream Hydrology Type	Corps Jurisdictional Determination (Yes or No)	Waters Type	PER	INT	EPH
RT5 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	275	Ephemeral	No	NRPW			275
RT5 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	133	Ephemeral	No	NRPW			133
RT1 of RT5 of RT1 of C3	UNT of UNT of UNT of UNT of Swanwick Creek	357	Ephemeral	No	NRPW			357
LT1 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	341	Ephemeral	No	NRPW			341
LT1 of LT1 of RT1 of C3	UNT of UNT of UNT of UNT of Swanwick Creek	206	Ephemeral	No	NRPW			206
LT2 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	250	Ephemeral	No	NRPW			250
LT3 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	97	Ephemeral	No	NRPW			97
LT3 of RT1 of C3 (Discontinuous Channel)		41	-	No				
LT4 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	113	Ephemeral	No	NRPW			113
LT4 of RT1 of C3 (Discontinuous Channel)		127	-	No				
LT5 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	164	Ephemeral	No	NRPW			164
LT5 of RT1 of C3 (Discontinuous Channel)		94	-	No				
LT6 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	188	Ephemeral	No	NRPW			188
LT6 of RT1 of C3 (Discontinuous Channel)		87	-	No				
LT7 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	98	Ephemeral	No	NRPW			98
LT7 of RT1 of C3 (Discontinuous Channel)		142	-	No				

Stream ID	Stream Name	Length (L.F.)	Stream Hydrology Type	Corps Jurisdictional Determination (Yes or No)	Waters Type	PER	INT	EPH
LT8 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	430	Ephemeral	No	NRPW			430
LT9 of RT1 of C3	UNT of UNT of UNT of Swanwick Creek	49	Ephemeral	No	NRPW			49
RT1 of LT2 of RT1 of C3	UNT to UNT of UNT of UNT of Swanwick Creek	111	Ephemeral	No	NRPW			111
RT2 of C3	UNT of UNT of UNT of Swanwick Creek	338	Ephemeral	No	NRPW			338
RT2 of C3 (Discontinuous Channel)		115	-	No				
RT3 of C3	UNT of UNT of UNT of Swanwick Creek	378	Ephemeral	No	NRPW			378
RT3 of C3 (Discontinuous Channel)		116	-	No				
LT1 of RT3 of C3	UNT of UNT of UNT of UNT of Swanwick Creek	180	Ephemeral	No	NRPW			180
RT4 of C3	UNT of UNT of UNT of Swanwick Creek	198	Ephemeral	No	NRPW			198
LT1 of C3	UNT of UNT of UNT of Swanwick Creek	208	Ephemeral	No	NRPW			208
LT2 of C3	UNT of UNT of UNT of Swanwick Creek	268	Ephemeral	No	NRPW			268
LT3 of C3	UNT of UNT of UNT of Swanwick Creek	41	Ephemeral	No	NRPW			41
LT4 of C3	UNT of UNT of UNT of Swanwick Creek	190	Ephemeral	No	NRPW			190
RT1 of LT4 of C3	UNT of UNT of UNT of UNT of Swanwick Creek	45	Ephemeral	No	NRPW			45
Total Per Stream Type						2515	8840	11516
Total Length of Delineated Streams						22,871		
Total Length of Jurisdictional Streams						11,355		
Total Length of Non-Jurisdictional Streams (Excluding Discontinuous Channel)						11,516		
Total Length of Discontinuous Channel						722		

6.0 WETLAND DELINEATION

Alliance personnel conducted wetland investigations in December of 2019 and January-February of 2020, in order to determine the presence of and delineate the boundaries for any potential wetland resources within the project area. The *US Army Corps of Engineers 1987 Wetland Delineation Manual* was utilized for guidance in determining potential wetland resources as jurisdictional. During this investigation nine (9) potential wetland resources were identified. Of the nine (9) potential wetland resources identified, four (4) were determined to be preliminary jurisdictional wetlands, four (4) were considered vegetated swales, and one (1) was classified as a farmed wetland. Swales were considered "generally shallow features in the landscape that may convey water across upland areas during or following storm events" per the 2007 *USACE Jurisdictional Determination Guidebook.* The farmed wetland identified within the project area was classified as such based on the continued use of the area for farming since at least 1981. Please note that the U.S.D.A – Soil Conservation Service report documenting a total of 18.7 acres of farmed wetland has been provided within Appendix C. This information indicates that the wetland in question has been farmed continuously since 1981.

All the potential wetlands, vegetated swales, and farmed wetlands within the project area can be found in the "Figures" on Drawing No. B19-525-A1 entitled "Stream and Wetland Delineation Map". As shown on this map, there is one potential wetland (Wetland 1) that is adjacent to the project boundary but does not occur within the project area. Please note that this was determined only after the completion of a property boundary survey for the property and therefore Wetland 1 has been removed from further discussion. Please note that this was determined only after the completion of a property boundary survey; therefore, Wetland 1 has been removed from further discussion. Accordingly, only the three (3) potential wetlands that were identified and delineated within the project area will be discussed further.

The identified potential wetlands were found to consist of the following wetland habitat type per the classification system developed by Cowardin et al. (1979) for wetland classification:

- **Palustrine Persistent Emergent (PEM) Wetland Habitat** is characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens and includes a vast array of grass-like plants, true grasses, and broad-leaved plants (Cowardin, et al., 1979).
- **Palustrine Forested (PFO) Wetland Habitat** is characterized by woody vegetation that is six meters tall or taller and normally possesses an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer (Cowardin, et al., 1979).
-

Table 3: Wetland Resources Delineated

Wetland ID	Estimated Size (Ac.)	Description	Receiving Waters	Hydrologic Connection	Likely Waters of the U.S.
Wetland 1	*Wetland located off-site -Removed from reporting*				
Wetland 2	*0.452*	**PEM**	RT1 of C3	*Abutting*	*Yes*

Wetland ID	Estimated Size (Ac.)	Description	Receiving Waters	Hydrologic Connection	Likely Waters of the U.S.
Vegetated Swale 1	*0.814*	-	LT1 of C2; C2	*Abutting*	*No*
Vegetated Swale 2	*0.685*	-	RT1 of C2; RT1 of RT1 of C2	*Abutting*	*No*
Wetland 5	*0.066*	-	RT3 of C2	*Adjacent*	*No*
Wetland 6	*14.655*	**PFO**	Swanwick Creek	*Abutting*	*Yes*
Farmed Wetland	*5.284*	-	RTA of C3	*Adjacent*	*No*
Vegetated Swale 3	*0.880*	-	LT1 of C1	*Abutting*	*No*
Vegetated Swale 4	*0.362*	-	C1	*Abutting*	*No*
Total	*23.201*				

7.0 OPEN WATER

Alliance surveyed the project area for areas that are considered "open water" by the USACE. For this project, open water was considered "*an area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark, where aquatic vegetation is either non-emergent, sparse, or absent*". No open water areas were identified within the study area.

8.0 POTENTIAL JURISDICTION

The majority of potential streams and wetlands found in the project area are likely to be jurisdictional. However, discontinuous channels, vegetated swales, and the farmed wetland area are likely to be considered non-jurisdictional. The table below summarizes the total linear feet of stream identified, as well as acreage of identified wetlands located within and adjacent to the project area. Discontinuous channels, vegetated swales, and the farmed wetland area were included as non-jurisdictional resources. No open water resources were identified in the area of interest.

Table 4: Ecological Resources Table

Feature	Total	Area of Investigation Totals
Jurisdictional Streams (L.F.)	11,355	*23,593*
Non-Jurisdictional Streams (L.F.)	11,516	
Discontinuous Channel	722	
Jurisdictional Wetlands (Ac.)	15.107	*23.201*
Non-Jurisdictional Wetlands (Ac.)	8.094	
Jurisdictional Open Waters (Ac.)	0	*0*
Non-Jurisdictional Open Waters (Ac.)	0	

9.0 CLOSING

In closing, we trust that this letter report and supporting data are adequate for your needs at this

time. The findings discussed herein document the conditions found at the time of the survey. The services performed for this project were performed with the care and skill ordinarily exercised by reputable members of the profession practicing under similar conditions, at the same time, and the same or similar locality. No other warranty, expressed or implied, is made or intended by the rendition of these consulting services or by furnishing oral or written reports of the findings made. This report has been prepared for the exclusive use of Lyme Illinois Mitigation Holdings LLC.

Respectfully submitted,

ALLIANCE CONSULTING, INC.

Randi Gabbert
Staff Scientist

Braden A. Hoffman
Senior Project Scientist

RG/BAH:rg/kjs

Enclosures

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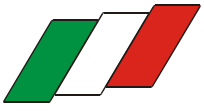


LIST OF FIELD INVESTIGATORS

Daniel Brady, M.S. – Staff Scientist
Daniel is a Staff Scientist with Alliance Consulting, Inc. He attended Marshall University where he obtained a Bachelor of Science in Environmental Science in 2009 and a Master of Science in Environmental Science in 2018. He became certified to identify North American Aquatic Insects (Family Level) in 2018. He has experience with the *1987 Army Corps of Engineers Wetland Delineation Manual* and the *Eastern Mountain and Piedmont regional supplement*, as well as, the *Midwest regional supplement*. He has received field training in stream and wetland delineation from the staff at Alliance Consulting, Inc, as well as training in wetland delineations via Swamp School in 2019.

Randi Gabbert, B.S. – Staff Scientist
Randi is a staff scientist with Alliance Consulting, Inc. She graduated from Concord University in 2017. She obtained a Bachelor of Science in Environmental Geoscience with concentrations in biology and physics. She has experience with the *1987 Army Corp of Engineers Wetland Delineation Manual* as well as the *Eastern Mountain and Piedmont Regional Supplement* and *Midwest Regional Supplement*. She has received field training in stream and wetland delineations from the staff at Alliance Consulting, Inc., as well as formal training in wetland delineations via Swamp School (2019).

Alex Patterson, B.S. – Staff Scientist
Alex is a Staff Scientist with Alliance Consulting, Inc. He attended Frostburg State University where he graduated with a Wildlife and Fisheries degree in 2015. He has received extensive training in the use of the *1987 Army Corps of Engineers Wetland Delineation Manual* from the Swamp School, 2015, as well as field training with Alliance staff. He has experience with the *Eastern Mountain and Piedmont Regional Supplement* as well as the *Midwest Regional Supplement.*

Christopher Waldeck, M.S. – Staff Scientist
Christopher is a staff scientist with Alliance Consulting, Inc. He attended Marshall University where he graduated with an Environmental Science Bachelor's Degree and an Integrated Science and Technology minor in 2017. He obtained an Environmental Science Master's Degree in 2019. He has received field training in the use of the *1987 Army Corps of Engineers Wetland Delineation Manual* and the *Eastern Mountains and Piedmont Regional Supplement* as well as the *Midwest Regional Supplement.*

APPENDIX A

REPRESENTATIVE SITE OVERVIEW PHOTOS

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of C1 Viewing Upstream

Representative Photo of C1 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of C2 Viewing Upstream

Representative Photo of C2 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of C3 Viewing Upstream

Representative Photo of C3 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of RT1 of C3 Viewing Upstream

Representative Photo of RT1 of C3 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of RT1 of C2 Viewing Upstream

Representative Photo of RT1 of C2 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of LT1 of C3 Viewing Upstream

Representative Photo of LT1 of C3 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Representative Photo of LT2 of RT1 of C3 Viewing Upstream

Representative Photo of LT2 of RT1 of C3 Viewing Downstream

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Wetland 1 – Overview Facing West

Wetland 2 – Overview Facing West

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Vegetated Swale 1 – Overview Facing West

Vegetated Swale 2 – Overview Facing West

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Wetland 6 - Overview

Wetland 6A - Overview

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Wetland 6B - Overview

Wetland 6C - Overview

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Wetland 6D - Overview

Wetland 6E - Overview

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Farmed Wetland - Overview

Farmed Wetland – Soil

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Farmed Wetland 7A - Soil

Farmed Wetland 7A -Overview

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Farmed Wetland 7B - Overview

Farmed Wetland 7B - Soil

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Farmed Wetland 7C - Overview

Farmed Wetland 7C - Soil

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Farmed Wetland 7D - Overview

Farmed Wetland 7D - Soil

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Site Overview Photos

Vegetated Swale 3 - Overview

Vegetated Swale 4 – Overview

APPENDIX B

WETLAND DETERMINATION FORMS

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Upland 1 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: _____ State: IL Sampling Point: _____

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex

Slope (%): 10-18 Lat: 38.199238 Long: -89.443133 Datum: NAD 27

Soil Map Unit Name: 7D3 - Atlas silty clay loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Reference for Wetlands 1 & 2

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Elymus canadensis*	50	Y	FACU
2. *Stellaria media*	20	Y	FACU
3. *Xanthium strumarium*	10	N	FAC
4. *Echinochloa frumentacea*	5	N	FACU
5. *Panicum capillare*	5	N	FAC
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	90 (A)		345 (B)

Prevalence Index = B/A = 3.83

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

P. 415-419: Soil, N, E, S, W

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/2	100			C	PL	->	silty clay loam
4-16	7.5 YR 4/6	100			C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Upland 2 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: _____ State: IL Sampling Point: _____

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex

Slope (%): 2-5 Lat: 38.200664 Long: -89.447260 Datum: NAD 27

Soil Map Unit Name: 13B - Bluford silt loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Reference for Wetlands 3 & 4

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Elymus canadensis*	90	Y	FACU
2. *Stellaria media*	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals:	95 (A)		380 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

P. 426-430: Soil, N, E, S, W

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/3	100			C	PL	clay loam	
4-16	7.5 YR 4/6	100			C	PL	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Upland 3 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: _____ State: IL Sampling Point: _____

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex

Slope (%): 2-5 Lat: 38.198866 Long: -89.450890 Datum: NAD 27

Soil Map Unit Name: 13B - Bluford silt loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Reference for Wetland 5

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Elymus canadensis*	88	Y	FACU
2. *Stellaria media*	10	N	FACU
3. *Xanthium strumarium*	2	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	98	x 4 =	392
UPL species	0	x 5 =	0
Column Totals:	100 (A)		398 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

P. 443-447: Soil, N, E, S, W

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/4	100			C	PL	silt loam	
6-16	7.5 YR 4/6	100			C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 Swanwick Creek Upland 4 City/County: Perry Sampling Date: 2-25-2020

Applicant/Owner: _____ State: IL Sampling Point: UPL-4

Investigator(s): AP, CW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 0-20 Lat: 38.200146 Long: -89.449503 Datum: NAD 83

Soil Map Unit Name: _____ NWI or WWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. N/A			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3. N/A			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. *Agrostis perennas*	70	Y	FAC
2. *Andropogon virginicus*	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. N/A			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	100 (A)		330 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPL-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/4	100					Loam	
5-10	10YR 5/8	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Wetland 1 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: _____ State: IL Sampling Point: _____

Investigator(s): DB; MW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 38.200454 Long: -89.443532 Datum: NAD 27

Soil Map Unit Name: 3382A - Belknap silt loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	12	Y	FACW
2. *Quercus palustris*	4	Y	FACW
3. *Quercus velutina*	2	N	NI
4.			
5.			
	18	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Platanus occidentalis*	15	Y	FACW
2. *Acer saccharinum*	5	Y	FACW
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	93	Y	FACW
2. *Leersia virginia*	5	N	FACW
3. *Crataegus marshalli*	2	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	136	x 2 =	272
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	136 (A)		272 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

P. 409-414: Soil, N, E, S, W, Pit

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 5/1	98	7.5 YR 4/6	2	C	PL	->	silty clay loam
6-16	10 YR 4/1	97	7.5 YR 4/4	3	C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 0-3

Water Table Present? Yes X No _____ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0-16

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 1 – Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Wetland 2 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: Lyme Mitigation State: IL Sampling Point:

DB; MW Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave

Slope (%): 10-18 Lat: 38.194784 Long: - 89.442803 Datum: NAD 27

Soil Map Unit Name: 929D3 - Hickory-Ava silty clay loams NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Platanus occidentalis*	20	Y	FACW
2. *Acer negundo*	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Typha latifola*	85	Y	OBL
2. *Leersia virginia*	15	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	35	x 2 =	70
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	125 (A)		170 (B)

Prevalence Index = B/A = 1.36

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

P. 371-375: Soil, N, E, S, W

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 4/2	98	7.5 YR 3/4	2	C	PL	silty clay loam	
6-16	10 YR 5/1	95	7.5 YR 3/4	5	C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 0-2

Water Table Present? Yes X No _____ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0-16

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 2 – Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek - Wetland 5 City/County: Perry Sampling Date: 02/06/2020

Applicant/Owner: State: IL Sampling Point:

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): hillslope (toeslope) Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 38.198573 Long: -89.450333 Datum: NAD 27

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Acer saccharinum*	15	Y	FACW
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	85	Y	FACW
2. *Leersia virginia*	15	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	115	x 2 =	230
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	115 (A)		230 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

P. 437-442: Soil, N, E, S, W, Pit

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 5/2	98	7.5 YR 4/4	2	C	PL	silt loam	
4-16	10 YR 5/1	95	7.5 YR 3/4	5	C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 0-1

Water Table Present? Yes X No _____ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0-16

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek Wetland 6 City/County: Perry Sampling Date: 2/25/2020

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL-6

Investigator(s): AP, CW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 38.195746 Long: -89.451168 Datum: NAD 83

Soil Map Unit Name: NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus palustris*	30	Y	FACW
2. *Quercus pagoda*	30	Y	FACW
3. *Liriodendron tulipifera*	20	Y	FACU
4. *Carya ovata*	10	N	FACU
5.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus serrulata*	30	Y	OBL
2. *Quercus palustris*	20	Y	FACW
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex lurida*	20	Y	OBL
2. *Echinochloa muricata*	30	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	190 (A)		360 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	90	10YR 6/8	10	C	PL	Clay/Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6 - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek City/County: Perry Sampling Date: 2-25-2020

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: PCF - 1

Investigator(s): AP,CW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 38.196212 Long: -89.450015 Datum: NAD 83

Soil Map Unit Name: NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

P15-19 NESW and Soil

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. *N/A*			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix nigra*	30	Y	OBL
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex lurida*	20	Y	OBL
2. *Echinochloa muricata*	20	Y	OBL
3. *Juncus effusus*	20	Y	OBL
4. *Xanthium strumarium*	30	Y	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. *N/A*			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		180 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: PCF - 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	90	10YR 6/8	10	C	PL	Clay/loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek City/County: Perry Sampling Date: 02/06/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: VS - 1

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 38.200755 Long: -89.446468 Datum: NAD 27

Soil Map Unit Name: 3108A - Bonnie Silt Loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Acer negundo*	10	Y	FAC
2. *Acer saccharinum*	2	N	FACW
3.			
4.			
5.			
	12 = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	90	Y	FACW
2. *Leersia virginia*	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	102	x 2 =	204
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	117 (A)		249 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: VS - 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 4/1	97	7.5 YR 3/4	3	C	PL	Silt Loam	
6-16	10 YR 5/1	95	7.5 YR 4/4	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-3

Water Table Present? Yes X No ___ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Vegetated Swale 1 – Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 - Swanwick Creek City/County: Perry Sampling Date: 02/06/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: VS - 2

Investigator(s): DB; MW Section, Township, Range: 8, 4S, 3W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 38.200737 Long: -89.447841 Datum: NAD 27

Soil Map Unit Name: 3108A - Bonnie Silt Loam NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (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 X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			NI
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Acer negundo*	2		FACW
2. *Acer saccharinum*	10	Y	FACW
3. *Platanus occidentalis*	2	N	FAC
4.			
5.			
	14 = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	88	Y	FACW
2. *Leersia virginia*	10	N	FACW
3. *Glechoma hederacea*	2	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	110	x 2 =	220
FAC species	2	x 3 =	6
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	114 (A)		234 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: VS - 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/1	98	7.5 YR 3/4	2	C	PL	Silt Loam	
4-16	10 YR 5/1	95	7.5 YR 3/3	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-4

Water Table Present? Yes X No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Vegetated Swale 2 – Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 Swanwick Creek City/County: Perry Sampling Date: 2-25-2020

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: VS - 3

Investigator(s): AP, CW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave

Slope (%): 0-5 Lat: 38.200491 Long: -89.450247 Datum: NAD 83

Soil Map Unit Name: NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

P23-29 NESW Soil

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. *N/A*			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3. *N/A*			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. *Echinochloa muricata*	30	Y	OBL
2. *Phragmites australis*	70	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. *N/A*			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: VS - 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	85	10YR 6/8	15	C	PL	Clay/Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Vegetated Swale 3 – Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760 Swanwick Creek City/County: Perry Sampling Date: 2-25-2020

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: VS-4

Investigator(s): AP, CW Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave

Slope (%): 0-5 Lat: 38.200937 Long: -89.451437 Datum: NAD 83

Soil Map Unit Name: NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. N/A			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3. N/A			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. *Xanthium strumarium*	20	Y	FAC
2. *Echinochloa muricata*	20	Y	OBL
3. *Carex lurida*	20	Y	OBL
4. *Elymus virginicus*	20	Y	FACW
5. *Polygonum pensylvanicum*	20	Y	FACW
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. N/A			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	40	x 2 =	80
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		180 (B)

Prevalence Index = B/A = 1.80

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: VS-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	90	10YR 6/8	10	C	PL	Clay/ Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Vegetated Swale 4 – Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL6-A

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.194886 Long: -89.450733 Datum: NAD 83

Soil Map Unit Name: 3328A - Belknap silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	30	Y	FAC
2. *Carya glabra*	10	Y	FACU
3.			
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	= Total Cover	
Herb Stratum (Plot size: ____)			
1. *Geum vernum*	25	Y	FACU
2. *Impatiens capensis*	25	Y	FACW
3. *Rudbeckia lacinata*	20	Y	FACW
4. *Allium vineale*	15	N	FACU
5. *Elymus virginicus*	15	N	FACW
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	30	x 3 =	90
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	140 (A)		410 (B)

Prevalence Index = B/A = 2.93

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL6-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 6/1	97	7.5 YR 3/4	3	C	M	Silty clay loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6A - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL6-B

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.194886 Long: -89.450733 Datum: NAD 83

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	10	Y	FAC
2. *Carya glabra*	10	Y	FACU
3. *Celtis occidentalis*	5	Y	FAC
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. *Impatiens capensis*	25	Y	FACW
2. *Utica dioica*	25	Y	FACW
3. *Geum vernum*	20	Y	FACU
4. *Dichanthelium clandestinum*	15	N	FACW
5. *Rudbeckia lacinata*	10	N	FACW
6. *Elymus virginicus*	5	N	FACW
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	15	x 3 =	45
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	125 (A)		325 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 181-182; Soil, Overview.

SOIL

Sampling Point: WL6-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/2	98	7.5 YR 4/4	2	C	M	Silty clay loa	
4-14	10 YR 5/1	90	7.5 YR 3/3	10	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6B - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL6-C

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.197892 Long: -89.450527 Datum: NAD 83

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	20	Y	FAC
2. *Acer negundo*	15	Y	FAC
3.			
4.			
5.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. *Urtica dioica*	35	Y	FACW
2. *Impatiens capensis*	25	Y	FACW
3. *Geum vernum*	15	N	FACU
4. *Rosa palustris*	15	N	OBL
5. *Rudbeckia lacinata*	10	N	FACW
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	70	x 2 =	140
FAC species	35	x 3 =	105
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	135 (A)		320 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 185-186; Soil, Overview.

SOIL

Sampling Point: WL6-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 6/1	95	10 YR 3/4	5	C	M	Silty clay loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6C - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL6-D

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.197824 Long: -89.451389 Datum: NAD 83

Soil Map Unit Name: 3382A - Belknap silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya glabra*	25	Y	FACU
2. *Betula nigra*	10	Y	FACW
3. *Celtis occidentalis*	10	Y	FAC
4.			
5.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	= Total Cover	
Herb Stratum (Plot size: ____)			
1. *Geum vernum*	25	Y	FACU
2. *Impatiens capensis*	25	Y	FACW
3. *Rudbeckia lacinata*	20	Y	FACW
4. *Solidago gigantea*	15	N	FACW
5. *Urtica dioica*	15	N	FACW
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	10	x 3 =	30
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	145 (A)		400 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 187-188; Soil, Overview.

SOIL

Sampling Point: WL6-D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 5/1	90	7.5 YR 5/6	10	C	M	Silty clay loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6D - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: WL6-E

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.197128 Long: -89.451696 Datum: NAD 83

Soil Map Unit Name: 3382A - Belknap silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (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 X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Celtis occidentalis*	5	Y	FAC
3.			
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. *Geum vernum*	35	Y	FACU
2. *Solidago gigantea*	25	Y	FACW
3. *Urtica dioica*	25	Y	FACW
4. *Elymus virginicus*	15	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	65	x 2 =	130
FAC species	25	x 3 =	75
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	125 (A)		345 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 189-190; Soil, Overview.

SOIL

Sampling Point: WL6-E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 6/1	95	7.5 YR 3/3	5	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Swanwick Creek Mitigation Bank
Lyme Illinois Mitigation Holdings LLC
Representative Wetland Soil Photo

Wetland 6E - Soil

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: PCF-A

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.197279 Long: -89.449938 Datum: NAD 83

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Area has been recently tilled and planted with soy beans

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxanus pennsylvanica*	30	Y	FACW
2.			
3.			
4.			
5.			
	30 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Scirpus atrovirens*	40	Y	OBL
2. *Carex vulpinoidea*	30	Y	FACW
3. *Schedonorus pratensis*	15	N	FACU
4. *Solidago gigantea*	15	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	130 (A)		250 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 173-174; Soil, Overview.

SOIL

Sampling Point: PCF-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 5/2	98	7.5 YR 4/6	2	C	M	Clay loam	Recently tilled
4-14	10 YR 4/1	93	7.5 YR 4/4	7	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: PCF-B

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.197256 Long: -89.448997 Datum: NAD 83

Soil Map Unit Name: 14B - Ava silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Area has been recently tilled and planted with soy beans.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Scirpus atrovirens*	25	Y	OBL
2. *Pilea pumila*	15	Y	FACW
3. *Schedonorus pratensis*	15	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	55 (A)		115 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 175-176; Soil, Overview.

SOIL

Sampling Point: PCF-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/2	100					Silty clay loam	
4-14	10 YR 5/1	98	7.5 YR 3/4	2	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: PCF-C

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.196321 Long: -89.449200 Datum: NAD 83

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Area has been recently tilled and planted with soy beans, significantly altering vegetation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Glycine max*	20	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 177-178; Soil, Overview.

SOIL

Sampling Point: PCF-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/2	98	7.5 YR 4/4	2	C	M	Clay loam	Recently tilled
4-14	10 YR 4/1	90	7.5 YR 4/4	10	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: B19-525-1760/Swanwick Creek Mitigation Bank City/County: Perry Sampling Date: 06/18/20

Applicant/Owner: Lyme Mitigation Holdings LLC State: IL Sampling Point: PCF-D

Investigator(s): Daniel Brady; Youssef Tajdin Section, Township, Range: 9, 4S, 3W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None

Slope (%): 0-2 Lat: 38.195774 Long: -89.449873 Datum: NAD 83

Soil Map Unit Name: 3108A - Bonnie silt loam NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Area has been recently tilled and planted with soy beans.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxanus pennsylvanica*	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Carex vulpinoidea*	15	Y	FACW
2. *Carex lurida*	10	Y	OBL
3. *Scirpus atrovirens*	10	Y	OBL
4. *Alisma subcordatum*	5	N	OBL
5. *Schedonorus pratensis*	5	N	FACU
6. *Trifolium repens*	5	N	FACU
7.			
8.			
9.			
10.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	55 (A)		105 (B)

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Pic #: 179-180; Soil, Overview.

SOIL

Sampling Point: PCF-D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 7/1	99	7.5 YR 4/3	1	C	M	Silty clay loa	
3-14	10 YR 6/1	95	7.5 YR 4/6	5	C	M	Silty clay loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C

U.S.D.A. FARMED WETLAND SUPPORTING DATA

USDA United States Department of Agriculture

Perry County, Illinois

WAS CROPPED SINCE 1981.
THIS FIELD WAS PART OF FIELD #10.
SEPARATED DUE TO ENROLLMENT IN CONSERVATION RESERVE PROGRAM (CRP)
FILTER STRIP
EXPIRED: 2014

Common Land Unit
- Non-Cropland
- Cropland

Tract Boundary

Wetland Determination Identifiers
- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

Tract Cropland Total: 111.90 acres

2020 Program Year
Map Created January 13, 2020

Farm **229**
Tract **113**

IL145_T113

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NRCS-CPA-026E
8-95

HIGHLY ERODIBLE LAND AND WETLAND CONSERVATION DETERMINATION

Name: HABBE, R. HENRY III
Tract: 113
Opid: 229
County: Perry
Request Date:
FSA Farm No.:

Section I - Highly Erodible Land

Fields in this section have undergone a determination of whether they were highly erodible land (HEL) or not; fields for which an HEL Determination has not been completed are not listed. In order to be eligible for USDA benefits, a person must be using an approved conservation system on all HEL.

Field	HEL(Y/N)	Sodbusted(Y/N)	Acres	Determination Date
1	Y	N	23.0	02/25/94
2	Y	N	4.4	02/25/94
6	Y	N	1.1	11/21/95
7	N	N	4.5	11/23/99
8	Y	N	18.6	02/25/94
9	Y	N	12.0	05/23/95
10	Y	N	25.1	11/21/95
11 (6, 4A)	Y	N	20.9	02/25/94
12	N	N	6.0	02/25/94

Section II - Wetlands

Fields in this section have had wetland determinations completed. See the Wetlands Explanation section for additional information regarding allowable activities under the wetland conservation provisions of the Farm Bill and Section 404 of the Clean Water Act.

Field	Wetland Label	Acres	Determination Date	Certification Date

No wetland determination has been made for any land units.

Remarks
R. HENRY HABBE III REPLACED PAUL PATTON AS OPERATOR.


Please keep
T48 R3W
T109
T113
T114
T117
T118
T119
HEL
CRP
C59 #101
C200
C354AB #510
C415 #513
NOT TO SCALE
E2-2-00-25

U.S.D.A.
Soil Conservation Service

SCS-CPA-026
(5-89)

HIGHLY ERODIBLE LAND AND WETLAND CONSERVATION DETERMINATION

1. Name and Address of Person
Larry R. Thomas
Route 1 Box 168
Oakdale, IL 62268

2. Date of Request
12/89

3. County
Perry

4. Name of USDA Agency or Person Requesting Determination
USDA-SCS

5. Farm No. and Tract No.
229 T-113

SECTION 1 - HIGHLY ERODIBLE LAND

	Yes	No	Field No.(s)	Total Acres
6. Is soil survey now available for making a highly erodible land determination?				
7. Are there highly erodible soil map units on this farm?				
8. List highly erodible fields that, according to ASCS records, were used to produce an agricultural commodity in any crop year during 1981-1985.				
9. List highly erodible fields that have been or will be converted for the production of agricultural commodities and, according to ASCS records, were not used for this purpose in any crop year during 1981-1985; and were not enrolled in a USDA set-aside or diversion program.				

10. This Highly Erodible Land determination was completed in the : Office ☐ Field ☐

NOTE: If you have highly erodible cropland fields, you may need to have a conservation plan developed for these fields. For further information, contact the local office of the Soil Conservation Service.

SECTION II - WETLAND

	Yes	No	Field No.(s)	Total Wetland Acres
11. Are there hydric soils on this farm?	X			
List field number sand acres, where appropriate, for the following:				
12. Wetlands (W), including abandoned wetlands, or Farmed Wetlands (FW). Wetlands may be farmed under natural conditions. Farmed Wetlands may be farmed and maintained in the same manner as they were prior to December 23, 1985, as long as they are not abandoned.				18.6
13. Prior Converted Wetlands (PC) - The use, management, drainage, and alteration of prior converted wetlands (PC) are not subject to FSA unless the area reverts to wetland as a result of abandonment. You should inform SCS of any area to be used to produce an agricultural commodity that has not been cropped, managed, or maintained for 5 years or more.				
14. Artifical Wetlands (AW) - Artifical Wetlands includes irrigation induced wetlands. These Wetlands are not subject to FSA.				
15. Minimal Effect Wetlands (MW) - These wetlands are to be farmed according to the minimal effect agreement signed at the time the minimal effect determination was made.				
16. Converted Wetlands (CW) - In any year that an agricultural commodity is planted on these Converted Wetlands, you will be ineligible for USDA benefits. If you believe that the conversion was commenced before December 23, 1985, or that the conversion was caused by a third party, contact the ASCS office to request a commenced or third party determination.				

RECEIVED
MAR 25 2008
Perry County FSA

17. The planned alteration measures on wetlands in fields _____ are considered maintenance and are in compliance with FSA.

18. The planned alteration measures on wetlands in fields _____ are not considered to be maintenance and if installed will cause the area to become a Converted Wetland (CW). See item 16 for information on CW.

19. This wetland determination was completed in the : Office ☒ Field ☐

20. This determination was: Delivered ☐ Mailed ☒ To the Person on Date: Dec 14, 1990

NOTE: If you do not agree with this determination, you may request a reconsideration from the person that signed this form in Block 22 below. The reconsideration is a prerequisite for any further appeal. The request for the reconsideration must be in writing and must state your reasons for the request. The request must be mailed or delivered within 15 days after this determination is mailed to or otherwise made available to you. Please see reverse side of the producer's copy of this form for more information on appeals procedure.

NOTE: If you intend to convert additional land to cropland or alter any wetlands, you must initiate another Form AD-1026 at the local office of ASCS. Abandonment is where land has not been cropped, managed, or maintained for 5 years or more. You should inform SCS if you plan to produce an agricultural commodity on abandoned wetlands.

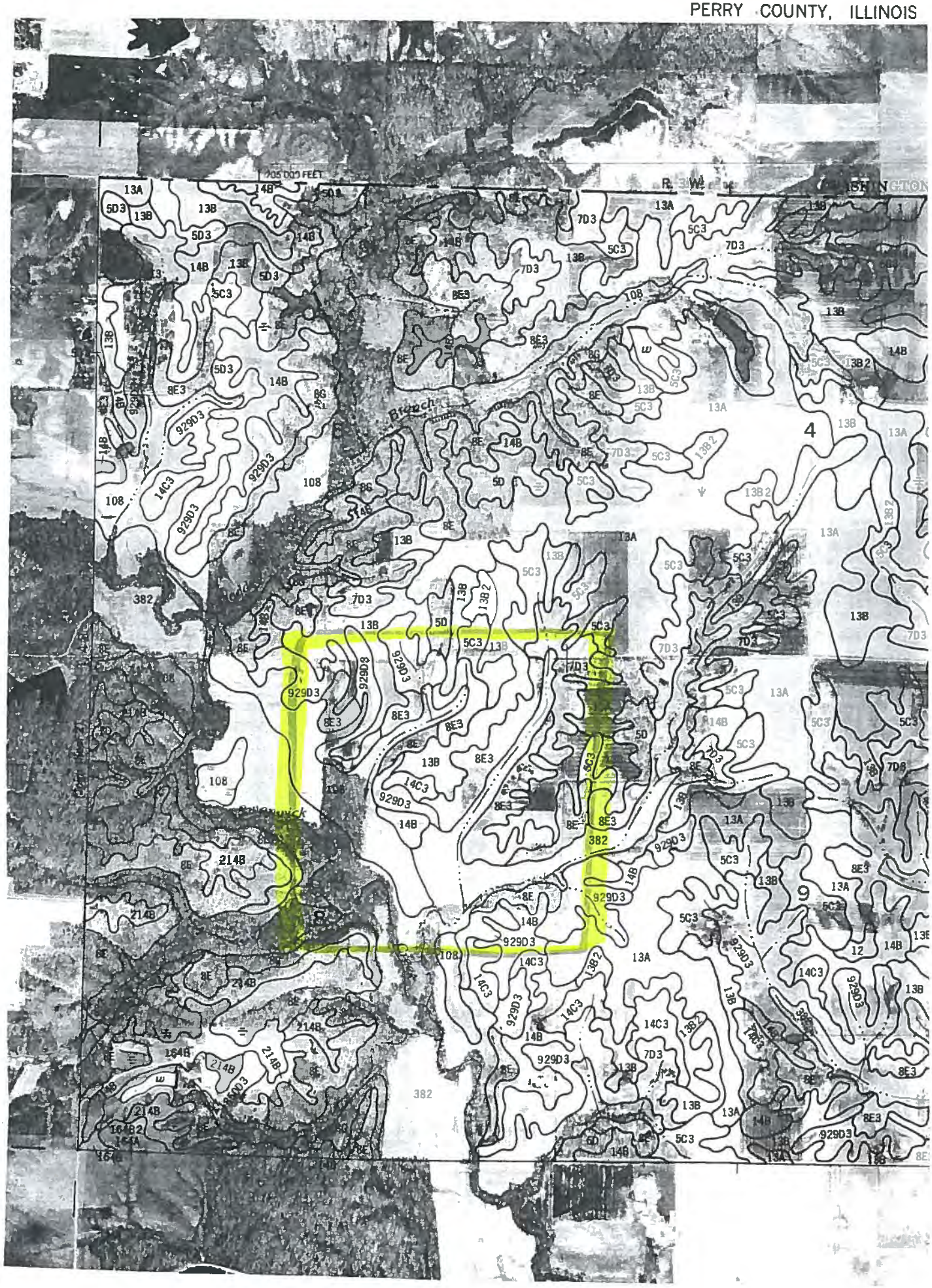
21. Remarks

22. Signature of SCS District Conservationist Robert L. Spencer

23. Date 12/14/90

Assistance and programs of the Soil Conservation Service available without regard to race, religion, color, sex, age, handicap, etc.

ASCS Copy


705 000 FEET
R. 3 W.
4
9
Branch
13A
13B
13B2
5C3
5D3
7D3
8E3
14B
14C3
929D3
108
382
214B
5D
8E
8G

APPENDIX D

NATURAL RESOURCE CONSERVATION SERVICE SOIL REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Perry County, Illinois

March 5, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

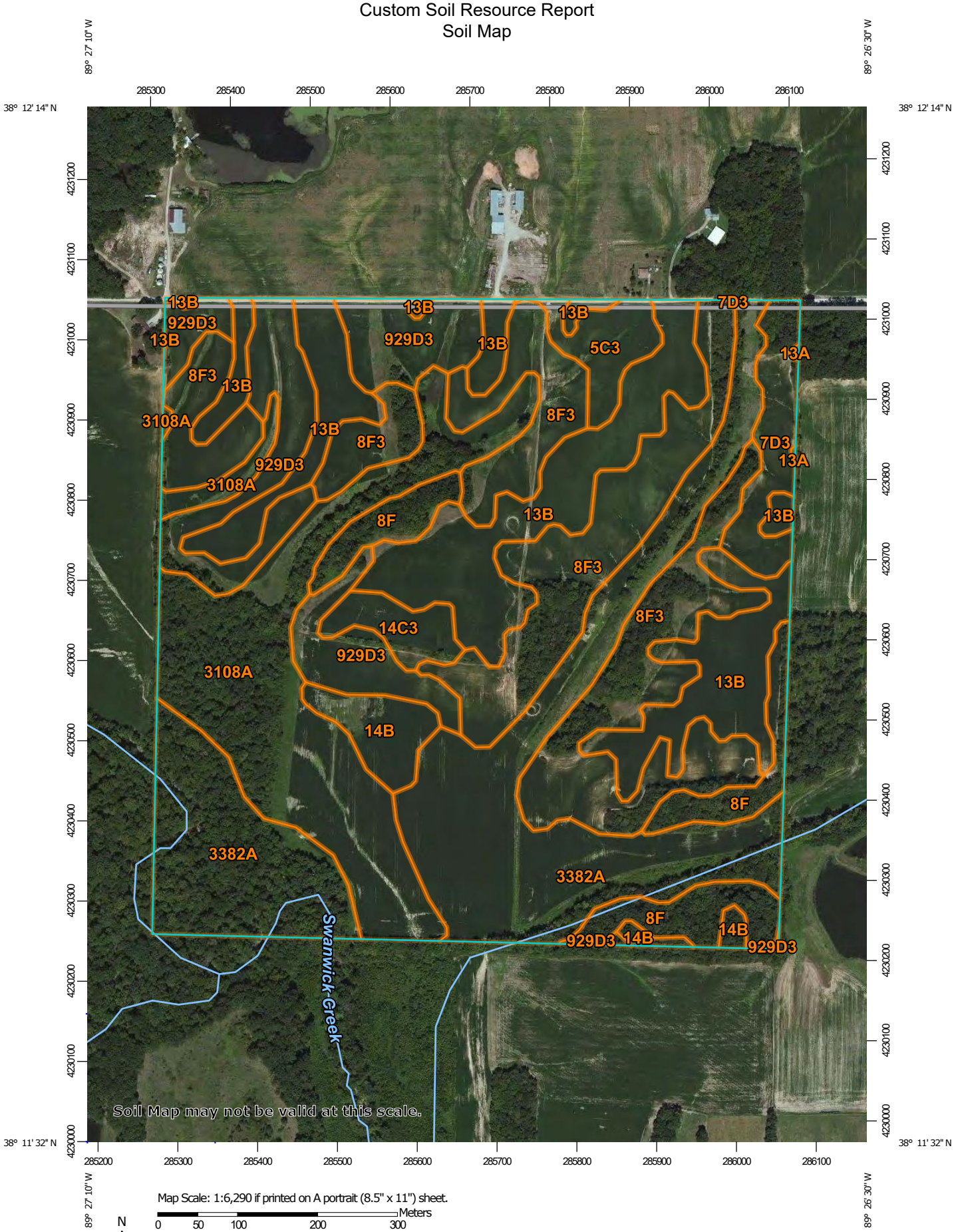
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


89° 27' 10" W
89° 26' 30" W
38° 12' 14" N
38° 11' 32" N
285300
285400
285500
285600
285700
285800
285900
286000
286100
285200
4231200
4231100
4231000
4230900
4230800
4230700
4230600
4230500
4230400
4230300
4230200
4230100
4230000
13B
929D3
5C3
7D3
13A
8F3
3108A
8F
14C3
14B
3382A
Swanwick Creek
Soil Map may not be valid at this scale.
Map Scale: 1:6,290 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
50
100
200
300
Feet
0
300
600
1200
1800
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Perry County, Illinois
Survey Area Data: Version 16, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 28, 2011—Oct 5, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5C3	Blair silty clay loam, 5 to 10 percent slopes, severely eroded	3.0	1.9%
7D3	Atlas silty clay loam, 10 to 18 percent slopes, severely eroded	4.3	2.7%
8F	Hickory silt loam, 18 to 35 percent slopes	8.2	5.2%
8F3	Hickory clay loam, 18 to 35 percent slopes, severely eroded	35.7	22.7%
13A	Bluford silt loam, 0 to 2 percent slopes	0.1	0.0%
13B	Bluford silt loam, 2 to 5 percent slopes	26.2	16.7%
14B	Ava silt loam, 2 to 5 percent slopes	3.6	2.3%
14C3	Ava silty clay loam, 5 to 10 percent slopes, severely eroded	2.4	1.6%
929D3	Hickory-Ava silty clay loams, 10 to 18 percent slopes, severely eroded	15.6	9.9%
3108A	Bonnie silt loam, 0 to 2 percent slopes, frequently flooded	23.5	14.9%
3382A	Belknap silt loam, 0 to 2 percent slopes, frequently flooded	34.7	22.1%
Totals for Area of Interest		**157.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made

up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Perry County, Illinois

5C3—Blair silty clay loam, 5 to 10 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2t964
Elevation: 330 to 840 feet
Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 54 to 58 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Blair, severely eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blair, Severely Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Silty pedisediment over till

Typical profile

Ap - 0 to 5 inches: silty clay loam
Bt - 5 to 12 inches: silty clay loam
Btg - 12 to 47 inches: silt loam
BCg - 47 to 71 inches: silt loam
2Btgb - 71 to 79 inches: clay loam

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 3.0
Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ava, eroded

Percent of map unit: 4 percent
Landform: Ridges, hillslopes
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Darmstadt, eroded

Percent of map unit: 3 percent
Landform: Ground moraines
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Belknap, frequently flooded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

7D3—Atlas silty clay loam, 10 to 18 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2tp2c
Elevation: 330 to 840 feet
Mean annual precipitation: 38 to 46 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Atlas, severely eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atlas, Severely Eroded

Setting

Landform: Till plains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: Loess over paleosol formed in till

Typical profile

Ap - 0 to 6 inches: silty clay loam
2Btg1 - 6 to 29 inches: silty clay loam
2Btg2 - 29 to 79 inches: silty clay loam

Properties and qualities

Slope: 10 to 18 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ava, eroded

Percent of map unit: 10 percent
Landform: Ridges, hillslopes
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

8F—Hickory silt loam, 18 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2yb19
Elevation: 370 to 680 feet
Mean annual precipitation: 39 to 46 inches
Mean annual air temperature: 55 to 58 degrees F
Frost-free period: 185 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Hickory and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hickory

Setting

Landform: Ground moraines
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: silt loam
E - 4 to 12 inches: loam
Bt1 - 12 to 26 inches: clay loam
Bt2 - 26 to 46 inches: clay loam
Bt3 - 46 to 60 inches: clay loam

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Ava

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Atlas, eroded

Percent of map unit: 3 percent
Landform: Ground moraines

Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Belknap, frequently flooded
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

8F3—Hickory clay loam, 18 to 35 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: 2w1yz
Elevation: 380 to 800 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 51 to 58 degrees F
Frost-free period: 170 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Hickory and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hickory

Setting
Landform: Ground moraines
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Illinois till

Typical profile
Ap - 0 to 6 inches: clay loam
Bt - 6 to 41 inches: clay loam
BC - 41 to 48 inches: clay loam
C - 48 to 60 inches: loam

Properties and qualities
Slope: 18 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Atlas

Percent of map unit: 3 percent
Landform: Ground moraines
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ava

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Marseilles

Percent of map unit: 2 percent
Landform: Ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Belknap

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

13A—Bluford silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t95c
Elevation: 360 to 840 feet
Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 53 to 58 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Bluford and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bluford

Setting

Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over mixed loess and drift

Typical profile

Ap - 0 to 7 inches: silt loam
E - 7 to 19 inches: silt loam
Btg - 19 to 35 inches: silty clay
2Btgx - 35 to 42 inches: silty clay loam
2Btg - 42 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 10 to 24 inches to abrupt textural change; 24 to 48 inches to fragipan
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Wynoose
Percent of map unit: 10 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

13B—Bluford silt loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2t95d
Elevation: 360 to 840 feet
Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 53 to 58 degrees F
Frost-free period: 175 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Bluford and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bluford

Setting
Landform: Ground moraines
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over mixed loess and drift

Typical profile
Ap - 0 to 7 inches: silt loam
E - 7 to 19 inches: silt loam
Btg - 19 to 35 inches: silty clay
2Btgx - 35 to 42 inches: silty clay loam
2Btg - 42 to 60 inches: silty clay loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: 10 to 24 inches to abrupt textural change; 24 to 48 inches to fragipan

Natural drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ava

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Wynoose

Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

14B—Ava silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t95h
Elevation: 360 to 840 feet
Mean annual precipitation: 38 to 46 inches
Mean annual air temperature: 54 to 58 degrees F
Frost-free period: 180 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ava and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ava

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over mixed loess and drift over till

Typical profile

Ap - 0 to 6 inches: silt loam
E - 6 to 14 inches: silt loam
Bt - 14 to 34 inches: silty clay loam
2Btx - 34 to 50 inches: silty clay loam
3Btb - 50 to 79 inches: loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 25 to 40 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Bluford

Percent of map unit: 10 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

14C3—Ava silty clay loam, 5 to 10 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 1j5g7
Elevation: 360 to 660 feet
Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ava, severely eroded, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ava, Severely Eroded

Setting

Landform: Till plains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Peoria and roxana loess over glacial drift

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 28 inches: silty clay loam
H3 - 28 to 64 inches: silt loam
H4 - 64 to 78 inches: silt loam

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: 25 to 40 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

929D3—Hickory-Ava silty clay loams, 10 to 18 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 1j661
Elevation: 360 to 980 feet
Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hickory, severely eroded, and similar soils: 55 percent
Ava, severely eroded, and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hickory, Severely Eroded

Setting

Landform: Till plains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

H1 - 0 to 8 inches: clay loam
H2 - 8 to 46 inches: clay loam
H3 - 46 to 58 inches: clay loam
H4 - 58 to 80 inches: loam

Properties and qualities

Slope: 10 to 18 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Ava, Severely Eroded

Setting

Landform: Till plains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Peoria and roxana loess over drift

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 28 inches: silty clay loam
H3 - 28 to 64 inches: silt loam
H4 - 64 to 78 inches: silt loam

Properties and qualities

Slope: 10 to 18 percent
Depth to restrictive feature: 25 to 40 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

3108A—Bonnie silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2tbrr
Elevation: 330 to 820 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 225 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Bonnie, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonnie, Frequently Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

Ap - 0 to 10 inches: silt loam
Cg1 - 10 to 27 inches: silt loam
Cg2 - 27 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Belknap, frequently flooded

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

3382A—Belknap silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2tbrv
Elevation: 330 to 490 feet

Mean annual precipitation: 35 to 46 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Belknap, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belknap, Frequently Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 59 inches: silt loam
Bg - 59 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 12.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Bonnie, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Piopolis, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

References

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SECTION B

SITE PLAN DRAWINGS

TABLE 01

No. of Design Channels	Weighted Average Wbkf	Weighted Average dbkf	Weighted Average W/D Ratio	Weighted Average Abkf	Weighted Average Dmax	Weighted Average Dmaxpool	Total Original Valley Length	Total Design Length	Effective (Weighted) Sinuosity (k)
12	9.91	0.77	13.16	7.83	1.08	1.79	10,519	14,260	1.39

Site	Channel Name	Wbkf	dbkf	W/D Ratio	Abkf	Dmax	Dmaxpool	Type	Valley Length	esign Lengt	Sinuosity (k)
C1	C1 R1	8.50	0.65	13.08	5.55	0.95	1.50	B5	526	619	1.18
C1	C1 R3R	8.20	0.68	12.06	5.55	0.95	1.50	C5	955	1,495	1.57
C1	LT1 of C1	7.80	0.53	14.72	4.13	0.80	1.80	B5	1,151	1,204	1.05
C2	RT1 of C2	7.80	0.53	14.72	4.13	0.80	1.80	B5	674	787	1.17
C2	T1 of RT1 of C2	7.80	0.53	14.72	4.13	0.80	1.80	B5	533	579	1.09
C2	C2 R1A	13.00	0.65	20.00	8.43	0.95	1.80	B5c	246	280	1.14
C2	C2 R1B	13.00	0.65	20.00	8.43	0.95	1.80	C5	303	331	1.09
C2	C2 R3R	10.20	0.83	12.29	8.43	1.10	2.16	C5	1,140	1,753	1.54
C2	LT1 of C2	7.80	0.53	14.72	4.13	0.80	1.80	B5	595	655	1.10
C3	C3R	12.10	0.99	12.22	11.96	1.28	1.80	C5	1,016	1,568	1.54
C3	LT1 of C3R	7.80	0.53	14.72	4.13	0.80	1.20	C5	280	336	1.20
C3	RT1 of C3R	11.00	0.91	12.09	10.01	1.30	1.80	C5	3,101	4,654	1.50

REFERENCES

Aerial Imagery for the project area was sourced from drone flights conducted by Alliance February 2020.

Aerial Imagery was retrieved from U.S. Department of Agriculture, National Agricultural Imagery Program (2019).

0 250 500 1,000 Feet

1 inch = 500 feet

B19-525-1760

Legend

- Property Boundary - 157.17 acres

Delineated Resources

- Discontinuous Channel - 981 lf
- Ephemeral - 9,154 lf
- Intermittent - 2,462 lf
- Perennial - 11,355 lf
- Farmed Wetland - 5.28 acres
- Vegetated Swale - 2.74 acres
- Wetland - 15.33 acres

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STREAM AND WETLAND DELINEATION MAP

SWANWICK CREEK MITIGATION BANK
PERRY COUNTY, ILLINOIS

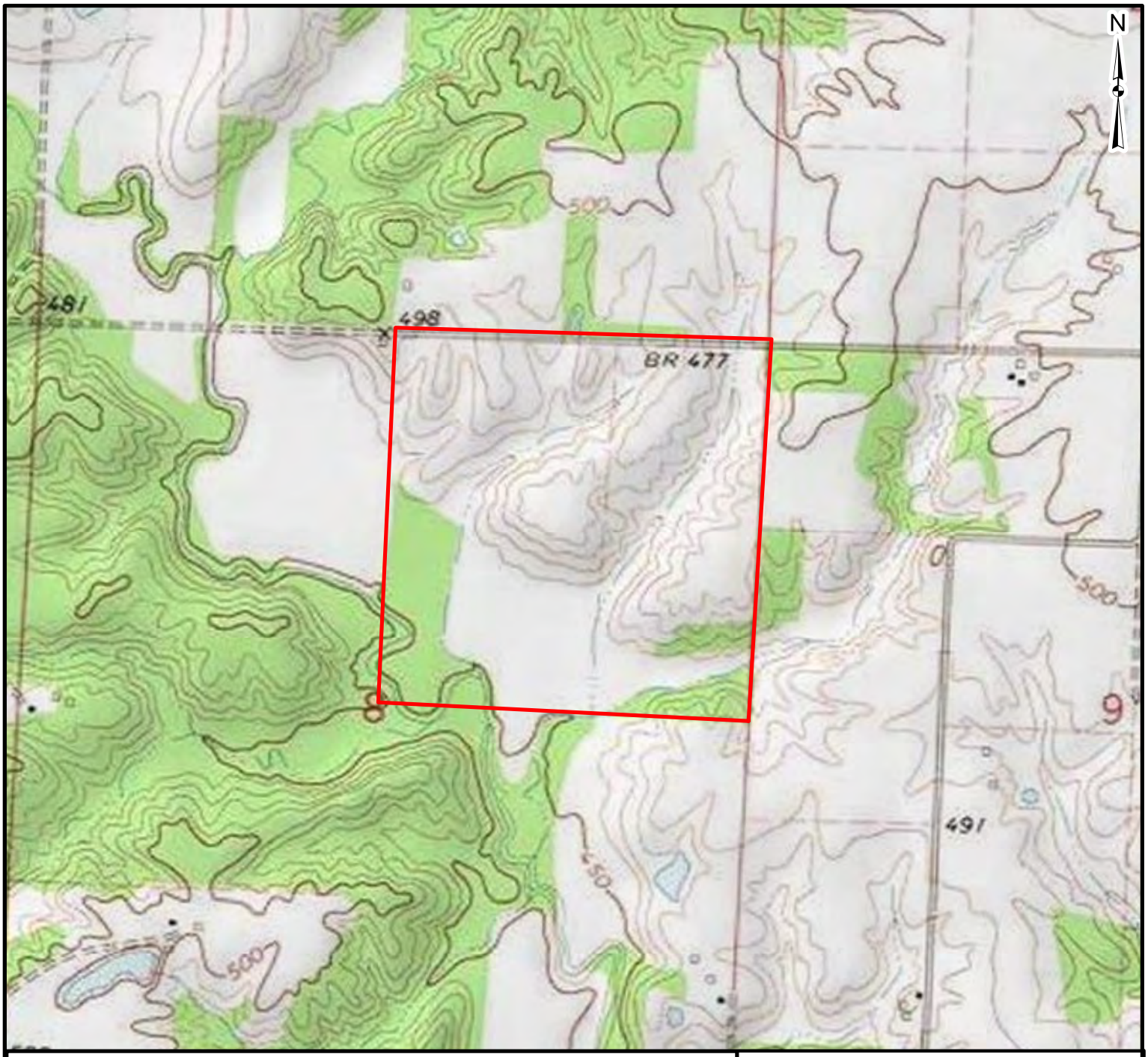
PREPARED FOR

LYME ILLINOIS MITIGATION HOLDINGS LLC
ATLANTA, GEORGIA

DRAWN BY	RG	3/04/2020
CHECKED BY	DB	3/23/2020
APPROVED BY	BH	3/25/2020

DRAWING NUMBER

B19-525-A1



REFERENCES

Topographic Quad was retrieved from ESRI Online Services on 3/5/2020.

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

B19-525-1760

Legend

Property Boundary

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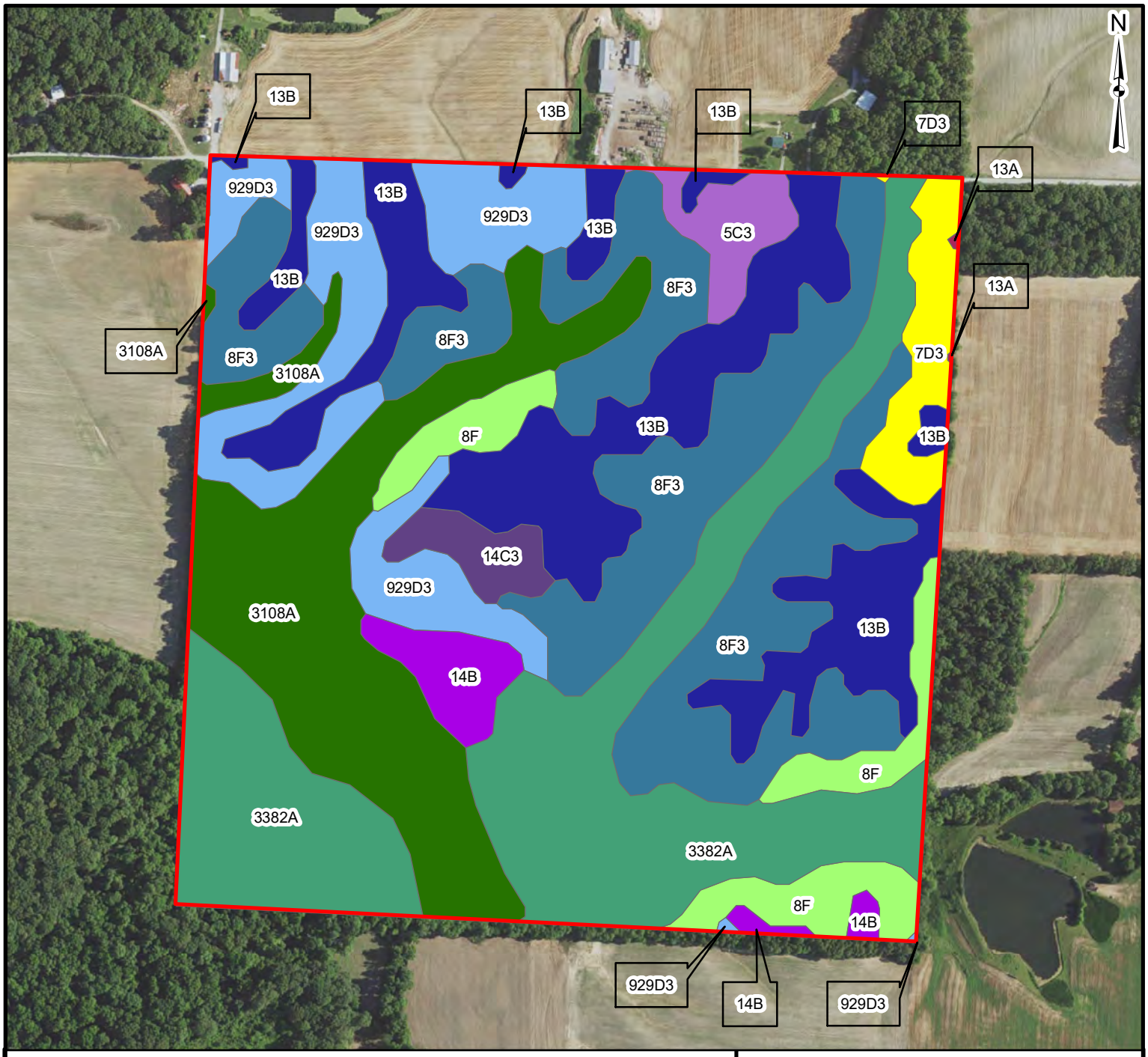
PROJECT AREA LOCATION TOPOGRAPHIC MAP

SWANWICK CREEK MITIGATION BANK
PERRY COUNTY, ILLINOIS

PREPARED FOR

LYME ILLINOIS MITIGATION HOLDINGS LLC
ATLANTA, GEORGIA

DRAWN BY	RG	3/05/2020
CHECKED BY	DB	3/23/2020
APPROVED BY	BH	3/25/2020
DRAWING NUMBER		
B19-525-A2		



REFERENCES

Aerial Imagery was retrieved from U.S. Department of Agriculture, National Agricultural Imagery Program (2019).

Soils data were retrieved from Web Soil Survey, U.S. Department of Agriculture, Natural Resources Conservation Service on 3/5/2020.

0 250 500 1,000 Feet

1 inch = 500 feet

B19-525-1760

Legend

Property Boundary

Soil Map Unit

13A	3382A	929D3
13B	5C3	
14B	7D3	
14C3	8F	
3108A	8F3	

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NRCS WEB SOIL SURVEY MAP

SWANWICK CREEK MITIGATION BANK
PERRY COUNTY, ILLINOIS

PREPARED FOR

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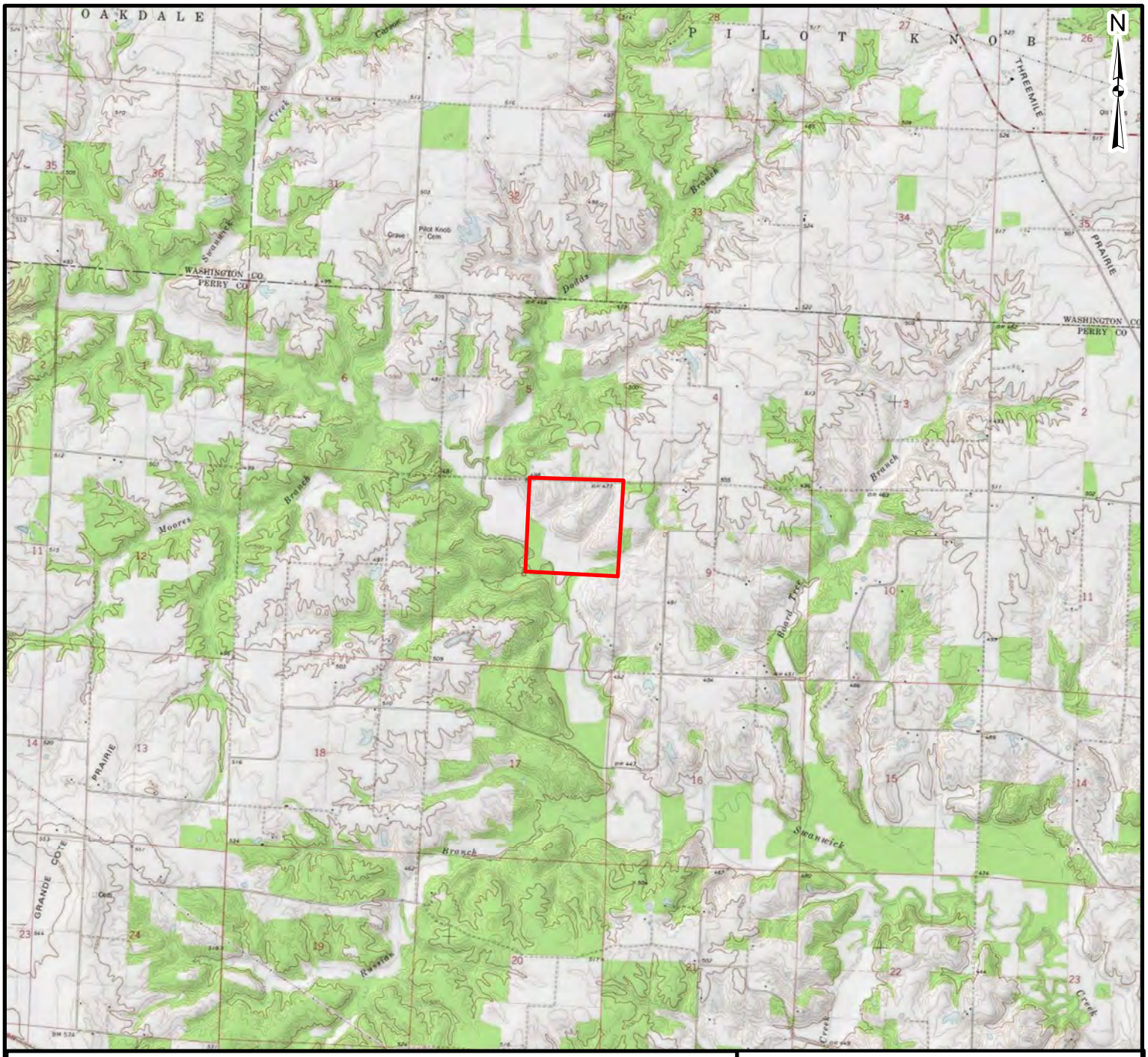
ATLANTA, GEORGIA

DRAWN BY	RG	3/05/2020
CHECKED BY	DB	3/23/2020
APPROVED BY	BH	3/25/2020

DRAWING NUMBER

B19-525-A6



REFERENCES

Topographic Quad was retrieved from ESRI Online Services on 3/9/2020.

0 2,000 4,000 8,000 Feet

1 inch = 4,000 feet

B19-525-1760

Legend

PROPERTY BOUNDARY

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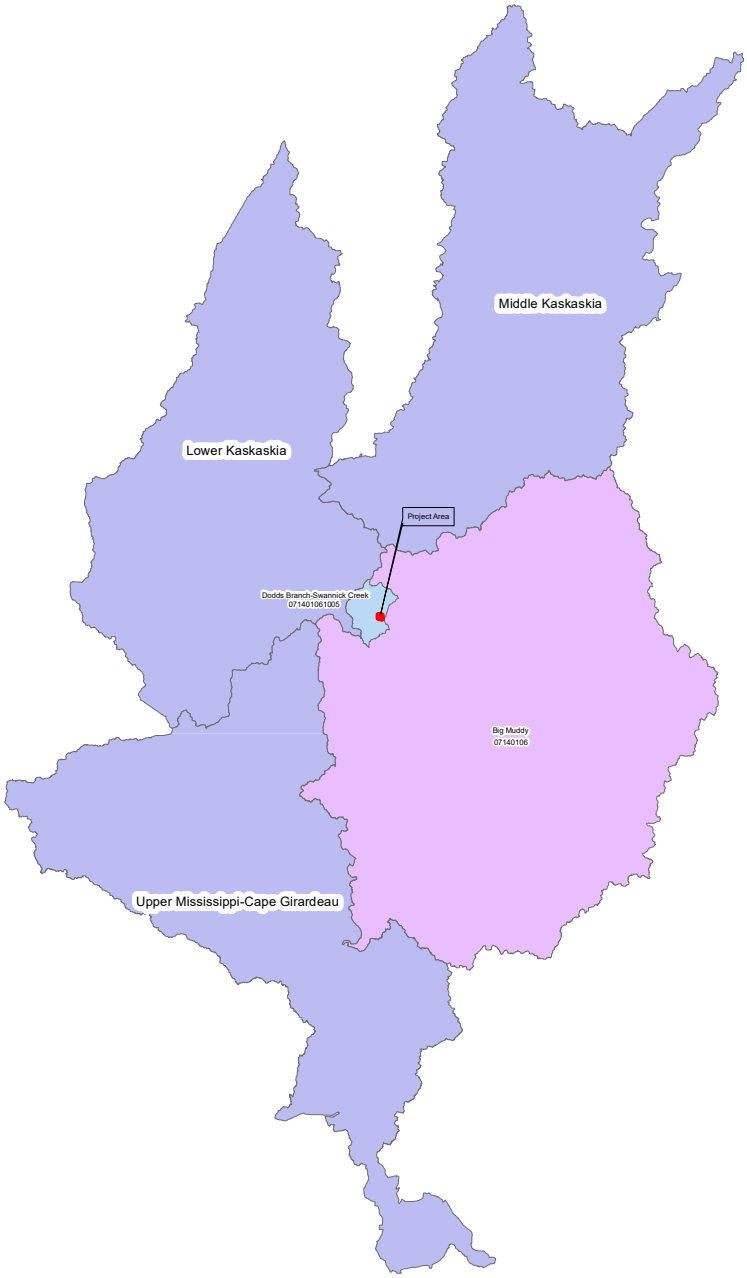
PROJECT TOPOGRAPHIC LOCATION MAP

SWANWICK CREEK MITIGATION AREA
PERRY COUNTY, ILLINOIS

PREPARED FOR

BUNROOTIS MITIGATION HOLDINGS, LLC
ATLANTA, GEORGIA

DRAWN BY	AJP	3/09/2020
CHECKED BY		
APPROVED BY		
DRAWING NUMBER		
B19-525-A7		



REFERENCES

HUC 8 and HUC 12 Watersheds were retrieved from U.S. Department of Agriculture, Natural Resources Conservation Service (2004).

0 12.5 25 50 Miles

1 in = 25 miles

B19-525-1760

Legend

- Secondary Service Areas
- Project Area
- HUC 12 - Dodds Branch-Swanwick Creek
- HUC 8 - Big Muddy - Primary Service Area

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HUC WATERSHEDS MAP

SWANWICK CREEK MITIGATION BANK
PERRY COUNTY, ILLINOIS

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ATLANTA, GEORGIA

DRAWN BY	RG	3/03/2020
CHECKED BY	DB	3/23/2020
APPROVED BY	BH	3/25/2020

DRAWING NUMBER

B19-525-A5

CONCEPTUAL
SWANWICK MITIGATION BANK

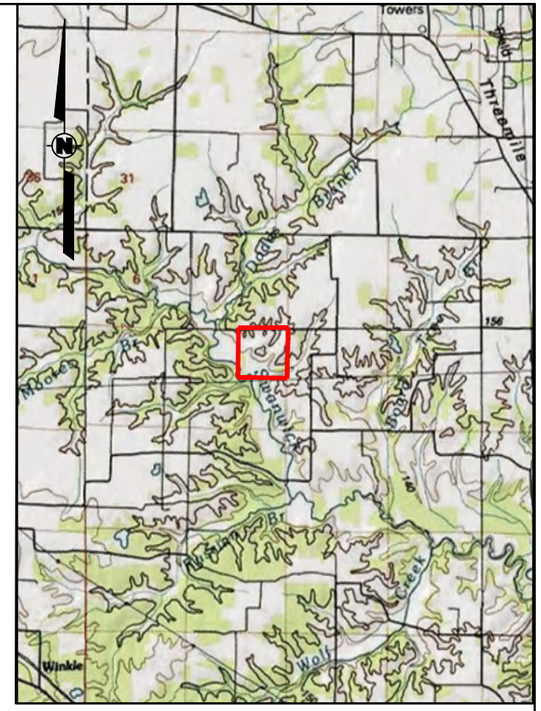
LOCATION MAP

REFERENCE:
OFFICIAL ILLINIOS STATE TRANSPORTATION MAP ISSUED BY ILLINIOS DEPARTMENT OF TRANSPORTATION, DATED 2019.

SCALE
4 0 8 MILES

INDEX OF DRAWINGS

SHEET NO.	DRAWING NO.	TITLE	REVISION NO.
	B19-525-T1	TITLE SHEET	0
1	B19-525-D1	AERIAL WITH PROPERTY LINE	0
2	B19-525-D2	SHEET INDEX	0
3	B19-525-D3	EXISTING CONDITIONS MAP	0
4	B19-525-D4	EXISTING CONDITIONS PHOTOS	0
5	B19-525-D5	PLAN, SECTION, AND PARAMETERS C1R1	0
6	B19-525-D6	PLAN, SECTION, AND PARAMETERS LT1 OF C1	0
7	B19-525-D7	PLAN, SECTION, AND PARAMETERS T1 OF RT1 OF C2	0
8	B19-525-D8	PLAN, SECTION, AND PARAMETERS RT1 OF C2	0
9	B19-525-D9	PLAN, SECTION, AND PARAMETERS C2R1A AND C2R1B	0
10	B19-525-D10	PLAN, SECTION, AND PARAMETERS LT1 OF C2	0
11	B19-525-D11	PLAN, SECTION, AND PARAMETERS RT1 OF C3	0
12	B19-525-D12	PLAN, SECTION, AND PARAMETERS RT1 OF C3	0
13	B19-525-D13	PLAN, SECTION, AND PARAMETERS RT1 OF C3	0
14	B19-525-D14	PLAN, SECTION, AND PARAMETERS C1R3	0
15	B19-525-D15	PLAN, SECTION, AND PARAMETERS C2R3	0
16	B19-525-D16	PLAN, SECTION, AND PARAMETERS C3R	0
17	B19-525-D17	PLAN, SECTION, AND PARAMETERS LT1 OF C3R	0
18	B19-525-D18	TYPICAL STEP POOL & SOIL/SOD LIFT DETAILS	0
19	B19-525-D19	TYPICAL LOG VANE AND GEOTEXTILE DETAILS	0
20	B19-525-D20	TYPICAL TOE WOOD DETAIL	0
21	B19-525-D21	EROSION AND SEDIMENT CONTROL DETAILS	0
22	B19-525-D22	PLANTING DETAILS AND NOTES	0



VICINITY MAP

REFERENCE:
TOPOGRAPHY FROM NASHVILLE AND WINKLE 7.5 MIN. USGS QUADRANGLES IN PERRY COUNTY, ILLINOIS NAD 27 WEST.

SCALE
4000 0 4000 FEET

PREPARED FOR:

LYME ILLINOIS MITIGATION HOLDINGS
ATLANTA GEORGIA

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

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CANONSBURG, PA (724) 746-3630
CHARLESTON, WV (681) 217-2090

TITLE SHEET
CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINIOS
Prepared For
LYME ILLINOIS MITIGATION HOLDINGS
ATLANTA GEORGIA

CAD BY	DJS	01/30/20	PROJECT NO. B19-525-1760
CHECKED BY			
APPROVED BY			DRAWING NO. B19-525-T1

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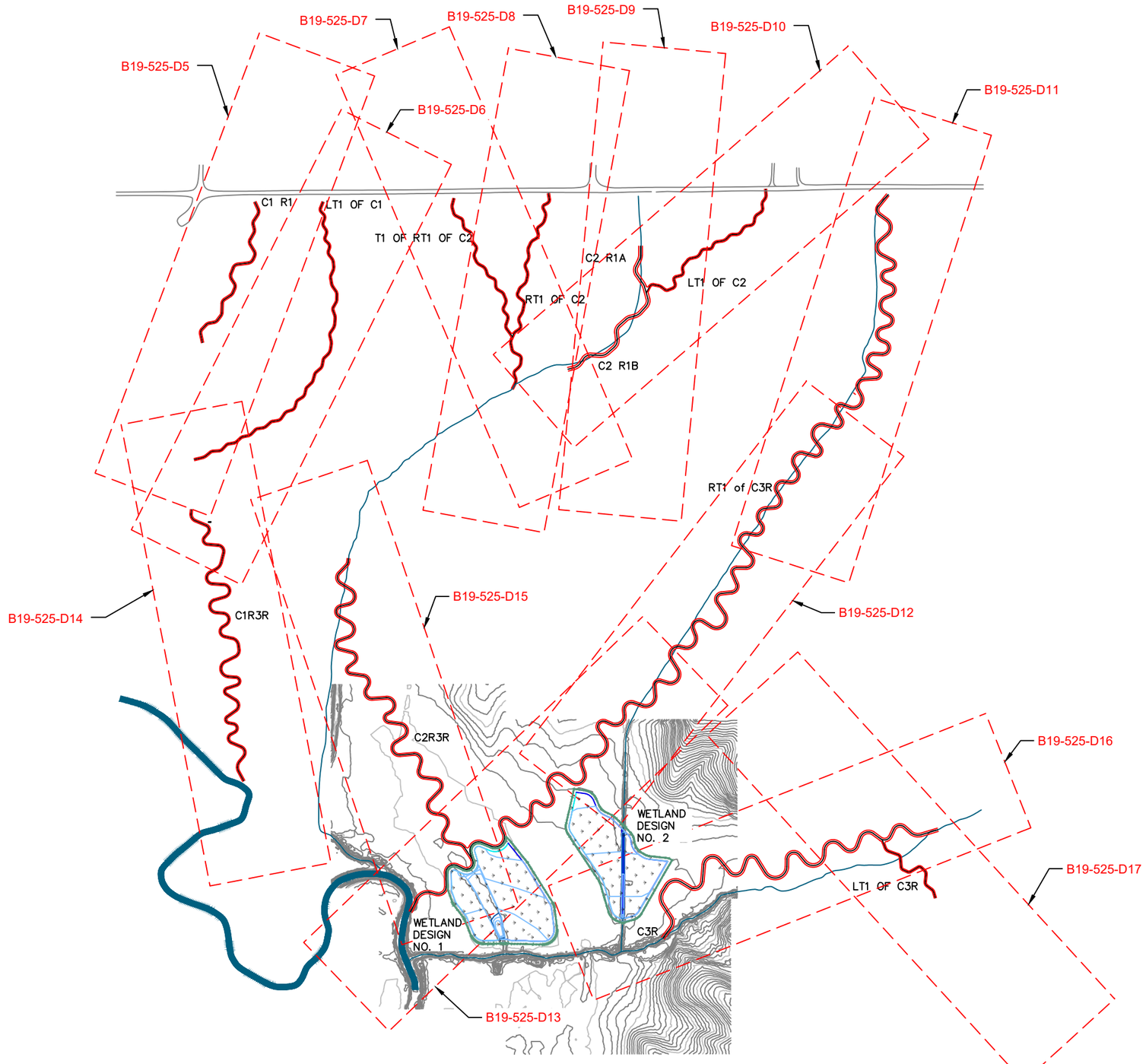
Date: Aug 13, 2024 4:16pm - Plotted by: dschoolfield
Xrefs: ILLINOIS HIGHWAY MAP E-W NAD 27.dwg



PLAN VIEW

SCALE

200 0 200 400Feet

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

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SHEET INDEX

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760
CHECKED BY			
APPROVED BY			DRAWING NO. B19-525-D2

Drawing: \\fs1-wse4\common\projects\B19\525\02_DESIGN\Dwg - Layout\Tab: INDEX Xref:
Date: Aug 13, 2020 4:18pm - Plotted by: dschoolfield

SAWMILL ROAD

SAWMILL ROAD

PROPERTY LINE

UNNAMED TRIBUTARY OF SWANWICK CREEK

UNNAMED TRIBUTARY OF SWANWICK CREEK

SWANWICK CREEK

UNNAMED TRIBUTARY OF SWANWICK CREEK

N

PLAN VIEW

SCALE

200 0 200 400 FEET

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

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EXISTING CONDITIONS MAP

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760
CHECKED BY			DRAWING NO. B19-525-D3
APPROVED BY			

Xrefs: 19525 BASE TOPO.dwg

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Date: Aug 13, 2020 at 1:18pm - Plotted by: dschofield















CONCEPT PACKAGE

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CONCEPTUAL MITIGATION BANK DESIGN
EXISTING CONDITIONS PHOTOS

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS

Prepared For

LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760	
CHECKED BY				
APPROVED BY			DRAWING NO. B19-525-D4	

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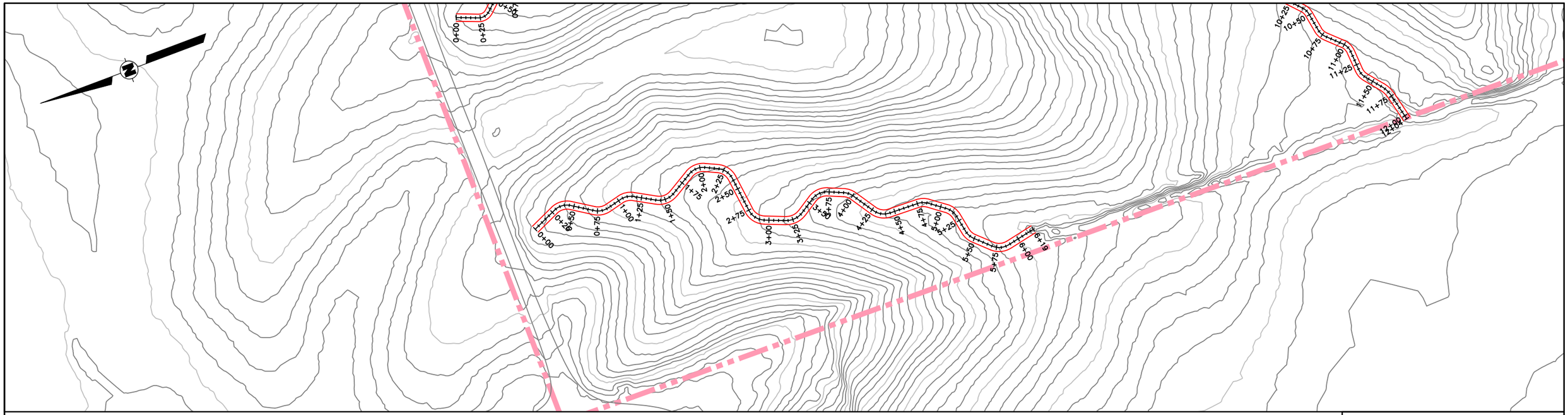
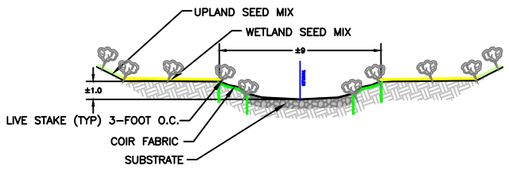


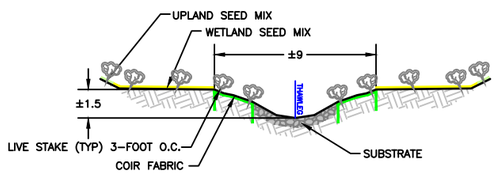
PLAN VIEW

SCALE

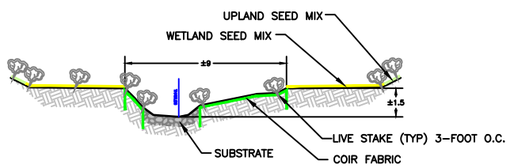
50 0 50 100FEET



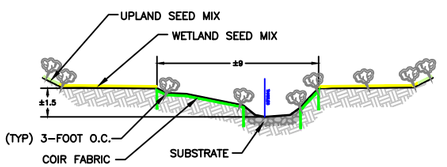
C1R1 RIFFLE (CONCEPT)



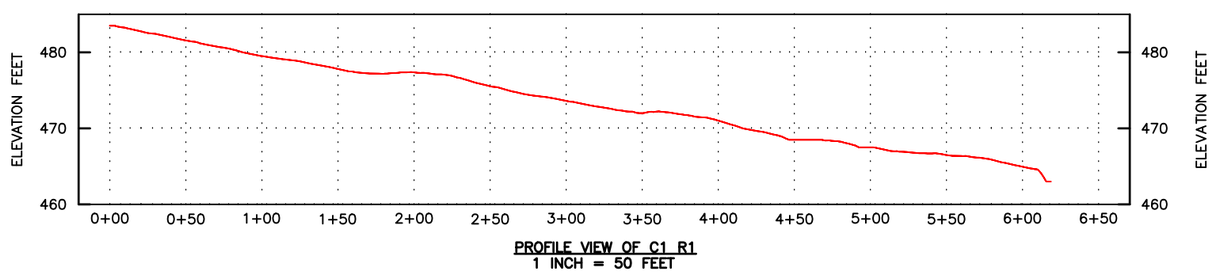
C1 R1 CENTER POOL (CONCEPT)



C1R1 MEANDER POOL (CONCEPT)



C1R1 MEANDER POOL (CONCEPT)



PROFILE VIEW OF C1 R1
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C1	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	C1R1	0.0299	8.50	0.65	5.55	0.95	619	619	1.00
Stream Type	B5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

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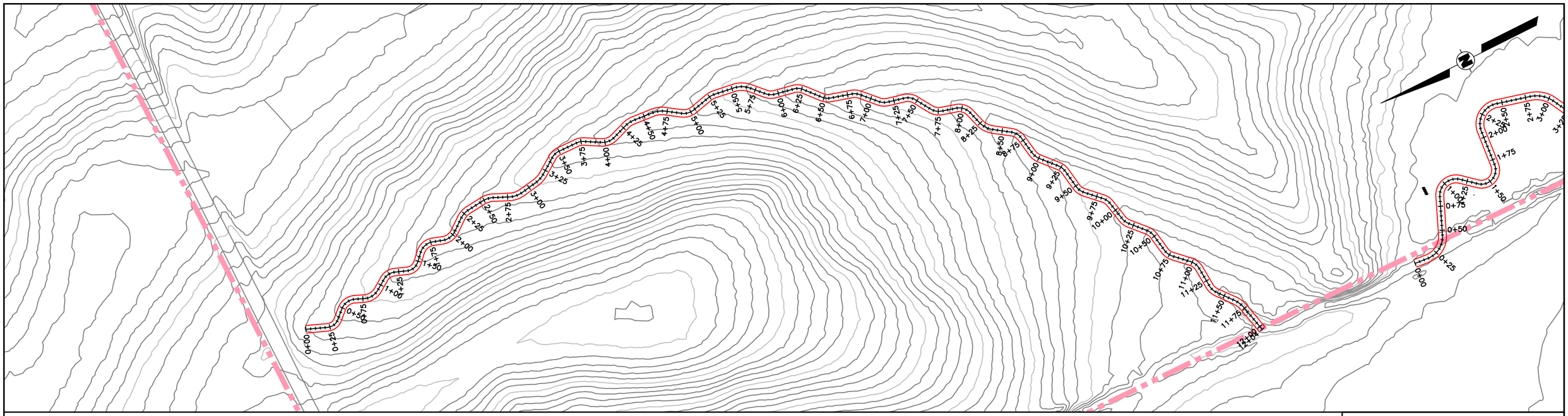
PLAN AND PROFILE
C1R1 STATION 0+00 TO 6+19
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

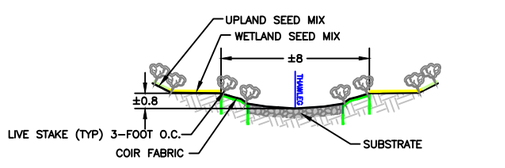
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D5



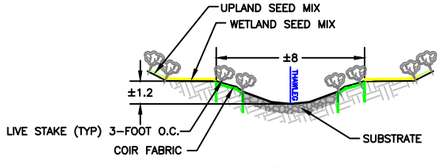
PLAN VIEW

SCALE

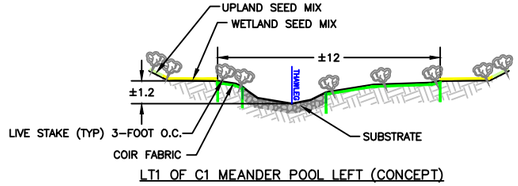
50 0 50 100FEET



LT1 OF C1 RIFFLE (CONCEPT)



LT1 OF C1 CENTER POOL (CONCEPT)



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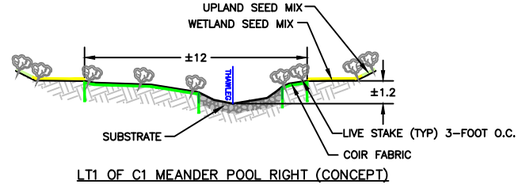

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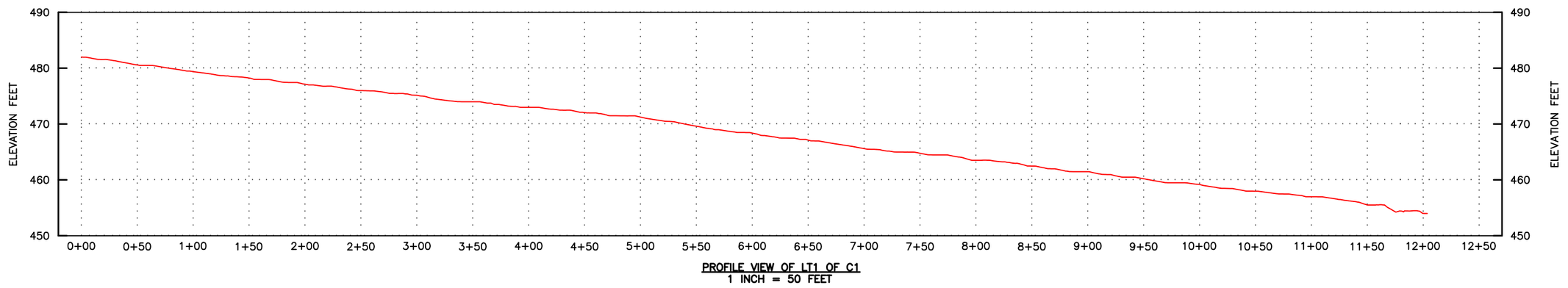

PROFILE VIEW OF LT1 OF C1
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C1	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	LT1 OF C1	0.0300	7.80	0.53	4.13	0.80	1151	1204	0.96
Stream Type	B5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
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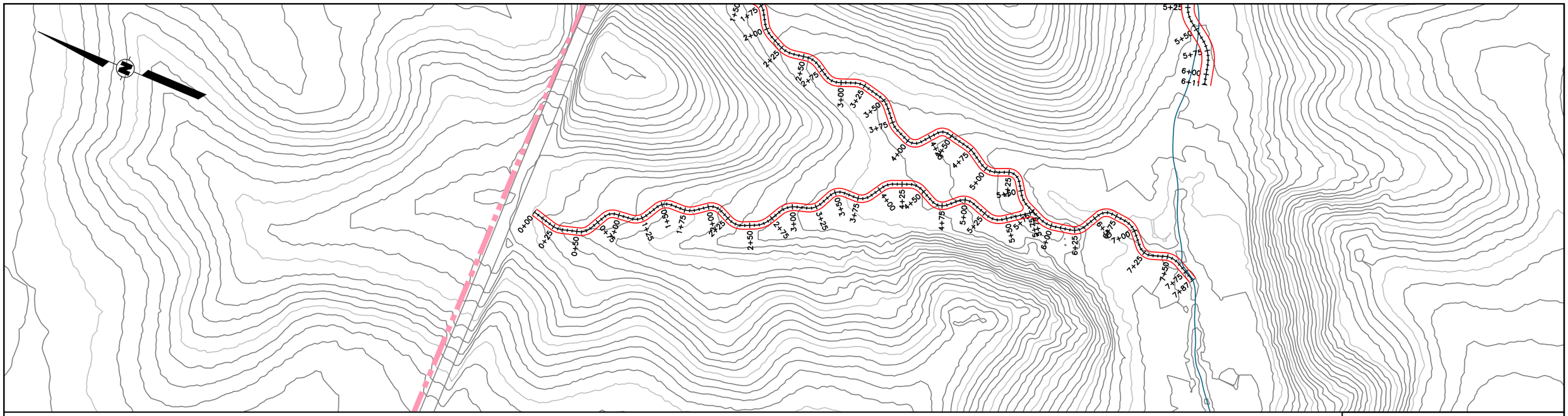
PLAN AND PROFILE
LT1 OF C1 STATION 0+00 TO 12+04
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

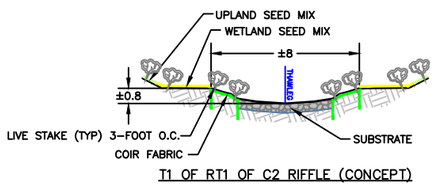
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D6



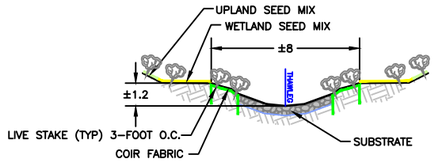
PLAN VIEW

SCALE

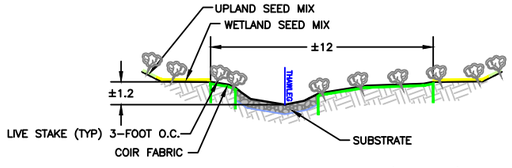
50 0 50 100FEET



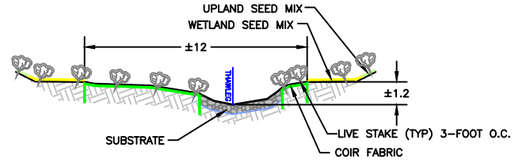
T1 OF RT1 OF C2 RIFFLE (CONCEPT)



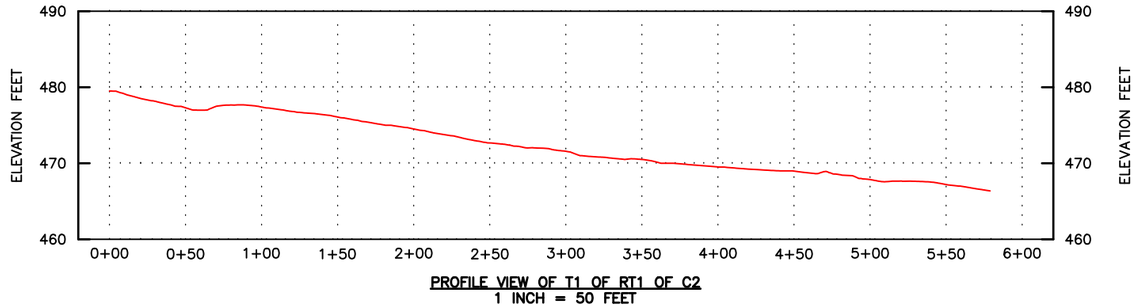
T1 OF RT1 OF C2 CENTER POOL (CONCEPT)



T1 OF RT1 OF C2 MEANDER POOL LEFT (CONCEPT)



T1 OF RT1 OF C2 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF T1 OF RT1 OF C2
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C2	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	LT1 OR RT1 OF C2	0.0300	7.80	0.53	4.13	0.80	533	579	0.92
Stream Type	B5								

REV.	DATE	DESCRIPTION
1		
2		
3		
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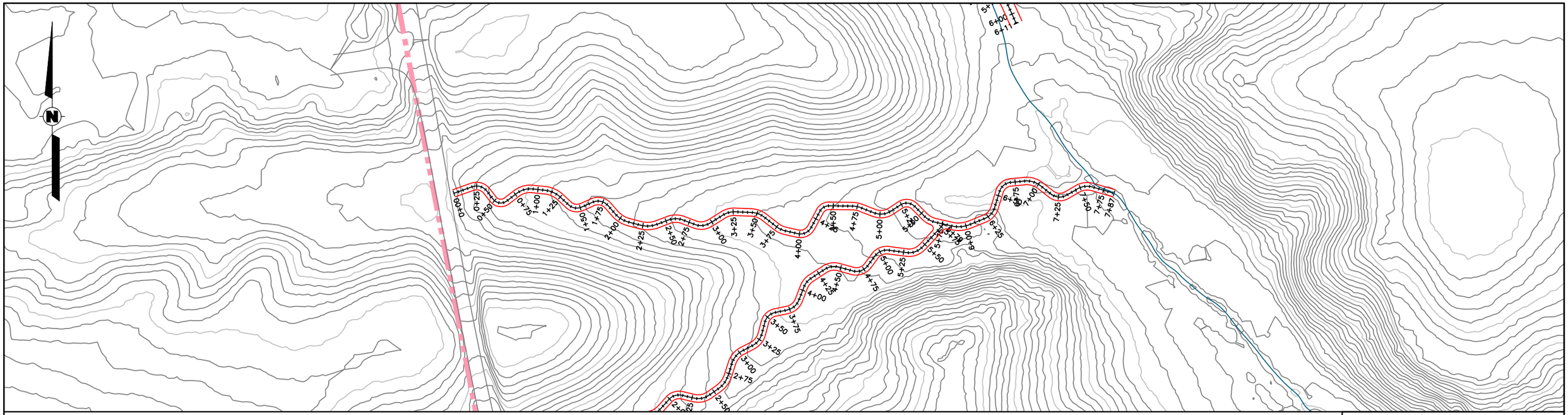
PLAN AND PROFILE
LT1 OF RT1 OF C2 STATION 0+00 TO 5+79
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

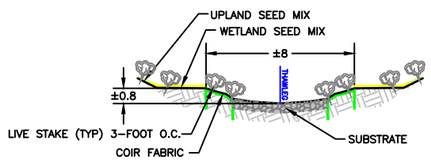
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D7



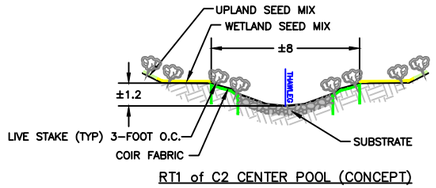
PLAN VIEW

SCALE

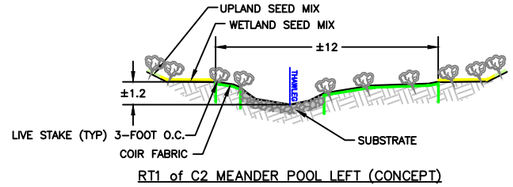
50 0 50 100FEET



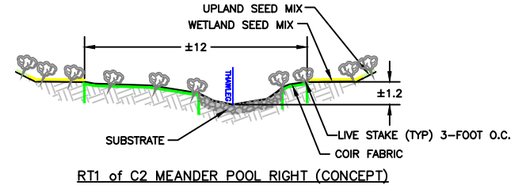
RT1 of C2 RIFFLE (CONCEPT)



RT1 of C2 CENTER POOL (CONCEPT)



RT1 of C2 MEANDER POOL LEFT (CONCEPT)



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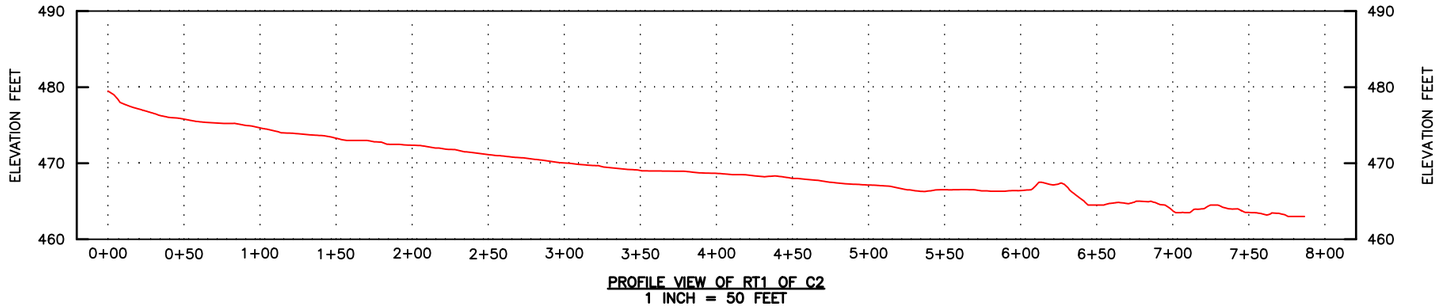

PROFILE VIEW OF RT1 OF C2
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C2	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	RT1 OF C2	0.0300	7.80	0.53	4.13	0.80	674	787	0.86
Stream Type	B5								

REV.	DATE	DESCRIPTION
1		
2		
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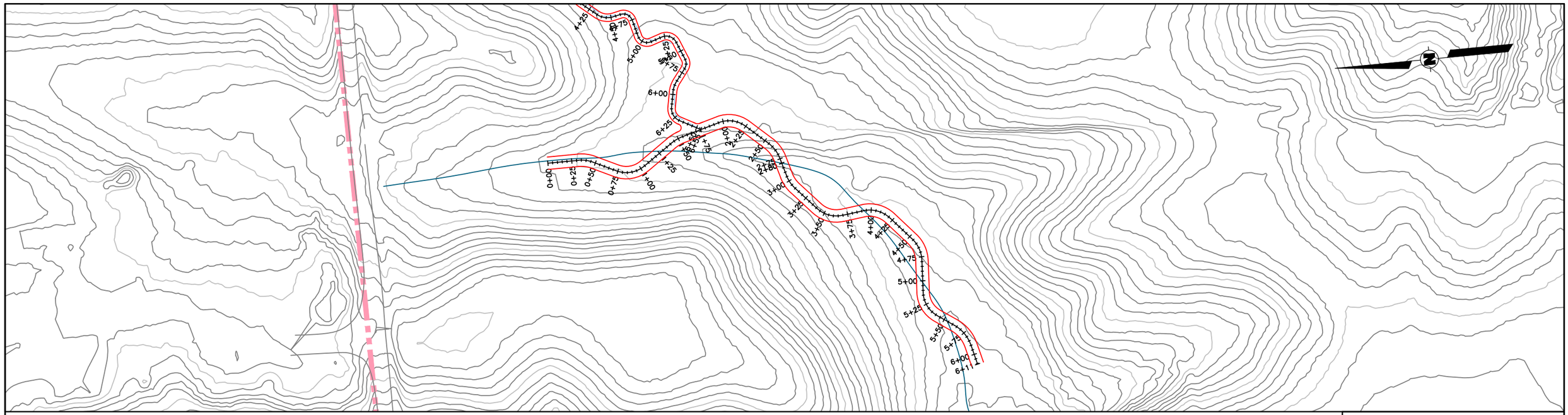
PLAN AND PROFILE

RT1 OF C2 STATION 0+00 TO 7+87

CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

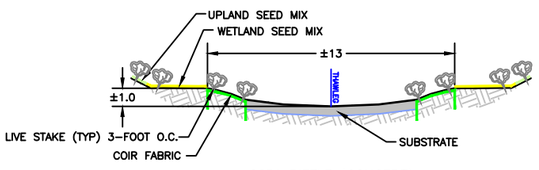
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D8



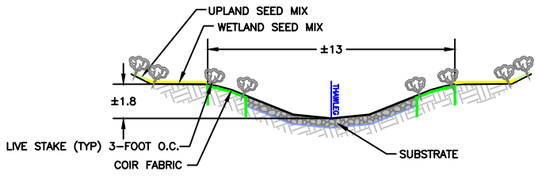
PLAN VIEW

SCALE

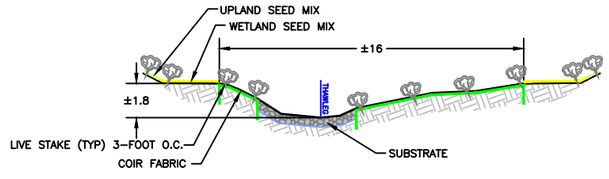
50 0 50 100FEET



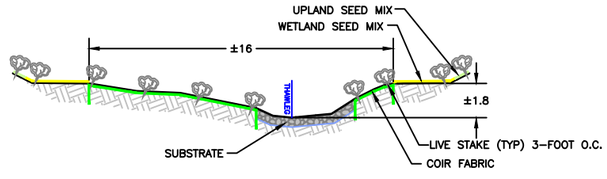
C2R1 RIFFLE (CONCEPT)



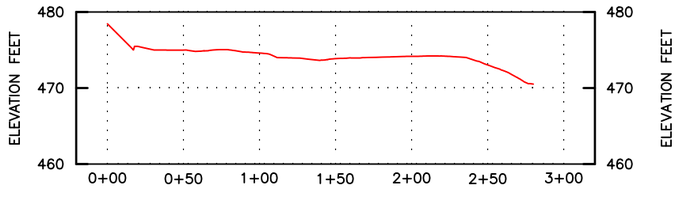
C2R1 CENTER POOL (CONCEPT)



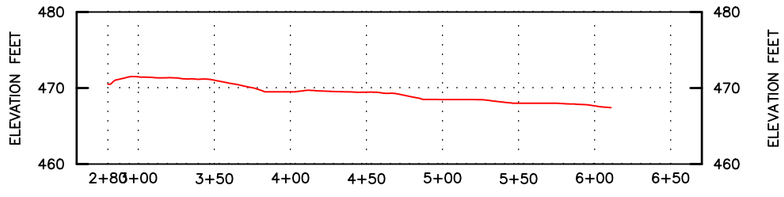
C2R1 MEANDER POOL LEFT (CONCEPT)



C2R1 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF C2 R1A
1 INCH = 50 FEET



PROFILE VIEW OF C2 R1B
1 INCH = 50 FEET

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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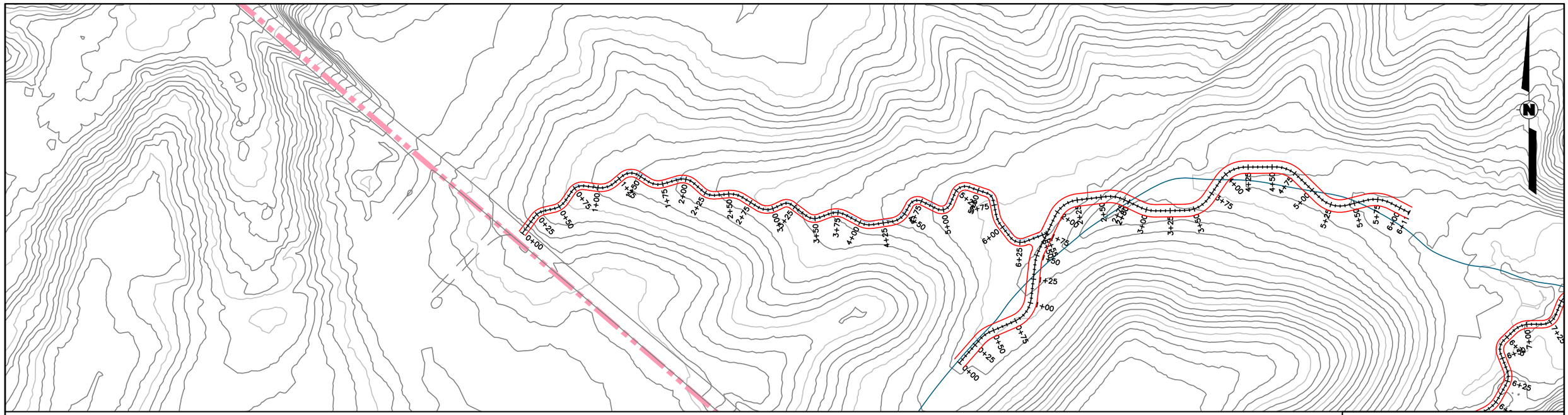
PLAN AND PROFILE
C2R1A STATION 0+00 TO 2+56 AND C2R1B
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

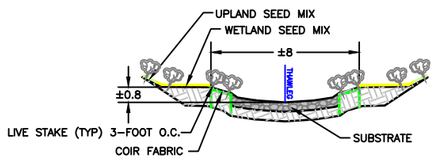
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D9



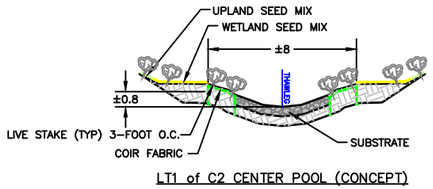
PLAN VIEW

SCALE

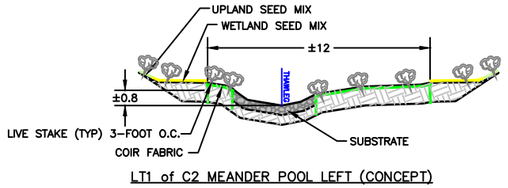
50 0 50 100FEET



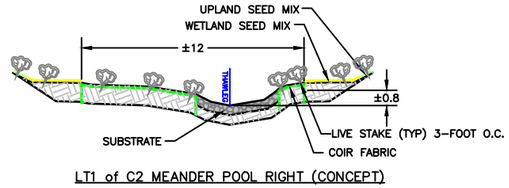
LT1 of C2 RIFFLE (CONCEPT)



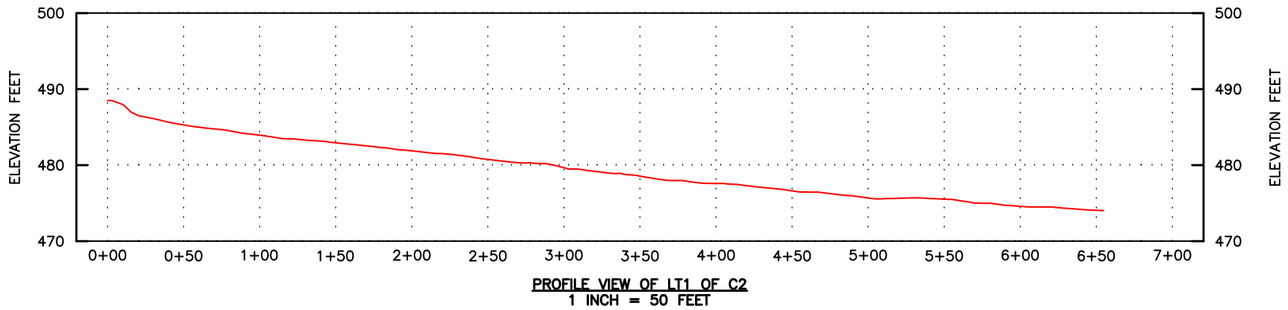
LT1 of C2 CENTER POOL (CONCEPT)



LT1 of C2 MEANDER POOL LEFT (CONCEPT)



LT1 of C2 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF LT1 OF C2
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C2	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	LT1 OF C2	0.0300	7.80	0.53	4.13	0.80	595	655	0.91
Stream Type	B5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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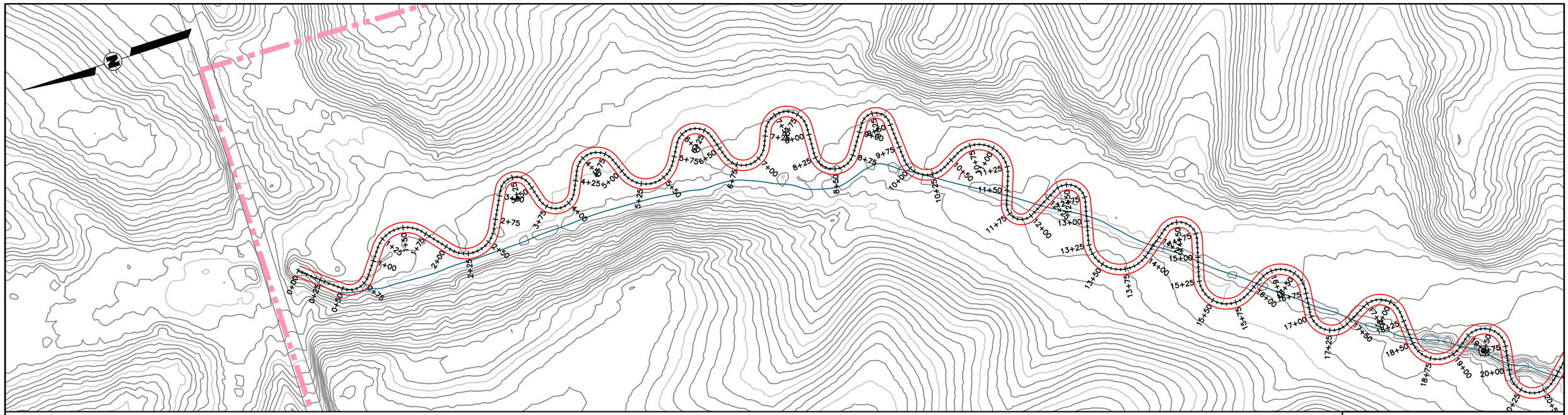
CANONSBURG, PA (724) 745-3630

PLAN AND PROFILE
LT1 OF C2 STATION 0+00 TO 6+55
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

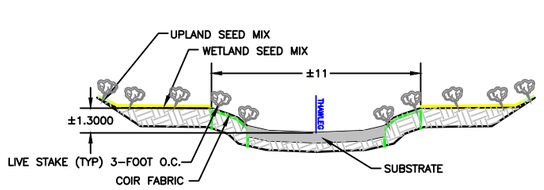
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D10



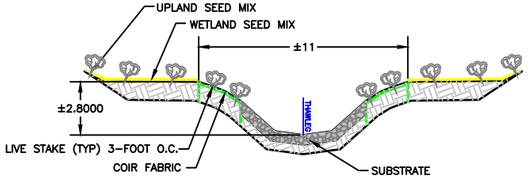
PLAN VIEW

SCALE

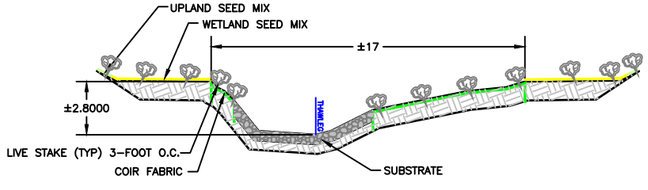
50 0 50 100FEET



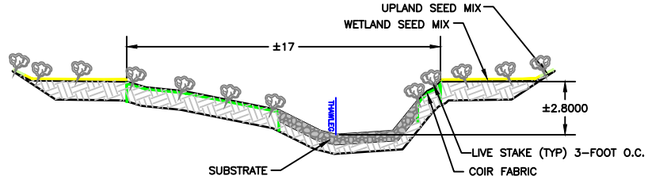
RT1 of C3 R1 RIFFLE (CONCEPT)



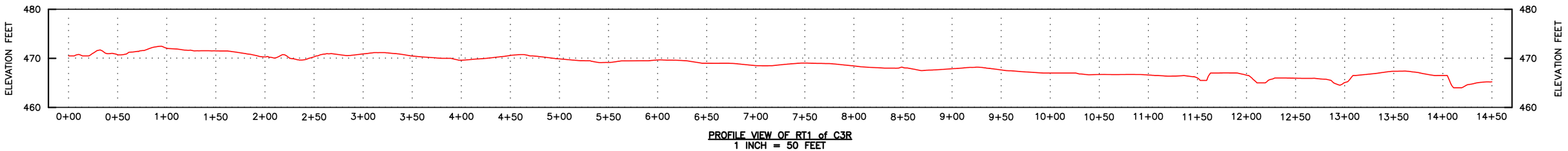
RT1 of C3 R1 CENTER POOL (CONCEPT)



RT1 of C3 R1 MEANDER POOL LEFT (CONCEPT)



RT1 of C3 R1 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF RT1 of C3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C3	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	RT1 OF C3R	0.0051	11.00	0.91	10.01	1.30	2827	4654	0.61
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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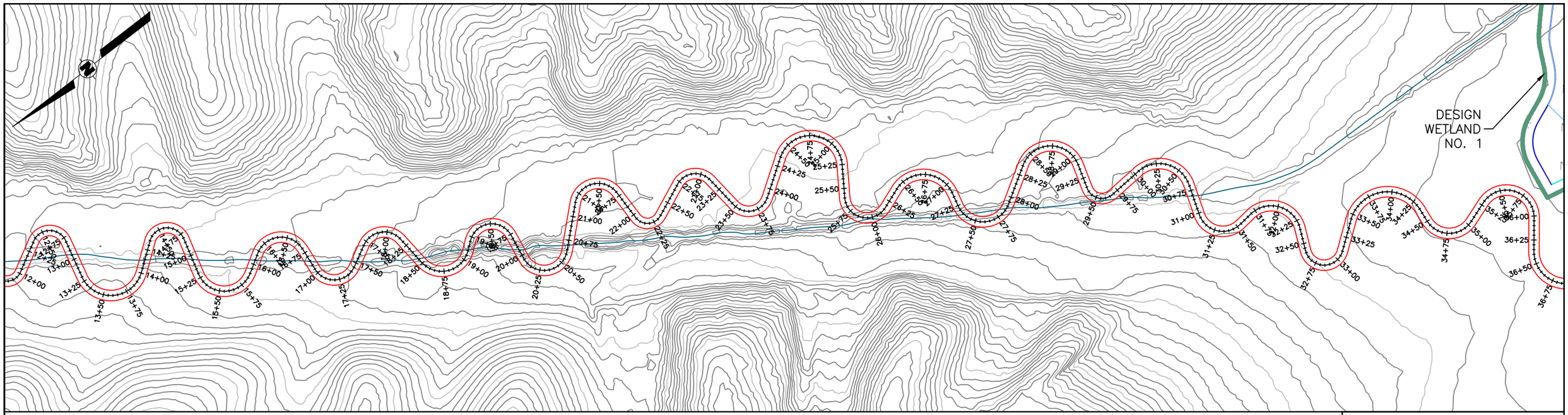
CANONSBURG, PA (724) 746-3630

PLAN AND PROFILE
RT1 OF C3
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

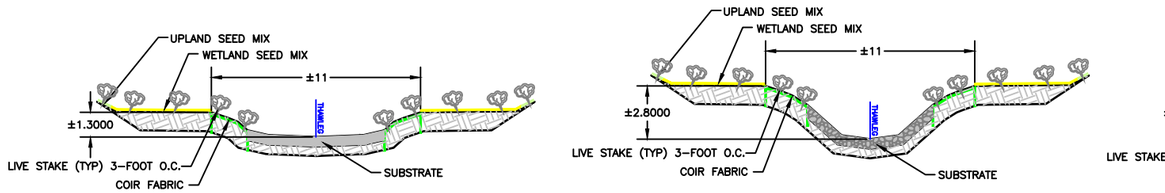
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D11



PLAN VIEW

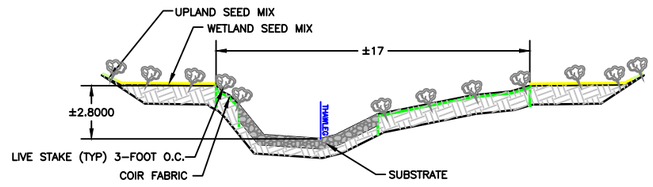
SCALE

50 0 50 100FEET

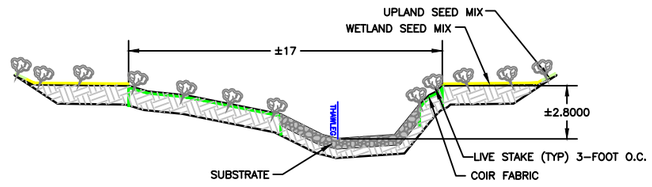


RT1 of C3 R1 RIFFLE (CONCEPT)

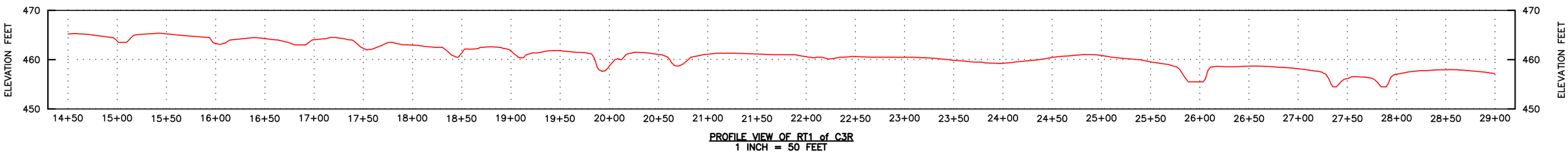
RT1 of C3 R1 CENTER POOL (CONCEPT)



RT1 of C3 R1 MEANDER POOL LEFT (CONCEPT)



RT1 of C3 R1 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF RT1 of C3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C3	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	RT1 OF C3R	0.0051	11.00	0.91	10.01	1.30	2827	4654	0.61
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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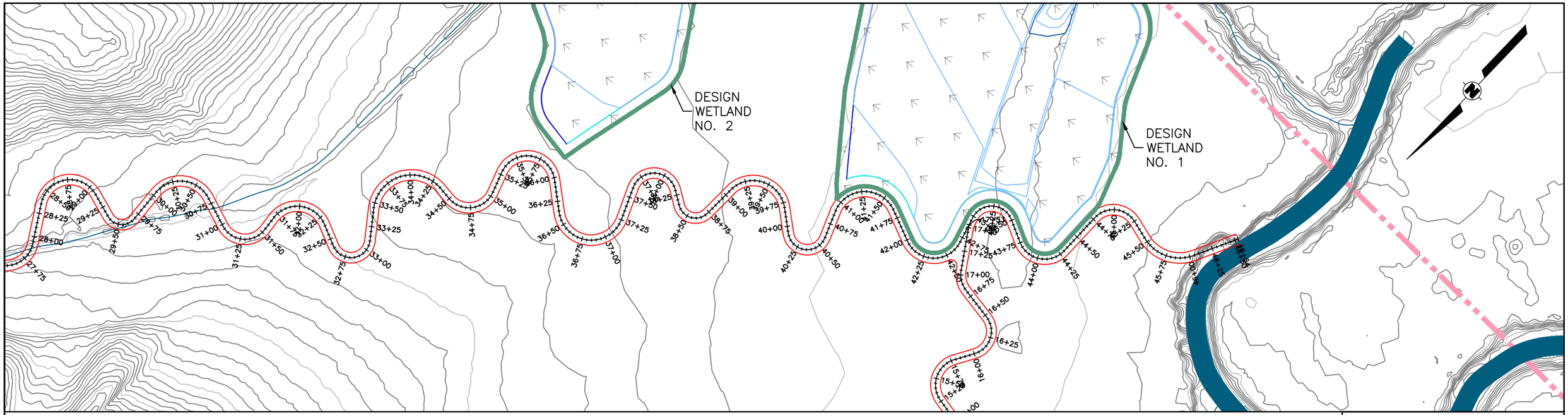
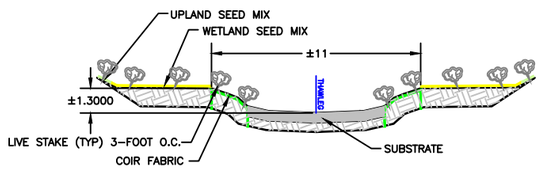
CANONSBURG, PA (724) 746-3630

PLAN AND PROFILE
RT1 OF C3 (1) STATION 14+50 TO 29+00
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

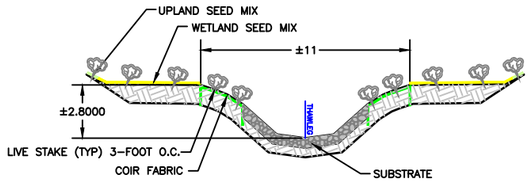
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D12



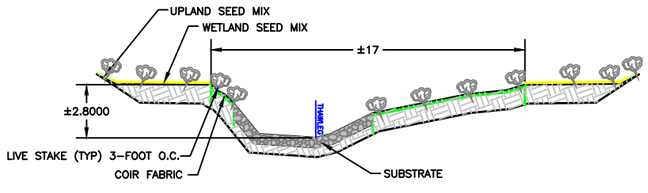
PLAN VIEW
SCALE
50 0 50 100FEET



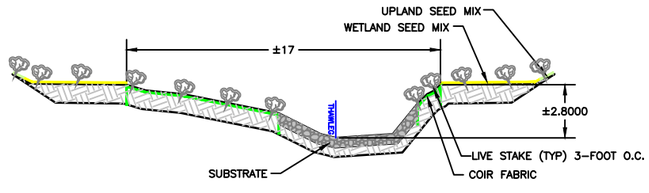
RT1 of C3 R1 RIFFLE (CONCEPT)



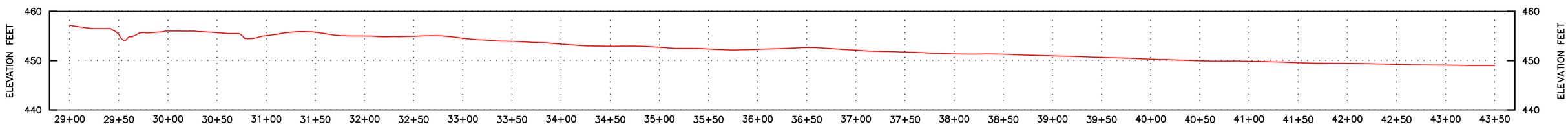
RT1 of C3 R1 CENTER POOL (CONCEPT)



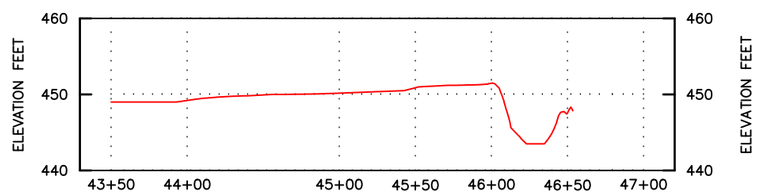
RT1 of C3 R1 MEANDER POOL LEFT (CONCEPT)



RT1 of C3 R1 MEANDER POOL RIGHT (CONCEPT)



PROFILE VIEW OF RT1 of C3R
1 INCH = 50 FEET



PROFILE VIEW OF RT1 of C3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C3	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	RT1 OF C3R	0.0051	11.00	0.91	10.01	1.30	2827	4654	0.61
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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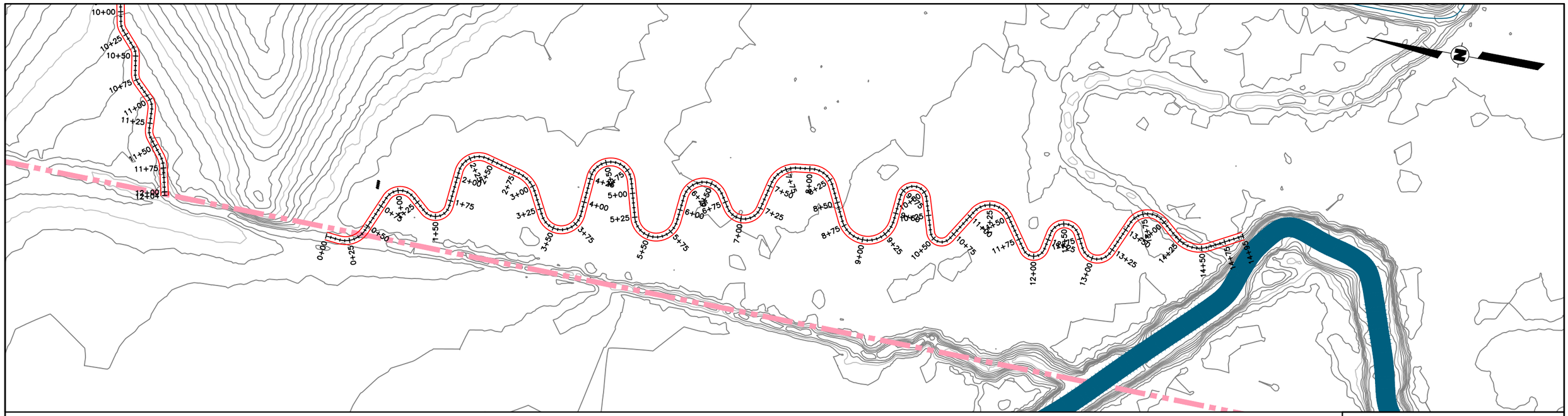
CANONSBURG, PA (724) 745-3630

PLAN AND PROFILE
RT1 OF C3 (2)
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

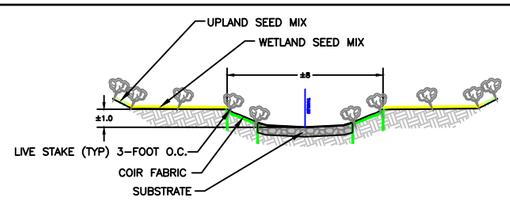
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D13



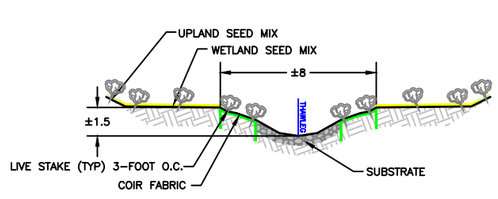
PLAN VIEW

SCALE

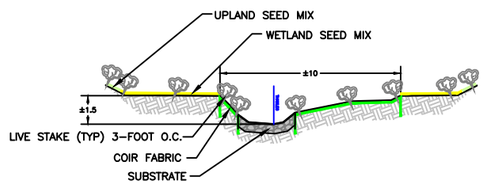
50 0 50 100FEET



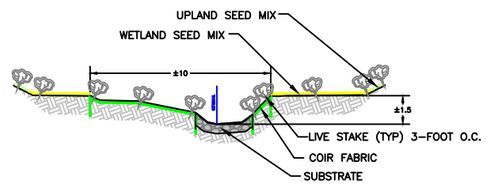
C1R3 RIFFLE (CONCEPT)



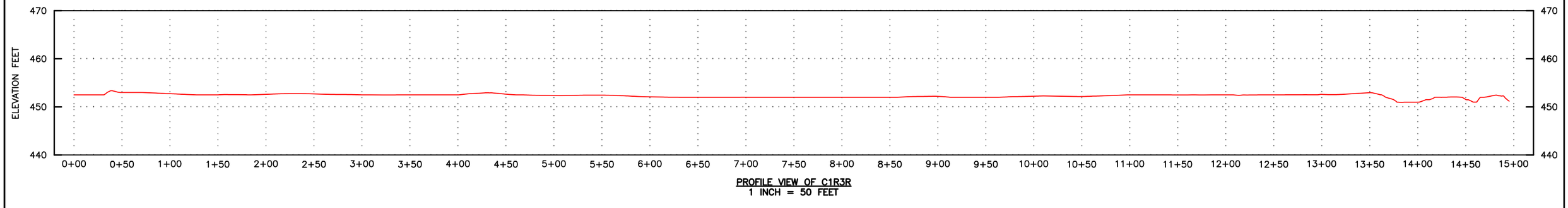
C1 R3 CENTER POOL (CONCEPT)



C1R3 MEANDER POOL (CONCEPT)



C1R3 MEANDER POOL (CONCEPT)



PROFILE VIEW OF C1R3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C1	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	C1R3	0.0020	8.20	0.68	5.55	0.95	970	1495	0.65
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
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CONCEPT PACKAGE

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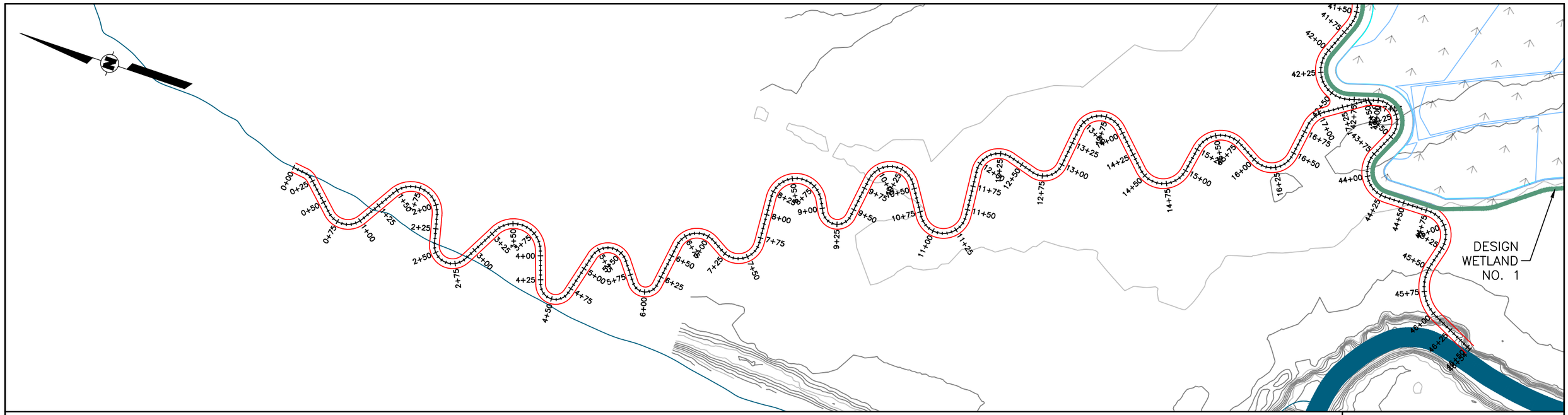
CANONSBURG, PA (724) 745-3630

PLAN AND PROFILE
C1R3 STATION 0+00 TO 14+95
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

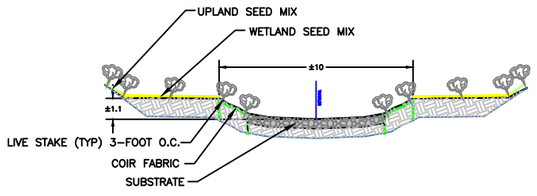
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D14



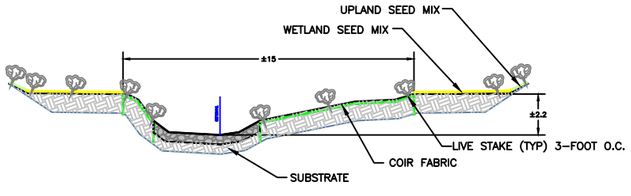
PLAN VIEW

SCALE

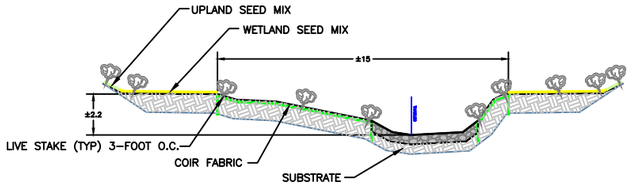
50 0 50 100FEET



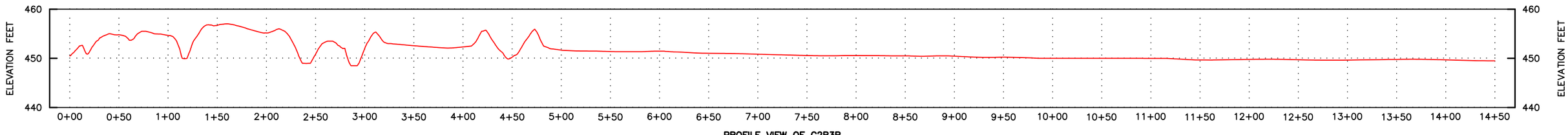
C2R3 RIFFLE (CONCEPT)



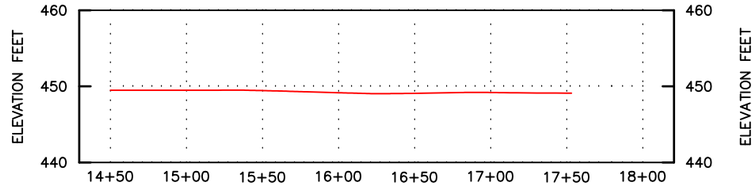
C2R3 MEANDER POOL (CONCEPT)



C2R3 MEANDER POOL (CONCEPT)



PROFILE VIEW OF C2R3R
1 INCH = 50 FEET



PROFILE VIEW OF C2R3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C2	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	C2R3	0.0030	10.20	0.83	8.43	1.10	1122	1753	0.64
Stream Type	C5 (LOW)								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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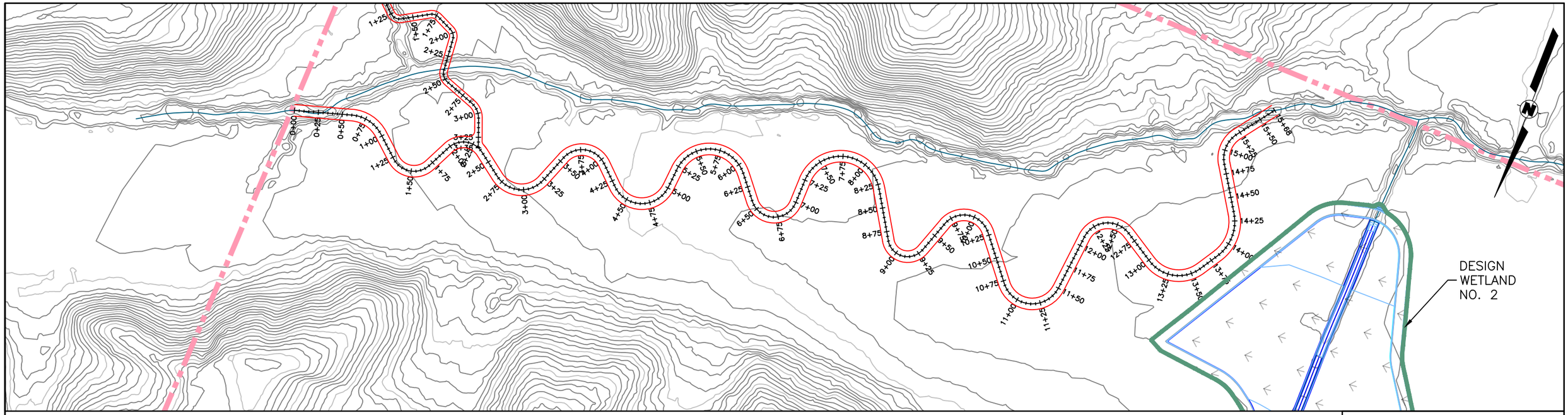
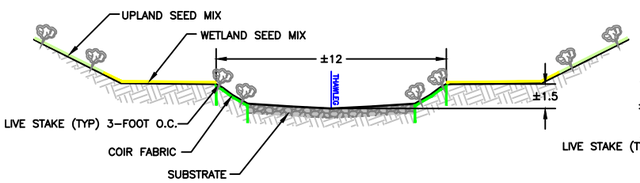
CANONSBURG, PA (724) 745-3630

PLAN AND PROFILE
C2R3 STATION 0+00 TO 17+53
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINIOS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

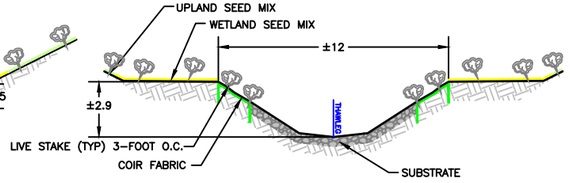
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			DRAWING NO.
PROJECT NO.	B19–525–1760		B19–525–D15



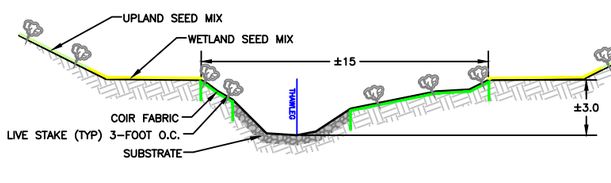
PLAN VIEW
SCALE
50 0 50 100FEET



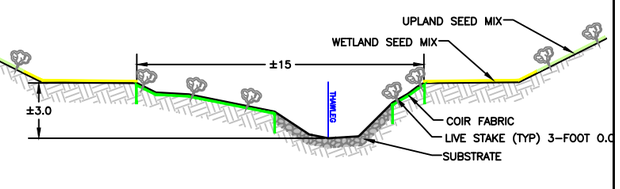
C3 RIFFLE (CONCEPT)



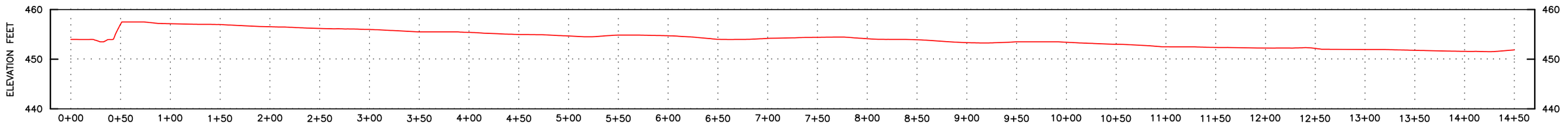
C3 R1 CENTER POOL (CONCEPT)



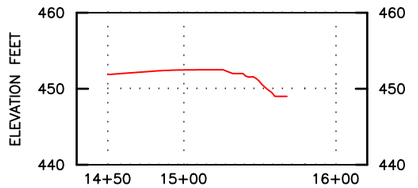
C3 MEANDER POOL (CONCEPT)



C3 MEANDER POOL (CONCEPT)



PROFILE VIEW OF C3R
1 INCH = 50 FEET



PROFILE VIEW OF C3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C3	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	C3R1	0.0030	12.10	0.99	12.00	1.28	1830	1568	1.17
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
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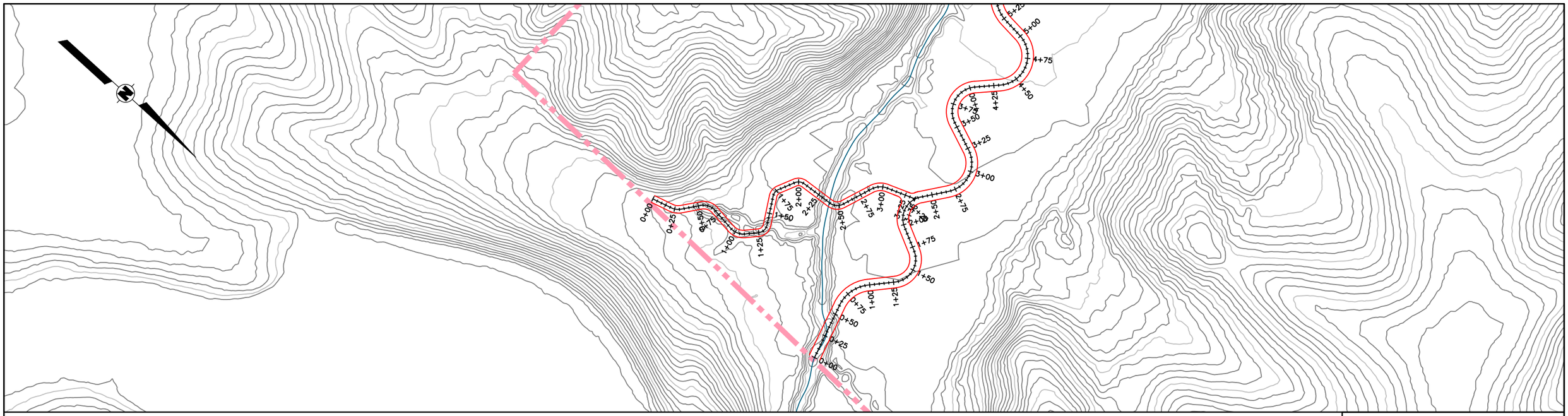
6		

CONCEPT PACKAGE

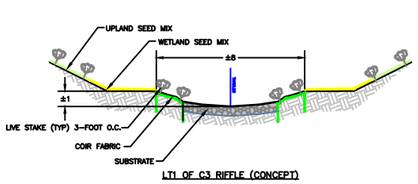
Alliance Consulting, Inc.
Engineers • Constructors • Scientists
BECKLEY, WV (304) 255-0491
CANONSBURG, PA (724) 745-3630

PLAN AND PROFILE
C3R STATION 0+00 TO 15+68
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

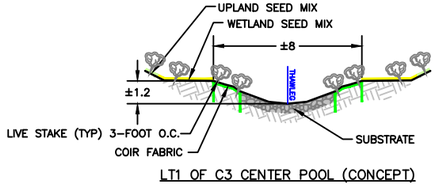
CAD BY	DJS	3/30/20	SHEET NO.
CHECKED BY			FIGURE NO.
APPROVED BY			
PROJECT NO.			DRAWING NO.
B19–525–1760			B19–525–D16



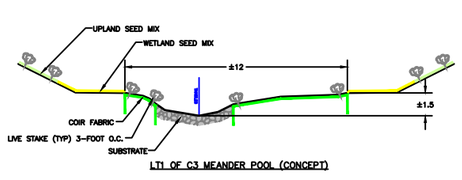
PLAN VIEW
SCALE
50 0 50 100FEET



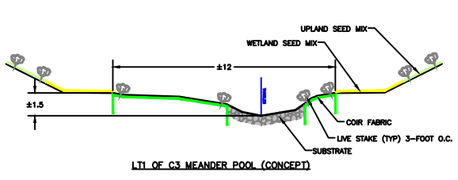
LT1 OF C3 RIFFLE (CONCEPT)



LT1 OF C3 CENTER POOL (CONCEPT)



LT1 OF C3 MEANDER POOL (CONCEPT)



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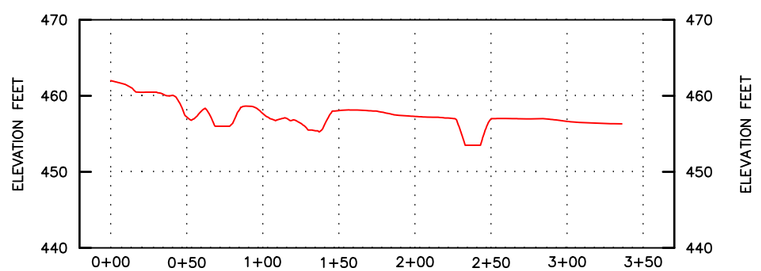

PROFILE VIEW OF LT1 OF C3R
1 INCH = 50 FEET

Conceptual Plan Parameters

Site	C3	Sbkf (Mean)	Wbkf	dbkf	Abkf	dmax	Lval	Ldesign (Concept)	K (Concept)
Design Name	LT1 OF C3	0.0115	7.80	0.53	4.13	0.80	186	336	0.55
Stream Type	C5								

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

CONCEPT PACKAGE

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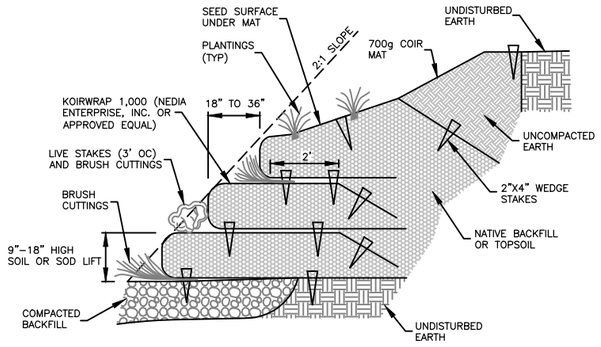
CANONSBURG, PA (724) 745-3630

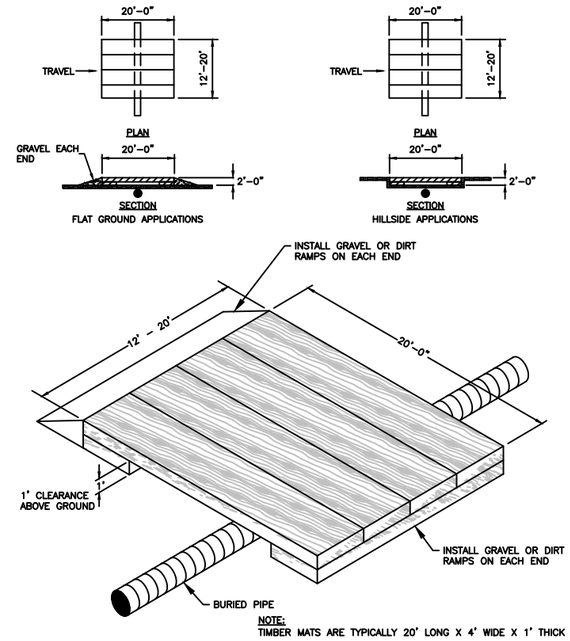
PLAN AND PROFILE
LT1 OF C3R STATION 0+00 TO 3+36
CONCEPTUAL MITIGATION BANK
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA, GEORGIA

CAD BY	DJS	3/30/20	SHEET NO.		
CHECKED BY			FIGURE NO.		
APPROVED BY					
PROJECT NO.			DRAWING NO.		
B19–525–1760			B19–525–D17		



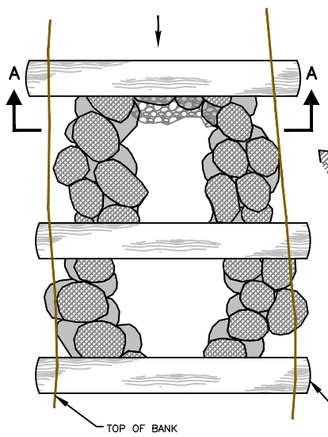
REINFORCED SOIL/SOD LIFTS
NTS

NOTE:
REACHES MAIN, LT1, LT2, RT1, RT1 OF LT2, RT3, AND RT6.



NOTE:
TIMBER MATS ARE TYPICALLY 20' LONG X 4' WIDE X 1' THICK

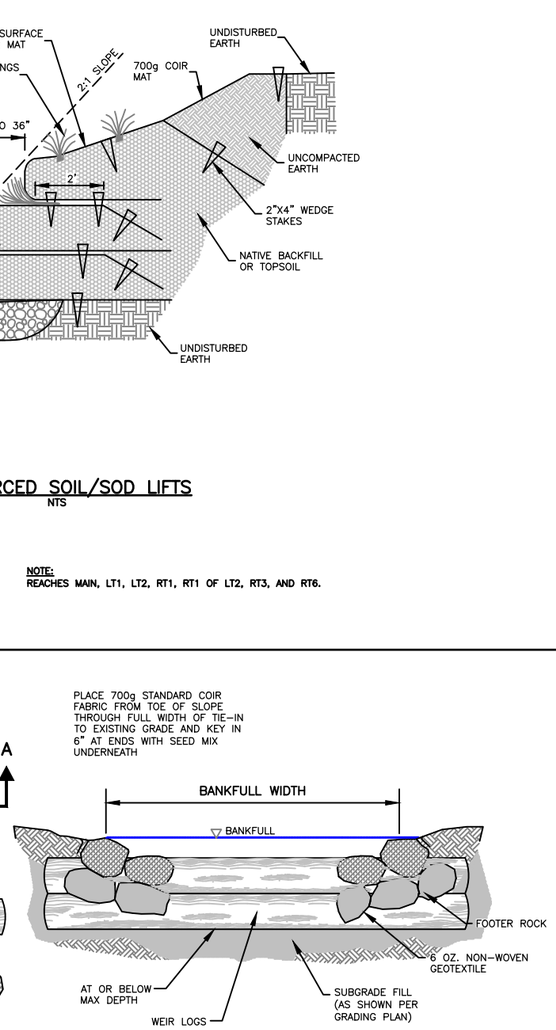
GAS LINE CROSSING
NTS



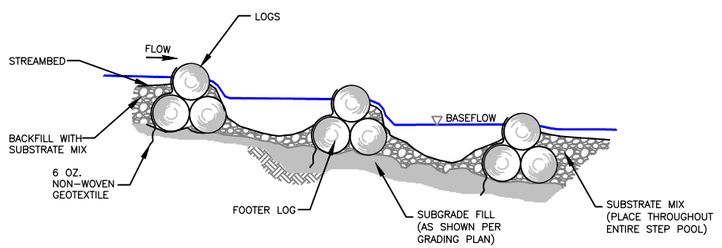
PLACE 700g STANDARD COIR FABRIC FROM TOE OF SLOPE THROUGH FULL WIDTH OF TIE–IN TO EXISTING GRADE AND KEY IN 6" AT ENDS WITH SEED MIX UNDERNEATH

LOGS CONTINUE INTO STREAM BANK TO A DEPTH NECESSARY TO ENSURE STABILITY UP TO BANKFULL WIDTH

PLAN VIEW
NTS



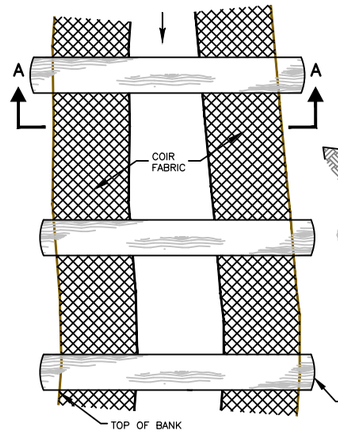
SECTION A VIEW
NTS



NOTES:
1. STRUCTURE ROCKS SHOULD BE 10"–12" DIAMETER.

2. THIS OPTION IS AVAILABLE FOR REACHES LT1 OF LT2, LT1 OF RT1, LT2 OF RT1, LT4, RT2 AND RT4.

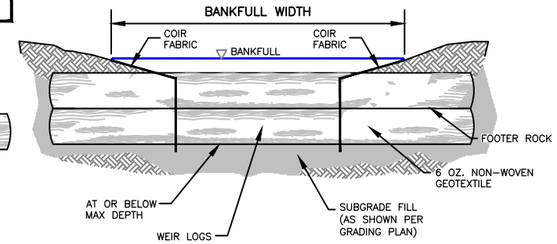
LOG AND ROCK STEP POOL (OPTION)
NTS



PLACE 700g STANDARD COIR FABRIC FROM TOE OF SLOPE THROUGH FULL WIDTH OF TIE–IN TO EXISTING GRADE AND KEY IN 6" AT ENDS WITH SEED MIX UNDERNEATH

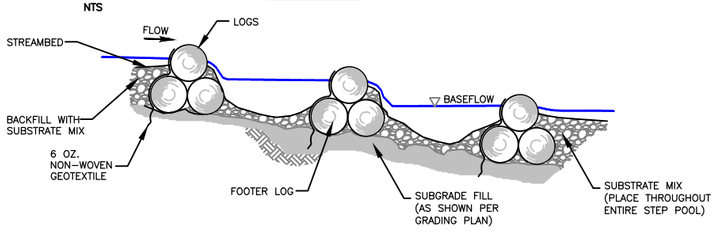
LOGS CONTINUE INTO STREAM BANK TO A DEPTH NECESSARY TO ENSURE STABILITY UP TO BANKFULL WIDTH

PLAN VIEW



SECTION A VIEW
NTS

NTS



NOTE:
REACHES LT1 OF LT2, LT1 OF RT1, LT2 OF RT1, LT4, RT2 AND RT4

LOG STEP POOL
NTS

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

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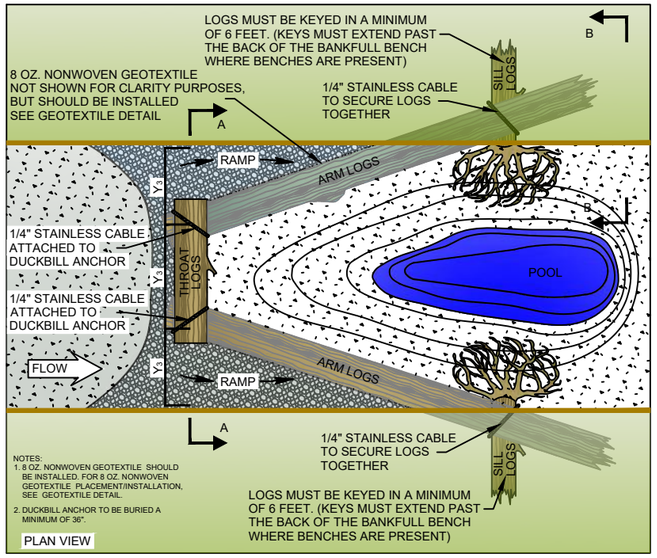
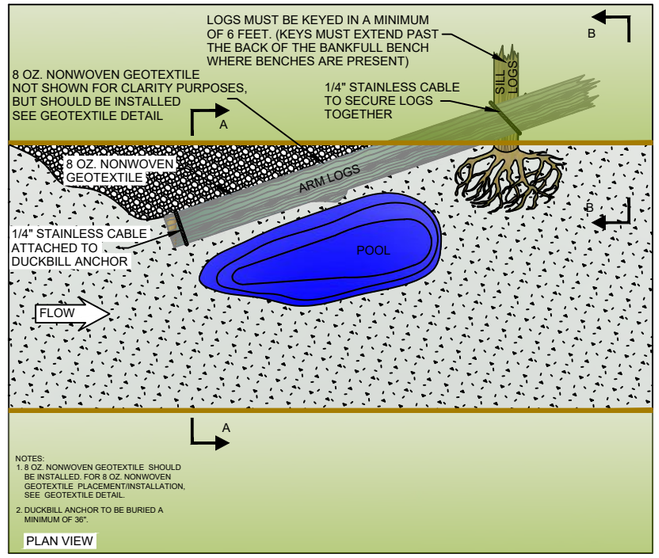
CHARLESTON, WV (681) 217-2090

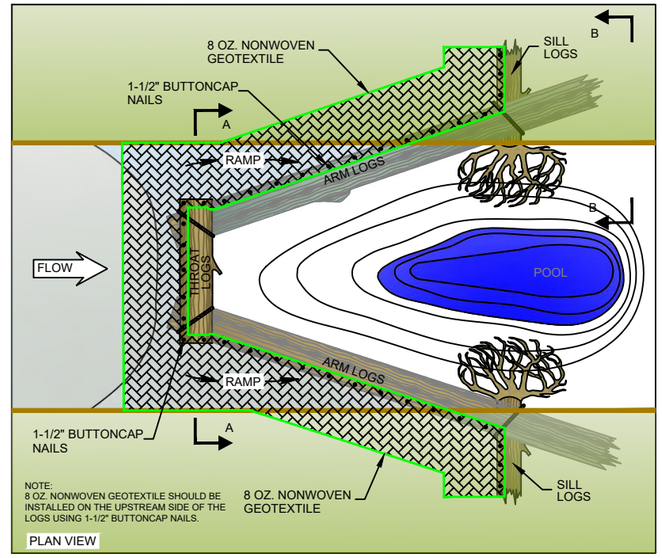
TYPICAL STEP POOL & SOIL/SOD LIFT DETAILS

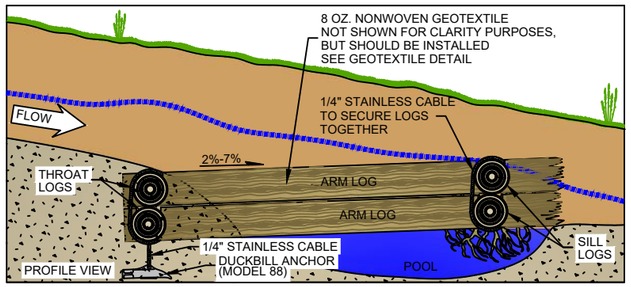
CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

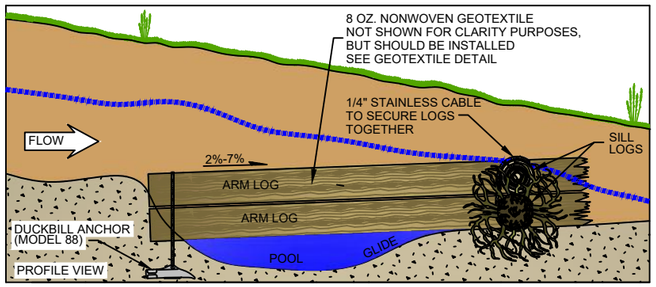
CAD BY	DJS	01/28/20	PROJECT NO. B19–525–1760	
CHECKED BY			DRAWING NO. B19–525–D18	
APPROVED BY				

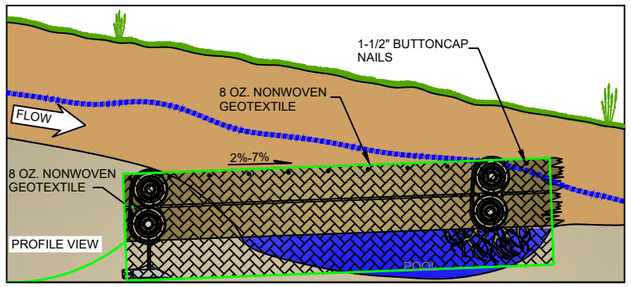


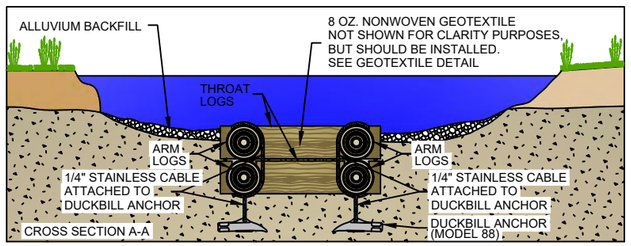


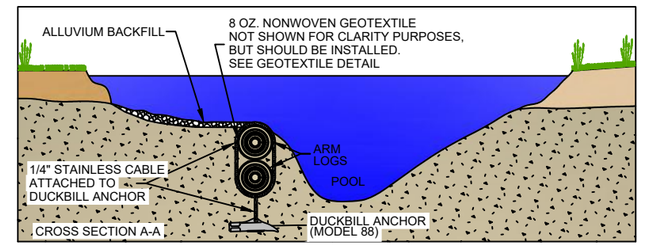


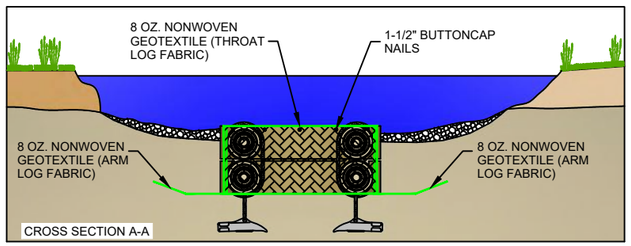


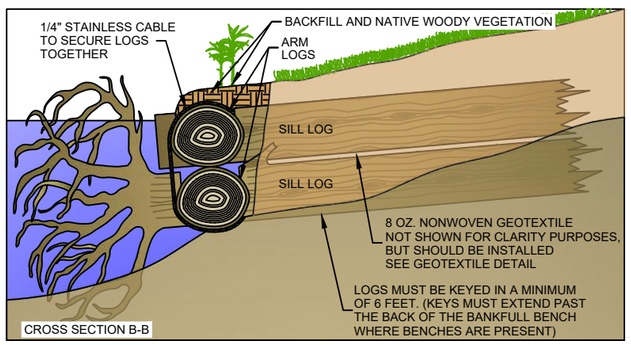




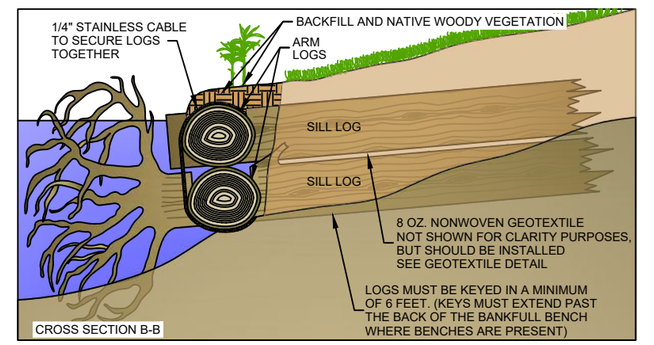




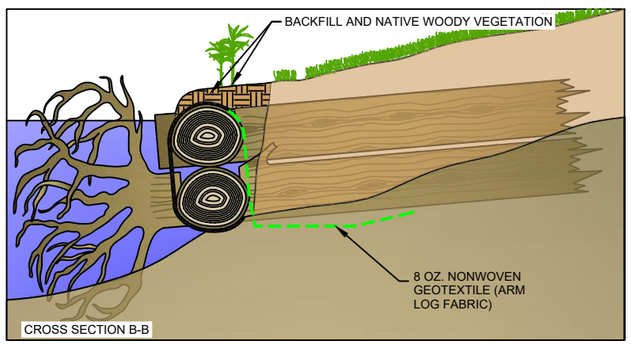




LOG CROSS VANE



LOG VANE



GEOTEXTILE DETAIL

REV.	DATE	DESCRIPTION	P.M.

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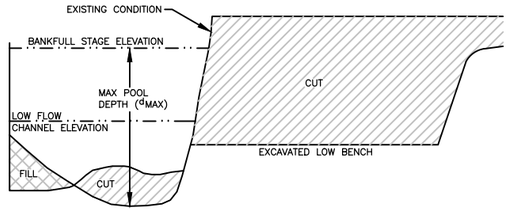
CHARLESTON, WV (681) 217-2080

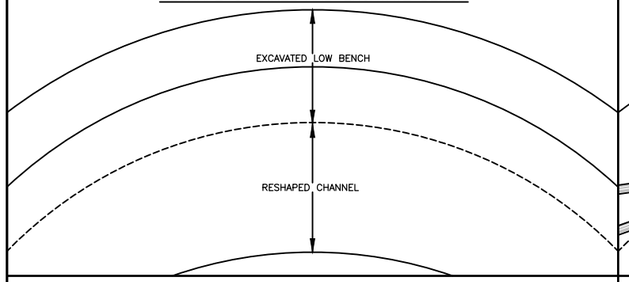
TYPICAL LOG VANE AND GEOTEXTILE DETAILS

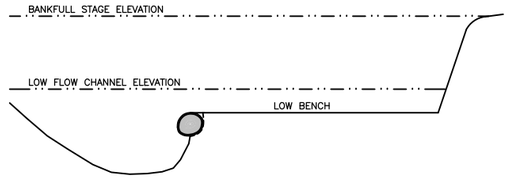
CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760
CHECKED BY			DRAWING NO. B19-525-D19
APPROVED BY			

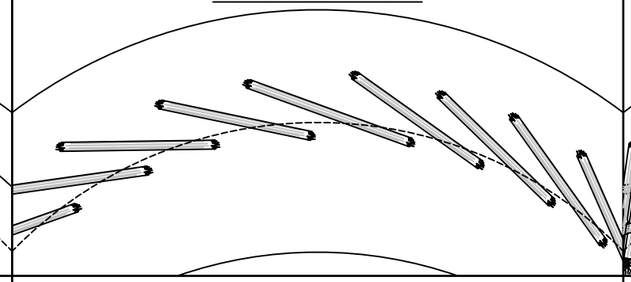


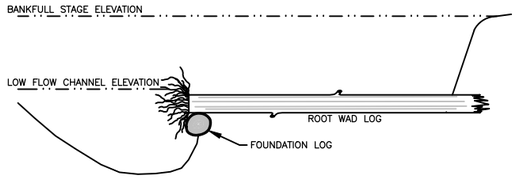
RESHAPE CHANNEL AND EXCAVATE BENCH



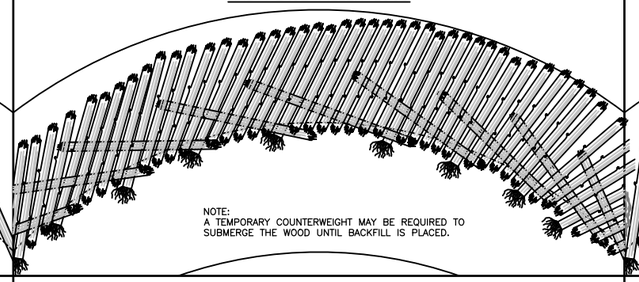


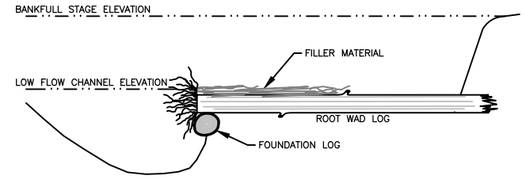
DIG TRENCH IN LOWER BENCH FOR FOUNDATION LOG AND PLACE LOG IN TRENCH



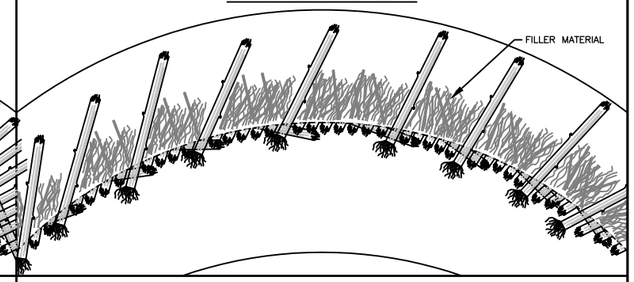


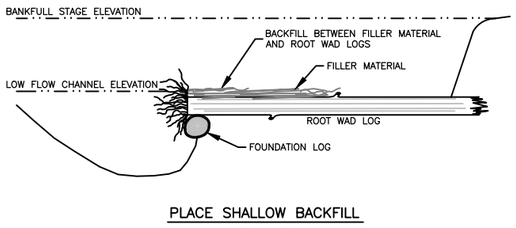
CANTILEVER THE ROOT WAD LOGS OVER FOUNDATION LOGS AND PLACE FILLER LOGS



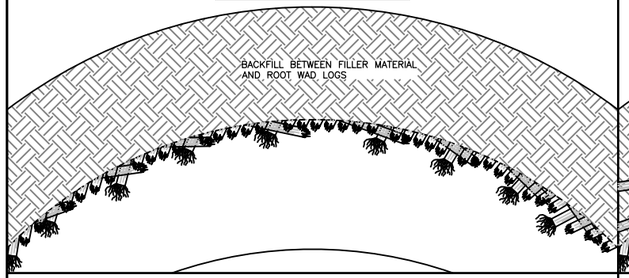


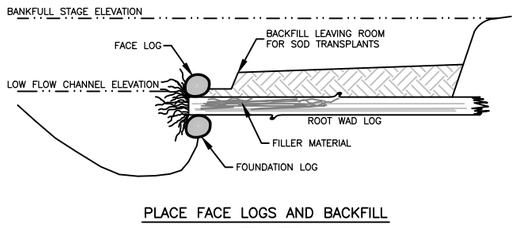
PLACE TOPS, LIMBS AND BRUSH BETWEEN THE ROOT WAD LOGS ON TOP OF FILLER LOGS



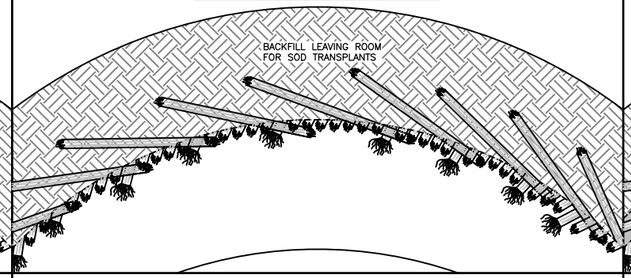


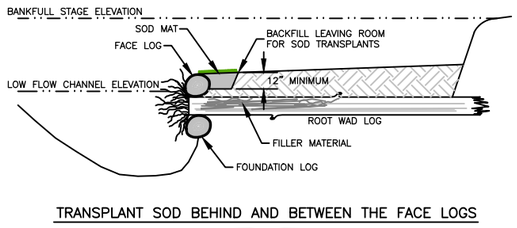
PLACE SHALLOW BACKFILL



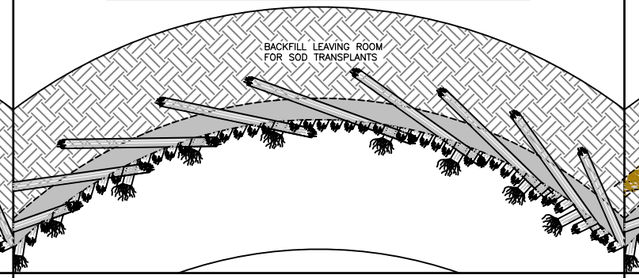


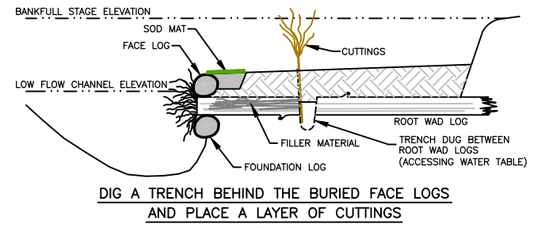
PLACE FACE LOGS AND BACKFILL



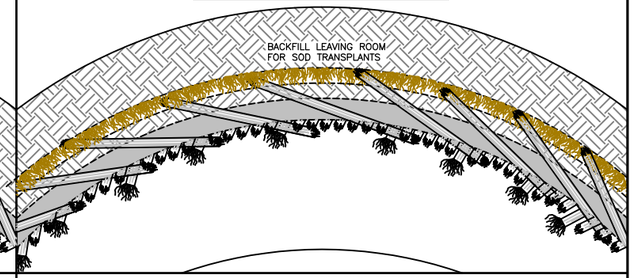


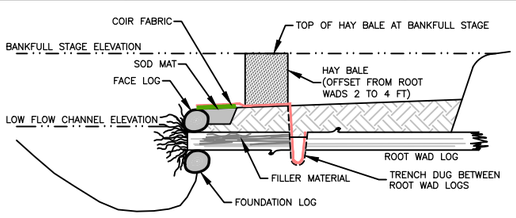
TRANSPLANT SOD BEHIND AND BETWEEN THE FACE LOGS



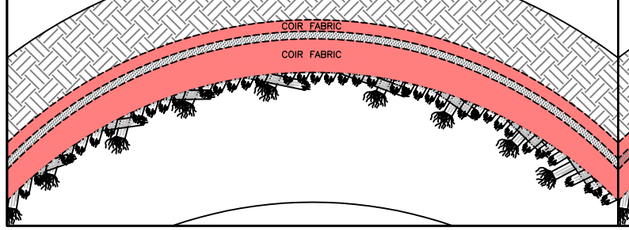


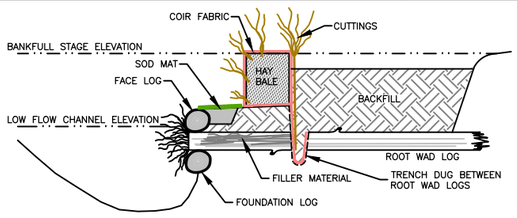
DIG A TRENCH BEHIND THE BURIED FACE LOGS AND PLACE A LAYER OF CUTTINGS



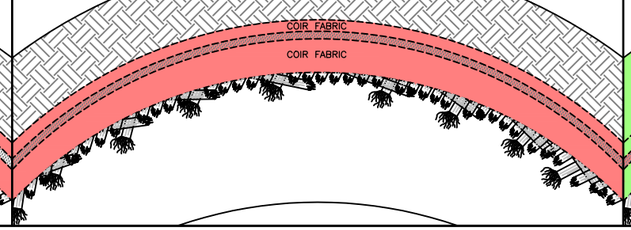


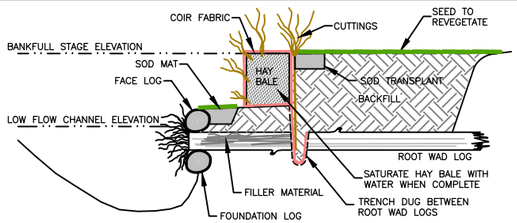
DIG A TRENCH BEHIND THE BURIED FACE LOGS AND PLACE A LAYER OF CUTTINGS



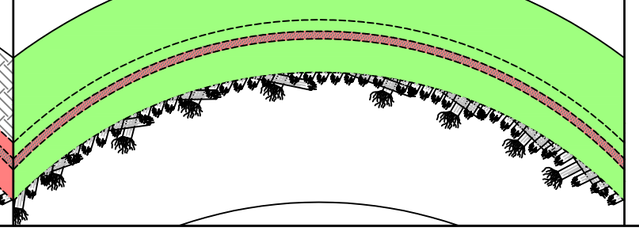


WRAP THE HAY BALES WITH COIR FABRIC, PLACE CUTTINGS AND BACKFILL





PLACE LAYER OF SOD TRANSPLANTS, BACKFILL AND PLACE SEED



MINIMUM LOG LENGTHS FOR FOUNDATION, ROOTWAD AND FACE LOGS BY BANKFULL WIDTH FOR TOE WOOD.

BANKFULL WIDTH (Wbkf)	LOG LENGTH (FT)
4–10	10–12
11–20	15–20
21–40	20–25
41–80	26–30
>80	30–40

ROOT WADS SELECTION:

SHALLOW ROOTED SPECIES WITH RATIOS OF FAN DIAMETER TO BALE DIAMETER OF 4.0 OR GREATER ARE PREFERRED; AVOID NARROW BASED FAN DIAMETER RATIOS LESS THAN 3.0. SPACING BETWEEN THE ROOT WAD CENTERS AT 1.5–2 TIMES THE FAN DIAMETER (MINIMUM 4.5').

FOR LARGER STREAMS, MULTIPLE LAYERS OF COIR WRAPPED HAY BALES OR SOD LIFTS MAY BE NECESSARY TO MEET BANKFULL ELEVATION.

FOR SMALL STREAMS HAY BALES OR SOD LIFTS CAN BE SUBSTITUTED FOR FACE LOGS.

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

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TYPICAL TOE WOOD DETAIL

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760	
CHECKED BY				
APPROVED BY			DRAWING NO. B19-525-D20	

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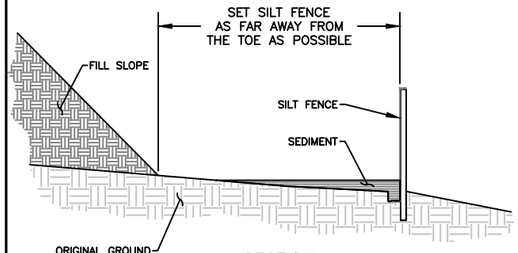

SECTION A–A

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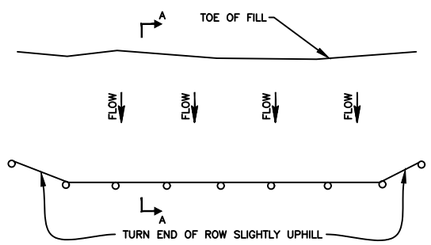

PLAN VIEW

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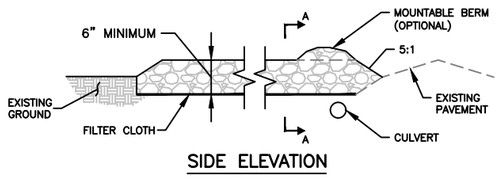
PLACEMENT OF SILT FENCE



SIDE ELEVATION

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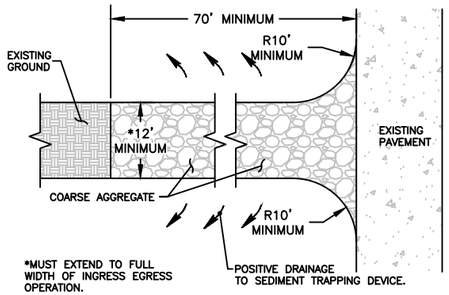

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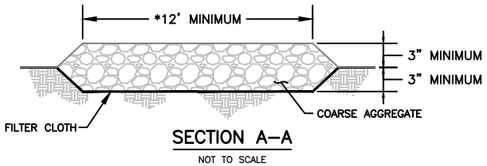

SECTION A–A

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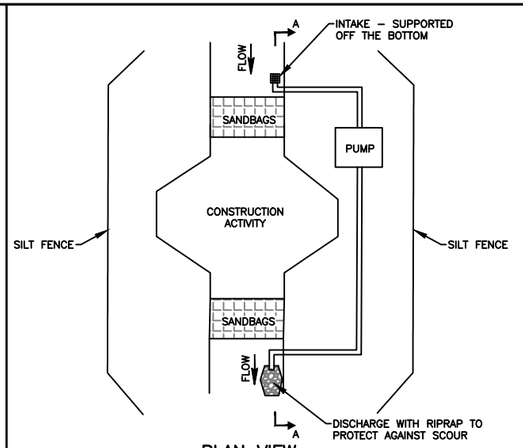
STONE CONSTRUCTION ENTRANCE



PLAN VIEW

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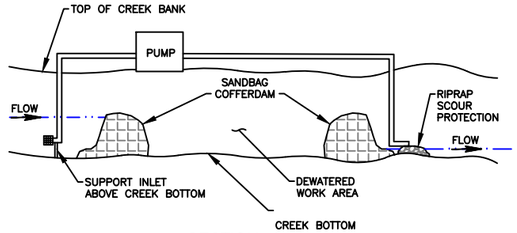

SECTION A–A

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PUMP AROUND

SWAMP MAT BEST MANAGEMENT PRACTICES

INSTALLATION

- MATS SHOULD BE IN GOOD CONDITION TO ENSURE PROPER INSTALLATION, USE AND REMOVAL.
- OPERATING HEAVY EQUIPMENT IN WETLANDS SHALL BE MINIMIZED, AND SUCH EQUIPMENT OTHER THAN FIXED EQUIPMENT (DRILL RIGS, FIXED CRANES, ETC.) SHALL NOT BE STORED, MAINTAINED, FUELED OR REPAIRED IN WETLANDS UNLESS THE EQUIPMENT IS BROKEN DOWN AND CANNOT BE EASILY REMOVED.
- AN ADEQUATE SUPPLY OF SPILL CONTAINMENT EQUIPMENT SHALL BE MAINTAINED ON SITE.
  MATS SHOULD BE PLACED IN POSITION AS OPPOSED TO DRAGGING.
- WOODY VEGETATION (TREES, SHRUBS, ETC.) SHALL BE CUT AT OR ABOVE GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA.
- WHERE FEASIBLE, PLACE MATS IN A LOCATION THAT WOULD MINIMIZE THE AMOUNT NEEDED FOR THE WETLANDS CROSSING.
- MINIMIZE IMPACTS TO WETLAND AREAS DURING INSTALLATION, USE, AND REMOVAL.
- INSTALL ADEQUATE EROSION AND SEDIMENT CONTROLS AT APPROACHES TO MATS TO PROMOTE A SMOOTH TRANSITION TO, AND MINIMIZE SEDIMENT TRACKING ONTO, SWAMP MATS.
- IN MOST CASES, CONSTRUCTION MATS SHOULD BE PLACED ALONG THE TRAVEL AREA SO THAT THE INDIVIDUAL BOARDS ARE RESTING PERPENDICULAR TO THE DIRECTION OF TRAFFIC. NO GAPS SHOULD EXIST BETWEEN MATS. PLACE MATS FAR ENOUGH ON EITHER SIDE OF THE RESOURCE AREA TO REST ON FIRM GROUND.

WETLAND/STREAM CHANNEL CROSSING

- AT "DRY" CROSSINGS WHERE NO FLOW IS PRESENT OR ANTICIPATED DURING PROJECT CONSTRUCTION, THE MATS MAY BE PLACED DIRECTLY ONTO THE GROUND IN ORDER TO PREVENT EXCESSIVE RUTTING, PROVIDED STREAM BANKS AND BOTTOMS ARE NOT ADVERSELY ALTERED.
- CONSTRUCTION MATS MAY BE USED AS A TEMPORARY BRIDGE OVER A STREAM TO ALLOW VEHICLES ACCESS TO THE WORK SITE. SMALL SECTIONS OF MAT ARE PLACED WITHIN AND ALONG THE STREAM PARALLEL TO THE FLOW OF WATER. MATS MAY THEN BE PLACED PERPENDICULAR TO THE STREAM, RESTING ON TOP OF THE INITIAL CONSTRUCTION MAT SUPPORTS. IT MAY BE NECESSARY TO PLACE ADDITIONAL REINFORCEMENT FOR EXTRA STABILITY AND TO MINIMIZE THE AMOUNT OF SEDIMENT THAT COULD FALL BETWEEN THE SPACES OF EACH TIMBER.
- IN AREAS WHERE WILDLIFE PASSAGE OR MIGRATION IS A CONSIDERATION, MATS MAY BE INSTALLED IN ACCORDANCE WITH THE DIAGRAM "TYPICAL STREAM CROSSING WITH SWAMP MATS."
- MATS SHOULD NOT BE PLACED SO THAT THEY RESTRICT THE NATURAL FLOW OF THE STREAM.
- MINIMIZE NUMBER OF STREAM/WETLAND CROSSINGS. WHERE FEASIBLE, LOCATE CROSSING SITE WHERE STREAM CHANNEL IS NARROW FOR THE SHORTEST POSSIBLE CLEAR SPAN AND WHERE STREAM BANKS ARE STABLE AND WELL DEFINED. FOR LARGE WETLAND COMPLEXES, CONSIDER ACCESSING STRUCTURES FROM OPPOSITE SIDES WHERE POSSIBLE TO AVOID CROSSING THE ENTIRE WETLAND.
- MORE THAN ONE LAYER OF MATS MAY BE NECESSARY IN AREAS WHICH ARE INUNDATED OR HAVE DEEP ORGANIC WETLAND SOILS.

MAINTENANCE

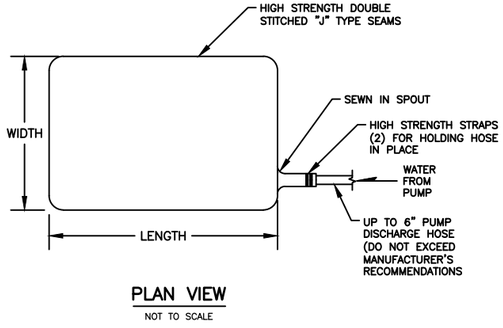
- MATTED WETLAND CROSSINGS SHOULD BE MONITORED TO ASSURE CORRECT FUNCTIONING OF THE MATS. INSPECT MATS AFTER USE. LOOK FOR ANY DEFECTS OR STRUCTURAL PROBLEMS. MATS WHICH BECOME COVERED WITH SOILS OR CONSTRUCTION DEBRIS SHOULD BE CLEANED AND THE MATERIALS REMOVED AND DISPOSED OF IN AN UPLAND LOCATION. THE MATERIAL SHOULD NOT BE SCRAPED AND SHOVELED INTO THE RESOURCE AREA. MATS WHICH BECOME IMBEDDED MUST BE RESET OR LAYERED TO PREVENT MUD FROM COVERING THEM OR WATER PASSING OVER THEM.

REMOVAL

- MATTING SHOULD BE REMOVED BY "BACKING" OUT OF THE SITE, REMOVING MATS ONE AT A TIME. ANY RUTTING OR SIGNIFICANT INDENTATIONS IDENTIFIED DURING MAT REMOVAL SHOULD BE REGRADED IMMEDIATELY, TAKING CARE NOT TO COMPACT SOILS.
- MATS SHOULD BE CLEANED BEFORE TRANSPORT TO ANOTHER WETLAND LOCATION TO REMOVE SOIL AND ANY INVASIVE PLANT SPECIES SEED STOCK OR PLANT MATERIAL.
- MATS SHALL BE CLEANED OF SOIL AND ANY INVASIVE PLANT SPECIES SEED STOCK OR PLANT MATERIAL FROM BEFORE INSTALLATION.
- CLEANING METHODS MAY INCLUDE BUT ARE NOT LIMITED TO SHAKING OR DROPPING MATS IN A CONTROLLED MANNER WITH A PIECE OF MACHINERY TO KNOCK OFF ATTACHED SOIL AND DEBRIS, SPRAYING WITH WATER OR AIR, AND SWEEPING.
- CROSSINGS SHOULD BE INSPECTED FOLLOWING MAT REMOVAL TO DETERMINE THE LEVEL OF RESTORATION REQUIRED.

RESTORATION

- SPECIAL PRECAUTIONS SHOULD BE TAKEN TO PROMPTLY STABILIZE AREAS OF DISTURBED SOIL LOCATED NEAR WETLANDS AND STREAMS. MATTED AREAS WITHIN WETLANDS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION. THIS MAY INVOLVE NATURAL REVEGETATION FROM EXISTING ROOT AND SEED STOCK OF NATIVE PLANT SPECIES. CONDITIONS MAY WARRANT PLANTING AND THE BROADCAST OF A WETLAND SEED MIX OVER THE MATTED AREA TO SUPPLEMENT THE EXISTING SEED AND ROOTSTOCK. SEED MIXES AND VEGETATION SHALL CONTAIN ONLY PLANT SPECIES NATIVE TO WEST VIRGINIA. THE USE OF MULCH IN WETLANDS SHALL CONSIST OF WEED– FREE MULCH TO MITIGATE THE RISK OF THE SPREAD OF INVASIVE PLANT SPECIES.



PLAN VIEW

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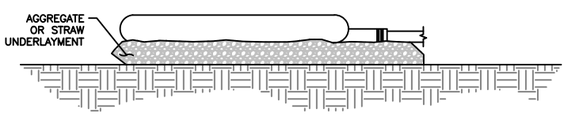

SIDE ELEVATION

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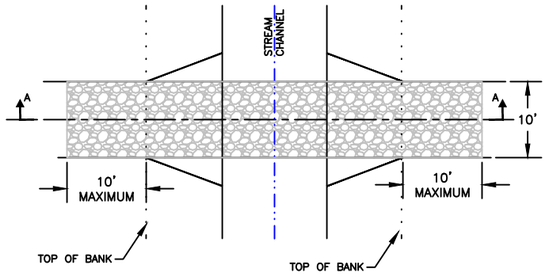
DEWATERING BAG



PLAN VIEW

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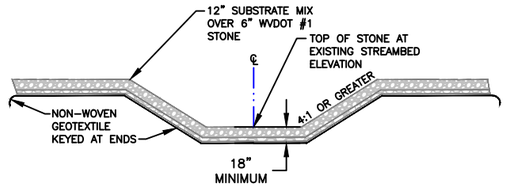

SECTION A–A

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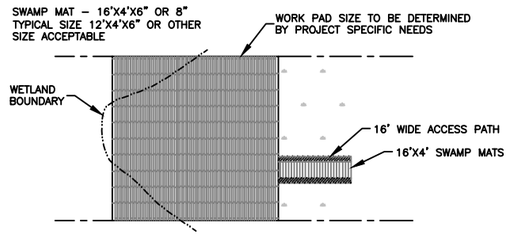
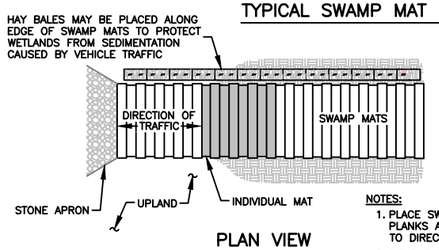
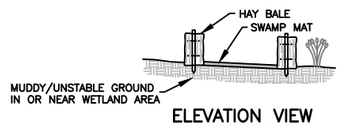
STREAM CROSSING (FORD)



TYPICAL SWAMP MAT LAYOUT



PLAN VIEW

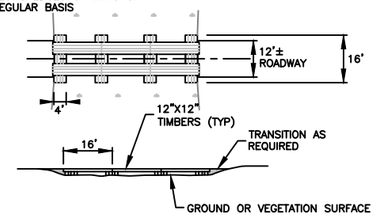


ELEVATION VIEW

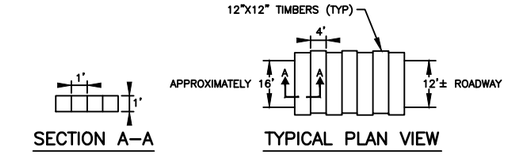
TYPICAL SWAMP MAT USE

NOTES:

1. PLACE SWAMP MATS SO PLANKS ARE PERPENDICULAR TO DIRECTION OF TRAFFIC.
2. REMOVE SEDIMENT DEPOSITS ALONG EDGES OF MATS ON A REGULAR BASIS



TYPICAL STREAM CROSSING
WITH SWAMP MATS

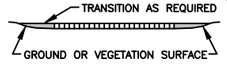


SECTION A–A

TYPICAL PLAN VIEW

TYPICAL MAT SECTION

BOLTED TOGETHER



TYPICAL SECTION VIEW

NOTES:

1. TO BE INSTALLED IF NECESSARY TO PREVENT RUTTING, TO ACCESS STRUCTURES.
2. THIS DETAIL SHOWS TYPICAL DIMENSIONS. SOME CONTRACTORS SWAMP MATS ARE DIMENSIONALLY DIFFERENT FROM WHAT IS SHOWN HERE.
3. DEPENDENT ON SITE CONDITIONS, MULTIPLE LAYERS OF SWAMP MATS MAY BE INSTALLED.

CONCEPT PACKAGE

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EROSION AND SEDIMENT CONTROL DETAILS

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19–525–1760	
CHECKED BY				
APPROVED BY			DRAWING NO. B19–525–D21	

PLANTING SPECIFICATIONS

1. GENERAL

1.1. PLANT DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.

1.2. SUBMITTALS
- 1.2.1. INSTALLERS QUALIFICATIONS: PROVIDE A LIST, WITH REFERENCES, OF THE PAST THREE PROJECTS OF SIMILAR SCOPE.
- 1.2.2. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
- 1.2.3. PLANT MATERIAL CERTIFICATIONS: CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT THE MATERIAL CERTIFICATIONS TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO MATERIAL PURCHASE.
- 1.2.4. MAINTENANCE SCHEDULE: CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT A PLANTS MAINTENANCE SCHEDULE, RECOMMENDING PROCEDURES FOR MAINTENANCE OF THE PLANT MATERIALS TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PLANT INSTALLATION.
- 1.2.5. TOPSOIL ANALYSIS AND SOIL AMENDMENTS: CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT CERTIFIED SOIL TEST RESULTS AND SOIL AMENDMENT RECOMMENDATIONS IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS INCLUDED FOR TOPSOIL AND ORGANIC SOIL AMENDMENTS.
- 1.2.6. CONTRACTOR SHOULD SCHEDULE A MINIMUM OF ONE WEEK FOR PROJECT ENGINEER REVIEW TIME OF THE SPECIFIED SUBMITTAL.

1.3. QUALITY ASSURANCE
- 1.3.1. SUPPLIER CERTIFICATION: THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
- 1.3.2. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER, WHO HAS SUCCESSFULLY COMPLETED PLANTING PROJECTS SIMILAR IN SIZE AND COMPLEXITY TO THIS PROJECT.
- 1.3.3. INSTALLER'S FIELD SUPERVISION: INSTALLER TO MAINTAIN AN EXPERIENCED FULL-TIME SUPERVISOR ON THE PROJECT SITE WHEN PLANTING IS IN PROGRESS.

1.4. PLANT MATERIALS:
- 1.4.1. PROVIDE PLANT MATERIALS OF QUANTITY, SIZE, GENUS, SPECIES, AND VARIETY INDICATED ON THE CONSTRUCTION DRAWINGS.

1.5. ALL PLANT MATERIALS AND WORK SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 2004 AMERICAN STANDARD FOR NURSERY STOCK. ALL SEED MUST MEET APPLICABLE STATE AND FEDERAL REGULATIONS AND MUST INCLUDE LABELING INDICATING SUPPLIER, FORMULATION, GERMINATION RATES AND SEED DATE.

1.6. DO NOT MAKE SUBSTITUTIONS UNLESS APPROVED BY THE PROJECT ENGINEER. IF SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY TO PROJECT ENGINEER, TOGETHER WITH PROPOSAL FOR USE OF EQUIVALENT MATERIAL.

1.7. PROJECT ENGINEER MAY INSPECT PLANT MATERIALS EITHER AT PLACE OF GROWTH OR ON SITE DURING PLANTING ACTIVITIES, FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. ADDITIONALLY, PROJECT ENGINEER RETAINS THE RIGHT TO FURTHER INSPECT PLANT MATERIAL. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN A REASONABLE TIME FRAME (I.E., 1 WEEK). REJECTED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM PROJECT SITE. UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
- 1.7.1. PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTIC FOR THE SPECIES;
- 1.7.2. PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
- 1.7.3. PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
- 1.7.4. PLANTS OF INSUFFICIENT SIZE;
- 1.7.5. PLANTS OF WRONG SPECIES/SUB-SPECIES; AND
- 1.7.6. PLANTS HAVING ROOT GIRDLING IN THE CONTAINER.

1.8. DELIVERY, STORAGE AND HANDLING
- 1.8.1. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF PLANTS DURING DELIVERY. DO NOT DROP PLANTS DURING DELIVERY.
- 1.8.2. DELIVER PLANT MATERIALS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, SET PLANT MATERIALS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST AND FREE FROM FROST. PREVENT PLUG, TUBELINGS AND BAREROOT MATERIAL FROM DRYING.
- 1.8.3. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS UNTIL PLANTING TIME.
- 1.8.4. BALLED AND BURLAPPED MATERIAL SHALL BE DUG SO AS TO RETAIN AS MANY FIBROUS ROOTS AS PRACTICABLE AND SHALL COME FROM SOIL WHICH WILL FORM A FIRM BALL. THE SOIL IN THE BALL SHALL BE THE ORIGINAL AND UNDISTURBED SOIL IN WHICH THE PLANT HAS BEEN GROWN. THE PLANT SHALL BE DUG, WRAPPED, TRANSPORTED AND HANDLED IN SUCH A MANNER THAT THE SOIL BALL WILL NOT BE LOOSENED TO CAUSE STRIPPING OF THE SMALL AND FINE FEEDING ROOTS OR CAUSE THE SOIL TO DROP AWAY FROM SUCH ROOTS.
- 1.8.5. BALLED AND BURLAPPED MATERIAL SHALL BE FRESHLY DUG. IF TREES ARE STORED, UNTIE AND SET VERTICALLY.
- 1.8.6. HANDLE PLANTING STOCK BY ROOT BALL.
- 1.8.7. PREVENT LIVE STAKING MATERIAL FROM DRYING OUT AND STORE ACCORDING TO SUPPLIERS RECOMMENDATIONS.

1.9. PROJECT CONDITIONS
- 1.9.1. EXAMINE THE SUBGRADE AND TOPSOIL, VERIFY THE ELEVATIONS, AND OBSERVE THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. ALL SOIL AMENDMENTS AND CONDITIONING SHALL BE COMPLETED PRIOR TO SEEDING AND PLANT MATERIAL INSTALLATION. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO THE INSTALLER.
- 1.9.2. CALL "MISS UTILITY" AT 1-800-552-7001 48 HOURS PRIOR TO ANY EXCAVATION. DETERMINE LOCATION OF UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID POSSIBLE DAMAGE. HAND EXCAVATE AS REQUIRED.

1.10. PLANTING AND SEEDING RESTRICTIONS
- 1.10.1. PLANTS SHALL BE PLANTED DURING UNFROZEN SOIL CONDITIONS NOVEMBER 1ST-APRIL 1ST. PLANT INSTALLATION OUTSIDE OF THIS TIME PERIOD SHALL NOT OCCUR UNLESS APPROVED BY THE PROJECT ENGINEER AND MAY REQUIRE ADDITIONS TO THE SCOPE OF WORK, SUCH AS WATERING REGIMES, AND ADDITIONAL PLANT QUANTITIES.
- 1.10.2. SEEDING SHALL BE COMPLETED DURING MARCH – MAY OR SEPTEMBER – NOVEMBER. GRADING OPERATIONS NEEDING STABILIZATION OUTSIDE OF THIS TIME PERIOD SHALL BE SEEDED WITH AN ALTERNATIVE WARM SEASON OR COOL SEASON GRASS MIX THAT IS APPROVED BY THE PROJECT ENGINEER UNTIL SUCH TIME AS THE SPECIFIED SEEDING CAN OCCUR.
- 1.10.3. THESE LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY THE PROJECT ENGINEER, IN ADVANCE, WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.

1.11. WARRANTY
- 1.11.1. WARRANTY PERIOD IS FOR ONE (1) YEAR AFTER DATE OF FINAL ACCEPTANCE AND COVERS DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM NEGLECT BY OWNER, ABUSE OR DAMAGE BY OTHERS, OR UNUSUAL PHENOMENA OR INCIDENTS WHICH ARE BEYOND CONTRACTOR'S CONTROL.
- 1.11.1. CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE FOR THE WARRANTY PERIOD OF 85% FOR BALLED AND BURLAPPED, CONTAINER GROWN, AND TUBELINGS, AND 75% FOR BARE ROOT AND LIVE STAKES.
- 1.11.2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN CONTRACTOR SHALL REPLACE THE QUANTITY OF DEFECTIVE OR DEAD PLANTS UP TO THE ORIGINAL CONSTRUCTION DRAWING SPECIFIED PLANT QUALITY. WARRANTY PLANTINGS SHALL OCCUR WITHIN THE NEXT PLANTING WINDOW (NOVEMBER 1ST – APRIL 1ST, EXCLUDING FROZEN SOIL CONDITIONS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.
- 1.11.3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY DURING THE WARRANTY PERIOD TO PROVIDE WRITTEN NOTICE OF ANY MAINTENANCE PRACTICE TO THE OWNER, WHICH IN THEIR OPINION WILL AFFECT THE GUARANTEE IF NOT REMEDIED PROMPTLY. THE PROJECT ENGINEER WILL RENDER AN OPINION OF ANY CONFLICT IF NECESSARY.

1.12. MAINTENANCE
- 1.12.1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL UNTIL FINAL ACCEPTANCE. THE OWNER IS RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL THROUGHOUT THE WARRANTY PERIOD ACCORDING TO THE PROJECT ENGINEER APPROVED MAINTENANCE SCHEDULE.

2. PRODUCTS/MATERIALS

2.1. PLANT MATERIALS
- 2.1.1. GENERAL: PROVIDE NURSERY-GROWN PLANT MATERIALS COMPLYING WITH ANSI Z60.1, WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.

2.2. LIVE STAKES
- 2.2.1. COMMERCIALLY SUPPLIED OR FIELD HARVESTED LIVE STAKES SHALL BE AT LEAST ONE YEAR OLD, AND SHALL BE HARVESTED AND TRANSPORTED WHEN PLANTS ARE DORMANT (NOV. 1-MARCH 1).
- 2.2.2. THE SIZE OF STAKES SHALL RANGE FROM 1/2 INCH TO 1 INCH IN CALIPER AND AVERAGE 24 INCHES IN LENGTH WITH A MINIMUM PLANTED LENGTH OF 18 INCHES. SIDE BRANCHES SHALL BE REMOVED WITH THE REMAINING BARK INTACT. THE BOTTOM (BASAL) END SHALL BE CLEANLY CUT AT A 45 DEGREE OR SHARPER ANGLE AND THE TOP END SHOULD BE CUT SQUARE (FLAT), PROTRUDING NO MORE THAN 4 INCHES.

2.3. SEED SHOULD BE CLEAN AND DRY. DO NOT USE SEED THAT HAS BECOME MOIST DURING DELIVERY OR STORAGE.

2.4. WATER: FREE OF SUBSTANCES HARMFUL TO PLANT GROWTH.

2.5. ROOT DIP: MYCORRHIZAL ROOT DIP OR PROJECT ENGINEER APPROVED EQUAL.

2.6. TOPSOIL
- 2.6.1. REUSE OF SURFACE SOIL STOCKPILED ON-SITE: CONTRACTOR IS RESPONSIBLE TO SUBMIT SOIL TEST RESULTS, CERTIFYING SUITABILITY OF STOCKPILED SURFACE SOIL FOR TOPSOIL USE, TO THE PROJECT ENGINEER FOR APPROVAL.
- 2.6.2. IF STOCKPILED SURFACE SOIL IS DETERMINED TO BE SUITABLE FOR REUSE AS TOPSOIL, THEN CONTRACTOR SHALL CLEAN SOIL TO REMOVE ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH PRIOR TO USE AS TOPSOIL.
- 2.6.3. IMPORTED TOPSOIL: IF ON-SITE SOIL IS DETERMINED TO BE UNSUITABLE THEN CONTRACTOR SHALL SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF-SITE SOURCES WITH CERTIFIED TOPSOIL. OBTAIN TOPSOIL DISPLACED FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4 INCHES (100 MM) DEEP; DO NOT OBTAIN FROM AGRICULTURAL LAND, BOGS OR MARSHES.

OR
- 2.6.4. AMENDED SURFACE SOIL: IF ON-SITE SOIL IS DETERMINED TO BE UNSUITABLE THEN CONTRACTOR SHALL AMEND EXISTING IN-PLACE SURFACE SOIL TO PRODUCE TOPSOIL. CONTRACTOR IS RESPONSIBLE TO SUBMIT CERTIFIED SURFACE SOIL TEST RESULTS AND RECOMMENDED AMENDMENTS TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO PURCHASING AMENDMENTS. CONTRACTOR SHALL CLEAN SURFACE SOIL TO REMOVE ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH PRIOR TO MIXING IN APPROVED AMENDMENTS.

2.7. ORGANIC SOIL AMENDMENTS
- 2.7.1. ORGANIC BACKFILL SHALL BE ADDED AS A SOIL AMENDMENT AND SHALL CONSIST OF COMPOSTED YARD WASTE, OR OTHER APPROVED RECYCLED ORGANIC MATERIALS. PRIOR TO DELIVERY, THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL A SAMPLE OF THE ORGANIC BACKFILL THAT WILL BE USED BY THE CONTRACTOR AND SHALL SUBMIT A TEST REPORT FROM AN INDEPENDENT LABORATORY VERIFYING THE MATERIAL CONFORMS TO THE FOLLOWING ANALYSIS:
- 2.7.2. ORGANIC BACKFILL SHALL BE AGED NOT LESS THAN ONE YEAR AND MUST BE FREE OF VIABLE WEED SEED. THE PROJECT ENGINEER RESERVES THE RIGHT AT ANY TIME TO TEST AND REJECT COMPOST MATERIAL THAT FAILS TO MEET THESE SPECIFICATIONS. COMPOSTED WASTE PRODUCTS SHALL EXCLUDE SEWER SLUDGE OR BIO-SOLIDS, PLASTICS OR METALS.

2.8. STRAW MULCH: CEREAL GRAIN STRAW HARVESTED FROM DRY STALKS AND PROPERLY STORED. STRAW SHALL COME IN BALED FORM TO BE SPREAD BY HAND OR MACHINE-BLOWN.

2.9. HERBICIDE SPRAY APPLICATION: EXISTING AREAS WITH SUBSTANTIAL COVERAGE OF UNDESIRABLE GRASS SPECIES SHALL BE SPRAYED WITH GLYPHOSATE (ROUNDUP OR APPROVED EQUAL), SURFACTANT, AND AMMONIUM SULFATE MIX AT A RATE OF 1 QUART GLYPHOSATE PER ACRE, 7 OUNCES OF SURFACTANT, AND 17 POUNDS PER 100 GALLONS OF WATER OF AMMONIUM SULFATE. COOL SEASON GRASS ERADICATION REQUIRES ONE APPLICATION IN THE FALL AND ONE IN THE SPRING. GRASS SHOULD BE ALLOWED TO GROW 6 INCHES, EITHER AFTER MOWING OR FROM SPRING GROWTH, TO WEAKEN THE PLANT AND PROVIDE MAXIMUM SURFACE AREA FOR APPLICATION.

3. EXECUTION:
INSTALL PLANT MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS AND DETAILS OF THE CONSTRUCTION DRAWINGS FOLLOWING THE ADDITION OF SOIL AMENDMENTS, SEEDING, AND INSTALLATION OF APPLICABLE EROSION CONTROL FABRIC.

3.1. PRIOR TO INSTALLATION OF WOODY PLANTING MATERIAL THE PLANTING AREA WILL BE RIPPED AND SPRAYED TO LOOSEN THE SOIL AND PREPARE FOR PLANTING.
- 3.1.1. ALL WOODY PLANTING MATERIAL WILL BE PLANTED IN ROWS AT SPACING CONSISTENT WITH THE NECESSARY QUANTITY PER ACRE.
- 3.1.2. ALL WOODY PLANTING MATERIAL WILL HAVE MULCH RINGS 1 1/2"-2" DEEP AND A MINIMUM OF 12" RADIALLY FROM THE STEM OF THE PLANT.

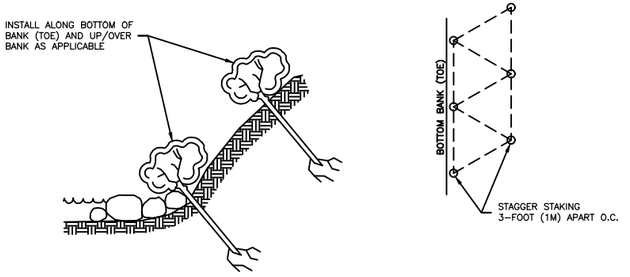
3.2. CONTAINER GROWN MATERIAL
- 3.2.2. PLANTING OF CONTAINER GROWN MATERIAL SHALL OCCUR IN ACCORDANCE WITH LOCATIONS AND/OR PATTERNS SPECIFIC TO THE CONSTRUCTION DRAWINGS.
- 3.2.3. PLANTING HOLES SHALL BE TWICE THE DIAMETER AND 1 FOOT DEEPER THAN THE CONTAINER IN WHICH THEY ARE GROWN. SCARIFY PLANTING HOLE BOTTOM A MINIMUM OF 6 INCHES AND MIX 1/2 CUBIC FOOT OF ORGANIC BLEND WITH HOLE BACKFILL PRIOR TO SETTING PLANT. DO NOT REMOVE PLANT MATERIAL FROM CONTAINER UNTIL IMMEDIATELY BEFORE INSTALLATION. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT WITHIN THE HOLE SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRICTION OF THE ROOT BALL.
- 3.2.4. SET PLANT MATERIALS PLUMB AND CENTERED WITHIN HOLE, ENSURING THAT THE TOP OF THE ROOT BALL IS ELEVATED 2 TO 3 INCHES ABOVE THE SURROUNDING SOIL ELEVATIONS. BACKFILL AROUND ROOT BALL WITH SUITABLE NATIVE SOIL, MAINTAINING PLUMB, AND GENTLY TAMPING BACKFILL LAYERS TO ELIMINATE VOIDS. WATER IN BACKFILL LAYERS TO THE POINT OF SOIL SATURATION.
- 3.2.5. FOLLOWING THE BACKFILLING, ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOUSE, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES.

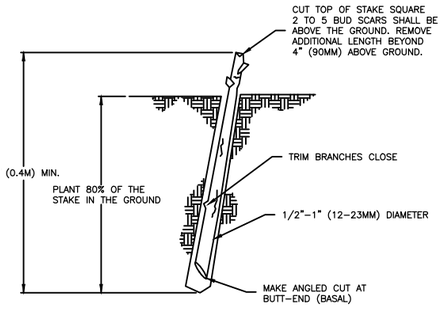
3.3. BAREROOT MATERIAL
- 3.3.1. PLANTING OF BARE ROOT MATERIAL SHALL OCCUR IN A ROW ACROSS THE SITE AND IN ACCORDANCE WITH THE SCHEDULE AND DETAILS PROVIDED.
- 3.3.2. IT SHOULD BE ANTICIPATED THAT THE SOIL MAY BE COMPACTED MORE THAN OPTIMAL FOR PLANTING AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DISK AND RAKE SOIL TO ASSURE OPTIMAL PLANTING CONDITION.
- 3.3.3. BAREROOT MATERIAL SHALL BE TREATED WITH ROOT DIP ACCORDING TO THE MANUFACTURERS RECOMMENDATION PRIOR TO PLANTING. MATERIALS SHALL BE PLANTED IMMEDIATELY OR OTHERWISE STORED PER THE MANUFACTURER'S RECOMMENDATIONS.

3.3.4 LIVE STAKE MATERIAL 3.3.1. LIVE STAKE MATERIAL SHALL BE SOAKED WITH GROWTH HORMONE 48 HOURS PRIOR TO INSTALLATION AND SHALL BE KEPT MOIST ACCORDING TO MANUFACTURERS RECOMMENDATIONS. DO NOT ALLOW THE LIVE STAKES TO DRY OUT PRIOR TO INSTALLATION.
- 3.3.2. MATERIAL SHALL BE PLANTED ACCORDING TO THE DETAIL PROVIDED ON THIS SHEET. THE USE OF A PUNCH/PLANTING BAR, AUGER, REBAR, OR WATER-JET MAY BE USED TO PREDRILL HOLE IF NECESSARY. TAMP SOIL AROUND STAKE FOLLOWING INSTALL. 3.3.3. INSTALL APPROVED TREE TAG IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.3.5. APPLY 1 1/2 TO 2 INCH AVERAGE THICKNESS OF PROJECT ENGINEER APPROVED ORGANIC MULCH LAYER ACROSS ENTIRE PLANTING HOLE EXTENDING A MINIMUM OF 12 INCHES RADIALLY. DO NOT PLACE MULCH WITHIN 3 INCHES OF PLANT TRUNK OR STEM.

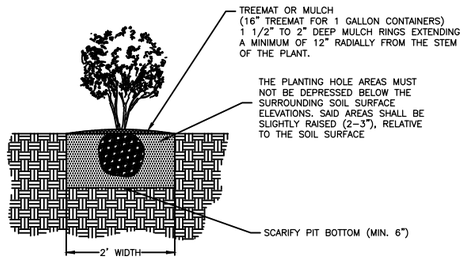
3.4. SEEDING
- 3.4.1. SEEDING IN AREAS GRADED OR OTHERWISE DENUDED SHALL OCCUR IN ACCORDANCE WITH THE CURRENT VERSION OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND MINIMUM STANDARD 1 (MS-1). SEED SHALL BE APPLIED PRIOR TO INSTALLATION OF ANY EROSION CONTROL FABRIC. AREAS APPLIED WITH HERBICIDE IN THE SPRING MAY BE SEEDED 7 DAYS AFTER APPLICATION.
- 3.4.2. SOW SEED WITH A SPREADER OR A HYDROSEED MACHINE WITH MANUFACTURER RECOMMENDED BINDING AGENT. DO NOT BROADCAST OR DROP SEED WHEN WIND VELOCITY EXCEEDS 5 MPH. EVENLY DISTRIBUTE SEED BY SOWING EQUAL QUANTITIES IN TWO DIRECTIONS AT RIGHT ANGLES TO EACH OTHER.
- 3.4.3. DO NOT USE WET SEED OR SEED THAT IS MOLDY OR OTHERWISE DAMAGED IN TRANSIT OR STORAGE.
- 3.4.4. SOW SEED PRIOR TO INSTALLATION OF EROSION CONTROL FABRIC WHERE APPLICABLE.
- 3.4.5. RAKE SEED LIGHTLY INTO THE TOP 1/4 TO 1/2 INCH OF TOPSOIL, ROLL LIGHTLY, AND WATER WITH A FINE SPRAY.
- 3.4.6. PROTECT SEEDED AREAS AGAINST EROSION BY SPREADING STRAW MULCH IMMEDIATELY FOLLOWING COMPLETION OF SEEDING OPERATIONS IF OTHER EROSION CONTROL MEASURES ARE NOT OTHERWISE SPECIFIED. SPREAD UNIFORMLY AT A RATE OF 2 TONS PER ACRE (90 LB. PER 1,000 S.F.) TO FORM A CONTINUOUS BLANKET OVER SEEDED AREAS. SPREAD BY HAND, BLOWER, OR OTHER SUITABLE EQUIPMENT. ANCHOR STRAW MULCH BY CRIMPING INTO TOPSOIL BY SUITABLE MECHANICAL EQUIPMENT.





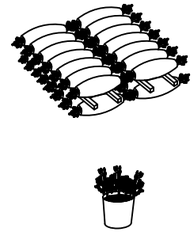
LIVE STAKING

NOT TO SCALE



CONTAINER TREE AND SHRUB PLANTING

NOT TO SCALE

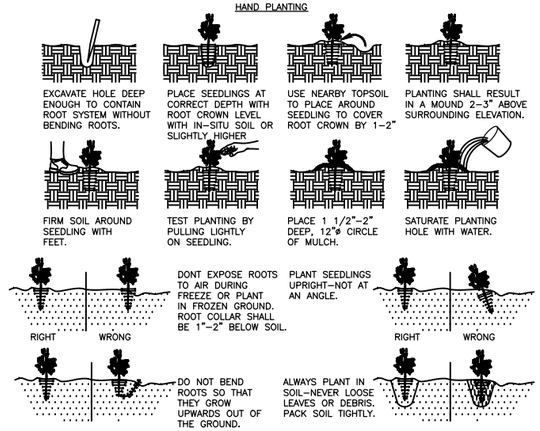


CARE OF SEEDLINGS UNTIL PLANTED

SEEDLINGS SHOULD BE PLANTED IMMEDIATELY. IF IT IS NECESSARY TO STORE MOSS-PACKED SEEDLINGS FOR MORE THAN 2 WEEKS, ONE PINT OF WATER PER PKG. SHOULD BE ADDED. IF CLAY-TREATED, DO NOT ADD WATER TO PKG. PACKAGES MUST BE SEPERATED TO PROVIDE VENTILATION TO PREVENT "HEATING". SEPERATE PACKAGES WITH WOOD STRIPS AND STORE OUT OF WIND IN A SHADED, COOL (NOT FREEZING) LOCATION.

CARE OF SEEDLINGS DURING PLANTING

WHEN PLANTING, ROOTS MUST BE KEPT MOIST UNTIL TREES ARE IN THE GROUND. DO NOT CARRY SEEDLINGS IN YOUR HAND EXPOSED TO THE AIR AND SUN. KEEP MOSS-PACKED SEEDLINGS IN A CONTAINER PACKED WITH WET MOSS OR FILLED WITH THICK MUDDY WATER. COVER CLAY-TREATED SEEDLINGS WITH WET BURLAP ONLY. ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE ROOT DIP OR APPROVED EQUAL.



BARE ROOT SEEDLING INSTALLATION

NOT TO SCALE

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

Alliance Consulting, Inc.
Engineers • Constructors • Scientists
BECKLEY, WV (304) 255-0491
CANONSBURG, PA (724) 745-3630
CHARLESTON, WV (681) 217-2090

PLANTING DETAILS AND NOTES

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	01/28/20	PROJECT NO. B19-525-1760	
CHECKED BY			DRAWING NO. B19-525-D22	
APPROVED BY				

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Date: Aug 13, 2020 4:21pm - Plotted by: dschofield
Xref's:

WETLAND 9
C1 R1
WETLAND 4
T1 OF RT1 OF C2
LT1 OF C2
WETLAND 8
WETLAND DESIGN NO. 3
C2 R1A
RT1 OF C2
LT1 OF C2
WETLAND 3
WETLAND 2
C2 R1B
RT1 OF C3R
WETLAND 5
C2
RT5 of RT1 of C3
WETLAND 6
C1R3R
RT1 of RT5 of RT1 of C3
WETLAND 7
C2R3R
RT5 OF C2
C3R
WETLAND DESIGN NO. 2
LT1 OF C3R
WETLAND DESIGN NO. 1
LT2 OF C3R

LEGEND:

- PROPERTY BOUNDARY
- DESIGNED STREAM CHANNEL
- EXISTING STREAM CHANNEL
- 50-FOOT BUFFER
- 125-FOOT BUFFER
- 150-FOOT BUFFER
- 300-FOOT BUFFER
- DESIGNED WETLAND (CONSTRUCTED)
- DELINEATED WETLAND (ENHANCED AND/OR PRESERVE)
- RIPARIAN BUFFER WETLAND

PLAN VIEW

SCALE

200 0 200 400Feet

CONCEPT PACKAGE

REV.	DATE	DESCRIPTION	P.M.

Alliance Consulting, Inc.
Engineers • Constructors • Scientists
BECKLEY, WV (304) 255-0491
CANONSBURG, PA (724) 745-3630
CHARLESTON, WV (681) 217-2090

WETLAND AND STREAM BUFFER MAP

CONCEPTUAL MITIGATION BANK DESIGN
SWANWICK, ILLINOIS
Prepared For
LYME ILLINIOS MITIGATION HOLDINS
ATLANTA GEORGIA

CAD BY	DJS	11/17/20	PROJECT NO. B19-525-1760	
CHECKED BY				
APPROVED BY			DRAWING NO. B19-525-D23	

Xrefs:

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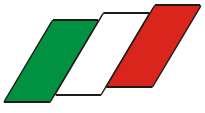
Date: Dec 01, 2020-8:58am - Plotted by: dschoolfield

SECTION C

CREDIT ESTIMATION TABLES



Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor	C1R1	LT1 of C1	LT1 of RT1 of C2	C2R1A	LT1 of C2
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1.5	1.5	1.5	1.5	1.5
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.75	2.75	2.75	2.75	2.75
Stream Length in Reach (do not count each bank separate) **(lf)=**	619	1204	579	280	655
Credits **(c) = (m)x(lf)**	1702.25	3311	1592.25	770	1801.25
Mitigation Factor	1	1	1	1	1
Credits Reach	1702.25	3311	1592.25	770	1801.25

Total Channel Restoration Credits Generated = 9176.75

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	C1R1	LT1 of C1	LT1 of RT1 of C2	C2R1A	LT1 of C2
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.4	0.4	0.4	0.4	0.4
Net Benefit Streamside B	0.4	0.4	0.4	0.4	0.4
Supplemental Buffer Credit	0.4	0.4	0.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	2.1	2.1	2.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	619	1204	579	280	655
Credits **(c) = (m) x (lf) =**	1299.9	2528.4	1215.9	588	1375.5
Mitigation Factor	1	1	1	1	1
Credits Reach	1299.9	2528.4	1215.9	588	1375.5

Total Riparian Credits Generated	7007.7

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	7007.7
C. Stream Restoration	9176.75
D. Total Proposed Non-Bank Mitigation = B + C	16184.45

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor	RT1 OF C2	RT3 of C2 (pres)	LT2 of C2 (pres)	RT2 of C2 (pres)	RT4 of C2 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1.5	1	1	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.75	2.25	2.25	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**	787				
Credits **(c) = (m)x(lf)**	2164.25	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	2164.25	0	0	0	0

Total Channel Restoration Credits Generated = 2164.25

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Riparian Worksheet

Factor	RT1 OF C2	RT3 of C2 (pres)	LT2 of C2 (pres)	RT2 of C2 (pres)	RT4 of C2 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.4	0.4	0.4	0.4	0.4
Net Benefit Streamside B	0.4	0.4	0.4	0.4	0.4
Supplemental Buffer Credit	0.4	0.4	0.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	2.1	2.1	2.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	787				
Credits **(c) = (m) x (lf) =**	1652.7	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	1652.7	0	0	0	0

Total Riparian Credits Generated 1652.7

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	1652.7
C. Stream Restoration	2164.25
D. Total Proposed Non-Bank Mitigation = B + C	3816.95

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Stream Restoration Worksheet

Factor	RT5 of C2 (pres)	RTA of C3 (pres)	LT2 of C3 (pres)	LT3 of C3 (pres)	LT4 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1	1	1	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.25	2.25	2.25	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**					
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	RT5 of C2 (pres)	RTA of C3 (pres)	LT2 of C3 (pres)	LT3 of C3 (pres)	LT4 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.1	0.4	0.1	0.4	0.4
Net Benefit Streamside B	0.1	0.4	0.1	0.4	0.4
Supplemental Buffer Credit	0.1	0.4	0.1	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	1.2	2.1	1.2	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	664.12	0	268.06		
Credits **(c) = (m) x (lf) =**	796.944	0	321.672	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	796.944	0	321.672	0	0

Total Riparian Credits Generated	1118.616

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	1118.616
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	1118.616

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Stream Restoration Worksheet

Factor	LT9 of RT1 of C3	LT8 of RT1 of C3	LT7 of RT1 of C3	LT6 of RT1 of C3	RT1 of RT5 of RT1 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1	1	1	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.25	2.25	2.25	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**					
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	LT9 of RT1 of C3	LT8 of RT1 of C3	LT7 of RT1 of C3	LT6 of RT1 of C3	RT1 of RT5 of RT1 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.4	0.4	0.4	0.4	0.1
Net Benefit Streamside B	0.4	0.4	0.4	0.4	0.1
Supplemental Buffer Credit	0.4	0.4	0.4	0.4	0.1
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	2.1	2.1	2.1	2.1	1.2
Linear Feet of Buffer (do not count each bank separate) **(lf)** =		0	0	0	356.71
Credits **(c) = (m) x (lf) =**	0	0	0	0	428.052
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	428.052

Total Riparian Credits Generated	428.052

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	428.052
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	428.052

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Stream Restoration Worksheet

Factor	RT5 of RT1 of C3	RT2 of RT1 of C3	LT1 of RT4 of C3	RT4 of C3 (pres)	RT4 of RT1 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1	1	1	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.25	2.25	2.25	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**					
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	RT5 of RT1 of C3	RT2 of RT1 of C3	LT1 of RT4 of C3	RT4 of C3 (pres)	RT4 of RT1 of C3
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.1	0.4	0.4	0.4	0.4
Net Benefit Streamside B	0.1	0.4	0.4	0.4	0.4
Supplemental Buffer Credit	0.1	0.4	0.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	1.2	2.1	2.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	132.87			0	
Credits **(c) = (m) x (lf) =**	159.444	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	159.444	0	0	0	0

Total Riparian Credits Generated 159.444

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	159.444
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	159.444

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Stream Restoration Worksheet

Factor	LT5 of RT1 of C3	LT4 of RT1 of C3	LT3 of RT1 of C3	RT3 of RT1 of C3	RT1 of RT1 of C3 (pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1	1	1	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.25	2.25	2.25	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**					
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	LT5 of RT1 of C3	LT4 of RT1 of C3	LT3 of RT1 of C3	RT3 of RT1 of C3	RT1 of RT1 of C3
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.4	0.4	0.4	0.4	0.4
Net Benefit Streamside B	0.4	0.4	0.4	0.4	0.4
Supplemental Buffer Credit	0.4	0.4	0.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	2.1	2.1	2.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	0	0	0		
Credits **(c) = (m) x (lf) =**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Riparian Credits Generated 0

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	0
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	0

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date: 2/14/20
ORM Number:
Stream Restoration Worksheet

Factor	RT3 of C3 (pres)	RT2 of C3 (pres)	C2R1B INT		
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	1	1	1.5	1	1
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	2.25	2.25	2.75	2.25	2.25
Stream Length in Reach (do not count each bank separate) **(lf)=**			331		
Credits **(c) = (m)x(lf)**	0	0	910.25	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	910.25	0	0

Total Channel Restoration Credits Generated = 910.25

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	RT3 of C3 (pres)	RT2 of C3 (pres)	C2R1B	LT1 of RT3 of C3	
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.4	0.4	1.4	0.4	0.4
Net Benefit Streamside B	0.4	0.4	1.4	0.4	0.4
Supplemental Buffer Credit	0.4	0.4	1.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	2.1	2.1	5.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =			331	0	
Credits **(c) = (m) x (lf) =**	0	0	1688.1	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	1688.1	0	0

Total Riparian Credits Generated	1688.1

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	1688.1
C. Stream Restoration	910.25
D. Total Proposed Non-Bank Mitigation = B + C	2598.35

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor	RT1 of C2	LT1 of C3R	RT5 of RT1 of C3	LT1 of RT1 of C3	LT2 of RT1 of C3 (Pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	2	2	1.5	1.5	1.5
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	3.25	3.25	2.75	2.75	2.75
Stream Length in Reach (do not count each bank separate) **(lf)=**	787	336			
Credits **(c) = (m)x(lf)**	2557.75	1092	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	2557.75	1092	0	0	0

Total Channel Restoration Credits Generated = 3649.75

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor	RT1 of C2	LT1 of C3R	RT5 of RT1 of C3	LT1 of RT1 of C3	LT2 of RT1 of C3 (Pres)
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	1.4	0.4	0.4	0.4	0.4
Net Benefit Streamside B	1.4	0.4	0.4	0.4	0.4
Supplemental Buffer Credit	1.4	0.4	0.4	0.4	0.4
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	5.1	2.1	2.1	2.1	2.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	787	336	132.87	0	0
Credits **(c) = (m) x (lf) =**	4013.7	705.6	279.027	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	4013.7	705.6	279.027	0	0

Total Riparian Credits Generated 4998.327

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	4998.327
C. Stream Restoration	3649.75
D. Total Proposed Non-Bank Mitigation = B + C	8648.077

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor		RT1 of C3R	C1R3R	C2R3R	C3R
Priority		0.05	0.05	0.05	0.05
Net Benefit		2	2	2	2
Monitoring		0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing		0.3	0.3	0.3	0.3
Sum Factors **(m)** =	0.4	3.25	3.25	3.25	3.25
Stream Length in Reach (do not count each bank separate) **(lf)=**		4654	1495	1753	1568
Credits **(c) = (m)x(lf)**	0	15125.5	4858.75	5697.25	5096
Mitigation Factor		1	1	1	1
Credits Reach	0	15125.5	4858.75	5697.25	5096

Total Channel Restoration Credits Generated = 30777.5

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:
ORM Number:
Riparian Worksheet

Factor		RT1 of C3R	C1R3R	C2R3R	C3R
Priority		0.05	0.05	0.05	0.05
Net Benefit Streamside A		1.4	1.4	1.4	1.4
Net Benefit Streamside B		1.4	1.4	1.4	1.4
Supplemental Buffer Credit	0	1.4	1.4	1.4	1.4
Monitoring		0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)		-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	0.7	5.1	5.1	5.1	5.1
Linear Feet of Buffer (do not count each bank separate) **(lf)** =		4654	1495	1753	1568
Credits **(c) = (m) x (lf) =**	0	23735.4	7624.5	8940.3	7996.8
Mitigation Factor	1	1	1	1	1
Credits Reach	0	23735.4	7624.5	8940.3	7996.8

Total Riparian Credits Generated 48297

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	48297
C. Stream Restoration	30777.5
D. Total Proposed Non-Bank Mitigation = B + C	79074.5

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor	C2 (preservation)				
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	2	2	1	1	1.5
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	3.25	3.25	2.25	2.25	2.75
Stream Length in Reach (do not count each bank separate) **(lf)=**				0	0
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Date:
ORM Number:
Riparian Worksheet

Factor			C2 (preservation)	PERENNIAL -LOW	PERENNIAL- HIGH WORK
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	1.4	1.4	0.4	0.1	2
Net Benefit Streamside B	1.4	1.4	0.4	0.1	0.35
Supplemental Buffer Credit	1.4	1.4	0.4	0.1	1.175
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	5.1	5.1	2.1	1.2	4.425
Linear Feet of Buffer (do not count each bank separate) **(lf)** =			1133.62	0	0
Credits **(c) = (m) x (lf) =**	0	0	2380.602	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	2380.602	0	0

Total Riparian Credits Generated	2380.602

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	2380.602
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	2380.602

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Illinois Stream Mitigation Method

Project Name: Perry County Illinois Stream Estimations Date:8-29-18
ORM Number:
Stream Restoration Worksheet

Factor	Swanwick				
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit	2	2	1	1	1.5
Monitoring	0.5	0.5	0.5	0.5	0.5
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Sum Factors **(m)** =	3.25	3.25	2.25	2.25	2.75
Stream Length in Reach (do not count each bank separate) **(lf)=**				0	0
Credits **(c) = (m)x(lf)**	0	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	0	0	0	0	0

Total Channel Restoration Credits Generated = 0

Illinois Stream Mitigation Method

Project Name: Date:
ORM Number:
Riparian Worksheet

Factor	Swanwick				
Priority	0.05	0.05	0.05	0.05	0.05
Net Benefit Streamside A	0.65	1.4	0.4	0.1	2
Net Benefit Streamside B	0	1.4	0.4	0.1	0.35
Supplemental Buffer Credit	0.325	1.4	0.4	0.1	1.175
Monitoring	0.25	0.25	0.25	0.25	0.25
Site Protection	0.4	0.4	0.4	0.4	0.4
Mitigation Construction Timing	0.3	0.3	0.3	0.3	0.3
Temporal Lag (Years)	-0.1	-0.1	-0.1	-0.1	-0.1
Sum of Factors **(m)** =	1.875	5.1	2.1	1.2	4.425
Linear Feet of Buffer (do not count each bank separate) **(lf)** =	1469.2			0	0
Credits **(c) = (m) x (lf) =**	2754.75	0	0	0	0
Mitigation Factor	1	1	1	1	1
Credits Reach	2754.75	0	0	0	0

Total Riparian Credits Generated 2754.75

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that needs planting		
	*Buffer Creation and Restoration Exotic Removal and (51-100%)Planting	Buffer Enhancement Exotic Removal and (10-50%)Planting	Buffer Preservation (<10%)Planting
300 feet	2.4	0.95	0.65
275 feet	2.3	0.9	0.625
250 feet	2.2	0.85	0.6
225 feet	2.1	0.825	0.55
200 feet	2	0.8	0.5
175 feet	1.8	0.75	0.45
150 feet	1.6	0.7	0.4
125 feet	1.4	0.65	0.35
100 feet	1.2	0.6	0.3
75 feet	0.8	0.4	0.2
50 feet Minimum Buffer Width (MBW) for credit	0.4	0.2	0.1
25 feet required	0	0	0

Illinois Stream Mitigation Method

Date: ##########

Project Name:
ORM Number
Stream Mitigation Summary Worksheet

I. Required Mitigation	**Debits**
A. Total Debits = (calculated from worksheets data)	0

II. Credit Summary	**Credits**
B. Riparian Buffer Enhancement	2754.75
C. Stream Restoration	0
D. Total Proposed Non-Bank Mitigation = B + C	2754.75

Proposed Mitigation Credits (A) = Total Debits (D)	**Yes or No**
	Yes

Swanwick Mitigation Credit Estimation Summary - 2020							
Stream Name	Reach ID	Linear Feet	Stream Type	Mitigation Type	Stream Restoration Credit Yield	Riparian Buffer Credit Yield	Combined Mitigation Credit Yield
C1R1	C1R1	619	EPH	Enhancement	1702.2500	1299.9000	3002.1500
C1R3R	C1R3	1495	INT	Enhancement	4858.7500	7624.5000	12483.2500
LT1 of C1	LT1 of C1	1204	EPH	Enhancement	3311.0000	2528.4000	5839.4000
RT1 of C2	RT1 of C2	787	EPH	Enhancement	2164.2500	1652.7000	3816.9500
LT1 of RT1 of C2	LT1 of RT1 of C2	579	EPH	Enhancement	1592.25	1215.9	2808.1500
C2R1A	C2R1A	280	EPH	Enhancement	770.0000	588.0000	1358.0000
C2R1B	C2R1B	331	INT	Enhancement	910.25	1688.1	2598.3500
C2R3R	C2R3	1753	INT	Enhancement	5697.2500	8940.3000	14637.5500
LT1 of C2	LT1 of C2	655	EPH	Enhancement	1801.25	1375	3176.2500
C3R	C3 R1	1568	INT	Enhancement	5096.0000	7996.8000	13092.8000
LT1 of C3R	LT1 of C3	336	EPH	Enhancement	1092.0000	705.6000	1797.6000
RT1 of C3R	RT1 of C3	4654	INT	Enhancement	15125.5000	23735.4000	38860.9000
C2	C2	1133.62	INT	Preservation		2380.602	2380.6020
RT3 of C2	RT3 of C2	109.94	EPH	Preservation			0.0000
LT2 of C2	Lt2 of C2	38.67	EPH	Preservation			0.0000
RT2 of C2	RT2 of C2	545.65	EPH	Preservation			0.0000
RT4 of C2	RT4 of C2	121.39	EPH	Preservation			0.0000
RT5 of C2	RT5 of C2	664.12	EPH	Preservation		796.944	796.9440
RTA of C3	RTA of C3	492.81	EPH	Preservation			0.0000
LT2 of C3	LT2 of C3	268.06	EPH	Preservation		321.672	321.6720
LT3 of C3	LT3 of C3	41.09	EPH	Preservation			0.0000
LT4 of C3	LT4 of C3	189.89	EPH	Preservation			0.0000
LT9 of RT1 of C3	LT9 of RT1 of C3	49.48	EPH	Preservation			0.0000
LT8 of RT1 of C3	LT8 of RT1 of C3	429.92	EPH	Preservation			0.0000
LT7 of RT1 of C3	LT7 of RT1 of C3	240.17	EPH	Preservation			0.0000
LT6 of RT1 of C3	LT6 of RT1 of C3	275.61	EPH	Preservation			0.0000
T1 of RT5 of RT1 of C	T1 of RT5 of RT1 of C	356.72	EPH	Preservation		428.052	428.0520
RT5 of RT1 of C3	RT5 of RT1 of C3	132.87	EPH	Preservation		159.444	159.4440
RT2 of RT1 of C3	RT2 of RT1 of C3	285.13	EPH	Preservation			0.0000
LT1 of RT4 of C3	LT1 of RT4 of C3	180.36	EPH	Preservation			0.0000
RT4 of C3	RT4 of C3	150	EPH	Preservation			0.0000
RT4 of RT1 of C3	RT4 of RT1 of C3	315.88	EPH	Preservation			0.0000
LT4 of RT1 of C3	LT4 of RT1 of C3	240.62	EPH	Preservation			0.0000
LT3 of RT1 of C3	LT3 of RT1 of C3	138.63	EPH	Preservation			0.0000
RT5 of RT1 of C3	RT5 of RT1 of C3	274.75	EPH	Preservation			0.0000
RT3 of RT1 of C3	RT3 of RT1 of C3	291.98	EPH	Preservation			0.0000
RT1 of RT1 of C3	RT1 of RT1 of C3	278.94	EPH	Preservation			0.0000
LT1 of RT1 of C3	LT1 of RT1 of C3	340.59	EPH	Preservation			0.0000
LT2 of RT1 of C3	LT2 of RT1 of C3	187.77	EPH	Preservation			0.0000
RT3 of C3	RT3 of C3	494.08	EPH	Preservation			0.0000
RT2 of C3	RT2 of C3	453.43	EPH	Preservation			0.0000
Swanwick	Swanwick	1469.2	PER	Preservation		2754.75	2754.7500
LT5 of RT1 of C3	LT5 of RT1 of C3	164.15	EPH	Preservation			0.0000
Total Linear Feet		24,616.52					**110,312.8140**

SECTION D

USFWS INFORMATION FOR PLANNING AND CONSULTATION (IPAC) AND ECOLOGICAL COMPLIANCE ASSESSMENT TOOL (ECOCAT)

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Perry County, Illinois

Local office

Southern Illinois Sub-Office

(618) 997-3344
(618) 997-8961

Southern Illinois Sub-office
8588 Route 148
Marion, IL 62959-5822

http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Indiana Bat Myotis sodalis — Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

THERE ARE NO MIGRATORY BIRDS OF CONSERVATION CONCERN EXPECTED TO OCCUR AT THIS LOCATION.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be

breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: Alliance Consulting, Inc
Contact: Braden Hoffman
Address: 124 Philpott Lane
Beaver, WV 25813

IDNR Project Number: 2008270
Date: 04/03/2020

Project: Swanwick Creek Mitigation Bank
Address: 1 Sawmill Road, Pinckneyville

Description: The Swanwick Creek Mitigation Bank is a stream and wetland restoration area in Perry County, Illinois.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Perry

Township, Range, Section:
4S, 3W, 4
4S, 3W, 5
4S, 3W, 8
4S, 3W, 9

IL Department of Natural Resources Contact
Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

EcoCAT Receipt

Project Code 2008270

APPLICANT	DATE
Alliance Consulting, Inc Braden Hoffman 124 Philpott Lane Beaver, WV 25813	4/3/2020

DESCRIPTION	FEE	CONVENIENCE FEE	TOTAL PAID
EcoCAT Consultation	$ 25.00	$ 1.00	$ 26.00

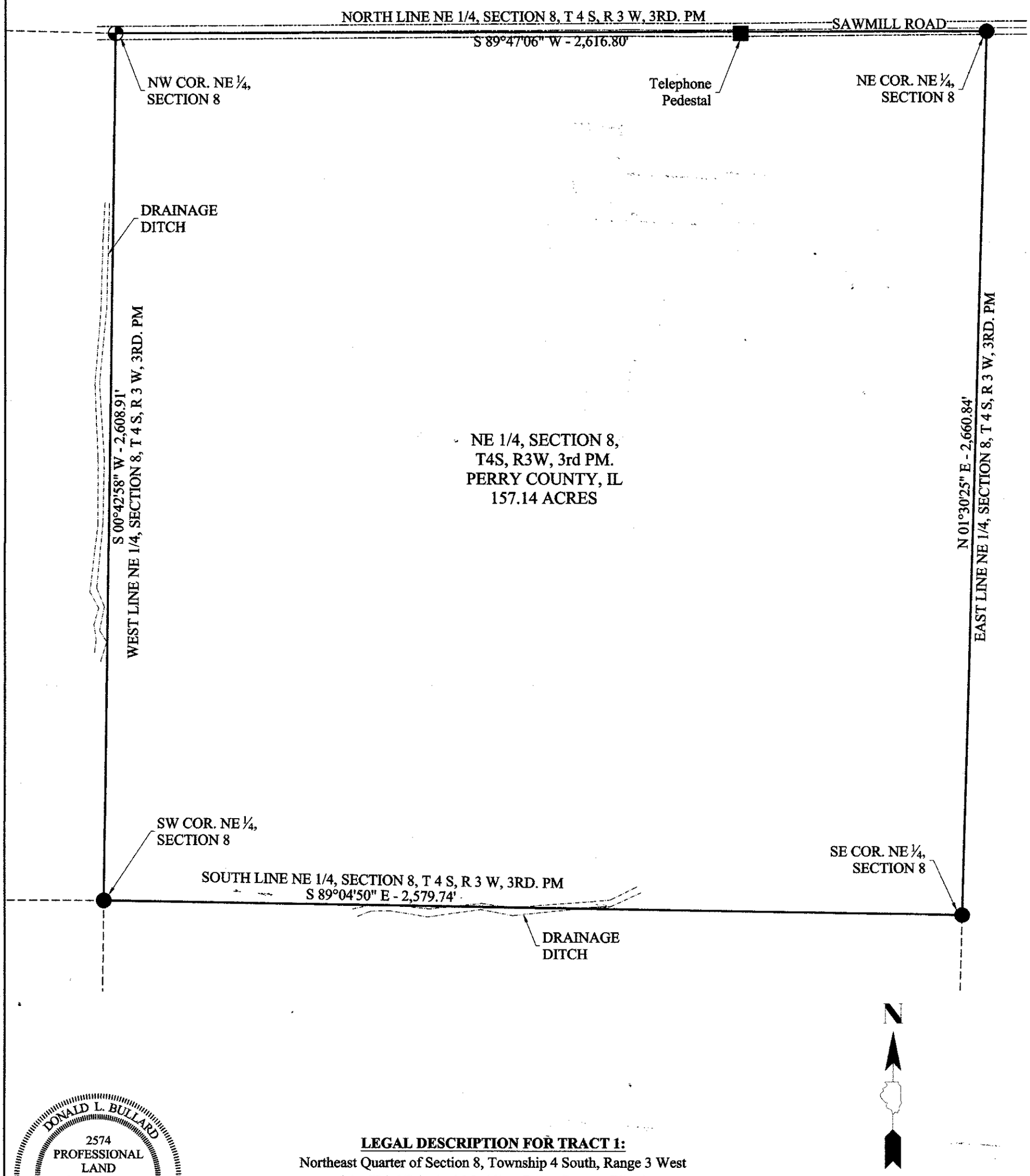
TOTAL PAID $ 26.00

Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
217-785-5500
dnr.ecocat@illinois.gov

SECTION E

PLAT OF SURVEY

PLAT OF SURVEY



DONALD L. BULLARD
2574
PROFESSIONAL LAND SURVEYOR
STATE OF ILLINOIS
THOMPSONVILLE, ILLINOIS

EXPIRES 11-30-2020

LEGAL DESCRIPTION FOR TRACT 1:

Northeast Quarter of Section 8, Township 4 South, Range 3 West of the Third Principal Meridian, Perry County, Illinois.

SURVEYORS STATEMENT:

No search was made for easements or utilities.
This Plat of Survey is not for scaling purposes.
Basis of Bearings are State Plane Coordinates NAD 1983, IL. West Zone
This Plat of Survey meets the minimum standards of practice for Boundary Surveys in the State of Illinois.

I, Donald L. Bullard, Illinois Professional Land Surveyor number 2574, Surveyed the above Legal Description at the request of Lyme Illinois Mitigation Holdings, LLC, on November 12th, 2019.

Donald L. Bullard, Illinois Professional Land Surveyor Number 2574.

Donald L. Bullard
Land Surveyor
21214 Corinth Rd.
Thompsonville IL. 62890
(618) 982-2002

Lyme Illinois Mitigation Holdings LLC.

NE ¼, Section 8, T4S, R3W, 3rd PM. Perry County, Illinois

Date : November 12th, 2019.

Design By:
DB
Drawn By:
TB
Check By:
DB

SECTION G

REDACTED TITLE POLICY

Fidelity National Title
Insurance Company

Policy No.: 137725-1-19LT05024-2019.27306-218180642

OWNER'S POLICY OF TITLE INSURANCE

Issued by

FIDELITY NATIONAL TITLE INSURANCE COMPANY

Any notice of claim and any other notice or statement in writing required to be given the Company under this Policy must be given to the Company at the address shown in Section 18 of the Conditions.

COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, FIDELITY NATIONAL TITLE INSURANCE COMPANY, a Florida corporation, (the "Company") insures as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
3. Unmarketable Title.
4. No right of access to and from the Land.
5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection
   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.
6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. Title being vested other than as stated Schedule A or being defective
   (a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
   (b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
      (i) to be timely, or
      (ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.
10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions

IN WITNESS WHEREOF, FIDELITY NATIONAL TITLE INSURANCE COMPANY has caused this policy to be signed and sealed by its duly authorized officers.

FIDELITY NATIONAL TITLE INSURANCE COMPANY

Countersigned:

By: _____
Authorized Officer or Agent
Ryan Kerner
Legacy Title Services, LLC
DBA Freedom Title
16476 Wild Horse Creek Rd
Chesterfield, MO 63017-1404
Tel:314-786-4000
Fax:314-744-5060

SEAL

By: _____
President

Attest: _____
Secretary

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a)"Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.

(b)"Date of Policy": The date designated as 'Date of Policy" in Schedule A.

(c)"Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d)"Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) successors to the Title of the Insured by

operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;

(B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(C) successors to an Insured by its conversion to another kind of Entity;

(D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1)if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2)if the grantee wholly owns the named Insured,

(3)if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or

(4)if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.

(ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.

(e) "Insured Claimant": An Insured claiming loss or damage.

(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(g)"Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(h)"Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(j) "Title": The estate or interest described in Schedule A.

(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. DEFENSE AND PROSECUTION OF ACTIONS

(a)Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b)The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

6. DUTY OF INSURED CLAIMANT TO COOPERATE

(a)In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the

action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title, or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b)The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a)To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii)To pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. DETERMINATION AND EXTENT OF LIABILITY

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a)The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii)the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

(b)If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii)the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c)In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. LIMITATION OF LIABILITY

(a)If the Company establishes the Title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b)In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c)The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

11. LIABILITY NONCUMULATIVE

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

12. PAYMENT OF LOSS

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

13. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT

(a)Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b)The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

14. ARBITRATION

Either the Company or the Insured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Insured arising out of or relating to this policy, any service in connection with its issuance or the breach of a policy provision, or to any other controversy or claim arising out of the transaction giving rise to this policy. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured. All arbitrable matters when the Amount of Insurance is in excess of $2,000,000 shall be arbitrated only when agreed to by both the Company and the Insured. Arbitration pursuant to this policy and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a)This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b)Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c)Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d)Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

16. SEVERABILITY

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

17. CHOICE OF LAW; FORUM

(a)Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefore in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b)Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

18. NOTICES, WHERE SENT

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at FIDELITY NATIONAL TITLE INSURANCE COMPANY, Attn: Claims Department, P.O. Box 45023, Jacksonville, FL 32232-5023.

FIDELITY NATIONAL FINANCIAL
PRIVACY NOTICE

Fidelity National Financial, Inc. and its majority-owned subsidiary companies (collectively, "FNF," "our," or "we") respect and are committed to protecting your privacy. This Privacy Notice explains how we collect, use, and protect personal information, when and to whom we disclose such information, and the choices you have about the use and disclosure of that information.

Types of Information Collected

We may collect two types of information from you: Personal Information and Browsing Information.

Personal Information. FNF may collect the following categories of Personal Information:

- contact information (*e.g.*, name, address, phone number, email address);
- demographic information (*e.g.*, date of birth, gender, marital status);
- identity information (*e.g.* Social Security Number, driver's license, passport, or other government ID number);
- financial account information (*e.g.* loan or bank account information); and
- other personal information necessary to provide products or services to you.

Browsing Information. FNF may automatically collect the following types of Browsing Information when you access an FNF website, online service, or application (each an "FNF Website") from your Internet browser, computer, and/or mobile device:

- Internet Protocol (IP) address and operating system;
- browser version, language, and type;
- domain name system requests; and
- browsing history on the FNF Website, such as date and time of your visit to the FNF Website and visits to the pages within the FNF Website.

How Personal Information is Collected

We may collect Personal Information about you from:

- information we receive from you on applications or other forms;
- information about your transactions with FNF, our affiliates, or others; and
- information we receive from consumer reporting agencies and/or governmental entities, either directly from these entities or through others.

How Browsing Information is Collected

If you visit or use an FNF Website, Browsing Information may be collected during your visit. Like most websites, our servers automatically log each visitor to the FNF Website and may collect the Browsing Information described above. We use Browsing Information for system administration, troubleshooting, fraud investigation, and to improve our websites. Browsing Information generally does not reveal anything personal about you, though if you have created a user account for an FNF Website and are logged into that account, the FNF Website may be able to link certain browsing activity to your user account.

Other Online Specifics

Cookies. When you visit an FNF Website, a "cookie" may be sent to your computer. A cookie is a small piece of data that is sent to your Internet browser from a web server and stored on your computer's hard drive. Information gathered using cookies helps us improve your user experience. For example, a cookie can help the website load properly or can customize the display page based on your browser type and user preferences. You can choose whether or not to accept cookies by changing your Internet browser settings. Be aware that doing so may impair or limit some functionality of the FNF Website.

Web Beacons. We use web beacons to determine when and how many times a page has been viewed. This information is used to improve our websites.

Do Not Track. Currently our FNF Websites do not respond to "Do Not Track" features enabled through your browser.

Links to Other Sites. FNF Websites may contain links to other websites. FNF is not responsible for the privacy practices or the content of any of those other websites. We advise you to read the privacy policy of every website you visit.

Use of Personal Information

FNF uses Personal Information for three main purposes:

- To provide products and services to you or in connection with a transaction involving you.
- To improve our products and services.
- To communicate with you about our, our affiliates', and third parties' products and services, jointly or independently.

When Information Is Disclosed

We may make disclosures of your Personal Information and Browsing Information in the following circumstances:

- to enable us to detect or prevent criminal activity, fraud, material misrepresentation, or nondisclosure;
- to nonaffiliated service providers who provide or perform services or functions on our behalf and who agree to use the information only to provide such services or functions;
- to nonaffiliated third party service providers with whom we perform joint marketing, pursuant to an agreement with them to jointly market financial products or services to you;
- to law enforcement or authorities in connection with an investigation, or in response to a subpoena or court order; or
- in the good-faith belief that such disclosure is necessary to comply with legal process or applicable laws, or to protect the rights, property, or safety of FNF, its customers, or the public.

The law does not require your prior authorization and does not allow you to restrict the disclosures described above. Additionally, we may disclose your information to third parties for whom you have given us authorization or consent to make such disclosure. We do not otherwise share your Personal Information or Browsing Information with nonaffiliated third parties, except as required or permitted by law.

We reserve the right to transfer your Personal Information, Browsing Information, and any other information, in connection with the sale or other disposition of all or part of the FNF business and/or assets, or in the event of bankruptcy, reorganization, insolvency, receivership, or an assignment for the benefit of creditors. By submitting Personal Information and/or Browsing Information to FNF, you expressly agree and consent to the use and/or transfer of the foregoing information in connection with any of the above described proceedings.

Please see "**Choices With Your Information**" to learn the disclosures you can restrict.

Security of Your Information

We maintain physical, electronic, and procedural safeguards to guard your Personal Information. We limit access to nonpublic personal information about you to employees who need to know that information to do their job. When we provide Personal Information to others as discussed in this Privacy Notice, we expect that they process such information in compliance with our Privacy Notice and in compliance with applicable privacy laws.

Choices With Your Information

If you do not want FNF to share your information with our affiliates to directly market to you, you may send an "opt out" request by email, phone, or physical mail as directed at the end of this Privacy Notice. We do not share your Personal Information with nonaffiliates for their use to direct market to you.

Whether you submit Personal Information or Browsing Information to FNF is entirely up to you. If you decide not to submit Personal Information or Browsing Information, FNF may not be able to provide certain services or products to you.

For California Residents: We will not share your Personal Information or Browsing Information with nonaffiliated third parties, except as permitted by California law.

For Nevada Residents: You may be placed on our internal Do Not Call List by calling (888) 934-3354 or by contacting us via the information set forth at the end of this Privacy Notice. Nevada law requires that we also provide you with the following contact information: Bureau of Consumer Protection, Office of the Nevada Attorney General, 555 E. Washington St., Suite 3900, Las Vegas, NV 89101; Phone number: (702) 486-3132; email: BCPINFO@ag.state.nv.us.

For Oregon Residents: We will not share your Personal Information or Browsing Information with nonaffiliated third parties for marketing purposes, except after you have been informed by us of such sharing and had an opportunity to indicate that you do not want a disclosure made for marketing purposes.

For Vermont Residents: We will not disclose information about your creditworthiness to our affiliates and will not disclose your personal information, financial information, credit report, or health information to nonaffiliated third parties to market to you, other than as permitted by Vermont law, unless you authorize us to make those disclosures.

Information From Children

The FNF Websites are meant for adults and are not intended or designed to attract persons under the age of eighteen (18).We do not collect Personal Information from any person that we know to be under the age of thirteen (13) without permission from a parent or guardian.

International Users

FNF's headquarters is located within the United States. If you reside outside the United States and choose to provide Personal Information or Browsing Information to us, please note that we may transfer that information outside of your country of residence for any of the purposes described in this Privacy Notice. By providing FNF with your Personal Information and/or Browsing Information, you consent to our collection, transfer, and use of such information in accordance with this Privacy Notice.

FNF Website Services for Mortgage Loans

Certain FNF companies provide services to mortgage loan servicers, including hosting websites that collect customer information on behalf of mortgage loan servicers (the "Service Websites"). The Service Websites may contain links to both this Privacy Notice and the mortgage loan servicer or lender's privacy notice. The sections of this Privacy Notice titled When Information is Disclosed, Choices with Your Information, and Accessing and Correcting Information do not apply to the Service Websites. The mortgage loan servicer or lender's privacy notice governs use, disclosure, and access to your Personal Information. FNF does not share Personal Information collected through the Service Websites, except (1) as required or authorized by contract with the mortgage loan servicer or lender, or (2) as required by law or in the good-faith belief that such disclosure is necessary to comply with a legal process or applicable law, to enforce this Privacy Notice, or to protect the rights, property, or safety of FNF or the public.

Your Consent To This Privacy Notice; Notice Changes

By submitting Personal Information and/or Browsing Information to FNF, you consent to the collection and use of the information in accordance with this Privacy Notice. We may change this Privacy Notice at any time. The revised Privacy Notice, showing the new revision date, will be posted on the FNF Website. Each time you provide information to us following any amendment of this Privacy Notice, your provision of information to us will signify your assent to and acceptance of the terms of the revised Privacy Notice for all previously collected information and information collected from you in the future. We may use comments, information or feedback that you submit to us in any manner that we may choose without notice or compensation to you.

Accessing and Correcting Information; Contact Us

If you have questions, would like to access or correct your Personal Information, or want to opt-out of information sharing for affiliate marketing, send your requests via email to privacy@fnf.com, by phone to (888) 934-3354, or by mail to:

Fidelity National Financial, Inc.
601 Riverside Avenue,
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

SCHEDULE A

Name and Address of Title Insurance Company:
Freedom Title 16476 Wild Horse Creek Rd, Ste 100 MO Chesterfield 63017

File No.: **19LT05024**

Policy No.: **27306-218180642**

Address Reference:
158 Acres Sawmill Rd Pinckneyville IL 62274

Amount of Insurance:

Premium:

Date of Policy: **October 28, 2019**

1. Name of Insured:

Lyme Illinois Mitigation Holdings LLC

2. The estate or interest in the Land that is insured by this policy is:

Fee Simple

3. Title is vested in:

Lyme Illinois Mitigation Holdings LLC

4. The Land referred to in this policy is described as follows:

Tract 1:
The East One-half (E 1/2) of the Northeast Quarter (NE 1/4), and the Northwest Quarter (NW 1/4) of the Northeast Quarter (NE 1/4) of Section Eight (8), Township Four (4) South, Range Three (3) West of the Third Principal Meridian, Perry County, Illinois,

Tract 2:
The Southwest Quarter (SW 1/4) of the Northeast Quarter (NE 1/4) of Section Eight (8), Township Four (4) South, Range Three (3) West of the Third Principal Meridian, Perry County, Illinois,

SCHEDULE B

File No.: **19LT05024** Policy No.: **27306-218180642**

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

1. Rights or claims of parties in possession not shown by the public records.
2. Encroachments, overlaps, boundary line disputes or other matters which would be disclosed by an accurate survey or inspection of the premises.
3. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
4. Taxes or special assessments which are not shown as existing liens by the public records
5. General taxes for the year 2019 and subsequent years not yet due and payable.