



# Mitigation and Monitoring Plan

Utica East Harrison Hub Facility  
North Township, Harrison County, Ohio

**March 2013**



OHIO WETLANDS  
FOUNDATION



*A Division of The Davey Tree Expert Company*



# Mitigation and Monitoring Plan

Utica East Harrison Hub Facility  
North Township, Harrison County, Ohio

March 2013

**Prepared for:**

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# Introduction

Utica East Ohio Midstream, LLC. is proposing to expand a natural gas liquid processing facility and associated distribution infrastructure located south of Scio-Bowerston Road, just northwest of the Village of Scio in North Township, Harrison County, Ohio. In order to compensate for unavoidable impacts to wetlands on the Utica East Harrison Hub Facility project site, the applicant has retained Ohio Wetlands Foundation (OWF) to complete the development of this off-site mitigation and monitoring plan. OWF proposes to complete the compensatory mitigation for wetlands impacts at the Little Stillwater site located in Franklin Township, Harrison County, Ohio.

This *Mitigation and Monitoring Plan* was prepared for OWF by Davey Resource Group, a division of The Davey Tree Expert Company, using the U.S. Army Corps of Engineers (USACE) rule for compensatory mitigation for losses of aquatic resources. Specifically, this document complies with §332.4 and includes the components listed in paragraphs (c) (2) through (c) (14) of this section of the USACE rule.

Details of the Little Stillwater mitigation project are provided in this comprehensive mitigation and monitoring plan for the Utica East Harrison Hub Facility project. An overview of the locations of the mitigation site and the impact site is provided on the map in Appendix A. The Utica East Harrison Hub Facility site and the proposed wetlands mitigation area are both located within the Tuscarawas River Watershed (HUC 05040001).

The wetland impacts for the Utica East Harrison Hub Facility Project include 8.72 acres of non-forested wetlands; all wetlands proposed to be impacted are ORAM Category 1 or 2 wetlands. See Table 1 for a complete list of the wetland impacts and compensatory mitigation provided at the Little Stillwater site.

The Little Stillwater mitigation area is located south of U.S. 250 (Appendix B). This site is part of a larger, 86-acre parcel owned by the Harrison County Commissioners. The restoration area has been used for agriculture for many years and contains numerous underground drainage tiles. It is believed that prior to being cleared and drained, the site would have been mostly forested and scrub/shrub wetland surrounded by a mixed riparian forest. The final boundary of the mitigation area for the Utica East Harrison Hub Facility project will be defined after construction and planting, during the first year of monitoring. This will be after hydrology and vegetation communities have started to become established to ensure that an adequate amount of mitigation for the Utica East Harrison Hub Facility project will be provided on the mitigation site.

The applicant is seeking a Section 401 Water Quality Certification from Ohio Environmental Protection Agency (EPA) and a Section 404 Individual Permit from the USACE. A minimum of 8.8 acres of non-forested wetlands will be re-established on the Little Stillwater site. This will provide the required 1:1 replacement component of the compensatory mitigation for wetland impacts that will occur at the Utica East Harrison Hub Facility project site.

**Table 1. Utica East Harrison Hub Facility Wetlands Impacts Mitigated for at Little Stillwater**

Wetland	Total Area (acres)	Connectivity	Vegetation	Impacts (acres)	ORAM Category	Ratio for Mitigation Provided at Little Stillwater	Required Restoration
1	5.91	non-isolated	emergent	5.91	2	1:1	5.91
5	0.04	non-isolated	emergent	0.04	1	1:1	0.04
6	0.08	non-isolated	emergent	0.08	1	1:1	0.08
7	0.06	non-isolated	emergent	0.06	1	1:1	0.06
8	0.14	non-isolated	emergent	0.14	1	1:1	0.14
30	5.384	non-isolated	emergent	2.34	1 or 2 gray zone	1:1	2.34
Wetland Ditch	0.15	non-isolated	emergent	0.15	1	1:1	0.15
<b>Total</b>				<b>8.72</b>			<b>8.72</b>

## Objectives

The primary objective of the proposed wetland mitigation at the Little Stillwater Site is to restore 8.8 acres of non-forested wetlands through restoration. Specifically, the Little Stillwater Site will be designed, constructed, and managed to attain the following basic goals:

- 
**Restore 8.8 acres of non-forested wetlands.** Restoration of high-quality, emergent wetlands will take place through construction of a small berm, microtopography restoration, disruption of existing subsurface tiles, installation of ditch plugs, and supplemental plantings of native vegetation. This restoration of a high-quality wetlands ecosystem will result in a gain in aquatic resource area and functions not currently present. The site will be maintained as described in the *Mitigation Work Plan* section of this document. A diverse wetlands ecosystem will be restored in an area where it likely historically existed prior to the conversion of the site for agricultural uses.

Appendix C contains the site map and construction drawings for the proposed wetlands restoration at the Little Stillwater Site. The final boundary of the wetland mitigation area for the Utica East Harrison Hub Facility project will be defined during the first year of monitoring. At this point in time, hydrology and vegetation communities should be established enough to ensure that an adequate amount of mitigation for the Utica East Harrison Hub Facility project will be provided on the mitigation site. The report section entitled *Performance Standards* contains details on how the success of high-quality wetlands restoration will be measured.

## Site Selection

Harrison County Board of Commissioners acquired the project parcel with the assistance of a Clean Ohio grant. In Fall 2007, the County contacted OWF to assist in determining the feasibility to use the site for compensatory mitigation. The wetlands restoration proposed at the Little Stillwater Site will promote the protection and restoration of the Little Stillwater Creek riparian corridor and floodplain located on the property. In addition, the wetlands functions that will be restored on the site will further aid in improving the water quality and the cessation of farming on the property will reduce nutrient loading and sedimentation in this section of Little Stillwater Creek.

Little Stillwater Creek has little remaining natural riparian corridor, floodplain, and wetlands. Most of this area has been farmed for many decades. Restoration of wetlands on this property represents a first step in restoring the natural functions and values of the riparian corridor and floodplain of Little Stillwater Creek.

Locating a wetlands mitigation project on the selected site provides a practicable mitigation solution on a property where there is a very high likelihood of accomplishing the goals of this plan and establishing an ecologically self-sustaining restoration of aquatic resources.

## Site Protection Instrument

The Little Stillwater Site is owned by Harrison County Commissioners. OWF will be responsible for the implementation of the wetlands mitigation plan, including construction, monitoring, maintenance, and, if necessary, remedial activities. The Harrison County Soil and Water Conservation District or other entity meeting the requirements of Ohio Revised Code §5301.69 will hold a permanent conservation easement on the project site. The conservation easement will include the entire mitigation site proposed for the Utica East Harrison Hub Facility project as well as areas proposed for use for other mitigation projects on the site, including the J.M. Smucker Mitigation Project (permit numbers: USACE 2010-00378-TUS and Ohio EPA ID No. 103698). This approach will allow for flexibility in determining the boundary or limits of the mitigation project for the Utica East Harrison Hub Facility Project. The draft easement is contained in Appendix D.

## Baseline Information

The site was last used for row crops in 2006 and in recent years, the site has been used primarily for hay production. One existing wetland was delineated within the Utica East Harrison Hub Facility mitigation site. This wetland is a 2.382-acre wet meadow with an ORAM score of 35, placing it within the range of Modified Class 2 wetlands. This wetland extends outside of the project area to the east. An existing conditions map of the site is in Appendix E.

The mitigation site is shown on the Deersville Quadrangle of the United States Geological Survey (USGS) map in Appendix F. Elevations on the site are around 878 feet. The National Wetlands Inventory (NWI) map (Deersville Quadrangle) is in Appendix G.

One NWI-mapped wetland is shown on the site. This wetland, identified as a palustrine scrub/shrub, broad leaved-leaved deciduous and emergent, persistent, seasonally flooded wetland, is associated with an old oxbow of Little Stillwater Creek. This wetland is located to the south of the mitigation site.

A map showing soil types located on and adjacent to the site from the U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (2007) is in Appendix H. Caneadea silty clay loam soil (CcA, 0 to 2 percent slopes) is the only mapped soil type on the site. This soil is classified as a hydric soil by NRCS and is somewhat poorly drained and its permeability is very slow. The depth to an intermittent perched water table is 0.5 to 1.0 foot from November to May in most years. The NRCS hydric soils list for Harrison County indicates that on average about 15 percent of the Caneadea soil is hydric.



**Photograph 1 (November 3, 2008).** The majority of the site is primarily used for agricultural purposes.

Observations of soils on the site during the wetland delineation suggest that the extent of hydric soils, as defined by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (U.S. Army Corps of Engineers, 2012), is far greater than 15% of the land area for this project. To further examine the extent of hydric soils on the site, Mr. Frank Gibbs, CPSS, CPSC, conducted a hydric soil delineation across the entire 86-acre parcel on November 18, 2011. This investigation revealed that the vast majority of the Little Stillwater site is underlain by hydric soils, with the majority of soil borings meeting the F3 depleted matrix hydric soil indicator. A copy of the hydric soil delineation map is included in Appendix H. In general, most of the areas planned for wetland restoration contain hydric soils, and other areas contain soils that barely meet non-hydric soil criteria. The high clay content combined with the poorly drained and somewhat poorly drained nature of these soils make them very suitable for wetlands restoration.

A review of the Natural Heritage maps and files by Ohio DNR Division of Natural Areas and Preserves (DNAP) indicated that no records of rare or endangered species are located in the project area or within a one-mile radius of the site (Appendix I). No unique ecological sites, geological features, or animal assemblages or state parks, nature preserves, forests, or wildlife areas are found within a one-mile radius of the project area. Two parcels owned by the Muskingum Watershed Conservancy District associated with Tappan Lake are located within one mile of the site, including one parcel that is directly east of the project area.

Ohio Historic Preservation Office (OHPO) was contacted for information of important cultural resources recorded for the project area and the surrounding lands. The search reviewed files from the Ohio Archaeological Inventory, Ohio Historic Inventory, and National Register of Historic Places. Just north of the site and to the north of U.S. 250 is the Law, Henry, Farm Historic District. Two archaeological sites, Huss Site #1 and Huss Site #2, are also located within this area. None of the listed resources are located within the project area. A copy of the OHPO findings is included in Appendix J.

## Mitigation Work Plan

### Restoring Hydrology

#### Tile Search

Many of the sub-surface drainage tiles have been located in the field with a GPS unit and are shown on the map in Appendix C. These known tiles will be disrupted and disabled to ensure the restoration of pre-agricultural historical site hydrology. In addition, a tile search will be conducted to locate additional tiles on the site. A track hoe or similar piece of construction equipment will be used to excavate a trench to a depth of at least 4 feet. Tiles discovered in the search will be crushed and disabled. Once disabled, tile lines will be excavated for approximately 15 feet inward from the trench and refilled to create compacted clayey soil plugs that will block the flow of water through the lines.

#### Topography and Hydrology

The project is located along Little Stillwater Creek, immediately downstream of the Tappan Lake Dam. Remnants of the original creek meanders still exist outside of the subject mitigation area. Elevations of the agricultural field range from 866 feet to 868 feet. The fields are smooth and nearly level, with minor local depressions attenuated from the decades of farming. U.S. 250, along the northern portion of the property, was constructed 7 to 10 feet higher than the adjacent fields in order to elevate it out of the Little Stillwater floodplain.

## Earth Embankment Construction and Microtopography Restoration

One broad, low earth embankment (0 to 3 feet high with 15:1 side slopes) will be created as shown on the construction site plans in Appendix C. The berm will establish a wetland cell with a normal pool elevation of 867.5 feet. The emergent wetlands will typically have standing water depths ranging from 0 to 18 inches. A few depressions will provide temporary, maximum water depths of 24 inches; however, actual water depths will vary in accordance with hydrologic and precipitation patterns.

The center portion of the earth embankment will be created of compacted clayey soils. The 15:1 front and back slopes of the embankment will be comprised of excess soils excavated from on site. The ground surface of the entire pool area created by each embankment will have a minimum of 6 inches of topsoil placed on it.

Ruts caused by the movement of construction equipment through the site will be encouraged and left ungraded so that microtopographic features and small pools can be restored to this area. During the construction process, care will be taken to avoid overcompaction of the soil to provide a more suitable planting substrate.

During wetland restoration construction on the mitigation site, OWF will secure coverage under the Ohio EPA NPDES general permit. Best management practices (BMPs) will be implemented on the site during construction activity to protect water quality.

## Planting Plan

The goal of this project is to restore a minimum of 8.8 acres of non-forested wetland habitat within the mitigation area as shown on the map in Appendix C. The mitigation project goals establish that there will be a minimum of 75% relative cover of native hydrophytic vegetation within the restored wetlands by the end of the monitoring period.

The species under consideration for seeding and planting on the site are provided in Appendix K. At a minimum, eight species of shrubs will be planted to ensure species diversity on the site. The species planted will be native to the region as described in Andreas, et al., 2004; Braun, 1967; Furlow, unpublished; Cooperider, 1995; and Fisher, 1988.

## Planting Methods

Planting will generally be performed by hand in early spring when soil conditions are suitable for planting. Areas disturbed during construction will be seeded. A diverse seed mix of native grasses, sedges, shrubs, and forbs will be sown to stabilize soils, minimize compaction, and improve overall plant diversity within restored wetlands. A sedge, wet meadow seed mix will be applied to areas that will have hydrology varying from seasonal inundation to soil saturation. Disturbed upland areas will be sown with a seed mix that includes *Elymus canadensis* (Canada rye), *E. riparius* (riverbank wild-rye), *E. hystrix* (bottlebrush grass), and *E. virginiana* (Virginia wild-rye).

# Maintenance Plan

## Vegetation Control

Invasive plant treatments will occur annually, as needed. Invasive plants species identified within and around the restoration area will be treated with a glyphosate herbicide specifically labeled for use in wetlands before they are able to set seed. Foliar application rates will be in accordance with label specifications. Delineation and reporting of invasive plant cover will occur in Years 1, 3, and 5 after planting.

The relative cover of all non-*Typha* invasive plant species will be less than 5% and the relative cover of all invasive species, including *Typha* spp., will be less than 10% in the restored wetland areas. An invasive species list is provided in Table 2.

**Table 2. Invasive Plant Species**

Scientific Name	Common Name
<i>Ailanthus altissima</i>	tree-of-heaven
<i>Alliaria petiolata</i>	garlic mustard
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Butomus umbellatus</i>	flowering rush
<i>Celastrus orbiculatus</i>	Asian bittersweet
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Elaeagnus umbellata</i>	autumn olive
<i>Euonymus alatus</i>	winged euonymus
<i>Euonymus fortunei</i>	wintercreeper
<i>Frangula alnus</i>	glossy buckthorn
<i>Iris pseudacorus</i>	yellow flag
<i>Ligustrum vulgare</i>	common privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lonicera maackii</i>	Amur honeysuckle
<i>Lonicera morrowii</i>	Morrow honeysuckle
<i>Lonicera tatarica</i>	Tartarian honeysuckle
<i>Lythrum salicaria</i>	purple loosestrife
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil
<i>Najas minor</i>	lesser naiad
<i>Nasturtium officinale</i>	watercress
<i>Phalaris arundinacea</i>	reed canary grass
<i>Phragmites australis</i>	common reed
<i>Polygonum cuspidatum</i>	Japanese knotweed
<i>Potamogeton crispus</i>	curly pondweed
<i>Ranunculus ficaria</i>	lesser celandine
<i>Rhamnus cathartica</i>	common buckthorn
<i>Rosa multiflora</i>	multiflora rose
<i>Typha angustifolia</i>	narrow-leaved cattail
<i>Typha x glauca</i>	hybrid cattail
<i>Virburnum opulus</i> var. <i>opulus</i>	European cranberry-bush
<i>Vinca minor</i>	periwinkle

## Hydrology

Post-construction maintenance may include corrective earthwork upon discovery of any additional swales, failed ditch plugs, or operational subsurface tiles found to be negatively affecting the restoration area's hydrology.

## Performance Standards

The long-term goal is to develop and manage the site such that high-quality, non-forested wetlands are restored within the mitigation area. Wetland communities planned for the mitigation site are depicted on the Little Stillwater habitat map in Appendix C. Performance standards proposed for the mitigation project are provided below.

1. Restored wetlands (i.e., restored depressional wetlands, including marsh and sedge meadow) shall meet minimum **VIBI scores of 51** (per Table 7 of Mack, 2007). A VIBI score of 51 is indicative of a mid-level Category 2 wetland of depression hydrogeomorphic class in the Western Allegheny Plateau ecoregion.
2. There will be **less than 10% un-vegetated open water areas within the mitigation site**. Un-vegetated open water is defined as permanently to regularly inundated areas where there is no or minimal emergent, rooted aquatic bed (e.g., *Nuphar advena*, *Nymphaeae odorata*, *Potamogeton* spp.), or submersed or floating, non-rooted aquatic bed (e.g., *Utricularia* spp., *Ceratophyllum* spp., excluding species in the family *Lemnaceae*) vegetation growing in the area of inundation, but does not include inundated areas where there is a closed canopy of living trees or shrubs over the area of inundation.
3. The goal is to **restore 8.8 acres of non-forested wetlands**. Wetlands delineations following the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and applicable regional supplement will be performed in Years 3 and 5 after construction and planting. The full delineation for Year 5 may be waived if Year 3 shows good potential with no major issues. A review of potential wetland areas will be implemented in Year 1 and will include vegetation, soils, and hydrology sampling at designated sampling locations.
4. The **relative cover of all non-Typha invasive plant species will be less than 5% and the relative cover of all invasive species, including Typha spp., will be less than 10%** in the restored wetland areas. A list of invasive species is provided in Table 2 of this document. These species will be managed through active methods of invasive plant control as necessary.
5. There will be at least **75% relative cover of native hydrophytes** within the restored wetlands. If it appears during the monitoring period that the project is not on a strong trajectory to meeting this goal, appropriate planting measures will be implemented.

# Monitoring Requirements

## Monitoring Methods

Monitoring of the mitigation wetlands will occur for 5 years. Monitoring will occur during each year after completion of construction and planting. Site visits will be scheduled with Ohio EPA and USACE after the submittal of the Year 3 monitoring report to review and discuss the success of the mitigation site. Additional site visits by USACE and Ohio EPA may be implemented as desired and/or needed. If the agencies agree, and all of the monitoring goals have been met before the end of the 5-year monitoring period, monitoring will cease.

A minimum of six photograph monitoring stakes will be installed at appropriate locations within the mitigation area following construction. These will be located based on the projected habitat types and hydrologic situations. The actual location and number of stakes will be dependent on the site conditions after construction. These stakes will be of an ultraviolet (UV), light-resistant polyvinyl chloride (PVC) material and will be identified with permanent unique numbers. Photo documentation of site conditions will be taken at these locations and will include the stake and stake number. Subsequent photographs will be taken in the same area and with the same direction of view to allow for an accurate portrayal of site development over an extended time.

Comprehensive wetlands delineations will be conducted in Years 3 and 5, using the protocols in the 1987 Corps Manual and applicable Regional Supplement, including the use of field forms. The full delineation for Year 5 may be waived if Year 3 shows good potential with no major issues. A review of potential wetland areas will be implemented in Year 1 and will include vegetation, soils, and hydrology sampling at designated sampling locations.

## VIBI Monitoring

Monitoring protocols will follow the *Integrated Wetlands Assessment Program: Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.4* (Mack, 2007). The Vegetation Index of Biotic Integrity (VIBI) is an intensive statistical wetlands monitoring methodology used by Ohio EPA at mitigation sites. The VIBI measures the ecological condition of wetlands.

One focus plot will be established in the restoration area. A VIBI score will be calculated using the data gathered from the focus plot. It is premature at this time to commit to the location of the focus plot until final earthwork is completed and site hydrology is re-established; as such, the focus plot will be established at the time of the VIBI field survey in Year 3. The focus plot will be monitored in Years 3 and 5. Data collected will include soils, hydrology, and vegetation information, as well as stem counts of all woody vegetation present.

## Hydrology

Water level data will be collected in spring and late summer in each monitoring year and included in the monitoring report.

## Monitoring Report

A baseline as-built report will be submitted in a letter format within 90 days of completing construction and planting. It is anticipated that construction will occur in the fall and planting will begin the subsequent spring. The baseline letter report shall include the following information:

- ✿ A drawing showing the as-built conditions of the mitigation area. This drawing will include water levels, as applicable. A full sized, 11- by 17-inch drawing will be provided.
- ✿ Color photographs and a photograph location map.
- ✿ A list of all seed mixes applied and a map showing locations and densities of installed trees, shrubs, and/or forbs will be provided. Wetlands Vegetation Indicator Status (Lichvar, 2012) and strata (e.g., herb or shrub) will also be included.

Monitoring reports will be prepared and submitted in Years 1, 3, and 5 from construction or until mitigation goals are met (additional monitoring reports may be completed, if appropriate). The reports will be submitted to Ohio EPA and USACE by December 31 of each monitoring year and will include the following information based upon data collected during the monitoring site visit within the growing season:

- ✿ A copy of the as-built map.
- ✿ Color photographs and a photograph location map.
- ✿ A comprehensive plant species list.
- ✿ Water depths and/or hydrological indicators and soil chromas.
- ✿ VIBI data and analysis (Years 3 and 5).
- ✿ Wetlands delineation (Years 3 and 5).
- ✿ A discussion regarding whether or not the objectives of the mitigation project are being met and a plan with an implementation timetable to correct any deficiencies.

## Long-Term Management Plan

Harrison County owns in fee simple the Little Stillwater property. OWF is responsible for the implementation of the Wetlands Mitigation and Monitoring Plan for the Utica East Harrison Hub Facility project, the monitoring of the site, and the implementation of any necessary remedial activities within the monitoring period. A permanent conservation easement will be placed on the site. The easement will be held by the Harrison Soil and Water Conservation District or other entity that meets ORC §5301.69 requirements for conservation easement holders. The Harrison County Commissioners will maintain the site for passive recreational use including, but not limited to, such uses as: bird watching, hunting, hiking, education, research, and fishing. The easement language will ensure that any modifications to the mitigation area will only be done after coordination and approval by USACE and Ohio EPA.

## Adaptive Management Plan

A site visit with USACE, Ohio EPA, and OWF will be held in the growing season following the submittal of the Year 3 monitoring report. Additional site visits by USACE and Ohio EPA may be implemented as desired and/or needed. If the mitigation sites are not adequately vegetated by the end of the third year, a planting plan (or other remedial measures) will be developed by OWF and submitted to USACE and Ohio EPA for review and concurrence. Once written concurrence is received from USACE and Ohio EPA, OWF will implement the plan as soon as practical (depending on the planting season and timing of the approval of the plan).

## **Mitigation Funding**

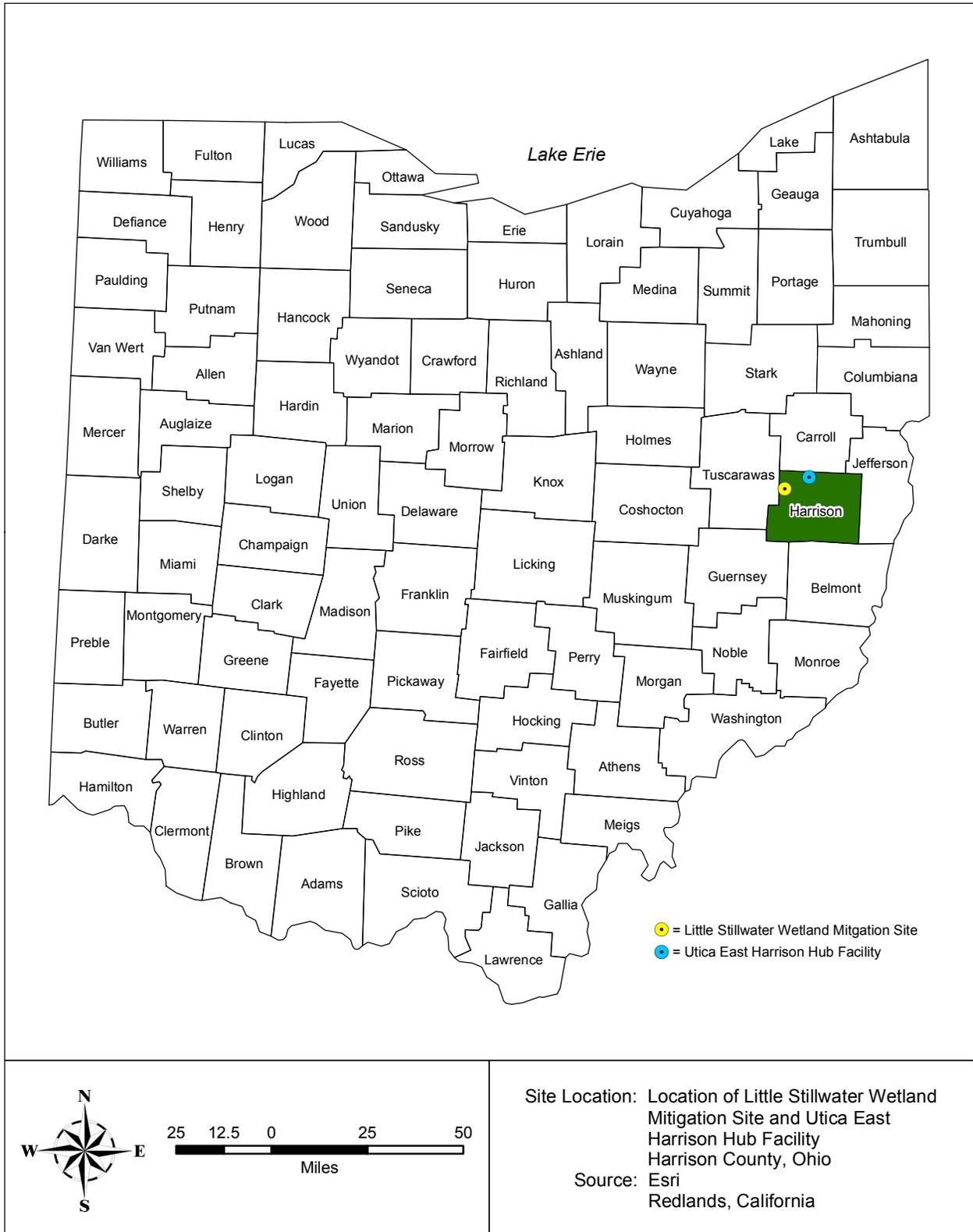
The Applicant will provide compensation to OWF for the completion of the mitigation project within 30 days of the permit issuance date. Confirmation of the payment of funds will be provided in writing by OWF to USACE and Ohio EPA.

## **References and Professional Staff**

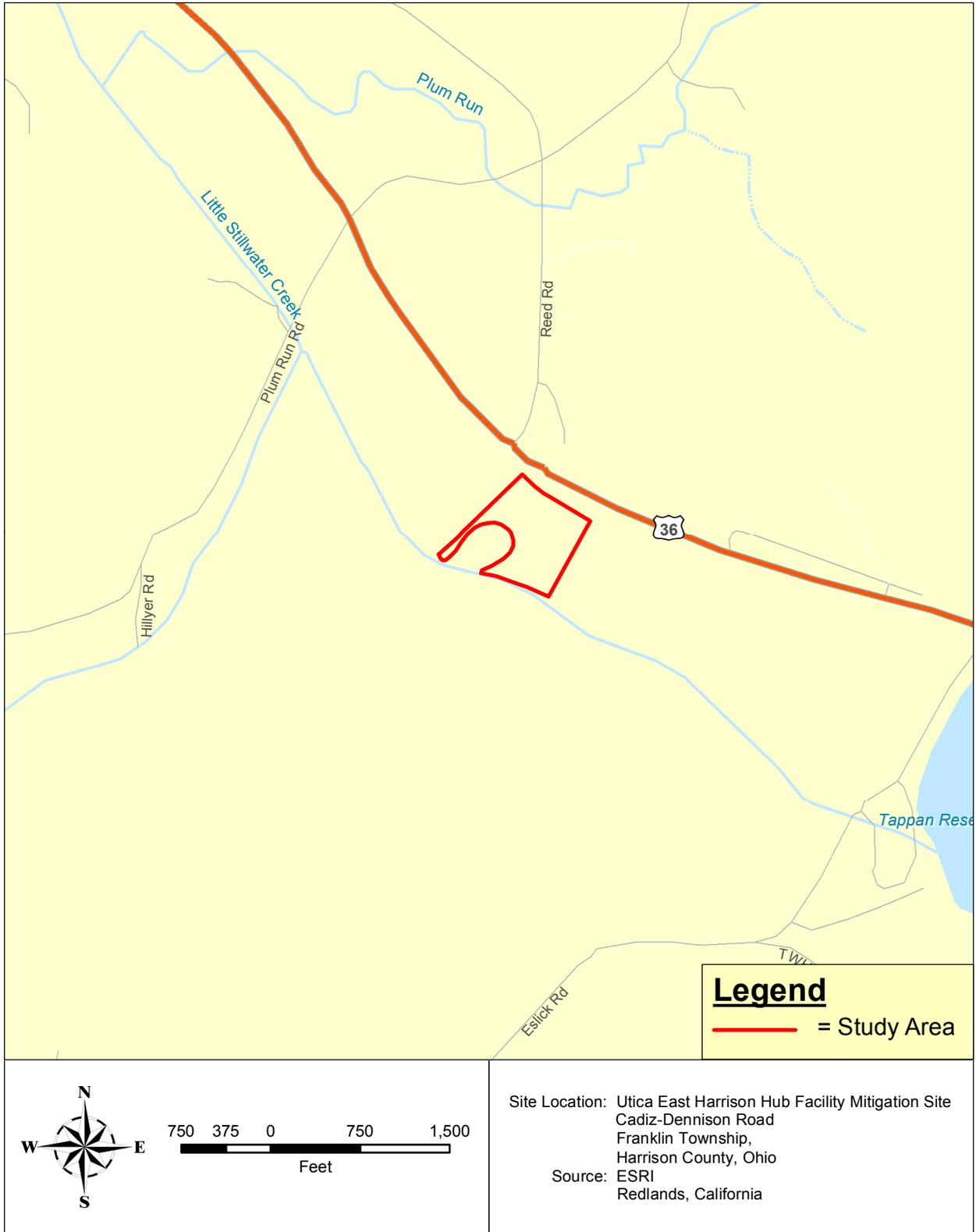
Please see Appendix M for a list of references consulted while conducting the field study and preparing this report and Appendix N for a list of Davey Resource Group professionals involved in the preparation of this document.

# Appendix A

## Location of Sites in Harrison County, Ohio



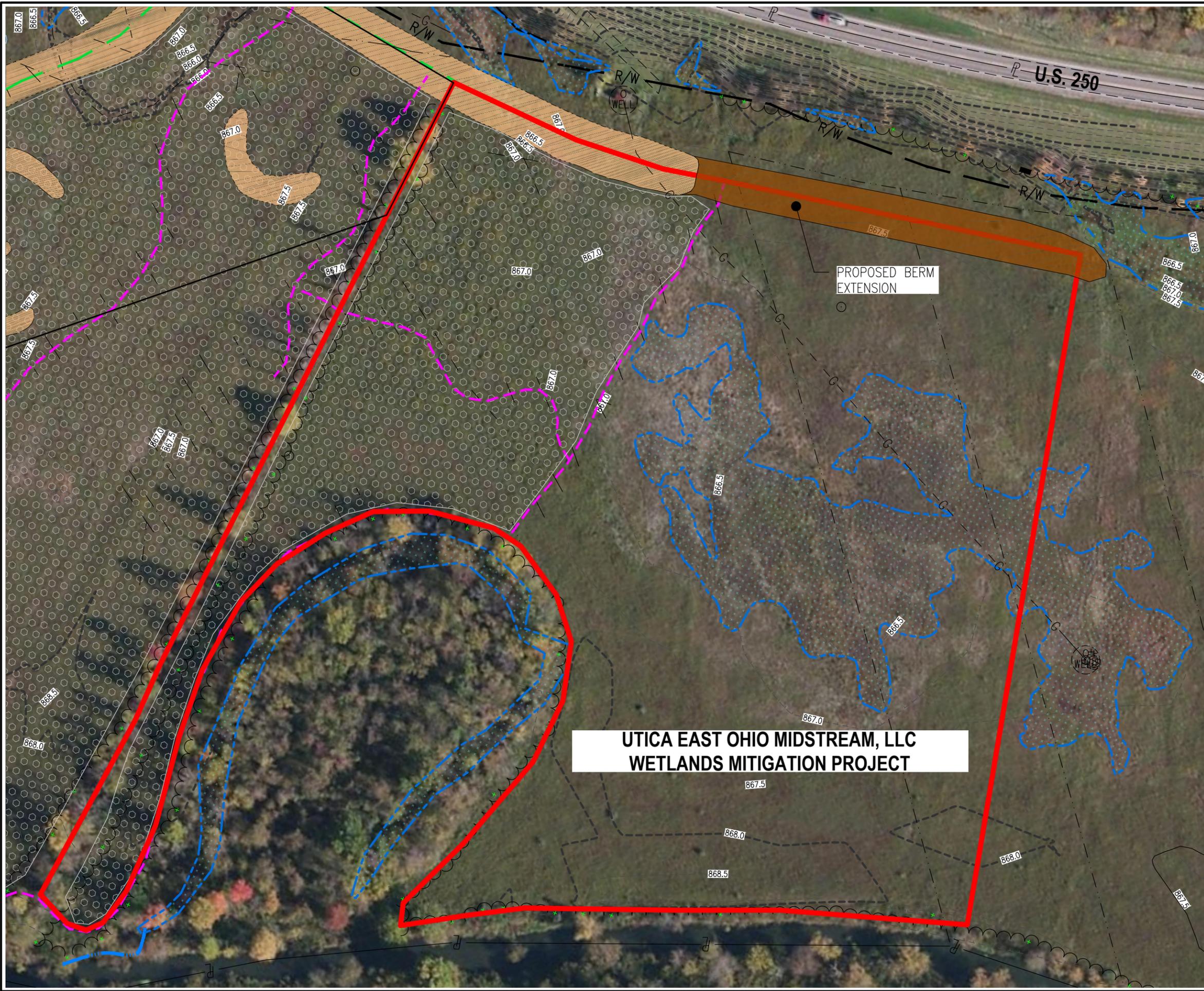
# Appendix B Location of Mitigation Site on Highway Map



# **Appendix C**

## **Site Map and Construction Drawings**

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**UTICA EAST OHIO MIDSTREAM, LLC  
WETLANDS MITIGATION PROJECT**

**UTICA EAST OHIO MIDSTREAM, LLC  
WETLANDS MITIGATION PROJECT**

Prepared For:  
**OHIO WETLANDS FOUNDATION**

A MINIMUM OF 8.8 ACRES OF NON-FORESTED WETLANDS WILL BE RESTORED WITHIN THE PROPOSED PROJECT.

THE EXACT BOUNDARY OF THE MITIGATION AREA WILL BE DEFINED AFTER CONSTRUCTION AND PLANTING, DURING THE FIRST YEAR OF MONITORING. THE BOUNDARY WILL BE DEFINED AFTER HYDROLOGY AND VEGETATION COMMUNITIES HAVE STARTED TO BECOME ESTABLISHED TO HELP ENSURE THAT AN ADEQUATE AMOUNT OF MITIGATION WILL BE PROVIDED.

BOUNDARIES OF MITIGATION SITE TO BE MARKED IN THE FIELD WITH CARSONITE POSTS.

-  PROPOSED PROJECT AREA
-  EXISTING TILE FOUND
-  EXISTING TILE SEARCH
-  EXISTING CORE TRENCH
-  EXISTING WETLANDS
-  EXISTING BERM
-  EXISTING MICRO-TOPOGRAPHIC RESTORATION

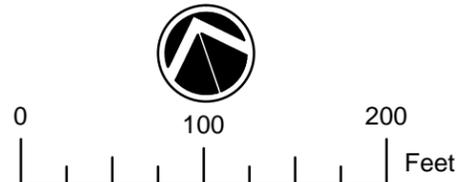


Exhibit Prepared By:  
  
**Jobs Henderson & ASSOCIATES**  
 Engineering | Surveying | Environmental

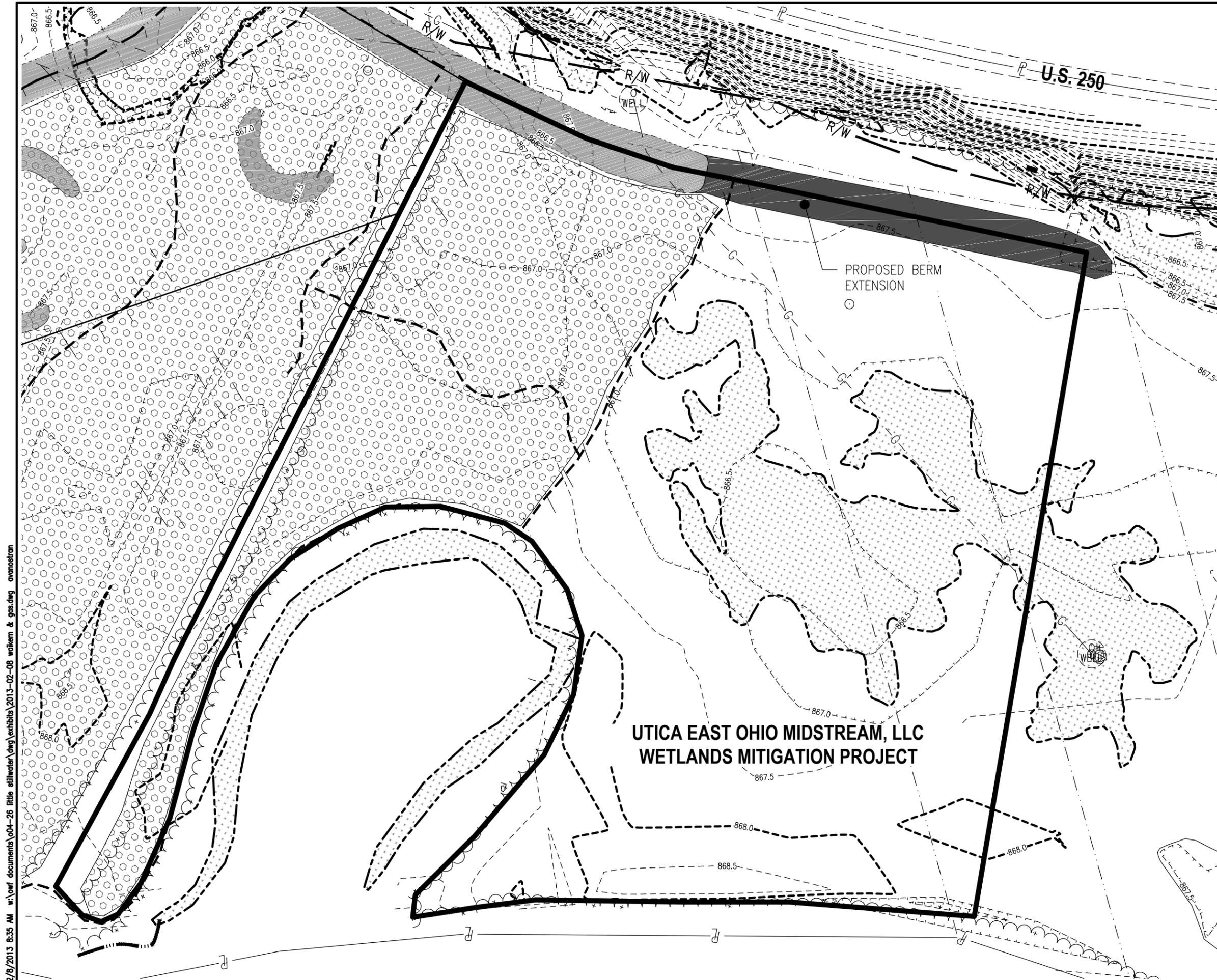
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**UTICA EAST OHIO MIDSTREAM, LLC  
WETLANDS MITIGATION PROJECT**

-  PROPOSED PROJECT AREA
-  EXISTING TILE FOUND
-  EXISTING TILE SEARCH
-  EXISTING CORE TRENCH
-  EXISTING WETLANDS
-  EXISTING BERM
-  EXISTING MICRO-TOPOGRAPHIC RESTORATION

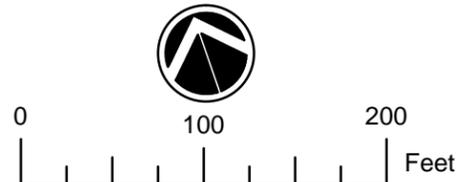


Exhibit Prepared By:  
**Jobs  
Henderson  
& ASSOCIATES**  
Engineering | Surveying | Environmental

# Appendix D

## Draft Conservation Easement

This Conservation Easement is granted this \_\_\_\_ day of \_\_\_\_, 2012 by the Harrison County Board of Commissioners (the "Owner"), having an address of 100 West Market Street, Cadiz, Ohio, 43907 to the Harrison Soil and Water Conservation District (the "Easement Holder"), having an address of 538 North Main Street, Cadiz, Ohio, 43907.

- A. The Owner is the sole owner in fee of certain real property comprising approximately 86.009 acres and situated in Franklin Township, Harrison County, Ohio, in the Tuscarawas River Watershed (the "Property") which is legally described on Exhibit A and depicted on a map shown on Exhibit B.
- B. The Property in its present and/or restored condition will support the preservation, restoration, and enhancement of wetlands, streams, and upland resources and such existing or restored wetlands, streams, and/or upland buffers will serve to mitigate for activities regulated under Sections 401 and 404 of the Federal Clean Water Act and Chapter 6111 of the Ohio Revised Code.
- C. The Property further possesses substantial value in conserving and protecting the physical, biological, and chemical integrity of the Tuscarawas River and its tributaries, including Little Stillwater Creek, and is important in the protection of the existing or designated use of the waters of the state pursuant to § 303 of the Clean Water Act, 33 U.S.C. § 1313 and § 6111.041 of the Ohio Water Pollution Control Act.
- D. The Owner wishes to grant and convey to the Easement Holder a perpetual conservation easement with respect to the Property to assure the perpetual protection of the preserved, restored, and enhanced wetlands, streams, and upland buffer. This Conservation Easement is granted consistent with Ohio Revised Code Section 5301.68. The Conservation Easement contains approximately XXXXX acres and the boundaries of this Conservation Easement are as described in Exhibit C.
- E. The Easement Holder and Owner share the common purpose of preserving the conservation values of the Property in perpetuity. The Owner intends to place restrictions on the use of the Property to protect those conservation values. The Owner further intends to convey to the Easement Holder, and the Easement Holder agrees to accept, the right to monitor and enforce these restrictions in order to preserve, enhance, and protect the conservation values of the Property.

Now therefore, the Owner and the Easement Holder agree to the following:

### Terms, Conditions and Restrictions of the Conservation Easement

Activity and Use Limitations. In order to protect the conservation values of the Property, the Owner hereby imposes and agrees to comply with the following activity and use limitations:

- a. Division: Any division or subdivision of the Property is prohibited;
- b. Discharge of Fill Material. Except as may otherwise be provided in this Conservation Easement, there shall be no filling, excavations, or other changes in the general topography of the Property;
- c. Commercial Activities: Commercial development or industrial activity on the Property is prohibited;
- d. Oil and Gas Wells: The drilling of new wells for the production of oil, gas, or other related products is prohibited.
- e. Construction: The placement or construction of any man-made modifications such as buildings, structures, fences, roads, and parking lots on the Property is prohibited except as specifically authorized herein.
- f. Cutting Vegetation: Any cutting of trees, ground cover or vegetation, or destroying by means of herbicides or pesticides on the Property is prohibited except for the control of invasive plant species or as otherwise required to maintain streams and wetlands pursuant to applicable requirements or the use of designated trails or recreational uses authorized herein;
- g. Dumping: Waste, garbage, and unsightly or offensive materials are not permitted and may not be accumulated on the Property; and
- h. Water Courses: Natural water courses and streams and adjacent riparian buffers may not be dredged, straightened, filled, channelized, impeded, diverted, or otherwise altered on the Property, except as provided in approved mitigation plans or to maintain restored wetlands or streams.

### Authorized Uses

Owner and Easement Holder agree that Owner or its designee shall have the right to restore and create wetlands on the Property including earth moving and vegetation planting, including the maintenance and monitoring of the restored and/or created wetlands and adjacent upland buffers. Additionally, the Owner may construct and maintain limited passive recreational and educational structures such as walking paths, restrooms, visitor parking area,

observation structures, bird nesting boxes, waterfowl nesting boxes, rain gauges, stream gauges, groundwater monitoring devices, and other related facilities provided that such construction or activity is authorized by the Easement Holder and the Owner receives applicable federal, state, and local permits prior to commencement of construction and the construction of structures will not cause a significant adverse effect on the conservation values of the property protected by this Conservation Easement.

Running with the Land. This Conservation Easement shall be binding upon the Owner and all assigns and successors in interest, including any Transferee, and shall run with the land subject to amendment or termination as set forth herein. The term "Transferee" as used in this Conservation Easement shall mean any future owner of any interest in the Property or any portion thereof, including, but not limited to, owners of an interest in fee simple, mortgagees, easement holders, and/or lessees.

Representations and Warranties. The Owner hereby represents and warrants to the other signatories hereto:

- a. that the Owner is the sole owner of the Property;
- b. that the Owner holds fee simple title to the Property which is free, clear, and unencumbered;
- c. that the Owner has the power and authority to enter into this Conservation Easement, to grant the rights and interests herein provided and to carry out all obligations hereunder; and
- d. that this Conservation Easement will not materially violate or contravene or constitute a material default under any other agreement, document, or instrument to which the Owner is a party of by which the Owner may be bound or affected.

Amendment or Termination. This Conservation Easement may be amended or terminated only by consent of the Owner or a Transferee and the Easement Holder. "Amendment" means any changes to the Conservation Easement, including the activity and use limitations set forth herein, or the elimination of one or more activity and use limitations when there is at least one limitation remaining. "Termination" means the elimination of all activity and use limitations set forth herein and all other obligations under this Conservation Easement.

This Conservation Easement may be amended or terminated only by a written instrument duly executed by the Owner and Easement Holder or Transferee of the Property or portion thereof, as applicable. Within thirty (30) days of signature by all requisite parties on any amendment or termination of this Conservation Easement, the Owner or Transferee shall file such instrument for recording with the Harrison County Recorder's Office.

Recordation. The Owner and its successors and assigns shall record this instrument in a timely fashion in the official record of Harrison County, Ohio and shall re-record it at any time as may be required to preserve the Easement Holder's rights in this Conservation Easement.

Assignment. This Conservation Easement is transferrable, but the Easement Holder may assign its rights and obligations hereunder only to an organization or entity that is qualified to hold conservation easements under Ohio law, and any applicable federal tax law, at the time of transfer, provided that such transfer is approved by Owner, which approval shall not be unreasonably withheld or delayed. As a condition of such transfer, the Easement Holder and Owner shall require that the conservation purposes that this grant is intended to advance continue to be carried out.

Liberal Construction. This Conservation Easement shall be liberally construed in favor of maintaining the conservation values of the Property. The section headings and subheadings identified herein are for reference purposes only and shall not be used to interpret the meaning of any provision hereof.

Notices. For purposes of this Conservation Easement, notices may be provided to all parties by personal delivery or by mailing a written notice to that party by first class mail, postage prepaid. Delivery will be complete upon depositing the properly addressed notice with the U.S. Postal Service.

The notice shall be served to the Grantor at:

Harrison County Board of Commissioners  
100 West Market Street  
Cadiz, Ohio, 43907

The notice shall be served to the Grantee at:

Harrison County Soil and Water Conservation District  
538 North Main Street  
Cadiz, Ohio 43907

Severability. If any portion of this Conservation Easement is determined to be invalid or unenforceable, the remaining provisions of this agreement will remain in full force and effect.

Subsequent Transfers. This Conservation Easement shall be a covenant running with the land and shall constitute a burden on the Property and shall run to the benefit of the parties hereto and their successors in interest. All subsequent owners of the Property shall be bound to all provision of this Conservation Easement to the same extent



**Appendix E**  
**Existing Conditions Map**

Prepared for  
**Ohio Wetlands Foundation**  
Little Stillwater Wetlands Mitigation Site  
12.2 Acres, U. S. 250, Franklin Township  
Harrison County, Ohio

Prepared by  
**DAVEY**  
RESOURCE GROUP  
A Division of The Davey Tree Expert Company

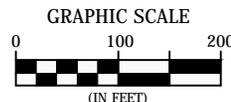
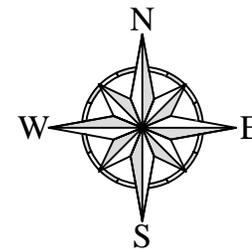
Data used to produce this map  
were collected  
on January 7, 2008,  
June 8, and July 9, 2009 and  
November 18, 2011

**NOTE:** Wetland sizes and stream lengths could change upon overlay of a boundary survey, especially where these features extend outside of or are in close proximity to the shown study limits. Wetland acreage and stream lengths are calculated for the portion that occurs in the shown study limits.

Wetland  
(1.755 acres)

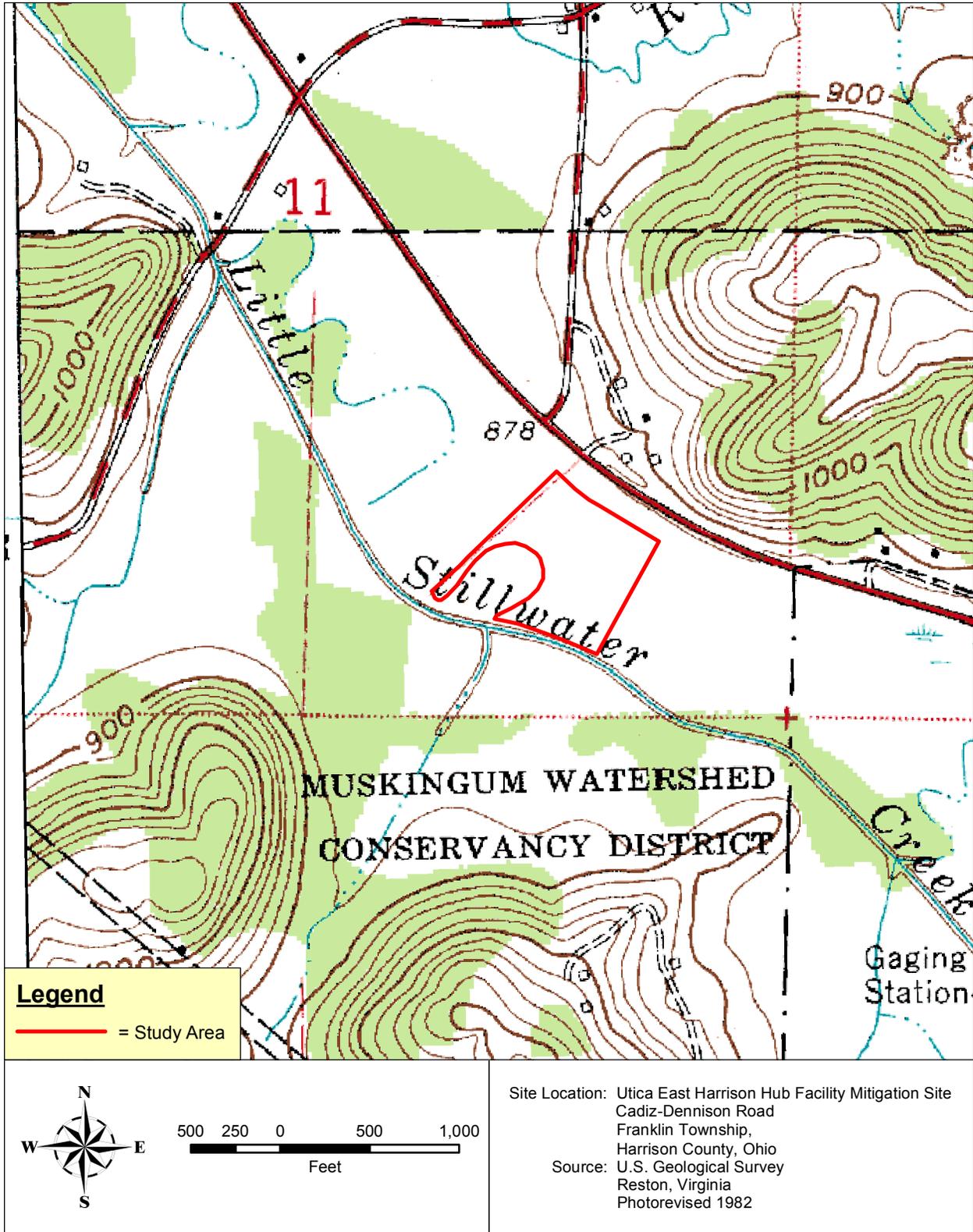
U. S. 250 (Cadiz-Dennison Road)

-  = Study area
-  = Stream
-  = Direction of flow
-  = Areas of wetlands delineated within study area (1.755 acres)



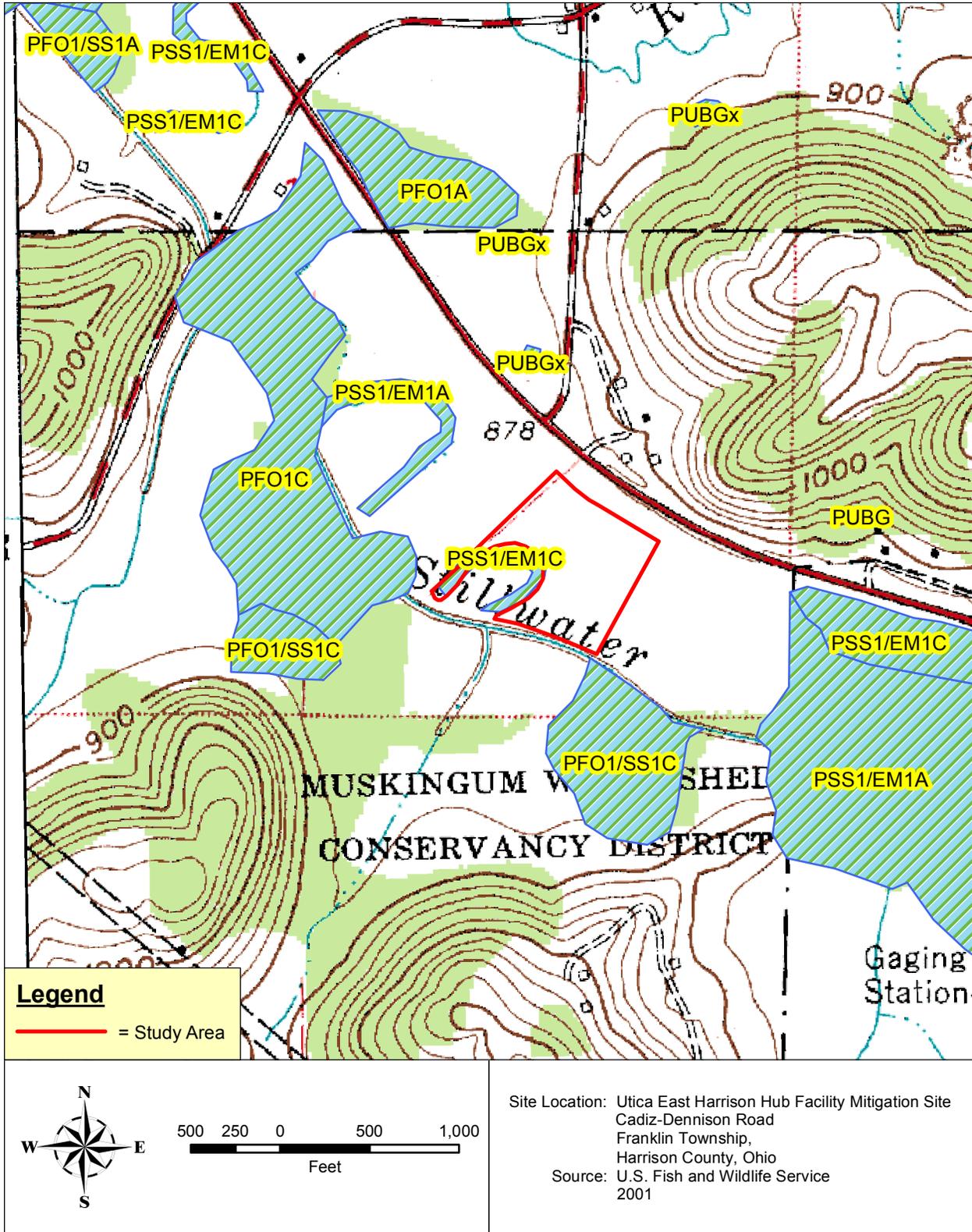
# Appendix F

## Location of Mitigation Site on USGS 7.5 Minute Topographic Map (Deersville Quadrangle)



# Appendix G

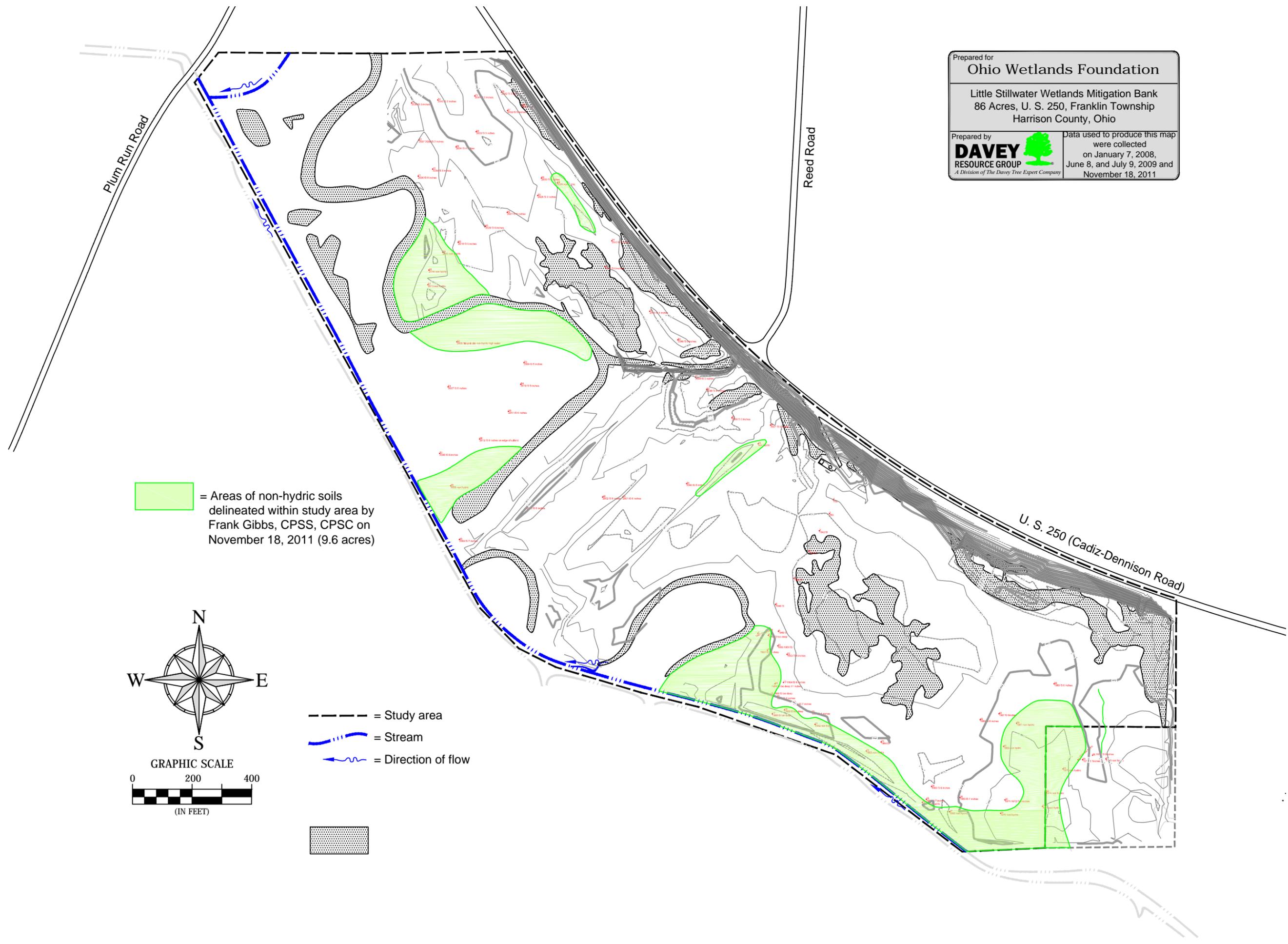
## Location of Mitigation Site on National Wetlands Inventory Map (Deersville Quadrangle)

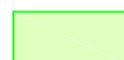


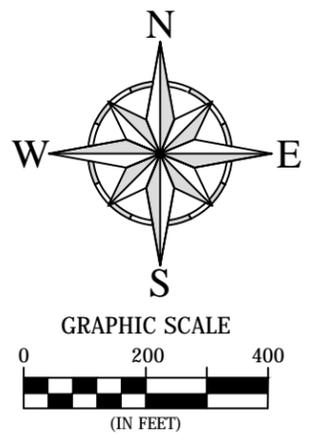
# **Appendix H**

## **Soils Information and Hydric Soils Delineation Map**

Prepared for <b>Ohio Wetlands Foundation</b>	
Little Stillwater Wetlands Mitigation Bank 86 Acres, U. S. 250, Franklin Township Harrison County, Ohio	
Prepared by <b>DAVEY</b> RESOURCE GROUP <small>A Division of The Davey Tree Expert Company</small>	Data used to produce this map were collected on January 7, 2008, June 8, and July 9, 2009 and November 18, 2011



 = Areas of non-hydric soils delineated within study area by Frank Gibbs, CPSS, CPSC on November 18, 2011 (9.6 acres)



-  = Study area
-  = Stream
-  = Direction of flow



## **Description of Soils Found on the Site from the Harrison County Soil Survey (Roth and Buzard, 1998).**

**CCA**—*Caneadea silty clay loam, 0 to 2 percent slopes.*

### **Setting**

*Landform:* Stream terraces

*Position on the landform:* Terrace treads

*Size of areas:* 5 to 300 acres

### **Typical Profile**

*Surface layer:*

0 to 9 inches—dark grayish brown, firm silty clay loam

*Subsoil:*

9 to 55 inches—grayish brown and yellowish brown, mottled, firm silty clay

*Substratum:*

55 to 80 inches—dark yellowish brown, mottled, firm laminated silty clay loam and silty clay

### **Soil Properties and Qualities**

*Drainage class:* Somewhat poorly drained

*Seasonal high water table:* 1.0 to 2.5 feet

*Depth class:* Very deep

*Root zone:* Very deep

*Permeability:* Very slow

*Available water capacity:* Moderate

*Surface runoff:* Slow

### **Composition**

*Caneadea soil and similar soils:* 85 percent

*Contrasting inclusions:* 15 percent

### **Inclusions**

*Contrasting inclusions:*

- The poorly drained Canadice soils in depressions

*Similar inclusions:*

- Soils that have a surface layer of silt loam

### **Use and Management**

**Land Use:** Dominant uses—cropland; other uses—pasture and woodland

#### **Cropland**

*Suitability:* Moderately well suited to corn, small grain, and hay

*Major management concerns:* Seasonal wetness, tilth, compaction, clodding

*Management measures:*

- A surface drainage system helps to remove excess surface water.
- Installing a subsurface drainage system helps to overcome the wetness in the subsoil.
- Cover crops and a system of conservation tillage that leave crop residue on the surface, improve tilth, and increase the rate of water infiltration.

- Tilling within the proper range of moisture content is important because the soil becomes compacted and cloddy if worked when it is wet and sticky.

### **Pasture**

*Suitability:* Moderately well suited

*Major management concerns:* Compaction and poor tilth in overgrazed areas

*Management measures:*

- Controlled grazing in winter and during other wet periods helps to prevent excessive compaction and maintain the rate of water infiltration.

### **Woodland**

*Suitability:* Moderately well suited.

*Major management concerns:* Seedling mortality; windthrow hazard; plant competition; limitations for haul roads, log landings, skid trails, logging areas, site preparation, and planting

*Management measures:*

- Planting techniques that spread the roots of seedlings and increase soil-root contact, reduce the seedling mortality rate.
- Harvesting procedures that do not leave the remaining trees widely spaced or isolated reduce the windthrow hazard.
- Removing vines and the less desirable trees and shrubs helps to control plant competition.
- Logging should be done when the soil is frozen or during the drier parts of the year.
- Site preparation and planting should be done during dry periods.

### **Buildings**

*Suitability:* Poorly suited

*Major management concerns:* Dwellings with and without basements—seasonal wetness, shrink-swell potential

*Management measures:*

- Building sites should be landscaped so that excess water drains away from foundations.
- Waterproofing basement walls, installing drains at the base of footings, and installing sump pumps help to keep basements dry.
- Designing walls that have plasters and that are reinforced with concrete, supporting walls with large spread footings, and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

### **Septic tank absorption fields**

*Suitability:* Poorly suited

*Major management concerns:* Seasonal wetness, very slow permeability

*Management measures:*

- Installing perimeter drains around the absorption field helps to overcome the wetness if drainage outlets are available.
- Enlarging the absorption area helps to overcome the restricted permeability.
- An aeration septic tank absorption field that has a suitable outlet is an effective alternative system.

### **Camp areas**

*Suitability:* Poorly suited

*Major management concerns:* Seasonal wetness, very slow permeability

*Management measures:*

- Installing a drainage system and a large absorption field for the disposal of wastewater helps to overcome the limitations.

**Paths and trails**

*Suitability:* Moderately well suited

*Major management concerns:* Wetness

*Management measures:*

- A drainage system is needed.

**Local roads and streets**

*Suitability:* Poorly suited

*Major management concerns:* Low strength, frost action

*Management measures:*

- Installing a drainage system and providing suitable base material help to prevent the damage caused by low strength and frost action.

**Interpretive Groups**

*Land capability classification:* IIIw

*Woodland ordination symbol:* 4C

*Pasture and hayland suitability group:* C-2

# **Appendix I**

## **Letter from Ohio Department of Natural Resources**



# Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR

SEAN D. LOGAN, DIRECTOR

**Division of Natural Areas and Preserves**

*Steven D. Maurer, Chief*  
2045 Morse Rd., Bldg. F-1  
Columbus, OH 43229-6693  
Phone: (614) 265-6453; Fax: (614) 267-3096

November 7, 2008

Todd Crandall  
Davey Resource Group  
3728 Fishcreek Rd.  
Stow, OH 44224

Dear Mr. Crandall:

I have reviewed our Natural Heritage maps and files for the Little Stillwater Wetlands Mitigation Bank project area, including a one mile radius, in section 11 of Franklin Township, Harrison County, and on the Deersville Quad. We have no records for rare or endangered species or other significant natural features within the project area. However, please note the location of two parcels of Tappan Lake (Muskingum Watershed Conservancy District) within the one mile radius of the project site and as shown in green on the attached map.

There are no state nature preserves or scenic rivers at the project site. We are also unaware of any unique ecological sites, geologic features, animal assemblages, state parks, state forests or state wildlife areas within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

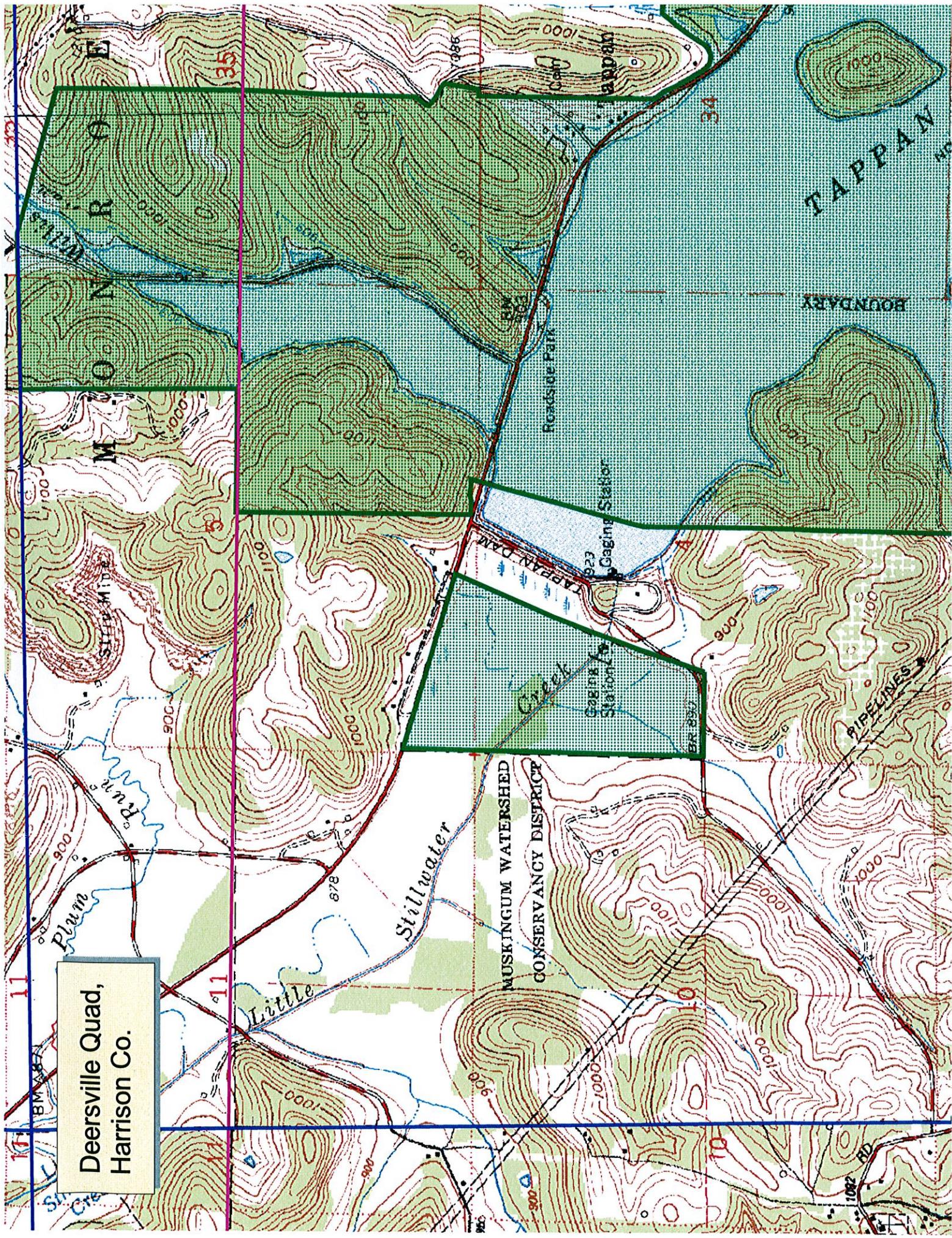
Sincerely,

A handwritten signature in blue ink, appearing to read "Debbie Woischke".

Debbie Woischke, Ecological Analyst  
Natural Heritage Program

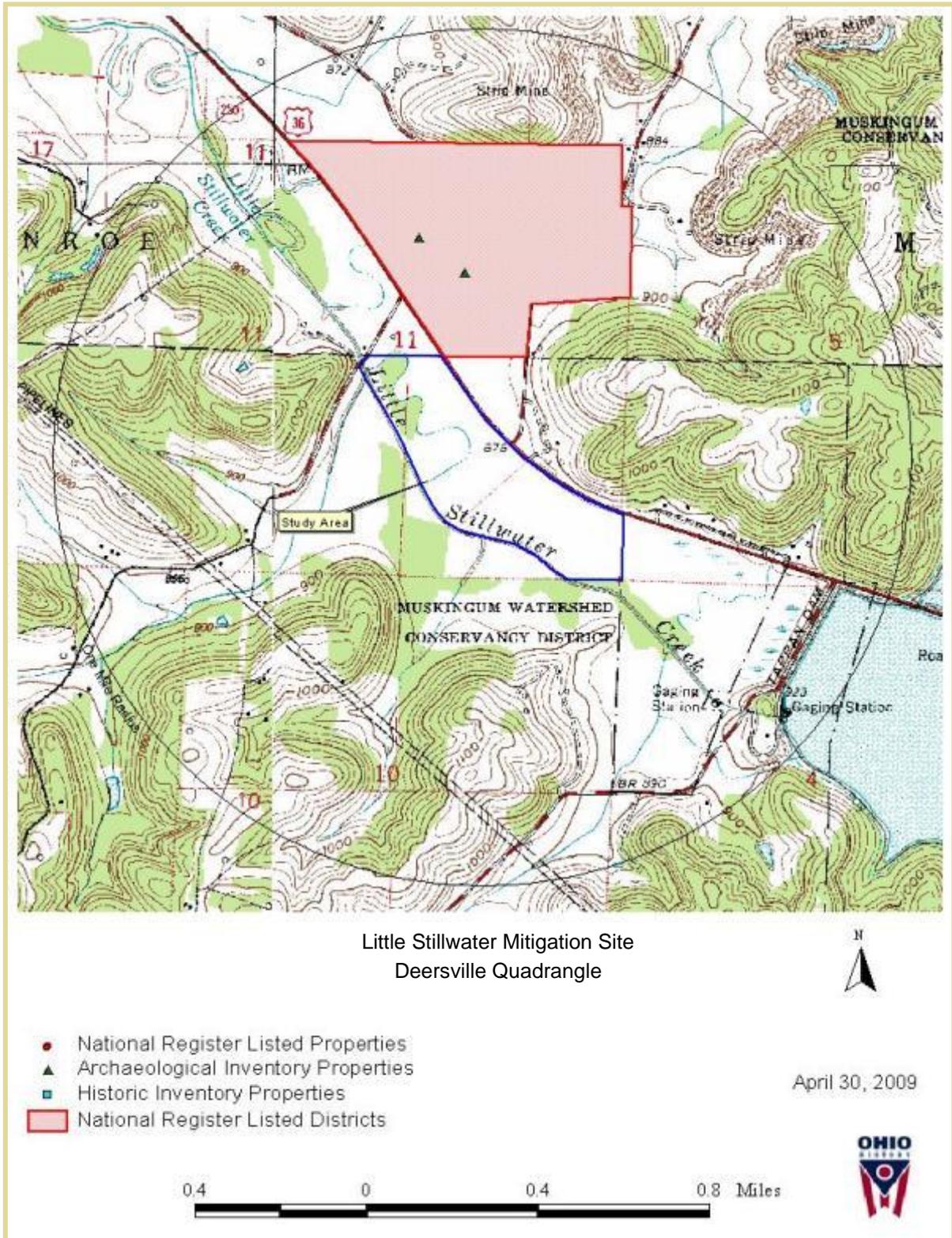


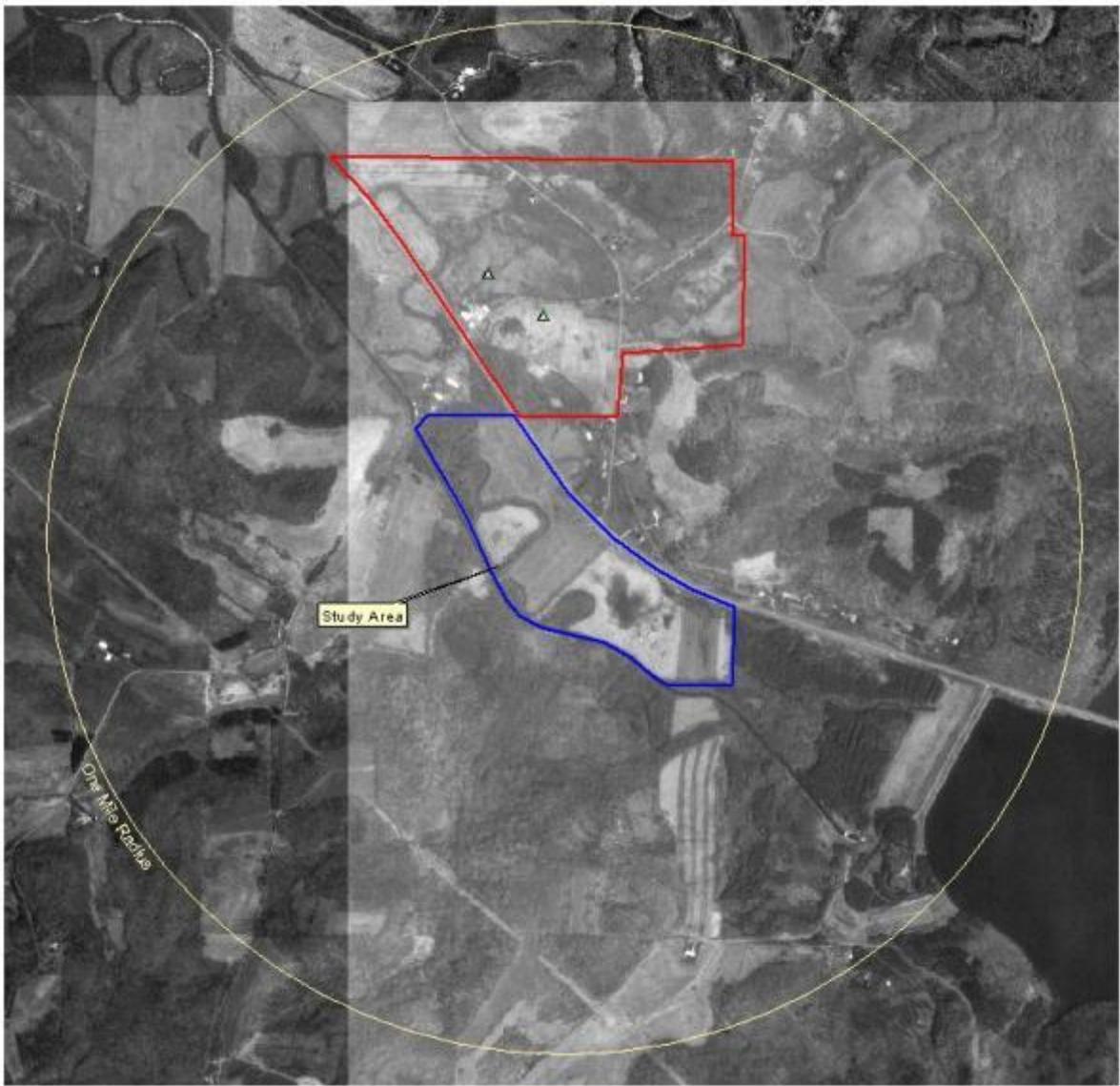
Deersville Quad,  
Harrison Co.



# Appendix J

## Ohio Historical Preservation Office Data





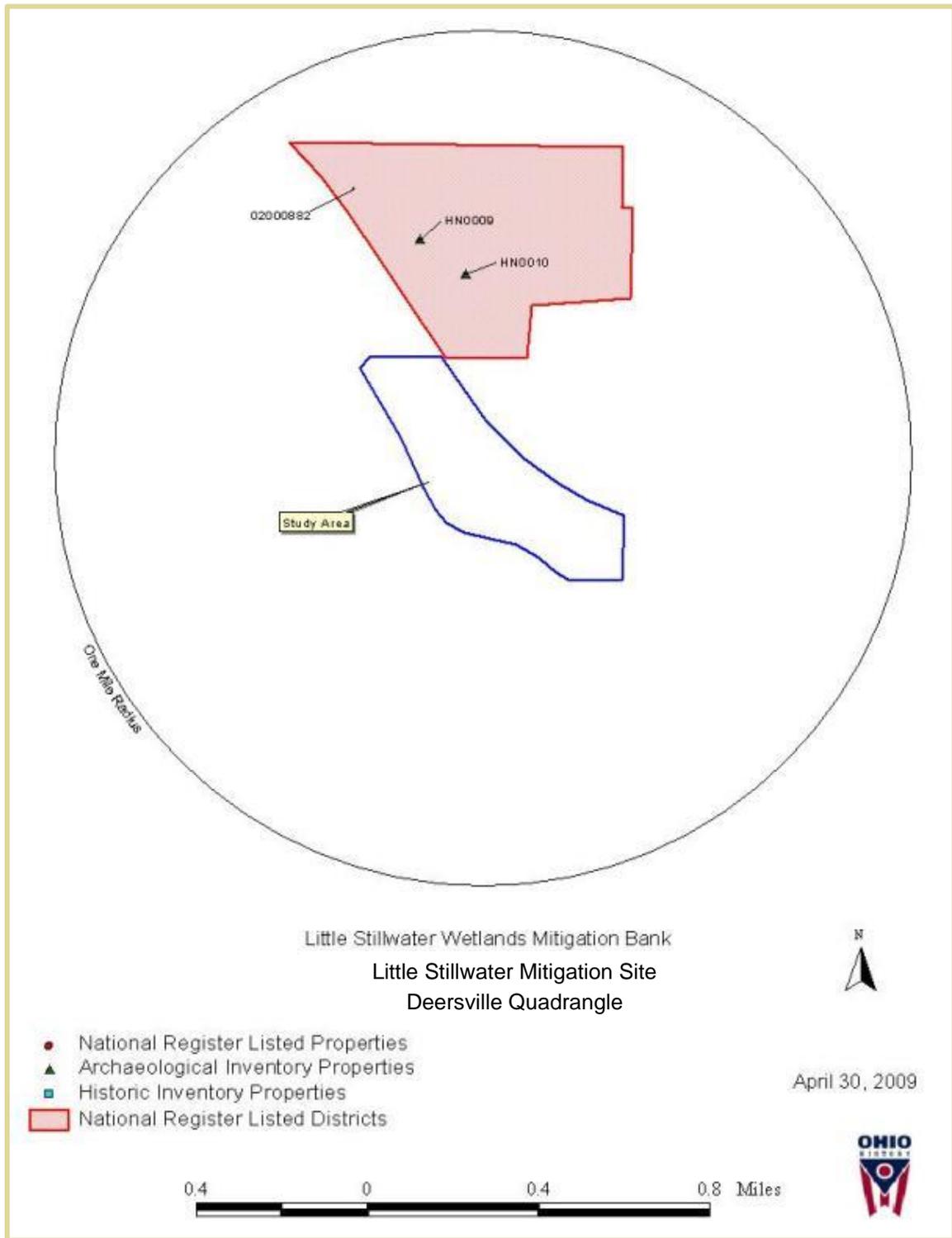
Little Stillwater Mitigation Site  
Deersville Quadrangle



- National Register Listed Properties
- ▲ Archaeological Inventory Properties
- Historic Inventory Properties
- National Register Listed Districts

April 30, 2009





**Ohio Archaeological Inventory**

NUMBER	SITE NAME	UTM ZONE	EASTING	NORTHING	NADB #
HN0009	Huss Site #1	17	479320	4468920	00000
HN0010	Huss Site #2	17	479490	4468790	00000

**Ohio Historic Inventory**

No resources found within radius

**National Register of Historic Places**

NUMBER	RESOURCE NAME	ADDRESS
02000882	Law, Henry, Farm Historic District	87675 Reed Rd

# Appendix K

## Planting and Seed Mix Species List

### Species for Planting (Dependent on Availability)

Species <sup>1</sup>	Common Name	Indicator Status <sup>2</sup>	C of C <sup>3</sup>
<b>Shrubs</b>			
<i>Alnus serrulata</i>	smooth alder	OBL	6
<i>Cephalanthus occidentalis</i>	common buttonbush	OBL	6
<i>Cornus alba</i>	red-osier dogwood	FACW	3
<i>Cornus amomum</i>	silky dogwood	FACW	2
<i>Cornus racemosa</i>	gray dogwood	FAC	1
<i>Corylus americana</i>	American hazel	FACU	4
<i>Ilex verticillata</i>	winterberry	FACW	6
<i>Lindera benzoin</i>	northern spicebush	FAC	5
<i>Photinia melanocarpa</i>	black chokeberry	FAC	5
<i>Physocarpus opulifolius</i>	ninebark	FACW	4
<i>Ptelea trifoliata</i>	hop-tree	FAC	5
<i>Ribes americanum</i>	wild black currant	FACW	4
<i>Rosa palustris</i>	swamp rose	OBL	5
<i>Salix discolor</i>	pussy willow	FACW	3
<i>Salix eriocephala</i>	Missouri river willow	FACW	2
<i>Salix exigua</i>	sandbar willow	FACW	1
<i>Salix sericea</i>	silky willow	OBL	4
<i>Sambucus nigra</i>	common elderberry	FACU	3
<i>Spiraea alba</i>	narrow-leaf meadow-sweet	FACW	3
<i>Spiraea tomentosa</i>	steeple-bush	FACW	4
<i>Staphylea trifolia</i>	American bladdernut	FAC	6
<i>Vaccinium corymbosum</i>	highbush blueberry	FACW	6
<i>Viburnum dentatum</i>	northern arrow-wood	FAC	2
<i>Viburnum lentago</i>	nannyberry	FAC	5
<i>Viburnum opulus</i> var. <i>americana</i>	American cranberrybush	FACW	8
<b>Forbs</b>			
<i>Acorus americanus</i>	American sweet-flag	OBL	6
<i>Brasenia schreberi</i>	watershield	OBL	7
<i>Chelone glabra</i>	white turtlehead	OBL	6
<i>Iris versicolor</i>	blueflag	OBL	6
<i>Lysimachia terrestris</i>	swamp loosestrife	OBL	6
<i>Nuphar lutea</i>	yellow cow-lily	OBL	4
<i>Nymphaea odorata</i>	white water-lily	OBL	6
<i>Oligoneuron ohioense</i>	Ohio golden-rod	OBL	8
<i>Peltandra virginica</i>	arrow arum	OBL	5
<i>Saururus cernuus</i>	lizard's tail	OBL	8
<i>Sparganium americanum</i>	American burreed	OBL	6
<i>Sparganium eurycarpum</i>	giant burreed	OBL	4
<b>Ferns</b>			
<i>Dryopteris cristata</i>	crested shield-fern	FACW	8
<i>Osmunda cinnamomea</i>	cinnamon fern	FACW	6
<i>Osmunda regalis</i>	royal fern	OBL	7
<b>Graminoids</b>			
<i>Carex intumescens</i>	bladder sedge	FACW	5
<i>Carex stipata</i>	crowded sedge	OBL	2
<i>Carex comosa</i>	bearded sedge	OBL	2
<i>Carex crinita</i>	tasseled sedge	OBL	3
<i>Carex stricta</i>	tussock sedge	OBL	5
<i>Schoenoplectus acutus</i>	hard-stem bulrush	OBL	7
<i>Schoenoplectus tabernaemontanii</i>	soft-stem bulrush	OBL	2
<i>Spartina pectinata</i>	prairie cordgrass	OBL	5

<sup>1</sup> Most species names and indicator status were obtained from Lichvar, 2012.

<sup>2</sup> Please refer to Appendix L for a description of wetlands vegetation indicator status symbols.

<sup>3</sup> The Coefficient of Conservatism (C of C) is the foundation of assessing floristic quality and an integral part of the Vegetation Index of Biotic Integrity (VIBI) (Mack, 2007). It identifies the likelihood that a plant is found within different habitats; the narrower the habitat requirements, the higher the C of C scores. Ohio EPA has assigned C of C scores for plants growing within the ecoregions particular to Ohio. These scores may be found in the *Floristic Quality Assessment Index (FQAI) for Vascular Plants and Mosses for the State of Ohio* (Andreas, et al., 2004).

### Seed Mix (Dependent on Availability)

Botanical Name	Common Name	Indicator Status	C of C
<i>Actaea pachypoda</i>	white baneberry	UPL	7
<i>Agrimonia parviflora</i>	small flower groovebur	FACW	2
<i>Alisma subcordatum</i>	water plantain	OBL	2
<i>Andropogon gerardii</i>	big bluestem	FAC	5
<i>Arisaema triphyllum</i>	swamp jack-in-the-pulpit	FACW	3
<i>Asclepias incarnata</i>	swamp milkweed	OBL	4
<i>Bidens cernua</i>	nodding beggar-ticks	OBL	3
<i>Boehmeria cylindrica</i>	small-spike false-nettle	FACW	4
<i>Calamagrostis canadensis</i>	blue-joint reedgrass	FACW	4
<i>Caltha palustris</i>	common marsh-marigold	OBL	6
<i>Carex crinita</i>	fringed sedge	OBL	3
<i>Carex crus-corvi</i>	raven-foot sedge	OBL	8
<i>Carex hyalinolepis</i>	shoreline sedge	OBL	5
<i>Carex intumescens</i>	bladder sedge	FACW	5
<i>Carex lacustris</i>	lakebank sedge	OBL	5
<i>Carex lupuliformis</i>	false hop sedge	FACW	9
<i>Carex lupulina</i>	hop sedge	OBL	3
<i>Carex lurida</i>	shallow sedge	OBL	3
<i>Carex muskingumensis</i>	Muskingum sedge	OBL	7
<i>Carex scoparia</i>	pointed broom sedge	FACW	3
<i>Carex squarrosa</i>	squarrose sedge	FACW	7
<i>Carex stipata</i>	crowded sedge	OBL	2
<i>Carex tribuloides</i>	blunt broom sedge	FACW	4
<i>Carex tuckermanii</i>	Tuckermann's sedge	OBL	8
<i>Carex vulpinoidea</i>	fox sedge	OBL	1
<i>Cephalanthus occidentalis</i>	common buttonbush	OBL	6
<i>Chamecrista fasciculata</i>	partridge pea	FACU	3
<i>Clematis virginiana</i>	Virginia virgin's bower	FAC	3
<i>Coreopsis tripteris</i>	tall tickseed	FAC	5
<i>Doellingeria umbellata</i>	flat-top white aster	FACW	3
<i>Dulichium arundinaceum</i>	three-way sedge	OBL	6
<i>Echinacea purpurea</i>	purple coneflower	UPL	6
<i>Elymus canadensis</i>	nodding wild-rye	FACU	6
<i>Elymus riparius</i>	riverbank wild -rye	FACW	5
<i>Elymus virginicus</i>	Virginia wild -rye	FACW	3
<i>Eupatorium perfoliatum</i>	common boneset	FACW	3
<i>Eutrochium fistulosum</i>	hollow Joe-pye-weed	FACW	6
<i>Eutrochium maculatum</i>	spotted Joe-pye-weed	FACW	6
<i>Glyceria canadensis</i>	rattlesnake grass	OBL	7
<i>Glyceria grandis</i>	American manna grass	OBL	7
<i>Glyceria septentrionalis</i>	eastern manna grass	OBL	6
<i>Glyceria striata</i>	fowl manna grass	OBL	2
<i>Heliopsis helianthoides</i>	smooth oxeye	FACU	5
<i>Hydrocotyle americana</i>	American marsh penny-wort	OBL	7
<i>Impatiens capensis</i>	spotted touch-me-not	FACW	2
<i>Iris versicolor</i>	blueflag	OBL	6
<i>Juncus effusus</i>	soft rush	OBL	1
<i>Leersia oryzoides</i>	rice cut grass	OBL	1
<i>Leersia virginica</i>	white grass	FACW	4
<i>Lobelia cardinalis</i>	cardinal flower	FACW	5
<i>Lobelia siphilitica</i>	great blue lobelia	FACW	3
<i>Lolium perenne</i> ssp. <i>multiflorum</i>	annual ryegrass	FACU	n/a
<i>Ludwigia alternifolia</i>	bushy seedbox	FACW	3
<i>Lysimachia ciliata</i>	fringed loosestrife	FACW	4
<i>Mimulus ringens</i>	Allegheny monkey-flower	OBL	4
<i>Oligoneuron riddelli</i>	Riddell's goldenrod	OBL	8
<i>Onoclea sensibilis</i>	sensitive fern	FACW	2
<i>Panicum virgatum</i>	switchgrass	FAC	4
<i>Penthorum sedoides</i>	ditch stonecrop	OBL	2
<i>Persicaria sagittata</i>	arrow-leaf tearthumb	OBL	2
<i>Poa palustris</i>	fowl bluegrass	FACW	5
<i>Rosa palustris</i>	swamp rose	OBL	5
<i>Rudbeckia fulgida</i> var. <i>speciosa</i>	orange coneflower	FAC	6
<i>Rudbeckia hirta</i>	black-eyed susan	FACU	1

Botanical Name	Common Name	Indicator Status	C of C
<i>Rudbeckia laciniata</i>	cut-leaf coneflower	FACW	6
<i>Sambucus nigra</i>	black elder	FACU	3
<i>Schoenoplectus acutus</i>	hard-stemmed bulrush	OBL	7
<i>Schoenoplectus fluviatilis</i>	river bulrush	OBL	5
<i>Schoenoplectus pungens</i>	Olney's bulrush	OBL	9
<i>Schoenoplectus tabernaemontani</i>	soft stem bulrush	OBL	2
<i>Scirpus atrovirens</i>	dark green bulrush	OBL	1
<i>Scirpus cyperinus</i>	woolgrass	OBL	1
<i>Scirpus polyphyllus</i>	leafy bulrush	OBL	6
<i>Solidago speciosa</i>	showy goldenrod	UPL	5
<i>Sorghastrum nutans</i>	Indian grass	FACU	5
<i>Sparganium americanum</i>	American burreed	OBL	6
<i>Sparganium eurycarpum</i>	giant burreed	OBL	4
<i>Spartina pectinata</i>	prairie cordgrass	OBL	5
<i>Spiraea tomentosa</i>	steepleshbush	FACW	4
<i>Symphotrichum puniceum</i>	swamp aster	OBL	7
<i>Tradescantia ohioensis</i>	Ohio spider-wort	FAC	5
<i>Verbena hastata</i>	blue vervain	FACW	4
<i>Viola cucullata</i>	marsh blue violet	FACW	6

# Appendix L

## Definition of Wetlands Vegetation Indicator Status (from Lichvar, 2012)

**Obligate Wetlands (OBL).** Almost always is a hydrophyte, rarely in uplands.

**Facultative Wetlands (FACW).** Usually is a hydrophyte but occasionally found in uplands.

**Facultative (FAC).** Commonly occurs as either a hydrophyte or non-hydrophyte.

**Facultative Upland (FACU).** Occasionally is a hydrophyte but usually occurs in uplands.

**Obligate Upland (UPL).** Rarely is a hydrophyte, almost always in uplands.

Species for which little or no information was available to base an indicator status were assigned a no indicator (NI) status. An asterisk (\*) after the indicator status indicates that the indicator status was based on limited ecological information.

The wetlands indicator categories should not be equated to degrees of wetness. Many obligate wetlands species occur in permanently or semipermanently flooded wetlands, but a number of obligates also occur, and some are restricted to wetlands that are only temporarily or seasonally flooded. The facultative upland species include a diverse collection of plants that range from weedy species adapted to exist in a number of environmentally stressful or disturbed sites (including wetlands), to species in which a portion of the gene pool (an ecotype) always occurs in wetlands. Both the weedy and ecotype representatives of the facultative upland category occur in seasonally and semipermanently flooded wetlands.

Davey Resource Group has added two additional indicators for situations when plants can only be identified to genus. A Wetlands Indicator Species (WIS) is a plant that is most likely obligate wetlands, facultative wetlands, or facultative. An Upland Indicator Species (UIS) is a plant that is most likely indicative of upland or facultative upland conditions. These additional indicators are used when species identification is not possible. A variety of factors are part of the UIS and WIS assignments. Indicator statuses of all locally occurring members of the genus in question are considered, as are the health and size of the population and the indicator status of nearby plants.

# Appendix M

## References

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# Appendix N

## Davey Resource Group Personnel Profiles

**Ana Burns, M.S.E.S.**, is a biologist and Coordinator of Ecological Services for Davey's Natural Resource Consulting group. Ms. Burns has 11 years of experience in the natural resources and environmental planning fields and at Davey is responsible for overseeing all ecological surveys and environmental planning studies, as well as the specialized management of ecological and wetlands permitting projects, mitigation bank planning and monitoring projects, and natural resource restoration projects. She is knowledgeable of state and federal stream and wetlands regulations, all aspects of Section 401 and 404 permitting, isolated wetlands regulations, and the federal mitigation rule for compensatory mitigation and its application to mitigation banking. Ms. Burns has managed multiple Section 401 and 404 permitting projects along with numerous natural resource inventories and planning projects. In addition, Ms. Burns has provided assistance with grant writing and managing grant-funded projects. Ms. Burns has coordinated and facilitated public meetings and hearings and has assisted in the development of various planning documents including greenways planning, watershed planning, and urban forestry management plans. In addition to public meetings, Ms. Burns has developed many informational public outreach publications and prepared electronic sources of information for distribution. With a background in urban and rural planning, she is well versed in working with planning commissions, steering committees, and local political groups and has given many presentations at a variety of venues. Ms. Burns is a board member of the Tinkers Creek Watershed Partnership and active in the Ohio Lake Management Society. Ms. Burns graduated from Indiana University with a Bachelor of Science degree in biology and holds a Master of Science degree in environmental science from IU's School of Public and Environmental Affairs.

**Ken Christensen** is a senior biologist with more than 25 years of experience in the natural resource field. Mr. Christensen is involved in all aspects of wetlands and stream restoration projects, including design, planting, and implementation. He is also involved with the subsequent monitoring of mitigation and restoration projects to ensure that such endeavors reach an expected successful conclusion. Mr. Christensen assists in plant surveys and wetlands delineations and in the field identification of vertebrate populations, especially amphibians, reptiles, and mammals. Proficient with AutoCAD® software, Mr. Christensen is responsible for managing the Global Positioning System (GPS) data collection and AutoCAD® mapping operations for all natural resource studies. As an International Society of Arboriculture Certified Arborist (OH-0690A), he performs tree appraisals and inventories and also develops tree preservation plans. Mr. Christensen is a LEED® Accredited Professional and has received the following training: Certificate of Completion for LEED® for New Construction Technical Review Workshop from U.S. Green Building Council; Certificate of Completion for American Ecological Engineering Society Wetland Mitigation Design from Virginia Polytechnic Institute and State University; Certificate of Completion for AutoCAD® for Stream Restoration and Monitoring from North Carolina Cooperative Extension; Certificate of Completion from North Carolina Stream Restoration Institute's Stream Classification and Assessment Program; and Certificate of Completion from North Carolina Stream Restoration Institute's Stream Restoration Design Principles. Mr. Christensen is prequalified by the Ohio Department of Transportation for wetland mitigation. He has also completed training through Ohio Environmental Protection Agency for conducting the following: Headwater Habitat Evaluation Index (HHEI); Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). Clients for these mitigation, stream restoration, and tree preservation projects have included the Holden Arboretum, Ohio Wetlands Foundation, Medina County Park District, Metro Parks Serving Summit County, Portage Park District, and Western Reserve Land Conservancy. He is a member of the American Ecological Engineering Society, Breakneck Creek Watershed Coalition, the Ecological Landscaping Association, the Northeast Ohio Association of Herpetologists, American Ecological Engineering Society, and Association of State Wetlands Managers. Mr. Christensen holds a Bachelor of Science degree in conservation from Kent State University.

**Todd A. Crandall, M.En.**, is a senior wetlands scientist with 19 years of experience performing wetlands delineations in Ohio and adjacent states. Mr. Crandall also performs ecological surveys, vegetation cover mapping, plant identification, and Section 401 and 404 and isolated wetlands permitting. He also contributes to the planning and design of restoration wetlands and prepares wetland mitigation reports. Mr. Crandall is responsible for vegetation monitoring at numerous wetlands mitigation sites throughout Ohio. He has completed large-scale wetlands and natural resource inventories for the Cuyahoga Valley National Park, as well as Cuyahoga, Medina, Portage, and Summit Counties in Northeast Ohio. He is certified to perform wetlands studies by the U.S. Army Wetlands Delineator Certification Program, and is a certified Professional Wetland Scientist through the Society of Wetland Scientists. He has completed the 40-hour OSHA health and safety training (OSHA Standard 29 CFR 1910.120). Mr. Crandall has successfully completed the Ohio Department of Transportation's (ODOT) Ecological Training hosted by the Office of Environmental Services. He is ODOT prequalified for ecological surveys and wetland mitigation. Mr. Crandall has also completed training through the Ohio Environmental Protection Agency for the following: Headwater Habitat Evaluation Index (HHEI); Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). He holds a Bachelor of Science degree from Hiram College in biology and a Master's degree in environmental science from Miami University.

**Judith Mitchell** is a biologist and project manager with 14 years of experience in wetland delineation and mitigation, Section 401 and 404 and isolated wetlands permitting, stream and wetland restoration and monitoring, and water quality testing. She also performs ecological surveys, including bat habitat and emergence studies, macroinvertebrate and amphibian studies, and vegetation surveys. Ms. Mitchell has provided planting and construction oversight for wetland and stream restoration projects. She has managed multiple Section 401 and 404 permitting projects and a wide variety of ecological survey and compensatory mitigation projects. Ms. Mitchell has completed training through Ohio Environmental Protection Agency for the following: Headwater Habitat Evaluation Index (HHEI); Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). Ms. Mitchell graduated from Kent State University with a Bachelor of Science degree in conservation with an emphasis in water resources.

**Greg Snowden, M.S.**, is a biologist with Davey Resource Group. He regularly prepares Section 404/401 permit applications, annual compensatory mitigation monitoring reports, Ohio Department of Transportation (ODOT) categorical exclusion documents, and ODOT ecological survey reports. Additionally, Greg performs several types of fieldwork, including wetland and stream delineations, ODOT ecological surveys, endangered species surveys, wetland vegetation assessments, and compensatory mitigation project monitoring. Mr. Snowden has completed the following agency held training courses: Ohio Rapid Assessment Method (ORAM) for Wetlands v. 5.0 and Headwater Habitat Evaluation Index (HHEI) training through Ohio Environmental Protection Agency (EPA), and Categorical Exclusion, Waterway Permits, and Ecological Survey courses through ODOT's Office of Environmental Services. During the Summer of 2012, Greg attended a week-long wetland delineation training course offered by the Swamp School, focusing on the 1987 manual, and the Eastern Mountain and Piedmont, and Northcentral and Northeast regional supplements. Mr. Snowden graduated from Ohio University's Honors Tutorial College with a Bachelor of Science degree in environmental and plant biology and received a Master of Science degree in biological sciences (ecology, evolution, and the environment) from the University of Notre Dame.