WETLAND DELINEATION

WABASH INDUSTRIAL PARK
RINGEL AVENUE
WABASH, INDIANA
PROJECT NO.: 16IN0383

PREPARED FOR:

BANNING ENGINEERING, P.C.
PLAINFIELD, INDIANA

PREPARED BY:

Alt & Witzig Consulting Services
Carmel, Indiana

July 29, 2016

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July 29, 2016

Banning Engineering, P.C.
853 Columbia Road
Suite 101
Plainfield, Indiana 46168
Attn: Mr. Kevin Steely

RE: Wetland Delineation
Wabash Industrial Park
Ringel Avenue
Wabash, Indiana
Alt & Witzig Project No.:16IN0383

Dear Mr. Steely:

In compliance with your request, we have completed a Wetland Delineation at the above referenced Site. The purpose of our investigation was to identify jurisdictional areas associated with the Site by evaluation of potential wetland areas or other "Waters of the United States".

If you have questions or comments regarding our findings, please do not hesitate to contact us. Thank you for the opportunity to offer our services.

Sincerely,
ALT & WITZIG CONSULTING SERVICES

Clayton Heavin
Project Manager
Environmental Division

John C. Flannelly
Senior Project Manager
Environmental Division

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INTRODUCTION

This report presents the results of a wetland reconnaissance performed on an approximately 135-acre tract of predominately unimproved land with a wooded tract located along Ringel Avenue northwest of the interchange between State Road 14 and US Highway 24 in Wabash, Indiana (Site). The Site was observed to consist of multiple unimproved parcels located within the existing Wabash Industrial Park and contained a section of Charley Creek transecting the central portion of the Site from north to south. Two (2) retention ponds were observed to be located on the western portion of the Site.

The purpose of our investigation was to determine if portions of the Site are regulated under Sections 401 and/or 404 of the Clean Water Act. Sections 401 and 404 were established to control activities in "State Regulated Wetlands" and regulated "Waters of the United States." An Alt & Witzig Consulting Services (Alt & Witzig) Wetlands Scientist performed a Site reconnaissance on July 20, 2016.

Soil and vegetation samples collected on the Site during the investigation were inspected to determine whether wetland soils or hydrophytic vegetation were present. Wetland hydrological indicators were also investigated.

This investigation was performed for Banning Engineering, P.C. Authorization to perform this assessment was in the form of a written agreement between Mr. Jeff Henson of Banning Engineering, P.C. and Alt & Witzig.

LIMITATION OF LIABILITY

This report has been prepared in accordance with an agreement between Banning Engineering, P.C. and Alt & Witzig.

The services performed by Alt & Witzig have been conducted in a manner consistent with the level of quality and skill generally exercised by members of its profession and consulting practices.

This report is solely for the use of Banning Engineering, P.C. Any reliance of this report by third parties shall be at such party's sole risk as this report may not contain sufficient information for purposes of other parties or for other uses. This report shall only be presented in full and may not be used to support any other objectives than those set out in the report, except where written approval and consent are provided by Banning Engineering, P.C. and Alt & Witzig.

REGULATION DEFINITION

Definition of "Waters of the U.S."

"Waters of the U.S." is a broad term that includes intrastate lakes, rivers, perennial and intermittent streams, mudflats, sandflats, wetlands, sloughs, wet meadows and natural ponds, which could affect interstate or foreign commerce. The U.S. Army Corps of Engineers (USACE) has jurisdiction over any "Waters of the U.S." under the Clean Water Act.

Definition of "State Regulated Wetlands" and "Isolated Wetland"

According to Indiana state regulatory changes, the definition of a "State Regulated Wetland" is described as an isolated wetland located in Indiana that is not an exempt isolated wetland. Isolated wetlands consist of wetlands that are not subject to regulation under section 404(a) of the Clean Water Act, regulated by USACE. Exempt isolated wetlands are generally wetlands that are voluntarily created, exists as an incidental feature, is a fringe wetland associated with a private pond, is associated with a manmade body of surface water, is a Class I isolated wetland with a delineation of 0.5-acre or less, is a Class II isolated wetland with a delineation of 0.25-acre or less, or is constructed for reduction or control of pollution.

Definition of Wetlands

The following definition of a wetland is taken from the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987).

> Wetlands are "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Listed below are the three criteria used to classify wetlands. All three wetland criteria must be present for an area to be classified as a regulated wetland under normal circumstances.

1. The site must have hydric soil. A hydric soil is defined as a soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the near surface zone.
2. The area must have a predominance of hydrophytic or wetland vegetation (*e.g.*, sedges, cattails, reed-canary grass, water tolerant trees) or be capable of supporting this vegetation.
3. The site must have evidence of wetland hydrology. Wetland hydrology is defined as periodic inundation or saturation of soils to the surface at some time during the growing season. Drainage patterns, drift lines, and watermarks are examples of hydrological indicators used if soils are not saturated or inundated at the time of inspection.

It should also be noted that the Corps distributed the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, Document ERDC/EL TR-10-16* (USACE, 2010). This document is one of a series of Regional Supplements to the USACE Delineation Manual. The development of the Regional Supplements is part of a nationwide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineating procedures. All wetland delineations submitted to the USACE after November 30, 2008 must follow the procedures listed within the supplement that includes the geographic region in which the subject property is located.

Regulation of Wetlands

Wetlands are regulated "Waters" under Section 404 of the Clean Water Act. Section 404, administered by the USACE, requires permits for discharges of dredged or fill material into regulated "Waters." Regulated "Waters" subject to jurisdiction by the USACE includes navigable "Waters of the United States" and wetland areas determined by the USACE as possessing a significant nexus to a regulated "Waters". A Supreme Court case in 2001 determined that the USACE does not have jurisdiction over isolated wetlands under the Section 404 Clean Water Act.

The Indiana Department of Environmental Management (IDEM) also regulates any activities in wetlands or other "waters" (e.g. streams, ponds, and lakes) under Section 401, Water Quality Certification (WQC). Regulatory laws have further identified IDEM as having regulatory jurisdiction over isolated wetlands.

DESCRIPTION OF SITE

Site Location

The Site is located approximately two and three quarter (2.75) miles north-northeast of downtown Wabash in Wabash County, Indiana. The Site is further located on the USGS 7.5-Minute Series Topographic map of Wabash, Indiana (see Figure 1, Appendix A) in the northern half of Section 36, Township 28 North, Range 6 East. Coordinates for the approximate center of the Site are 40.50083 North Latitude and -85.48113 West Longitude.

General Site Description

The Site consists of approximately 135-acres of predominately unimproved land with a wooded tract containing a section of Charley Creek located within the existing Wabash Industrial Park. Two (2) retention ponds were observed to be located on the western portion of the Site. A total of five (5) drainage features were observed to be located throughout the Site. State Road 13, residential and commercial properties adjoin the Site to the east. Agricultural and residential properties adjoin the Site to the north. North County Road 100 West, residential and agricultural land adjoin the Site to the west. Commercial properties, West County Road 50 North and unimproved land adjoin the Site to the south.

Based on the review of historical aerial photographs, it appears the Site has consisted of predominately unimproved land from at least 1941 through the present.

WETLAND DELINEATION

Methodology

Prior to mobilizing to the Site, aerial photographs of the Site, obtained from the Indiana Historical Aerial Photograph Index (IHAPI) and Google Earth©, were reviewed. The Wabash, Indiana USGS 7.5-Minute Series Topographic map (USGS, 1963 [Revised 1981]) was also reviewed. A United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map and a United States Department of Agriculture (USDA) Soil Conservation Service (SCS) soil survey for the Site were also reviewed. One (1) small freshwater emergent wetland was depicted on the western portion of the Site. In addition, the NWI map identified the section of Charley Creek that transects the Site. The soil survey indicated the presence of hydric soils. An initial reconnaissance was performed at the Site in order to determine sampling points. Sample points were selected based on the potential for that area to be identified as a wetland. Areas that were not sampled were located on upland terraces, exhibited a dominance of upland plant species and/or a lack of hydrology indicators. A total of ten (10) sampling points were established at the Site in order to obtain a representative sample of the vegetation, soils and hydrology (Appendix A, Figure 2).

Wetland determination activities were performed in accordance with the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, Version 2.0* (USACE, 2010). At each sampling point, vegetation was identified, a soil test pit was excavated to determine if hydric soils were present, and visual observations were made to determine if hydrology indicators were present. For vegetation, each sampling point consisted of a 30-foot radius for the tree and woody vine stratum; a 15-foot radius for the sapling and shrub stratum; and a five foot radius for the herbaceous plants stratum. The following is a summary of the data that was collected from the sampling points. Copies of the Wetland Determination Data Forms – Midwest Region are provided in Appendix B.

Vegetation

The dominant vegetation within a wetland must have greater than 50 percent hydrophytic species by evaluation with the 50/20 rule. In addition, if hydric soils and wetland hydrology are observed on the Site, but the vegetation does not pass the dominance test by use of the 50/20 rule, then a prevalence index value greater than three must be shown to indicate the lack of dominance of wetland vegetation. If the vegetation does not meet the prevalence index requirements indicating a dominance of hydric vegetation, then morphological adaptations (adventitious roots, multi-stemmed trunks, shallow root systems, tree buttressing, etc.) must be noted to indicate if the upland vegetation on the Site are functioning as hydrophytes. The dominance of plants classified as Obligate Wetland (OBL), Facultative Wetland (FACW) and/or Facultative (FAC) are necessary to meet the wetland vegetation criteria. The indicator status of a plant species is expressed in terms of the estimated probabilities of a species occurring in a wetland within this region. The indicator categories as defined by the USACE Midwest Regional Supplement are as follows:

Obligate Wetland (OBL): Occur almost always (> 99%) under natural conditions in wetlands.

Facultative Wetland (FACW): Usually occur in wetlands (67%-99%), but occasionally found in non-wetlands.

Facultative (FAC): Equally likely to occur in wetlands or non-wetlands (34%-66%).

Facultative Upland (FACU): Usually occur in non-wetlands, but occasionally found in wetlands (1%-33%).

Obligate Upland (UPL): Occur almost always (>99%) in uplands

Plants that are OBL, FACW and FAC are considered to be wetland species. The type of soil and the duration of standing water and/or saturated soil determine the plant species composition of an area.

The Site was investigated for the presence and dominance of hydrophytic vegetation. Vegetation was identified and recorded on the data forms. Vegetation identities were confirmed using references entitled *Wetland Plants of Indiana* (Chadde, 2011) and *Peterson Field Guides® Eastern Trees* (Petrides/Wehr, 1988). Identified vegetation was then compared to the *Midwest 2014 Regional Wetland Plant List* (USACE, 2014) and assigned the appropriate classification (i.e., FAC, FACW). Table 1 summarizes dominant vegetation identified at each sampling point.

TABLE 1 – VEGETATION

Sample Area	Dominance of Hydrophytic Vegetation	Vegetation (Classification)
S-1	N	*Festuca spp.* (FACU/UPL)
S-2	N	*Wheat Crop* (No Classification)
S-3	N	*Festuca spp.* (FACU/UPL)
S-4	N	*Soybean Crop* (No Classification)
S-5	Y	*Ulmus rubra* (FAC), *Celtis occidentalis* (FAC), *Juglans nigra* (FACU), *Lonicera morrowii* (FACU), *Pilea pumila* (FACW), *Carex lupulina* (OBL), *Festuca spp.* (FACU/UPL), *Parthenocissus quinquefolia* (FACU)
S-6	Y	*Acer rubrum* (FAC), *Fraxinus pennsylvanica* (FACW), *Celtis occidentalis* (FAC), *Setaria pumila* (FAC), *Carex lupulina* (OBL), *Vitis vulpina* (FACW)
S-7	N	*Ulmus rubra* (FAC), *Acer saccharum* (FACU), *Celtis occidentalis* (FAC), *Juglans nigra* (FACU), *Lonicera morrowii* (FACU), *Rubus armeniacus* (UPL), *Parthenocissus quinquefolia* (FACU)
S-8	N	*Juglans nigra* (FACU), *Lonicera morrowii* (FACU), *Galium triflorum* (FACU), *Festuca spp.* (FACU/UPL), *Parthenocissus quinquefolia* (FACU)
S-9	N	*Populus deltoides* (FAC), *Salix nigra* (OBL), *Juglans nigra* (FACU), *Andropogon virginicus* (FACU)
S-10	N	*Carya ovata* (FACU), *Prunus serotina* (FACU), *Juglans nigra* (FACU), *Lonicera morrowii* (FACU), *Rubus armeniacus* (UPL), *Gallium triflorum* (FACU), *Parthenocissus quinquefolia* (FACU)

Y = 50% or more wetland species
N = Less than 50% wetland species

A dominance of wetland/hydrophytic vegetation was observed at sample points S-5 and S-6. Hydrophytic vegetation appears to be limited to the small wooded tract located on the north central portion of the Site, which is adjacent to Charley Creek. The majority of the Site consists of unimproved land and was observed to be covered with grass and agricultural crops.

Hydrology

Wetland hydrology consists of water that is on or near the surface of the soil for a significant period of time during the growing season. Evidence of hydrology indicators can be observed beyond the growing season, or during times in the growing season that actual hydrology is not present. Many factors

determine wetland hydrology such as topography, soil type, depth of the water table, and drainage. A summary of the hydrological indicators observed at the sampling points is summarized in Table 2.

TABLE 2 – HYDROLOGY

Sample Area	Wetland Hydrology	Hydrological Indicators Field (Observations)
S-1	N	None Observed
S-2	N	None Observed
S-3	N	None Observed
S-4	N	None Observed
S-5	N	None Observed
S-6	Y	Saturation (A3)
S-7	N	None Observed
S-8	N	None Observed
S-9	N	None Observed
S-10	Y	None Observed

Y = Hydrology indicators indicate wetland hydrology
N = Hydrology indicators are not present or sufficient for wetland hydrology
(A1) = Primary/Secondary hydrology indicators

The Site was investigated for the presence of wetland hydrology and/or hydrological indicators noted in the USACE Midwest Regional Supplement. Wetland hydrology was observed at sample point S-6. This sample point was located on the north central portion of the Site within the small wooded tract. Wetland hydrology was not observed at the remaining sample points.

Soils

Hydric soils, as defined by USDA, are soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions. Indications of hydric soils can be documented in the field any time of the year. A hydric soil is different from a non-hydric soil due to the anaerobic conditions, which change the soil color, mottling, structure and chemistry. Soils must be hydric for an area to be considered a wetland.

A custom soil report for the Site was generated using the USDA web soil survey (Appendix C). Based on the report, it appears ten (10) soil associations are present on the Site (Appendix A, Figure 3). All ten of the soil associations at the Site are classified as hydric. It should be noted however, that soil surveys act as a guide to the general types of soil in an area and field observations take precedent.

In order to determine if hydric soils were present, a soil test pit was excavated to approximately 20-inches below ground surface (bgs) at each sampling point. Soil horizons were observed and soil colors were determined using the *Munsell Soil Color Chart* (Munsell, 2000). Soil colors observed included the matrix and any mottling, if present. In addition, texture, redox features (if present) and any other characteristics were observed. These data were recorded on the data forms (Appendix B). The USACE Midwest Regional Supplement has included numerous additional soil indicators to aid in identifying hydric soils and this was referenced during data collection. In addition, the USDA Natural Resource Conservation Service (NRCS) *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and*

Delineating Hydric Soils, version 7.0, 2010 was referenced. A description of the soils is provided in Table 3.

TABLE 3 – SOILS				
Sampling Point	**Hydric Soils**	**Depth (inches)**	**Soil Color**	**Soil Texture**
S-1	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
S-2	Yes	0 - 20	Matrix 10YR 4/3 95%; Mottling 10YR 5/8 5%	Silty clay loam
	Hydric Indicators: Depleted Matrix			
S-3	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
S-4	Yes	0 - 20	Matrix 10YR 4/3 90%; Mottling 10YR 5/8 10%	Silty clay loam
	Hydric Indicators: Depleted Matrix			
S-5	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
S-6	Yes	0 - 20	Matrix 10YR 5/1 75%; Mottling 7.5YR 5/6 25%	Silty clay loam
	Hydric Indicators: Depleted Matrix			
S-7	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
S-8	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
S-9	Yes	0 - 20	Matrix 10YR 5/1 85%; Mottling 7.5YR 5/6 15%	Silty clay loam
	Hydric Indicators: Depleted Matrix			
S-10	No	0 - 20	10YR 4/3	Silty clay loam
	Hydric Indicators: None Observed			
Yes = The soils are classified as hydric based upon field conditions **No** = The soils are not classified as hydric soils				

Hydric soil indicators were observed at sampling points S-2, S-4, S-6 and S-9. The remaining sample point locations did not demonstrate hydric soil indicators. The Site soils consisted of relatively homogenous textures including silty clay loams.

National Wetland Inventory Map

An NWI map was reviewed for the Site (Figure 4, Appendix A), and one (1) small freshwater emergent wetland was identified on the western portion of the Site. In addition, the NWI map identified the section of Charley Creek that transects the Site. It should be noted the NWI map does not preclude the results of a wetland assessment.

Identified "Waters of the U.S."

Vegetation and soil data were collected at ten (10) sampling points. In addition, visual observations were made to determine the presence of hydrology indicators. One (1) wetland area (Wetland A), three (3) open water features (Charley Creek, Retention Pond #1 and Retention Pond #2), and five (5) drainage features [(Drainage Features 1-5)(Figure 5, Appendix A)] were identified during the course of the investigation and are described below in the Conclusions and Recommendations Section.

CONCLUSIONS AND RECOMMENDATIONS

This report presents the results of a Wetland Delineation performed on an approximately 135-acre tract of predominately unimproved land located within the existing Wabash Industrial Park in Wabash, Indiana. The reconnaissance was performed to determine if potential “Waters of the U.S.” and/or “State Regulated Wetlands” exist on the Site. Photographs taken during this assessment are provided in Appendix D.

Based on this reconnaissance, it appears there are one (1) wetland area (Wetlands A), a section of Charley Creek, two (2) retention ponds and five (5) drainage features located on the Site (see Figure 5, Appendix A).

Wetland A is located on the north central portion of the Site, situated immediately west of Charley Creek within the small wooded tract. Wetland A consists of approximately 0.75-acres and appears to have formed as drainage originating from the adjoining upland areas to the north and west flow toward Charley Creek and consistently saturate this portion of the Site. Observations made during the Site reconnaissance indicated that it is likely drainage from Wetland A would flow in an easterly direction into Charley Creek. Based on its proximity to Charley Creek, Wetland A appears to possess a significant nexus to a regulated "Waters", and is anticipated to be regulated by the USACE as a “Waters of the U.S”.

Charley Creek appears to originate approximately 0.8-miles northeast of the Site and flows in a southerly direction, transecting the western portion of the Site for approximately 2,725-feet, before flowing off-Site to the south. Charley Creek continues to flow in a southerly direction and eventually converges with the Wabash River. The section of Charley Creek located on the Site demonstrated an Ordinary High Water Mark (OHWM), a defined bed and bank and a significant nexus to a Traditional Navigable Water (TNW); therefore, the section of Charley Creek located on the Site is anticipated to be regulated by the USACE as a "Waters of the U.S.".

Retention Pond #1 is located on the western portion of the Site situated between the section of Charley Creek and an unimproved tract. Retention Pond #1 consists of approximately 2-acres and was observed to not contain fringe wetlands. Retention Pond #1 did not demonstrate a significant nexus to a TNW; therefore, Retention Pond #1 is not anticipated to be regulated by the USACE as a "Waters of the U.S.". In addition, the Indiana Department of Environmental Management (IDEM) typically classifies retention ponds as exempt water features.

Retention Pond #2 is located on the southwest portion of the Site situated between a gravel access road and an unimproved tract. Retention Pond #2 consists of approximately 1.75-acres and was observed to not contain fringe wetlands. Retention Pond #2 did not demonstrate a significant nexus to a TNW; therefore, Retention Pond #2 is not anticipated to be regulated by the USACE as a "Waters of the U.S.". In addition, the IDEM typically classifies retention ponds as exempt water features.

Drainage Feature #1 is located on the northeast portion of the Site, situated immediately east of a gravel access road within a tract of unimproved land. Drainage Feature #1 appeared to originate from a culvert located beneath Ringel Avenue and extended north for approximately 900-feet eventually converging with a dry retention area. Water was not observed to be flowing in Drainage Feature #1 at the time of the Site reconnaissance. Drainage Feature #1 did not demonstrate an OHWM, a defined bed and bank or a significant nexus to a TNW; therefore, Drainage Feature #1 is not anticipated to be regulated by the USACE as a "Waters of the U.S.".

Drainage Feature #2 is located on the central portion of the Site, situated immediately north of a gravel access road within a tract of unimproved land. Drainage Feature #2 appeared to originate from a culvert located beneath the west end of Ringel Avenue and extended west for approximately 560-feet eventually converging with Retention Pond #1. Water was not observed to be flowing in Drainage Feature #2 at the time of the Site reconnaissance. Drainage Feature #2 did not demonstrate an OHWM, a defined bed and bank or a significant nexus to a TNW; therefore, Drainage Feature #2 is not anticipated to be regulated by the USACE as a "Waters of the U.S.".

Drainage Feature #3 is located on the central portion of the Site, situated between two parcels of unimproved land. Drainage Feature #3 appeared to originate from an agricultural tract (wheat field) and extended west for approximately 1,130-feet eventually converging with Retention Pond #2. Water was not observed to be flowing in Drainage Feature #3 at the time of the Site reconnaissance. Drainage Feature #3 did not demonstrate an OHWM, a defined bed and bank or a significant nexus to a TNW; therefore, Drainage Feature #3 is not anticipated to be regulated by the USACE as a "Waters of the U.S.".

Drainage Feature #4 is located on the southwest portion of the Site, situated between two parcels of unimproved land. Drainage Feature #4 appeared to originate from a south adjoining commercial property and extended west for approximately 400-feet eventually converging with Retention Pond #2. Water was not observed to be flowing in Drainage Feature #4 at the time of the Site reconnaissance. Drainage Feature #4 did not demonstrate an OHWM, a defined bed and bank or a significant nexus to a TNW; therefore, Drainage Feature #4 is not anticipated to be regulated by the USACE as a "Waters of the U.S.".

Drainage Feature #5 is located on the southwest portion of the Site, situated immediately east of a gravel access road. Drainage Feature #5 appeared to originate from a culvert beneath West County Road 50 North and extended northeast for approximately 350-feet eventually converging with Retention Pond #2. Water was not observed to be flowing in Drainage Feature #5 at the time of the Site reconnaissance. Drainage Feature #5 did not demonstrate an OHWM, a defined bed and bank or a significant nexus to a TNW; therefore, Drainage Feature #5 is not anticipated to be regulated by the USACE as a "Waters of the U.S.".

A Regional General Permit and Water Quality Certification will likely be required for impacts to the Wetland A and Charley Creek. Impacts to “Waters of the U.S.” which total less than 0.1-acre do not require mitigation. If impacts are anticipated to be 1.0-acre or greater, or exceed 1,500-linear feet of stream, then an Individual Permit may be necessary. Mitigation for impacts is required at a 1:1 ratio for drainage features and open water; 4:1 for forested wetlands; 3:1 for scrub/shrub wetlands; and 2:1 for emergent wetlands if verified as a USACE jurisdictional “Waters of the U.S.”

Charley Creek may drain more than one square mile; therefore, coordination with Indiana Department of Natural Resources (IDNR) for a Construction-in-a-Floodway may be required.

Prior to any permitting activities, a jurisdictional determination (JD) would be required to be performed by USACE to ensure they concur with our findings.

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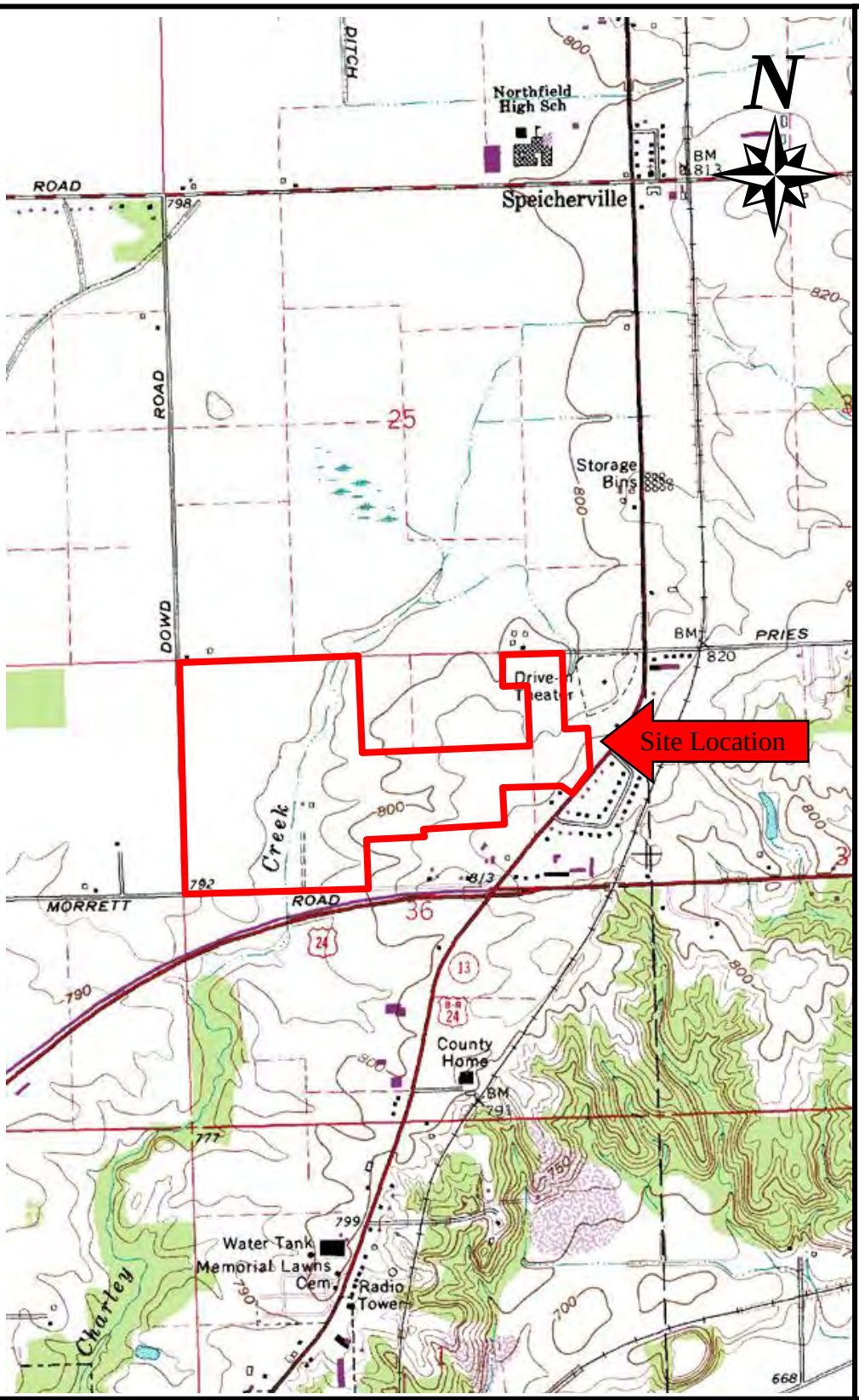
APPENDIX A

Figures

FIGURE 1: SITE LOCATION MAP



USGS Topographic Map:
Wabash Quadrangle

Township: T 28 N.
Range: R 6 E.
Section: 36

PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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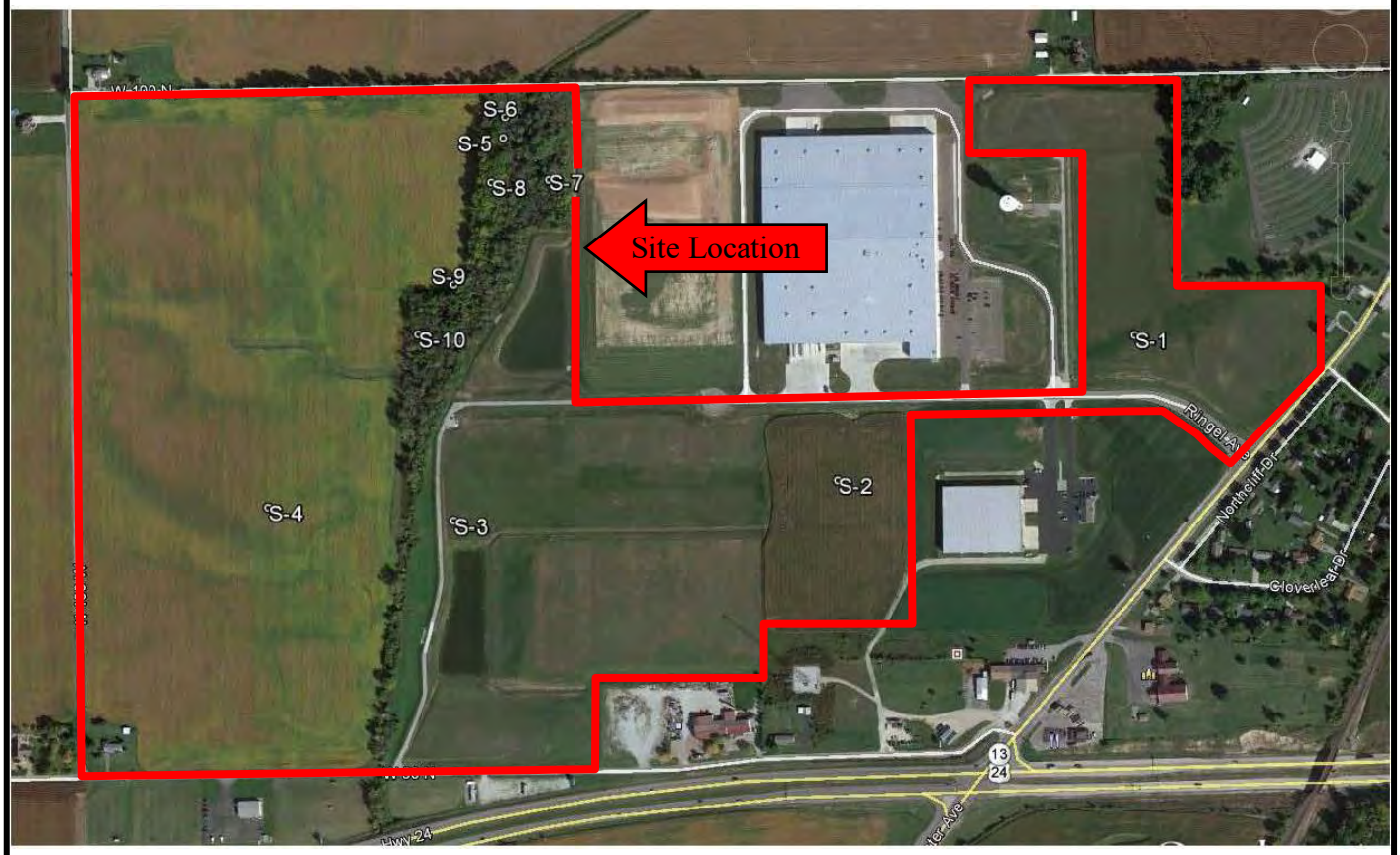
FIGURE 2: SAMPLE LOCATION MAP



PROJECT: Wabash Industrial Park
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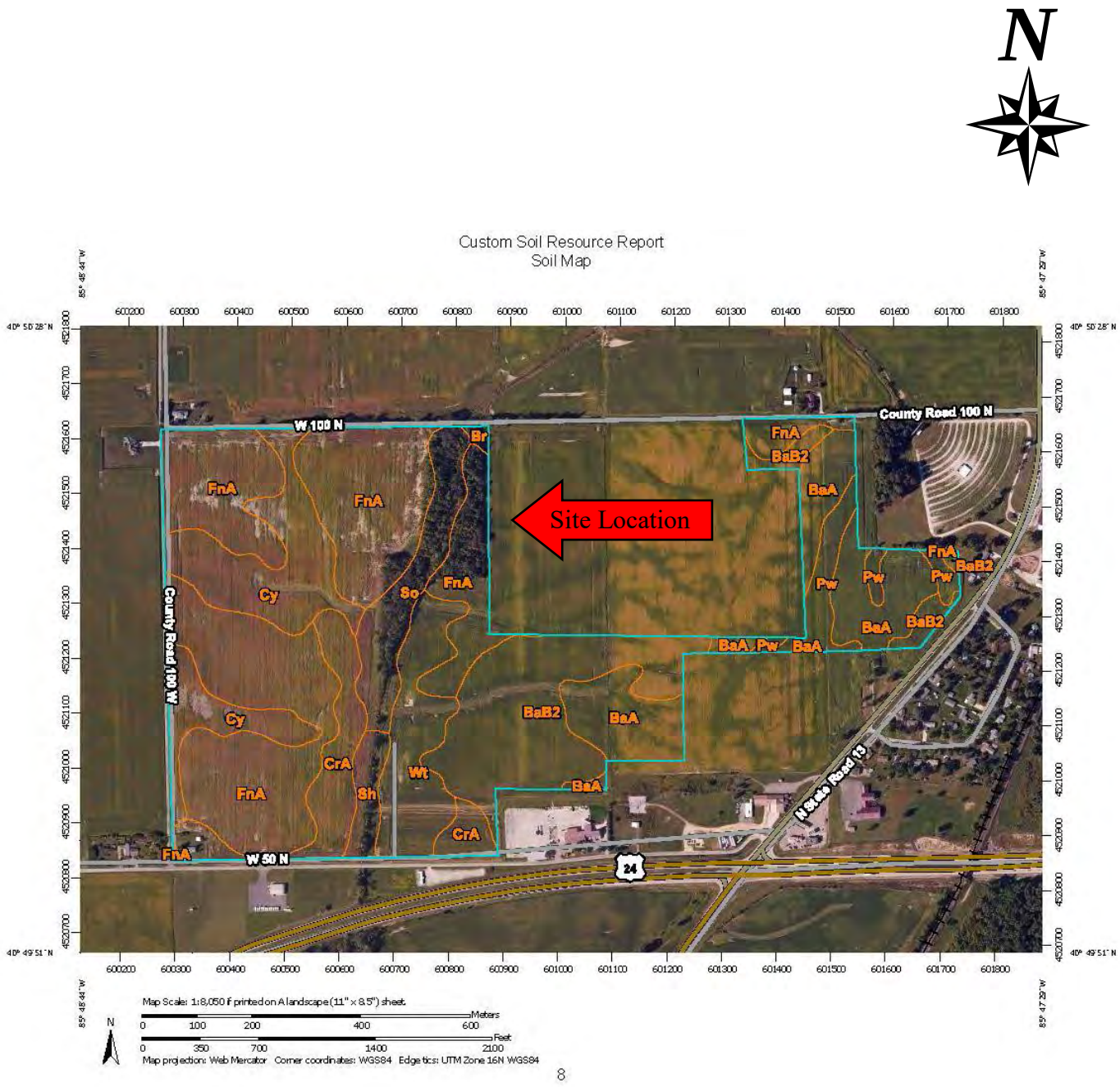
FIGURE 3: SOIL MAP



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

Alt & Witzig Consulting Services
4105 W. 99th Street ·Carmel, IN 46032
TEL (317)875-7000 · FAX (317) 876-3705
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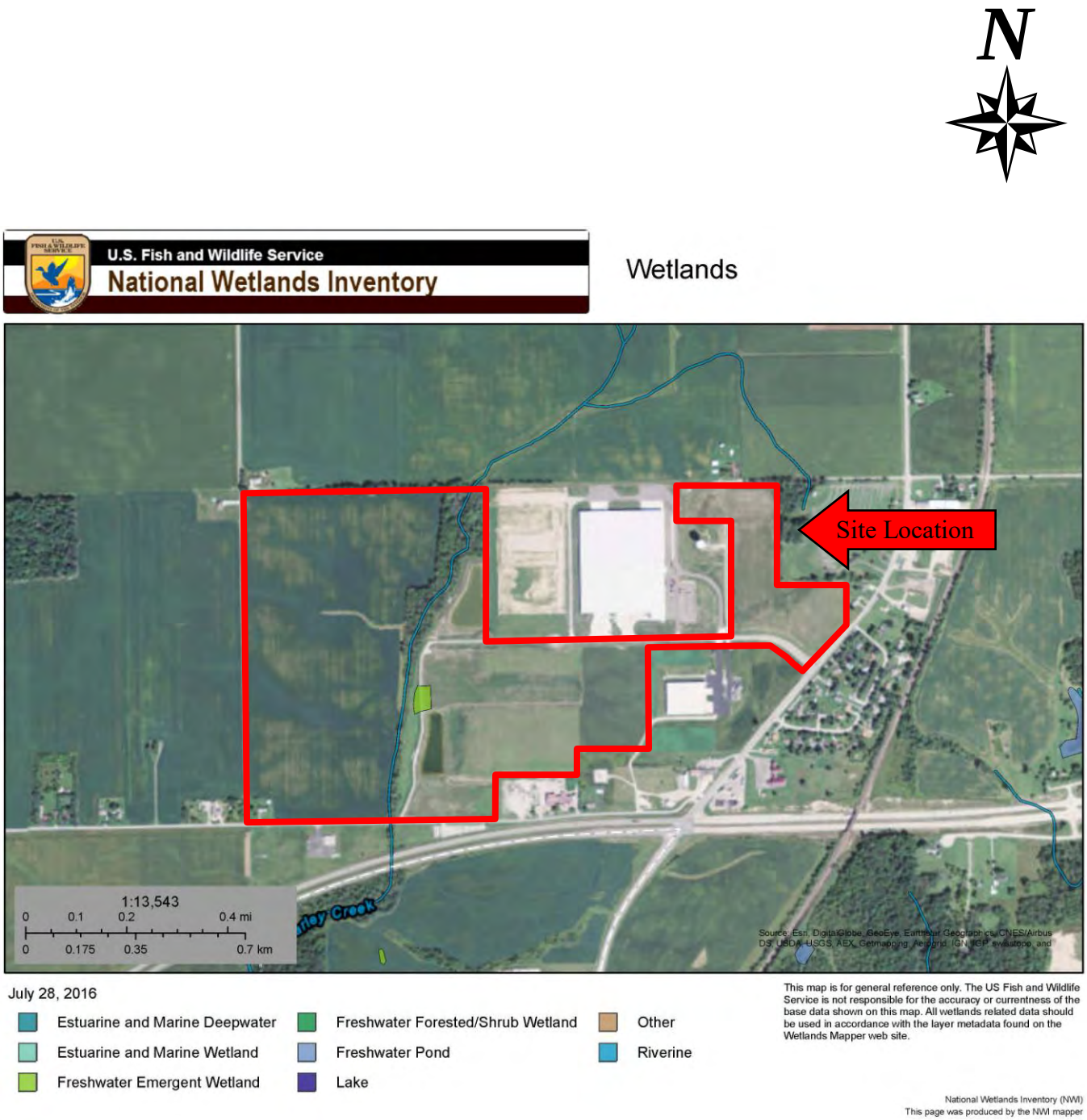
FIGURE 4: NATIONAL WETLANDS INVENTORY MAP



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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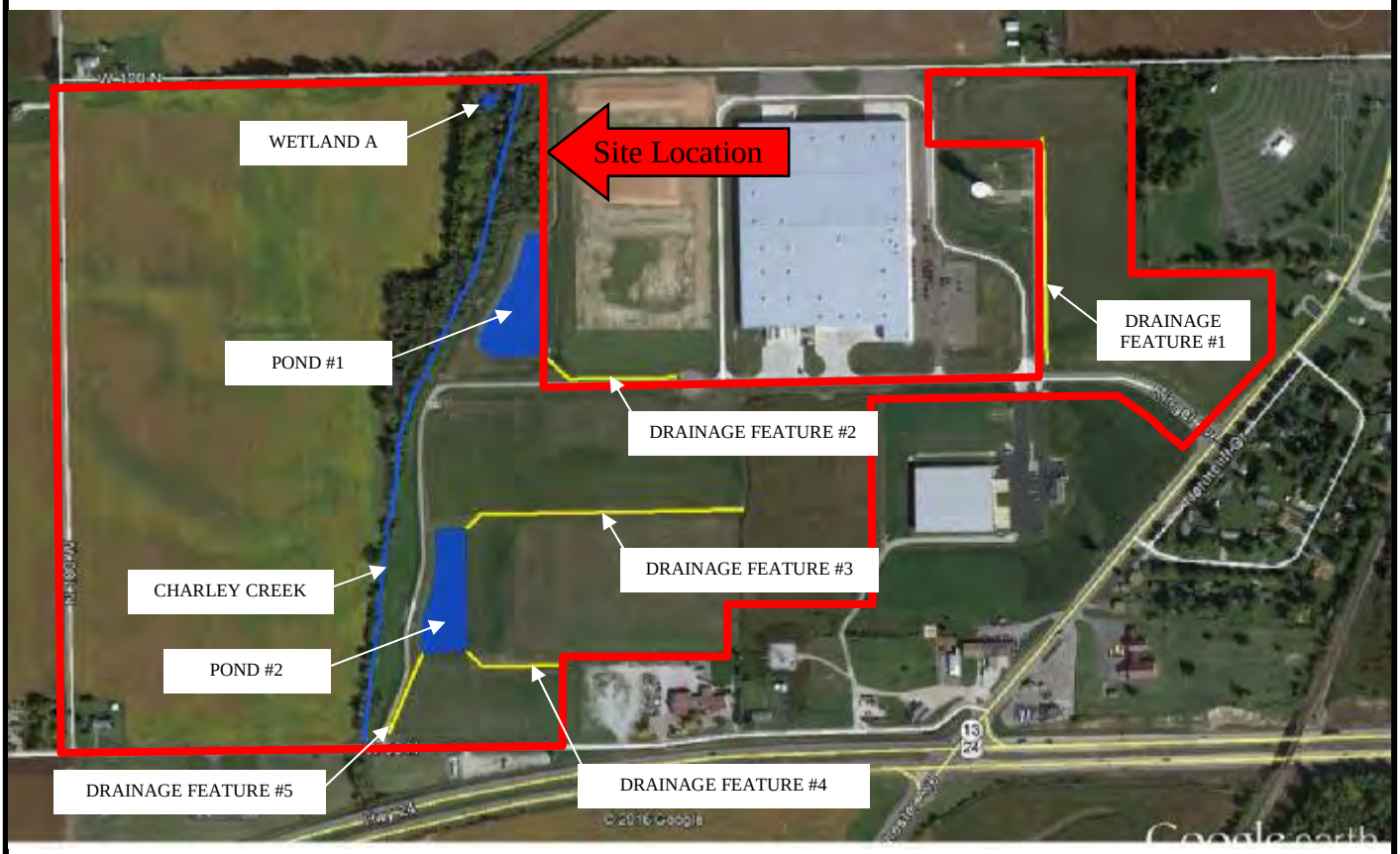
FIGURE 5: WETLAND MAP



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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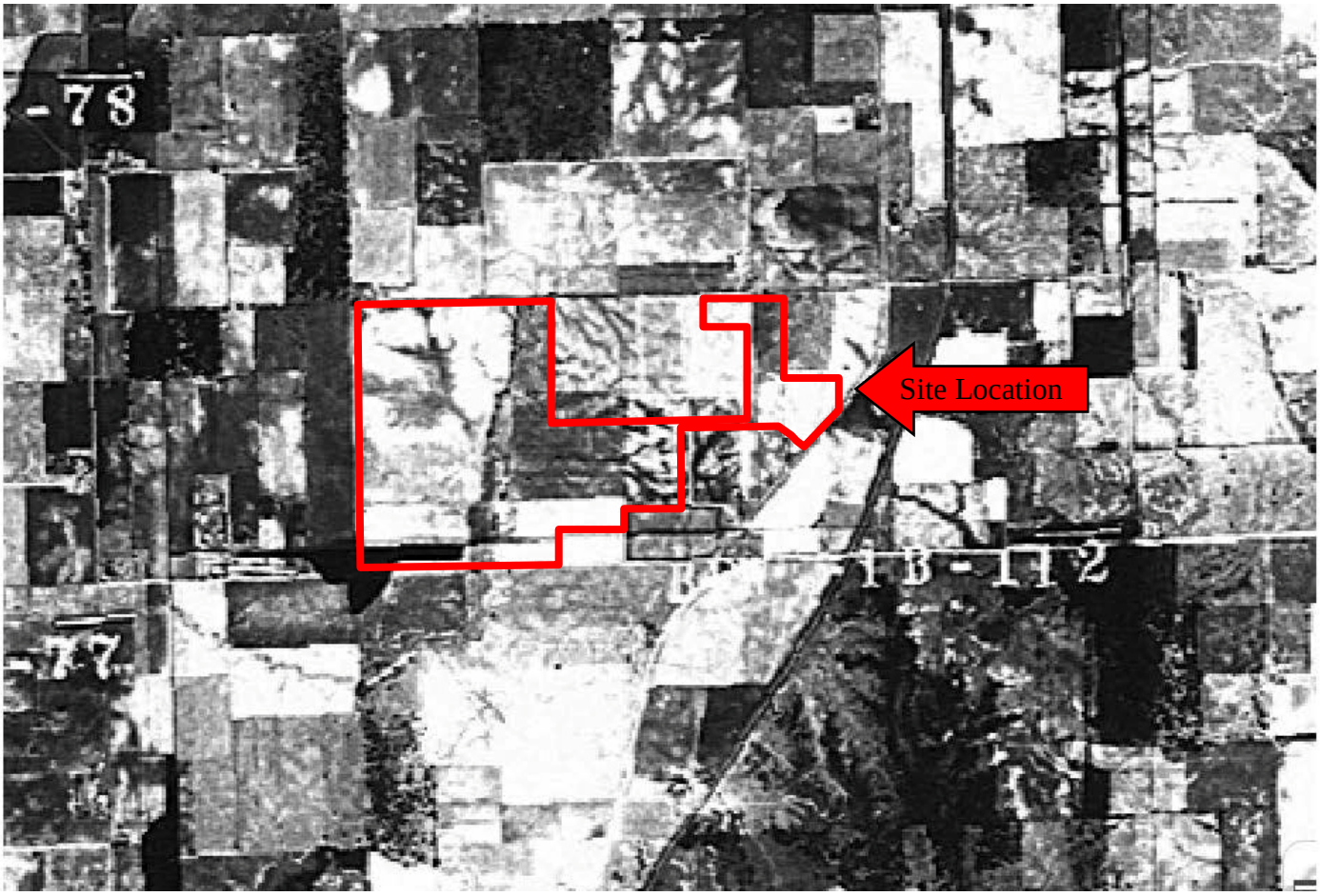
FIGURE 6: 1941 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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FIGURE 7: 1957 AERIAL

PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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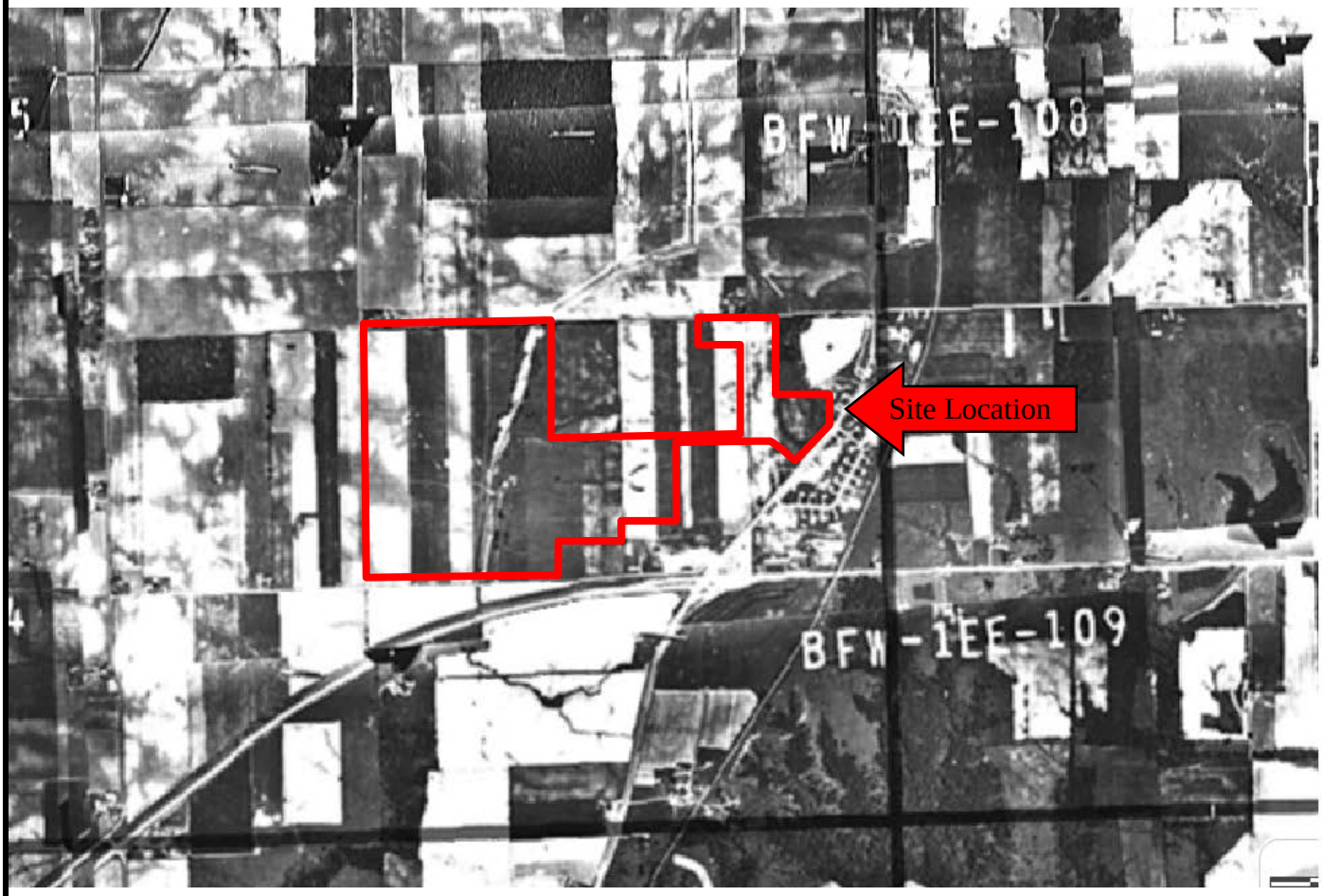
FIGURE 8: 1964 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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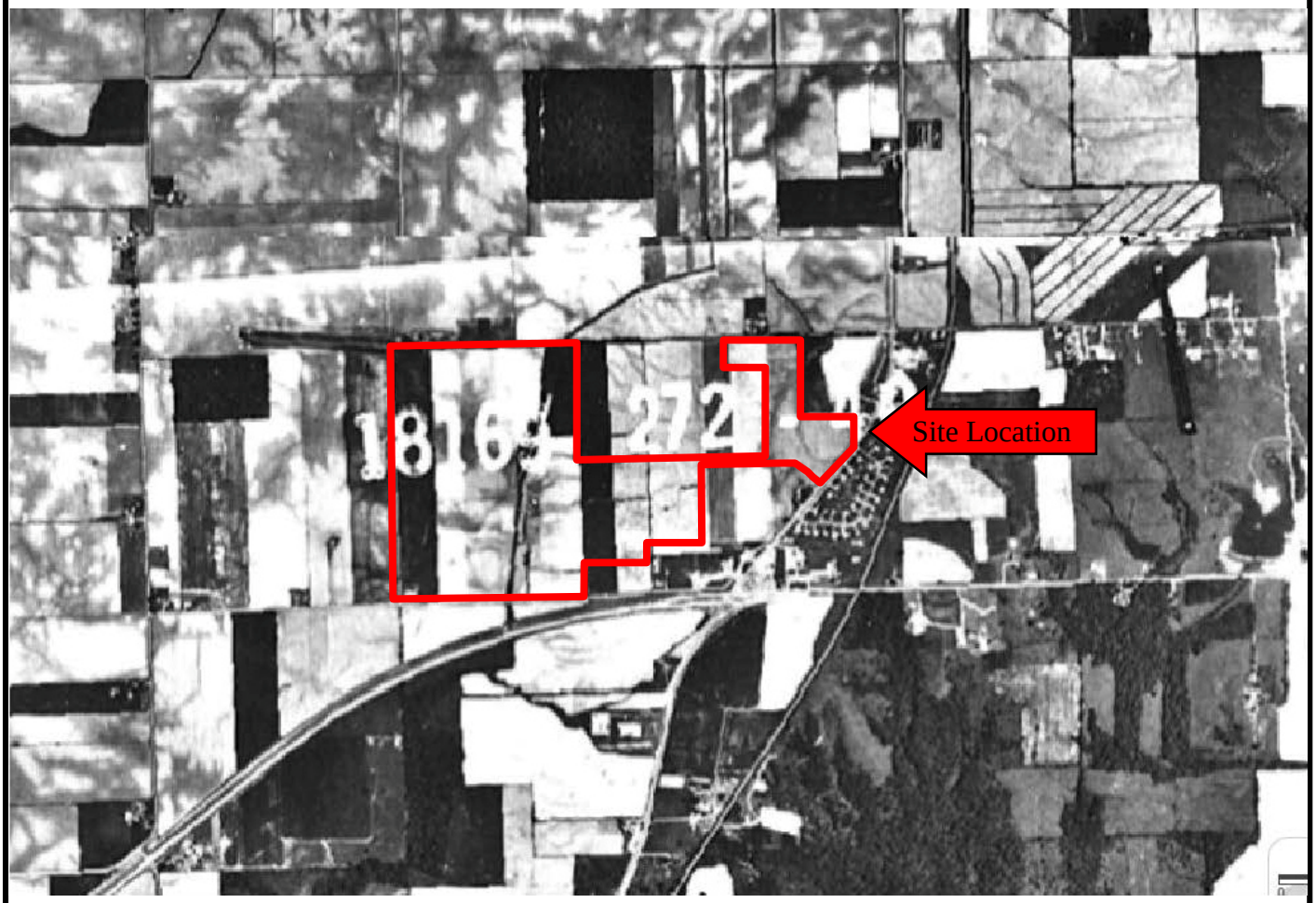
FIGURE 9: 1972 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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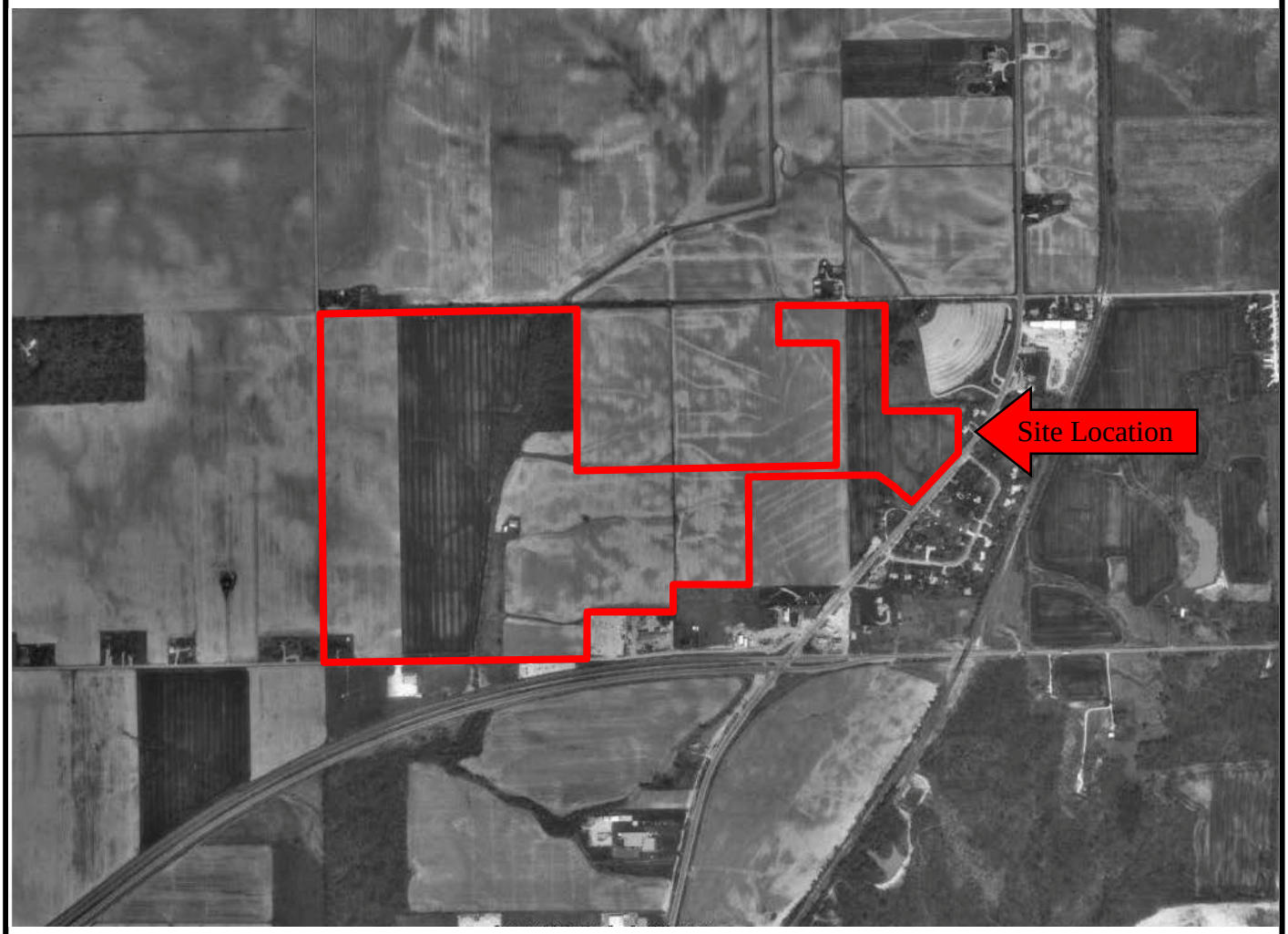
FIGURE 10: 1998 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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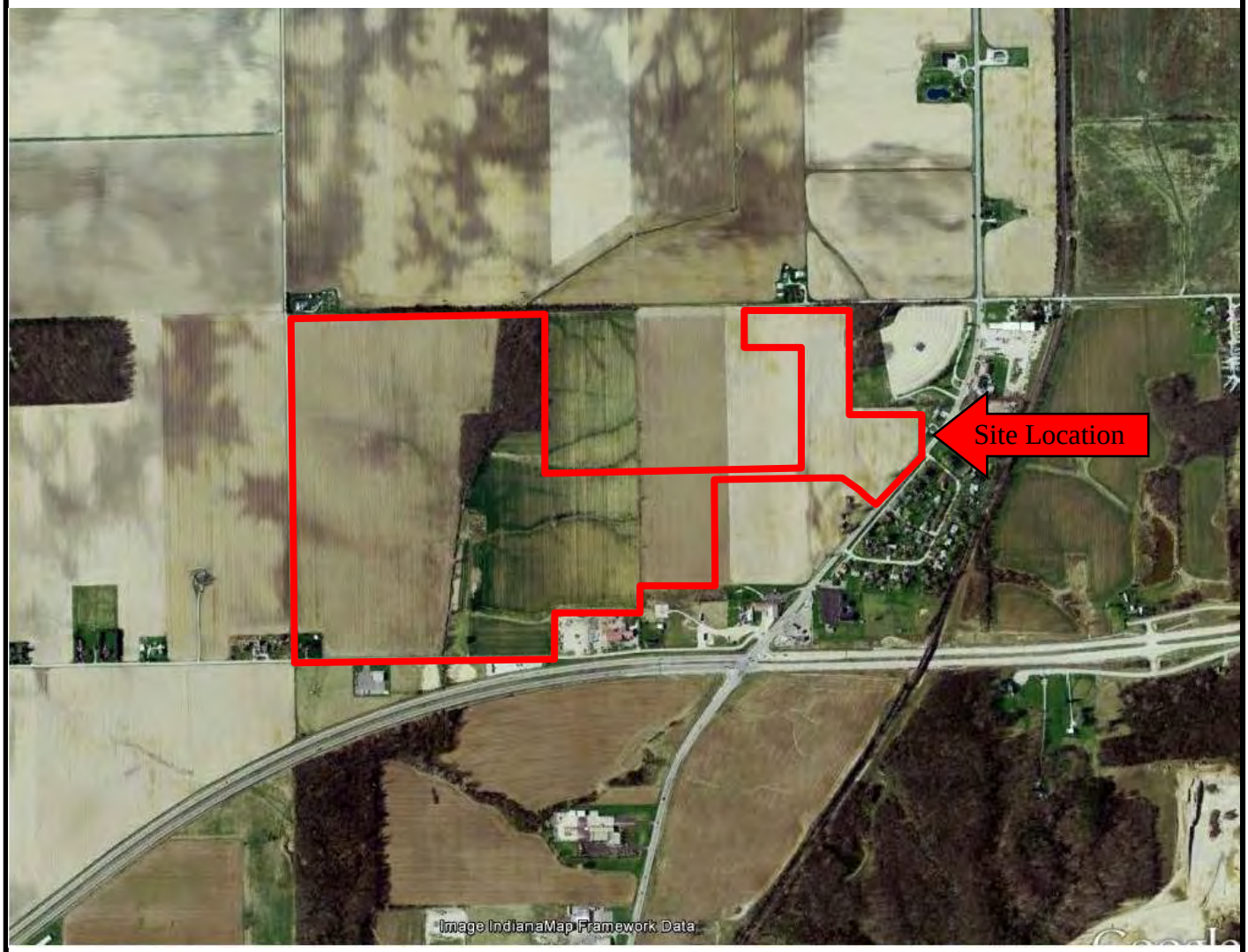
FIGURE 11: 2005 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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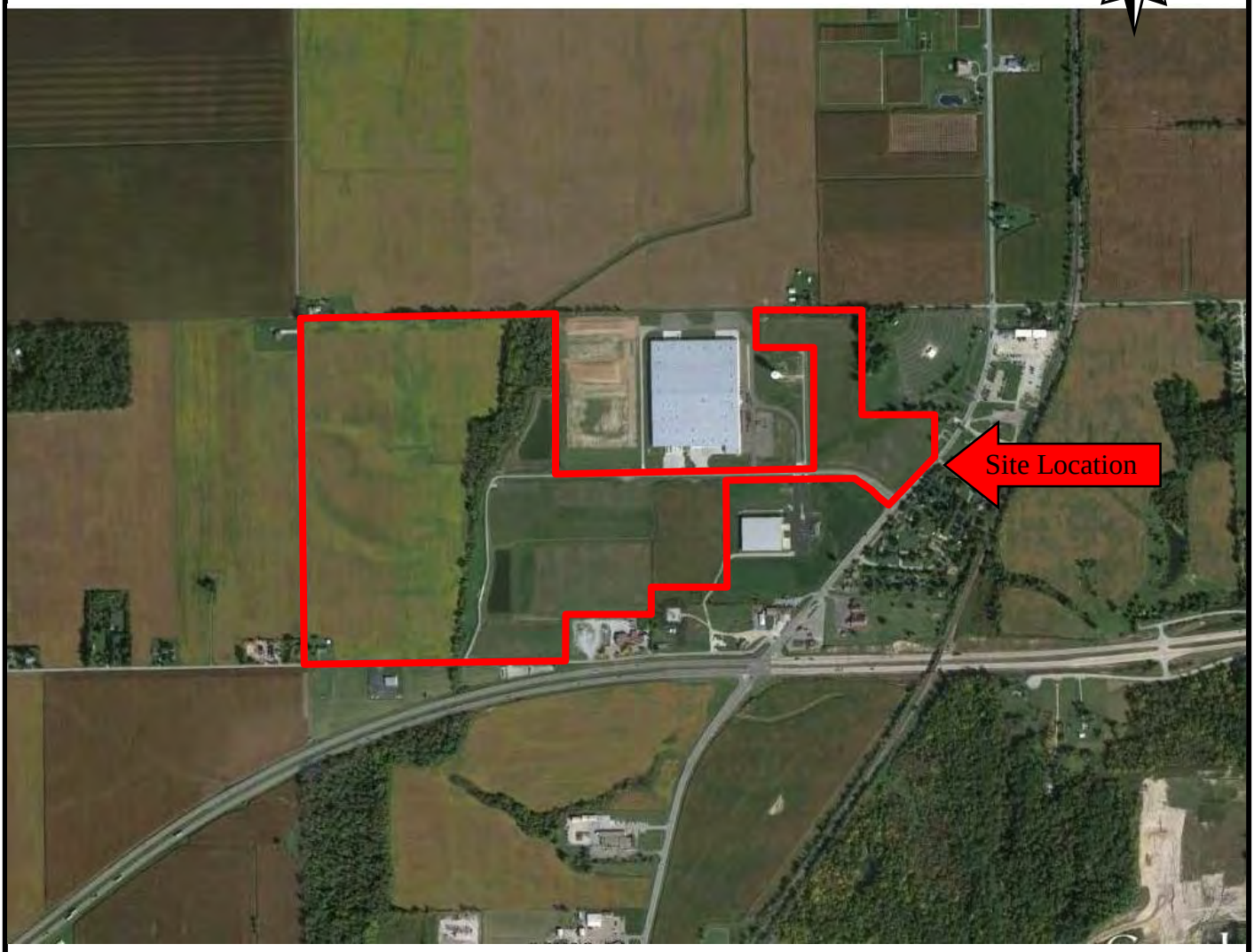
FIGURE 12: 2014 AERIAL



PROJECT: Wabash Industrial Park
LOCATION: Ringel Ave., Wabash, IN
CLIENT: Banning Engineering
A&W File No.: 16IN0383

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APPENDIX B

Wetland Determination Data Forms – Midwest Region

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-1

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50131 N Long: -85.47450 W Datum: _____

Soil Map Unit Name: Blount silt loam NWI or WWI classification: None

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. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Festuca spp.	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
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	_____	x 1 =	0
FACW species	_____	x 2 =	0
FAC species	_____	x 3 =	0
FACU species	_____	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

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.)

SOIL

Sampling Point: S-1

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 20	10YR 4/3	100					Si Cl	

[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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-2

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50075 N Long: -85.47599 W Datum: _____

Soil Map Unit Name: Blount silt loam NWI or WWI classification: None

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 X No _____	
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. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Wheat crop	100	Y	N/A
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
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	_____	x 1 =	0
FACW species	_____	x 2 =	0
FAC species	_____	x 3 =	0
FACU species	_____	x 4 =	0
UPL species	_____	x 5 =	0
Column Totals:	_____ (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.)

SOIL

Sampling Point: S-2

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 - 20	10YR 4/3	95	10YR 5/8	5	C	M	Si Cl	Redox Concentrations Present

[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)
- ___ 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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-3

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40 50059 N Long: -85 48192 W Datum: _____

Soil Map Unit Name: Whitaker loam NWI or WWI classification: Freshwater Emergent

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. None			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. *Festuca spp.*	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
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		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

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.)

SOIL

Sampling Point: S-3

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 - 20	10YR 4/3	100						

[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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-4

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50065 N Long: -85.48285 W Datum: _____

Soil Map Unit Name: Fincastle silt loam NWI or WWI classification: None

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 X No _____	
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. None			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Soybean crop	100	Y	N/A
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
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		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(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.)

SOIL

Sampling Point: S-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 4/3	90	10YR 5/8	10	C	M	Si Cl	Redox Concentrations Present

[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)
- ___ 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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-5

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50206 N Long: -85.48167 W Datum: _____

Soil Map Unit Name: Sloan silty clay loam NWI or WWI classification: None

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 _____ 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. *Ulmus rubra*	20	Y	FAC
2. *Celtis occidentalis*	10	Y	FAC
3. *Juglans nigra*	10	Y	FACU
4.			
5.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii*	25	Y	FACU
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Pilea pumila*	50	Y	FACW
2. *Carex lupulina*	25	Y	OBL
3. *Festuca spp.*	20	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. *Parthenocissus quinquefolia*	10	Y	FACU
2.			
	10 = 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: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	50	x 2 =	100
FAC species	30	x 3 =	90
FACU species	45	x 4 =	180
UPL species		x 5 =	0
Column Totals:	150 (A)		395 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

___ 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: S-5

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 - 20	10YR 4/3	100						

[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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-6

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50214 N Long: -85.48166 W Datum: _____

Soil Map Unit Name: Sloan silty clay loam NWI or WWI classification: None

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 _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	20	Y	FAC
2. *Fraxinus pennsylvanica*	15	Y	FACW
3. *Celtis occidentalis*	10	Y	FAC
4.			
5.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *None*			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Setaria pumila*	50	Y	FAC
2. *Carex lupulina*	20	Y	OBL
3. *Bidens frondrosa*	15	N	FACW
4. *Rosa multiflora*	5	N	FACU
5. *Phalaris arundinacea*	5	N	FACW
6. *Ambrosia trifida*	5	N	FAC
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Vitis vulpina*	5	Y	FACW
2.			
	5	= 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: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	35	x 2 =	70
FAC species	85	x 3 =	255
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	145 (A)		365 (B)

Prevalence Index = B/A = 2.52

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: S-6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 5/1	75	7.5YR 5/6	25	C	M	Si Cl	Redox Concentrations Present

[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)
- 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)
- ___ 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 X No ___ Depth (inches): Surface

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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-7

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50190 N Long: -85.48144 W Datum: _____

Soil Map Unit Name: Fincastle silt loam NWI or WWI classification: None

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. *Ulmus rubra*	20	Y	FAC
2. *Acer saccharum*	10	Y	FACU
3. *Celtis occidentalis*	10	Y	FAC
4. *Juglans nigra*	10	Y	FACU
5.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii*	25	Y	FACU
2.			
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus armeniacus*	30	Y	UPL
2. *Lonicer morrowii*	20	Y	FACU
3. *Ambrosia trifida*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55	= Total Cover	
Woody Vine Stratum (Plot size 30')			
1. *Parthenocissus quinquefolia*	5	Y	FACU
2.			
	5	= 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: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	35	x 3 =	105
FACU species	50	x 4 =	200
UPL species	30	x 5 =	150
Column Totals:	115 (A)		455 (B)

Prevalence Index = B/A = 3.96

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: S-7

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 20	10YR 4/3	100						

[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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-8

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50189 N Long: -85.48173 W Datum: _____

Soil Map Unit Name: Sloan silty clay loam NWI or WWI classification: None

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. *Juglans nigra*	75	Y	FACU
2. *Fraxinus pennsylvanica*	10	N	FACW
3. *Celtis occidentalis*	10	N	FAC
4.			
5.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii*	25	Y	FACU
2.			
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Galium triflorum*	50	Y	FACU
2. *Festuca spp.*	25	Y	FACU
3. *Ambrosia trifida*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Parthenocissus quinquefolia*	5	Y	FACU
2.			
	5	= 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: 5 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	180	x 4 =	720
UPL species		x 5 =	0
Column Totals:	205 (A)		785 (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.)

SOIL

Sampling Point: S-8

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 20	10YR 4/3	100						

[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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-9

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50150 N Long: -85.48192 W Datum: _____

Soil Map Unit Name: Fincastle silt loam NWI or WWI classification: None

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 X	No _____	
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. *Populus deltoides*	5	Y	FAC
2. *Salix nigra*	5	Y	OBL
3. *Juglans nigra*	5	Y	FACU
4.			
5.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *None*			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Andropogon virginicus*	90	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *None*			
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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species		x 2 =	0
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species		x 5 =	0
Column Totals:	105 (A)		400 (B)

Prevalence Index = B/A = 3.81

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: S-9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 5/1	85	7.5YR 5/6	15	C	M	Si Cl	Redox Concentrations Present

[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)
- ___ 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: 16IN0383 / Wabash Industrial Park City/County: Wabash / Wabash Sampling Date: 7/20/2016

Applicant/Owner: Banning Engineering State: IN Sampling Point: S-10

Investigator(s): Alt & Witzig Consulting Section, Township, Range: Section 36, T 28 N, R 6 E

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

Slope (%): _____ Lat: 40.50131 N Long: -85.48210 W Datum: _____

Soil Map Unit Name: Sloan silty clay loam NWI or WWI classification: None

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. *Carya ovata*	20	Y	FACU
2. *Prunus serotina*	15	Y	FACU
3. *Juglans nigra*	10	Y	FACU
4. *Ulmus rubra*	5	N	FAC
5.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii*	10	Y	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus armeniacus*	25	Y	UPL
2. *Gallium triflorum*	25	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Parthenocissus quinquefolia*	5	Y	FACU
2.			
	5	= 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: 7 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	0
FACW species	_____	x 2 =	0
FAC species	5	x 3 =	15
FACU species	85	x 4 =	340
UPL species	25	x 5 =	125
Column Totals:	115 (A)		480 (B)

Prevalence Index = B/A = 4.17

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: S-10

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 20	10YR 4/3	100						

[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:

APPENDIX C

Soil Report

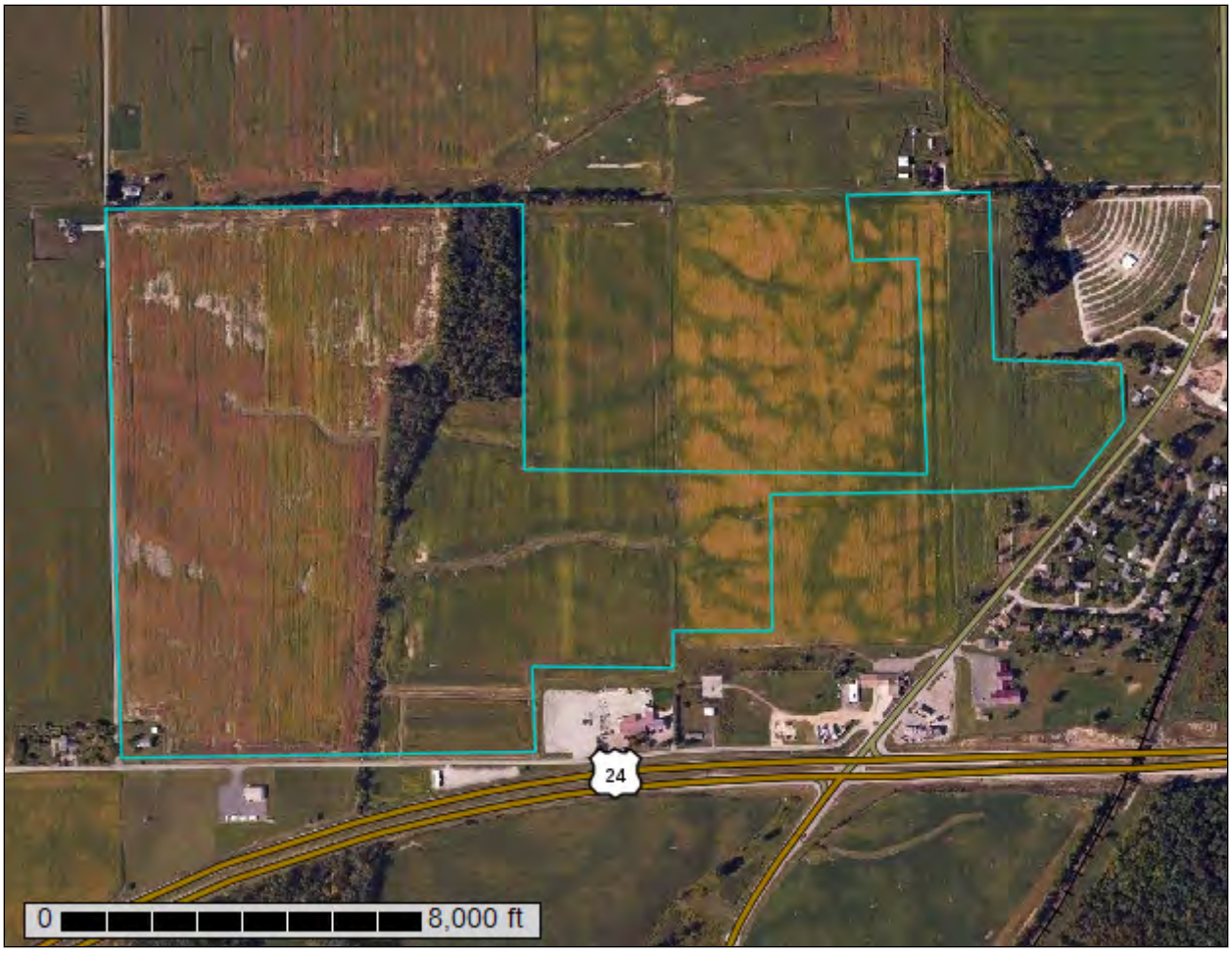
United States Department of Agriculture

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 Wabash County, Indiana



July 28, 2016

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 (http://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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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.

Custom Soil Resource Report
Soil Map

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 1:15,800.

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: http://websoilsurvey.nrcs.usda.gov
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: Wabash County, Indiana
Survey Area Data: Version 19, Sep 11, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 17, 2011—Mar 14, 2012

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

Wabash County, Indiana (IN169)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BaA	Blount silt loam, 0 to 2 percent slopes	19.1	11.9%
BaB2	Blount silt loam, 1 to 4 percent slopes, eroded	23.8	14.8%
Br	Brookston loam	0.4	0.2%
CrA	Crosby silt loam, 0 to 3 percent slopes	10.7	6.6%
Cy	Cyclone silt loam, 0 to 2 percent slopes	19.0	11.9%
FnA	Fincastle silt loam, Tipton Till Plain, 0 to 2 percent slopes	59.1	36.8%
Pw	Pewamo silty clay loam, 0 to 1 percent slopes	5.1	3.2%
Sh	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded	2.9	1.8%
So	Sloan silty clay loam, frequently flooded	9.0	5.6%
Wt	Whitaker loam	11.3	7.0%
Totals for Area of Interest		**160.3**	**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.

Wabash County, Indiana

BaA—Blount silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t6kp
Elevation: 700 to 1,200 feet
Mean annual precipitation: 34 to 42 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Blount and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blount

Setting

Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wisconsin till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 33 inches: silty clay
BC - 33 to 39 inches: clay loam
Cd - 39 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 31 to 54 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D

Minor Components

Haskins

Percent of map unit: 6 percent

Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Pewamo

Percent of map unit: 5 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear

Glynwood

Percent of map unit: 4 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear

BaB2—Blount silt loam, 1 to 4 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t6kn
Elevation: 640 to 1,150 feet
Mean annual precipitation: 34 to 42 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Blount and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blount

Setting

Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wisconsin till derived from limestone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 26 inches: silty clay
BC - 26 to 30 inches: clay loam

Cd - 30 to 79 inches: clay loam

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D

Minor Components

Haskins

Percent of map unit: 6 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Glynwood

Percent of map unit: 5 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope, backslope, shoulder
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Linear

Pewamo

Percent of map unit: 4 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope, backslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear, concave

Br—Brookston loam

Map Unit Setting

National map unit symbol: 5dpr

Elevation: 360 to 1,530 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 47 to 51 degrees F
Frost-free period: 170 to 185 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Brookston and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brookston

Setting

Landform: Depressions on till plains
Landform position (two-dimensional): Toeslope, footslope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy till

Typical profile

Ap - 0 to 9 inches: loam
Btg - 9 to 48 inches: clay loam
BC - 48 to 68 inches: loam
C - 68 to 80 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: 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 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Minor Components

Rensselaer

Percent of map unit: 8 percent
Landform: Depressions on outwash plains, depressions on till plains
Landform position (two-dimensional): Toeslope, footslope
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Crosier

Percent of map unit: 8 percent

Landform: Till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Trees/Timber (Woody Vegetation), Trees/Timber (Woody Vegetation)

Goodell

Percent of map unit: 4 percent
Landform: Depressions on till plains
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

CrA—Crosby silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 5dpt
Elevation: 530 to 1,050 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 49 to 54 degrees F
Frost-free period: 180 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Crosby and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crosby

Setting

Landform: Till plains
Landform position (two-dimensional): Backslope, shoulder, footslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 10 inches: silt loam
E - 10 to 13 inches: silt loam
Bt,BC - 13 to 25 inches: clay loam
C - 25 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to densic material

Natural drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Other vegetative classification: Trees/Timber (Woody Vegetation)

Minor Components

Miami

Percent of map unit: 7 percent
Other vegetative classification: Trees/Timber (Woody Vegetation)

Brookston

Percent of map unit: 3 percent
Landform: Depressions
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Cy—Cyclone silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2thyf
Elevation: 640 to 1,150 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Cyclone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cyclone

Setting

Landform: Depressions on till plains, swales on till plains, flats on till plains
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 14 inches: silt loam
Btg1 - 14 to 20 inches: silt loam
Btg2 - 20 to 49 inches: silty clay loam
2Bt3 - 49 to 60 inches: loam
2C - 60 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
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 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Fincastle

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Summit, footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

Xenia

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Sugarvalley

Percent of map unit: 3 percent
Landform: Flats on ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex

Morningsun

Percent of map unit: 2 percent
Landform: Flats on ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise

Down-slope shape: Linear
Across-slope shape: Convex

FnA—Fincastle silt loam, Tipton Till Plain, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2rkb8
Elevation: 400 to 1,010 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 170 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Fincastle and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fincastle

Setting

Landform: Till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 10 inches: silt loam
E - 10 to 13 inches: silt loam
Bt1 - 13 to 27 inches: silty clay loam
2Bt2 - 27 to 50 inches: clay loam
2BC - 50 to 59 inches: loam
2Cd - 59 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Cyclone

Percent of map unit: 10 percent
Landform: Depressions on till plains, swales on till plains, flats on till plains
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear

Mahalasville

Percent of map unit: 5 percent
Landform: Depressions on till plains, swales on till plains, flats on till plains
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear

Pw—Pewamo silty clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t6lv
Elevation: 700 to 1,300 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Pewamo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pewamo

Setting

Landform: Depressions on till plains, drainageways on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Wisconsin till derived from limestone and shale

Typical profile

Ap - 0 to 11 inches: silty clay loam

Btg1 - 11 to 34 inches: silty clay
Btg2 - 34 to 47 inches: silty clay
BCg - 47 to 57 inches: clay loam
Cg - 57 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
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: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Minor Components

Blount

Percent of map unit: 9 percent
Landform: End moraines on till plains, ground moraines on till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Minster

Percent of map unit: 6 percent
Landform: Depressions on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Sh—Shoals silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2t6lp
Elevation: 340 to 1,000 feet
Mean annual precipitation: 34 to 42 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Shoals and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shoals

Setting

Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Ap - 0 to 10 inches: silt loam
B - 10 to 42 inches: silt loam
C - 42 to 79 inches: stratified sandy loam to 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: Low
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: About 6 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 22 percent
Available water storage in profile: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Sloan

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear

Eel

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear

So—Sloan silty clay loam, frequently flooded

Map Unit Setting

National map unit symbol: 5ds5
Elevation: 640 to 1,150 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 47 to 52 degrees F
Frost-free period: 165 to 175 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Sloan and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sloan

Setting

Landform: Depressions on flood plains
Landform position (two-dimensional): Footslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Ap - 0 to 8 inches: silty clay loam
A - 8 to 12 inches: silty clay loam
A2 - 12 to 16 inches: silty clay loam
Bg1,Bg2 - 16 to 32 inches: loam
Cg1 - 32 to 42 inches: loam
Cg2 - 42 to 60 inches: stratified sand to loamy sand to loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
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 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 30 percent
Available water storage in profile: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Wt—Whitaker loam

Map Unit Setting

National map unit symbol: 5dsb
Elevation: 580 to 1,200 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 46 to 51 degrees F
Frost-free period: 170 to 185 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Whitaker and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitaker

Setting

Landform: Outwash plains, moraines, stream terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy outwash

Typical profile

Ap - 0 to 17 inches: loam
Btg - 17 to 39 inches: clay loam
BC - 39 to 48 inches: sandy loam
C - 48 to 86 inches: stratified loamy sand to silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low
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: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 45 percent
Available water storage in profile: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Other vegetative classification: Trees/Timber (Woody Vegetation)

Minor Components

Crosier

Percent of map unit: 25 percent
Landform: Moraines, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Trees/Timber (Woody Vegetation)

Selfridge

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Trees/Timber (Woody Vegetation)

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APPENDIX D

Site Photographs

Photograph # 1	Description: Drainage Feature #1 located on the northeast portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 2	Description: Drainage Feature #2 located on the central portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 3	Description: Drainage Feature #3 located on the central portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 4	Description: Drainage Feature #4 located on the southwest portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 5	Description: Drainage Feature #5 located on the southwest portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 6	Description: Retention Pond #1 located on the western portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 7	Description: Retention Pond #2 located on the southwest portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 8	Description: Viewing Charley Creek which transects the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 9	Description: Wetland A located on the north central portion of the Site.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016

Photograph # 10	Description: Viewing depleted matrix within the soil.	
Project # 16IN0383	Project Name: Wabash Industrial Park	Date: 7/20/2016