Federal Aviation Administration-Great Lakes Region
Condensed Environmental Assessment (CEA)

The Condensed Environmental Assessment (CEA) is appropriate for projects when a project:

- Cannot be Categorically Excluded (CATEX),
- Does not have any significant impacts, and
- A detailed Environmental Assessment (EA) is not needed.

Proper completion of this document will allow the Federal Aviation Administration to determine whether the CEA is appropriate for the proposed project and to support a Finding of No Significant Impact (FONSI).

Resource guidance used in preparation of this form comes from the Federal Aviation Administration's (FAA) Order 1050.1E, *"Environmental Impacts: Policies and Procedures"* or subsequent revisions. This order incorporates the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), as well as the US Department of Transportation's environmental regulations (including FAA Order 5050.4B or subsequent revisions), and other federal statutes and regulations. Accordingly, this form is intended to meet the Federal regulatory requirements of an EA.

This format is appropriate if the proposed project's involvement with, or impacts to extraordinary circumstances are not notable in number or degree and do not rise to the level of a full EA. Consult with an Environmental Specialist at the FAA to determine if this form is appropriate for your project.

To complete this form, the preparer should describe the proposed project and provide information on any potential impacts of the proposed project. It will be necessary for the preparer to have knowledge of the environmental features of the airport. Although some of this information may be obtained from the preparer's own observations, environmental studies or other research may be necessary. Complete consultation with applicable Federal, state, and local resource agencies responsible for protecting specially protected resources prior to submitting this form to FAA.

This form is not meant to be a stand-alone document. Rather, it is intended to be used in conjunction with applicable orders, laws, and guidance documents, and in consultation with the appropriate resource agencies.

An appendix that contains all the figures, correspondence, and completed studies (or executive summaries of completed studies) should accompany the completed CEA when submitted to FAA for final approval.

Project Location:

Airport Name:	Indy South Greenwood Airport		Airport Identifier:	HFY	
Address:	897 Airport Parkway				
City:	Greenwood	County:	Johnson	State:	IN

Airport Sponsor Information:

Point of Contact:	Mr. Rick Ferrill, Airport Manager				
Address:	897 Airport Parkway				
City:	Greenwood	State:	IN	Zip Code:	46143
Telephone Number:	(317) 201-3574	Fax Number			
Email:	ferrillr@indysouthgreenwood.com				

CEA Preparer Information:

Point of Contact:	Susan Zellers				
Address:	6510 Telecom Drive, Suite 210				
City:	Indianapolis	State:	IN	Zip Code:	46278
Telephone Number:	(317) 803-8954	Fax Number			
Email:	szellers@hanson-inc.com				

Identify all Attachments to this CEA:

Include aerial photos, maps, plans, correspondence, and completed studies (or executive summaries)

Appendix A - Exhibits
Exhibit 1 – Topography Map
Exhibit 2 – Proposed Action
Exhibit 3 – Use Existing Terminal Auto Parking Lot Area Alternative
Exhibit 4 – Expand Apron North of T-Hangars Alternative
Exhibit 5 – Expand Apron South of Corporate Hangars Alternative
Exhibit 6 – Relocate Terminal facilities North of T-Hangars Alternative
Exhibit 7 – Wetlands Map
Exhibit 8 – Floodplain Map

Appendix B – Agency Coordination
Indiana Department of Natural Resources Concurrence
Indiana Division of Historic Preservation and Archeology Concurrence
U.S. Army Corps of Engineers Approved Jurisdictional Determination

Appendix C – Resource Reports
Phase I Architectural Evaluation of the Proposed Apron Expansion Project within the Indy South Greenwood Airport
Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at Greenwood Municipal Airport
Biotic Resources Report for the Indy South Greenwood Airport
Regulated Waters Delineation Report for the Indy South Greenwood Airport

Part I - General Project Identification

PURPOSE AND NEED:

Describe the problem that the project will address and the goals of the project.

Indy South Greenwood Airport (Airport) is in the City of Greenwood, in Johnson County, in central Indiana. See **Exhibit 1 – Topography Map** in **Appendix A**. The Airport plans to expand the current terminal apron. This terminal apron expansion will also include tug roads to connect the apron to the north and south hangar areas and storm water management areas. The current terminal apron area does not provide adequate space for the aircraft that regularly use the airport to park and taxi. The Airport is expected to maintain normal growth but based upon existing aircraft apron usage and forecasted activity, additional apron space is needed adjacent to the terminal. A location near the terminal is required for the apron due to the use of terminal services and fueling by the aircraft operators. The Purpose of this project is to provide additional apron area in close proximity to the terminal building to accommodate existing patrons. The Need for this project is to relieve congestion on the existing apron by providing additional space for taxiing and parking near the terminal with the FAA-required object free areas.

The terminal apron was built in the early 1990s and designed with marked tie-down spaces for 34 aircraft with wing spans less than 49 feet, Group I aircraft. The installation of the fuel farm on the north edge of the apron precludes the use of the five tie-downs along this edge of the apron for parking, as this portion of the apron is used for aircraft to access the fuel farm. Ten of the tie-down spaces are assigned to tenants for use by their aircraft and customers. With the runway extension to more than 5,000 feet, the airport now regularly accommodates 3-4 corporate aircraft operations per day with Cessna Citations to smaller Gulfstream aircraft. Some of these aircraft have wingspans in excess of 49 feet (Group II aircraft). Therefore, the airport reserve the spaces closest to the terminal and farthest from the runway to allow adequate clearance for the tails of the larger corporate aircraft. These spaces are also adjacent to the western apron edge taxilane providing a larger maneuver area for the corporate aircraft. When these larger aircraft are parked, they typically need to occupy about three of the small aircraft tie-down spaces. The airport also supports unscheduled charter flights with a Cessna Caravan each night. The Caravan is typically parked on the apron each day occurring about two tie-down spaces. These regular uses of the apron allow for only about five spaces to be available for other transient aircraft, and they are frequently occupied. The additional apron area will provide larger taxilanes to better accommodate the corporate aircraft that regularly operate at the airport as well as some additional parking spaces.

This apron will also be designed so that a portion of the drainage can be isolated to accommodate aircraft deicing. The tug roads will allow the fuel trucks to access and serve aircraft in the hangar areas without driving on the parallel taxiway. The stormwater management areas will be sized to accommodate increased impervious surfaces created by the apron expansion, road construction, and potential future development. This project will increase the capacity of the terminal apron, the margin of safety at the Airport, and its ability to comply with stormwater regulations.

PROPOSED ACTION (PREFERRED ALTERNATIVE):

Describe the preferred alternative in detail, including how the project fits into the airport layout plan.

The Sponsor's Proposed Action is to construct an apron expansion and tug road. The apron expansion will enclose a portion of Pleasant Creek and construct approximately 134,180 square feet of additional terminal apron to the south of the existing apron. Additional stormwater management capacity would be constructed under the apron and connect to the existing drainage system. The tug roads would be constructed from the existing north edge of the apron and the expanded south edge of the apron to the adjacent taxilanes. See **Exhibit 2 – Proposed Action** in **Appendix A**.

OTHER ALTERNATIVES CONSIDERED:

Describe alternatives considered, including the Do-Nothing Alternative

No Action Alternative

In the No Action Alternative, no new apron area would be constructed. The airport would be unable to meet the needs of users for aircraft parking with FAA standard taxilane access to allow aircraft to move with adequate wing tip clearance on the apron. No tug roads would be constructed, resulting in the fuel trucks and tenant user vehicles continuing to operate on the parallel taxiway.

Use Existing Terminal Auto Parking Lot Area Alternative
To avoid enclosing Pleasant Creek and impacting the floodway, this alternative would relocate the terminal auto parking and use this area for aircraft parking apron. See **Exhibit 3 – Use Existing Terminal Auto Parking Lot Area Alternative** in **Appendix A**. The width of the auto parking and land outside Pleasant Creek floodway is limited. After providing taxilane access there will be limited aircraft parking. In addition, the undeveloped airport owned land closest to the terminal area would require all patrons to walk across the airport entrance road and apron to access the terminal.

Expand Apron North of T-hangars Alternative
This alternative would construct additional apron area north of the T-hangars. See **Exhibit 4 – Expand Apron North of T-hangars Alternative** in **Appendix A**. This location does not provide access to the terminal building. When the airport is staffed, some form of transportation such as a golf cart may be able to be provided between the two areas. Otherwise, patrons would be required to walk from the expanded apron area to the terminal. The access between the existing terminal apron and north apron would be on the hangar taxilane. Moving patrons and fuel trucks between a north apron and the existing terminal would increase non-aircraft traffic on the taxilane.

Expand Apron South of Corporate Hangars Alternative
This alternative would construct additional apron area south of the corporate hangars. See **Exhibit 5 – Expand Apron South of Corporate Hangars Alternative** in **Appendix A**. This location does not provide access to the terminal building and fueling services. When the airport is staffed, some form of transportation such as a golf cart may be able to be provided between the two areas. Otherwise, patrons would be required to walk from the expanded apron area to the terminal. To move patrons and fuel trucks between a south apron and the existing terminal, a tug road would need to be constructed to keep non-aircraft traffic off the taxiways. Without a tug road non-aircraft traffic would increase on the parallel taxiway. This alternative would put the apron within the AWOS critical area which could impact the accuracy of the weather measuring devices.

Relocate Terminal and Construct New Apron to North of T-hangars Alternative
This alternative would relocate the existing terminal area complex: terminal building, apron, and auto parking. See **Exhibit 6 – Relocate Terminal and Construct New Apron North of T-hangar Alternative** in **Appendix A**. A portion of this area is narrow, and another portion underlies the instrument departure surface with height restrictions limiting the area available for development. The terminal building, auto parking, and most of the apron could be replicated north of the T-hangars. However when compared to the SPA this alternative would have 23,000 fewer square feet than the SPA. After replicating the existing facilities, no additional space would be available for expansion. In order to construct the new apron in this location at the same size as proposed by the SPA, the Airport would have to expand the apron to the west. The Airport does not own the land due west of the location proposed by this alternative and property acquisition would be required. Due to the location of the apron, this alternative also would not allow for the construction of any tug roads, so fuel trucks would continue to be moved via the taxiway.

Explain in detail the reason for eliminating each non-preferred alternative.

The No Action Alternative was eliminated from further consideration. This action is not considered since it does not provide adequate space for the aircraft that regularly use the airport to park and taxi or relieve congestion on the existing apron by providing additional space for taxiing and parking near the terminal with the FAA required object free areas.

The Use Existing Terminal Auto Parking Lot Alternative was eliminated from further consideration due to the limited space that does not meet the need to relieve congestion on the existing apron by providing additional space for taxiing and parking near the terminal with the FAA required object free areas. Also, it would require patrons to cross the road and apron to access the terminal from a relocated auto parking area, which would reduce the customer service and margin of safety at the Airport.

The Expand Apron South of Corporate Hangar and Expand Apron North of T-hangars Alternatives were eliminated from further consideration because these locations do not provide access to the terminal building and fueling service, which would reduce the customer service and margin of safety at the Airport.

The Relocate Terminal and Construct New Apron North of T-hangars Alternative was eliminated from further consideration due to insufficient space to move the existing terminal building, auto parking and apron area to the north end of the airport. Also, there would be no space for apron expansion. Therefore, this alternative does not provide adequate space for the aircraft that regularly use the airport to park and taxi or relieve congestion on the existing apron by providing additional space for taxiing and parking near a terminal with the FAA required object free areas.

AIRPORT DESCRIPTION:

Fill out the following information if the proposed project includes any changes to the existing airport design

Development Items	Existing			Proposed		
Runway Numeral						
Runway Length			ft			ft
Runway Width			ft			ft
Pavement Strength						
NAVAIDS		Fed Owned	Y or N?		Fed Owned	Y or N?
Approach Minima						
Critical Aircraft (ARC)						
RPZ Area						

If the airport has multiple runways, this section should be filled out for each runway.

Remarks:

The Airport's proposed action does not change the existing airport design and therefore, this section is not applicable.

LAND ACQUISITION:

Fill out the following information.

Land Use Types	Amount (acres)	
	Permanent	Easement
Residential	0	
Commercial	0	
Agricultural	0	
Forest	0	
Wetlands	0	
Other:	0	
TOTAL	0	N/A

Remarks:

The Airport's proposed action will occur on Airport Property.

PROJECT SCHEDULE:

Discuss the proposed schedule for the project, including permits and construction.

The Airport's proposed action is proposed to begin in 2020 with design and will be constructed over multiple years starting as early as 2021 based on available FAA grant funding.

AFFECTED ENVIRONMENT:

Succinctly describe existing environmental conditions of the potentially affected area.

Indy South Greenwood Airport is in the City of Greenwood, in Johnson County, in central Indiana. The airport is situated just south of the Marion/Johnson County line and owns property in Marion County to protect the approach to Runway 19. All airport facilities are located in Johnson County. The Airport is located approximately three miles from downtown Greenwood and approximately 12 miles from downtown Indianapolis. The Airport is located one mile from an interchange with I-65 and provides personal and corporate aircraft with access to Greenwood, Johnson County, and the metropolitan Indianapolis area.

The airport is encompassed by a variety of land uses: agriculture fields to the southwest, residential to the southeast and northwest, and commercial and retail to the north and east. The Airport appears to be similar to the adjacent surroundings. Pleasant Creek passes through the project area. See **Exhibit 2 –Proposed Action** in **Appendix A**. The Airport's proposed action and potential effects of the proposed apron expansion will be further evaluated in Part II – Environmental Consequences.

AIR QUALITY

Criterion	Yes	No
Is the project in an air quality nonattainment or maintenance area?		X
If Yes, is the:		
Project listed on Presumed to Conform List		
Project accounted for in State Implementation Plan		
Project emissions below applicable *de minimis* levels		
Does the project require an air quality analysis?		X
Does the project require an air quality analysis for construction impacts?		X

Remarks:
Johnson County, Indiana is currently in attainment for the criteria pollutants, including sulfur dioxide, carbon monoxide, nitrogen dioxide, PM 2.5, lead and 8-hour ozone, thereby achieving the national standard for air quality. As part of the FAA's Order 5050.4B no air quality analysis is needed since the Airport is considered general aviation and has less than 180,000 operations forecasted annually.[1]

COASTAL AREAS

Criterion	Yes	No
Is the project located in a Coastal Barrier Resource System?		X
Is the project located in a Coastal Zone Management Program?		X
If Yes, is a consistency finding required?		

Remarks:
There are no Coastal Barrier Resource Systems in Johnson County, Indiana. The nearest Coastal Zone Management Program area is along the coast of Lake Michigan, over 150 miles to the north and outside the drainage area of the Airport.

COMPATIBLE LAND USE

Criterion	Yes	No
Will proposed action comply with local/regional development patterns for the area?	X	
Is the proposed project located near or will it create a wildlife hazard as defined in FAA Advisory Circular 150/5200-33B, "Wildlife Hazards on or Near Airports"?		X
Has coordination with USDA Wildlife Service occurred?		
Is a Wildlife Assessment required?		

Remarks:
The Airport's proposed project is located on Airport property. The proposed project includes the expansion of the terminal apron, construction of tug roads to eliminate the need for fuel truck to use the parallel taxiway. The proposed action will allow the airport to relieve congestion on the existing apron by providing additional space for taxiing and parking near the terminal with the FAA required object free areas. The proposed project will not have an impact on zoning or planned development within the communities surrounding the Airport.

CONSTRUCTION IMPACTS

Criterion	Yes	No
Will construction of the proposed project:		
Increase ambient noise levels due to equipment operation		X
Degrade local air quality due to dust, equipment exhaust, or burning debris		X
Deteriorate water quality when erosion or pollutant runoff occur		X
Disrupt off-site and local traffic patterns		X

Remarks:
The Airport's proposed project may cause temporary localized air degradation from construction activities. Dust resulting from earth moving, grading, exhaust emissions and construction activities will be generated. Proper engineering measures will limit

[1] https://www.in.gov/idem/airquality/files/nonattainment_areas_map.pdf

the impact on the Airport, with no noticeable effects beyond the Airport property. Heavy equipment operations during construction may temporarily increase noise levels. The major acoustic impact will result from construction vehicles on site and material haul vehicles driving through local streets. Construction vehicles will sound similar to farm implements and trucking freight services presently used in the locale. All construction will take place during daylight hours. During construction, some amount of erosion will occur. Engineering controls will be used to limit erosion and sedimentation. An erosion and sediment control program, including the possible use of silt fences, silt traps, detention basins and/or interim soil stabilization, will be developed during the design phase of the project. Additionally, there could be minor indirect impacts on surface water runoff quality from increased sediment levels. Any impacts should be of a short duration, and due to the nature of adjacent land uses, should not be adverse.

CULTURAL RESOURCES

Criterion	Yes	No	SHPO/FAA Approval Dates
Results of Research			
Eligible or Listed Resources Present:			
Archaeology		X	
History/Architecture		X	

Criterion	Yes	N/A	SHPO/FAA Approval Dates
Project Effect			
No Historic Properties Affected	X		Indiana Division of Historic Preservation & Archaeology correspondence dated January 8, 2020 in **Appendix B**
No Adverse Effect			
Adverse Effect			
Completed Documentation			
Historic Properties Short Report		X	
Historic Property Report	X		Phase I Architectural Evaluation of the Proposed Apron Expansion Project within the Indy South Greenwood Airport. In **Appendix C**
Archaeological Records Check/Review		X	
Archaeological Phase I Survey/Report	X		Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at Greenwood Municipal Airport. In **Appendix C**
Archaeological Phase II Survey/Report		X	
Archaeological Phase III Recovery		X	
APE, Eligibility and Effect		X	
Memorandum of Agreement		X	

Describe all efforts to document cultural resources using the categories outlined in the remarks box. Include any additional Section 106 work required, such as mitigation or deep trenching. Remarks: Area of Potential Effect (APE); Coordination with Consulting Parties; Archaeology; Historic Properties; Documentation & Findings; Public Involvement.

Remarks:

The Airport's proposed project includes constructing a terminal apron expansion and tug roads. A phase I archaeological and architectural evaluations were conducted for the proposed project area. In the archaeological evaluation, it was noted that two previously recorded archaeological sites (12Jo58 and 12Jo298) may be within the project area; however, no archaeological artifacts or features associated with these sites were documented during the current survey. No further archaeological investigations were required for the proposed project area. See **Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at Greenwood Municipal Airport** in **Appendix C**. A phase I architectural evaluation of the proposed apron expansion project site was conducted. Although two resources listed within the county survey were identified within the Area of Potential Effect (APE) (Site #s 081-041-05008 and 081-041-05009), Site #9 (a circa 1890 house) was demolished prior to 1985 and Site #8 (a circa 1880 school house) was found to be fully screened from the existing airport lighting by both distance and existing commercial complexes. Although the schoolhouse is identified as Notable, the lighting from the existing commercial complexes was found to prevent any lighting from the airport being discernable at this location. Likewise, although four map documented structures (MDS) were identified during the map and field review, MDS #1 (a farmstead) was found to be mostly screened from the existing airport by topography, with the most visible light impacts coming from the existing

commercial complexes along the west side of Emerson Avenue. MDS #2 (a large shed) was also found to be fully screened by existing commercial buildings and their associated lighting. MDS #s 3 and 4 were also found to be fully screened by the existing residential and commercial developments. Four residential subdivisions were also identified within the APE, but the most substantial lighting impacts are generated by existing commercial and medical properties. While the four MDS and four residential subdivisions are either of or close to sufficient age to be evaluated for the National and State registers, the proposed apron expansion and lighting project should have a minimal impact on their eligibility. As a result, no further architectural evaluations were conducted, and project clearance is recommended. See **Phase I Architectural Evaluation of the Proposed Apron Expansion Project within the Indy South Greenwood Airport in the Cite of Greenwood, Pleasant Township, Indiana** in **Appendix C**. The archaeology and architectural reports were submitted to the Indiana Division of Historic Preservation & Archaeology for their review. They determined that no historic buildings, structures, districts, or object listed in or eligible for inclusion in the National Register of Historic Places are within the probable area of potential effect. Therefore, no historic/cultural resources impacts are expected under this project. See **Indiana Division of Historic Preservation & Archaeology correspondence dated January 8, 2020** in **Appendix B**.

DEPARTMENT OF TRANSPORTATION ACT-49 USC § 303 (formerly Section 4(f))

Criterion	Yes	No	FAA Approval
Does the project area contain:			
Publicly owned Park Lands		X	
Wildlife and/or Waterfowl Refuges		X	
Historic Properties		X	
Completed Documentation			
Individual Section 4(f) Evaluation		X	
"De minimis" Impact		X	

Only to be used for the following circumstances: Historic Properties: project includes No Adverse Effect Finding with SHPO/THPO concurrence; Parks, Recreation Areas, or Wildlife/Waterfowl Refuges: project will not adversely affect activities, features, and attributes of the property and the official with jurisdiction concurs with the finding. Discuss De minimis impacts below. Individual Section 4(f) documentation must be separate Draft and Final documents. Remarks:

The proposed project is located on Airport property that contains no Section 4(f) or 6(f) lands. No parks, recreation areas, or wildlife/waterfowl refuges will be impacted by the proposed project. Therefore, no cultural or historic resources will be impacted by the proposed project.

ECOLOGICAL RESOURCES

Criterion	Yes	No
Biotic Resources		
Threatened and/or Endangered Species		
Is the project within the known range of any federal species?	X	
Does the project area contain any critical habitat?		X
Is Section 7 formal consultation required for this action?		X
Are there any State threatened and/or endangered species in the area?		X

Describe the various types of flora (plants), fauna (fish, birds, reptiles, mammals, etc), and habitat located in the project area. Indicate if the project will have any impact on these species or their habitat. Remarks:

Remarks:

A biotic resources site assessment was conducted by Cardno on September 30, 2019 to identify floral and faunal presence and usage in the proposed project area. No potential roost trees for either the Indiana Bat (*Myotis sodalis*) or the Northern Long-eared Bat (*Myotis septentrionalis*) were observed within the study area. There is potential foraging habitat along the Pleasant Creek corridor. No other federal rare, threatened, or endangered species or high-quality natural communities or significant natural habitat areas were observed. The threatened and endangered species survey was provided to the U.S. Fish and Wild Services (USFWS) (January 13, 2020) since there was no habitat for federally listed species, they did not provide comments on the project. Coordination with the Indiana Department of Natural Resources' Natural Heritage Data Center found occurrences of the state endangered reptile, Kirtland's Snake (*Clonophis kirtlandii*) documented within a half mile. See **Biotic Resources Report for the Indy South Greenwood Airport** in **Appendix C**. Due to the potential for suitable habitat for this species within

the study area, Indiana Department of Natural Resources (IDNR) requested an entrenched silt fence be installed around the work area while the project is underway in order to minimize potential impacts to the Kirtland's snake. **IDNR – Division of Fish and Wildlife correspondence dated February 14, 2020** in **Appendix C**.

ENERGY AND NATURAL RESOURCES

Criterion	Yes	No
Will the project result in energy impacts during or after construction?		X
Will demand exceed supply?		X
Are scare or unusual materials required for the proposed project?		X
Will the project change existing aircraft fuel consumption?		X

Remarks:
Additional apron lighting similar to that in place on the existing apron will be added to the expanded apron. The apron will have energy efficient lighting and is unlikely to place an undue burden on the existing utilities. Therefore, energy supply and natural resources impacts are not expected under this project.

ENVIRONMENTAL JUSTICE (EJ)

Criterion	Yes	No
Are any EJ populations located within the project area?		X
Will the project result in adversely high or disproportionate impacts to EJ populations?		X

Remarks:
The proposed project does not include the acquisition of homes or businesses or undue environmental impacts. Nor does it include adverse impacts to a disproportionately high number of minority or low-income populations. In addition, the project will not create environmental health and safety risks that could disproportionately affect children at or near the Airport.

FARMLAND

Criterion	Yes	No
Will the project affect any Agricultural Lands?		X
Is there any Prime Farmland (per NRCS) in the project area?		
NRCS-CPA-1006 Form Score		

Remarks:
The proposed project area is located on Airport property which is currently not used for agricultural production. Agricultural resource impacts are not expected under the proposed project.

FLOODPLAINS

Criterion	Yes	No
Is the project located in a FEMA designated floodplain?	X	

Attach the corresponding FEMA Flood Insurance Rate Map (FIRM) or other documentation in the appendix. Remarks:
The proposed project area is located on Airport property. The project is mapped as being within Zone X and Zone AE Floodway on National Flood Insurance Rate Maps by the Federal Emergency Management Agency (FEMA). See **Exhibit 4 – Floodplain Map** in **Appendix A**. The proposed apron will require a floodplain development permit through Indiana Department of Natural Resources – Division of Water (IDNR) due to required construction within a regulated floodway and a one-hundred-year floodplain. Due to construction in the regulated floodplain and floodway, drainage analysis will be required. The drainage analysis will consider various enclosure alternatives for construction of the apron; these alternatives will include those suggested by IDNR during their review of the proposed project. See **IDNR Concurrence** in **Appendix B**.

On May 30, 2020 further coordination was conducted with IDNR via phone and IDNR indicated that additional enclosure of Pleasant Creek would need to be constructed such that there are no increases to water surface profiles upstream of the airport. Since the expansion of the apron will require additional length of Pleasant Creek to be enclosed, a preliminary HEC-RAS hydraulic assessment was conducted through the project reach to help determine the appropriate structure size and channel improvements that would provide enough conveyance to meet water surface profile requirements. The hydraulic analysis considered various enclosure alternatives for construction of the apron, including arches similar to the existing structure under

the runway and parallel taxiway as well as three-sided box culverts. Results from these models indicate that it would be feasible for either structure type to provide the hydraulic capacity necessary to pass creek discharges without increasing regulatory water surface elevations when combined with minor channel improvements through the culvert reach.

The hydraulic analysis and preferred enclosure will be assessed in more detail during the design phase of the project. The hydraulic model results and preferred enclosure will be coordinated with IDNR Office of Water Resources and appropriate local, state, and federal permits will be obtained prior to any construction within the floodplain or floodway. In addition, under the proposed project, the impacted channel length will be replaced with an equal length of restored channel that possesses equal or higher quality riparian and stream habitat as the impacted area, through the 404 and 401 permitting process.

LAND AND WATER CONSERVATION FUND ACT SECTION 6(f)

Criterion	Yes	No
Are there areas acquired or improved with Land and Water Conservation Fund Grant Assistance		X

Remarks:
No LAWCON properties are impacted by the proposed project. Therefore, Section 6(f) impacts are not expected under this project.

LIGHT EMISSIONS AND VISUAL EFFECTS

Criterion	Yes	No
Will the project result in airport-related lighting impacts?		X
Does the proposed project fit with the existing environment?		X

Remarks:
Additional apron lighting similar to that in place on the existing apron will be added to the expanded apron. The apron lighting is aimed downward toward the apron. No lighting impacts are anticipated under this project.

NOISE

Criterion	Yes	No
Will the project change the current noise levels?		X
Are there non-compatible land uses within the 65 DNL?		X
Will the project create temporary (less than 180 days) noise impacts?		X
Is a noise analysis required in accordance with FAA regulations?		X

Remarks:
The Airport's proposed action will not increase the Airport's aircraft capacity and the Airport is expected to maintain normal growth. In addition, the Airport supported 583 jet operations in October 2018 to September 2019 (most recent 12 months at time of analysis). This is below the level of 700 annual jet operations for which a noise analysis must be conducted. Noise impacts are not expected under the proposed project.

SOCIAL IMPACTS

Criterion	Yes	No
Will the project adversely impact local transportation infrastructure (roads etc.)?		X
Will the proposed action result in the relocation people, businesses or farms?		X

Number of Relocations:
Residences: 0 Businesses: 0 Farms: 0 Other: 0

Remarks:
The Airport's proposed action is on airport property. The proposed project will not require any residential or commercial relocations, will not divide or disrupt the physical arrangement of an established community, disrupt any local transportation patterns, or substantially reduce the levels of service of roads serving the Airport or the surrounding community and therefore no mitigation is required.

SOCIOECONOMIC IMPACTS

Criterion	Yes	No
Will the proposed action result in:		
A change in business or economic activity in the project area		X
An impact on local public service demands		X
Induced/Secondary impacts		X

Remarks:

The Airport's proposed action is on airport property. Immediate benefits of the proposed improvements include a temporary increase in employment in the construction sector proportionate to the manpower needs for the construction project. This increased employment results in a temporary boost to local merchant/professionals from the sale of goods and services and will result in a positive growth for a time period equivalent to the construction phase of development. Therefore, temporary positive socioeconomic impacts are expected under this project.

SOLID AND HAZARDOUS WASTE

Criterion	Yes	No
Is there an Environmental Due Diligence Audit (EDDA) Phase I Report?		X
If Yes, is EDDA Phase II required/completed		
If Yes, is EDDA Phase III required/completed		
Does the project require the use of land that may be contaminated?		X
Will the proposed project generate solid waste?	X	
If Yes, are local disposal facilities capable of handling the additional waste?	X	

Remarks:

Any solid waste generated by construction of the Airport's proposed action will be temporary, and the contractor will be responsible for appropriate disposal of the waste. The local disposal facilities are capable of handling this waste and the proposed project will not put an undue burden on the existing collection system. This apron will be designed so that a portion of the drainage can be isolated to accommodate aircraft deicing. If deicing is conducted, this isolation will allow the Airport to capture and properly dispose of deicing material to reduce the chances of discharge into adjacent waterways. Therefore, solid and hazardous waster impacts are not expected to from this project.

WATER QUALITY

Criterion	Yes	No
Streams, Rivers, Watercourses & Jurisdictional Ditches		
Are there Streams, Rivers, Watercourses or Ditches in/near the project area?	X	
Is there any Wild, Scenic or Recreational Rivers in/near the project area?		X
Other Waters		
Are there any lakes or ponds in/near the project area?		X
Are there other surface/below surface waters in/near the project area?		X

Remarks:

There are two National Rivers Inventory waters in Johnson County, Indiana: The West Fork of the White River and the Big Blue River. Neither of these Rivers is located near the Airport and they will not be impacted by the proposed project. Indiana does not contain any designated Wild and Scenic Rivers.

The proposed project area contains Pleasant Creek, a 1,366' perennial stream that flows west through the proposed project area. Pleasant Creak flows into the White River, a Traditional Navigable Water. Due to this connection, the stream is considered a "waters of the United States" and under the jurisdiction of the United States Army Corps of Engineers (USACE). A USACE Section 404 permit and Section 401 Water Quality Certification (WQC) will be obtained prior to any construction activities in the proposed project area. See **IDNR – Division of Fish and Wildlife correspondence dated February 14, 2020** in **Appendix C**. In addition since the proposed project will occur within a regulated floodplain and floodway, a drainage study will be conducted to assess alternatives and determine the type of enclosure needed for the apron construction. All appropriate state and federal floodplain permitting will occur prior to construction.

Additional stormwater management capacity would also be constructed under the apron and connect to the existing drainage system. The deicing containment is planned to be included in the expanded apron and will be completely separate from all compensatory water storage. Where the enclosed portion of Pleasant Creek daylights west of Airport Access Drive, the floodway associated with Pleasant Creek could be graded if needed to accommodate for increased output from constricted flow under the apron and road during storm events. Under the proposed project, the impacted channel length will be replaced with an equal length of restored channel that possesses equal or higher quality riparian and stream habitat as the impacted area, through the 404 and 401 permitting process.

CUMULATIVE IMPACTS

Criterion	Yes	No
When considered together with other past, present, and reasonably foreseeable future development projects on or off the airport, would the proposed project produce a cumulative effect on any of the environmental impact categories above?		X

Remarks:

A review of past, present, and reasonably foreseeable conditions indicate the Airport has taken multiple actions in avoiding cumulative impacts on the local environs. Some past and present off-airport projects have occurred in the area and others are expected to occur in the future. It is anticipated that local infrastructure projects will not have any significant adverse impacts on the Airport's environs.

WETLANDS

Criterion	Yes	No
Are there wetlands in/near the project area?	X	

Total wetland area 1.19 acres Total wetland area impacted 0.91 acres

Wetland Classification Code	Classification	Wetland Total Area (Ac)	Impacted Wetland (Ac)	Jurisdictional	Non-Jurisdictional	Comments
PEM	emergent	0.91	0.91	USACE/IDEM		
PEM	emergent	0.28	0	IDEM	USACE	

Criterion	Yes	No
Completed Documentation		
Wetland Delineation Report	X	
Conceptual Mitigation Plan (see remarks)		
Mitigation Available		

Criterion	Yes	No
Individual Wetland Finding		
Alternatives that will not result in any wetland impacts are not practicable because such avoidance would result in (Mark all that apply and explain):		
Substantial adverse impacts to adjacent homes, business or other improved properties;		X
Substantially increased project costs;	X	
Unique engineering, maintenance, or safety problems;	X	
Substantial adverse social, economic, or environmental impacts, or		X
The project not meeting the identified needs	X	

Discuss measures to avoid, minimize, and mitigate wetland impacts. Make sure to include mitigation ratios. Remarks:

Under the Sponsor's Proposed Action, a portion of Pleasant Creek will be enclosed and piped under the apron expansion. A wetlands and waters of the United States delineation was conducted on September 30, 2019 by Cardno. They determined the site contained two wetlands and one stream. Pleasant Creek has a drainage area greater than a square mile. There is a

regulated floodway and a one-hundred-year floodplain on site. The USACE reviewed the wetland and waters of the United States Delineation and determined that both Pleasant Creek and the surrounding wetland are jurisdictional, under 404 of the Clean Water Act, while the isolated wetland (wetland 2) is jurisdictional under Indiana Department of Environmental Management (IDEM) isolated wetland program. The USACE issued an approved jurisdictional determination for the isolated wetland (wetland 2). See **USACE Jurisdictional Determination** in **Appendix B**. As part of the USACE's jurisdictional determination issuance, they provided the wetland delineation and their jurisdictional determination to the U.S. Environmental Protection Agency (USEPA) and Indiana Department of Environmental Protection (IDEM) for a 21-day review. Neither IDEM nor the USEPA provided comments on the USACE project documents. See **USACE Email Coordination** in **Appendix B**. Impacts to Pleasant Creek and its fringe wetland will require a USACE Section 404 permit and Section 401 Water Quality Certification (WQC) prior to any construction activities in the proposed project area. At this time the isolated wetland can be avoided, however, should impacts be needed they will require an IDEM isolated wetland impact permit.

Part III – Permits, Mitigation, Coordination and Public Involvement

PERMITS/MITIGATION

Permits: List all required permits for the proposed project & indicate if any problems are anticipated in obtaining the permit. Remarks.

Commitments, Permits, and Mitigation			
Agency	Resources	Permit or Commitment Required	Timing
Indiana Department of Natural Resources	State threatened and endangered species	An entrenched silt fence be installed around the work area while the project is underway in order to minimize potential impacts to the Kirtland's snake	Prior to and during construction
Indiana Department of Natural Resources	Floodplain	Drainage analysis considering Pleasant Creek Enclosure Alternatives	Prior to and during design
IDNR Office of Water Resources	Floodplain	Review drainage analysis	Prior to and during design
Local, State, and Federal Floodplain Permits. Johnson County, Indiana Department of Natural Resources, and Federal Emergency Management Agency	Floodplain	Local and State permits and a possible update to the Federal Emergency Management Agency Flood Rate Insurance Map.	Prior to construction
U.S. Army Corps of Engineers, and Indiana Department of Environmental Management	Wetlands and Waters of the United Stated	USACE Section 404 permit and Section 401 Water Quality Certification (WQC)	Prior to Construction
Indiana Department of Environmental Management	Wetlands	Isolated Wetland Impacts Permit, if needed	Prior to Construction

Mitigation: Describe all mitigation measures for the proposed project. Include any impacts that cannot be mitigated or those that cannot be mitigated below threshold levels. Also, provide a description of any resources that must be avoided during construction. Remarks.

EARLY COORDINATION

List each agency coordinated with, the date coordination was sent, and if a response was received in the following table. Make sure to include a copy of the response in the appendix.

Resource Agency	Date ECL Sent	Date Response Received	Date Draft EA Sent	Date Response Received
Indiana Department of Natural Resources	December 10, 2019	January 13, 2020		
Indiana Division of Historic Preservation and Archaeology	December 12, 2019	January 8, 2020		
U.S. Army Corps of Engineers	November 8, 2019	February 25, 2020		
U.S. Environmental Protection Agency	February 4, 2020	No Comment – USACE		
Indiana Department of Environmental Protection	February 26, 2020	No Comment – USACE		
U.S. Fish and Wildlife Service	January 13, 2020	No Comment – Phone Call		

Remarks.

See Appendix B for early coordination documentation.

PUBLIC INVOLVEMENT

Some level of public involvement is encouraged for every Federal Action. The level of public involvement should be commensurate with the proposed action. Discuss any public involvement activities (legal notices, letters to affected property owners and residents, meetings, special purpose meetings, newspaper articles, etc.) for this project.

Criterion	Yes	No
Public Controversy on Environmental Grounds		
Is the project anticipated to involve substantial controversy concerning community and/or natural resource impacts?		X

Remarks.

This development has been discussed in open meetings with the Indy South Greenwood Airport Authority and the Airport management staff. Coordination efforts are commensurate with typical development projects being completed for other sites at Indy South Greenwood Airport.

Preparer Certification

I hereby certify that the information I have provided is complete and accurate, to the best of my knowledge:

Shawn K Gibbs	3/2/2020
Signature	*Date*
Shawn Gibbs, Biologist	*Hanson Professional Services Inc.*
Printed Name & Title	*Organization*

Airport Sponsor Certification (May Not Be Delegated To Consultant)

I hereby certify that the information provided is complete and accurate to the best of my knowledge. I also recognize and agree that no construction activity, including but not limited to site preparation, demolition, or land disturbance, shall proceed for the above proposed project(s) until the FAA issues a final environmental decision for the proposed project(s) and until compliance with all other applicable FAA approval actions (e.g., ALP approval, airspace approval, grant approval if applicable) have occurred. All applicable Federal, State, and local permits required shall be obtained before proceeding with the proposed action.

Signature	*3/12/2020*
	Date
Scott Hines, President BOAC	*Greenwood BOAC*
Printed Name & Title	*Organization*

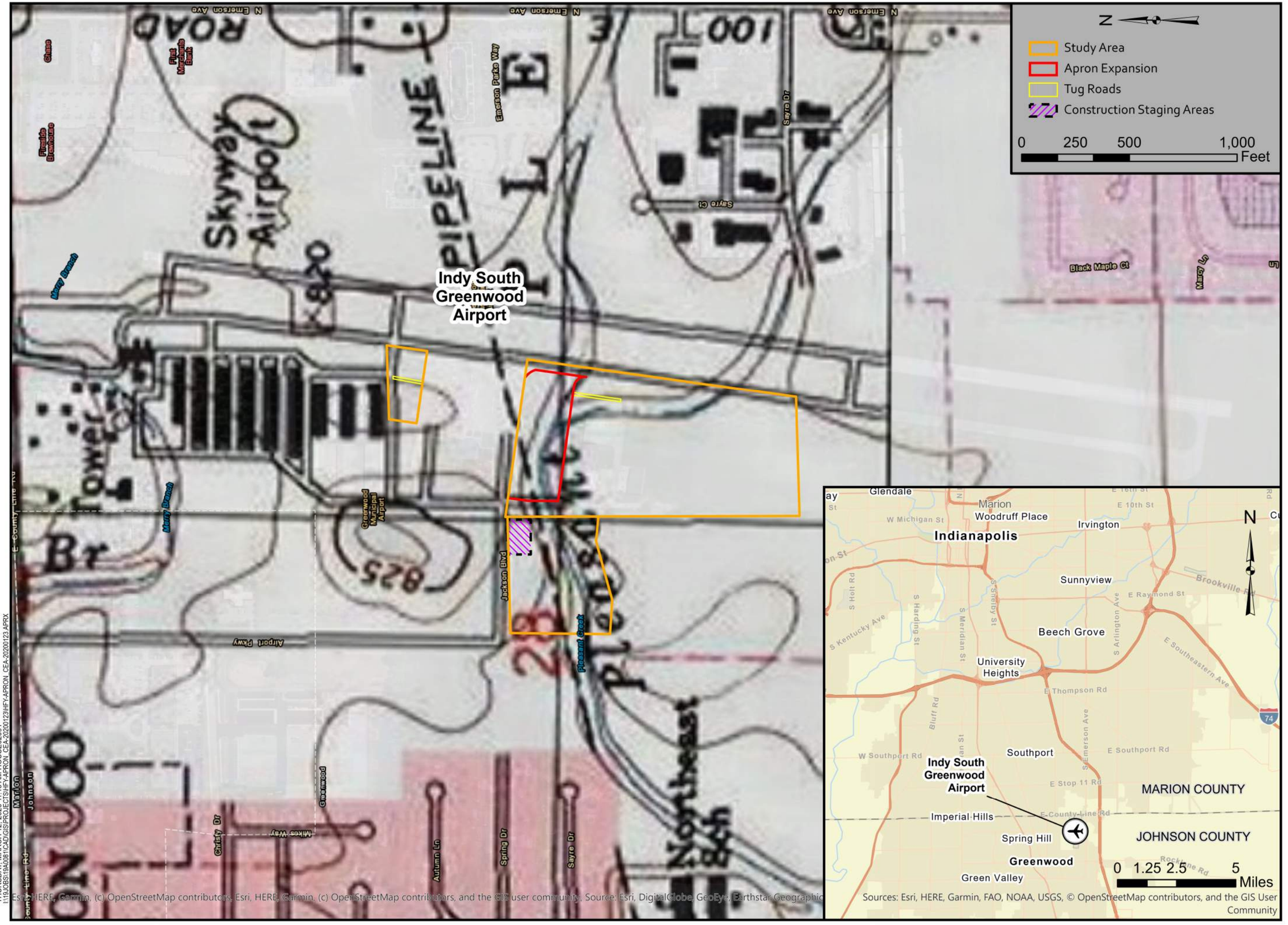
FAA Decision

Having reviewed the above information, certified by the responsible airport official, the proposed projects of development warrant environmental processing as indicated below:

- ☐ The proposed action has been found to qualify for a Condensed Environmental Assessment.
- ☐ The proposed development action exhibits conditions that require the preparation of a detailed Environmental Assessment.
- ☐ The proposed development action requires preparation of an Environmental Impact Statement.

This Environmental Assessment becomes a Federal document when signed/dated by the Responsible FAA Official.

	[insert]
Signature	*Date*
[insert printed name]	
Environmental Protection Specialist	*FAA Responsible Official*



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Illinois Licensed
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#184-001084

INDY SOUTH
GREENWOOD AIRPORT

INDY SOUTH GREENWOOD AIRPORT
897 AIRPORT PARKWAY
GREENWOOD, IN 46143

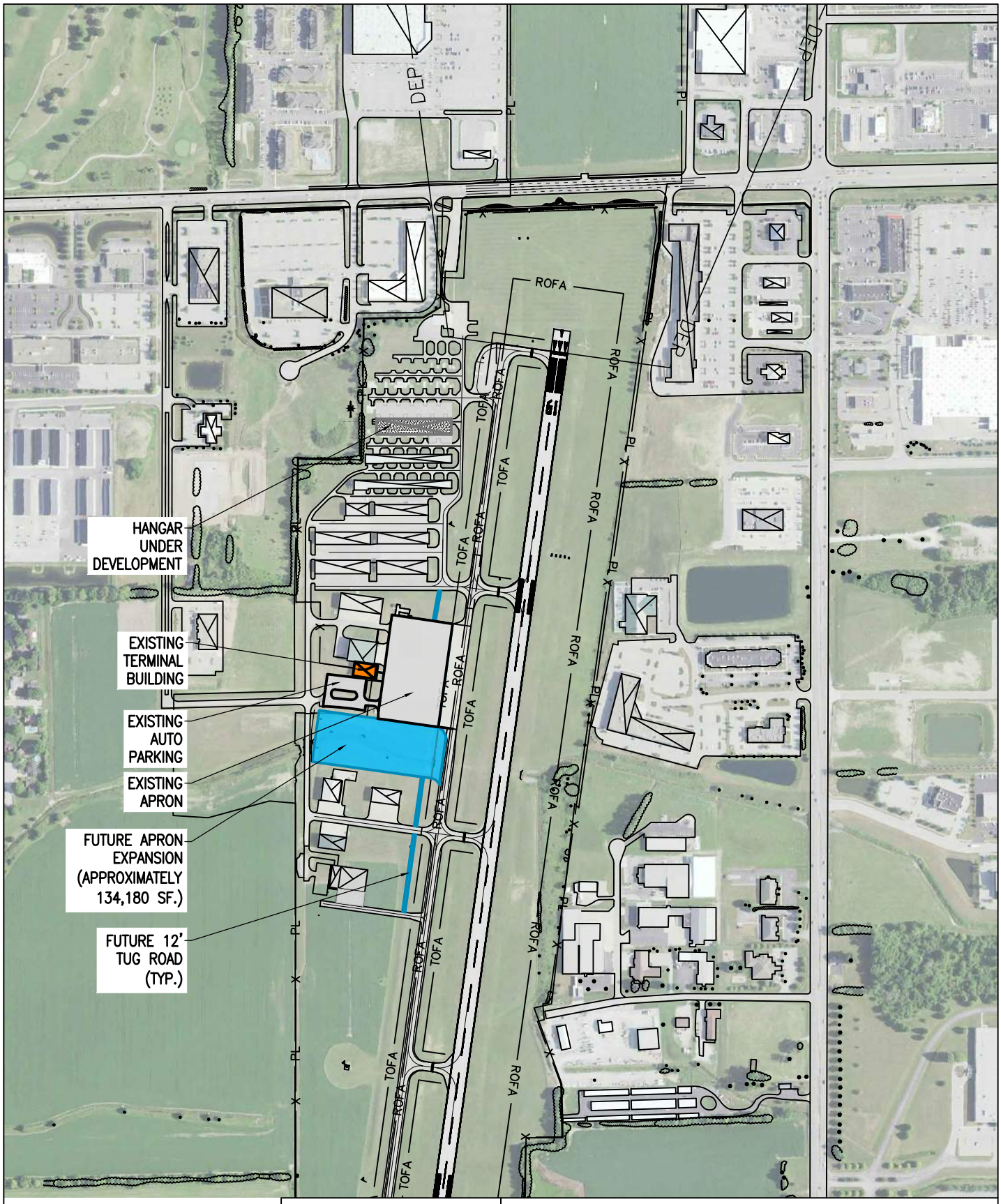
CONDENSED ENVIRONMENTAL ASSESSMENT

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: MONTH DAY, YEAR
PROJECT NUMBER
CAD FILE:
LAYOUT BY:
DRAWN BY: SKG
REVIEWED BY: RHA

TOPOGRAPHY MAP

EXHIBIT 1



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INDY SOUTH GREENWOOD AIRPORT APRON ENVIRONMENTAL ASSESSMENT
PROPOSED ACTION

EXHIBIT 2

SCALE: 1:600

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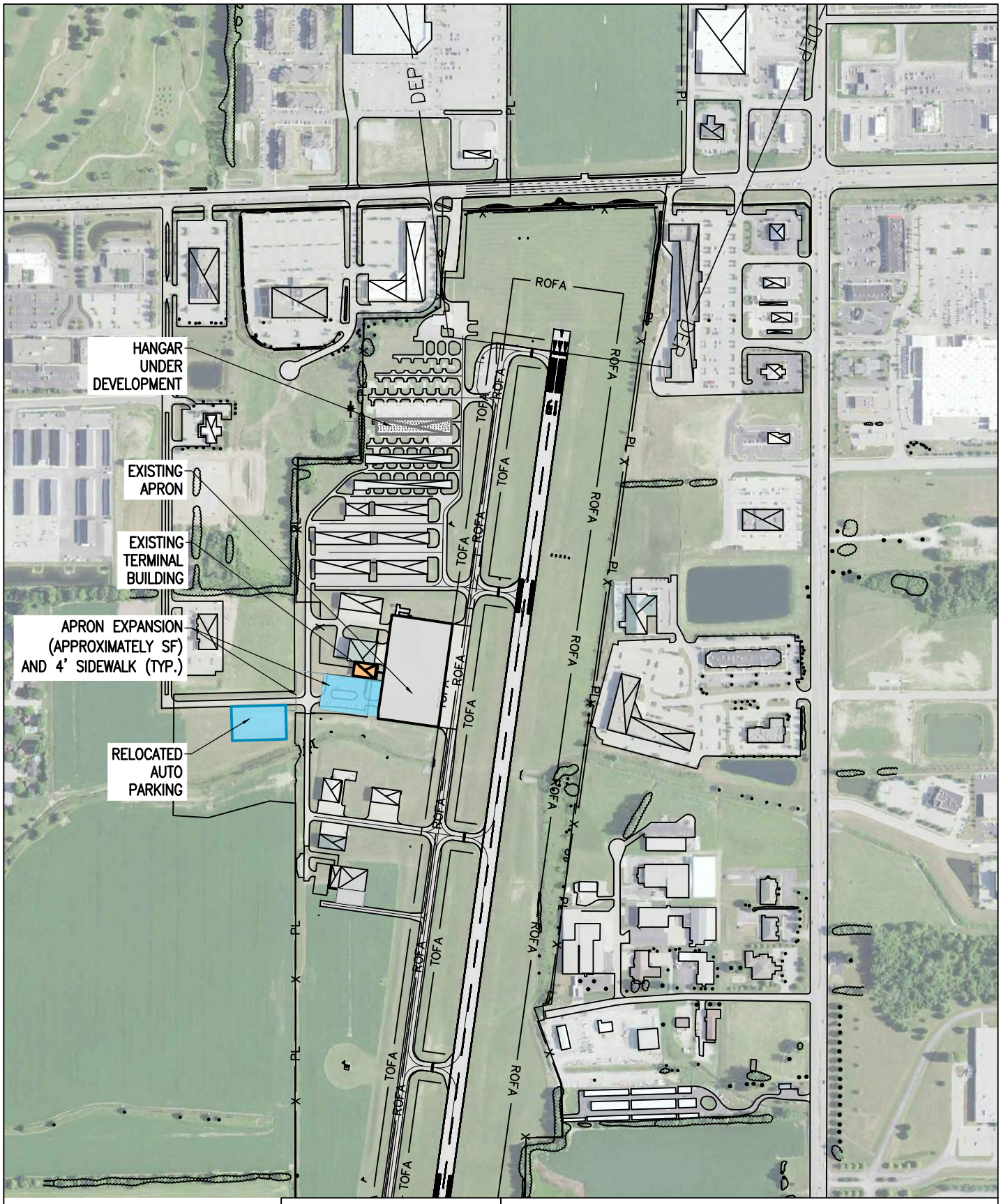

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INDY SOUTH GREENWOOD AIRPORT

INDY SOUTH GREENWOOD AIRPORT APRON ENVIRONMENTAL ASSESSMENT
USE EXISTING TERMINAL AUTO PARKING LOT AREA

EXHIBIT 3

SCALE: 1:600

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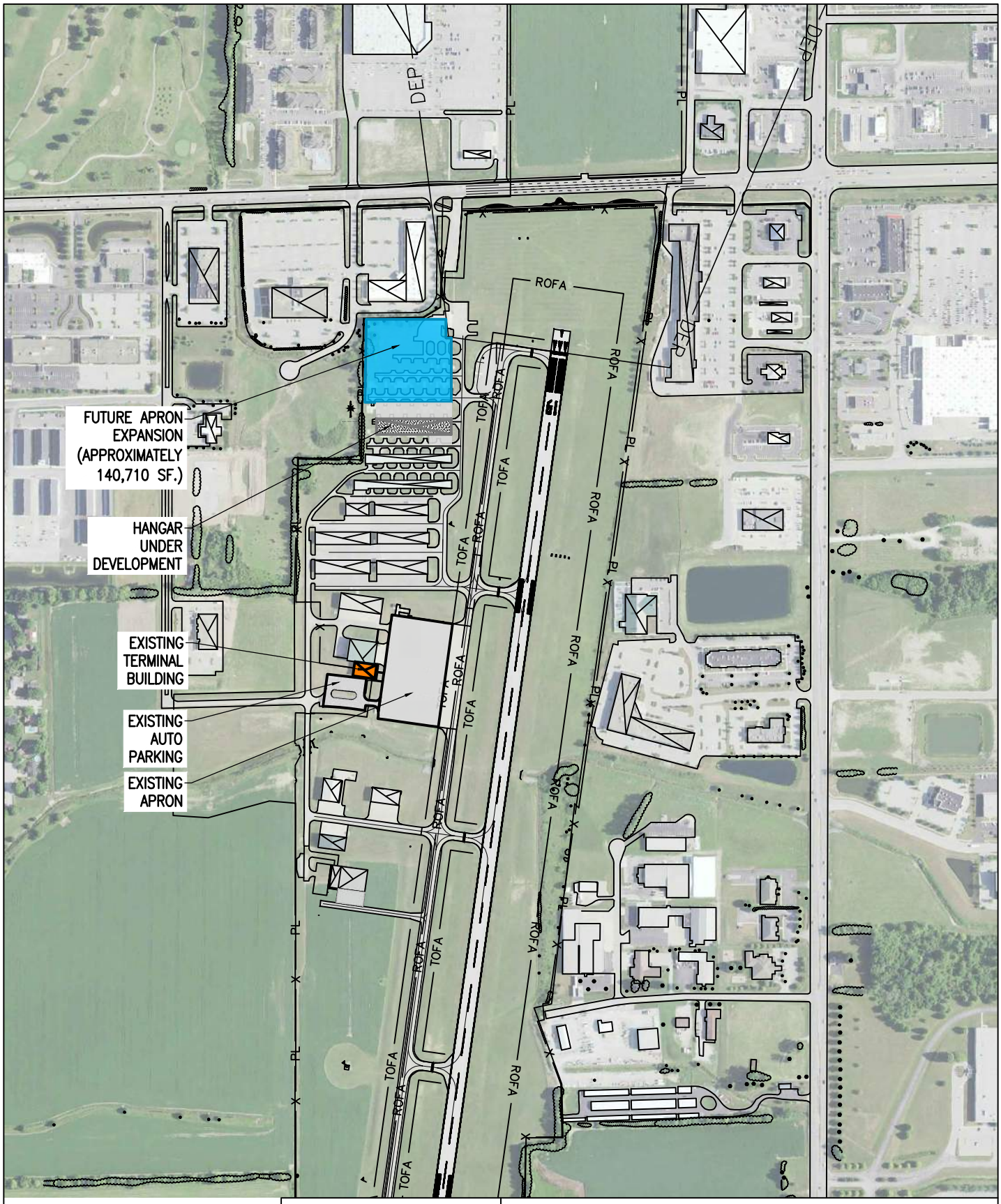

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INDY SOUTH GREENWOOD AIRPORT

INDY SOUTH GREENWOOD AIRPORT APRON ENVIRONMENTAL ASSESSMENT
EXPAND APRON NORTH OF T-HANGARS

EXHIBIT 4

SCALE: 1:600

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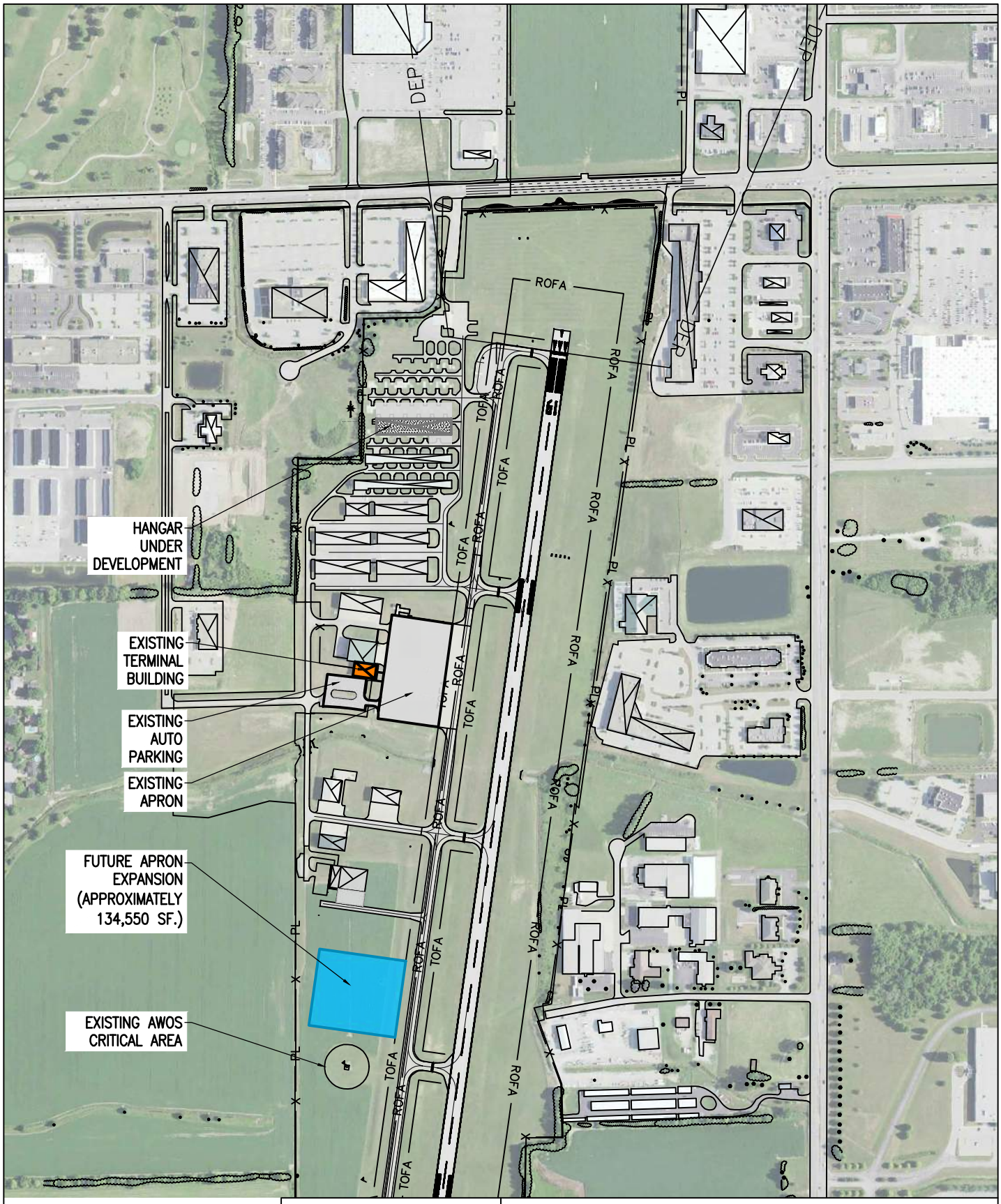

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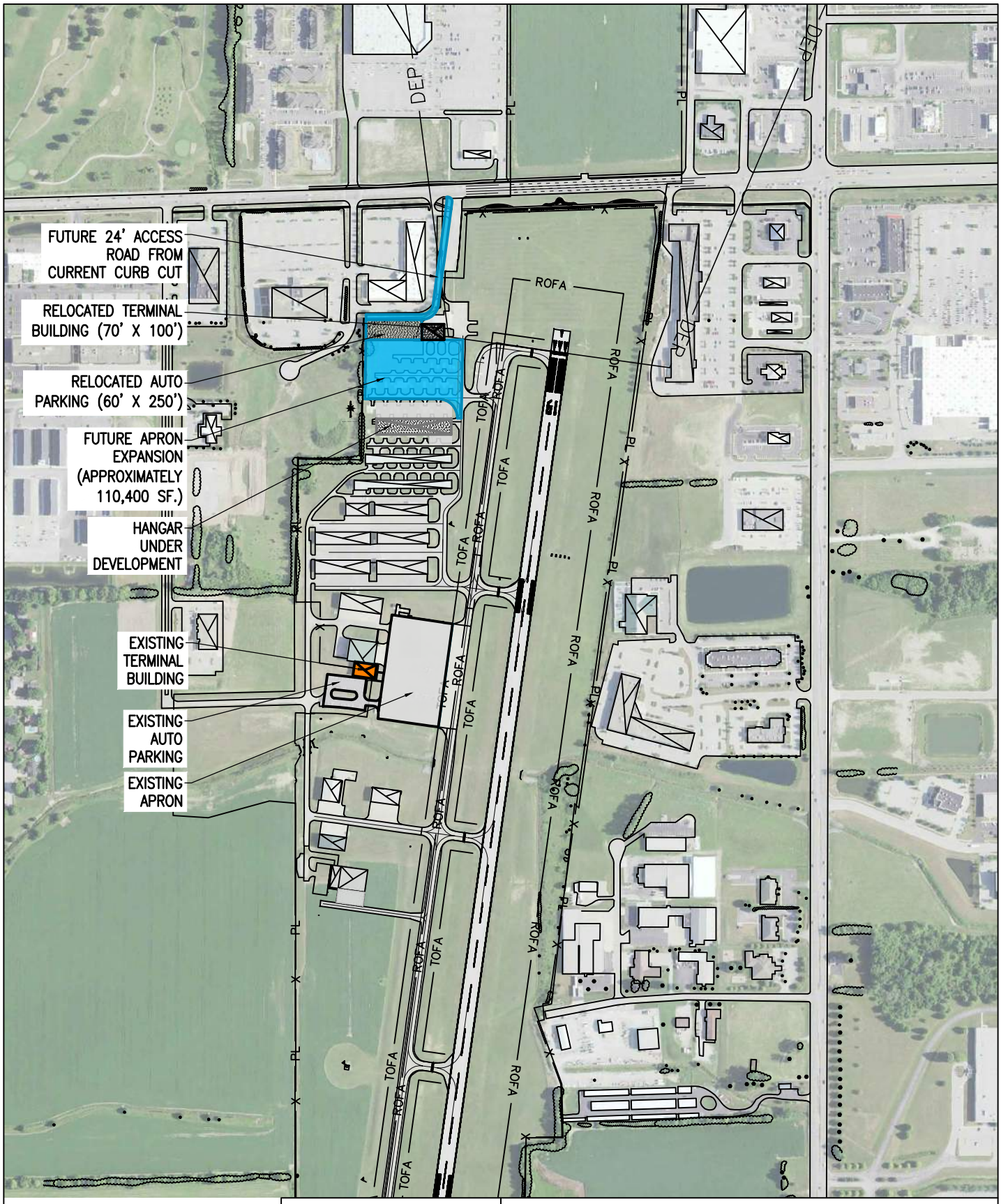
INDY SOUTH GREENWOOD AIRPORT APRON ENVIRONMENTAL ASSESSMENT
EXPAND APRON SOUTH OF CORPORATE HANGARS

EXHIBIT 5

SCALE: 1:600



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INDY SOUTH GREENWOOD AIRPORT

INDY SOUTH GREENWOOD AIRPORT APRON ENVIRONMENTAL ASSESSMENT
RELOCATE TERMINAL FACILITIES NORTH OF T-HANGARS

EXHIBIT 6 SCALE: 1:600

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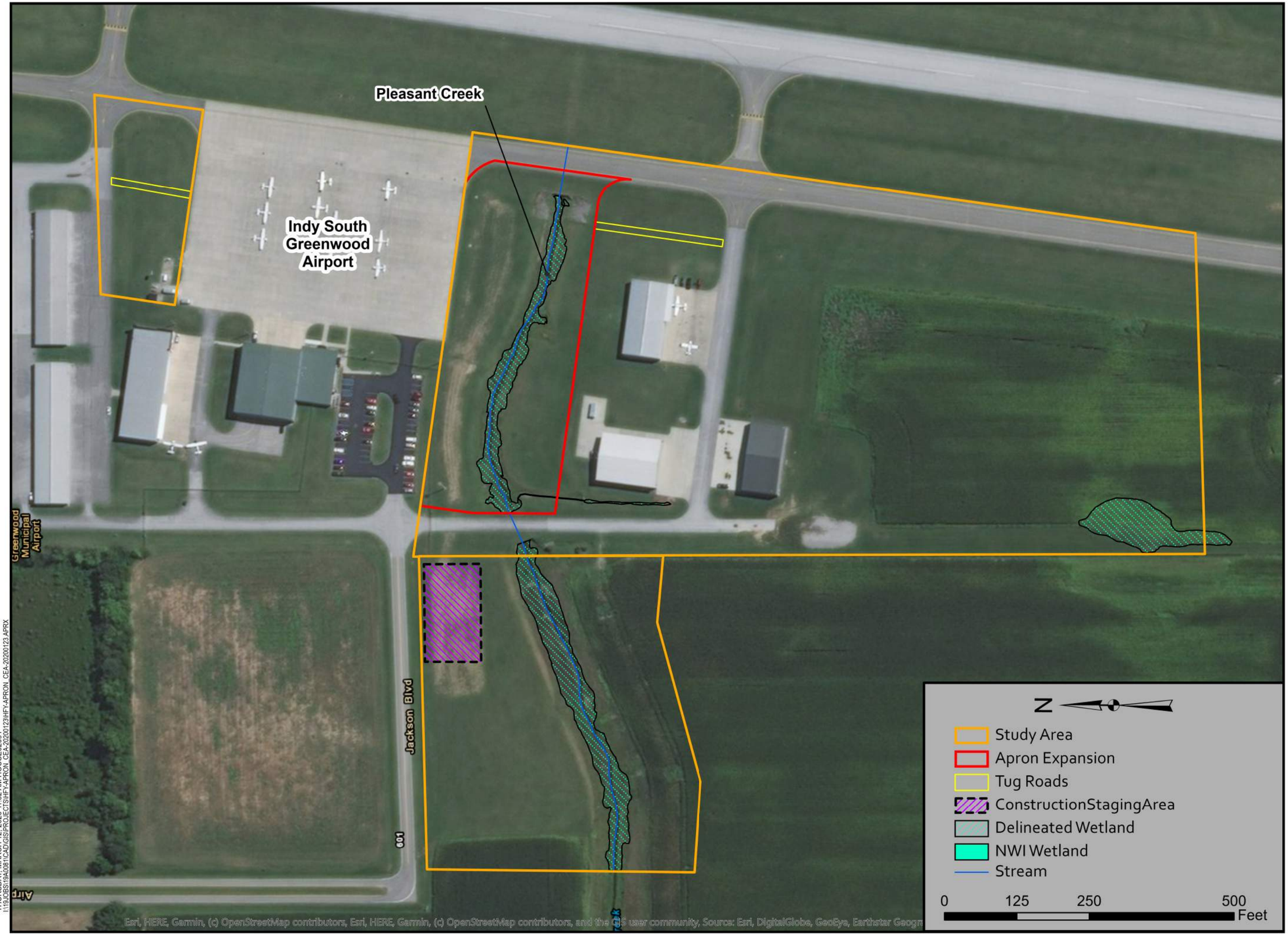

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897 AIRPORT PARKWAY
GREENWOOD, IN 46143

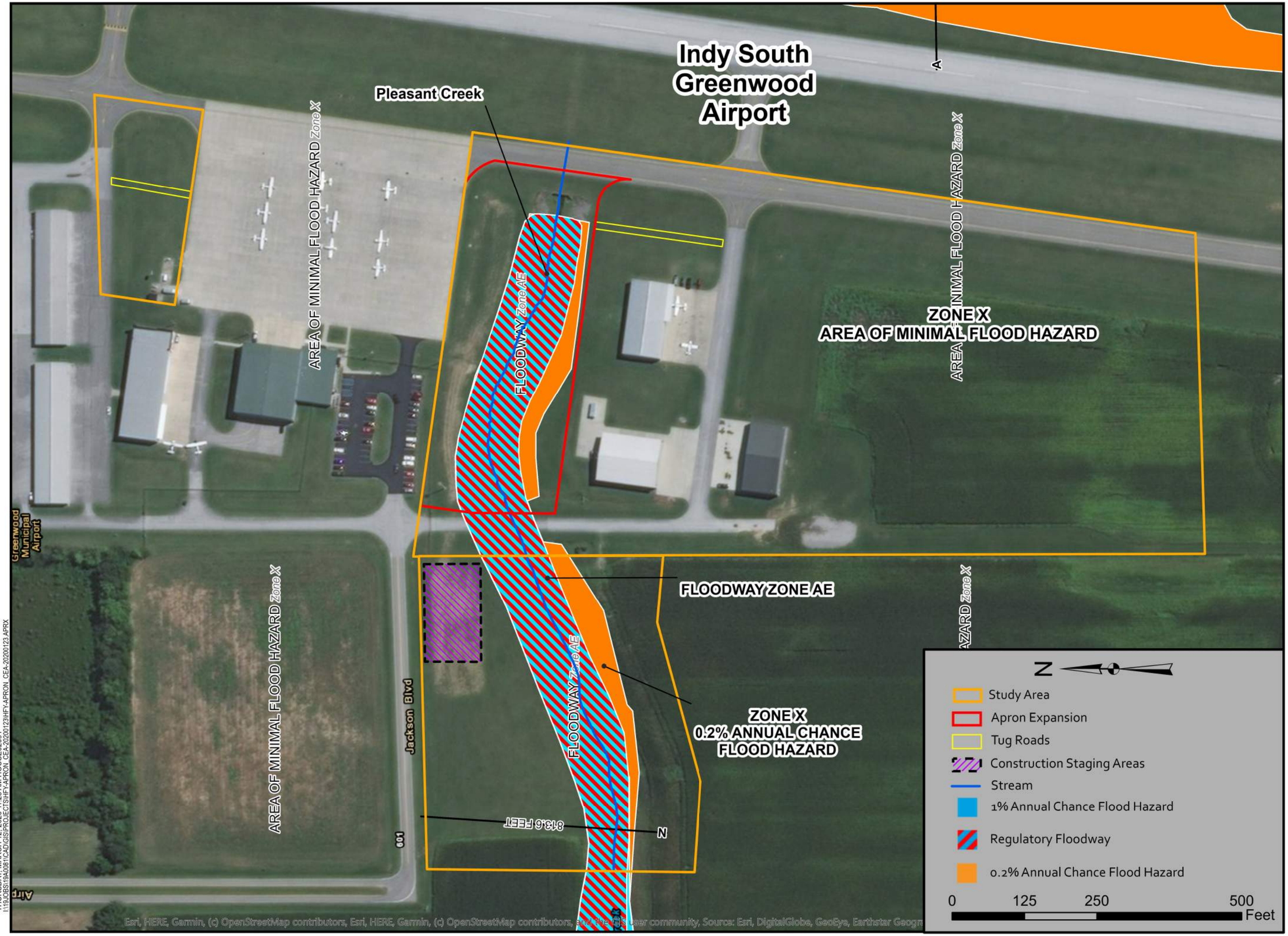
CONDENSED ENVIRONMENTAL ASSESSMENT

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

ISSUE: MONTH DAY, YEAR
PROJECT NUMBER
CAD FILE:
LAYOUT BY:
DRAWN BY: SKG
REVIEWED BY: RHA

WETLANDS MAP

EXHIBIT 7



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GREENWOOD AIRPORT

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897 AIRPORT PARKWAY
GREENWOOD, IN 46143

CONDENSED ENVIRONMENTAL ASSESSMENT

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

ISSUE: MONTH DAY, YEAR
PROJECT NUMBER
CAD FILE:
LAYOUT BY:
DRAWN BY: SKG
REVIEWED BY: RHA

FLOODPLAINS MAP

EXHIBIT 8

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Early Coordination/Environmental Assessment

DNR #: ER-22126 **Request Received:** January 13, 2020

Requestor: Hanson Professional Services Inc.
Shawn K Gibbs
1525 South Sixth Street
Springfield, IL 62703-2886

Project: Construction of an apron expansion over Pleasant Creek; Indy South Greenwood Airport

County/Site info: Johnson

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

If our agency has regulatory jurisdiction over the project, the recommendations contained in this letter may become requirements of any permit issued. If we do not have permitting authority, all recommendations are voluntary.

Regulatory Assessment: This proposal may require the formal approval of our agency pursuant to the Flood Control Act (IC 14-28-1) for any proposal to construct, excavate, or fill in or on the floodway of Pleasant Creek. Please submit more detailed plans to the Division of Water's Technical Services Section if you are unsure whether or not a permit will be required.

Natural Heritage Database: The Natural Heritage Program's data have been checked.
As indicated in the October 17, 2019, letter from Teresa Clark, Division of Nature Preserves, state endangered Kirkland's snake (Clonophis kirtlandii) has been documented within 1/2 mile of the project area.

Fish & Wildlife Comments: Avoid and minimize impacts to fish, wildlife, and botanical resources to the greatest extent possible, and compensate for impacts. The following are recommendations that address potential impacts identified in the proposed project area:

1) Kirtland's Snake:
To minimize potential impacts to this snake species, an entrenched silt fence should be installed around the work area while the project is underway.

2) River and Stream Impacts:
Impacts to the channel should first be addressed in planning through avoidance, minimization, and lastly compensatory mitigation. Mitigation for a stream channelization/relocation should include replacement of the impacted channel length with an equal length of restored channel that possesses equal or higher quality riparian and stream habitat as the impacted area. Habitat enhancement should also occur along another length of stream equal to the length impacted. Experienced professionals with backgrounds in soils, botany, ecology, fish and wildlife management, fluvial geomorphology, and engineering should design all channel relocation projects. A restrictive covenant should be used to protect the channel from future disturbance, and it should cover both the restored and enhanced creek lengths (essentially at a ratio of 2:1 or greater in linear feet of stream relocated/impacted).

3) Channel Relocation:
Channel relocations are not recommended, are difficult to design, and have a high likelihood of failure or permanent loss of habitat and function. If relocation remains the

best option after a complete examination of the possible alternatives and avoidance of impacts, mitigation plans should be developed. Mitigation for channel relocations should include replacement of an equal or greater length of channel with equivalent or higher quality habitat, enhancing habitat along an additional length of stream equal to the length of impact, and protection of the relocated channel. Habitat improvements should include enhancing (invasive species removal) or replanting a minimum 35 foot wide woody or herbaceous riparian buffer strip using a mixture of grasses, sedges, wildflowers, vines, shrubs, and trees native to the area and specifically for stream bank/floodway stabilization purposes.

4) Stream Enclosure:
Piping a waterway (placing a 4-sided culvert or any structure that artificially contains the creek on all sides) is detrimental to wildlife resources and an alternative design is recommended. The Division of Fish and Wildlife recommends that a bridge or a three-sided culvert be used where possible. These structures maintain the natural stream bottom, which is critical for fish and wildlife use of the stream. Natural stream bottoms allow for easier wildlife movement, maintain essential habitat, and provide resting and feeding locations. Riprap or other bank or channel stabilization materials should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes fish or aquatic organism passage (riprap should not be placed above the existing streambed elevation). If 300' or more of stream length is enclosed, mitigation to offset the in-stream and riparian habitat impacts is recommended. Mitigation options should include restoration or enhancement of habitat along the stream near the area of impact equal to the length of the impact. Possible examples of mitigation include: bioengineering along the streambank to reduce erosion, planting riparian vegetation along the top of the bank, creating in-stream habitat similar to what was lost, and other habitat improvements.

5) Wetland Habitat:
Due to the presence or potential presence of wetland habitat on site, we recommend contacting and coordinating with the Indiana Department of Environmental Management (IDEM) 401 program and also the US Army Corps of Engineers (USACE) 404 program. Impacts to wetland habitat should be mitigated at the appropriate ratio (see http://www.in.gov/legislative/iac/20190130-IR-312190041NRA.xml.pdf).

The additional measures listed below should be implemented to avoid, minimize, or compensate for impacts to fish, wildlife, and botanical resources:
1. Revegetate all bare and disturbed areas that will not be mowed and maintained with a mixture of grasses, sedges, and wildflowers native to Central Indiana and specifically for stream bank/floodway stabilization purposes as soon as possible upon completion; turf-type grasses (including low-endophyte, friendly endophyte, and endophyte free tall fescue but excluding all other varieties of tall fescue) may be used in regularly mowed areas only.
2. Minimize and contain within the project limits inchannel disturbance and the clearing of trees and brush.
3. Do not work in the waterway from April 1 through June 30 without the prior written approval of the Division of Fish and Wildlife.
4. Do not cut any trees suitable for Indiana bat or Northern Long-eared bat roosting (greater than 5 inches dbh, living or dead, with loose hanging bark, or with cracks, crevices, or cavities) from April 1 through September 30.
5. Use minimum average 6 inch graded riprap stone extended below the normal water level to provide habitat for aquatic organisms in the voids.
6. Do not use broken concrete as riprap.
7. Underlay the riprap with a bedding layer of well graded aggregate or a geotextile to prevent piping of soil underneath the riprap.
8. Minimize the movement of resuspended bottom sediment from the immediate project

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Early Coordination/Environmental Assessment

area.
9. Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized.
10. Seed and protect all disturbed streambanks and slopes not protected by other methods that are 3:1 or steeper with erosion control blankets that are heavy-duty, biodegradable, and net free or that use loose-woven / Leno-woven netting to minimize the entrapment and snaring of small-bodied wildlife such as snakes and turtles (follow manufacturer's recommendations for selection and installation); seed and apply mulch on all other disturbed areas.
11. Do not excavate or place fill in any riparian wetland.

Contact Staff: Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife
Our agency appreciates this opportunity to be of service. Please contact the above staff member at (317) 232-4080 if we can be of further assistance.

Christie L. Stanifer **Date:** February 14, 2020
Environ. Coordinator
Division of Fish and Wildlife

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Cameron F. Clark, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

January 8, 2020

Shawn K. Gibbs
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, Illinois 62703

Federal Agency: Federal Aviation Administration ("FAA")

Re: Archaeological field reconnaissance report (Stillwell, 5/17/2013) and phase I architectural evaluation (Waters, 11/27/2019) for the proposed apron expansion project within the Greenwood Airport (DHPA #24789)

Dear Mr. Gibbs:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated December 12, 2019 and received on December 17, 2019, for the above indicated project in Greenwood, Johnson County, Indiana.

Based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects.

As stated in our letter dated July 3, 2013, we concur with the recommendation in the archaeology report that no further archaeological investigations are needed in the proposed project area. We note that from our records, it appears that portions of two previously recorded archaeological sites (12Jo58 and 12Jo298) may be within the project area; however, no archaeological artifacts or features associated with these sites were documented during the current survey (Stillwell, 5/17/2013). Therefore, no currently known archaeological sites listed in or eligible for the National Register of Historic Places have been identified within the proposed project area.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

At this time, it would be appropriate for the FAA to analyze the information that has been gathered from the Indiana SHPO, the general public, and any other consulting parties and make the necessary determinations and findings. Please refer to the following comments for guidance:

1) If the FAA believes that a determination of "no historic properties affected" accurately reflects its assessment, then it shall provide documentation of its finding as set forth in 36 C.F.R. § 800.11 to the Indiana SHPO, notify all consulting parties, and make the documentation available for public inspection (36 C.F.R. §§ 800.4[d][1] and 800.2[d][2]).

2) If, on the other hand, the FAA finds that an historic property may be affected, then it shall notify the Indiana SHPO, the public and all consulting parties of its finding and seek views on effects in accordance with 36

C.F.R. §§ 800.4(d)(2) and 800.2(d)(2). Thereafter, the FAA may proceed to apply the criteria of adverse effect and determine whether the project will result in a "no adverse effect" or an "adverse effect" in accordance with 36 C.F.R. § 800.5.

If you have questions about archaeological issues please contact Cathy Draeger-Williams at (317) 234-3791 or cdraeger-williams@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov. In all future correspondence regarding the above indicated project, please refer to DHPA #24789.

Very truly yours,

Chad W. Slider

Beth K. McCord
Deputy State Historic Preservation Officer

BKM:KMP:CDW:cdw

cc: Bobb A. Beauchamp, Federal Aviation Administration

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
INDIANAPOLIS REGULATORY OFFICE
8902 OTIS AVENUE, SUITE S106B
INDIANAPOLIS, IN 46216

February 25, 2020

Regulatory Division
North Branch
ID No. LRL-2019-1080-sjk

Mr. Shawn Gibbs
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, Illinois 62703

Dear Mr. Gibbs:

This is in regards to your letter dated November 8, 2019, requesting a jurisdictional determination on the behalf of the Indy South Greenwood Airport for the reported wetland 2 located on airport property in Greenwood, Johnson County, Indiana (latitude 39.6283° and longitude -86.0902°). A location map is enclosed. We have reviewed the submitted data relative to Section 404 of the Clean Water Act.

The U.S. Army Corps of Engineers exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344) for certain activities in "waters of the United States (U.S.)." These waters include all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce.

The reported isolated wetland 2 does not appear to be used or be susceptible to use in interstate or foreign commerce. As such, this wetland is not considered to be a "water of the U.S." and is not regulated under Section 404 of the Clean Water Act. However, this determination does not relieve you of the responsibility to comply with applicable State law. We urge you to contact the Indiana Department of Environmental Management (IDEM), Office of Water Quality, 100 North Senate Avenue Room N1252, Indianapolis, Indiana, 46204 to determine the applicability of State law to the isolated water mentioned above and verification of the wetland boundaries.

This letter contains an approved jurisdictional determination (JD) for your site. If you object to this JD, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this JD you must submit a completed RFA form to the Lakes and Rivers Division Office at the following address:

U.S. Army Corps of Engineers
Attn: Jacob Siegrist, CELRD-PD-REG
550 Main Street, Room 10524
Cincinnati, OH 45202-3222
(513) 684-6212

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **April 26, 2020.**

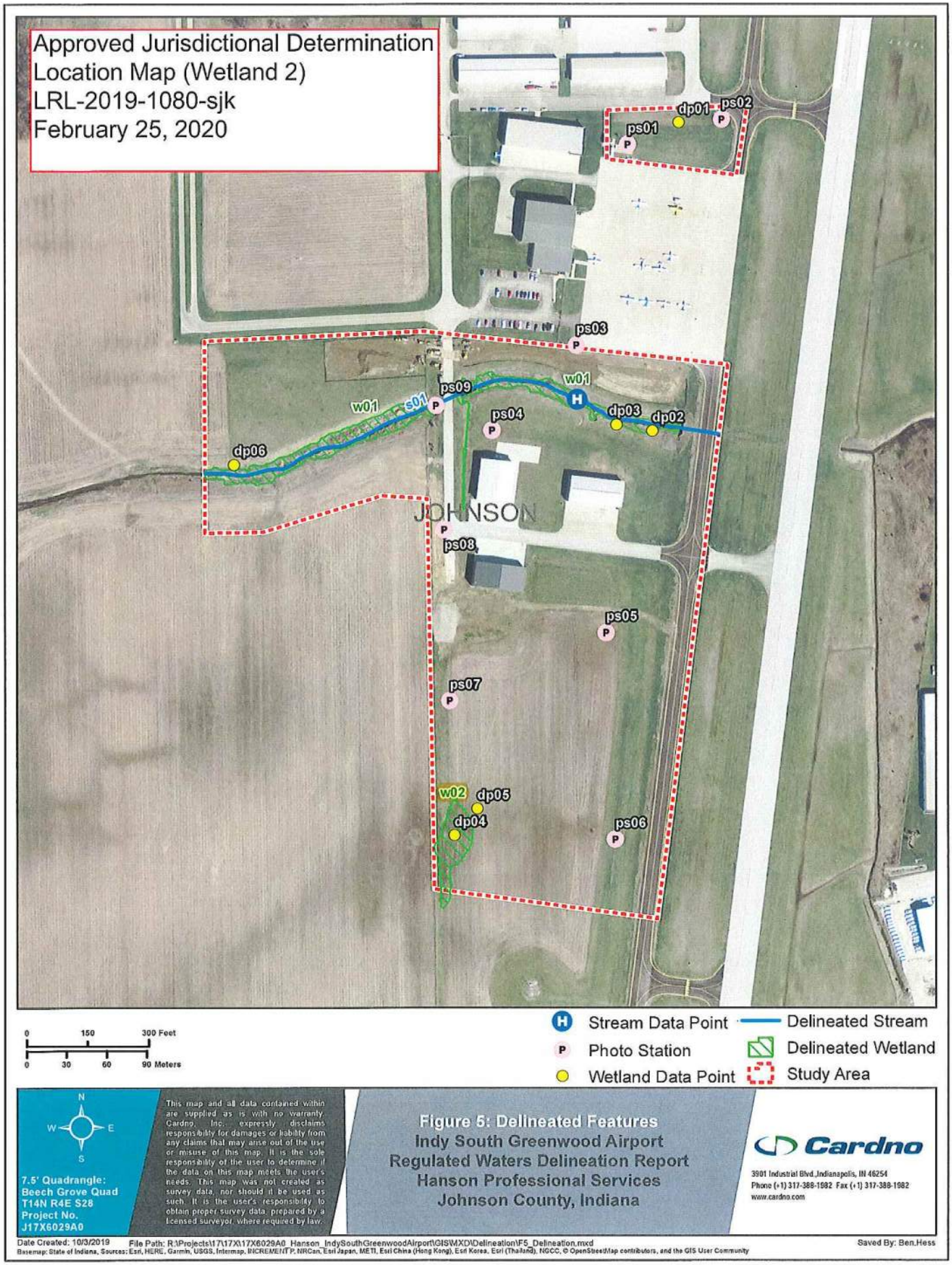
This jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date. It is not necessary to submit an RFA form to the Division office if you do not object to the JD in this letter.

If we can be of any further assistance, please contact me by writing to the above address or by calling 317-543-9424. Any correspondence on this matter should reference our Identification Number LRL-2019-1080-sjk.

Sincerely,

Sarah Keller
Regulatory Specialist
Indianapolis Regulatory Office

Enclosures
Copy Furnished: IDEM (Sowinski)


Approved Jurisdictional Determination
Location Map (Wetland 2)
LRL-2019-1080-sjk
February 25, 2020
dp01
ps02
ps01
ps03
w01
ps09
w01
s01
ps04
dp03
dp02
dp06
JOHNSON
ps08
ps05
ps07
w02
dp05
dp04
ps06
0 150 300 Feet
0 30 60 90 Meters
Stream Data Point
Photo Station
Wetland Data Point
Delineated Stream
Delineated Wetland
Study Area
N
W
E
S
7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0
This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.
Figure 5: Delineated Features
Indy South Greenwood Airport
Regulated Waters Delineation Report
Hanson Professional Services
Johnson County, Indiana
Cardno
3901 Industrial Blvd.,Indianapolis, IN 46254
Phone (+1) 317-388-1982 Fax (+1) 317-388-1982
www.cardno.com
Date Created: 10/3/2019
File Path: R:\Projects\17\17X\17X6029A0_Hanson_IndySouthGreenwoodAirport\GIS\MXD\Delineation\F5_Delineation.mxd
Basemap: State of Indiana, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
Saved By: Ben.Hess

Shawn Gibbs

From: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil>
Sent: Wednesday, February 26, 2020 6:26 AM
To: Sowinski, Thomas (IDEM)
Cc: Shawn Gibbs
Subject: LRL-2019-1080-sjk, Copy Furnished: Indy South airport (Greenwood) AJD
Attachments: LRL-2019-1080 AJD_signed.pdf

Tom,

Attached is your copy of an AJD for a wetland at the Greenwood airport .

Regards,

Sarah

Shawn Gibbs

From: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil>
Sent: Tuesday, February 4, 2020 2:02 PM
To: Shawn Gibbs
Subject: RE: LRL-2019-1080-sjk, Indy South Airport

Shawn,

The JD has been sent to the USEPA for their 21-day comment period.

Regards,

Sarah

-----Original Message-----
From: Keller, Sarah J CIV USARMY CELRL (USA)
Sent: Thursday, January 30, 2020 12:38 PM
To: Shawn Gibbs <SGibbs@hanson-inc.com>
Subject: RE: LRL-2019-1080-sjk, Indy South Airport

Shawn,

The JD for wetland 2 has been sent to my supervisor for approval. Once that occurs, I will sent the JD to the USEPA for their 21-day comment period.

Regards,

Sarah

-----Original Message-----
From: Shawn Gibbs [mailto:SGibbs@hanson-inc.com]
Sent: Thursday, January 30, 2020 10:19 AM
To: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil>
Subject: [Non-DoD Source] RE: LRL-2019-1080-sjk, Indy South Airport

Hi Sarah,

We're fine with getting an AJD for the isolated feature and not for the two jurisdictional wetlands. A drainage study for the floodplain is required. Permitting will be initiated after the drainage study and when design is started.

Thank you for all your help

Shawn

Office: 217.747.9228

Cell: 217.414.8263

From: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil>
Sent: Tuesday, January 28, 2020 10:14 AM
To: Shawn Gibbs <SGibbs@hanson-inc.com>
Cc: Jessica Householder <JHouseholder@hanson-inc.com>
Subject: RE: LRL-2019-1080-sjk, Indy South Airport

Shawn,

I've reviewed the delineation data and I concur with the delineated boundary. Wetland 1 directly abuts Pleasant Run Creek, a relatively permanent water. Both of these resources would be considered jurisdictional by rule (i.e. - we can just move forward with permitting any proposed projects that would impact them rather than spend the extra time/effort completing the AJD on it).

Wetland 2 does not appear to be connected with any regulated stream; therefore, it would be considered isolated and not regulated under Section 404 CWA. I would need to complete the AJD on Wetland 2 in order to officially decline jurisdiction, at which time you can then request the state provide their official isolated determination for permitting purposes.

Please let me know how you wish to proceed based on the information above.

Thanks,

Sarah

-----Original Message-----
From: Shawn Gibbs [mailto:SGibbs@hanson-inc.com]
Sent: Friday, December 20, 2019 10:27 AM
To: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil <mailto:Sarah.J.Keller@usace.army.mil> >
Cc: Jessica Householder <JHouseholder@hanson-inc.com <mailto:JHouseholder@hanson-inc.com> >
Subject: [Non-DoD Source] RE: LRL-2019-1080-sjk, Indy South Airport

Hi Sarah,

I’ve attached the completed and signed JD form. Do you need us to mail you the original?

Thanks

Shawn Gibbs |Biologist
Hanson Professional Services Inc.

1525 South Sixth Street, Springfield, IL 62703 w 217-747-9228|c 217-414-8263

From: Keller, Sarah J CIV USARMY CELRL (USA) <Sarah.J.Keller@usace.army.mil <mailto:Sarah.J.Keller@usace.army.mil> >
Sent: Monday, December 9, 2019 7:34 AM
To: Shawn Gibbs <SGibbs@hanson-inc.com <mailto:SGibbs@hanson-inc.com> >
Subject: LRL-2019-1080-sjk, Indy South Airport

Mr. Gibbs,

Can you please provide me an electronic copy of the submittal? Additionally, if you are seeking an Approved Jurisdictional Determination, I need you to complete the attached form and send it back to me.

Thanks,

Sarah Keller
Regulatory Specialist
Indianapolis Regulatory Office
Louisville District, USACE
Phone: 317-543-9424 x 3
Fax: 317-547-4526
Sarah.J.Keller@usace.army.mil <mailto:Sarah.J.Keller@usace.army.mil>

How are we doing? Our National Customer Service Survey is located at:
BlockedBlockedhttp://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

_____

_____

Archaeological Consultants of Ossian

May 18. 2013

Mr. Tony McMichael
NGC Corp.
1410 S. Post Road. Suite 200
Indianapolis. IN 46239

Invoice for Archaeological Services. An Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at the Greenwood Municipal Airport in Greenwood, Johnson County. Indiana. Archaeological Consultants of Ossian Cultural Resource Management Report #13 FR 72 as submitted to NGC Corp.. 5/17/13. Payment for the referenced services should be addressed to Archaeological Consultants of Ossian. P.O. Box 2374. Muncie. IN 47307.

Costs: Salary for field work, laboratory analysis, and report writing:

Budget		
Johnson Co.	Greenwood Airport	2.870.00
Total		**2,870.00**

Sincerely.

Larry N. Stillwell
Principal Investigator

Archaeological Consultants of Ossian
P.O. Box 2374
Muncie. IN 47307

Archaeological Consultants of Ossian

May 17, 2013

Mr. Tony McMichael
NGC Corp.
1410 S. Post Road, Suite 200
Indianapolis, IN 46239

Dear Mr. McMichael:

Enclosed is a report entitled *An Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at the Greenwood Municipal Airport in Greenwood, Johnson County, Indiana.* Archaeological Consultants of Ossian Cultural Resource Management Report #13 FR 72. Please forward this report to the Indiana Division of Historic Preservation and Archaeology. Please make a copy of the report for your records. All original documents must be forwarded to the SHPO.

As you will see from the report, Phase I survey has detected no properties that are eligible for nomination to the National Register of Historic Places. Since no historically or archaeologically significant sites will be impacted by the proposed undertaking, we recommend that project clearance be granted.

Thank you very much for the opportunity to work with you. If there is anything more I can do for you, please do not hesitate to call me at 765 281-0969 or 765 730-0524.

Sincerely,

Larry N. Stillwell
Archaeologist

Enclosures: CRM Report 13 FR 72

An Archaeological Field Reconnaissance of Three Parcels of Land for Proposed Improvements at the Greenwood Municipal Airport in Greenwood, Johnson County, Indiana

By
Larry N. Stillwell
Principal Investigator

Submitted by:
Archaeological Consultants of Ossian
P.O. Box 2374
Muncie, IN 47307

Submitted to:

NGC Corp.
Indianapolis, IN

May 17, 2013

Introduction

As a result of a request by NGC Corp., Archaeological Consultants of Ossian (ACO) was contracted to evaluate the effects on cultural resources of three land parcels for proposed improvements to the Greenwood Municipal Airport in Greenwood, Johnson County, Indiana (Figure 1). On May 13, 2013, personnel from Archaeological Consultants of Ossian conducted an archaeological reconnaissance survey of three areas that totaled approximately 16.8 acres selected for development. The areas surveyed are listed below.

Area #1 is located in portions of N 1/2 of the NW 1/4 of the NE 1/4 of Section 33; and in portions of the SE 1/4 of the SW 1/4 of the SW 1/4 of the SE 1/4 of Section 28, Township 14 North, Range 4 East (Pleasant Township) in Greenwood, Johnson County, Indiana (Figure 2).

Area #2 is located in portions of the N 1/2 of the NW 1/4 of the SE 1/4 of Section 28, Township 14 North, Range 4 East (Pleasant Township) in Greenwood, Johnson County, Indiana (Figure 2).

Area #3 is located in portions of the S 1/2 of the NW 1/4 of the SE 1/4 of Section 28, Township 14 North, Range 4 East (Pleasant Township) in Greenwood, Johnson County, Indiana (Figure 2).

No archaeological sites were located as a result of the survey. This report is a summary of the background review and the results of the Phase I archaeological investigation.

Physical Environment

Johnson County has a midcontinental climate with cold winters and quite hot summers (average daily low in January = 23 degrees F, average daily high in July = 88 degrees F), with 40.1 inches of precipitation per year (Sturm 1979). Approximately 60% of the annual precipitation falls between the months of April and September. Wide temperature fluctuations are common throughout the year. The average number of days per year with minimum temperatures above 32 degrees (five in ten year probability) is 175 (Sturm 1979).

The project area lies within the Tipton Till Plain of central Indiana (Schneider 1966), generally a flat featureless till plain which was laid down during the Wisconsin glacial period (Wayne 1963, 1966; Homoya 1985). In particular, it lies on materials of the Cartersburg Till Member of the Trafalgar Formation (Wayne 1966; Ulrich 1966), an area of Devonian and Mississippian shales. These materials, including outwash sand and gravels, and moraines such as the Crawfordsville and Knightsville Moraines, were laid down by a pair of advances and retreats of the ice from northeast to south-central Indiana circa 21,000 to 20,000 years B.P. This ice then became stagnant, as evidenced by eskers and esker troughs found in the region (Wayne 1966; Gutschick 1966). The thickness of glacial till deposited by the ice mass over the bedrock ranges from 10 to 200 feet (3 to 60 meters). Owing to the deep mantle of glacial drift, the underlying bedrock has little

effect on present-day topographic features (Schaal 1966). The deep till deposits overlying bedrock has not resulted in a relatively chert-poor environment. Bedrock exposures of chert in the study area are not known, but outcroppings of both Laurel and Jeffersonville cherts naturally occur within the region (Tomak 1987; Hawkins and Walley 1995).

Soils in the area are dominated by Crosby-Brookston Association (Sturm 1979; Ulrich 1966). The Crosby-Brookston Association is described as deep, somewhat poorly drained and very poorly drained, nearly level and gently sloping soils that formed in a thin silty layer and in the underlying glacial till on uplands (Sturm 1979). Specific soils within the project area consist of the deep, somewhat poorly drained Crosby silt loam, 0-2% slopes; the deep, well drain and somewhat poorly drained Crosby-Miami silt loams, 2-4% slopes, eroded; the deep, well drained Miami silt loam, 6-12% slopes, eroded; and the deep, very poorly drained Brookston silty clay loam (Sturm 1979). Crosby and Miami soils originate in glacial till and are found on till plains within the region. Brookston soils are developed in loess and in the underlying calcareous glacial till and are found on broad till plains (Sturm 1979).

The hydrology of the area suggests that lack of water would not have been a concern for prehistoric and early historic occupants of the project area. The proposed project area is drained by Pleasant Creek. Other sources of water located near the survey area include Pleasant Run, Merry Branch, and Leatherwood Creek. The project area lies within the West Fork of the Upper White River watershed.

Presettlement vegetation of the area was beech-maple forest (Petty and Jackson 1966). Lindsey (et. al. 1965) cites similar vegetation for the survey area. The General Land Office survey notes of the township indicated the area was a mosaic of marsh, grassland, and forest (GLO 1820). The diversity of trees, plus other hydrologic variables suggest that the environment was relatively rich, and likely to attract human occupation.

Taken as a whole, the environmental data (soils, hydrologic, and vegetational) all suggest that the area has a potential to contain archaeological sites, and was likely occupied and/or exploited by prehistoric Native Americans as well as Euroamerican settlers. The combination of well drained soils (i.e. Miami soils) located near constant waterways (i.e. Pleasant Creek), in a vegetational zone that provides abundant resources has consistently yielded relatively moderate densities of archaeological sites in previous surveys (e.g., Hart and Jeske 1988, 1991; Jeske 1992). Climatological, vegetational, and edaphic variables all point to the probability that area would have been attractive to both hunter-gatherers and early horticulturalists in this portion of the Midwest.

Background Review/Culture Sequence

The archaeology of Johnson County is relatively poorly known. However, some study has been conducted within the county as a result of cultural resource management surveys and sponsored research. Much of Johnson County is drained by a series of creeks, which mostly feed into either the Big Blue River or the White River. The Blue

River drainage runs through several counties before feeding into a fork of the White River.

The archaeological site files and maps at the Indiana Division of Historic Preservation and Archaeology Office and at Archaeological Consultants of Ossian were examined as part of the background review for this project. Historical documents such as county plat maps (Anonymous 1876) and notes and maps of the General Land Office were also examined. Other sites within the region have been noted from historic sources (e.g. Guernsey 1932; Dragoo 1951). Additionally, cultural resource management survey reports of the area were also studied.

State archives indicate that at least 634 archaeological sites have been recorded for Johnson County. Because of the current pace of development in the county, almost 200 of these archaeological sites have been recorded in the last decade. Currently, all periods of Indiana prehistory have been noted in Johnson County. The cultural chronology for the region extends from the PaleoIndian through the Mississippian periods (Tankersley et. al. 1990: Hicks 1992: Cree 1992). The cultural chronology of the region has in part been drawn on from large scale cultural resource management surveys conducted outside of the county (i.e. Cree 1992; Burkett and Hicks 1986). Many of the archaeological resources for Johnson County have been discovered as a result of cultural resource management projects (i.e. Bennett 1996; Buehrig 1986, 1989: Cantin 1987; Evans 1989; French 1992: Gaw 1993; Hartman and Bennett 1995; Hawkins-Bennett 1989: Hilton-Plunkett 1996; Jackson 2002; Kreinbrink 1998; McCullough and Kearney 1992: Natt 1996; O'Brien and Pirkl 1997; Pace 1983, 1984, 1985; Pirkl 1996, 1999; Zoll 2002; etc.). The author has also conducted numerous field survey projects within the county (Stillwell 1992, 1993a, 1993b 1999a, 1999b, 2000, 2001a, 2001b, 2001c, 2002a, 2002b, 2003, 2005a, 2005b, 2006, 2007a, 2007b, 2007c, 2007d, 2009a, 2009b, 2009c, 2010a, 2010b, 2012a, 2012b, 2012c).

Two large scale river valley surveys were also examined as part of the background review for this report. Although the studies did not take place in Johnson County, both the White River and the Big Blue River drain portions of the county. A brief synopsis of the studies in given below.

Burkett and Hick's survey (1986) of the Big Blue River drainage studied approximately 1,100 acres of the river valley. Their survey recorded an archaeological site density of one site per 3.8 acres in the uplands and one site per 6.5 acres in the actual river valley. While it may seem odd that the uplands contained a higher site density than the valley, the poorly drained nature of the Big Blue River drainage may help to explain the results of their survey. Until the Historic Period, much of the Big Blue River Valley consisted of swampland. During the Historic Period, many of the swampy areas were drained and converted to farm fields. The remnants of the swamplands are today still designated by the Brookston and Westland soils which are present throughout much of Hancock County.

Cree (1992) conducted a data enhancement project, which examined approximately 1,000 acres in Marion and Hamilton Counties, Indiana. The survey involved a comprehensive look at the Tipton Till Plain region and the White River Valley in which the current project area is situated. His survey was reviewed for its regional association with Johnson County and because of the similarities in drainage, topographic landforms, and soil types that the current project area has in common. The current project setting is contained within the White River Valley. Cree examined significant tracts of land on the till plain within Marion County. The current project is located near the Marion/Johnson County boundary.

The Division of Historic Preservation archives indicated that none of the known archaeological resources on file for the county were located within the current project area. However, the same records determined that at least 45 known cultural resources were located within an approximate 1.0 mile radius of the project area. The sites included 12-Ma-150, 12-Ma-151, 12-Ma-184, 12-Ma-761, 12-Ma-766/12-Jo-290, 12-Ma-769, 12-Ma-821, 12-Ma-833, 12-Ma-848, 12-Jo-18, 12-Jo-27, 12-Jo-51, 12-Jo-56 through 12-Jo-61, 12-Jo-104, 12-Jo-105, 12-Jo-217, 12-Jo-291 through 12-Jo-305, 12-Jo-349 through 12-Jo-355, 12-Jo-437, and 12-Jo-462.

Significant archaeological sites are known to exist within Johnson County. One of them is 12-Jo-116. Site 12-Jo-116 is known to have contained multi-component occupations from the Middle/Late Archaic, Early Woodland, and Middle Woodland Periods (Pace 1984). Other significant sites were recorded during a data enhancement survey conducted by Brinker (1984). Her survey examined limited acreage in Johnson, Morgan, Marion, and Hamilton. The focus of the survey was to establish a model to predict Late Archaic sites across the landscape in Central Indiana. Before Brinker's survey, only 65 archaeological sites had been documented in the county. Brinker work also re-examined known archaeological resources within the county. Some of the sites recorded by Brinker are located near the current project.

Three studies have been previously conducted at the Greenwood Municipal Airport (Baltz 1986; French 1992; Stillwell 2012b). One of the field investigations appears to have investigated limited areas of the current project examined by the archaeologist (French 1992). Although several archaeological resources recorded by French (1992) are located adjacent to the current project areas, none of them appear to cross into any of the three land parcel limits.

Historically, Johnson County was established in 1823. The County was named in honor of John Johnson an early Indiana State Supreme Court Judge. Franklin, the county seat, was platted in 1822. The first settlers in Franklin were thought to be Samuel Herriot, George King, John Smiley, and W. G. Springer. Franklin College (the product of a large seminary project) was founded in 1849. By 1849, the seminary contained 250 houses and an approximate population of 1750 (Barnhart and Riker 1971; Carmony 1966; Lockridge 1980; Rudolph 1980).

The General Land Office survey notes for the township indicate that no cultural resources were present within the project area. Historic plat maps of Johnson County (Anonymous 1876) show the presence of four houses, a school, two cemeteries, a railroad, the Greenwood Post Office, and the City of Greenwood within an approximate 1.0 mile radius of the project area.

A review of the Division of Historic Preservation cemetery records for Pleasant Township indicated that no known historic graveyards would be impacted by the project. However, the same records indicated that Greenwood Cemetery was located within an approximate 1.0 mile radius of the project.

Archaeological Survey Methods

The combined approximate 16.8 acre parcel examined for the proposed airport improvements was currently situated within portions of grass covered lawn and on tilled agricultural field. Ground surface visibility for the project area was estimated to have ranged between 0-100%. Due to the varying ground surface visibility within the limits of the airport improvement right-of-way, both shovel testing and pedestrian walkover survey were utilized within the project area.

In areas where ground surface visibility was thought to be 30% or greater, pedestrian walkover survey was utilized. Pedestrian survey of the project area consisted of archaeologists walking abreast at 10-meter intervals visually examining the ground for cultural debris. Where cultural materials were located, survey flags were placed, and sites were then re-walked at 2-meter intervals to determine the artifact density and boundary of each site.

In areas where ground surface visibility was determined to have been less than 30%, shovel probe survey was implemented. Shovel probe survey consisted of small test holes, approximately 35-cm in diameter and 50-cm deep, that were excavated across the project area at intervals of 15-meters along transects spaced 15-meters apart. Soil from the probes was screened through 6.4 mm mesh in an attempt to locate cultural materials. Soil conditions and the presence or absence of cultural materials were noted for each hole. In areas where shovel probes tested positive for cultural materials, additional probes were excavated at 5-meter intervals in the cardinal directions around the positive shovel test pit. Although the shovel probe technique will not find deeply buried sites, and may miss small or ephemeral sites, it is the most cost-effective, reliable form of archaeological survey in areas of low or zero surface visibility (Lightfoot 1986; Nance & Ball 1986).

If applicable, fire-cracked rock was noted but not collected during the survey. All cultural materials recovered during the course of the survey were taken to the ACO office for processing. All artifacts from the survey will be taken to Indiana State Museum for curation.

Archaeological Reconnaissance Survey

On May 13, 2013, an archaeological reconnaissance level survey was initiated for the combined approximate 16.8 acre project area (Figures 2 and 3). The survey was conducted by Alan Miller, Darrin McBride, and Mike Dean with the author who serving as Principal Investigator.

The project consisted of three areas (Figures 2 and 3). Area #1 was located at the southern end of the existing airport runway and was 10.5 acres in size (Figure 3). Area #2 consisted of an approximate 2.3 acre tract that was located immediately west of the existing airport runway/taxiway (Figure 3). Area #3 was comprised of an approximate 4.0 acre tract that was located south of the airport offices and immediately west of the existing airport runway/taxiway (Figure 3).

Area #1 contained a mix of tilled agricultural field and grass covered ground (Figure 3). All of the tilled farm field within the survey limits was examined through pedestrian means. The grass covered areas were shovel tested. Shovel tested areas identified both agricultural and non-agricultural disturbance. Non-agricultural disturbance was noted on shovel probes excavated on a beauty mound west of the airport taxiway/runway (Figure 3). Shovel probes easily determined that the beauty mound had been constructed from fill deposits. Shovel probes dug at the southern end of the airport taxiway/runway identified the existence of an agricultural plowzone within the wall profiles of the test pits. The plowzone extended up to 8.5 inches below the ground surface. No archaeological resources were found in Area #1.

Area #2 was situated within portions tilled agricultural field and grass covered ground (Figure 3). All areas of agricultural field were subjected to pedestrian survey. All grass covered areas were shovel tested. Shovel probe survey of the grass covered area documented disturbance from previous construction activities. Immediately beneath the grass covered ground, deposits of road gravel were encountered. Gravel deposition was several inches in depth and in most places shovel testing could not penetrate it. No cultural materials were located in Area #2.

Area #3 was located upon grass covered ground. Additionally, a rip-rapped lined drainage ditch crossed through the project area (Figure 3). The entire area was shovel tested. Shovel testing of Area #3 documented extensive fill deposits within the wall profiles of the probe walls. The fill was thought to have originated from the channelization of the drainage ditch as well as the construction of several nearby airport buildings. Also, the area may have been built up in an attempt to control rainfall. No archaeological sites were documented in Area #3.

An archaeological field reconnaissance for three parcels of land for proposed improvements at the Greenwood Municipal Airport located no cultural materials. The field reconnaissance determined that the project area had experienced both agricultural and non-agricultural disturbance.

Prehistoric densities for Johnson County appear to range on the average of one site per every 6.0 to 15.0 acres examined. The current survey located no archaeological sites within a combined approximate 16.8 acre tract. It was estimated that about 10 acres of the entire project universe had been disturbed by non-agricultural activity. If the non-agriculturally disturbed areas are subtracted from the project universe as a whole, the field reconnaissance located no cultural resources within an approximate 6.8 acre tract. Thus, the results of the field reconnaissance appear to fall within the projected prehistoric site density estimates formulated for the county.

Conclusions and Recommendations

An archaeological field reconnaissance of three parcels of land for proposed airport improvements at the Greenwood Municipal Airport in Greenwood, Johnson County, Indiana, located no cultural resources. Archaeological survey of the project area determined that it had been disturbed by both agricultural and non-agricultural activity. The results of CRM surveys conducted within the county suggest that sites contained within the region vary in size from small ephemeral lithic scatters to fairly significant prehistoric deposits. Because no cultural materials were located during the field survey, it is the opinion of the archaeologist that no further archaeological assessment is warranted. It is also the opinion of the archaeologist that the proposed undertaking will not affect any archaeological properties eligible for listing on the National Register of Historic Places. Project clearance is recommended. However, if any unanticipated artifact concentrations, burials, or features become apparent during construction of the project, work should be halted until the archaeologist in the Department of Natural Resources, Division of Historic Preservation and Archaeology is contacted.

References Cited

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1986 Archaeological Field Reconnaissance Greenwood Alpine Electronics Infrastructure, Johnson County, Indiana. Archaeological Resources Management Service Ball State University, Muncie, IN.
1989 Addendum: Cultural Resources Report for the Balance of the Amended Route for Proposed Construction of Texas Gas Transmission Corporation's Bedford-Indianapolis 20-Inch Pipeline: Brown, Bartholomew, and Johnson Counties. WAPORA, Inc., Cincinnati, OH.

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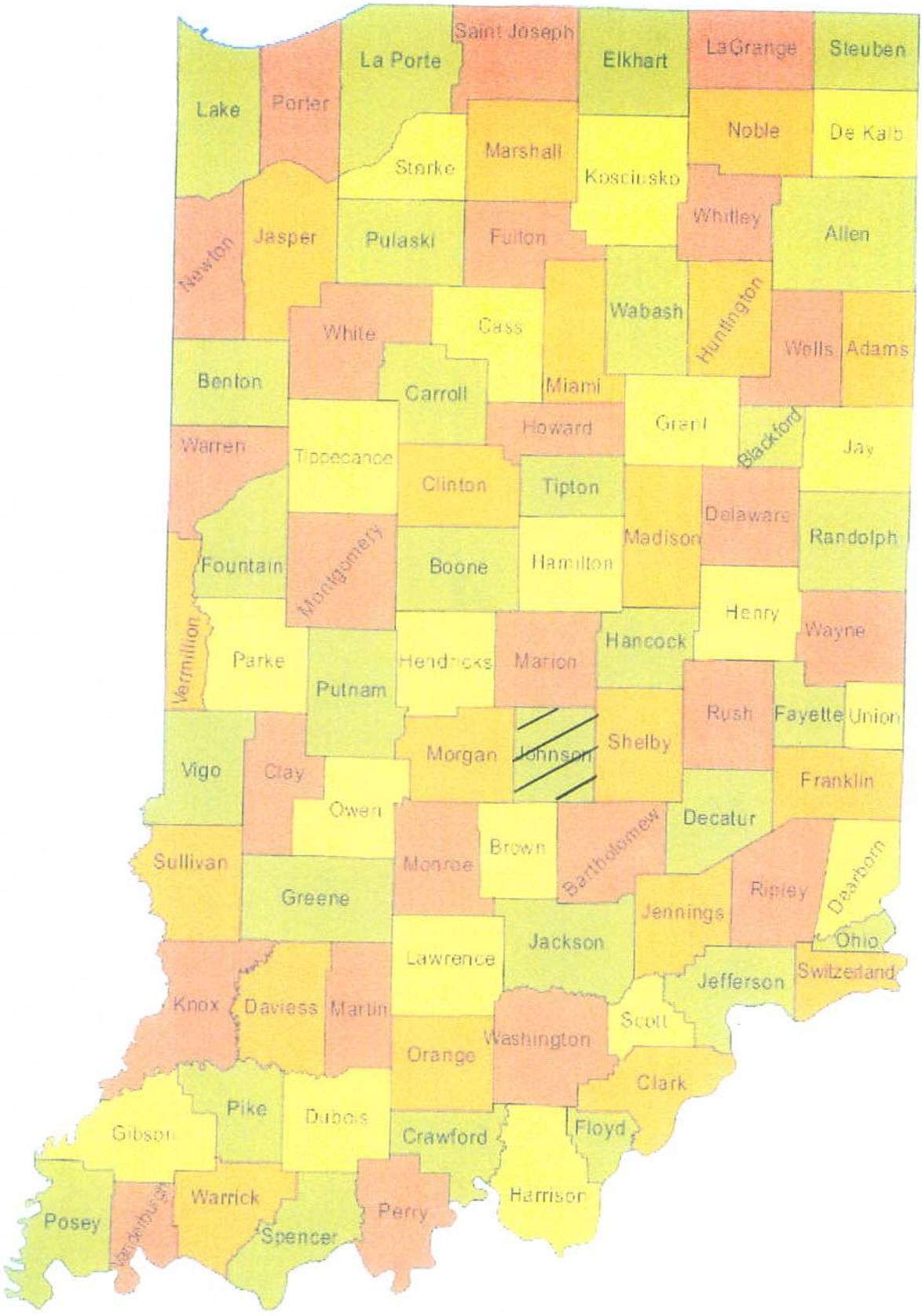

Figure 1. Location of Johnson County within the State.

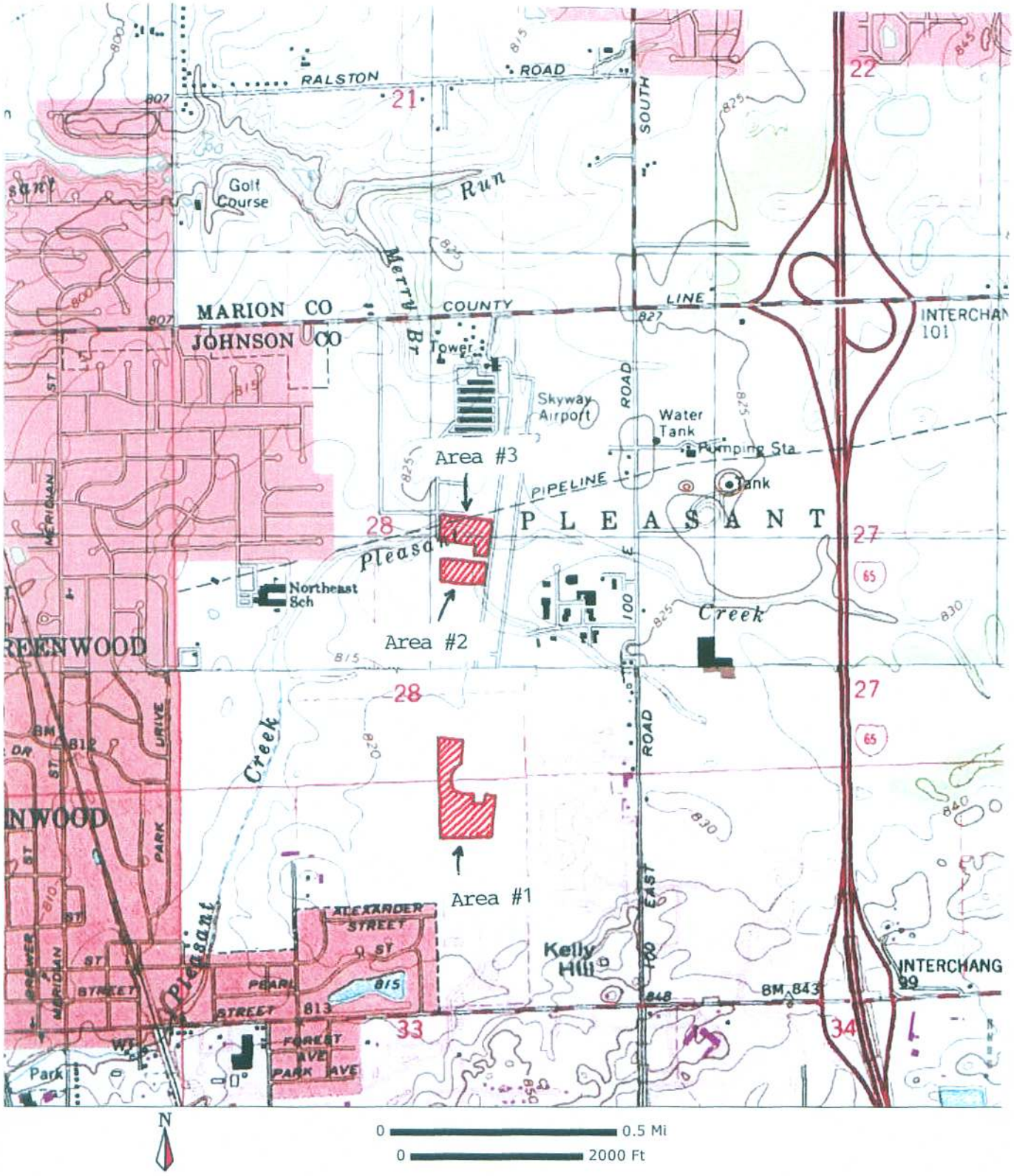

Figure 2. Location of the project areas as shown on the Greenwood and Beech Grove, Indiana USGS 7.5' Quadrangle.

Figure 3. Aerial Map of the Survey Areas.

Phase I Architectural Evaluation of the Proposed Apron Expansion Project Site within the Indy South Greenwood Airport in the City of Greenwood, Pleasant Township, Johnson County, Indiana

Final report prepared by:

Alliance Archaeology Services, Inc.

Helping to make the past

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Final report date:

November 27th, 2019

Reports of Investigations 19FR08

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Phase I Architectural Evaluation of the Proposed Apron Expansion Project Site within the Indy South Greenwood Airport in the City of Greenwood, Pleasant Township, Johnson County, Indiana

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Abstract

In response to a request from Hanson Professional Services, Inc., Alliance Archaeology Services, Inc. has completed a phase I architectural evaluation of the proposed apron expansion project site within the Indy South Greenwood Airport in the City of Greenwood, Pleasant Township, Johnson County, Indiana.

The phase I architectural survey was conducted on October 11th, 12th and 13th, 2019, by Nikki A. Waters, M.A., RPA under the supervision of Jessie A. Ravage, M.A. Ms. Ravage has been accepted as a 36 CFR Part 61 qualified architectural historian by the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology. The phase I survey included a combination of historic map research, reference material review, informal on-site interviews, field evaluation and photo documentation.

Project Description

The proposed project calls for expanding the existing apron within the Indy South Greenwood Airport and adding additional apron lighting. This survey evaluates the potential visual impacts of this additional lighting.

The Indy South Greenwood Airport is bordered to the north by a mix of commercial and medical complexes along County Line Road, to the east by a mix of commercial, medical and residential properties along Emerson Avenue, to the south by agricultural land and additional commercial, medical and residential properties fronting the highways, and to the west by additional agricultural land and residential subdivisions. All commercial and medical complexes are less than 20 years old, but the residential subdivisions are generally older with some developments now older than 50 years. All areas reviewed lie in Pleasant Township in Johnson County. Perry Township in Marion County borders the areas reviewed on the north.

The proposed apron expansion and construction staging areas are within and adjacent to existing airport structures and lighting. The current work scope was defined as an evaluation of the visual impact this expansion and additional required lighting will have on surrounding properties, including any properties already listed on or potentially eligible for nomination to either the *National Register of Historic Places* (NRHP) and/or the Indiana *Historic Sites and Structures Inventory* (IHSSI).

Project Location

The project area is located within the grounds of the Indy South Greenwood Airport in Pleasant Township, Johnson County, Indiana. This area is to the immediate south of the border with Perry Township in Marion County (Figure 1), specifically in the east half of Section 28, Township 14N, Range 4E as shown on the U.S.G.S. Beech Grove, Indiana quadrangle (Figure 2).

The APE lies in a generally level area. Its strongly rectilinear spatial organization laid out in the mid-1800s provides the framework that informs the structure of almost all subsequent development of the landscape. Main highways follow the range and section lines, with Emerson Road (CR 100 East) running north-south and County Line Road and CR 950 running east-west. A railroad runs northwest-southeast to the west of the project area. Until the mid-1900s, the APE was entirely agricultural, and some land remains in cultivation. A handful of buildings predating the mid-1900s survive, but areas along the main highways feature considerable post-war development. These include residential subdivisions and a variety of commercial and medical developments facing County Line Road, Emerson Avenue and CR 950. The Indy South Greenwood Airport (formerly the Greenwood Municipal Airport) opened in September of 1947 south of County Line Road and west of Emerson Avenue.

The APE was defined as any location from which the existing airport and associated lighting could be viewed. Figure 3a shows the overall project area within the airport and Figure 3b shows details of the proposed apron expansion. Historic maps of the project area and APE (Appendix A) are provided as figures 4 through 6. Google aerial maps of the project area and APE (Appendix B) are provided as figures 7 through 14. Figure 15 shows the location and orientation of all project photographs. These photographs are provided in Appendix C.

Figure 1. General location of the project area within Indiana.

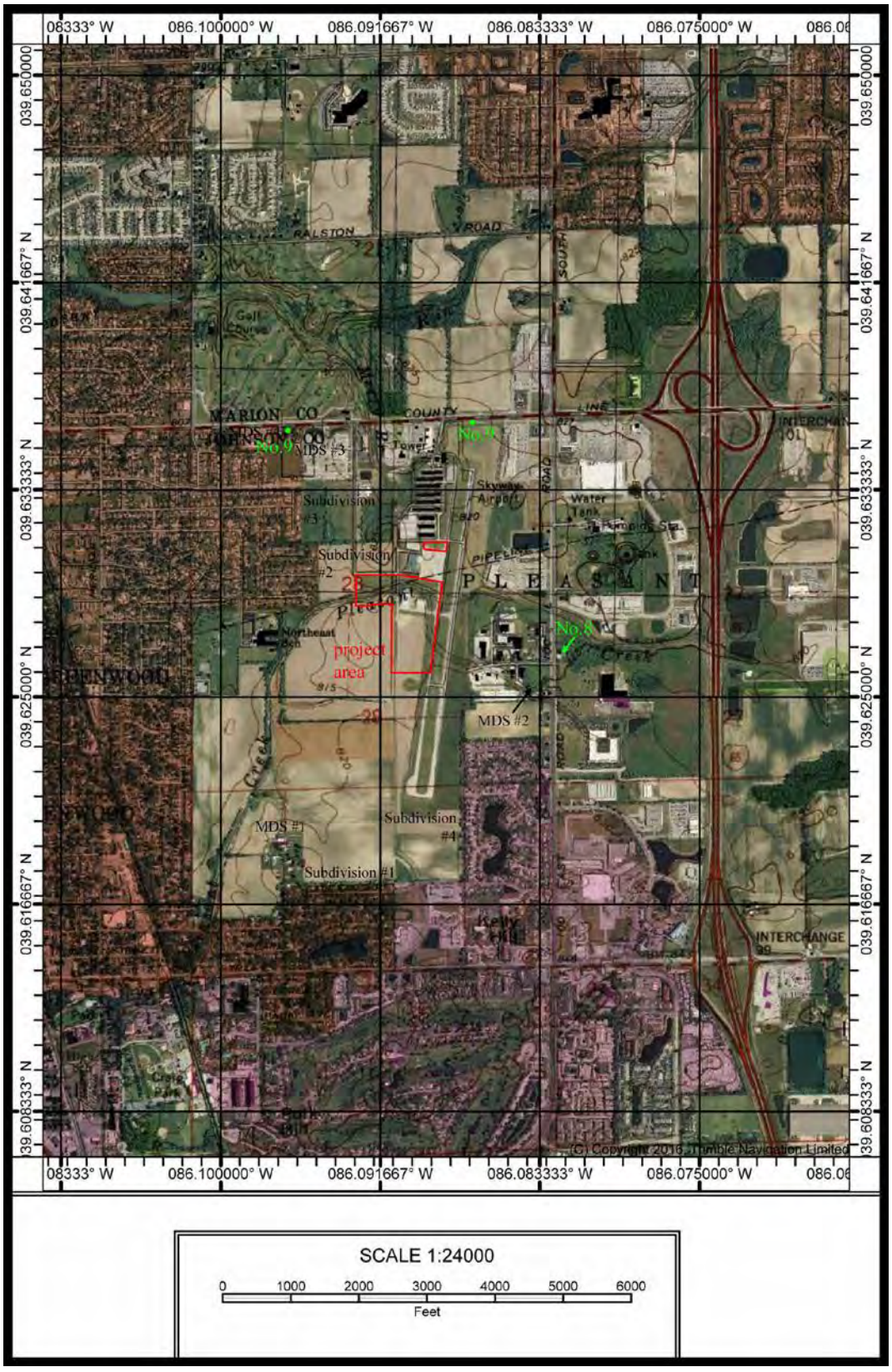

Figure 2. Location of the project area as shown on a portion of the USGS 7.5' Beech Grove, Indiana quadrangle.

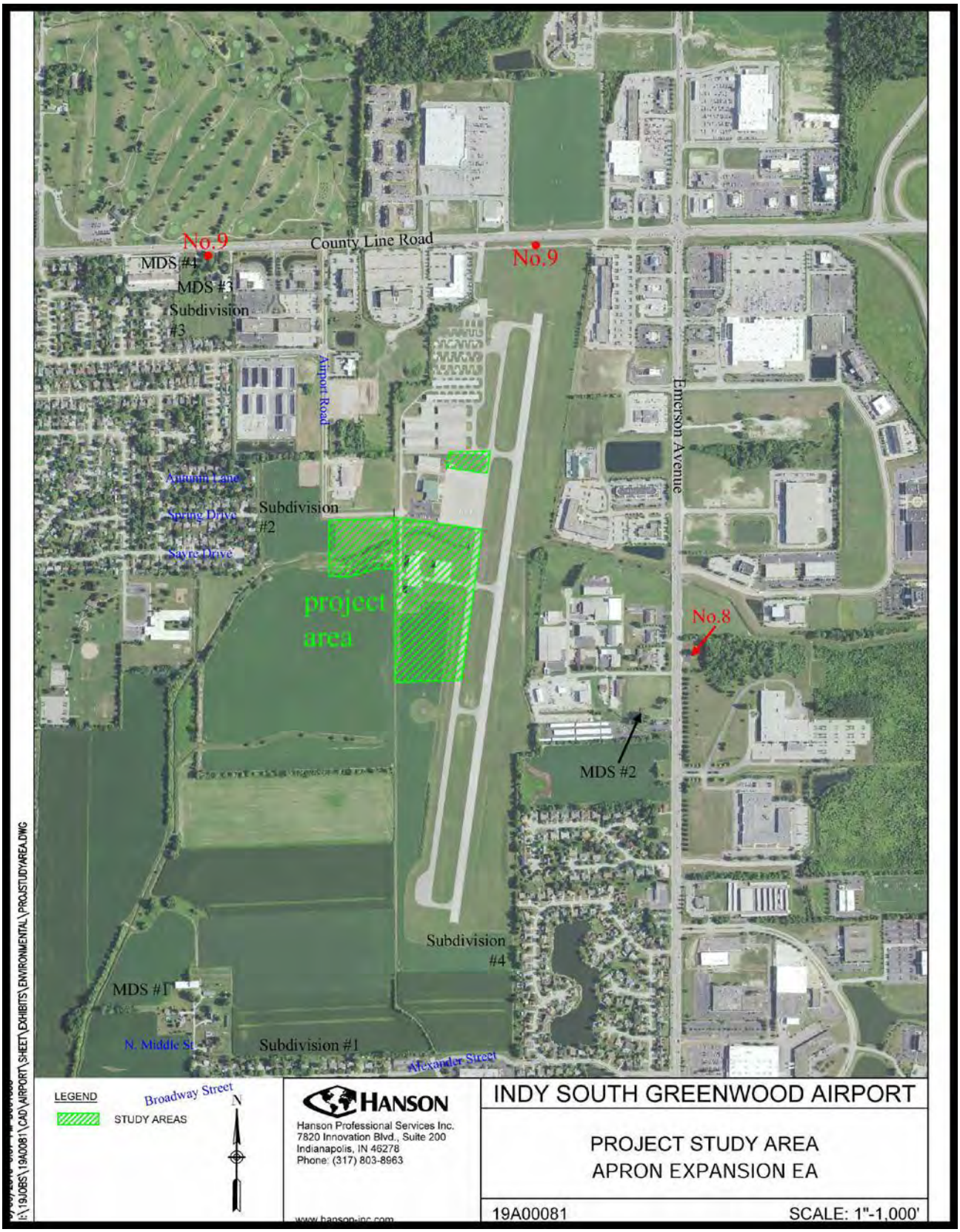

Figure 3a. Location of the project area (Adapted from a base map provided by Hanson Professional Services, Inc.).

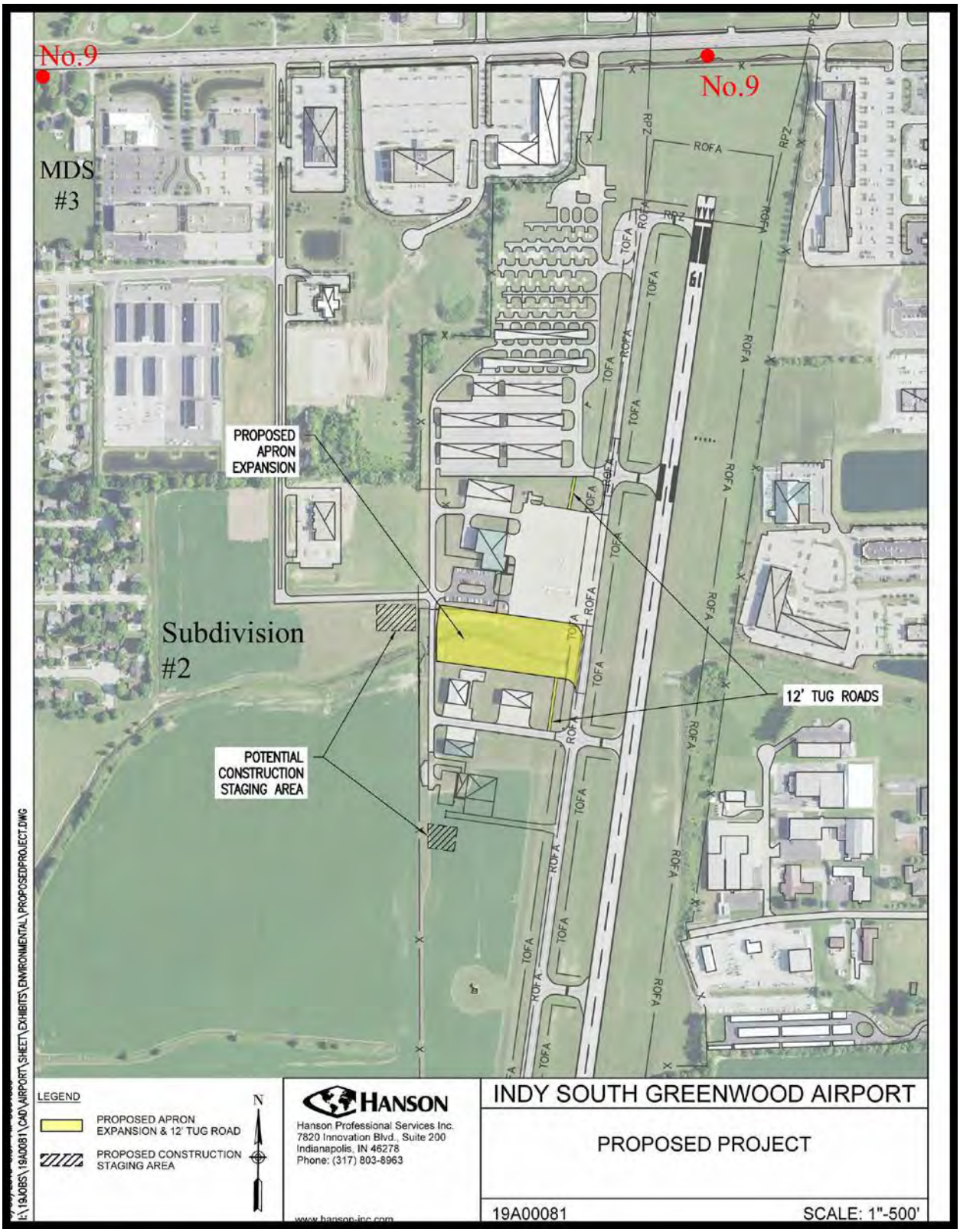

Figure 3b. Details of the proposed apron expansion project (Adapted from a base map provided by Hanson Professional Services, Inc.).

Literature Review

Evaluated files included the currently available NRHP and IHSSI records, as well as the Indiana *State Register of Historic Sites and Structures* (IRHSS) files. The *Johnson County Interim Report* (1985) for Pleasant Township and the Indiana *Historic Buildings, Bridges and Cemeteries Map* (SHAARD) were also evaluated. A search was also made for any listed or eligible properties within the adjacent portions of Perry Township. All of these records were accessed through the Indiana *State Historic Architectural and Archaeological Research Database* (SHAARD).

The previously recorded Greenwood Commercial Historic District (06001-031) and the Greenwood Scattered Sites (07001-032) located about one mile to the southwest are far enough away from the proposed project area and screened by intervening building and vegetation to not be included in the APE. No further architectural evaluation of these resources was conducted.

This review indicated that one contributing property (Site #081-041-05009) (No. 9) may be within or just west of the northern portion of the existing airport on the south side of County Line Road. (Different mapping episodes are difficult to align completely.) A second contributing property (Site #081-041-05008) (No. 8) is outside the existing airport, but within the APE on the east side of Emerson Road (Figure 2).

The interim report (1985) identified Site #081-041-05009 (No. 9) as a circa 1890 house located on the south side of County Line Road, but SHAARD records that it was demolished by 1985. Before that it was listed in unaltered but fair condition. SHAARD located the house ¼ mile west of CR 100 East. This location would place it within the northern portion of the existing airport (figures 3a and 3b), but, the township map presented in the county interim report shows it slightly farther west. Both possible locations are shown on all figures and were further evaluated in the field for any remaining structural indications. Although older outbuildings (MDS #s 3 and 4) stand near a newer residential property within the westernmost proposed location (Appendix C, Photographs 128 to 135), no indications remain within the northern portion of the airport property. Thus, no further architectural evaluations of Site #081-041-05009 were conducted.

Site #081-041-05008 (No. 8) is identified in the interim report as School House No. 2 constructed circa 1880. SHAARD lists this resource as Notable. As of 1985 it was in slightly altered but good condition and used as a private residence. At the time of the current evaluation this property was still extant and housed a business. As a result, further architectural evaluations were conducted.

The evaluations of these two properties are presented in the *Survey Results* section.

Survey Methodology

The current project plan at the Indy South Greenwood Airport calls for expanding the existing apron and adding more apron lighting. The survey methodology in this report focused on evaluating potential visual impacts. First, the APE was defined as any area visible from the existing airport and any area from which the airport could be seen. Historic maps and Google aerial maps were then evaluated to aid in the identification of any resources 50 years or older within this area. Daylight photographs were taken of the specific project area (Appendix C, Photographs A1 to A37), as well as photographs looking towards the project area from and within the surrounding APE (Appendix C, Photographs 1 to 163). Informal interviews with three local residents within Subdivision #2 were also conducted to obtain their opinion of the existing airport lighting in relation to their property and neighborhood. The APE was also evaluated at night to determine the visibility of the current apron lighting and assess the potential for additional lighting to reach and/or impact these areas.

Survey Results

Historic Map and Google Aerial Review

A summary of the resources within the APE is provided in Table 1. A narrative description of the overall development of this area from circa 1820 to 2018 is provided below.

Table 1: Surveyed Historic Resources within the APE					
County Survey #	*Identification*	*Approx. Date*	*Other #s*	*Status*	*Eligibility*
Site #081-041-05008	School House #2	circa 1880	No. 8	in use as a business	Notable
Site #081-041-05009	House	circa 1890	No. 9	demolished by 1985	---
Map-documented Resources	*Identification*	*Approx. Date*	*Other #s*	*Status*	*Eligibility*
North end of Middle Street	farmstead	early 20th cent.	MDS #1	in use as a residence	unknown
Southwest of School House	large shed	early 20th cent.	MDS #2	in use for storage	unknown
South of County Line Road	barn	early 20th cent.	MDS #3	in use for storage	unknown
South of County Line Road	Small shed	early 20th cent.	MDS #4	in use for storage	unknown
Residential Subdivisions	*Approx. Date of Initial Construction*		*Other #s*		*Eligibility*
South of airport	By 1958		Subdivision #1		unknown
West of airport	Between 1958 and 1966		Subdivision #2		unknown
West of airport	Between 1972 and 1992		Subdivision #3		unknown
Southeast of airport	Between 1972 and 1992		Subdivision #4		unknown

The map showing features built between 1820 to 1900 and the 1880 Johnson County historic map (figures 4 and 5) show no details of the project area or APE, but they do show the location of School House #2 (Site #081-041-05008; No. 8).

The 1953 topographic map (Figure 6) shows School House No. 2 and a house associated with an unimproved access road north of the project area. Both buildings are now encompassed by the current grounds of the airport. Based on location, the latter may be the house identified as Site #081-041-05009. Two of the MDS (#s 1 and 2) which were noted during the field survey within the APE were also identified on the 1953 map. A farmstead southwest of the project area (MDS #1) at the northern terminus of Middle Street is delineated. Buildings possibly related to the large shed (MDS #2) on the west side of Emerson Avenue southwest of School House #2 (No. 8) are also shown (Figure 6). Although another building is also shown northwest of the intersection of CR 950 North and Emerson Avenue (southeast of the airport property), by the time of the current field evaluation, this structure was not extant. Although scattered properties were surveyed along County Line Road and Emerson Avenue for the 1953 map (Figure 6), there were no major subdivisions or developments at that time.

A 1956 aerial photograph (no copies of this image available for figure production) shows significant residential development south of the APE along CR 950 North, as well as to the south and west along the west side of the railroad. A strong residential presence is also shown at the intersection of the roads. Land north and east of the APE was all agricultural. The residential property and associated access road located in the northern portion of the airport property is shown, as is a building at the potential western location of Site #081-041-05009. Structures are also shown at the sites of MDS #s 1 and 2. A building, presumably School House No. 2, stands at that site. Otherwise, development along County Line Road and Emerson Avenue is minimal: the area is mainly agricultural.

In 1958 (no copies of this map available for figure production), no new development was yet shown along County Line Road or Emerson Avenue. There were, however, two new residential subdivisions under construction. One was located on the north side of CR 950 North (Subdivision #1); the second was east of the railroad. The latter subdivision is of sufficient distance to not be included in the current APE. All previously mapped historic resources were still extant.

By 1966 (no copies of this map available for figure production), Subdivision #1 was extended northward to its current configuration. The area to the east was still shown as agricultural land. The subdivision east of the railroad was expanded north and east into the current APE (Subdivision #2). The Greenwood Northeast Elementary School was built in the interim. Although no new development is shown along Emerson Avenue, scattered new structures were shown along County Line Road to the west of the airport.

By 1972 (no copies of this map available for figure production), no new subdivisions were platted, but the existing subdivisions (#s 1 and 2) have been filled in. All previously mapped resources were still extant.

By 1992 (Figure 7), the subdivision south of County Line Road and east of the railroad (Subdivision #3) was platted. Although the northern portion of Emerson Avenue largely remained undeveloped, Subdivision #4 on the west side of the avenue southeast of the airport is laid out. Infill development stretches along County Line Road, and Subdivision #2 has been extended east. Details of the existing airport are also shown, as are the locations of MDS #s 3 and 4 (Figure 7).

In 1999 (Figure 8), development within the subdivisions and along County Line Road and Emerson Avenue remained consistent with 1992. The airport runway, however, was altered to its current configuration by this date. Southeast of the airport, there is new commercial development northwest of the intersection of CR 950 North and Emerson Avenue.

By 2003 (Figure 9), additional commercial development is shown along County Line Road and Emerson Avenue to the north and east of the airport. In 2005 (Figure 10), such development continued expanding, especially along the intersection of County Line Road and Emerson Avenue. Further infill is shown in 2008 (Figure 11) and 2014 (Figure 12) mapping. Additional commercial and residential development is shown directly north of the airport by 2016 (Figure 13). Still further commercial and medical infill along Airport Road is shown in 2018 (Figure 14).

Table 1 above summarizes the findings of the map review in terms of eligibility. The potential impact of additional light proposed in the project based on the maps follow. Residential properties in four subdivisions opened between 1958 and 1992 might be affected by the new apron lighting. Subdivisions #1 and #2 were developed before 1972 and may contain potentially eligible resources or may count as eligible neighborhoods. Subdivisions #3 and 4 were developed between 1972 and 1992. The maps also show that the surrounding large-scale commercial and medical complexes were developed mainly between 2003 and 2018 (figures 9 to 14). These properties include significant lighting elements of their own and are a moderating factor on the impact of the proposed additional airport lighting. While Site #081-041-05009 was demolished sometime prior to 1985, Site #081-041-05008 is extant and currently houses a business. It is listed as Notable and may be NRE. The map review shows considerable commercial development lies between this resource and the airport project area, and the lighting associated with these commercial properties is a moderating factor on the impact of the proposed apron expansion on this potentially NRE resource.

Field Survey

Field evaluation of the airport project area was conducted on October 11th, 2019. Photographs were shot of the proposed apron expansion and construction staging areas as well as of the existing lighting. Line of sight between the project area and the surrounding APE was also noted and photographed (Appendix C; Photographs A1 to A37). Following this evaluation, the surrounding subdivisions and commercial/medical complexes were evaluated and photographed between October 11th and October 13th. Line of sight was noted for each area, as well as the presence of intervening vegetation or topography. When possible, residents of the subdivisions were interviewed informally. These interviews were initiated by the residents, who commented on the impact of the airport on their daily lives. Nighttime visits and photography further evaluated the visibility of the existing airport lighting, especially in relation to the surrounding commercial/medical complex lighting. A summary of the results of these investigations by area is provided below.

Airport Project Area

The project area consists of a large section for the proposed apron expansion, two smaller construction staging areas, and two 12-foot-wide tug roads (figures 3a and 3b). Existing apron lighting within this area (Appendix C; Photographs A34 to A37) is directed east and downwards towards the present aprons. The additional apron lighting will follow the same configuration. There is additional airport lighting visible from all directions. Visibility towards and from the airport is moderated by distance, screening vegetation in the form of hedges and tree rows, and also by existing commercial and medical buildings. Although active agricultural land borders the airport to the west and south, topography is only slightly rolling and generally not a limiting factor on visibility. The only exception is to the southwest of the airport, where the land becomes more rolling. When the project area was re-evaluated at night, the existing apron lighting was extremely bright when viewed straight on (even from a distance), but was overwhelmed by the remaining airport lighting when viewed from the sides or rear. This suggested that the

greatest visual impacts for any additional lighting would be to the east of the existing airport along Emerson Avenue. As this area contains Site #081-041-05008, further evaluations of this potential were conducted.

County Line Road

This portion of the APE lies directly north of the project area. At the time of the current evaluation, this was a densely developed commercial corridor with numerous businesses, medical complexes and post-2000 residential complexes. Although Site #081-041-05009 was present within this area, SHAARD lists this structure as demolished and no surface indications of this resource were identified within the northern portion of the airport. Instead, this area has been substantially re-worked by modifications to County Line Road, the installation of a sidewalk, and fencing and landscaping related to the airport. Although older outbuildings (MDS #s 3 and 4) which could be related to Site #081-041-05009 were noted slightly further to the west, this area is screened from visible impacts from the airport by an extensive commercial/medical complex. Although the nighttime re-evaluation indicated that airport lighting was visible from County Line Road, this area is also strongly lit by the existing commercial lighting and perceived impacts from the additional apron lighting should be minimal. Although the new apron lighting will be most visible within this area from the intersection of County Line Road and Emerson Avenue, this intersection has been heavily commercialized, and perceived impacts from the proposed apron lighting within this area should also be minimal. Photographic documentation of this area is provided in Appendix C.

Emerson Avenue

This portion of the APE lies directly east of the project area. At the time of the current evaluation, the northern portion of the avenue as it approaches County Line Road was a densely developed, post-2005 commercial corridor. However, the central and southern frontages of this avenue incorporate a residential subdivision opened between 1972 and 1992. This subdivision (#4) is discussed in more detail below.

Site #081-041-05008 (School House #2) still stands within this area, but it is screened from the current project area by a large commercial complex. A full exterior photographic record of this resource at the time of the current evaluation is provided in Appendix C (Photographs 144 to 163). The existing apron lighting is visible from the west side of this commercial complex, but no airport lighting was visible from the location of the school house during the nighttime evaluation. Instead, all lighting visible from this location was related to the existing commercial complexes facing this section of Emerson Avenue. SHAARD identifies this schoolhouse as Notable and therefore potentially NRE, but the proposed apron expansion will not increase the light disturbance on this resource.

Likewise, although MDS #2 was identified to the southwest of School House #2, west of Emerson Avenue and south of Sayre Drive, it also is screened from proposed project impacts by existing commercial buildings. This resource was identified as a large, one-story, open-front shed with a saltbox roof, a concrete block lower portion and board-and-batten upper portion (Appendix C; Photograph 143). This MDS is on private property and could not be evaluated further, but it may be associated with an adjacent commercial property. At the time of this evaluation, the view from the road indicated that the shed was being used for storage. Because Emerson Avenue is lined by commercial properties, each already lit by its own system, the proposed increase in lighting for the apron will not perceptively increase the existing lighting impacts. Photographic documentation of this area is provided in Appendix C.

Subdivision #1

This residential subdivision is located south of the project area along Alexander, East Broadway and North Middle streets (Figure 8). The circulation pattern has multiple access roads, and the vegetation is a mature mix of deciduous trees and shrubs. Fencing is limited but trees and shrubs are present along the back lot lines facing the airport. Based on the historic map and aerial review, construction began circa 1958. Representative photographs of this subdivision are provided in Appendix C. The nighttime evaluation indicated that the existing airport and apron lighting are most visible along the eastern portion of Alexander Street directly south of the airport adjoining the west boundary of Subdivision #4.

Because a large medical complex with associated lighting is present along the south side of Alexander Street within this same area, and the houses further to the west are somewhat screened from the airport by vegetation

and low rolling topography, the proposed increase in lighting for the apron will not perceptively increase the existing lighting impacts.

The farmstead identified as MDS #1 (Table 1; Figure 8) is located in this area at the northern terminus of North Middle Street. The nighttime evaluation indicated that this farmstead is partially screened from the airport by slightly more rolling topography, and the lights most visible from this location were from the existing commercial complexes facing the west side of Emerson Avenue. While this farmstead and the subdivision are of sufficient age to be evaluated for the National and State registers, the proposed apron expansion and lighting should have a minimal impact on their eligibility because the proposed additional apron lighting will also be directed away from this farmstead.

Subdivision #2

This residential subdivision is located west of the project area and just north of the Greenwood Northeast Elementary School (Figure 8). This subdivision faces the airport and is the closest to the airport project area. It features multiple access roads terminating in cul-de-sacs within the development. It features a variety of mature vegetation of mixed deciduous trees and shrubs. Fencing is limited. Based on the historic map and aerial review, construction began circa 1966. Representative photographs of this subdivision are provided in Appendix C.

The daytime evaluation indicated clear and relatively unobstructed views of the airport from the eastern ends of Autumn Lane, Spring Drive and Sayre Drive, as well as from the elementary school (Figure 8). In an interview, a resident of Spring Drive said that the most obtrusive lighting came from the red and white light tower rather than the apron lighting (which faces east and away from this area) (Appendix C; photographs 5, 16a and 16b). This resident further remarked that people in the neighborhood use heavier curtains along their east-facing windows to minimize the light penetration. Other residents stated that the lighting around the medical building at the corner of Airport Road was more intrusive (Appendix C; photographs 17a and 17b). Some back property lines closest to the airport in other sections of this subdivision feature heavier screening vegetation of deciduous trees and shrubs. Consistent with the information gained during the interviews in this subdivision, the nighttime evaluation showed that the existing apron lighting was less visible here than that of other airport or commercial/medical complex lighting. This subdivision is old enough to be evaluated for the National and State registers, but the proposed apron expansion and lighting should have a minimal impact on its eligibility.

Subdivision #3

This residential subdivision is located immediately north of Subdivision #2 facing the south side of County Line Road (Figure 8). It features a cul-de-sac plan with a single north-south access road from County Line Road and a single east-west access road between Airport Road and N. Meridian Street. The vegetation is a mature mix of deciduous trees and shrubs. Fencing is limited. The westernmost potential location of Site #081-041-05009 (discussed above) adjoins this subdivision to the north. Based on the historic map and aerial review, this subdivision was opened between 1972 and 1992. Representative photographs of this subdivision are provided in Appendix C. Daytime evaluation indicated that views of the airport from this location are obstructed by the existing commercial and medical buildings to the immediate east, as well as by Subdivision #2 to the immediate south. While some properties within this subdivision may soon be of sufficient age for evaluation for the National and State registers, the proposed apron expansion and lighting should have a minimal impact on their eligibility.

Subdivision #4

This residential subdivision is located on the west side of Emerson Avenue southeast of the airport. It adjoins the northeast boundary of Subdivision #1 (Figure 8). It features a cul-de-sac plan centered on a large pond. Primary access points are from Emerson Avenue and Alexander Street. Mature deciduous trees and shrubs are densely planted on the side facing the airport. Vegetation within the remainder of the subdivision is more scattered, presumably to avoid obstructing views of the pond. Fencing is limited. Based on the historic map and aerial review, this subdivision was opened between 1972 and 1992. Representative photographs are provided in Appendix C. Daytime evaluation indicated that views of the airport from this subdivision are partially screened by vegetation along its west boundary. At the time of the nighttime evaluation, the current apron lighting was largely screened from this location by the existing deciduous vegetation, and the most substantial light impacts were from the large commercial complex immediately north of the subdivision. Thus, the properties most impacted by the current

project are located along the subdivision's northwestern border. Properties to the south and east will be screened by the existing buildings and vegetation. While some properties within this subdivision may soon be old enough to be evaluated for the National and State registers, the proposed apron expansion and lighting should have a minimal impact on their eligibility.

Summary and Recommendations

In response to a request from Hanson Professional Services, Inc., Alliance Archaeology has completed a phase I architectural evaluation of the proposed apron expansion project site within the Indy South Greenwood Airport in the City of Greenwood, Pleasant Township, Johnson County, Indiana. Although two resources listed within the county survey were identified within the APE (Site #s 081-041-05008 and 081-041-05009), Site #9 (a circa 1890 house) was demolished prior to 1985 and Site #8 (a circa 1880 school house) was found to be fully screened from the existing airport lighting by both distance and existing commercial complexes. Although the school house is identified as Notable, the lighting from the existing commercial complexes was found to prevent any lighting from the airport being discernable at this location. As a result, the proposed project should have a minimal impact on this Notable resource.

Likewise, although four MDS were identified during the map and field review, MDS #1 (a farmstead) was found to be mostly screened from the existing airport by topography, with the most visible light impacts coming from the existing commercial complexes along the west side of Emerson Avenue. MDS #2 (a large shed) was also found to be fully screened by existing commercial buildings and their associated lighting. MDS #s 3 and 4 were also found to be fully screened by the existing residential and commercial developments. Four residential subdivisions were also identified within the APE, but the most substantial lighting impacts are generated by existing commercial and medical properties. While the four MDS and four residential subdivisions are either of or close to sufficient age to be evaluated for the National and State registers, the proposed apron expansion and lighting project should have a minimal impact on their eligibility. As a result, no further architectural evaluations were conducted and project clearance is recommended.

References Cited

Beers, J.H. & Co.
1881 *Atlas of Johnson County, Indiana.* Chicago.

Google Earth
Historic aerials: 1992, 1999, 2003, 2005, 2008, 2014, 2016 & 2018.

Historic aerials of Greenwood, Indiana
1956, 1958, 1966 & 1972
https://www.historicaerials.com/

Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
1985 *Johnson County Interim Report*.

2019 SHAARD Database

U.S. Geological Survey
1953 Pleasant Township topographic map.

Appendix A: Historic Maps of the Project Area and APE

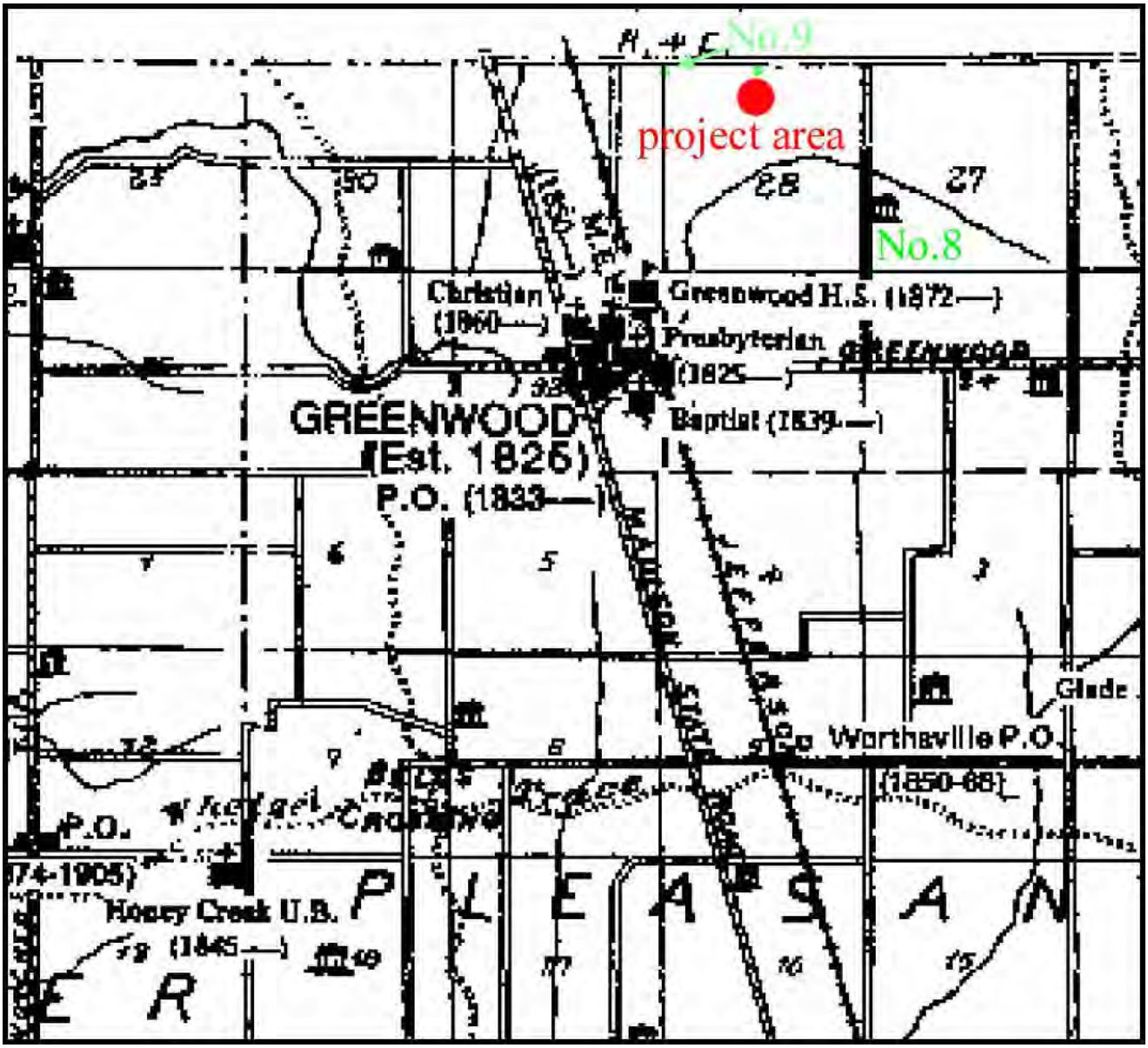

Figure 4. Location of the project area as shown on a portion of the 1820-1900 *Johnson County map.*

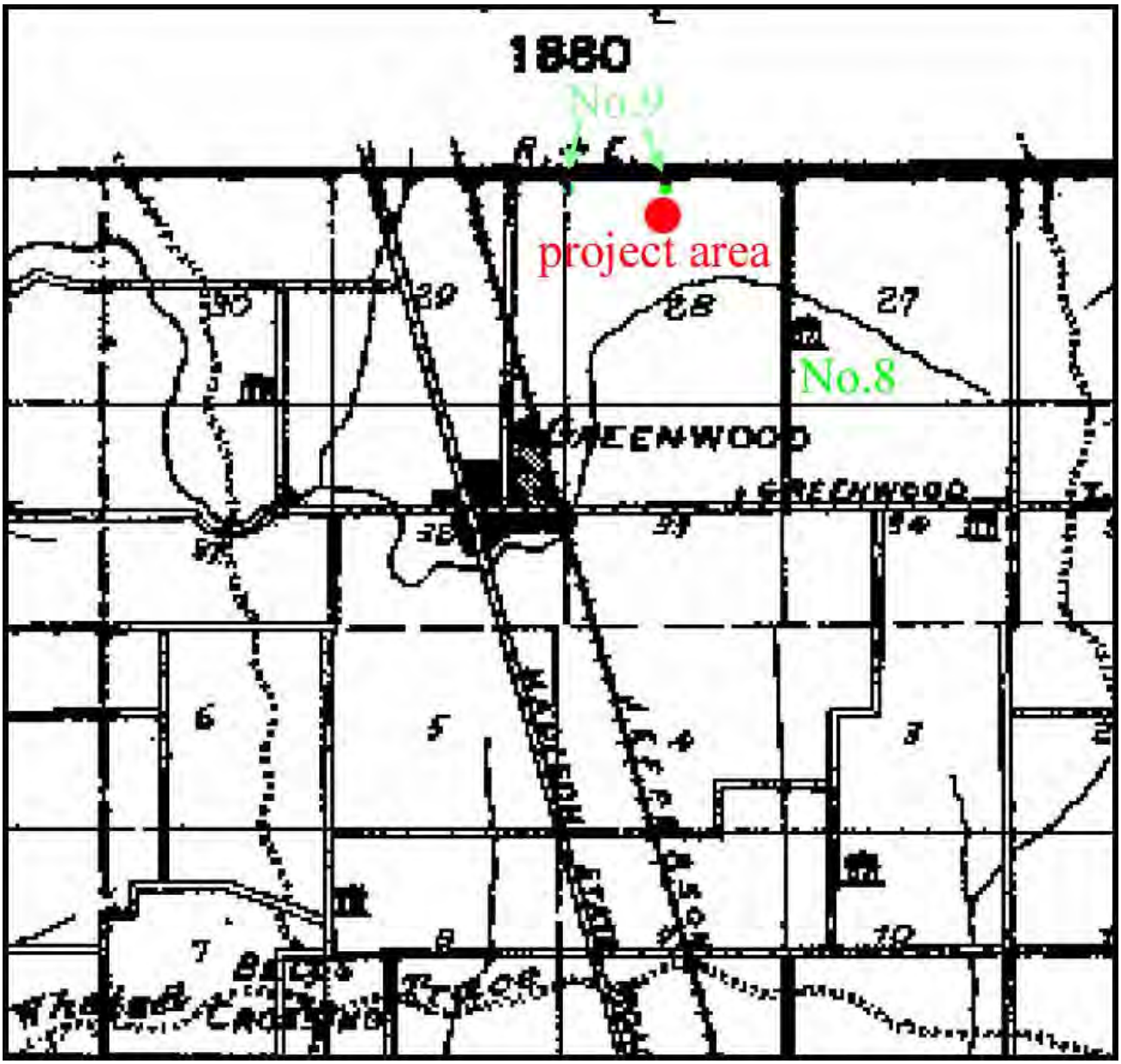

Figure 5. Location of the project area as shown on a portion of the 1880 *Johnson County map.*

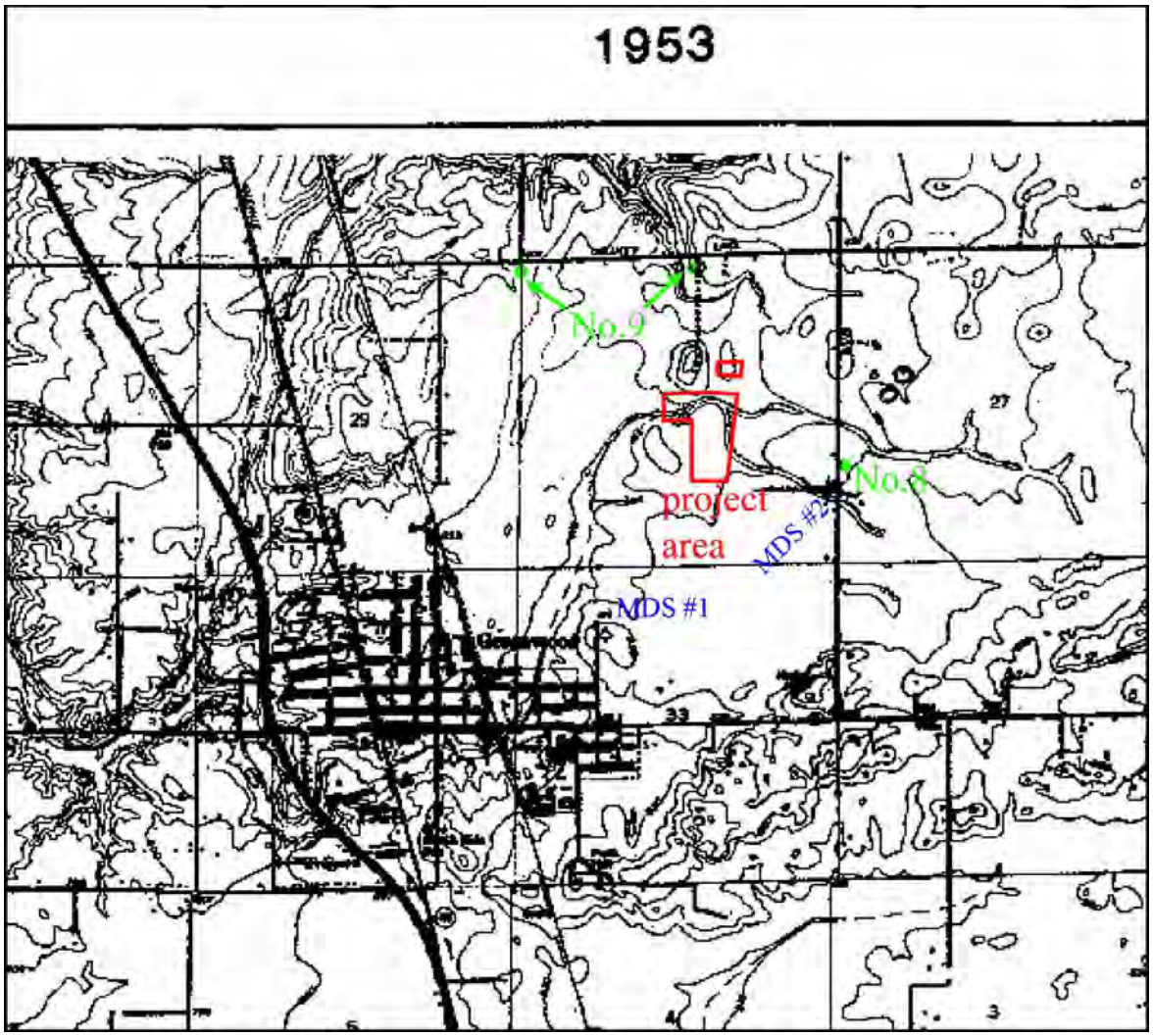

Figure 6. Location of the project area as shown on the 1953 Pleasant Township topographic map.

Appendix B: Google Aerial Maps of the Project Area and APE

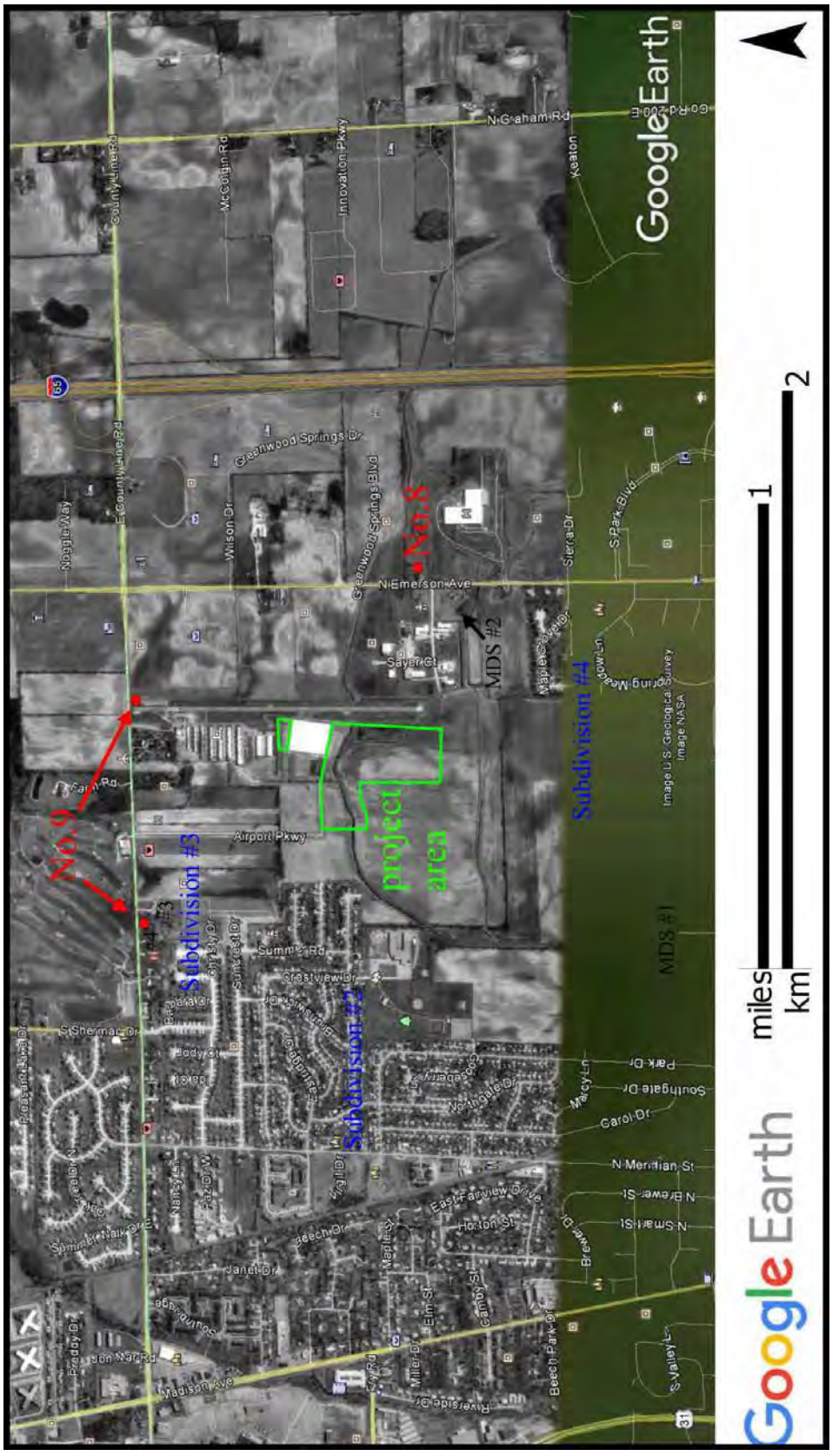

Figure 7. Location of the project area and APE as shown on the 1992 Google aerial map.

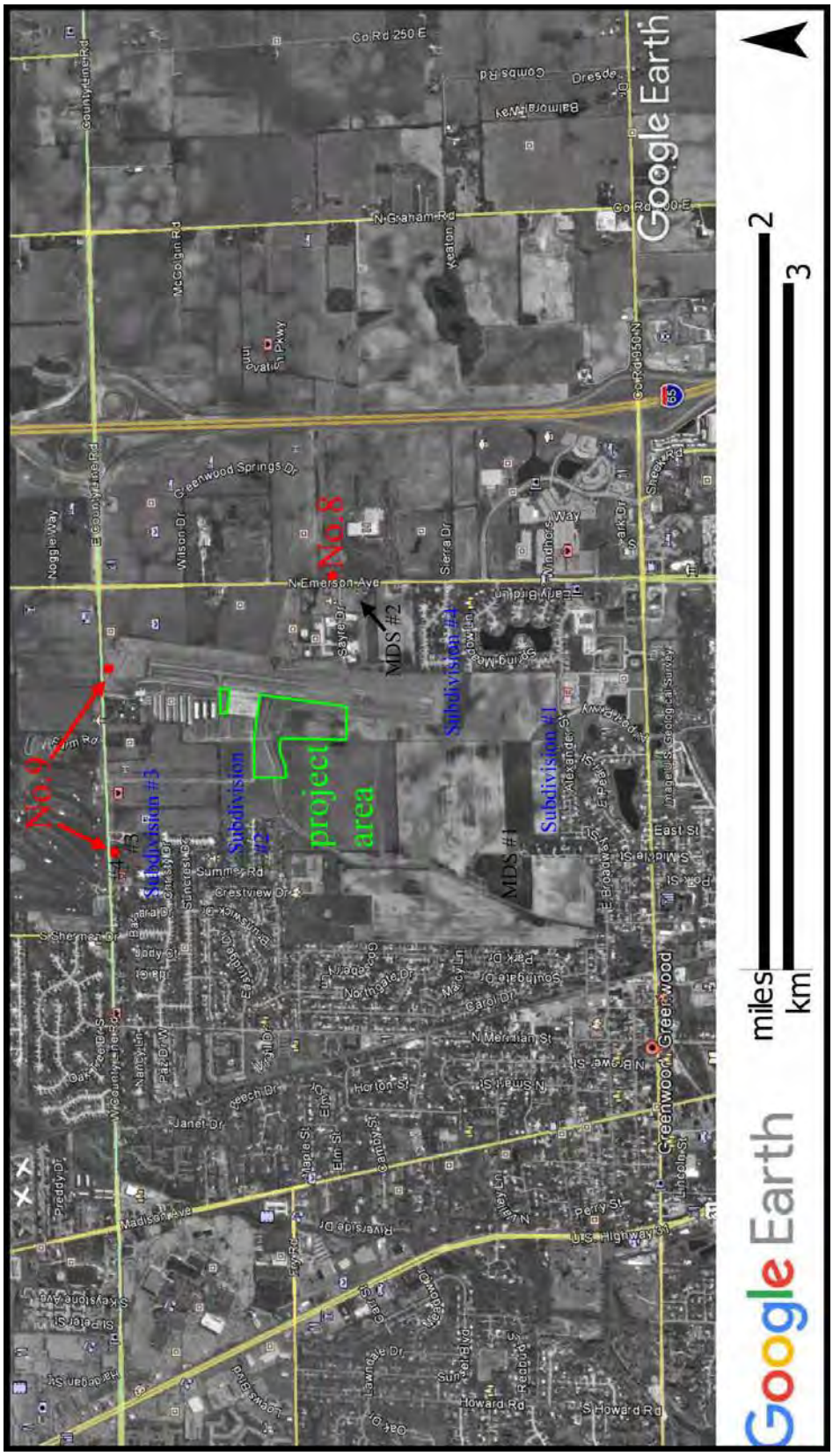

Figure 8. Location of the project area and APE as shown on the 1999 Google aerial map.

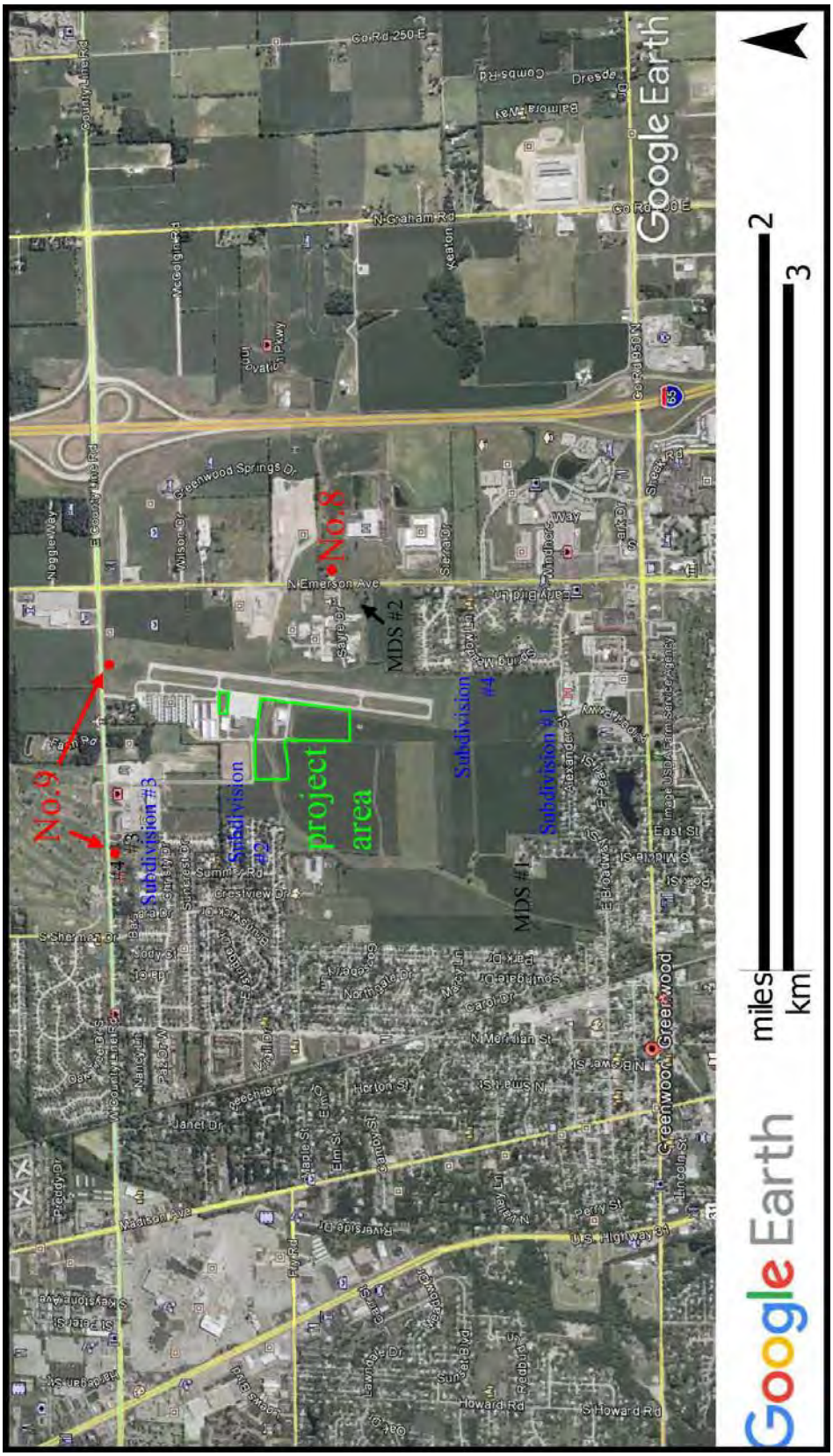

Figure 9. Location of the project area and APE as shown on the 2003 Google aerial map.

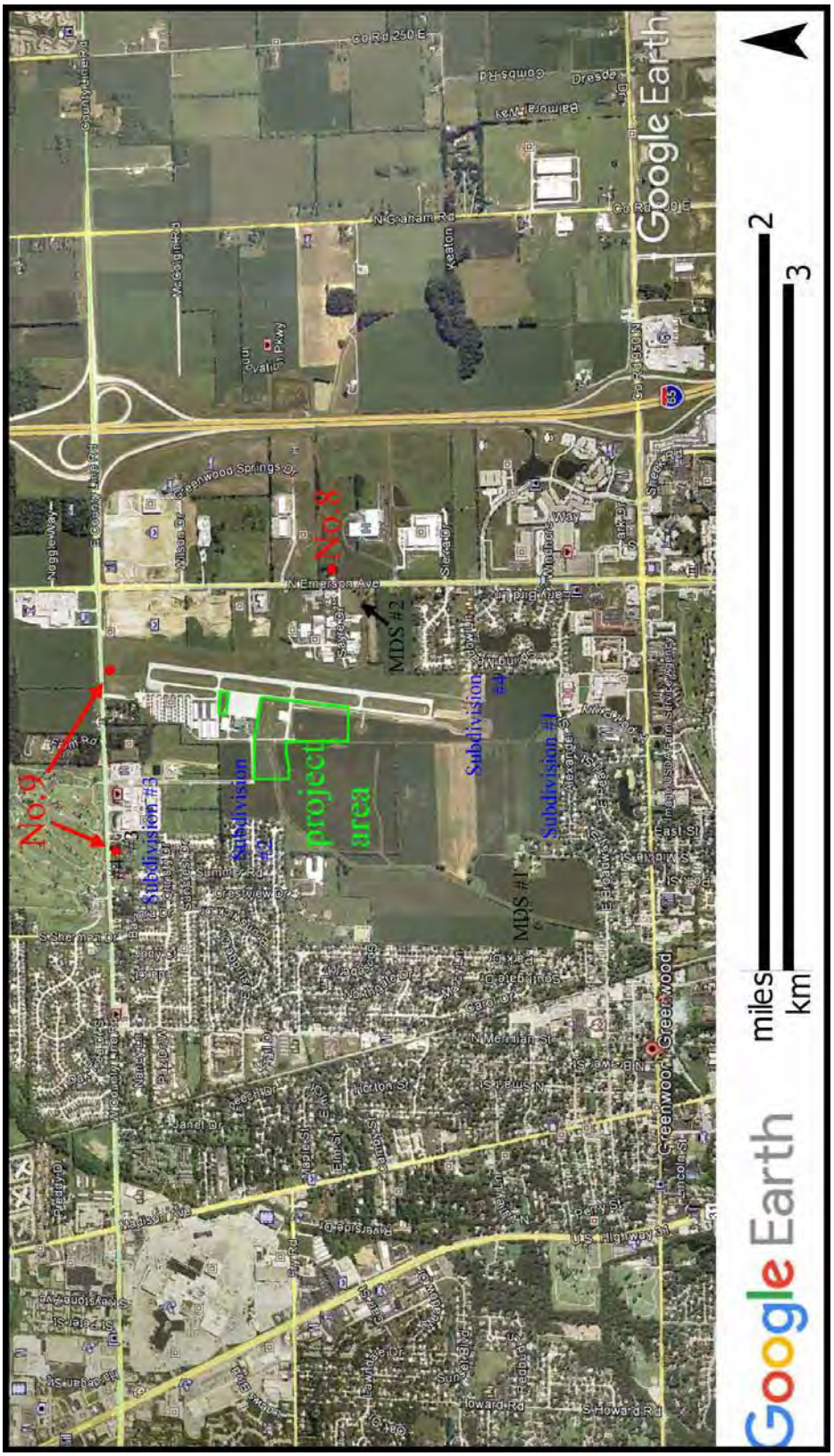

Figure 10. Location of the project area and APE as shown on the 2005 Google aerial map.

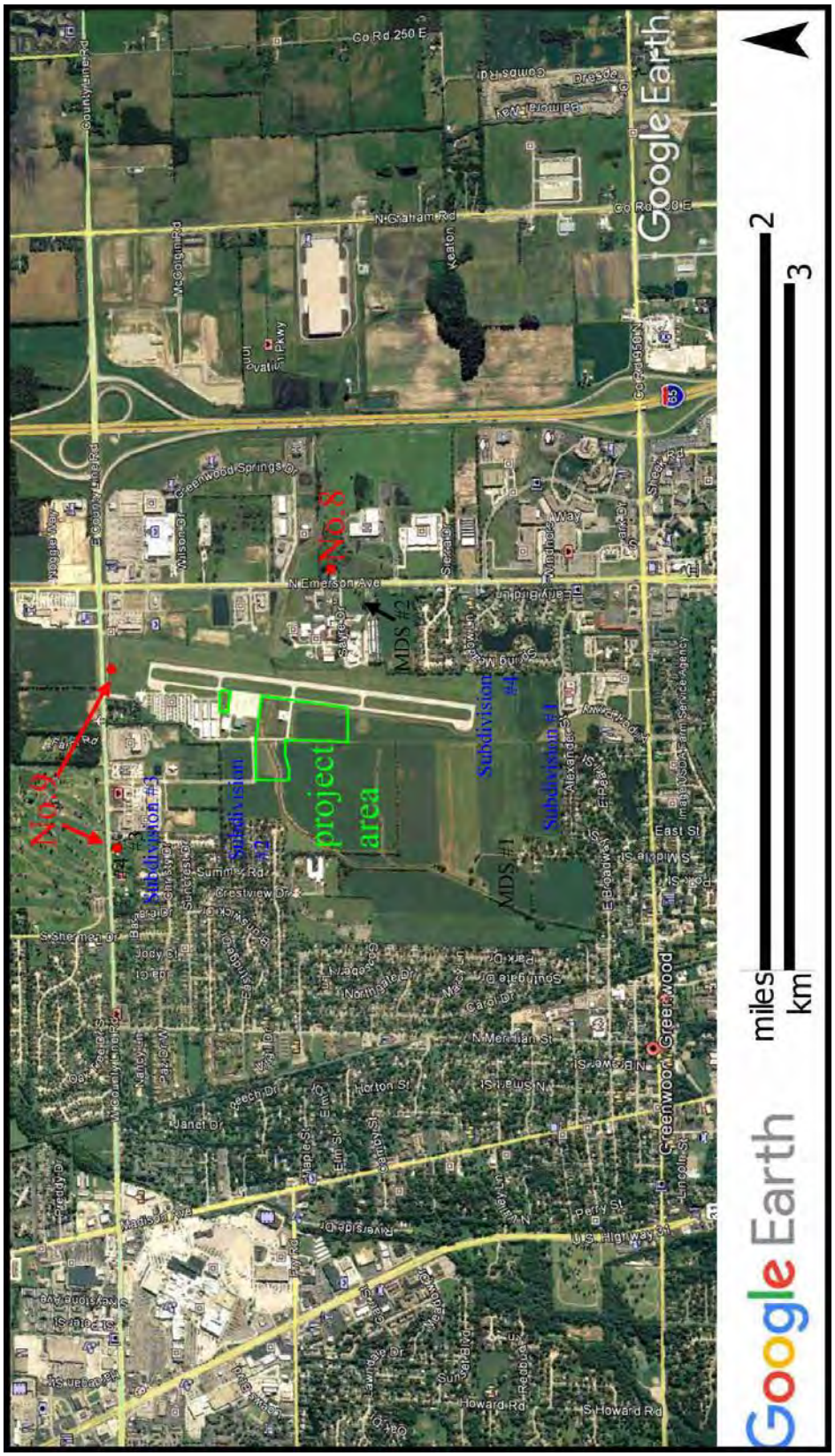

Figure 11. Location of the project area and APE as shown on the 2008 Google aerial map.

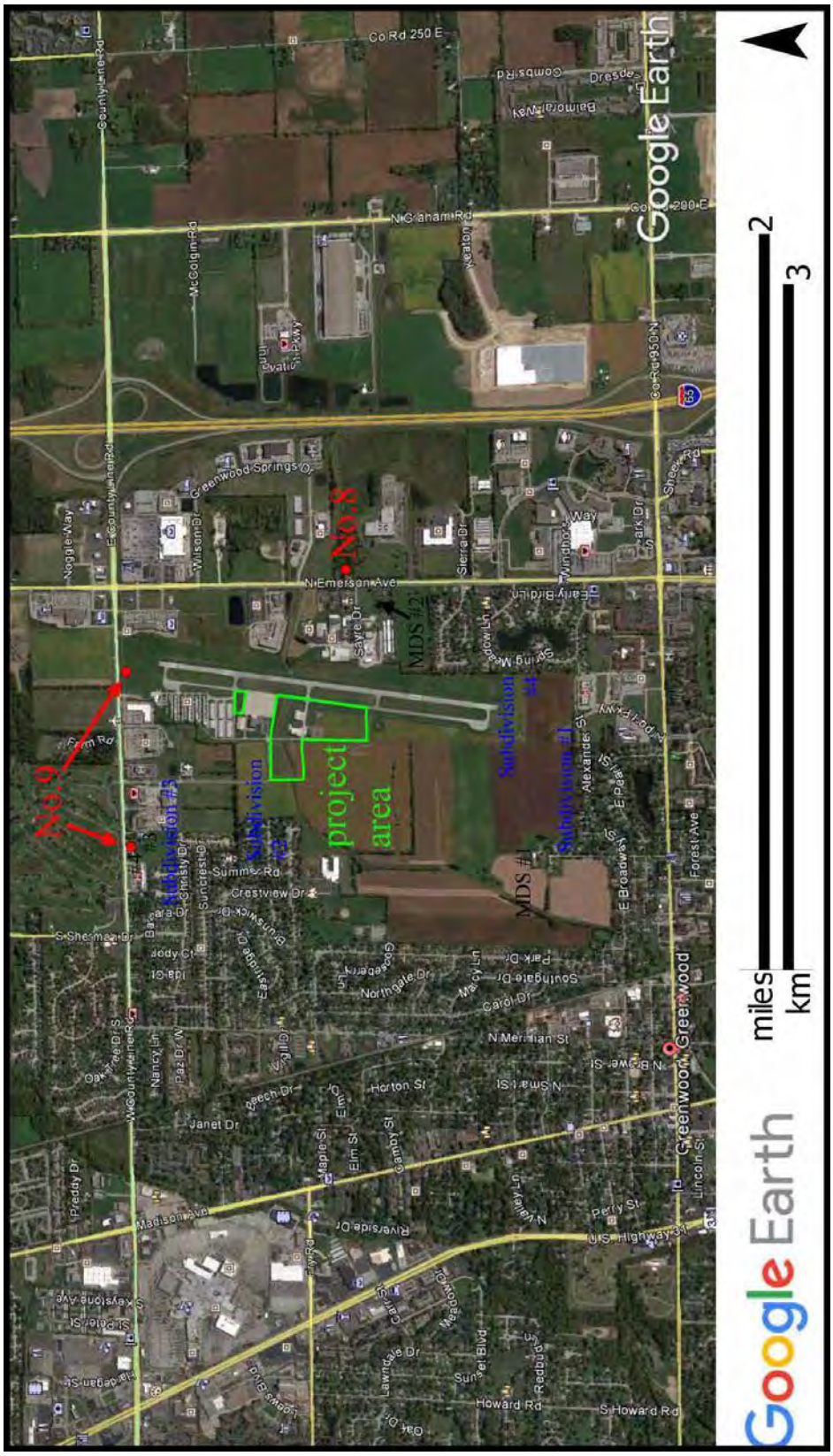

Figure 12. Location of the project area and APE as shown on the 2014 Google aerial map.

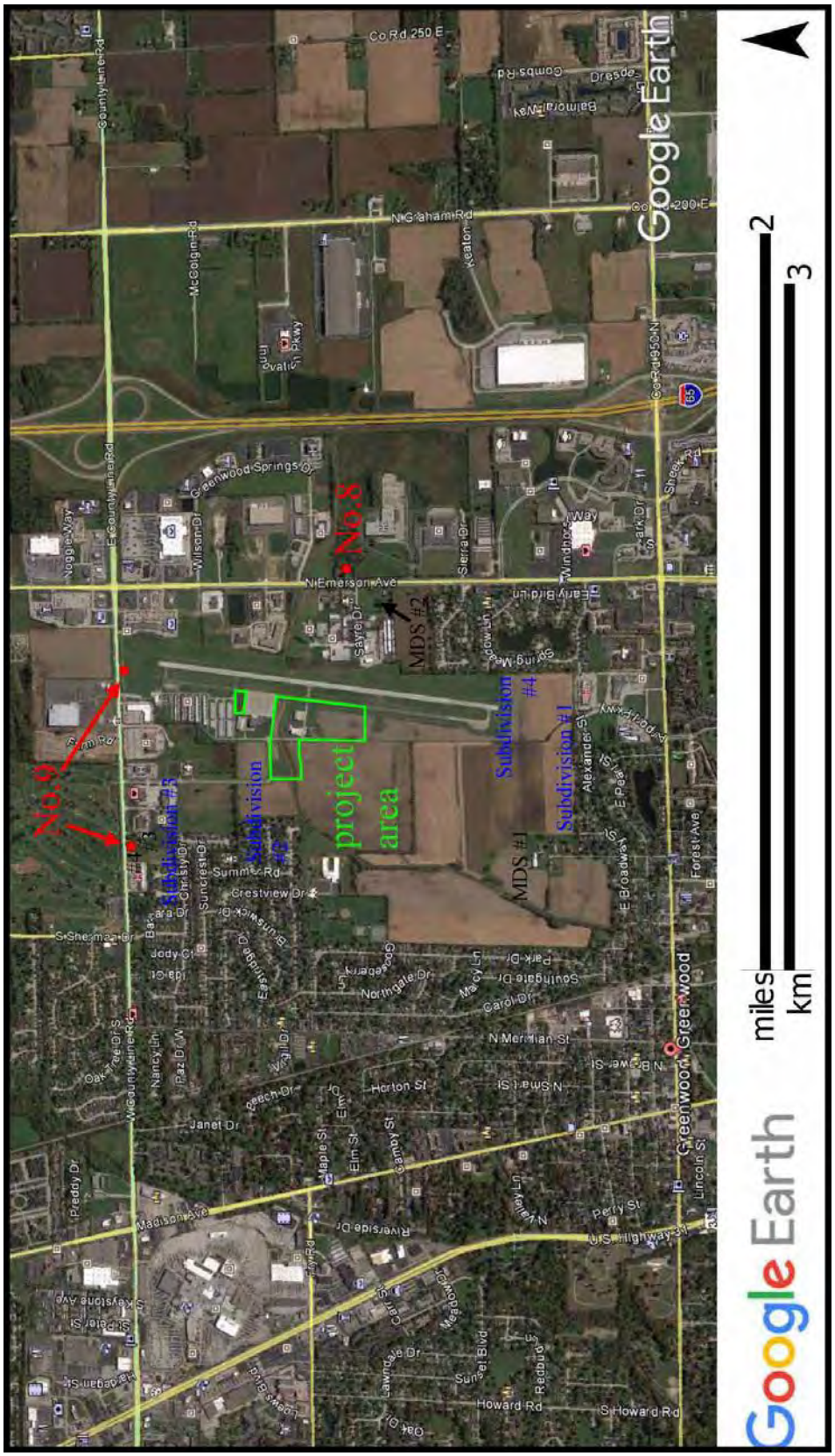

Figure 13. Location of the project area and APE as shown on the 2016 Google aerial map.

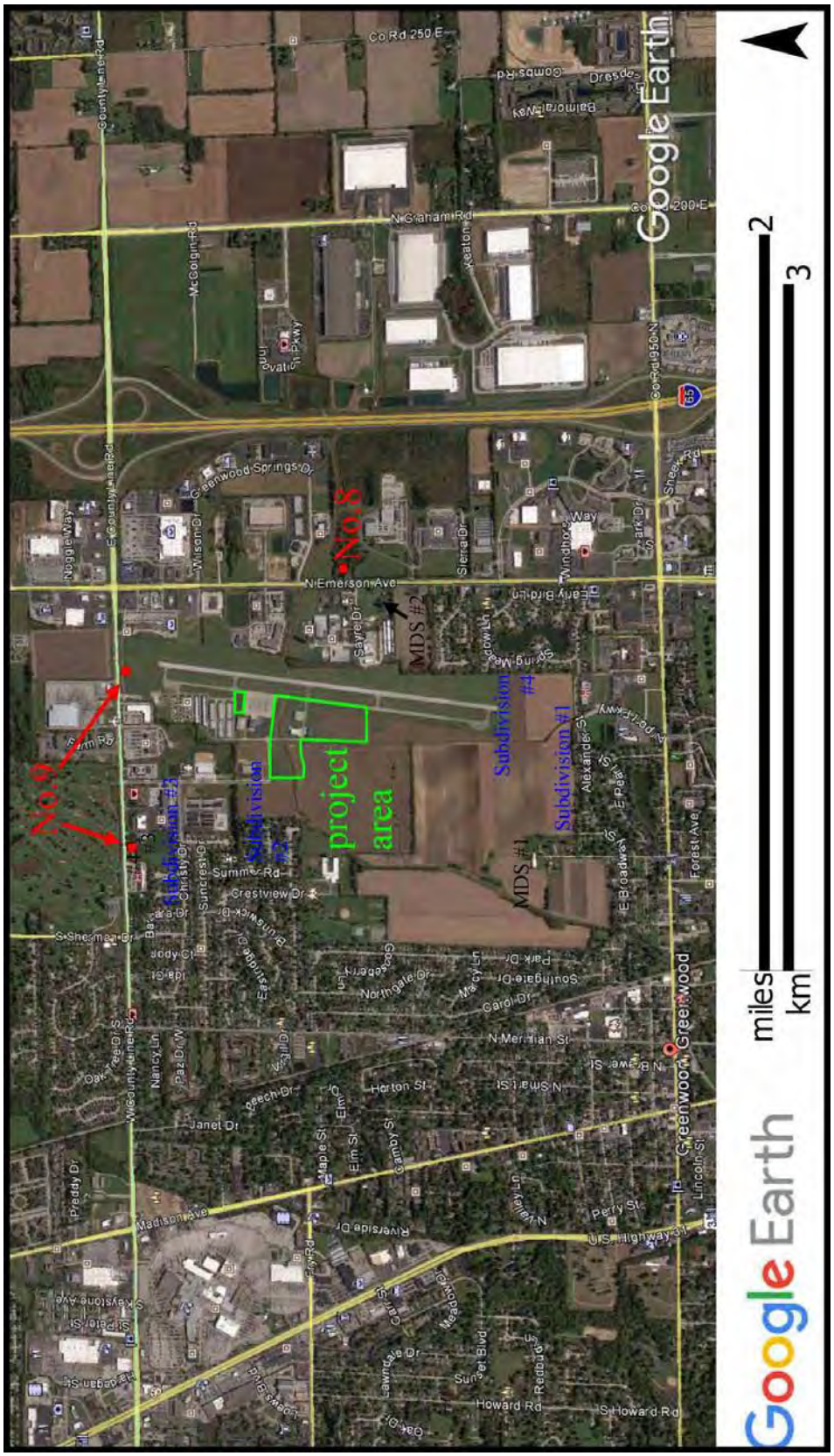

Figure 14. Location of the project area and APE as shown on the 2018 Google aerial map.

Appendix C-1: Photographs of the Project Area

LIST OF PHOTOGRAPHS

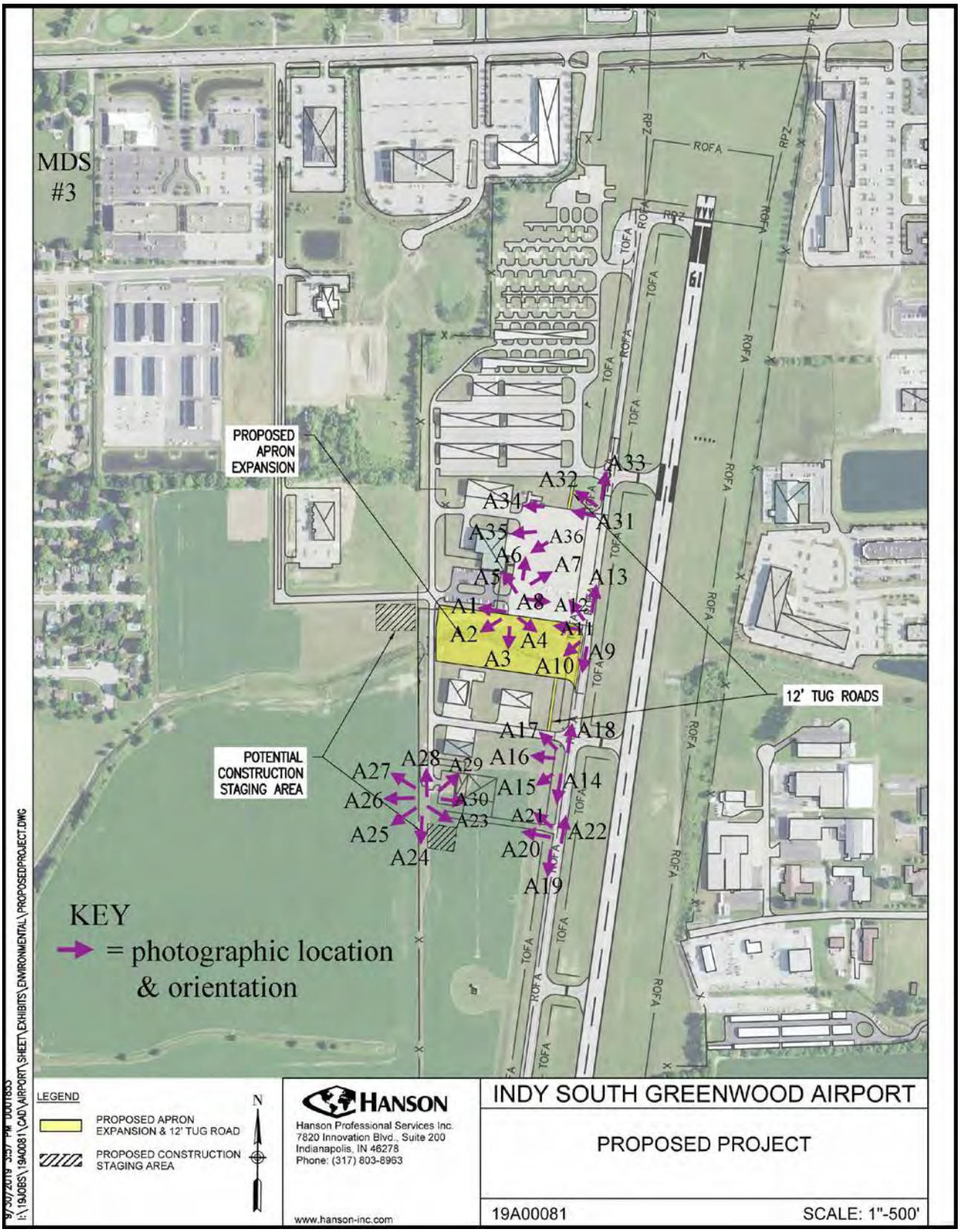

Figure 15a. Location and orientation of all project area photographs.

Photograph A1. Looking west across the project area.

Photograph A2. Looking southwest across the project area.

Photograph A3. Looking south across the project area.

Photograph A4. Looking southeast across the project area.

Photograph A5. Looking northwest within the airport at the current apron lighting.

Photograph A6. Looking north across the existing apron and apron lighting within the airport.

Photograph A7. Looking northeast across the existing apron within the airport.

Photograph A8. Looking east across the existing apron within the airport.

Photograph A9. Looking south along the runway at the project area.

Photograph A10. Looking southwest from the runway at the project area.

Photograph A11. Looking west from the runway at the project area.

Photograph A12. Looking northwest from the runway at the project area and existing apron lighting.

Photograph A13. Looking north along the runway at the project area.

Photograph A14. Looking south along the runway at the project area.

Photograph A15. Looking southwest from the runway at the project area.

Photograph A16. Looking west from the runway at the project area.

Photograph A17. Looking northwest from the runway at the project area.

Photograph A18. Looking north along the runway at the project area.

Photograph A19. Looking south along the runway from the project area.

Photograph A20. Looking west from the runway at the project area.

Photograph A21. Looking northwest from the runway at the project area.

Photograph A22. Looking north along the runway at the project area.

Photograph A23. Looking southeast towards the runway from the project area.

Photograph A24. Looking south from the project area.

Photograph A25. Looking southwest from the project area towards MDS #1.

Photograph A26. Looking west from the project area towards the elementary school and Subdivision #2.

Photograph A27. Looking northwest from the project area towards Subdivision #2.

Photograph A28. Looking north across the project area.

Photograph A29. Looking northeast across the project area.

Photograph A30. Looking east across the project area towards the runway.

Photograph A31. Looking west across the project area towards the existing apron lighting.

Photograph A32. Looking northwest across the project area.

Photograph A33. Looking north across the project area.

Photograph A34. Looking west at the existing apron lighting.

Photograph A35. Looking west at the existing apron lighting.

Photograph A36. Looking west at the existing apron lighting. Note the red and white tower referenced during the resident interviews.

Appendix C-2: Photographs of the APE

LIST OF PHOTOGRAPHS

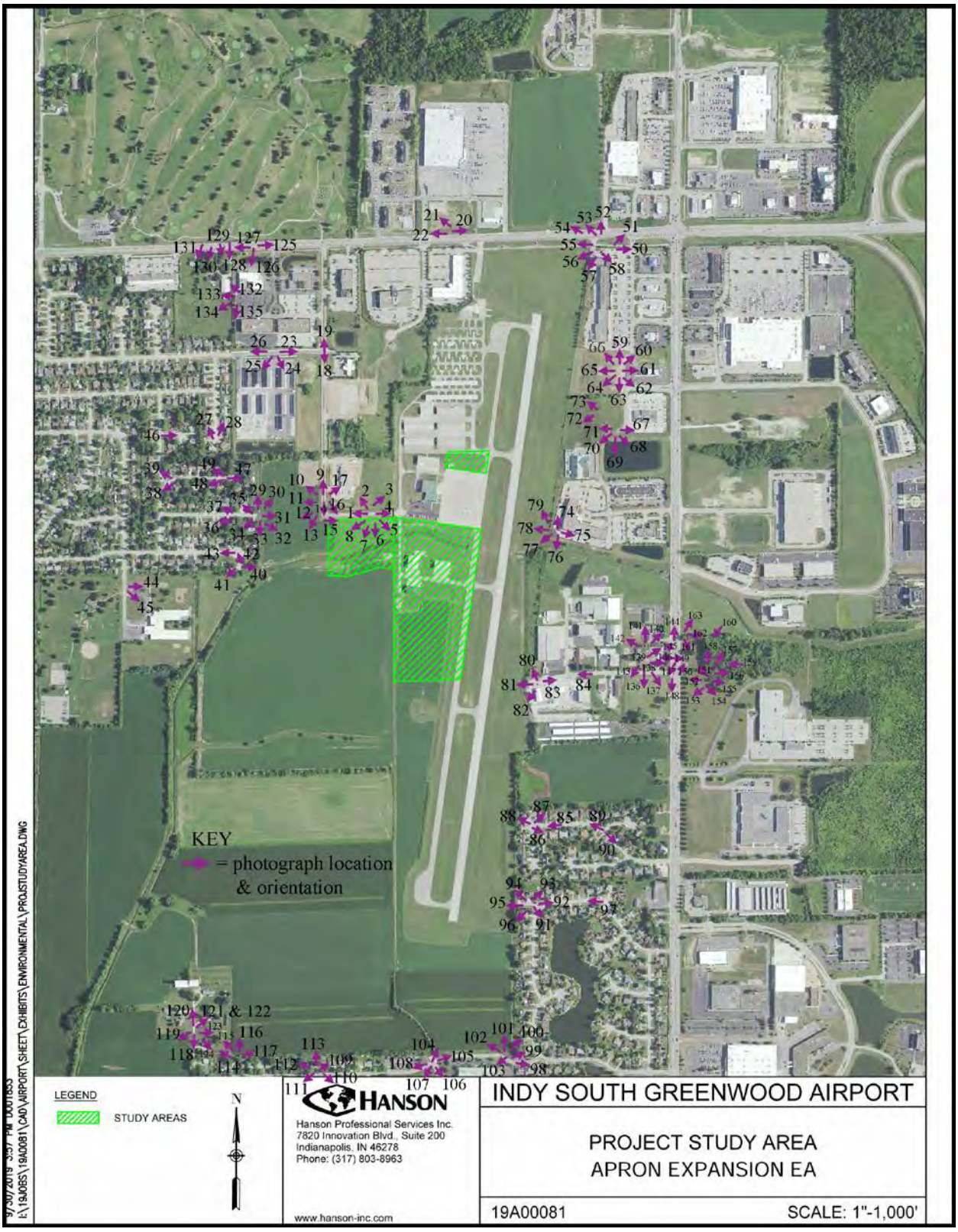

Figure 15b. Location and orientation of all project area photographs.

Photograph 1. Looking west along Airport Road towards Subdivision #2.

Photograph 2. Looking northwest from Airport Road towards the medical building.

Photograph 3. Looking northeast from Airport Road towards existing airport buildings.

Photograph 4. Looking east along Airport Road towards the airport.

Photograph 5. Looking southeast from Airport Road across the project area.

Photograph 6. Looking south from Airport Road across the project area.

Photograph 7. Looking southwest from Airport Road across the project area.

Photograph 8. Looking southwest from Airport Road across the project area.

Photograph 9. Looking north along Airport Road towards County Line Road.

Photograph 10. Looking northwest from Airport Road towards Subdivision #2.

Photograph 11. Looking west from Airport Road towards Subdivision #2.

Photograph 12. Looking southwest from Airport Road towards Subdivision #2.

Photograph 13. Looking southwest from Airport Road towards the elementary school.

Photograph 14. Looking south from Airport Road towards MDS #1 and Subdivision #1.

Photograph 15a. Daytime photograph looking southeast from Airport Road across the project area.

Photograph 15b. Nighttime photograph looking southeast from Airport Road across the project area.

Photograph 16a. Daytime photograph looking east along Airport Road towards the airport and existing lighting. Note the red and white tower to the right of the road.

Photograph 16b. Nighttime photograph looking east along Airport Road towards the airport and existing lighting.

Photograph 17a. Daytime photograph looking northeast from Airport Road towards the medical building.

Photograph 17b. Nighttime photograph looking northeast from Airport Road towards the medical building.

Photograph 18. Looking south along Airport Road.

Photograph 19. Looking north along Airport Road.

Photograph 20. Looking east along County Line Road to the north of the airport.

Photograph 21. Looking northwest at the post-2000 residential complex along County Line Road.

Photograph 22. Looking west along County Line Road to the north of the airport.

Photograph 23. Looking east along Christy Drive towards the airport.

Photograph 24. Looking southeast from Christy Drive towards the existing commercial complex.

Photograph 25. Looking southwest from Christy Drive towards the existing commercial complex.

Photograph 26. Looking west along Christy Drive towards Subdivision #3.

Photograph 27. Looking northwest along Mike's Way within Subdivision #3.

Photograph 28. Looking northeast along Mike's Way within Subdivision #3.

Photograph 29a. Daytime photograph looking north from the terminus of Spring Drive within Subdivision #2.

Photograph 29b. Nighttime photograph looking north from the terminus of Spring Drive within Subdivision #2.

Photograph 30a. Daytime photograph looking northeast from the terminus of Spring Drive towards the medical building and airport.

Photograph 30b. Nighttime photograph looking northeast from the terminus of Spring Drive towards the medical building and airport.

Photograph 31a. Daytime photograph looking east from the terminus of Spring Drive towards the airport.

Photograph 31b. Nighttime photograph looking east from the terminus of Spring Drive towards the airport.

Photograph 32a. Daytime photograph looking southeast from the terminus of Spring Drive towards the airport.

Photograph 32b. Nighttime photograph looking southeast from the terminus of Spring Drive towards the airport.

Photograph 33a. Daytime photograph looking south from the terminus of Spring Drive.

Photograph 33b. Nighttime photograph looking south from the terminus of Spring Drive.

Photograph 34. Looking southwest from the terminus of Spring Drive within Subdivision #2.

Photograph 35. Looking northwest from the terminus of Spring Drive within Subdivision #2.

Photograph 36. Looking southwest along Spring Drive within Subdivision #2.

Photograph 37. Looking northwest along Spring Drive within Subdivision #2.

Photograph 38. Looking southwest from Autumn Lane within Subdivision #2.

Photograph 39. Looking northwest from Autumn Lane within Subdivision #2.

Photograph 40a. Daytime photograph looking east from the terminus of Sayre Drive within Subdivision #2.

Photograph 40b. Nighttime photograph looking east from the terminus of Sayre Drive within Subdivision #2.

Photograph 41. Looking southwest from the terminus of Sayre Drive towards the elementary school.

Photograph 42. Looking northwest from the terminus of Sayre Drive within Subdivision #2.

Photograph 43. Looking west from the terminus of Sayre Drive within Subdivision #2.

Photograph 44a. Daytime photograph looking east across the Greenwood Northeast Elementary School.

Photograph 44b. Nighttime photograph looking east across the grounds of the Greenwood Northeast Elementary School.

Photograph 45a. Daytime photograph looking southeast at the Greenwood Northeast Elementary School.

Photograph 45b. Nighttime photograph looking southeast at the Greenwood Northeast Elementary School.

Photograph 46. Looking east along Summer Court within Subdivision #3.

Photograph 47a. Daytime photograph looking east from the terminus of Autumn Lane within Subdivision #2.

Photograph 47b. Nighttime photograph looking east from the terminus of Autumn Lane within Subdivision #2.

Photograph 48. Looking southwest from the terminus of Autumn Lane within Subdivision #2.

Photograph 49. Looking northwest from the terminus of Autumn Lane within Subdivision #2.

Photograph 50. Looking east along County Line Road to the northeast of the airport.

Photograph 51a. Daytime photograph looking northeast across County Line Road to the northeast of the airport.

Photograph 51b. Nighttime photograph looking northeast across County Line Road to the northeast of the airport.

Photograph 52. Looking north across County Line Road to the northeast of the airport.

Photograph 53. Looking northwest across County Line Road to the north of the airport.

Photograph 54. Looking northwest across County Line Road to the north of the airport.

Photograph 55a. Daytime photograph looking west along County Line Road to the north of the airport.

Photograph 55b. Nighttime photograph looking west along County Line Road to the north of the airport.

Photograph 56a. Daytime photograph looking southwest from County Line Road towards the airport.

Photograph 56b. Nighttime photograph looking southwest from County Line Road towards the airport.

Photograph 57. Daytime photograph looking southwest at the commercial complex northeast of the airport.

Photograph 58. Nighttime photograph looking southeast at the commercial complex northeast of the airport.

Photograph 59. Looking north across the commercial complex northeast of the airport.

Photograph 60. Looking northeast across the commercial complex northeast of the airport.

Photograph 61. Looking east across the commercial complex northeast of the airport.

Photograph 62. Looking southeast across the commercial complex northeast of the airport.

Photograph 63. Looking south across the commercial complex northeast of the airport.

Photograph 64. Looking southwest from the commercial complex towards the airport.

Photograph 65. Looking west from the commercial complex towards the airport.

Photograph 66. Looking northwest from the commercial complex towards the airport.

Photograph 67a. Daytime photograph looking east across the commercial complex northeast of the airport.

Photograph 67b. Nighttime photograph looking east across the commercial complex northeast of the airport.

Photograph 68. Looking southeast across the commercial complex northeast of the airport.

Photograph 69. Looking south across the commercial complex northeast of the airport.

Photograph 70a. Daytime photograph looking southwest across the commercial complex northeast of the airport.

Photograph 70b. Nighttime photograph looking southwest across the commercial complex northeast of the airport.

Photograph 71. Looking west from the commercial complex towards the airport.

Photograph 72. Looking northwest from the commercial complex towards the airport.

Photograph 73. Looking north across the commercial complex northeast of the airport.

Photograph 74. Looking north across the commercial complex east of the airport.

Photograph 75. Looking east across the commercial complex east of the airport.

Photograph 76. Looking south across the commercial complex east of the airport.

Photograph 77. Looking southwest from the commercial complex towards the airport.

Photograph 78. Looking west from the commercial complex towards the airport.

Photograph 79. Looking northwest from the commercial complex towards the airport.

Photograph 80a. Daytime photograph looking north across the commercial complex east of the airport.

Photograph 80b. Nighttime photograph looking north across the commercial complex east of the airport.

Photograph 81. Looking west from the commercial complex towards the airport.

Photograph 82. Looking south across the commercial complex east of the airport.

Photograph 83. Looking east along Sayre Drive within the commercial complex east of the airport.

Photograph 84. Nighttime photograph looking west along Sayre Drive within the commercial complex east of the airport.

Photograph 85. Looking west along Maple Grove Drive within Subdivision #4.

Photograph 86. Looking southeast along Maple Grove Drive within Subdivision #4.

Photograph 87. Looking northeast along Maple Grove Drive within Subdivision #4.

Photograph 88. Looking west from the terminus of Maple Grove Drive towards the airport within Subdivision #4.

Photograph 89. Looking northwest along Maple Grove Drive within Subdivision #4.

Photograph 90. Looking southeast along Maple Grove Drive within Subdivision #4.

Photograph 91. Looking southeast along Marcy Lane within Subdivision #4.

Photograph 92. Looking east along Marcy Lane within Subdivision #4.

Photograph 93. Looking northeast along Marcy Lane within Subdivision #4.

Photograph 94. Looking northwest towards the airport from the terminus of Marcy Lane within Subdivision #4.

Photograph 95. Looking west towards the airport from the terminus of Marcy Lane within Subdivision #4.

Photograph 96. Looking southwest towards the airport from the terminus of Marcy Lane within Subdivision #4.

Photograph 97. Looking west along Spring Meadow Drive within Subdivision #4.

Photograph 98. Looking east along Alexander Street between Subdivision #s 1 and 4.

Photograph 99. Looking northeast from Alexander Street towards Subdivision # 4.

Photograph 100. Looking north from Alexander Street along the west side of Subdivision # 4.

Photograph 101a. Daytime photograph looking north at the airport from Alexander Street between Subdivision #s 1 and 4.

Photograph 101b. Nighttime photograph looking north at the airport from Alexander Street.

Photograph 102. Looking northwest at the airport from Alexander Street between Subdivision #s 1 and 4.

Photograph 103a. Daytime photograph looking southwest at the medical complex south of the airport on Alexander Street.

Photograph 103b. Nighttime photograph looking south at the medical complex south of the airport on Alexander Street.

Photograph 104. Looking northeast towards Subdivision #4 from Alexander Street and Airport Parkway.

Photograph 105. Looking east across the intersection of Alexander Street and Airport Parkway.

Photograph 106. Looking south across the intersection of Alexander Street and Airport Parkway.

Photograph 107. Looking southwest from the intersection of Alexander Street and Airport Parkway.

Photograph 108. Looking west from the intersection of Alexander Street and Airport Parkway.

Photograph 109. Looking northeast along Alexander Street within Subdivision #1.

Photograph 110. Looking southeast along Alexander Street within Subdivision #1.

Photograph 111. Looking southwest along Alexander Street within Subdivision #1.

Photograph 112. Looking northwest along Alexander Street within Subdivision #1.

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Regulated Waters Delineation Report

Indy South Greenwood Airport, Greenwood, Johnson County, Indiana

October 11, 2019

Cardno®

Document Information

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Acronyms

APA	Administrative Procedure Act
BF	Bank Full
CFR	Code of Federal Regulations
CWA	Clean Water Act
DBH	Diameter at Breast Height
DNP	Division of Nature Preserves
DP	Data Point
EPA	U.S. Environmental Protection Agency
EPH	Ephemeral (Stream Type)
ETR	Endangered, Threatened, and Rare
FAC	Facultative Plant
FACU	Facultative Upland Plant
FACW	Facultative Wetland Plant
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographical Information System
HHEI	Headwater Habitat Evaluation Index
IC	Indiana Code
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
INT	Intermittent (Stream Type)
MS4	Municipal Separate Storm Water Sewer Systems
NHD	National Hydrography Dataset
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NWI	National Wetland Inventory

Acronyms (continued)

NWP	Nationwide Permit
NWPL	National Wetland Plant List
OBL	Obligate Wetland Plant
OHWM	Ordinary High Water Mark
PEM	Palustrine Emergent Wetland
PER	Perennial (Stream Type)
PFO	Palustrine Forested Wetland
PSS	Palustrine Shrub Scrub Wetland
PUB	Palustrine Unconsolidated Bottom
RGP	Regional General Permit
SNE	Significant Nexus
SWANCC	Solid Waste Agency of Northern Cook County
TNW	Traditional Navigable Water
TOB	Top of Bank
UPL	Upland Plant
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WOTUS	Waters of the United States
WQC	Water Quality Certification

1 Introduction

Cardno was contracted to perform a regulated waters delineation, including wetlands and streams, which are located at the Indy South Greenwood Airport Study Area in Section 28, Township 14 North, Range 4 East, in Johnson County, Indiana (Figure 1, Appendix A). Field work was performed on September 30, 2019. The total size of the Study Area was approximately 26.6 acres. The Study Area was agricultural fields and maintained commercial land. Two wetlands and one stream were identified.

This report identifies the jurisdictional status of the Study Area based on Cardno's best professional understanding and interpretation of the Corps of Engineers' Wetland Delineation Manual (Environmental Laboratory, 1987) and U.S. Army Corps of Engineers' (USACE) guidance documents and regulations. Jurisdictional determinations for other "waters of the U.S." were made based on definitions and guidance found in 33 CFR 328.3, USACE Regulatory Guidance Letters, and the wetland delineation manual. The USACE administers Section 404 of the Clean Water Act (CWA), which regulates the discharge of fill or dredged material into all "waters of the U.S.," and is the regulatory authority that must make the final determination as to the jurisdictional status of the Study Area.

2 Regulatory Definitions

2.1 Waters of the United States

"Waters of the U.S." are within the jurisdiction of the USACE under the CWA. "Waters of the U.S." is a broad term, which includes waters that are used or could be used for interstate commerce. This includes wetlands, ponds, lakes, territorial seas, rivers, tributary streams including any definable intermittent waterways, and some ditches below the ordinary high water mark (OHWM). Also included are manmade water bodies such as quarries and ponds, which are no longer actively being mined or constructed and are connected to other "waters". Wetlands, mudflats, vegetated shallows, riffle and pool complexes, coral reefs, sanctuaries, and refuges are all considered special aquatic sites which involve more rigorous regulatory permitting requirements. A specific, detailed definition of "waters of the U.S." can be found in the Federal Register (33 CFR 328.3).

On January 9, 2001, the U.S. Supreme Court issued a decision, Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers (No. 99-1178). The decision reduced the regulation of isolated wetlands under Section 404 of the CWA, which assigned the USACE authority to issue permits for the discharge of dredge or fill material into "waters of the U.S.". Prior to the SWANCC decision, the USACE had adopted a regulatory definition of "waters of the U.S." that afforded federal protection for almost all of the nation's wetlands. The Supreme Court decision interpreted that the USACE's jurisdiction was restricted to navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and tributaries. The decision leaves the majority of "isolated" wetlands unregulated by the CWA. Therefore, most wetlands that are not adjacent to, or contiguous with, any other "waters of the U.S." via a surface drain such as a swale, ditch, or stream are considered isolated and thus no longer jurisdictional by the USACE.

On June 19, 2006, the U.S. Supreme Court issued decisions in regards to John A. Rapanos v. United States (No. 04-1034) and June Carabell v. United States (04-1384), et al. The plurality decision created two 'tests' for determining CWA jurisdiction: the permanent flow of water test (set out by Justice Scalia) and the "significant nexus" test (set out by Justice Kennedy). On June 5, 2007 the USACE and U.S. Environmental Protection Agency (EPA) issued joint guidance on how to interpret and apply the Court's ruling. According to this guidance, the USACE will assert jurisdiction over traditionally navigable waters, adjacent wetlands, and non-navigable tributaries of traditionally navigable waters that have "relatively permanent" flow, and wetlands that border these waters, regardless of whether or not they are separated by roads, berms, and similar barriers. In addition, the USACE will use a case-by-case "significant nexus" analysis to determine whether waters and their adjacent wetlands are jurisdictional. A "significant nexus" can be found where waters, including adjacent wetlands, alter the physical, biological, or chemical integrity of the traditionally navigable water based on consideration of several factors.

In January 2015 an EPA sponsored publication, *Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence* (EPA, 2015), emphasized how streams, non-tidal wetlands, and open waters in and outside of riparian areas and floodplains affect downstream waters such as rivers, lakes, estuaries, and oceans.

On May 27, 2015 the EPA released a statement that a new Clean Water Rule typically referred to as, “The Waters of the United States (WOTUS) Rule” was finalized and that it would “not create any new permitting requirements and maintains all previous exemptions and exclusions” (epa.gov). The Rule would only protect waters that have historically been covered by the CWA. The intent was to clearly define: jurisdictional limits of tributaries of navigable waterways; set boundaries on covering nearby waters; identify specific national water treasures by name (prairie potholes, etc.); clearly define when a ditch is jurisdictional, and when it is not; maintain status that waters within Municipal Separate Storm Water Sewer Systems (MS4) are not jurisdictional; and reduce the use of case-specific analysis of waters.

Also on May 27, 2015 a publication, *Technical Support Document for the Clean Water Rule: Definition of Waters of the United States* (EPA, 2105), was released discussing in detail why the significant nexus (SNE) between one water and another is important. It specifically ties distances to the various types of waters mentioned within the Code of Federal Regulations [33 CFR 328.3(a)(1) through (a)(8)]. For example, the document states “Waters located within the 100-year floodplain of a Traditional Navigable Water (TNW), interstate water, or the territorial seas and waters located more than 1,500 feet and less than 4,000 feet from the lateral limit of an (a)(1) or (a)(3) water may still be determined to have a significant nexus on a case-specific basis under paragraph (a)(8) of the Rule and, thus, be a ‘water of the United States’ (EPA 2015).”

On June 29, 2015 the new Clean Water Rule was entered into the Federal Register (40 CFR Parts 110, 112, 116, et al. Clean Water Rule: Definition of ‘‘waters of the United States’’; Final Rule). This report will refer to this Rule as “June 29, 2015 WOTUS Rule”. This Rule includes exact distances mentioned in the May 27, 2015 Technical Support Document as it relates to adjacent waters, including the following: waters within 100 ft. of jurisdictional waters; waters within the 100-year floodplain to a maximum of 1,500 feet from the OHWM; waters within the 100-year floodplain with a SNE to the TNW; and waters with a SNE within 4,000 ft. of jurisdictional waters.

On October 9, 2015 the U.S. Court of Appeals for the Sixth Circuit (Court) issued a nationwide stay against the enforcement of the June 29, 2015 WOTUS Rule. The Court stated, “…we conclude that…Justice Kennedy’s opinion in *Rapanos* represents the best instruction on the permissible parameters of “waters of the United States” as used in the CWA, it is far from clear that the new Rule’s distance limitations are harmonious with the instruction.

Moreover, the Court stated that the rulemaking process by which the distance limitations were adopted is facially suspect. Petitioners contend the proposed rule that was published, on which interested persons were invited to comment, did not include any proposed distance limitations in its use of terms like “adjacent waters” and “significant nexus.” Consequently, petitioners contend, the Final Rule cannot be considered a “logical outgrowth” of the rule proposed, as required to satisfy the notice-and-comment requirements of the APA, 5 U.S.C. § 553. As a further consequence of this defect, petitioners contend, the record compiled by respondents is devoid of specific scientific support for the distance limitations that were included in the Final Rule. They contend the Rule is therefore not the product of reasoned decision-making and is vulnerable to attack as impermissibly “arbitrary or capricious” under the APA, 5 U.S.C. § 706(2).”

On February 28, 2017, President Donald Trump signed Executive Order #13778 titled “Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the ‘Waters of the United States’ Rule”. Section 1(a) states that the EPA “shall review the final rule entitled ‘Clean Water Rule: Definition of 'Waters of the United States,'' 80 Fed. Reg. 37054; and ‘….shall…publish… proposed rules rescinding or revising, those issuances, as appropriate’ [Section 2(b)].”

Until further notice, the June 29, 2015 WOTUS Rule is not in effect. Furthermore, this report does not attempt to include a professional opinion as it relates to the June 29, 2015 WOTUS Rule.

2.2 Waters of the State

“Waters of the state” are within the jurisdiction of the Indiana Department of Environmental Management (IDEM). They are generally defined as surface and underground water bodies, which extend through or exist wholly in the state of Indiana, which includes, but is not limited to, streams and both isolated and non-isolated wetlands. Private ponds, or any pond, reservoir, or facility built for reduction of pollutants prior to discharge are not included in this definition. In addition to “waters of the U.S.”, IDEM also regulates and issues permits for isolated wetland impacts. Isolated wetlands are defined by state law as those wetlands that are not subject to regulation under Section 404(a) of the Federal CWA. Since 2004, IDEM has regulated isolated wetlands under Indiana’s State Isolated Wetlands Law (IC 13-18-22). Indiana’s State Isolated Wetlands Law establishes a classification system for wetlands and a set of general permits, exemption criteria, and individual permitting authority for IDEM to regulate the placement of dredged or fill material into non-exempt isolated wetlands. Indiana’s isolated wetlands are defined as being a Class I, Class II, or Class III wetland; these definitions are listed in Indiana Code 13-11-2-25.8. Class I wetlands are significantly (more than 50 percent) disturbed by human activity or development and support only minimal wildlife or aquatic habitat or hydrologic function due to low species diversity or non-native invasive species dominance. Class II wetlands are those wetlands that are neither Class I or Class III wetlands or are wetlands that would be Class I wetlands were they not a “rare and ecologically important” [IC 13-11-2-25.8(3)(B)] wetland type. Class III wetlands are undisturbed or minimally disturbed by human activity and support diverse flora and fauna or are a “rare and ecologically important” wetland type [IC 13-11-2-25.8(3)(B)]..

IDEM relies on the USACE decision regarding wetland determinations and delineations including whether or not a wetland is isolated or non-isolated.

2.3 Wetlands

Wetlands are a category of "waters of the U.S." for which a specific identification methodology has been developed. As described in detail in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to the criteria defined in the 1987 Manual, the procedures described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory, 2010) were used to evaluate the Study Area for the presence of wetlands.

2.3.1 Hydrophytic Vegetation

On June 1, 2012, the National Wetland Plant List (NWPL), formerly called the National List of Plant Species that Occur in Wetlands (Reed 1988), went into effect after being released by the U.S. Army Corps of Engineers (USACE) as part of an interagency effort with the U.S. Fish and Wildlife Service (USFWS), the U.S. EPA, and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (Lichvar and Kartesz, 2009). The NWPL, along with the information implied by its wetland plant species status ratings, provides general botanical information about wetland plants and is used extensively in wetland delineation, restoration, and mitigation efforts. The NWPL consists of a comprehensive list of wetland plant species that occur within the United States along with their respective wetland indicator statuses by region. An indicator status reflects the likelihood that a particular plant species occurs in a wetland or upland (Lichvar et al. 2012). Definitions of the five indicator categories are presented below.

> **OBL** (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.
>
> **FACW** (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.
>
> **FAC** (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
>
> **FACU** (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.
>
> **UPL** (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

According to the USACE's Midwest Regional Supplement, plants that are rated as FAC, FACW, or OBL are classified as wetland plant species. The percentage of dominant wetland species in each of the four vegetation strata (tree, shrub/sapling, herbaceous, and woody vine) in the sample area determines the hydrophytic (wetland) status of the plant community. Dominant species are

chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total.

For the purposes of determining dominant plant species, the four vegetation strata are defined. Trees consist of woody species 3 inches or greater in diameter at breast height (DBH). Shrubs and saplings are woody species that are over 1 meter in height and less than 3 inches DBH. Herbaceous species consist of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants less than 1 meter tall. Woody vines consist of vine species greater than 1 meter in height, such as wild grapes.

2.3.2 Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. In general, hydric soils are flooded, ponded, or saturated for a week or more during the growing season when soil temperatures are above 32 degrees Fahrenheit. The anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to differentiate hydric from non-hydric soils.

In this report, soil colors are described using the Munsell notation system. This method of describing soil color consists of separate notations for hue, value, and chroma that are combined in that order to form the color designation. The hue notation of a color indicates its relation to red, yellow, green, blue, and purple; the value notation indicates its lightness, and the chroma notation indicates its strength or departure from a neutral of the same lightness.

The symbol for hue consists of a number from 1 to 10, followed by the letter abbreviation of the color. Within each letter range, the hue becomes more yellow and less red as the numbers increase. The notation for value consists of numbers from 0 for absolute black, to 10 for absolute white. The notation for chroma consists of numbers beginning with /0 for neutral grays and increasing at equal intervals. A soil described as 10YR 3/1 soil is more gray than a soil designated 10YR 3/6.

2.3.3 Wetland Hydrology

Wetland hydrology is defined as the presence of water for a significant period of time at or near the surface (within the root zone) during the growing season. Wetland hydrology is present only seasonally in many cases, and is often inferred by indirect evidence. Hydrology is controlled by such factors as seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage. Primary indicators of hydrology are inundation, soil saturation in the upper 12 inches of the soil, watermarks, sediment deposits, and drainage patterns. Secondary indicators such as oxidized root channels in the upper 12 inches of the soil, water-stained leaves, local soil survey data, and the FAC-neutral vegetation test are sometimes used to identify hydrology. A primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

2.3.4 Wetland Definition Summary

In general, an area must meet all three criteria to be classified as a wetland. In certain problem areas such as seasonal wetlands, which are not wet at all times, or in recently disturbed (atypical) situations, areas may be considered a wetland if only two criteria are met. In special situations, an area that meets the wetland definition may not be within the USACE's jurisdiction due to a specific regulatory exemption.

2.4 Streams, Rivers, Watercourses & Jurisdictional Ditches

With non-tidal waters, in the absence of adjacent wetlands, the extent of the USACE's jurisdiction is defined by the OHWM. USACE regulations define the term "ordinary high water mark" for purposes of the CWA lateral jurisdiction at 33 CFR 328.3(e), which states:

> The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Streams, rivers, watercourse, and ditches within the Study Area were evaluated using the above definition and documented. Waterways that did exhibit an OHWM were recorded and evaluated using the Ohio EPA's Primary Headwater Habitat Evaluation Index (HHEI) methodology. If applicable, the results of the HHEI are presented in Section 3.2, Technical Descriptions and datasheets will be provided upon request.

3 Background Information

3.1 Existing Maps

Several sources of information were consulted to identify potential wetlands and wetland soil units on the site. These include the USFWS's *National Wetland Inventory* (NWI), the USGS's *National Hydrography Dataset* (NHD), and the NRCS *Soil Survey* for this county. These maps identify potential wetlands and wetland soil units on the site. The NHD maps are used to identify low-lying areas, historical waterways, drainage patterns, and potential surface waters. The NHD maps are not field verified, and do not always account for human alteration such as ditching and tiling. The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified. Additionally, the criteria used in identifying these wetlands were different from those currently used by the USACE. The county soil maps, on the other hand, were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The resolution of the soil maps limits their accuracy as well. The mapping units are often generalized based on topography and many mapping units contain inclusions of other soil types for up to 15 percent of the area of the unit. The USACE does not accept the use of either of these maps to make wetland determinations.

3.1.1 National Wetland Inventory

The NWI map of the area (Figure 2) identified two riparian wetland complexes on site.

3.1.2 National Flood Hazard Layer

The FEMA FIRMette map of the area (Figure 3) identified a regulated floodway along Pleasant Creek on the site. Indiana DNR's Best Available Flood Hazard Area maps also identified a one-hundred year floodplain along Pleasant Creek.

3.1.3 Stream Stats Basin Analysis

Pleasant Creek (S01) had a stream basin greater than a square mile within the study area (1.392 square miles) (Figure 3).

3.1.4 National Hydrography Dataset

The NHD map of the area (Figure 4) identified eight surface waters on site.

3.1.5 Soil Survey

The NRCS Soil Survey of Johnson County identified five soil series on the site (Figure 4). The following table identifies the soil unit symbol, soil unit name, and whether or not the soil type contains components that meet the hydric soil criteria.

Table 3-1 Soil Types Within the Indy South Greenwood Airport Study Area

Symbol	Description	Hydric
Br	Brookston silty clay loam, 0 to 2 percent slopes	Yes
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	No
CsB2	Crosby-Miami silt loams, 2 to 4 percent slopes, eroded	No
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	No
MnC2	Miami silt loam, 6 to 12 percent slopes, eroded	No

4 Methodology and Description

4.1 Regulated Waters Investigation

The delineation of regulated waters within the Study Area was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory, 2010) as required by current USACE policy.

Prior to the field work, the background information was reviewed to establish the probability and potential location of wetlands and regulated waters on the site. Next, a general reconnaissance of the Study Area was conducted to determine site conditions. The site was then walked with the specific intent of determining wetland and jurisdictional stream boundaries. Data stations were established at locations within and near the wetland areas to document soil characteristics, evidence of hydrology and dominant vegetation. Note that no attempt was made to examine a full soil profile to confirm any soil series designations. However, when possible, soils were examined to a depth of at least 16 inches to assess soil characteristics and site hydrology. Complete descriptions of typical soil series can be found in the soil survey for this county.

4.1.1 Site Photographs

Photographs of the site are located in Appendix B. These photographs are the visual documentation of site conditions at the time of inspection. The photographs are intended to provide representative visual samples of any wetlands or other special features found on the site.

4.1.2 Delineation Data Sheets

Where stations represent a wetland boundary point they are typically presented as paired data points, one each documenting the wetland and upland sides of the wetland boundary. The routine wetland delineation data sheets used in the jurisdictional delineation process are located in Appendix C. These forms are the written documentation of how representative sample stations met or did not meet each of the wetland criteria. For plant species included on the National Wetlands Plant List, nomenclature will follow their lead. For all other plants not listed in the NWPL, nomenclature will follow the USDA's Plants Database. Data point locations are shown on Figure 5.

4.2 Technical Descriptions

Complete field data sheets from the site investigation are located in Appendix D. The site is located in Johnson County, Indiana, south of County Line Road at Airport Parkway (Figure 1). The area investigated was approximately 26.6 acres. The Study Area was agricultural fields and maintained commercial land.

4.2.1 Data Point and Wetland Descriptions

Upland Data Point

Data Point 01 (dp01)

Dominant vegetation in the vicinity of dp01 included Red Clover (*Trifolium pratense*, FACU), Yellow Bristle Grass (*Setaria pumila*, FAC), and White Oldfield American-Aster (*Symphyotrichum*

pilosum, FACU). In addition, non-dominant vegetation observed included Frank's Sedge (*Carex frankii*, OBL), Kentucky Blue Grass (*Poa pratensis*, FAC), Hairy Crab Grass (*Digitaria sanguinalis*, FACU), and Black-Seed Plantain (*Plantago rugelii*, FAC). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0 to 20 inches had a matrix soil color of 10YR 3/2 with a texture of Silty Clay Loam. The soil at the data point was mapped as Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Wetland 01 (0.91 Acre)

Wetland 01 was an emergent wetland located along Pleasant Creek. Pleasant Creek, later called Pleasant Run Creek, flows directly into the White River, a Traditional Navigable Water (TNW). Due to this connection, this wetland should be considered a “waters of the United States”.

Wetland Data Point

Data Point 02 (dp02)

Dominant vegetation in the vicinity of dp02 included Reed Canary Grass (*Phalaris arundinacea*, FACW), and Black Bent (*Agrostis gigantea*, FACW). In addition, non-dominant vegetation observed included Kentucky Blue Grass (FAC), Limestone-Meadow Sedge (*Carex granularis*, FACW), Frank's Sedge (OBL), Ditch-Stonecrop (*Penthorum sedoides*, OBL), Blunt Broom Sedge (*Carex tribuloides*, OBL), Cut-Leaf Water-Horehound (*Lycopus americanus*, OBL), Large Barnyard Grass (*Echinochloa crus-galli*, FACW), Great Blue Lobelia (*Lobelia siphilitica*, OBL), Common Boneset (*Eupatorium perfoliatum*, OBL), American Water-Plantain (*Alisma subcordatum*, OBL), and Spotted Lady's-Thumb (*Persicaria maculosa*, FACW). The plants at this data point qualified as hydrophytic vegetation. The soil from 0 to 20 inches had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 5 percent, and a texture of Silty Clay Loam. The soil at the data point was mapped as Brookston silty clay loam, 0 to 2 percent slopes (Br), and met the Depleted Matrix (F3) hydric soil criteria. Primary indicators of hydrology included Drift Deposits (B3), Algal Mat or Crust (B4), and secondary indicators of hydrology observed included Surface Soil Cracks (B6), Crayfish Burrows (C8), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 03 (dp03)

Dominant vegetation in the vicinity of dp03 included Tall Redtop (*Tridens flavus*, UPL), Japanese Bristle Grass (*Setaria faberi*, FACU), Yellow Bristle Grass (FAC), and Red Fescue (*Festuca rubra*, FACU). In addition, non-dominant vegetation observed included Spiny-Leaf Sow-Thistle (*Sonchus asper*, FACU), Virginia Wild Rye (*Elymus virginicus*, FACW), Straw-Color Flat Sedge (*Cyperus strigosus*, FACW), Common Boneset (OBL), Canadian Horseweed (*Erigeron canadensis*, FACU), Fall Panic Grass (*Panicum dichotomiflorum*, FACW), Florida Crown Grass (*Paspalum floridanum*, FACW), American Water-Plantain (OBL), Large Barnyard Grass (FACW), and Annual Ragweed (*Ambrosia artemisiifolia*, FACU). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0 to 20 inches had a matrix soil color of 10YR 4/2

with a texture of Silt Loam. The soil at the data point was mapped as Brookston silty clay loam, 0 to 2 percent slopes (Br), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Wetland 02 (0.28 Acre)

Wetland 02 was an emergent wetland located within a depression within the agricultural field. No surface water connection with any "waters of the United States" was observed. This wetland should be considered a "waters of the state".

Wetland Data Point

Data Point 04 (dp04)

Dominant vegetation in the vicinity of dp04 included Large Barnyard Grass (FACW). In addition, non-dominant vegetation observed included Rough Cockleburr (*Xanthium strumarium*, FAC), Bog Yellowcress (*Rorippa palustris*, OBL), and Cress-Leaf Groundsel (*Packera glabella*, FACW). The plants at this data point qualified as hydrophytic vegetation. The soil from 0 to 20 inches had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 10 percent, and a texture of Silty Clay Loam. The soil at the data point was mapped as Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA), and met the Depleted Matrix (F3), and Redox Depressions (F8) hydric soil criteria. Primary indicators of hydrology included Algal Mat or Crust (B4), and secondary indicators of hydrology observed included Surface Soil Cracks (B6), Stunted or Stressed Plants (D1), Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 05 (dp05)

Dominant vegetation in the vicinity of dp05 included soybean (*Glycine max*, UPL). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0 to 20 inches had a matrix soil color of 10YR 4/2 with a texture of Silty Clay Loam. The soil at the data point was mapped as Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Upland Data Point

Data Point 06 (dp06)

Dominant vegetation in the vicinity of dp06 included Japanese Bristle Grass (FACU), composite dropseed (*Sporobolus compositus*, UPL), and Yellow Bristle Grass (FAC). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0 to 20 inches had a matrix soil color of 10YR 4/2 with a texture of Silty Clay Loam. The soil at the data point was mapped as Brookston silty clay loam, 0 to 2 percent slopes (Br), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

4.2.2 Stream Descriptions

Stream 01 (Pleasant Creek) (1366 Linear Feet)

Pleasant Creek was a perennial stream that flowed west through the project study area. Stream 01 was considered to have recovered from past modifications. Neither bank had a riparian corridor, with the floodplain land use predominantly urban or industrial land. The stream had low sinuosity, with a half S-curve observed within the two hundred foot survey reach. The stream had a flat gradient, with a drop of a half a foot or less every hundred feet. This stream was at base flow conditions at the time of the stream survey. The turbidity levels were not elevated at the time of survey. The dominant substrates were cobble and sand. Ordinary High Water Mark width was four feet and depth was 0.3 foot. Bank Full width was six feet and depth was 0.5 foot. Top of Bank width was ten feet and depth was two feet. The maximum pool depth observed was greater than twelve inches. Pleasant Creek flows into the White River, a Traditional Navigable Water. Due to this connection, this stream should be considered a "waters of the United States".

5 Jurisdictional Analysis

5.1 U.S. Army Corps of Engineers and the Indiana Department of Environmental Management

The USACE has authority over the discharge of fill or dredged material into “waters of the U.S.”. This includes authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any “waters of the U.S.”. A permit must be obtained from the USACE under Section 404 of the CWA before any of these activities occur. Permits can be divided into three general categories: Individual Permits, Nationwide Permits (NWP), and the Regional General Permits for Indiana.

Individual Permits are required for projects that do not fall into one of the specific NWP or the Regional General Permit (RGP) or are deemed to have significant environmental impacts. These permits are much more difficult to obtain and receive a much higher level of regulatory agency and public scrutiny and may require several months to more than a year for processing.

NWP have been developed for projects which meet specific criteria and are deemed to have minimal impact on the aquatic environment. In Indiana, however, most NWP's have been rescinded and replaced by the RGP.

The RGP for Indiana authorizes activities associated with the construction or installation of new facilities or structures as well as for agriculture or mining. Proposed wetland impacts must be less than 1 acre and meet specific criteria in order to qualify for these permits. Section 401 WQC must be obtained from IDEM before the USACE will perform their permit review.

IDEM is responsible for issuing CWA Section 401 WQCs in conjunction with the USACE Section 404 permits. IDEM requires notification for all permanent non-isolated wetland impacts less than 0.10 acre, which entails a brief notification form that must be signed by the applicant. If only temporary wetland impacts are proposed, then notification is also required for the cumulative wetland temporary impacts that exceed 0.10 acre. However, for non-isolated wetland impacts greater than 0.10 acre, an application for WQC must be submitted concurrently with a wetland mitigation plan. IDEM will not initiate their review process until both the application and wetland mitigation plan have been submitted.

Applicants proposing an impact to an “isolated wetland,” which is a wetland that the USACE has determined to be a non-federally jurisdictional wetland, are required to apply for and obtain Isolated Wetland Permits from IDEM. Isolated wetland permits are required under Indiana’s State Isolated Wetland Law (Indiana Code 13-18-22 and 327 Indiana Administrative Code 17).

5.2 Indiana Department of Natural Resources

Indiana Department of Natural Resources (IDNR) has jurisdiction over mapped floodways, floodplains where there is no mapped floodway (Figure 3), and the floodway of ditches and streams with a watershed greater than one (1) square mile (Figure 3). If impacts are proposed to jurisdictional floodways, a Construction-In-A-Floodway Permit may be required from IDNR.

6 Summary and Conclusion

6.1 Summary

Cardno inspected the Indy South Greenwood Airport Study Area on September 30, 2019. Delineated features are shown on Figure 5 and in Table 6-1.

6.1.1 Wetlands and Waterways

Two wetlands and one stream were identified.

Table 6-1 Features Identified Within Indy South Greenwood Airport Study Area

Feature Name	Feature Class	Area (Acres) / Linear Feet (LF)	Jurisdictional Status
Wetland 01	PEM	0.91AC	USACE/IDEM
Wetland 02	PEM	0.28AC	IDEM
Stream 01	EPH	1366LF	USACE/IDEM/IDNR
	WETLAND TOTAL	1.19AC	

6.1.2 Floodways and Floodplains

Pleasant Creek has a drainage area greater than a square mile. There is a regulated floodway and a one-hundred year floodplain on site.

6.2 Conclusion

Two wetlands and one stream were identified. Pleasant Creek has a drainage area greater than a square mile. There is a regulated floodway and a one-hundred year floodplain on site.

While this report represents our best professional judgment based on our knowledge and experience, it is important to note that the Louisville District of the U.S. Army Corps of Engineers has final discretionary authority over all jurisdictional determinations of 'waters of the U.S.' including wetlands under Section 404 of the CWA in this region. It is therefore, recommended that a copy of this report be furnished to the Louisville District of the U.S. Army Corps of Engineers to confirm the results of our findings.

7 References

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Lichvar, R., Melvin, N.C., Butterwick, M.L. and Kirchner, W.N. 2012. *National Wetland Plant List Indicator Rating Definitions*. ERDC/CRREL TN-12-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf

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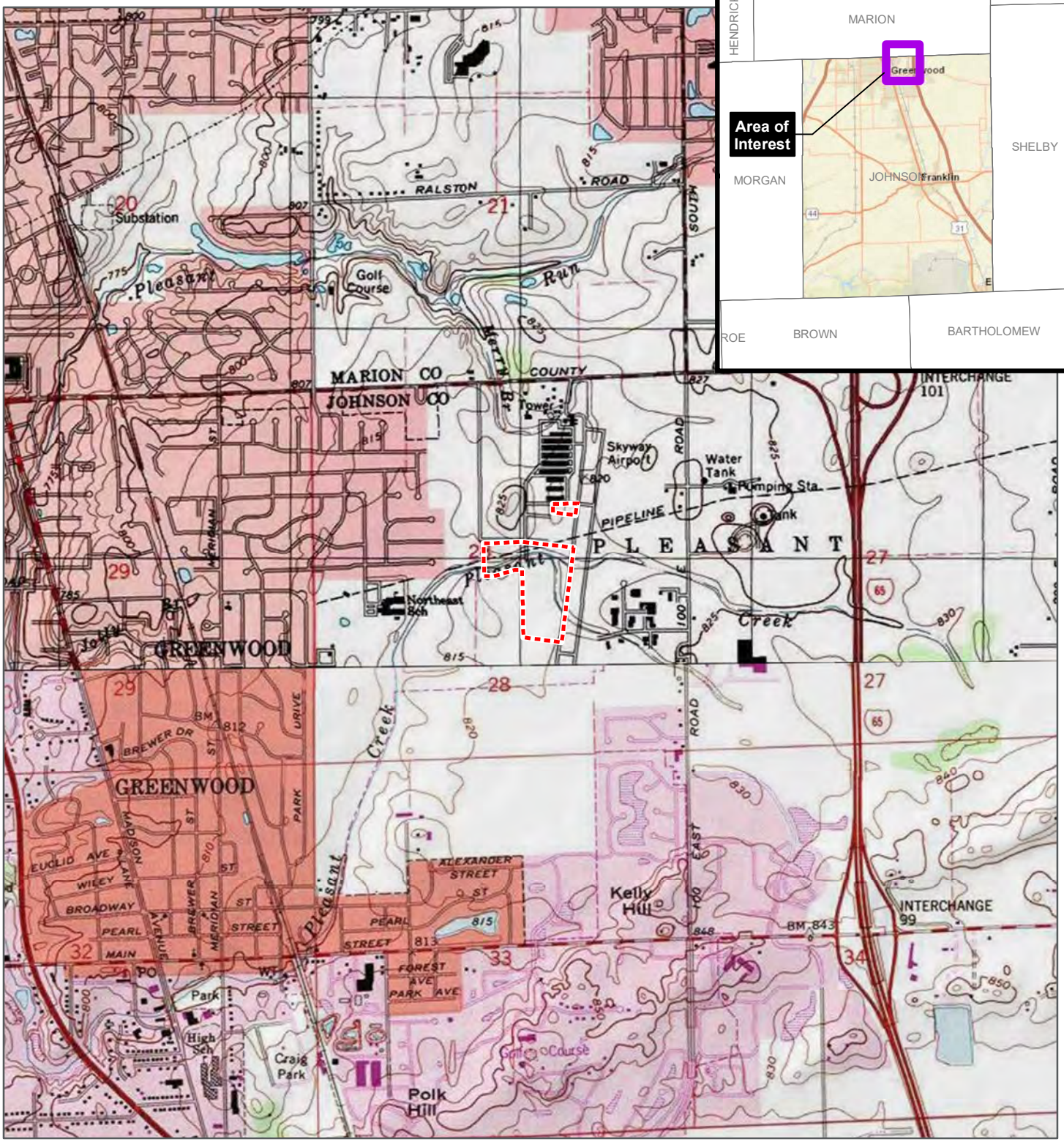
Indy South Greenwood Airport,
Greenwood, Johnson County,
Indiana

APPENDIX A

FIGURES



N
W E
S

7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0

Figure 1: Project Location
Indy South Greenwood Airport
Regulated Waters Delineation Report
Hanson Professional Services
Johnson County, Indiana

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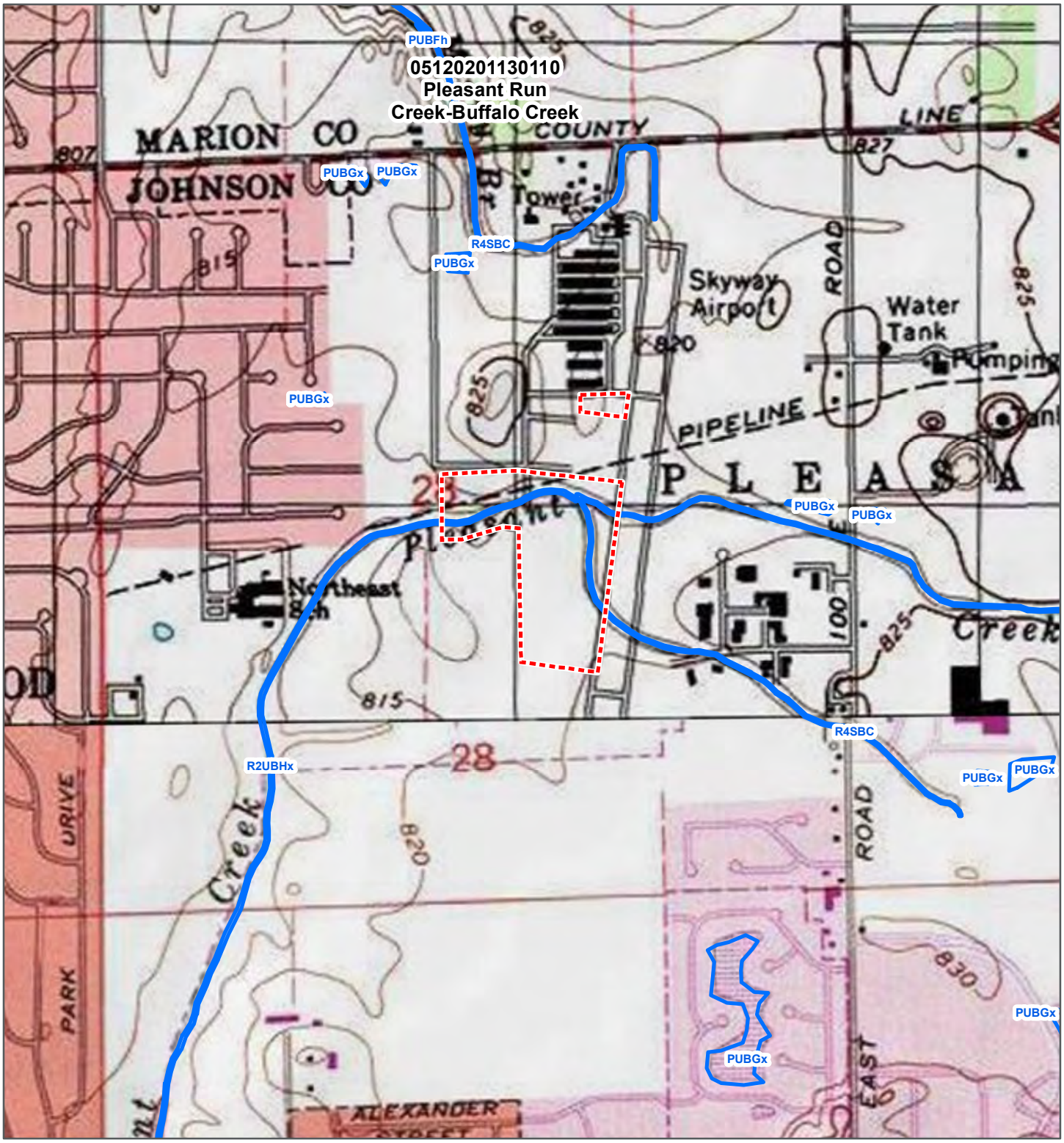
Date: 9/30/2019 File Path: R:\Projects\17\17X\17X6029A0_Hanson_IndySouthGreenwoodAirport\GIS\MXD\Delineation\F1_Location.mxd Saved By: Ben.Hess



7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0

Figure 2: NWI & Watershed
Indy South Greenwood Airport
Regulated Waters Delineation Report
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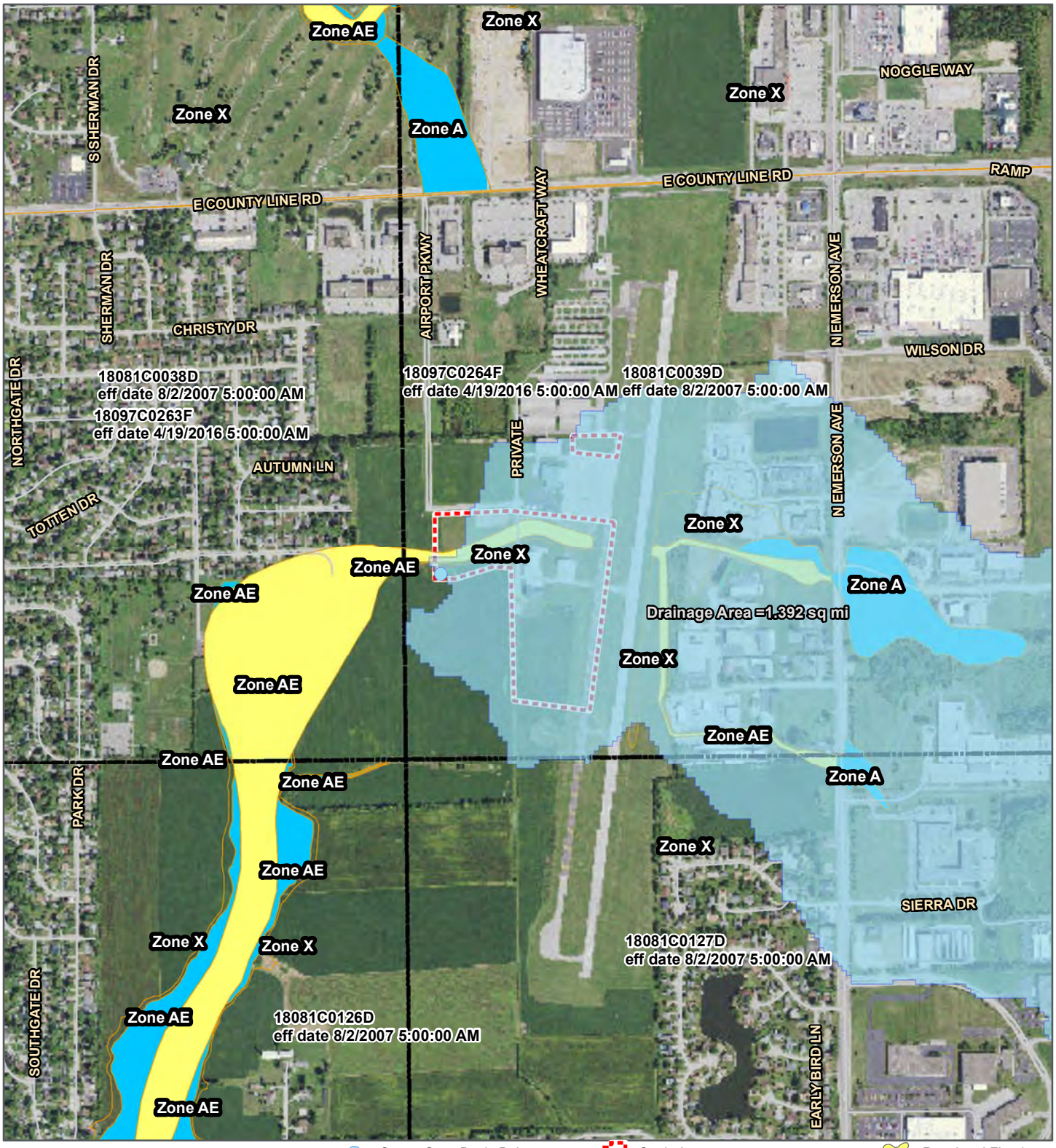
Date: 9/30/2019 File Path: R:\Projects\17\17X\17X6029A0_Hanson_IndySouthGreenwoodAirport\GIS\MXD\Delineation\F2_NWI.mxd Saved By: Ben.Hess



7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0

Figure 3: Construction in Floodway Constraints

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Regulated Waters Delineation Report
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Date: 10/10/2019
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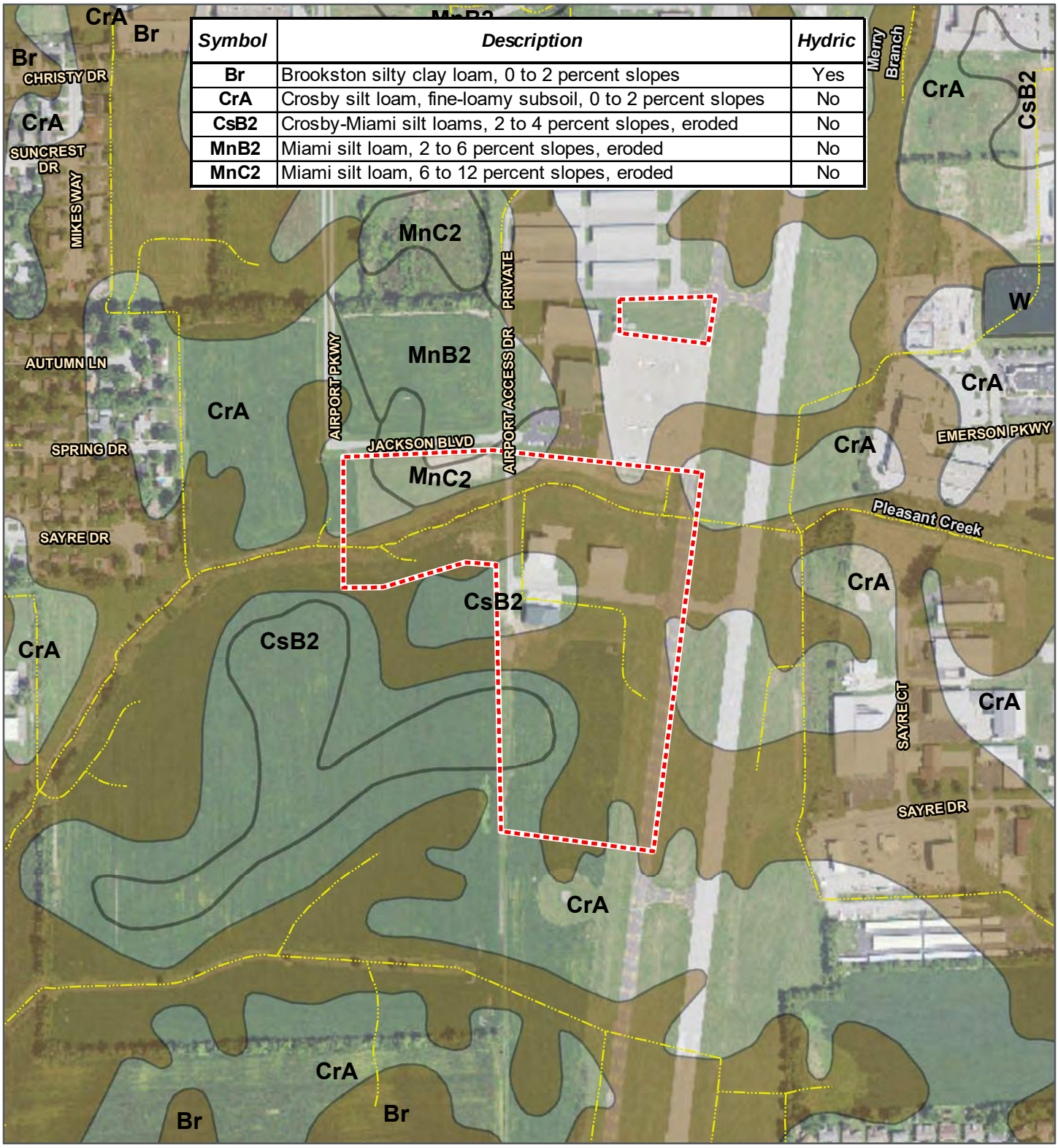
National Agriculture Imagery Program (NAIP), Farm Services Agency (FSA), U. S. Department of Agriculture (USDA), UITS, Indiana Spatial Data Portal , Indiana Department of Natural Resources DFIRM (Published 03/20/2017)



Symbol	Description	Hydric
Br	Brookston silty clay loam, 0 to 2 percent slopes	Yes
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	No
CsB2	Crosby-Miami silt loams, 2 to 4 percent slopes, eroded	No
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	No
MnC2	Miami silt loam, 6 to 12 percent slopes, eroded	No

N W E S

7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0

Figure 4: Soil Survey & NHD
(2016 Aerial)
Indy South Greenwood Airport
Regulated Waters Delineation Report
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Johnson County, Indiana

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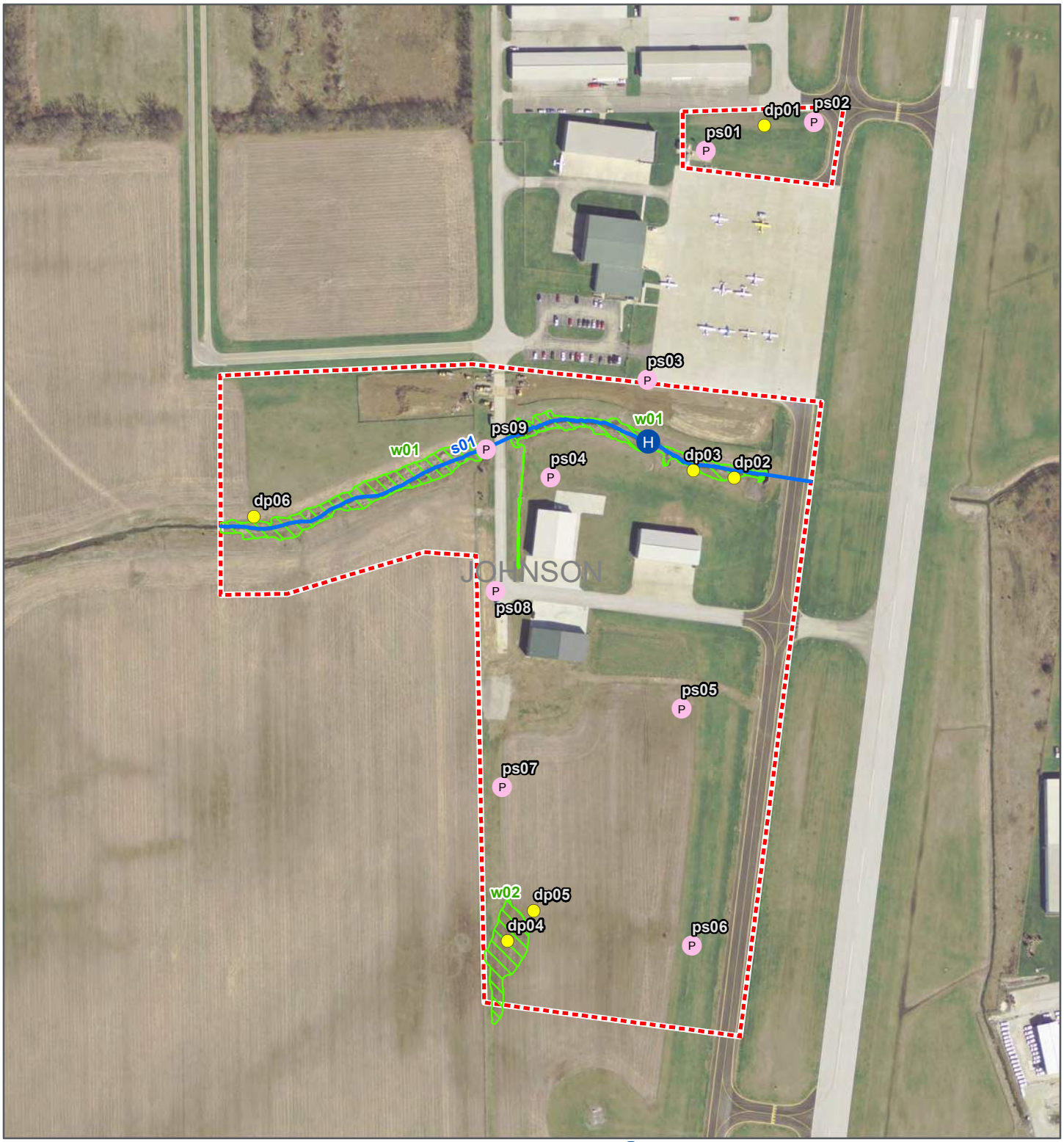
Saved By: Ben.Hess
National Agriculture Imagery Program (NAIP), Farm Services Agency (FSA), U. S. Department of Agriculture (USDA), UITS, Indiana Spatial Data Portal



N
W E
S

7.5' Quadrangle:
Beech Grove Quad
T14N R4E S28
Project No.
J17X6029A0

Figure 5: Delineated Features
Indy South Greenwood Airport
Regulated Waters Delineation Report
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Indy South Greenwood Airport,
Greenwood, Johnson County,
Indiana

APPENDIX B

SITE PHOTOGRAPHS

DP01, View Looking North

DP01, View Looking East

DP01, View Looking South

DP01, View Looking West

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DP02, View Looking North

DP02, View Looking East

DP02, View Looking South

DP02, View Looking West

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DP03, View Looking North

DP03, View Looking East

DP03, View Looking South

DP03, View Looking West

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DP04, View Looking North

DP04, View Looking East

DP04, View Looking South

DP04, View Looking West

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DP05, View Looking North

DP05, View Looking East

DP05, View Looking South

DP05, View Looking West

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DP06, View Looking North

DP06, View Looking East

DP06, View Looking South

DP06, View Looking West

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PS01, View Looking North

PS01, View Looking East

PS01, View Looking South

PS01, View Looking West

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PS02, View Looking North

PS02, View Looking East

PS02, View Looking South

PS02, View Looking West

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PS03, View Looking North

PS03, View Looking East

PS03, View Looking South

PS03, View Looking West

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PS04, View Looking North

PS04, View Looking East

PS04, View Looking South

PS04, View Looking West

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PS05, View Looking North

PS05, View Looking East

PS05, View Looking South

PS05, View Looking West

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PS06, View Looking North

PS06, View Looking East

PS06, View Looking South

PS06, View Looking West

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PS07, View Looking North

PS07, View Looking East

PS07, View Looking South

PS07, View Looking West

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PS08, View Looking North

PS08, View Looking East

PS08, View Looking South

PS08, View Looking West

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PS09, View Looking North

PS09, View Looking East

PS09, View Looking South

PS09, View Looking West

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S01, View Looking Upstream

S01, View Looking Downstream

Red-winged Damsel - *Hetaerina americana*

S01, View Looking Downstream from East Side

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Indy South Greenwood Airport,
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APPENDIX C

WETLAND DELINEATION DATA SHEETS – MIDWEST REGION

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp01

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

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

Slope (%): 0% | Lat: 39.63125759 | Long: -86.08882241 | Datum: NAD83 UTM16N

Soil Map Unit Name: Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Carex frankii*	10%	No	OBL
2. *Trifolium pratense*	25%	Yes	FACU
3. *Setaria glauca*	30%	Yes	FAC
4. *Symphyotrichum pilosum*	25%	Yes	FACU
5. *Poa pratensis*	10%	No	FAC
6. *Digitaria sanguinalis*	20%	No	FACU
7. *Plantago rugelii*	5%	No	FAC
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	125%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species	10%	x1 =	0.1
FACW species		x2 =	
FAC species	45%	x3 =	1.35
FACU species	70%	x4 =	2.8
UPL species		x5 =	
Column Totals:	1.25 (A)		4.25 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation

____ 2-Dominance Test is >50%

____ 3-Prevalence Index is ≤3.0[1]

____ 4-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: dp01

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 3/2	100					Silty Clay Loam	

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

Hydric Soil Indicators[3]:

- ___ 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

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):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp02

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

Landform (hillslope, terrace, etc.): Stream Terrace | Local relief (concave, convex, none): none

Slope (%): 1% | Lat: 39.62919931 | Long: -86.08907709 | Datum: NAD83 UTM16N

Soil Map Unit Name: Brookston silty clay loam, 0 to 2 percent slopes (Br) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	Yes X No ____
Wetland Hydrology Present?	Yes X	No ____		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	40%	Yes	FACW
2. *Agrostis gigantea*	20%	Yes	FACW
3. *Poa pratensis*	15%	No	FAC
4. *Carex granularis*	5%	No	FACW
5. *Carex frankii*	5%	No	OBL
6. *Penthorum sedoides*	5%	No	OBL
7. *Carex tribuloides*	5%	No	OBL
8. *Lycopus americanus*	5%	No	OBL
9. *Echinochloa crus-galli*	2%	No	FACW
10. *Lobelia siphilitica*	5%	No	OBL
11. *Eupatorium perfoliatum*	5%	No	OBL
12. *Alisma subcordatum*	2%	No	OBL
13. *Persicaria maculosa*	1%	No	FACW
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	115%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species	32%	x1 =	0.32
FACW species	68%	x2 =	1.36
FAC species	15%	x3 =	0.45
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	1.15 (A)		2.13 (B)

Prevalence Index = B/A = 1.85

Hydrophytic Vegetation Indicators:

- X 1-Rapid Test for Hydrophytic Vegetation
- X 2-Dominance Test is >50%
- X 3-Prevalence Index is ≤3.0[1]
- ____ 4-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: dp02

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 4/2	95	10YR 4/4	5	C	M	Silty Clay Loam	

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

Hydric Soil Indicators[3]:

- ___ 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp03

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

Landform (hillslope, terrace, etc.): Stream Terrace | Local relief (concave, convex, none): none

Slope (%): 6% | Lat: 39.62924449 | Long: -86.0893841 | Datum: NAD83 UTM16N

Soil Map Unit Name: Brookston silty clay loam, 0 to 2 percent slopes (Br) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Sonchus asper*	2%	No	FACU
2. *Tridens flavus*	20%	Yes	UPL
3. *Setaria faberi*	20%	Yes	FACU
4. *Elymus virginicus*	5%	No	FACW
5. *Setaria pumila*	60%	Yes	FAC
6. *Cyperus strigosus*	5%	No	FACW
7. *Eupatorium perfoliatum*	1%	No	OBL
8. *Erigeron canadensis*	5%	No	FACU
9. *Festuca rubra*	20%	Yes	FACU
10. *Panicum dichotomiflorum*	5%	No	FACW
11. *Paspalum floridanum*	1%	No	FACW
12. *Alisma subcordatum*	2%	No	OBL
13. *Echinochloa crus-galli*	2%	No	FACW
14. *Ambrosia artemisiifolia*	3%	No	FACU
15.			
16.			
17.			
18.			
19.			
20.			
	151%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species	3%	x1 =	0.03
FACW species	18%	x2 =	0.36
FAC species	60%	x3 =	1.8
FACU species	50%	x4 =	2
UPL species	20%	x5 =	1
Column Totals:	1.51 (A)		5.19 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation

____ 2-Dominance Test is >50%

____ 3-Prevalence Index is ≤3.0[1]

____ 4-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: dp03

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 4/2	100					Silt Loam	

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

Hydric Soil Indicators[3]:

- ___ 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

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):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp04

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

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

Slope (%): 0% | Lat: 39.62650441 | Long: -86.09082805 | Datum: NAD83 UTM16N

Soil Map Unit Name: Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	Yes X No ____
Wetland Hydrology Present?	Yes X	No ____		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size: 5' radius)			
1. *Echinochloa crus-galli*	40%	Yes	FACW
2. *Xanthium strumarium*	1%	No	FAC
3. *Rorippa palustris*	2%	No	OBL
4. *Packera glabella*	5%	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	48%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of: That Are OBL, FACW, or FAC:		Multiply by: A/B	
OBL species	2%	x1 =	0.02
FACW species	45%	x2 =	0.9
FAC species	1%	x3 =	0.03
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	0.48 (A)		0.95 (B)

Prevalence Index = B/A = 1.98

Hydrophytic Vegetation Indicators:

- X 1-Rapid Test for Hydrophytic Vegetation
- X 2-Dominance Test is >50%
- X 3-Prevalence Index is ≤3.0[1]
- ____ 4-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: dp04

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 4/2	90	10YR 4/6	10	C	M	Silty Clay Loam	

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

Hydric Soil Indicators[3]:

- ___ 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp05

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

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

Slope (%): 1% | Lat: 39.62668176 | Long: -86.0906261 | Datum: NAD83 UTM16N

Soil Map Unit Name: Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes (CrA) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	100%	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	100%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species	100%	x5 =	5
Column Totals:	1.00 (A)		5 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation

____ 2-Dominance Test is >50%

____ 3-Prevalence Index is ≤3.0[1]

____ 4-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: dp05

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 4/2	100					Silty Clay Loam	

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

Hydric Soil Indicators[3]:

- ___ 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

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):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Indy South Greenwood Airport | City/County: Greenwood/Johnson | Sampling Date: 9/30/2019

Applicant/Owner: Hanson | State: IN | Sampling Point: dp06

Investigator(s): Ben Hess | Section, Township, Range: S28, T14N, R4E

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

Slope (%): 7% | Lat: 39.62900376 | Long: -86.09271238 | Datum: NAD83 UTM16N

Soil Map Unit Name: Brookston silty clay loam, 0 to 2 percent slopes (Br) | NWI 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N 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**	
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Setaria faberi*	40%	Yes	FACU
2. *Sporobolus compositus*	60%	Yes	UPL
3. *Setaria pumila*	30%	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	130%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species		x1 =	
FACW species		x2 =	
FAC species	30%	x3 =	0.9
FACU species	40%	x4 =	1.6
UPL species	60%	x5 =	3
Column Totals:	1.30 (A)		5.5 (B)

Prevalence Index = B/A = 4.23

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation

____ 2-Dominance Test is >50%

____ 3-Prevalence Index is ≤3.0[1]

____ 4-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: dp06

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR 4/2	100					Silty Clay Loam	

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

Hydric Soil Indicators[3]:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
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- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
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- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States* , Version 8.0, 2016.

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)
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- ___ Aquatic Fauna (B13)
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- ___ 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):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

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

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

Remarks:

About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs.

Cardno Zero Harm

Cardno ZERO HARM EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

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10/17/2019

Susan J.H. Zellers, P.E. AAE
Hanson Professional Services Inc.
7820 Innovation Blvd., Suite 200
Indianapolis, Indiana, 46278

Subject: Biotic Resources for the Indy South Greenwood Airport

Dear Mrs. Zellers:

The following summarizes the findings from our recent Biotic Resources Assessment of the Indy South Greenwood Airport. The project area consists of approximately 26.6 acres of agricultural field and maintained commercial land, located south of County Line Road at Airport Parkway in Johnson County, Indiana.

A site assessment was conducted on September 30, 2019 to identify floral and faunal presence and usage, and to inventory the impacts to endangered and threatened species. All vascular plants encountered were recorded and entered into the Floristic Quality Assessment (FQA) program, Indiana Database 2004. All vertebrate species or their sign encountered during the assessment were recorded, in addition to some invertebrate species. There were three distinct Vegetational zones, the maintained turf areas, the stream corridor, and the agricultural field. By far, the stream corridor had the most native species and the highest C-values.

The vascular plant survey identified 127 total species, 79 of which are considered native to Indiana. With the exception of the stream corridor along Pleasant Creek, the flora of the study area is highly manipulated and modified. The average coefficient of conservatism (C-value), a factor that attempts to measure habitat intactness, supports this supposition. The native C-value was 1.7 out of 10 and the total C-value was 1.1 out of ten, which is indicative of disturbed and modified communities. The Floristic Quality Index, which combines the number of species and the mean C-value, give the study area a 15.3 native FQI and a 12.1 total FQI. These are low values for the size of the study area.

Ten vascular plant species observed are listed on the Indiana Invasive Species Council's list. Field Thistle (*Cirsium arvense*, Highly Invasive), Bull Thistle (*Cirsium vulgare*, Highly Invasive), Crown Vetch (*Coronilla varia*, Highly Invasive), Queen Anne's Lace (*Daucus carota*, Medium Invasive), Common St. John's Wort (*Hypericum perforatum*, Low Invasive), White Mulberry (*Morus alba*, Highly Invasive), Reed Canary Grass (*Phalaris arundinacea*, Highly Invasive), Beginner's Pondwood (*Potomegeton crispus*, Highly Invasive), Bradford Pear (*Pyrus calleryana*, Highly Invasive), and Narrow-Leaved Cattail (*Typha angustifolia*, Highly Invasive) were all observed within the study area. The invasive plants with the most coverage were the wetland invasives Reed Canary Grass and Narrow-Leaved Cattail.

Fifteen animal species were observed within the study area. The intensive land management, limited habitat, and short duration of the assessment all contributed to this low number. The list of species observed is located in the appendix.

No potential roost trees for either the Indiana Bat (*Myostis sodalist*) or the Northern Long-eared Bat (*Myotis septentrionalis*) were observed within the study area. There is potential foraging habitat along the Pleasant Creek corridor. No other rare, threatened, or endangered species or high quality natural communities or significant natural habitat areas were observed. Coordination with the Indiana Department of Natural Resources' Natural Heritage Data Center found occurrences of the state endangered reptile, *Clonophis kirtlandii* (Kirtland's Snake) documented within a half mile. Potentially suitable habitat for this species may be present within the study area.

Summary

Based on our site assessment and review of available resources, there are limited biotic resources present within the study area.

Thank you for the opportunity to be of service. Please feel free to call me if you have any questions regarding our report or if we may be of further assistance.

Sincerely,

Ben Hess
Professional Wetland Scientist
for Cardno
317-388-1982
Email: Ben.Hess@cardno.com

Attachments:
Floristic Quality Assessment
Observed Animal Species
Natural Heritage Data Center Coordination

File: J17X6029A0

Site: indysouth airport
Locale: greenwood, in
By: brh
File: c:\FQA\studies\20190630_greenwood2.inv

FLORISTIC QUALITY DATA						
79 NATIVE SPECIES	Native	79	62.2%	Adventive	48	37.8%
127 Total Species	Tree	5	3.9%	Tree	2	1.6%
1.7 NATIVE MEAN C	Shrub	1	0.8%	Shrub	0	0.0%
1.1 W/Adventives	W-Vine	2	1.6%	W-Vine	1	0.8%
15.3 NATIVE FQI	H-Vine	0	0.0%	H-Vine	0	0.0%
12.1 W/Adventives	P-Forb	29	22.8%	P-Forb	11	8.7%
-1.5 NATIVE MEAN W	B-Forb	2	1.6%	B-Forb	5	3.9%
-0.4 W/Adventives	A-Forb	18	14.2%	A-Forb	15	11.8%
AVG: Faculative (+)	P-Grass	7	5.5%	P-Grass	7	5.5%
	A-Grass	3	2.4%	A-Grass	7	5.5%
	P-Sedge	9	7.1%	P-Sedge	0	0.0%
	A-Sedge	1	0.8%	A-Sedge	0	0.0%
	Fern	2	1.6%	Fern	0	0.0%

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
ABUTHE	0	ABUTILON THEOPHRASTI	4	FACU-	Ad A-Forb	BUTTONWEED
ACARHO	0	Acalypha rhomboidea	3	FACU	Nt A-Forb	THREE-SEEDED MERCURY
ACENEG	1	Acer negundo	-2	FACW-	Nt Tree	BOXELDER
ACESAI	1	Acer saccharinum	-3	FACW	Nt Tree	SILVER MAPLE
AGRALA	0	AGROSTIS GIGANTEA	-3	FACW	Ad P-Grass	RED TOP
ALISUB	2	Alisma subcordatum	-5	OBL	Nt P-Forb	COMMON WATER PLANTAIN
AMATUB	1	Amaranthus tuberculatus	-5	OBL	Nt A-Forb	TALL WATER HEMP
AMBARE	0	Ambrosia artemisiifolia v. elatior	3	FACU	Nt A-Forb	COMMON RAGWEED
AMBTRI	0	Ambrosia trifida	-1	FAC+	Nt A-Forb	GIANT RAGWEED
ANDVIR	1	Andropogon virginicus	1	FAC-	Nt P-Grass	BROOM SEDGE
APOCAN	2	Apocynum cannabinum	0	FAC	Nt P-Forb	DOGBANE
ASCINC	4	Asclepias incarnata	-5	OBL	Nt P-Forb	SWAMP MILKWEED
BARVUL	0	BARBAREA VULGARIS	0	FAC	Ad B-Forb	YELLOW ROCKET
BIDFRO	1	Bidens frondosa	-3	FACW	Nt A-Forb	COMMON BEGGAR'S TICKS
BROTEC	0	BROMUS TECTORUM	5	UPL	Ad A-Grass	CHEAT GRASS
CALSEP	1	Calystegia sepium	0	FAC	Nt P-Forb	AMERICAN BINDWEED
CARHIR	0	CARDAMINE HIRSUTA	3	FACU	Ad A-Forb	HAIRY BITTER CRESS
CXFRAN	2	Carex frankii	-5	OBL	Nt P-Sedge	BRISTLY CATTAIL SEDGE
CXGRNG	2	Carex granularis	-4	FACW+	Nt P-Sedge	PALE SEDGE
CXTRBT	5	Carex tribuloides v. tribuloides	-4	FACW+	Nt P-Sedge	BROAD-LEAVED OVAL SEDGE
CXVULP	2	Carex vulpinoidea	-5	OBL	Nt P-Sedge	BROWN FOX SEDGE
CELOCC	3	Celtis occidentalis	1	FAC-	Nt Tree	HACKBERRY
CHAMAC	0	Chamaesyce nutans	4	FACU-	Nt A-Forb	NODDING SPURGE
CHEALB	0	CHENOPODIUM ALBUM	1	FAC-	Ad A-Forb	LAMB'S QUARTERS
CICINT	0	CICHORIUM INTYBUS	5	UPL	Ad P-Forb	CHICKORY
CIRARV	0	CIRSIUM ARVENSE	3	FACU	Ad P-Forb	FIELD THISTLE
CIRVUL	0	CIRSIUM VULGARE	4	FACU-	Ad B-Forb	BULL THISTLE
COMCOM	0	COMMELINA COMMUNIS	0	FAC	Ad A-Forb	COMMON DAY FLOWER
CONCAN	0	Conyza canadensis	1	FAC-	Nt A-Forb	HORSEWEED
CORDRU	2	Cornus drummondii	0	FAC	Nt Shrub	ROUGH-LEAVED DOGWOOD
CORVAR	0	CORONILLA VARIA	5	UPL	Ad P-Forb	CROWN VETCH
CYNLAE	1	Cynanchum laeve	0	FAC	Nt W-Vine	BLUEVINE
CYPESL	0	Cyperus esculentus v. leptostachyus	-3	FACW	Nt P-Sedge	FIELD NUT SEDGE
CYPSTR	0	Cyperus strigosus	-3	FACW	Nt P-Sedge	LONG-SCALED NUT SEDGE
DACGLO	0	DACTYLIS GLOMERATA	3	FACU	Ad P-Grass	ORCHARD GRASS
DATSTS	0	DATURA STRAMONIUM	4	FACU-	Ad A-Forb	JIMSONWEED
DAUCAR	0	DAUCUS CAROTA	4	FACU-	Ad B-Forb	QUEEN ANNE'S LACE
DIGISC	0	DIGITARIA ISCHAEMUM	3	FACU	Ad A-Grass	SMOOTH CRAB GRASS
DIGSAN	0	DIGITARIA SANGUINALIS	3	FACU	Ad A-Grass	HAIRY CRAB GRASS
ECHCRU	0	ECHINOCHLOA CRUS-GALLI	-3	FACW	Ad A-Grass	BARNYARD GRASS
ECLPRO	3	Eclipta prostrata	-3	FACW	Nt A-Forb	YERBA DE TAJO
ELEERY	2	Eleocharis erythropoda	-5	OBL	Nt P-Sedge	RED-ROOTED SPIKE RUSH
ELEOBT	1	Eleocharis obtusa	-5	OBL	Nt A-Sedge	BLUNT SPIKE RUSH
ELYVIR	3	Elymus virginicus	-2	FACW-	Nt P-Grass	VIRGINIA WILD RYE
EPICOL	3	Epilobium coloratum	-5	OBL	Nt P-Forb	CINNAMON WILLOW HERB
EQUARV	1	Equisetum arvense	0	FAC	Nt Fern	COMMON HORSETAIL
EQUFER	2	Equisetum ×ferrissii	-3	FACW	Nt Fern	JOLIET HORSETAIL
EREHIE	2	Erechtites hieracifolia	3	FACU	Nt A-Forb	FIREWEED
ERIANS	0	Erigeron annuus	1	FAC-	Nt B-Forb	ANNUAL FLEABANE
EUPALT	1	Eupatorium altissimum	3	FACU	Nt P-Forb	TALL BONESET
EUPPER	4	Eupatorium perfoliatum	-4	FACW+	Nt P-Forb	COMMON BONESET
FESRUB	0	FESTUCA RUBRA	1	FAC-	Ad P-Grass	RED FESCUE
GERCAR	2	Geranium carolinianum	5	UPL	Nt A-Forb	CAROLINA CRANESBILL
GEULAC	3	Geum laciniatum	-3	FACW	Nt P-Forb	ROUGH AVENS
GLYMAX	0	GLYCINE MAX	5	UPL	Ad A-Forb	SOYBEAN
HIBTRI	0	HIBISCUS TRIONUM	5	UPL	Ad A-Forb	FLOWER-OF-AN-HOUR
HORJUB	0	HORDEUM JUBATUM	-1	FAC+	Ad P-Grass	SQUIRREL-TAIL GRASS

HYPPER	0	HYPERICUM PERFORATUM	5	UPL	Ad P-Forb	COMMON ST. JOHN'S WORT
IMPCAP	2	Impatiens capensis	-3	FACW	Nt A-Forb	SPOTTED TOUCH-ME-NOT
IPOHED	0	IPOMOEA HEDERACEA	0	FAC	Ad A-Forb	IVY-LEAVED MORNING GLORY
IPOPUR	0	IPOMOEA PURPUREA	4	FACU-	Ad A-Forb	COMMON MORNING GLORY
JUNDUD	2	Juncus dudleyi	0	FAC	Nt P-Forb	DUDLEY'S RUSH
JUNTEN	0	Juncus tenuis	0	FAC	Nt P-Forb	PATH RUSH
JUNTOR	3	Juncus torreyi	-3	FACW	Nt P-Forb	TORREY'S RUSH
JUNVIR	2	Juniperus virginiana	3	FACU	Nt Tree	EASTERN RED CEDAR
LACSAL	0	LACTUCA SALIGNA	3	FACU	Ad B-Forb	WILLOW-LEAVED LETTUCE
LACSER	0	LACTUCA SERRIOLA	0	FAC	Ad B-Forb	PRICKLY LETTUCE
LEEORY	2	Leersia oryzoides	-5	OBL	Nt P-Grass	RICE CUT GRASS
LOBSIP	3	Lobelia siphilitica	-4	FACW+	Nt P-Forb	GREAT BLUE LOBELIA
LUDPAL	3	Ludwigia palustris	-5	OBL	Nt P-Forb	MARSH PURSLANE
LUDPEG	2	Ludwigia peploides s. glabrescens	-5	OBL	Nt P-Forb	CREEPING PRIMROSE WILLOW
LYCAME	3	Lycopus americanus	-5	OBL	Nt P-Forb	COMMON WATER HOREHOUND
MEDLUP	0	MEDICAGO LUPULINA	1	FAC-	Ad A-Forb	BLACK MEDICK
MENARV	4	Mentha arvensis v. villosa	-3	FACW	Nt P-Forb	WILD MINT
MORALB	0	MORUS ALBA	0	FAC	Ad Tree	WHITE MULBERRY
MUHFRO	3	Muhlenbergia frondosa	-3	FACW	Nt P-Grass	COMMON SATIN GRASS
OENBIE	0	Oenothera biennis	3	FACU	Nt B-Forb	COMMON EVENING PRIMROSE
OXASTR	0	Oxalis stricta	3	FACU	Nt P-Forb	TALL WOOD SORREL
PACGLA	0	Packera glabella	-5	OBL	Nt A-Forb	BUTTERWEED
PANCAP	0	Panicum capillare	0	FAC	Nt A-Grass	OLD WITCH GRASS
PANDIC	0	Panicum dichotomiflorum	-2	FACW-	Nt A-Grass	FALL PANICUM
PASFLO	2	Paspalum floridanum	-3	FACW	Nt P-Grass	FLORIDA CROWN GRASS
PENSED	2	Penthorum sedoides	-5	OBL	Nt P-Forb	DITCH STONECROP
PERHYR	0	PERSICARIA HYDROPIPER	-5	OBL	Ad A-Forb	WATER PEPPER
PERLAP	0	Persicaria lapathifolia	-4	FACW+	Nt A-Forb	CURYTOP LADY'S THUMB
PERPUN	3	Persicaria punctata	-5	OBL	Nt A-Forb	SMARTWEED
PERVUL	0	PERSICARIA VULGARIS	-3	FACW	Ad A-Forb	LADY'S THUMB
PHAARU	0	PHALARIS ARUNDINACEA	-4	FACW+	Ad P-Grass	REED CANARY GRASS
PHYHET	3	Physalis heterophylla	5	UPL	Nt P-Forb	CLAMMY GROUND CHERRY
PLALAN	0	PLANTAGO LANCEOLATA	0	FAC	Ad P-Forb	ENGLISH PLANTAIN
PLARUG	0	Plantago rugelii	0	FAC	Nt A-Forb	RED-STALKED PLANTAIN
POAPRA	0	POA PRATENSIS	1	FAC-	Ad P-Grass	KENTUCKY BLUE GRASS
POLAVA	0	POLYGONUM AVICULARE v. AVICULARE	1	FAC-	Ad A-Forb	COMMON KNOTWEED
POPDEL	1	Populus deltoides	-1	FAC+	Nt Tree	EASTERN COTTONWOOD
POROLE	0	PORTULACA OLERACEA	1	FAC-	Ad A-Forb	PURSLANE
POTCRI	0	POTAMOGETON CRISPUS	-5	OBL	Ad P-Forb	BEGINNER'S PONDWEED
POTFOL	4	Potamogeton foliosus	-5	OBL	Nt P-Forb	LEAFY PONDWEED
PYRCAL	0	PYRUS CALLERYANA	5	UPL	Ad Tree	BRADFORD PEAR
RORPAF	2	Rorippa palustris s. fernaldiana	-5	OBL	Nt A-Forb	MARSH YELLOW CRESS
RUMCRI	0	RUMEX CRISPUS	-1	FAC+	Ad P-Forb	CURLY DOCK
SAGLAT	3	Sagittaria latifolia	-5	OBL	Nt P-Forb	COMMON ARROWHEAD
SAMVAL	5	Samolus valerandi	-5	OBL	Nt P-Forb	WATER PIMPERNEL
SCHARU	0	SCHEDONORUS ARUNDINACEUS	2	FACU+	Ad P-Grass	TALL FESCUE
SCHTAB	4	Schoenoplectus tabernaemontani	-5	OBL	Nt P-Sedge	GREAT BULRUSH
SCIATR	4	Scirpus atrovirens	-5	OBL	Nt P-Sedge	DARK-GREEN BULRUSH
SETFAB	0	SETARIA FABERI	2	FACU+	Ad A-Grass	GIANT FOXTAIL GRASS
SETPUM	0	SETARIA PUMILA	0	FAC	Ad A-Grass	PIGEON GRASS
SIDSPI	0	SIDA SPINOSA	3	FACU	Ad A-Forb	PRICKLY SIDA
SOLCAR	0	Solanum carolinense	4	FACU-	Nt P-Forb	HORSE NETTLE
SOLDUL	0	SOLANUM DULCAMARA	0	FAC	Ad W-Vine	BITTERSWEET NIGHTSHADE
SOLPTY	0	Solanum ptycanthum	4	FACU-	Nt A-Forb	BLACK NIGHTSHADE
SOLALT	0	Solidago altissima	3	FACU	Nt P-Forb	TALL GOLDENROD
SORBIC	0	SORGHUM BICOLOR	5	UPL	Ad A-Grass	SORGHUM
SPOCOM	1	Sporobolus compositus	5	UPL	Nt P-Grass	ROUGH DROPSEED
SPOVAG	1	Sporobolus vaginiflorus	5	UPL	Nt A-Grass	NORTHERN RUSH GRASS
SYMLAN	3	Symphyotrichum lanceolatum	-5	OBL	Nt P-Forb	PANICLED ASTER
SYMPII	0	Symphyotrichum pilosum v. pilosum	4	FACU-	Nt P-Forb	HAIRY ASTER
TAROFF	0	TARAXACUM OFFICINALE	3	FACU	Ad P-Forb	COMMON DANDELION
TRIFLA	1	Tridens flavus	5	UPL	Nt P-Grass	COMMON PURPLETOP
TRIPRA	0	TRIFOLIUM PRATENSE	2	FACU+	Ad P-Forb	RED CLOVER
TRIREP	0	TRIFOLIUM REPENS	2	FACU+	Ad P-Forb	WHITE CLOVER
TYPANG	0	TYPHA ANGUSTIFOLIA	-5	OBL	Ad P-Forb	NARROW-LEAVED CATTAIL
TYPLAT	1	Typha latifolia	-5	OBL	Nt P-Forb	BROAD-LEAVED CATTAIL
VERURU	3	Verbena urticifolia v. urticifolia	-1	FAC+	Nt P-Forb	WHITE VERVIAN
VERANA	5	Veronica anagallis-aquatica	-5	OBL	Nt P-Forb	WATER SPEEDWELL
VITRIP	1	Vitis riparia	-2	FACW-	Nt W-Vine	RIVERBANK GRAPE
XANSTR	0	Xanthium strumarium	0	FAC	Nt A-Forb	COCKLEBUR

Common Name	*Scientific Name*
Amphibian	
Frog species	*Lithobates sp.*
Bird	
Killdeer	*Charadrius vociferus*
Mourning Dove	*Zenaida macroura*
Song Sparrow	*Melospiza melodia*
Crustacean	
Crayfish species	*Orconectes sp.*
Fish	
Minnow species	*Cyprinidae sp.*
Insect	
Cabbage White	*Pieris rapae*
Common Buckeye	*Junonia coenia*
Common Sulphur	*Colias philodice*
Dragonfly species	*Odonata sp.*
Honey bee species	*Aphis sp.*
Monarch	*Danaus plexippus*
Red-winged Damselfly	*Hetaerina americana*
Mammal	
Coyote	*Canis latrans*
Mollusk	
Asian clam species	*Corbicula sp.*

Division of Nature Preserves
402 W. Washington St., Rm W267
Indianapolis, IN 46204-2739

October 17, 2019

Benjamin Hess
CARDNO
3901 Industrial Boulevard
Indianapolis, Indiana 46254

Dear Benjamin Hess:

I am responding to your request for information on the endangered, threatened, or rare (ETR) species, high quality natural communities, and natural areas for the Indy South Greenwood Airport Expansion project in Johnson County, Indiana. The Indiana Natural Heritage Data Center has been checked and found occurrence of state endangered reptile, *Clonophis kirtlandii* (Kirtland's Snake), documented within 0.5 mile of the project area.

For more information on the animal species mentioned, please contact Christie Stanifer, Environmental Coordinator, Division of Fish and Wildlife, 402 W. Washington Room W273, Indianapolis, Indiana, 46204, (317)232-8163.

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973. If you have concerns about potential Endangered Species Act issues you should contact the Service at their Bloomington, Indiana office.

U.S. Fish and Wildlife Service
620 South Walker St.
Bloomington, Indiana 47403-2121
812-334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. For more information, please contact:

Department of Natural Resources
Attn: Christie Stanifer
Environmental Coordinator
Division of Fish and Wildlife
402 W. Washington Street, Room W273
Indianapolis, IN 46204

(317)232-8163

Please note that the Indiana Natural Heritage Data Center relies on the observations of many individuals for our data. In most cases, the information is not the result of comprehensive field surveys conducted at particular sites. Therefore, our statement that there are no documented significant natural features at a site should not be interpreted to mean that the site does not support special plants or animals.

Due to the dynamic nature and sensitivity of the data, this information should not be used for any project other than that for which it was originally intended. It may be necessary for you to request updated material from us in order to base your planning decisions on the most current information.

Thank you for contacting the Indiana Natural Heritage Data Center. You may reach me at (317)232-3517 if you have any questions or need additional information.

Sincerely,

Teresa Clark

Teresa L. Clark
Indiana Natural Heritage Data Center