



WETLAND STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990 WETLAND PROTECTION

Construct Marquette Greenway Trail Calumet Reroute Section

Indiana Dunes National Park
Porter, Indiana

Recommended:

_____ Date: _____

Acting Superintendent, Indiana Dunes National Park

Certification of technical adequacy and service-wide consistency:

_____ Date: _____

Chief, Water Resources Division

Approved:

_____ Date: _____

Director, Regions 3,4,5 (Midwest)

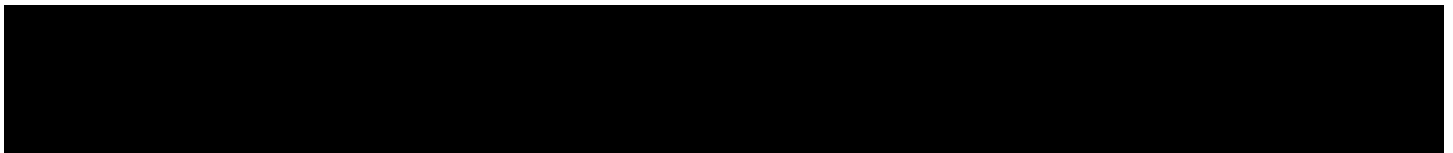


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1.0 INTRODUCTION

The National Park Service (NPS) has prepared this Wetland Statement of Findings (WSOF) for wetlands within a portion of Indiana Dunes National Park (INDU or park) in compliance with NPS Director's Order #77-1: Wetland Protection. INDU proposes to enter into an agreement with Porter County, Indiana (County), to construct a 6.3-mile paved Architectural Barriers Act/Americans with Disabilities Act (ABA/ADA) compliant trail through a portion of the park (Appendix A, Figures 1 - 2).

The purpose of the project is to facilitate the connection of sections of the Marquette Greenway Trail (MGT) and improve access to this area of the park by entering into an agreement with the County for the construction of an approximately 6.3-mile section of the MGT called the Calumet Reroute Segment. The MGT is a three-state, five-county, initiative to build a 60-mile ABA/ADA trail from Chicago, IL to New Buffalo, MI, linking together several trail facilities, communities, major parks, and a wide variety of cultural, natural, and economic assets across Northern Indiana as part of Indiana's Visionary Trail System. The proposed action is needed because there are no viable existing ABA/ADA compliant trails in this section of the park to connect adjacent MGT segments and to provide for non-motorized visitor use, access, and recreation.

This trail segment would become part of the MGT and part of Indiana's Visionary Trail System. The Indiana Visionary Trail System is a collection of over 150 miles of existing and proposed trail corridors that provide a backbone for connected trails throughout Indiana and is a tool to help encourage developers to work together to complete and connect these corridors (IDNR – Division of Outdoor Recreation 2019). The trail would also be a recreation asset to the park, including allowing visitors to experience units of the park that were previously inaccessible. The trail would also provide park staff accessibility to manage these park areas.

INDU had previously identified the need for an east-west trail connecting all units of the park in the 1980 and 1997 Indiana Dunes National Lakeshore General Management Plans as well as the 1991 Little Calumet River Corridor Plan. This trail would facilitate several points of access to Lake Michigan as well as be part of the east-west trail connection from Miller Woods in the western section of the park (Gary, IN) to Mount Baldy in the eastern section of the park (Michigan City, IN). The Northwestern Indiana Regional Planning Commission (NIRPC) and several other local entities, in conjunction with park staff, have been working to close the gap separating the units of INDU for more than a decade.

A wetland delineation was completed throughout the project area (a 200 to 300-foot-wide project corridor was established around the proposed trail route, please see Appendix A, Figure 2). Development of the 6.3-mile trail project requires 45 individual wetland impacts on NPS land. The trail is being routed along existing roadways, roadbeds, and active trail routes to maximize avoidance and minimization of wetland impacts. Six wetland impacts would be mitigated with raised boardwalk construction, 38 impacts to previously disturbed areas would be excepted from further compliance with Director's Order #77-1: Wetland Protection, and one 0.008-acre wetland impact does not require compensation.

This Wetland Statement of Findings was written in accordance with the NPS Procedural Manual #77-1: Wetland Protection.

2.0 PROPOSED ACTION

The Environmental Assessment's (EA) preferred alternative, Alternative B – Build the Trail, would consist of construction of an ABA/ADA compliant, non-motorized trail that would be a 10-foot-wide asphalt trail with 2-foot-wide aggregate shoulders on either side of the trail (Figure 1, page 11 below). The County selected asphalt for the trail surface as it provides an easily maintainable and ABA/ADA compliant surface that is preferred for multi-use trails that include pedestrians, bicyclists, and limited-mobility users. The 10-foot-wide main trail is designed for 2-way traffic with 2-foot-wide recovery areas (shoulders) for safety. The recovery areas also serve an important role in preventing edge cracking of the paved surface ensuring the longest lifespan possible. The preferred design of bridges would have timber decking with a concrete pier cap constructed on helical piles. No piers would be placed in the waterway. In addition, through wetlands, boardwalks would be installed, each section at least 2 feet above the wetland surface (Figure 2, page 11 below).

The County is not proposing the construction of any major trail amenities (such as lighting, restrooms, shelters) for this segment of the trail. “Stay on Trail”, hazard, directional, and interpretive signs may be added as needed through the corridor following NPS guidelines and approval from INDU. The limit of construction disturbance would be approximately 25-foot-wide. The construction limit width would be as narrow as possible along the route and not necessarily a uniform 25 feet. As soon as construction is completed, the County would rehabilitate disturbed areas. Rehabilitated areas would use NPS-approved, native seed mixtures. Erosion control materials would be biodegradable (all natural fibers) debris free as well as meet the United States Department of Agriculture (USDA) defined “snake-friendly” for Indiana (USDA 2013). The County would submit proposed seed mixes and source of materials to the park prior to the start of construction).

A Cooperative Management Agreement with Porter County has already been signed outlining trail maintenance and management. All maintenance and management would meet INDU requirements such as wildlife proof trash bins, proper vegetation management, and trail surface treatment. The park would also utilize the volunteer Trail Crew for basic maintenance activities.

2.1 Project Location

The trail would run from State Road 49 (SR-49) in the town of Porter, IN to Lake Shore County Road in Beverly Shores, IN. The proposed new trail alignment (Action Alternative) would extend for approximately 6.3 miles starting just south of the intersection of SR-49 and U.S. Highway 12 (US-12). The project would be broken up into seven sections (please see Appendix A, Figure 3.0 – 3.7):

1. Section 1 (0.85 miles): Start at the Dunes Kankakee trail at SR-49 and continue east to Tremont Road.
2. Section 2 (0.75 miles): After crossing Tremont Road, the trail would continue northeast to Hadenfelt Road (CR-150 E).
3. Section 3 (1.10 miles): At Hadenfelt Road, the trail would follow the road north to Furnessville Road (CR-1500 N) and then turn east following Furnessville Road to Teale Drive. At Teale Drive, the trail would continue north to US-12.
4. Section 4 (1.05 miles): At US-12, the trail would continue to the east and generally follow along the south side of US-12 before turning north at Kemil Road (CR-300E) to cross US-12.
5. Section 5 (0.95 miles): From Kemil Road, the trail would follow along a series of old roadbeds till it crosses Wieland Ditch at a new bridge crossing.
6. Section 6 (1.15 mile): From Wieland Ditch the trail continues along Service Avenue, turns south to run along the south side of the Town of Beverly Shores town buildings, returns to Service Avenue, and continues along roadbeds till it connects with the existing Calumet Trail.
7. Section 7 (0.4 miles): The trail would run along the existing Calumet Trail/utility line corridor for the last 0.4 miles of trail till the project ends at Lake Shore County Road.

INDU contains 15,349 acres within its established boundary and is located approximately 50 miles southeast of Chicago, IL, in the counties of Lake, Porter, and LaPorte in Northwest Indiana’s industrial-urban corridor. It encompasses approximately 15 miles of Lake Michigan’s southern shoreline and extends from the City of Gary, IN on the west to Michigan City, IN on the east (Appendix A, Figure 1). The park is at the southernmost tip of Lake Michigan and shares its boundaries with residential, agricultural, recreational, and industrial developments. The park contains over 50 miles of hiking trails and 37 miles of multi-use trails.

3.0 INVESTIGATIONS OF ALTERNATIVES

Two alternatives were investigated in the Environmental Assessment (EA). These are summarized below and include:

- Alternative A – No Action (Do Not Build the Trail)
- Alternative B – Build the Trail

3.1 Alternative A – No Action

Under Alternative A - No Action, the park would deny the County's construction proposal and not allow this segment of the Marquette Greenway Trail to be built in the park.

3.2 Alternative B – Build the Trail (Preferred Alternative)

Under the Alternative B – Build the Trail, the County would realign approximately 6.3 miles of trail through a section of the park which would become part of the Marquette Greenway Trail. The County worked with consultants and park staff to select a trail alignment based on the local topography, vegetation composition, and utility easement restrictions, which prohibit the construction of paved trails within an active gas line. The ABA/ADA compliant, non-motorized trail would be a 10-foot-wide asphalt trail with 2-foot-wide aggregate shoulders on either side of the trail (Figure 1). The County selected asphalt for the trail surface as it provides an easily maintainable and ABA/ADA compliant surface that is preferred for multi-use trails that include pedestrians, bicyclists, and limited-mobility users. The 10-foot-wide main trail is designed for 2-way traffic with 2-foot-wide recovery areas (shoulders) for safety. The recovery areas also serve an important role in preventing edge cracking of the paved surface ensuring the longest trail lifespan possible. The preferred design of bridges would have timber decking with a concrete pier cap constructed on helical piles. No piers would be placed in the waterway (riverine wetland). In addition, through wetlands, a raised boardwalk would be installed (Figure 2).

Portions of Furnessville Road, Hadenfelt Road, and Veden Road, which are all park owned, would be permanently closed to vehicle use and utilized as trail. This would reduce trail construction disturbance by approximately one mile and would eliminate five road crossings of this trail project and other existing park trails (which include horses).

4.0 SITE DESCRIPTIONS – WETLANDS

Director's Order #77-1: Wetland Protection requires parks to avoid, to the extent possible, adversely impacting wetlands and all NPS activities that have the potential to have adverse impacts on wetlands be conducted in a manner consistent with the goal of no net loss of wetlands. Procedural Manual #77-1: Wetland Protection provides procedures for NPS to implement this.

4.1 Wetland Delineation

A wetland delineation was completed in 2022 using the routine methodology as outlined in the 1987 U.S. Army Corps of Engineers' Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (U.S. Army Corps of Engineers, 2012). Guidance within the NPS Procedural Manual #77-1: Wetland Protection was also followed for delineating and mapping wetlands to meet NPS requirements. All the wetlands identified within the project area (Wetlands 1 – 30) met NPS requirements for wetlands. Four waterways were identified on site which are considered riverine wetlands under NPS jurisdiction.

For purposes of the wetland delineation, a 200 to 300-foot-wide project area was established around the proposed trail route (Appendix A, Figures 1 – 3). Soil Solutions, Inc., an environmental consulting company that works almost exclusively in Northwest Indiana, completed the field work for the wetland delineation between April and June 2022. The field work was completed by qualified wetland delineators, including two Certified Professional Soil Scientists (CPSS), a botanist, and a biologist.

Four riverine and 30 palustrine wetlands were identified in the project area during the wetland delineation in 2022.

4.2 Riverine Wetlands: Streams and Drainageways

The project area includes a roadside ditch (Stream 1), Wieland Ditch (Stream 2), Dunes Creek (Stream 3), and an unnamed tributary of Dunes Creek (Stream 4).

TABLE 1. STREAMS AND DRAINAGEWAYS IDENTIFIED WITHIN THE PROJECT AREA.

Stream Feature	Linear Feet	Cowardin Classification
Stream 1 – Roadside Ditch	220	R4SBC
Stream 2 – Wieland Ditch	177	R2UBFx
Stream 3 – Dunes Creek	1,128	R2UBFx
Stream 4 – Unnamed Tributary of Dunes Creek	537	R4SBC
Totals	2,062	

4.3 Palustrine Wetlands: Forested, Scrub-Shrub, and Emergent Wetlands

The on-site wetland delineation identified 91.72 acres of forested and emergent wetlands in the project area. Thirty wetlands were identified and 10 of these would be impacted by the trail project. The impacts include areas along the edges of existing roadways that would be filled for trail development or for installation of new culverts in drainage ways.

4.4 Floristic Quality Assessment

A floristic quality assessment was completed by Soil Solutions, Inc. as part of the requirements of a USACE Section 404 permit. This identified community types within the project area and assessed quality based on the remnant species diversity and dominance of non-native and invasive species. A 200 to 300-foot corridor was assessed around the planned trail route. This area included the Great Marsh interdunal wetland complex and the Glenwood – Calumet Dunes Forest system just to the south. Within the Glenwood – Calumet Dunes are interdunal wetlands, depressional forested wetlands, and a mesic/floodplain forest complex along Dunes Creek.

The eastern end of the project area and trail route runs through the Great Marsh wetland complex (from Lake Shore County Road to Kemil Road). An extensive network of roads was developed and abandoned within the marsh over the past 100 years. The east end of the project area largely runs along old roadbeds or within the existing NIPSCO utility corridor. Where the roadbeds run through forested wetland (hydromesophytic swamp forest), the adjacent wetlands are high quality with limited invasive species. The roadbeds within the wetlands are overgrown with a mixture of non-native shrubs. Where the roadbeds run through upland forest, the roadbeds and adjacent dune forest are dominated by Asian bittersweet (*Celastrus orbiculatus*) and non-native shrubs.

The central portion of the project area, between US-12 and Furnessville Road, encompasses dune forest along the Calumet Dunes as well as the interdunal wetland system to the south. Portions of this dune forest community were developed with roads and houses which disturbed the landscape. The areas around the USGS office on Kemil Road and east towards Oakwood Street have extensive areas dominated by invasive shrubs such as burning bush (*Euonymus alatus*). The portions of dune forest outside of the areas that were formerly residential development, are still high quality with a largely open understory. Many locations of sensitive species have been identified within this portion of the project area.

The west end of the project area is the most disturbed. This area is located between Hadenfelt Road and SR-49. This area has been impacted in the past with either residential development or possibly agricultural use. Much of the dune forest in this area is heavily degraded. Dunes Creek (Stream 3) runs through this area. The creek meanders through a stream valley with diverse species along the floodplain and adjacent seeps. This area, though diverse, is also threatened by invasive species (Japanese barberry, *Berberis thunbergii*). Overall, the west end of the project area is the most disturbed.

The floristic quality assessment includes vegetation surveys for the hydromesophytic swamp forest, wet prairie, and old field/dry prairie along the Calumet Trail, dune forest, forested wetland, and roadbeds. The hydromesophytic swamp forest is only found at the east end of the project area in Beverly Shores. The wet prairie community is only found along the Calumet Trail on NIPSCO property. Dry prairie/old field includes dry prairie along the trail as well as small prairie openings within dune forest or areas that are open because of past development. Dune forest includes all upland forest within the project area. Forested wetland includes the interdunal wetlands south of the Calumet Dunes, forested wetland seeps adjacent to Dunes Creek, and forested wetland found along narrow drainage ways. The final community type is roadbed which includes the filled roadbeds within the Great Marsh wetland system as well as roadbeds that were developed and abandoned within the rest of the project area.

4.5 Wetland Communities

Palustrine Emergent

The Wet Prairie community type is found exclusively along the existing Calumet Trail and south of the hydromesophytic swamp forest. This is a diverse community type but much of it within the project area is degraded. It is adjacent to the Calumet Trail on land owned by NIPSCO. Installation of a utility line within the past 5 years disturbed portions of the project area.

Moderate quality wet prairie was dominated by a variety of species in the Asteraceae including parasol white-top (*Doellingeria umbellata*), flat-top goldenrod (*Euthamia graminifolia*), spotted trumpetweed (*Eupatorium maculatum*), sunflowers (*Helianthus* spp.), goldenrods (*Solidago* spp.), and asters (*Symphyotrichum* spp.). Other dominant species included rushes (*Juncus* spp.), sedges (*Carex* spp.), and the invasive species purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis* ssp. *australis*), and cattail (*Typha x glauca*). Low quality wet prairie was dominated by common reed or cattail.

Palustrine Forested and Scrub-Shrub

The Swamp Forest community type includes the hydromesophytic swamp forest within the Great Marsh wetland complex. This diverse community type is almost all considered high quality within the project area. Within the high-quality swamp forest, the canopy included species such as pin oak (*Quercus palustris*), black tupelo (*Nyssa sylvatica*), and red maple (*Acer rubrum*). Common understory shrubs included spice bush (*Lindera benzoin*) and winterberry holly (*Ilex verticillata*). Swamp Forest was largely intact and high quality throughout the project area. A small amount of Swamp Forest near the Beverly Shores town buildings is degraded with a canopy of green ash (*Fraxinus pennsylvanica*) and an understory of reed canary grass (*Phalaris arundinacea*).

The Forested Wetland community type includes small areas of forested wetland located in depressional areas between dunes, forested wetlands along streams and drainage ways, and forested seeps along the base of hill slopes. Forested wetland located in more isolated portions of the park was highest quality while other areas in fragmented locations were more degraded.

Forested Wetland with a diversity of species and limited cover of invasive species was considered high quality. This community type was dominated by red maple, button bush (*Cephalanthus occidentalis*), sedges, and rushes and ferns such as cinnamon fern (*Osmunda cinnamomeum*) and royal fern (*Osmunda spectabilis*).

Areas with limited herbaceous diversity or moderate invasive species cover were considered moderate quality. Moderate quality forested wetland included similar species but with less diversity, cover, or with moderate levels of invasive species present.

5.0 FUNCTIONAL ASSESSMENT

5.1 Biotic Functions

Alternative B – Build the Trail would result in minor, localized, direct impacts on aquatic species and habitats. There would be a loss of 0.26 acres of wetland habitat. But loss of habitat would be minimal as it is very narrow within individual wetlands and located next to existing disturbed corridors. The adjacent wetlands would continue to provide the same wildlife habitat. Suitable habitat for the Indiana bat, northern long-eared bat, and tricolored bat is found within the project limits. To avoid impacts to this species, no trees would be cut during the roosting season (April 1 to September 30). Suitable habitat for the eastern massasauga is found within the utility line corridor. Exclusion fencing would be installed prior to construction activities during the active season for this species (April 15 – October 15). Overall, trail development may result in minor adverse impacts to the Indiana bat, northern long-eared bat, and tricolored bat, or eastern massasauga but these impacts would be minimized with the implementation of tree clearing restrictions and minimization measures.

5.2 Hydrologic Functions

The design of the trail allows for storm water to flow under the trail through a series of trench drains spaced every 300 – 500 feet along the trail where it is bordered by wetland. The existing roadbeds either have culverts or have sections washed out where water flows across the roadbeds. No significant changes to wetland hydrology are proposed or expected.

5.3 Cultural Values

There are known cultural resources within the trail project area and as a result of a Phase IA investigation, seven new archaeological sites were identified, and one previously identified site was investigated. In addition, one area containing post-contact fill was located and documented in the field. Development of the trail has the potential to adversely impact unknown archeological sites and artifacts in the project area. Adverse impacts could be permanent if damage ensues but would not result in additional impacts to cultural resources in a measurable way. Additionally, because a Phase IA investigation was conducted, additional archaeological sites were identified which may not have been found otherwise.

5.4 Research and Scientific Values

There are numerous scientific and research projects associated with the park. Fire Effects within INDU has several long-term vegetation monitoring plots within the project area. The trail was rerouted to avoid impacts to these plots as well as sensitive plant species in the area. There are no known studies that specifically occur within the project area. The construction of the proposed ABA/ADA accessible trail and associated loss of wetland and upland vegetation would not significantly affect the developed and impacted environment in the immediate vicinity. This disturbance is relatively small in comparison to INDU as a whole.

5.5 Economic and Recreational Values

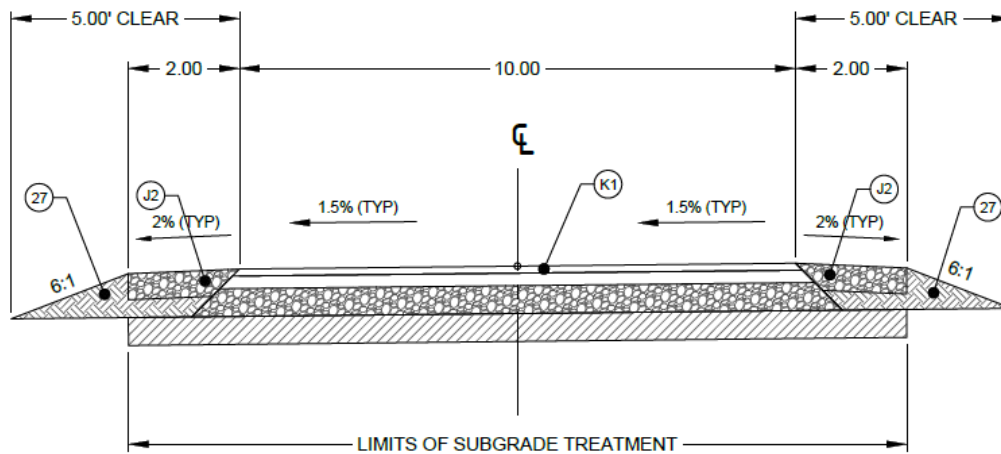
Annual recreational visitation at the park has been increasing for the past decade and averaged more than 2 million visitors over the last 3 years (2019-2021). In 2021, the park saw a record visitation of 3.17 million. The population surrounding the park continues to grow, with increased residential and commercial development. This growth is anticipated to result in increased demand for recreational opportunities and contributes to increases in annual park visitation. The COVID-19 pandemic put a spotlight on the park and the surrounding region. People are moving to Northwest Indiana from Illinois to take advantage of the outdoor recreation opportunities and favorable economic conditions. This project would enhance connections between existing trails within the park and the County and when additional sections of the greater MGT have been completed, would likely increase visitor use at the park.

6.0 PROPOSED IMPACTS

The detailed maps in Appendix A (Figure 3.1 – 3.7) show the proposed new trail route, existing trails and roads, wetlands, and proposed impacts. The impact description section goes through each section of the project (outlined in section 2.1 above) to provide details of individual impacts.

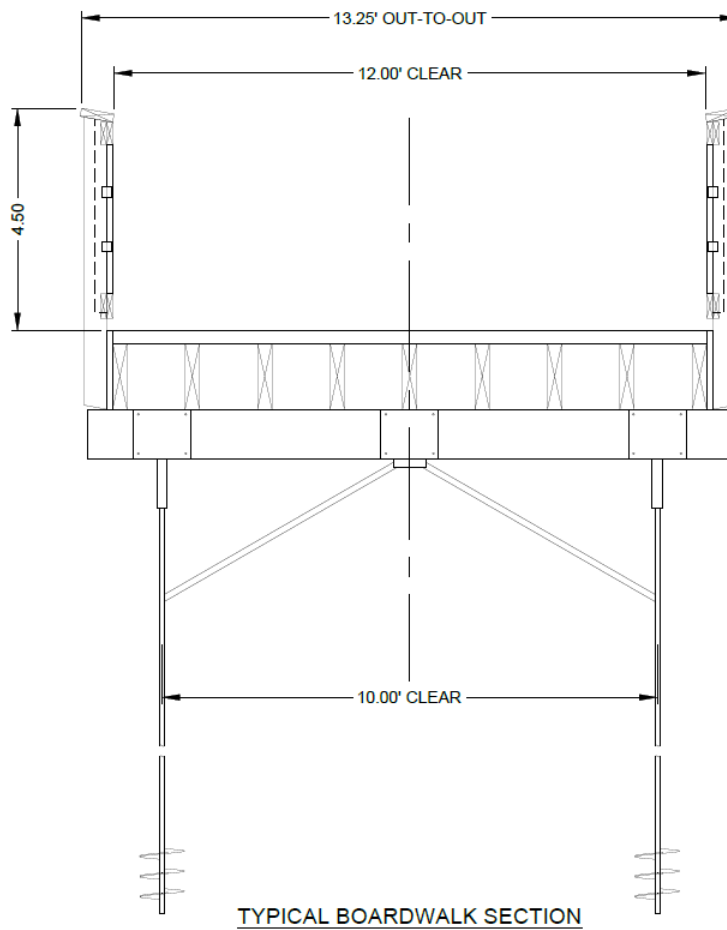
6.1 Trail Section Details

Figure 1. Typical Trail Section (sample only; design not finalized).



TYPICAL MULTI-USE ASPHALT TRAIL SECTION

Figure 2. Typical boardwalk section (sample only; design not finalized). The boardwalk deck would be raised a minimum of 2 feet above the ground surface.



TYPICAL BOARDWALK SECTION

6.2 Impact Descriptions

Figure 3.1 Impacts (Appendix A)

Impact 1 in Wetland 30 (0.008 acre)

The first quarter mile of trail is the only section of the project area without existing roadbeds or trails. Here, the trail was routed to cross through the narrowest portion of Wetland 30, the drainage way portion at the north end of the wetland. Though not mapped, this wetland continues to the north and south and so a wetland crossing was unavoidable. A pre-cast concrete box culvert with a headwall would be installed in the drainage way portion of the wetland to allow for development of a paved asphalt trail to cross Wetland 30. A box culvert was chosen for this crossing, rather than a boardwalk, to allow for an asphalt truck to drive across this area to pave the portion of trail west of this crossing not only during construction but also for later park operations. Vehicular access from the roadway to the west is not feasible as the existing trail system is separated from the adjacent roadway by a wooden barrier.

Impact 3 (0.005 acre) in Stream 4

Impact 3 is located at an existing trail crossing over a small drainage way, a wooden boardwalk that is part of the Glenwood Dunes Trail system. Impact 3 is for installation of a concrete box culvert in a drainage way where there is currently a wooden deck. Installation of a culvert would allow for an asphalt truck to cross this drainage way to reach the approximately 200 feet of trail from this point to the boardwalk crossing to the west (Impact 2). Asphalt trucks cannot cross the raised boardwalks.

Figure 3.2 Impacts (Appendix A)

No Impacts

There are no planned impacts for this section of trail. The trail would cross Dunes Creek and the adjacent wetlands with a raised boardwalk on helical piers. The location of the trail crossing over these wetlands was chosen to utilize an existing roadbed (labeled "Road Name Unavailable" on the map) that travels east from 150 East. Using this existing roadbed reduces impact to the upland hillslope. The boardwalk crossing the stream and wetlands would be 5 to 7 feet above the surface of wetlands.

Figure 3.3 Impacts (Appendix A)

Impacts 7, 8, and 9 in Wetland 18, 17, and 15 (0.01 acre)

Impacts 7, 8, and 9 are located in wetlands adjacent to Teale Drive. The trail would run down the center of this abandoned road and narrow impacts in previously-disturbed wetlands are necessary along the edges to construct the trail with safe maneuverable side slopes and a recovery area which are required for ABA/ADA compliant trails. Impacts 7 and 8 are located at the south end of Teale Drive where small roadside ditches are located adjacent to the edge of the roadbed. Here the roadbed edge has collapsed over time and so it is necessary to impact the adjacent previously-disturbed wetland to reconstruct the roadbed for trail development. Impact 9 is located further north along Teale Drive. Here the side slopes of the roadbed have eroded over time and a narrow impact is necessary along the toe of slope to rebuild the side slope to support the paved trail along Teale Drive.

Figure 3.4 Impacts (Appendix A)

No Impacts

There are no planned impacts for this section of trail.

Figure 3.5 Impacts (Appendix A)

Impacts 16 – 37 in Wetlands 5 – 8

Figure 3.5 includes the portion of the trail that crosses US-12, runs north and east through the utility line corridor owned by the local public utility company (NIPSCO), and then turns north to return to NPS property. Impacts 10 – 15 are not on NPS property. From this point to the end of the trail system, the project runs through the Town of Beverly Shores and within a series of abandoned roads that were developed between the 1920s through the 1940s. From the utility line corridor, the trail turns north onto Lake Shore Drive, east onto Mertz Avenue, north onto Seville Avenue, and then finally onto Service Avenue. Impacts 16 through 36 are all associated with minor encroachment to wetlands based on constructing the trail and redeveloping the roadbeds with acceptable side slopes. Each of these impacts are for placement of fill along the existing toe of slope of the roadbed. Wieland Ditch (Stream 2) would be spanned with a bridge anchored in the uplands on either side of the drainage way with no wetland impact. This was historically a culverted crossing, but the culvert was removed when the road was abandoned.

Construction of this portion of the trail would take place within the existing roadbeds. No staging areas or construction areas would be required within the adjacent wetland on either side of the existing roadbeds.

Figure 3.6 Impacts (Appendix A)

Impacts 38 – 53 in Wetlands 1 – 4 (0.659 acre)

Figure 3.6 shows the trail continuing to run along Service Avenue on NPS land. Impacts 38 – 53 are all along Service Avenue and are all associated with minor encroachment into previously-disturbed wetlands based on constructing the trail and redeveloping the roadbeds with acceptable side slopes. The trail turns north off Service Avenue to run along two old roadbeds, Manning Avenue and Wendell Avenue, each of which is wide enough for trail construction without additional wetland impacts. Wendell Avenue ends and from here there are no more existing roadbeds to run the trail. Service Avenue, through mapped, was not constructed beyond this point. From the end of Wendell Avenue, a raised boardwalk would be constructed to return the trail to the utility line corridor. This boardwalk would be a minimum of 2 feet above the existing grade but would average 32 inches above grade. A 16-foot-wide area would be cleared within the forested wetland for installation of the raised boardwalk. Equipment would be staged between the 10- foot wide spacing of the helical piers. Construction of this portion of the trail would take place between December 1st to February 28th while the ground is frozen.

Figure 3.7 Impacts (Appendix A)

No Impacts

After the raised boardwalk at the end of Wendell Avenue, the trail returns to the utility line corridor and would run within the corridor to the end of this trail project. This land is owned by NIPSCO and so there are no NPS wetland impacts within this area.

7.0 MITIGATION ACTIONS

The trail was routed along existing roadways and trails to the extent possible to avoid further habitat fragmentation and to minimize wetland impacts. Section 3.6 of the EA details alternative routes and paths that were considered but dismissed from further consideration.

7.1 Avoidance and Minimization

This trail project minimizes wetland impacts to the extent possible. Mitigation measures and best management practices would be implemented during trail construction to reduce adverse impacts to wetlands including using silt fencing and other erosion control measures, using locally sourced sand as fill material, using locally sourced native seed and plant materials for any areas that need to be revegetated, and using construction fencing to protect sensitive resources such as wetlands or sensitive plant species to prevent resource damage.

The construction of the trail would primarily occur on existing roadbeds that were originally developed through wetland. To minimize and avoid new wetland impacts, this trail is routed along the existing roadbeds. The majority of the impacts (0.247 acres of the 0.26 acres total) is fill along the toe of slope of the roadbeds to rebuild eroded side slopes. The impacts are narrow; 1-4 feet wide located at the edge of the road prism and within the limits of past disturbance.

A network of old roadbeds and existing trails runs through much of the current project area. These existing disturbed corridors were used as much as possible to route the new alignment. There are 45 individual wetland impacts associated with the project on NPS land, 44 of which are considered excepted actions for either boardwalk installation, minor stream crossings, or maintenance or repair of existing structures (roadbeds). A single wetland impact (0.008 acre) is a new wetland impact in an undeveloped area.

The typical trail would be a 10-foot-wide asphalt trail with 2-foot-wide aggregate recovery areas (shoulders) (see Figure 1). Boardwalks would be used in all wetland crossings and each boardwalk would be raised at a minimum 2 feet above the ground surface; most would be elevated higher (see Figure 2). Boardwalk locations are identified in the drawings in Appendix A (Figures 3.1 – 3.7).

Following construction of the trail, disturbed areas would be revegetated with park-approved native plant species. Overall functions of the wetlands are not likely to be noticeably altered because of the generally small area disturbance in relation to the total acres of wetlands present in the project area as well the location of the trail route along existing corridors through previously disturbed wetlands. Narrow areas (3-4 feet wide) of wetland vegetation would be filled along sections of the roadbed to develop the appropriate base and side slopes for the ABA/ADA compliant trail. Remaining adjacent wetlands would continue to filter and convey precipitation and provide important wetland habitat, functions, and values.

Public roadways are being closed in order to route the trail along roadbeds to avoid impacts to sensitive plant resources and wetlands (Figures 3.2 – 3.3). County Road 150 E would be closed with a cul-de-sac installed south of the trail. Furnessville Road/County Road 1500 N would be completely closed to traffic from the intersection with US-12 to the west to the end of the trail beyond Teale Drive. Routing the trail along Furnessville Road avoided impacts to Wetlands 17, 21, 24, and 25 as the trail was planned to run along the north side of the road.

Figures 3.1 – 3.7 in Appendix A show the alignment of the proposed trail route in relation to the existing trail system and roadways. Figure 3.1 has two permanent wetland impacts for culvert installation within drainage ways. The trail was routed at the narrowest point in Wetlands 29 and 30 to minimize impacts.

Figure 3.2 shows a temporary impact for a boardwalk over Dunes Creek. The adjacent forested wetland system includes seep fed wetlands and stream terrace wetlands adjacent to meandering portion of Dunes Creek. The wetland is high quality and diverse. Permanent impacts to this wetland were completely avoided by installing a boardwalk system through this stream valley.

Figure 3.3 includes the section of trail that was rerouted onto Furnessville Road to avoid impacts to sensitive and threatened and endangered plant species found on the north side of the road as well as impacts to the wetlands found on both sides of the roadway. Permanent impacts were necessary where the trail runs north along an existing roadbed, Teale Drive, as there are several pinch points where the wetlands are close to the edge of the road. From here the trails through dune forest with no planned wetland impacts (Figure 3.4).

Figure 3.4 Shows wetland 13 close to an existing trail system and the new trail would align closely with the existing trail in this area. Wetland 13 is 16 feet from the edge of the trail and in this situation, construction fencing, or erosion control

fencing would be placed at the limits of construction, 8 to 10 feet beyond the trail edge, which would be outside the boundaries of Wetland 13 to prevent accidental damage to this wetland.

Figure 3.5 shows the trail route as it crosses US-12 and moves onto the system of utility corridors and existing roadways through the hydromesophytic swamp forest in the Town of Beverly Shores. The roadways shown between US-12, Kemil Road, and Beverly Drive are all abandoned roadways. The planned trail route would cross US-12, turn east onto the existing utility corridor (NIPSCO land), then move onto the old road system of Lake Shore Drive, Mertz Avenue, and Service Avenue. The details the reasons for not running the trail along the utility line easement and also an existing trail called the Calumet Trail. Essentially this route is an access road for the utility company to service its transmissions lines. The trail is bounded by wetlands on both sides and the trail itself floods frequently. Improving the trail on this corridor would require more than one acre of wetland impact which would require even greater amounts of wetland mitigation. For these reasons, the trail was routed onto the system of old roadbeds on INDU land and small individual wetland impacts would be required along these roads to widen the base for trail construction.

Figure 3.6 shows more of the route through Beverly Shores and the old roadway system. The roadway system ends at the east end of Wendell Avenue where it runs through Wetland 1. There is no roadbed for Service Avenue where it is mapped east of Wendell Avenue. From here to the east end of the project area, there were no viable roadbeds to run the trail and so from Wendell Avenue, the trail would run along a boardwalk section to connect back to the Calumet Trail/NIPSCO corridor. Again, this area is outside of NPS property, but this last section of trail (Figure 3.7) is one of the largest wetland impacts for the entire project (0.38 acres).

7.2 Specifications, Mitigations, and Best Management Practices

The park places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the park, in cooperation with the County and contractors, would implement the following typical measures as part of Alternative B – Build the Trail.

The items in this section have been considered during the route selection process. Specific stipulations and mitigations would be created as the final engineering plans are developed and monitored through construction of the trail. The list below is a general representation of efforts that would be implemented to minimize resource disturbance.

7.2.1 General

- Install erosion and sedimentation control measures during construction to minimize the transport of sediment into the waterway to protect the overall watershed. These measures would remain in place until vegetation is reestablished. Erosion control materials should be biodegradable (all natural fibers), weed, weed seed and debris free, as well as meet the USDA defined “snake-friendly” for Indiana (USDA 2013) (Internal Scoping, 2021).
- Any fill used to construct the trail would be sourced from local sand mining operations and/or limestone quarries. No unclean fill would be used on site, including air cooled blast furnace slag (Internal Scoping, 2021).
- The new, replacement, or rehabbed structure, and any bank stabilization under the structure, should not create conditions that are less favorable for wildlife passage under the structure compared to the current conditions (IDNR – DFW).
- Vegetation establishment along the banks is critical for stabilization and erosion control. In addition to vegetation some other form of bank stabilization may be needed. While hard armoring alone (e.g., riprap or glacial stone) may be needed in certain instances, soft armoring and bioengineering techniques should be considered first (IDNR – DFW).
- Place the trail in or adjacent to existing rights-of-way where possible to minimize potentially significant impacts to natural resource habitat. Also, utilize previously disturbed or degraded areas. Align the trail along or near existing manmade edges or areas that have the potential to be restored or enhanced by

trail construction (i.e., railroad corridors), rather than routing the trail through previously undisturbed areas (IDNR – DFW).

- Trails designed to follow a stream's course must be placed outside the stream's forested riparian (streamside habitat) buffer. Trails will not be placed along the tops of the banks of a forested creek. Fragmentation of riparian areas will be avoided. Where the stream has little or no forested riparian buffer, the trail will be no closer than 15-foot from the tops of the banks (IDNR – DFW, 2020).
- Trails are designed to have as narrow a disturbance area as possible to help minimize negative impacts. Where significant impacts to fish, wildlife, or botanical resources are likely due to the trail's width, the trail width is reduced to help avoid those impacts. ADA accessibility standards allows departures from the standards under certain conditions, including substantial harm to natural features, habitat, or vegetation ([U.S. Access Board \(access-board.gov\)](https://www.access-board.gov/)) (IDNR – DFW).
- Shoulders will be constructed using unconsolidated materials where possible. In some situations, solid shoulders are necessary. In those cases, shoulders will be constructed using porous concrete (IDNR – DFW).
- Clearly marked construction limits along the route will help to prevent unnecessary resource damage.

7.2.2 Vegetation

- The County would mark trees for INDU approval prior to clearing. Minimize the removal of mature high-quality trees as determined by the NPS (Internal Scoping, 2021).
- Revegetated areas adjacent to the trail would be of native plantings with an emphasis on pollinator species habitat that are not treated with neonicotinoids. The County would submit proposed seed mixes and source of materials to the park for approval prior to the start of construction (Internal Scoping, 2021).
- All plant material, mud, and debris shall be removed from any equipment before entering or leaving the construction site to prevent the spread of invasive species (Internal Scoping, 2022).
- A potential USACE wetland impacts mitigation plan would require the County to remove of invasive species along the corridor. The plan would incorporate target species and success criteria over a 5-year period with annual reporting to USACE and Parks Staff. The County, park, and USACE would create a separate plan agreement. The USACE controls this park-approved process.
- We recommend a mitigation plan be developed (and submitted with the permit applications) for any unavoidable habitat impacts that would occur. The DNR's Floodway Habitat Mitigation guidelines (and plant lists) can be found online at: [IDNR Floodway Habitat Mitigation Guidelines](#) (IDNR – DFW 2019).
- Impacts to non-wetland forests of one (1) acre or more should be mitigated at a minimum 2:1 ratio. If less than one acre of non-wetland forest is removed in a rural setting, replacement should be at a 1:1 ratio based on area. A native riparian forest mitigation plan should use at least five canopy trees and five understory trees or shrubs selected from a Woody Riparian Vegetation list or an approved equal. Additionally, the native herbaceous seed mixture should consist of at least ten (10) species of grasses, sedges, and wildflowers selected from the Herbaceous Riparian Vegetation list (IDNR – DFW 2019).
- Any plantings in the riparian areas will be locally native species, not exotic species, or horticultural varieties (IDNR – DFW 2019).

7.2.3 Protected Species Specifications

- Removal of woody vegetation & trees shall be done outside the local avian breeding season to prevent impacts to nesting birds protected under the Migratory Bird Treaty Act [16 USC 703] (Internal Scoping, 2021).

- Do not cut any trees suitable for Indiana bat, northern long-eared bat, or tricolored bat roosting (greater than 3 inches diameter breast height, living or dead, with loose hanging bark, or with cracks, crevices, or cavities) during the summer nursery season, which is from April 1 through September 30 (USFWS 2022a).
- Install exclusion fencing prior to construction activities during eastern massasauga active season in areas of suitable habitat, generally April 15 through October 15.
- Utilize a herpetological monitor routinely while exclusion fencing is installed, generally April 15 through October 15.
- Fence off rare plant species near the construction limits to prevent resource damage.

7.2.4 Visitor Use and Park Operations

- A Cooperative Management Agreement has been signed with the County outlining trail maintenance and management. All maintenance and management would meet NPS requirements such as wildlife proof trash bins, proper vegetation management, and trail surface treatment.

8.0 COMPENSATORY MITIGATION

The trail project was designed so that almost the entire trail runs along existing roadways, roadbeds, or trails, or crosses wetlands via elevated boardwalks. Out of the 6.3 miles of trail being constructed, there is only a single wetland impact in a previously undeveloped area (Impact 1 – 0.008 acres). All of these wetland impacts may be considered excepted from compliance with Director's Order #77-1: Wetland Protection for either boardwalks, minor stream crossings, or for maintenance, repair, or renovation of an existing road. As such, compensatory mitigation is not being proposed for this project.

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APPENDIX A – MAPS AND FIGURES

Due to its size, Appendix A is a standalone document.