



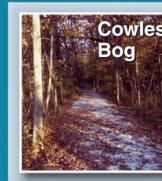
THE MARQUETTE GREENWAY NATIONAL LAKESHORE CONNECTOR ROUTE



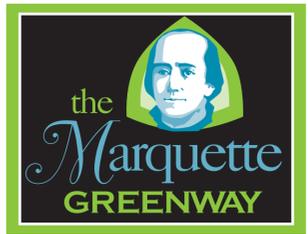
Inland Marsh
Tucked away from the lakefront, Inland Marsh exists as an ecological gem with two well-maintained loop trails totaling three miles in length. The site consists of a large marsh area with significant Oak-Savannah ecosystem remaining throughout. There are two access sites along US 12, which will directly connect to the proposed route of the Marquette Greenway Trail. The site is an excellent location for bird-watching.



Lakefront Pavilion
Purchased by the National Park Service in 2004, this 57-acre site of reclaimed industrial land has been transformed into the newest jewel along the Indiana lakeshore. Renovated using funds from the Regional Development Authority, this new site offers parking for 125 cars, an accessible fishing pier, a riverwalk along Burns Waterway, a rehabilitated breakwater, various hike/bike trails, access to the beach, and a 3,500 square foot pavilion. This project represented the first redevelopment initiative as envisioned in the Marquette Plan. It is operated by Portage Parks through an agreement with the NPS.



Cowles Bog
This location, which is actually classified as a fen, is a remnant of the marsh system that once stretched from where the city of Gary is today all the way to Michigan City. Most of these wetlands were filled in years ago for industries, but several spectacular sites — including Cowles Bog — have been preserved and are now administered by the National Park Service. The core of the Cowles Bog area is a marsh surrounding a small fen. Major features include interdunal ponds, marshes, a stand of northern white cedars, forested dunes, foredunes, and open beach. This site represents a great way to experience several different habitats. There currently exists a significant walking trail system that consists of three loops routes totaling five miles. A trailhead is shared with the western terminus of the Calumet Trail on Mineral Springs Road.



THE MARQUETTE GREENWAY NATIONAL LAKESHORE CONNECTOR ROUTE PROPOSAL



AREA DETAILS



Trail Development & Preservation

There are a host of options available in order to develop and preserve a trail system which affords the maximum enjoyment and accessibility to all users. The following topics serve as an introduction to these options.

Spine & Spur Routes

On the route detail map shown above, not only is the Marquette Greenway (MG) route defined, but so are a number of "spur" routes identified. These spur routes are located off the main route, or spine, in order to access destination areas within the corridor. These spurs link to places of interest such as the Portage Lakefront and Riverwalk, the AmeriPlex development, and the communities of Ogden Dunes and Burns Harbor. Any successful spine route is directly related to how many spur routes can be effectively linked to it.

Trailheads

Along the proposed route, trail users will need to be afforded places to enter/exit and rest along the way. These places, called "trailheads", are to be located based on the relative ease of finding services in proximity to the trail, or where residential areas are accessed. Most of the trailheads will be located where the main spine route intersects with a major spur facility. Depending on the location, a trailhead will include a variety of amenities such as restrooms, benches, bike racks, drinking fountains, informational signage/kiosks and trash receptacles. In addition, modest automobile parking (5-20 spaces) should be a considered to accommodate trail visitors.

Trail Signage

Once constructed, the trail should be marked so that its route is clear. A standard trail marker for the MG needs to be developed. A recommended marker option, used on other regional trails, is a plastic (carsonite) stake marked with the MG logo. These stakes are placed at regular intervals and at junctions along the trail. Keep the number of signs to a minimum as they detract from the user's outdoor experience and are potential targets for vandalism and theft.

Entrance signs should be placed at the MG trailheads. These signs should include maps, trail distances, potential hazards, places of interest, instructions for using the trail, and the types of trails used permitted.

Lighting

Lighting for shared-use paths should be considered wherever low light or night usage is expected, including areas serving college students or commuters and at highway intersections. Fixed-source lighting reduces crashes along shared-use paths and at intersections; and allows the bicyclist to see the path direction, surface conditions, and obstacles. Roadways, bikeways, and walkways may be illuminated in accordance with recommended design values in the INDOT Roadway Lighting Design Manual and should meet the standards of the International Dark Skies Association. Lighting off-road walkways and bikeways permits some freedom in system and luminaire design.

Maintenance & Operations

The maintenance of bikeways is closely linked to the bicyclist's safety and the preservation of the bikeway function and investment. Poor maintenance can result in the accumulation of sand, gravel, broken glass or branches; and the development of potholes, corrugations, and other rough surface conditions. Such conditions often cause bicyclists to choose alternative routes that are also unsafe. Maintenance should be regarded as an investment in the bikeway and insurance against repairs that can be costly.

The majority of the responsibility in maintaining the trail will fall on the local jurisdictional authority of a given trail segment. This includes local municipalities, with the vast majority being assumed by the National Park Service. The City of Portage will assume maintenance responsibility within their jurisdiction around the marina and through the AmeriPlex development. It is recommended that Ogden Dunes partner with either the National Lakeshore or Portage to delegate maintenance authority on their segment of the trail to ensure consistent upkeep with the larger segments of the route.

An abundance of resources are available for developing and implementing a maintenance plan. The Rails-to-Trails Conservancy has published "Rail-Trail Maintenance & Operation" which serves as a best-practices manual and is an excellent primer on the topic. In general, this report estimated average annual maintenance and operations cost for an asphalt trail to be roughly \$1,500 per mile.

Ecological Considerations

Promoting a route to avoid diminishing the natural environment or the experience of the user to the natural setting is key to establishing a critical balance between protecting resources and human enjoyment. A number of principles can be applied which can minimize the impact of the trail to nearby sensitive ecological systems. These include avoiding critical wildlife habitats, building the route in locations already influenced by human activity, and providing buffers to protect wetlands and streams. In regards to the proposed route as shown on this map, virtually the entire length has been located on property heavily influenced by human activity. Thus a vast majority of woodlands are replete with invasive plant species, and to some extent, former industrial site remnants.

Upon detailed trail analysis and engineering, emphasis should be placed on re-establishing native plant materials and using minimally-invasive maintenance practices to protect and enhance the surrounding ecosystems.

Trail & Natural Settings



Trail by Roadway (US12)



Trail Head Detail



Marquette Greenway Trail Area Summary Report June 2009

Engineering & Construction Costs

Numerous complexities exist regarding the eventual construction of the trail facility. Far from a simple ribbon of asphalt, project estimates need to take into consideration design, engineering, environmental review, construction, and contingencies. Construction costs will involve site clearing, excavation, asphalt (base + surface), fencing, bridges, parking lots, and site furnishings (benches, trash receptacles, signage, etc.). Taken together these quickly add to the overall costs, and in many cases, can escalate based on variations in any of the abovementioned factors.

The MG-NLC Trail will involve nearly all of these elements throughout its estimated 9+ mile length end-to-end. A table outlining the route specifics in regard to mileage and costs associated with that entity responsible for construction is shown at right. This figures assume a rough estimate of \$400,000 per linear mile, which is adjusted based on terrain complexity and funding sources. If federal or state monies are used, the costs will rise in association with additional review responsibilities. The AmeriPlex segment is expected to be developed with private funds, and hence is less costly overall. All segments are assumed to be located where right-of-way is already owned by the construction sponsor.

It must be emphasized that these figures below are strictly approximate, and only through detailed field analysis will a true cost estimate be correctly calculated. In addition, a small stretch of the trail route may necessitate the construction of a boardwalk due to excessively wet soil conditions.

JURISDICTION	TRAIL MILES	ESTIMATED COST	LIMITS
INDIANA DUNES NATIONAL LAKESHORE	1.9	\$1,000,000	COUNTY LINE ROAD AT EAST TERMINUS OF MARQUETTE TRAIL, ALONG US 12 TO OGDEN DUNES
OGDEN DUNES	0.5	\$150,000	ALONG US 12
PORTAGE	1.3	\$600,000	FROM OGDEN DUNES ON US 12, ALONG SR 249 TO AMERIPLEX DRIVE
AMERIPLEX (HOLLADAY PROP.)	1.0	\$100,000	ALONG AMERIPLEX DRIVE FROM SR 249 TO OLD SAMUELSON ROAD
INDIANA DUNES NATIONAL LAKESHORE	4.0	\$5,000,000	FROM OLD SAMUELSON ROAD, RUNNING ALONG LITTLE CALUMET RIVER TO PORTER BRICKYARD TRAIL AT HOWE ROAD
PORTER BRICKYARD TRAIL	.95	COMPLETED IN 2010	FROM HOWE ROAD TO CALUMET TRAIL START ON MINERAL SPRINGS ROAD
APPROXIMATE BUILT DISTANCE & COST	9.65	\$6,850,000	