Form No. 10-306 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

# NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED JUN 21 1980
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

## 1 NAME

HISTORIC: United States Coast Guard Lighthouses and Light Stations on the Great Lakes

AND/OR COMMON:

## 2 LOCATION

STREET & NUMBER: Multiple locations in Illinois, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin

__NOT FOR PUBLICATION

CITY, TOWN: CONGRESSIONAL DISTRICT:

__ VICINITY OF

STATE: CODE: COUNTY: CODE:

## 3 CLASSIFICATION

| CATEGORY | OWNERSHIP | STATUS | PRESENT USE | |
|---|---|---|---|---|
| __DISTRICT | X PUBLIC | X OCCUPIED | __AGRICULTURE | __MUSEUM |
| X BUILDING(S) | __PRIVATE | X UNOCCUPIED | __COMMERCIAL | __PARK |
| X STRUCTURE | __BOTH | __WORK IN PROGRESS | __EDUCATIONAL | __PRIVATE RESIDENCE |
| __SITE | **PUBLIC ACQUISITION** | **ACCESSIBLE** | __ENTERTAINMENT | __RELIGIOUS |
| __OBJECT | __IN PROCESS | X YES: RESTRICTED | X GOVERNMENT | __SCIENTIFIC |
| | __BEING CONSIDERED | X YES: UNRESTRICTED | __INDUSTRIAL | X TRANSPORTATION |
| | N/A | X NO | __MILITARY | __OTHER: |

## 4 AGENCY

United States Coast Guard, U.S. Department of Transportation

REGIONAL HEADQUARTERS: *(If applicable)*

STREET & NUMBER: 400 7th Street SW

CITY, TOWN: Washington __ VICINITY OF STATE: District of Columbia

## 5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: United States Coast Guard Ninth District Headquarters

STREET & NUMBER: 1240 East Ninth Street

CITY, TOWN: Cleveland STATE: Ohio 44199

## 6 REPRESENTATION IN EXISTING SURVEYS

TITLE: Historic American Engineering Record Great Lakes Lighthouse Survey (see attached forms)

DATE: 1979 X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: H.A.E.R., 440 G Street NW

CITY, TOWN: Washington STATE: District of Columbia

# 7 DESCRIPTION

| CONDITION | | CHECK ONE | CHECK ONE |
|---|---|---|---|
| __EXCELLENT | __DETERIORATED | __UNALTERED | __ORIGINAL SITE |
| __GOOD | __RUINS | __ALTERED | __MOVED DATE_____ |
| __FAIR | __UNEXPOSED | See individual forms. | |

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The theme of this nomination is the design and construction of lighthouses and light stations on the Great Lakes prior to 1930. The nominated buildings and structures were essential to the rapid expansion of Great Lakes maritime commerce from the 1850's through the 1920's. They illustrate the evolution of lighthouse design and construction methods in response to the changing requirements of Great Lakes shipping as the volume of traffic increased, routes changed, and the size and speed of ships increased.

The nomination is based on the buildings and structures identified in the Historic American Engineering Record Great Lakes Lighthouse Survey conducted for the United States Coast Guard between March and September 1979. The survey was limited from the outset to light towers, lighthouses, and light stations owned by the U.S. Coast Guard and not previously included on the National Register of Historic Places. Sites with no above-ground remains were excluded from the survey, as were sites where neither light tower nor lighthouse were extant. With a few exceptions, no structures built after 1930 were included in the survey. There are approximately 2,500 "aids to navigation" on the Great Lakes, but the vast majority of these are buoys and lights mounted on piles or poles. Virtually all of these buoys and pole lights are of recent vintage and none were considered in the survey.

The H.A.E.R. survey was conducted by Carol Poh Miller, an architectural historian with several years' experience in engineering history and industrial archeology, including work on several H.A.E.R. inventories in Cleveland, and Dr. Charles K. Hyde, a historian of technology with seven years' experience on numerous H.A.E.R. inventories and recording projects. The two surveyors identified a total of one hundred and one (101) lighthouses or light stations in all eight states bordering of the Great Lakes.

Several criteria were used for inclusion in this thematic nomination. Lights which were significant to the growth of general navigation on the Great Lakes, specifically coastal lights, major harbor lights (e.g., in Chicago, Cleveland, and Buffalo), and reef/shoal lights were nominated. Less significant harbor lights were included if they incorporated innovative designs. Finally, the nomination includes several lights which are significant because of innovative construction techniques used in their erection. They were built in remote locations, most notably on isolated reefs and shoals.

The historical integrity of the surviving buildings and structures was a major criterion used for selection. The minimum requirement was that the lighthouse or light tower be structurally intact. Total integrity of buildings, structures, and equipment is non-existant for Great Lakes light stations because of modernization and automation. Nowhere for example has nineteenth-century steam-driven fog signal equipment survived. The original lenses are extant at about one-half of the sites, but the conversion to electrical illumination in the twentieth century eliminated the original oil vapor or acetylene illuminating apparatus. All of the lenses which were originally turned by mechanical clockwork systems are now driven by electric motors. Nevertheless, the properties are essentially coherent, i.e., the major buildings and structures are intact. Light stations where most of the major buildings are not standing were excluded from the nomination.

Using these criteria, a total of fifty properties were selected. They are listed below by state.

(continued on next sheet)

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Illinois

Chicago Harbor Light Station

Michigan

Big Sable Point Light Station
Detroit River Light Station
Eagle Harbor Light Station
Forty Mile Point Light Station
Grand Traverse Light Station

Granite Island Light Station
Gull Rock Light Station
Harbor Beach Light
Isle Royale Light Station
Little Sable Point Light Station

Manitou Island Light Station
Marquette Harbor Lighthouse
Pointe Betsie Light Station
Port Sanilac Light Station
Presque Isle Light Station

Rock of Ages Light Station
Saginaw River Light Station
Seul Choix Point Light Station
Skillagallee (Ile Aux Galets) Light Station
Sturgeon Point Light Station

St. Martin Island Light Station
Tawas Point Light Station
Thunder Bay Island Light Station
Waugoshance Light Station
White Shoal Light Station

Minnesota

Duluth South Breakwater Inner Light
Two Harbors Light Station

New York

Buffalo Main Light
Buffalo North Breakwater South End Light
Dunkirk Light
Fort Niagara Light
Galloo Island Light
South Buffalo North Side Light
Thirty Mile Point Light
Tibbetts Point Light

Ohio

Ashtabula Harbor Light
Cedar Point Light
Cleveland West Pierhead Light
Toledo Harbor Light
West Sister Island Light

Pennsylvania

Presque Isle Light

Wisconsin

Ashland Breakwater Light
LaPointe Light Station
North Point Light Station
Plum Island Rear Range Light
Rawley Point Light Station
Sherwood Point Light Station
Sturgeon Bay Canal Light
Wind Point Light Station

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In the National Register of Historic Places information leaflet, the general criteria for listing a property in the National Register of Historic Places are as follows:

"The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody the districtive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

In evaluating the significance of lighthouses on the Great Lakes, it is apparent that Criteria A and C are the most applicable. It is also apparent that essentially all lighthouses embody the distinctive characteristics of a type, period, or method of construction and that practically all lighthouses on the Great Lakes could conceivably be eligible for the National Register of Historic Places under Criteria C.

Both of the historians responsible for the preparation of this nomination believe listing of all lighthouses on the Great Lakes in the National Register to be inappropriate. Both have been responsible for the preparation of National Register nomination forms prior to this study and believe they have an understanding of how the criteria can be fairly and judiciously applied to the lighthouses of the Great Lakes. Without question, arguments could be made that lighthouses not included in this nomination could have local historical significance and thus could be eligible for the National Register. Similarly, archeologists could argue that lighthouse sites no longer retaining standing structures might be likely to yield information important to history or prehistory, and thus be eligible for the National Register. Nonetheless, this study recommends the following fifty lighthouses for nomination to the National Register of Historic Places.

# 8 SIGNIFICANCE

| PERIOD | AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW | | | | |
|---|---|---|---|---|---|
| __PREHISTORIC | __ARCHEOLOGY-PREHISTORIC | __COMMUNITY PLANNING | __LANDSCAPE ARCHITECTURE | __RELIGION | |
| __1400-1499 | __ARCHEOLOGY-HISTORIC | __CONSERVATION | __LAW | __SCIENCE | |
| __1500-1599 | __AGRICULTURE | __ECONOMICS | __LITERATURE | __SCULPTURE | |
| __1600-1699 | __ARCHITECTURE | __EDUCATION | __MILITARY | __SOCIAL/HUMANITARIAN | |
| __1700-1799 | __ART | X ENGINEERING | __MUSIC | __THEATER | |
| X 1800-1899 | X COMMERCE | __EXPLORATION/SETTLEMENT | __PHILOSOPHY | X TRANSPORTATION | |
| X 1900- | __COMMUNICATIONS | __INDUSTRY | __POLITICS/GOVERNMENT | __OTHER (SPECIFY) | |
| | | __INVENTION | | | |

SPECIFIC DATES 1832-1919 BUILDER/ARCHITECT Various

STATEMENT OF SIGNIFICANCE

In the early nineteenth century the Great Lakes became the most important single transportation system in the United States and has retained its importance to the present. The completion of the Erie Canal in 1825 opened a direct cheap route between the Middle West and the Atlantic Coast. Within a few years after this event there was an enormous growth in shipments of grain, lumber, and coal from west to east, while manufactured goods moved in the opposite direction. The Great Lakes transportation system was not fully developed until 1855, when the St. Mary's Falls Ship Canal at Sault Ste. Marie opened, linking Lake Superior with the Lower Lakes. This immediately touched off the rapid development of the enormous iron ore and copper deposits found on Lake Superior. On the eve of the Civil War the Great Lakes system was a vital part of the American economy, linking the natural resources and agricultural lands of the Middle West with the industrialized East Coast and the rest of the world. According to one estimate, the value of products traded on the Great Lakes in 1856 was approximately $600 million, more than the total value of American foreign trade.

Great Lakes commerce continued to expand rapidly throughout the rest of the nineteenth century and retained its significance to the national economy. Shipments increased sharply from 6 million tons in 1870 to over 80 million tons by 1911, while the value of trade rose more slowly, by about 430 percent. This slower growth reflected declining price levels and a simultaneous shift in the composition of trade. Lumber and grains had accounted for three-quarters of the tonnage shipped in the 1870's, but by 1911 they accounted for less than one-tenth of the total. Over the same period, iron ore shipments increased in importance, accounting for half the total tonnage by 1911, while coal made up another quarter. In 1910, when virtually all the output from the Lake Superior iron mines was shipped by water, these mines accounted for seventy percent of U.S. iron ore production. The development of major iron and steel plants at Gary, Buffalo, Cleveland, and Detroit during the last quarter of the nineteenth century was a direct result of the Great Lakes transportatio system, which permitted the economical movement of iron ore and coal over great distances.

The development of Great Lakes lighthouses and other aids to navigation not only paralleled the growth in commerce, but was a prerequisite for that growth. The construction and maintenance of lighthouses has been a Federal Government responsibility since 1789, when Congress created the Lighthouse Establishment and placed it under the jurisdiction of the Secretary of the Treasury. Responsibility for aids to navigation remained in the Treasury Department until 1903, when the Lighthouse Service was transferred to the newly-created Department of Commerce and Labor. Finally in 1939 the Lighthouse Service was merged with the U.S. Coast Guard, which has retained jurisdiction over lighthouses to this day.

(continued)

The construction of lighthouses on the Great Lakes began in earnest after the Erie Canal opened. Only four lighthouses were built in 1818-1822, seven more were added in 1825-1829, but the first real boom took place in the 1830's, when thirty-four were built. Construction slowed the following decade when only twenty new lights were added to the system, but then quickened in the 1850's when thirty-eight new lighthouses were built. On the eve of the Civil War the Great Lakes had a total of one hundred and two lighthouses. Their distribution reflected the relative importance of the individual Lakes at that time. Lake Michigan had a total of thirty-three lights, Lake Erie had twenty-nine, while Lakes Superior, Ontario, and Huron had fourteen, eleven, and ten respectively. There were an additional five lights on the Detroit River and Lake St. Clair. Two-thirds of these structures marked harbor or river entrances, while the rest were placed on islands, points, and dangerous shoals and reefs.

As commerce expanded after the Civil War, particularly on Lake Superior, so did the need for additional lighthouses. The increased volume of traffic and the growth in the size of ships made improved lighting of treacherous areas like the Straits of Mackinac, the St. Mary's River, and the Detroit River imperative. The total number of Great Lakes lighthouses more than tripled between 1860 and the end of the century, by which time there were 333 lighthouses and eleven lightships in service. Lake Michigan had the most lighthouses (ninety-six), but Lake Superior was close behind with ninety-one, not including nearly fifty additional lights on the St. Mary's River. Lake Erie was a distant third with forty-eight lights, reflecting the changed orientation of Lake traffic toward Lake Superior. Most lighthouse construction after 1900 involved rebuilding or relocating existing structures and replacing lightships with permanent light stations. The lighthouse system in use today is essentially the structures which were in place in the early twentieth century, with modernized, automated lighting systems added later.

Lighthouse design evolved gradually during the nineteenth century, with considerable variations between harbor and coast lights. The most common design before 1870 consisted of a frame or brick Keeper's Dwelling with the light exhibited in a lantern mounted either directly atop the dwelling or on an attached square tower standing twenty-five to forty feet tall. This was not however a universal design. Where taller towers were required, usually for coastal lights, conical masonry (usually brick) structures were built, normally connected to the Keeper's House by an enclosed passageway. There were also a few large skeletal iron towers such as the one at Manitou Island (1861) built during this era. Initially there were considerable variations in lantern designs, including the widespread use of the "birdcage" lantern, but by the 1870's the polygonal lantern, usually with eight or ten sides, had become nearly universal on the Lakes.

There were also significant changes in illuminants and lenses prior to 1870. At the beginning of the century sperm oil was the principal illuminant, but as the sperm whale population declined, rapeseed oil was substituted. Immediately after the Civil War, lard

oil became the standard source of light. The lenses used in lighthouses were a more important and controversial matter. The U.S. government adopted the Argand lamp and parabolic reflector system for its lighthouses after purchasing the patent rights from Captain Winslow Lewis in 1812. The French physicist Augustus Fresnel developed a radically different and superior lens in 1822, incorporating a series of glass prisms surrounding the light source in a beehive configuration. A central prism magnified the light while prisms above and below refracted light to yield a single powerful beam.

The Lighthouse Establishment, directed by the Fifth Auditor of the Treasury, did not make any significant effort to adopt the Fresnel lens for thirty years. A single lens of the new type was purchased in 1841, but ten years later there were only three in use in the United States. The Fifth Auditor, Stephen Pleasanton, adamantly resisted the Fresnel lens and was responsible for its slow adoption. He was ultraconservative, technically ignorant, and a close friend of Winslow Lewis. An outraged Congress eventually investigated the Lighthouse Establishment in 1851 and the following year created the Lighthouse Board, dominated by military officers, engineers, and scientists. They moved quickly to adopt the Fresnel lens, which not only produced a superior light, but was also more economical to operate. Seventy-five Great Lakes lighthouses were refitted with Fresnel lenses between 1854 and 1857 and all new ones built after 1854 were similarly equiped. This became the standard lens for the rest of the century and there are still more than one hundred of these in service on the Great Lakes.

Lighthouse design evolved in several distinct directions after the Civil War. Beginning in the 1870's harbor lights were moved from the mainland onto the piers and breakwaters that were being built, necessitating a change in their design. Pier lights, while still manned, no longer included a residence which typically remained on shore, so simple wooden or skeletal iron structures sufficed. Few of these have survived because numerous pier extensions and the destructive effects of storms and ice shortened their lives. In the first two decades of this century virtually all the harbor lights were replaced with steel-framed structures encased in cast iron or steel plates. Beginning in the mid-1920's the unenclosed skeletal steel tower or post with an exposed lens lantern became the dominant form.

Coastal and island lights requiring tall light towers evolved more slowly. With a few exceptions, the conical brick tower was the typical design used before 1900. Individual towers one hundred feet tall, requiring massive walls were not uncommon, although there were also significant examples of skeletal steel towers. After the turn of the century there were few tall towers built and these all utilized steel frames.

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The greatest challenge faced by lighthouse designers in the period 1870-1910 was the construction of light stations on isolated islands, reefs, and shoals. The Lighthouse Establishment had its own staff of engineers attached to the three Great Lakes districts and these were usually men with experience as military engineers. When a proposed lighthouse presented particularly difficult engineering problems, the U.S. Army Corps of Engineers would assign additional personnel to work on the project. They became expert in the design and construction of offshore lights resting on submarine crib structures beginning with the building of the Waugoshance Shoal Light (1851) and including major engineering feats at Spectacle Reef (1874), Stannard Rock (1882), and the Detroit River Light (1885). The culmination of these efforts to design and build structures under difficult conditions was the completion of the light station at White Shoal (1910), a project which received considerable attention from the national engineering community.

Lenses and illuminants have also changed considerably since the 1870's. The Fresnel lens was virtually the only type used until the 1910's, when a variety of new types gradually came into use, primarily in new light towers. These included locomotive lenses, airport beacon styles, and a variety of lens lanterns which could be exposed to the elements. Kerosene was introduced as an illuminant in 1877 and by the mid-1880's had largely replaced lard oil. Incandescent lamps were used experimentally beginning in the 1890's and acetylene gas after 1902, but kerosene and other oils remained the dominant illuminant until the 1920's, when the majority of lights were converted to electrical illumination. Increased electrification of isolated areas and the development of improved portable engines and generators made the conversion to electricity virtually complete by the Second World War.

## 9 MAJOR BIBLIOGRAPHICAL REFERENCES

(see continuation sheet)

## 10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY (see individual forms)

UTM REFERENCES

| | ZONE | EASTING | NORTHING | | ZONE | EASTING | NORTHING |
|---|---|---|---|---|---|---|---|
| A | | | | B | | | |
| C | | | | D | | | |

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

| STATE | CODE | COUNTY | CODE |
|---|---|---|---|
| STATE | CODE | COUNTY | CODE |

## 11 FORM PREPARED BY

NAME / TITLE

Professor Charles K. Hyde

ORGANIZATION — DATE

For H.A.E.R. and the U.S. Coast Guard — 15 October 1979

STREET & NUMBER — TELEPHONE

Dept. of History, Wayne State University — (313) 577-2525

CITY OR TOWN — STATE

Detroit — Michigan 48202

## 12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES____ NO____ NONE____

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ____National X State ____Local.

FEDERAL REPRESENTATIVE SIGNATURE Robert L. Queen

TITLE DOT Historic Preservation Officer DATE July 6, 1982

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

Bob Grosvenor DATE 9/1/82

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

See Continuation sheet for listings

GPO 899-214

# 8 SIGNIFICANCE

| PERIOD | AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW | | | | |
|---|---|---|---|---|---|
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| __1400-1499 | __ARCHEOLOGY-HISTORIC | __CONSERVATION | __LAW | __SCIENCE | |
| __1500-1599 | __AGRICULTURE | __ECONOMICS | __LITERATURE | __SCULPTURE | |
| __1600-1699 | __ARCHITECTURE | __EDUCATION | __MILITARY | __SOCIAL/HUMANITARIAN | |
| __1700-1799 | __ART | X ENGINEERING | __MUSIC | __THEATER | |
| X 1800-1899 | X COMMERCE | __EXPLORATION/SETTLEMENT | __PHILOSOPHY | X TRANSPORTATION | |
| X 1900- | __COMMUNICATIONS | __INDUSTRY | __POLITICS/GOVERNMENT | __OTHER (SPECIFY) | |
| | | __INVENTION | | | |

SPECIFIC DATES 1832-1919 BUILDER/ARCHITECT Various

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(continued)

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