NPS Form 10-900 OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: GRECIAN Shipwreck Site
Other names/site number: Michigan Site Number: 20UH046
Name of related multiple property listing:
N/A
(Enter "N/A" if property is not part of a multiple property listing

2. Location

Street & number: Lake Huron
City or town: Alpena State: Michigan County: Alpena
Not For Publication: ☐ Vicinity: ☐

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national **_X_statewide** **___local**

Applicable National Register Criteria:

_X_A **___B** **_X_C** **_X_D**

Brian Conway 12/21/17

Signature of certifying official/Title: **Date**

SHPO

State or Federal agency/bureau or Tribal Government

In my opinion, the property ✓ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

FPO 1/16/2017

Title : **State or Federal agency/bureau or Tribal Government**

4. National Park Service Certification

I hereby certify that this property is:

X entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

for Signature of the Keeper — 2/8/18 Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private:	☐
Public – Local	☐
Public – State	X
Public – Federal	☐

Category of Property

(Check only **one** box.)

Building(s)	☐
District	☐
Site	X
Structure	☐
Object	☐

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
0		buildings
1		sites
0		structures
0		objects
1		Total

Number of contributing resources previously listed in the National Register _____

6. Function or Use
Historic Functions
(Enter categories from instructions.)
TRANSPORTATION/*water-related*

Current Functions
(Enter categories from instructions.)
LANDSCAPE/*underwater*

7. Description

Architectural Classification
(Enter categories from instructions.)
_N/A_____
_____
_____
_____
_____
_____
_____

Materials: (enter categories from instructions.)
Principal exterior materials of the property: N/A_____

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The shipwreck site of the 296-foot-long steel bulk freighter GRECIAN is located eleven miles southeast of Alpena, Michigan, and four miles south of Thunder Bay Island in Lake Huron. GRECIAN was built in 1891, and foundered in 1906, while under tow from Detour Village, Michigan to Detroit, Michigan. The wreck site lies in 102 feet of water and is in an excellent state of preservation.

GRECIAN carried iron ore and coal cargoes between Lake Erie ports and Escanaba, Michigan, during a period of rapid economic expansion at the dawn of the United States' steel industry. The vessel's remains constitute an excellent example of an early-period Great Lakes bulk freighter, a vessel type unique to the Great Lakes region whose proliferation throughout the nineteenth and twentieth centuries was integral to the region's accelerated industrial, economic, and social growth.

Narrative Description

GRECIAN (Registry Number US. 086136) was launched on 26 February 1891, with an overall length of 296.2 feet, a 40.4 foot beam, twenty-one-foot-depth of hold, and a gross tonnage of 2,348 tons and net tonnage of 1,875 tons (United States Department of Commerce and Labor 1891). Bulk freighter GRECIAN was designed and built to run between the lower lake ports of Ashtabula and Cleveland, Ohio, and Chapin Iron Mining Company's docks at Escanaba, Michigan, on the northwest shore of Lake Michigan. When fully loaded, draft fluctuated between twenty-one and twenty-four feet. For GRECIAN, a typical 1,094-mile round-trip between Cleveland, Ohio, and Escanaba, Michigan, took nine days and delivered 2,650 tons of iron ore.

GRECIAN was one of six identical steel bulk freighters commissioned by the Menominee Transit Company that were completed between September 1890 and July 1891 at Globe Iron Works in Cleveland, Ohio (FIGURE 1). GRECIAN featured prominent characteristics of early steel bulk freighters, like the forward pilothouse and unobstructed spar deck that were first introduced when Peck and Masters built R.J. HACKETT in 1869 (FIGURE 2). After R.J. HACKETT, the forward cabin became one of the defining characteristics of the "laker", or bulk freighter ship type.

The aft cabin housed GRECIAN's propulsion machinery. GRECIAN was outfitted with a triple expansion steam engine also built by Globe Iron Works Company. Its three cylinders measured twenty-four, thirty-eight, and sixty-one inches in diameter, each with a forty-two-inch stroke. At forty revolutions per minute, the engine produced 1200 horsepower. Supplying this engine were two fourteen-foot by twelve-and-a-half-foot Scotch boilers, each producing 160 pounds-per-square-inch of steam pressure. The boilers were also made by the Globe Iron Works Company (Thunder Bay Sanctuary Research Collection: Grecian).

On June 7, 1906, GRECIAN struck a rock five miles south of Detour Village, on the eastern end of Michigan's Upper Peninsula, while underway to lower lake ports with a full cargo of iron ore. None of the twenty crew were injured in the accident, and GRECIAN, damaged, returned to Detour Village where it later sunk at dock in twenty-one feet of water (*Buffalo Evening News* 6/8/1906). Several days later GRECIAN was pumped out, floated, fixed with a temporary hull patch, and hitched to the propeller SIR HENRY BESSEMER for delivery to Detroit Shipbuilding Company for repairs. On June 15, 1906, the vessels were eleven miles offshore Alpena, Michigan, when GRECIAN's temporary hull patch failed. The vessel filled with water and sank quickly, finally resting in 102 feet of water. The crew escaped in the lifeboats and were rescued by SIR HENRY BESSEMER, which had hastily given up the tow to save itself (*Door County Advocate* 6/22/1906). At the time of loss GRECIAN was valued between $75,000 and $100,000.

In an effort to recover some value from the vessel, the Pittsburgh Steamship Company, owners of GRECIAN at the time of wrecking, contracted Dr. Fernando Staud y Ximénez three years later to raise the steel bulk freighter. Dr. Staud had patented a submersible canalon (an air-filled

buoyant lifting device) for raising ships several years prior, on September 3, 1907, (Fernando Staud y Ximénez 1907). Its operation was based upon filling the canalon with water at the surface, allowing it sink to the bottom where divers would affix a cable that ran through the center of the canalon to the shipwrecked vessel (FIGURE 3). Once secured to the vessel, the flooding valve was shut and a surface-supplied high-pressure air hose then displaced the water inside with air by means of a one-way exhaust valve. The inherent buoyancy of the now air-filled volume would exert a massive upward force on any object to which it was attached. Dr. Staud believed four of his canalons used in concert could raise GRECIAN (*Door County Advocate* 8/5/1909).

On July 24, 1909, the barge WEEAH departed Muskegon, Michigan, on the west side of the state, with Dr. Staud and four canalons. Work began immediately upon arrival in Alpena on the wrecking steamer SEARCHLIGHT; Dr. Staud was confident that GRECIAN would break Lake Huron's surface in just ten days (*Alpena Argus Pioneer* 10/6/1909). Dr. Staud's confidence quickly vanished, however, as equipment failure jeopardized the venture and the safety of crew:

> Friday one of the big steel canalons, the second sunk beside the wreck, burst and for awhile there something doing. The huge steel tank had just been pumped full of air and exerted an enormous lifting power. It was not very long before the water above the tank was churning with a terrible sea from the force of the air escaping to the surface. The water bubbled up like an immense fountain for maybe a hundred feet and then the steamer SEARCHLIGHT was tossed around like a cork, but escaped injury. The action of the water was a beautiful site for a few moments. The total cost of the canalon was $12,000 (*Alpena Argus Pioneer* 10/6/1909).

Having lost a necessary canalon with no ability to replace it, the accident marked the end for Dr. Staud's expedition and the fifty thousand dollar commission he was to receive if GRECIAN was successfully raised. Seven days after the accident Staud suspended salvage operations for the season with intent to return the following year. Due to financial constraints Dr. Staud never returned to Alpena, and GRECIAN disappeared from the public eye until it was relocated by sport divers in 1971 (Thunder Bay Sanctuary Research Collection: Grecian).

The shipwreck rests in 102 feet of water, eleven miles southeast of Alpena, and four miles south of Thunder Bay Island in Lake Huron. Most of the features that make this early steel bulk freighter historically significant remain preserved on GRECIAN's shipwreck site. The bow, stern, and after portion of the midships section remain intact while the forward majority of the midships section has collapsed. Starting forward, the bow stands twenty-five feet off the bottom with a slight starboard list. A single davit remains affixed at the forward end of the foredeck with the anchor windlass positioned just aft. A small hatch positioned aft of the starboard windlass drum leads to the chain locker which houses GRECIAN's anchor tackle, part of whose chain is deposited on the foredeck. According to ship build plans for a near identical Globe Iron Works hull, berthing space and restroom facilities for deck hands and porters were also accessed through this forward hatch. Portions of GRECIAN's oak railing wrap around the bow. Two iron bitts are present on both port and starboard sides of the foredeck and served as anchor posts for

docking lines.

The bow section sheared at the foredeck aft coaming (FIGURE 4). The remains of the forward pilot house (including quarters for the Captain, wheelsman, watchmen, and mates), and the forward-most section of the spar deck lay disarticulated on the lake bed just aft of the break at the bow (Globe Iron Works 1889). Much of this debris field spills out off the port side (FIGURE 5). Aft of this debris field is a one-hundred-foot-long section of spar deck that encompasses four cargo hatches, forward deck winch, pilot house coaming, and oak railing. This section lays almost flat on the lake bottom and is off-center. Every cargo hatch on GRECIAN measures a standard twenty-eight feet port to starboard and seven-and-a-half feet fore and aft (National Oceanic and Atmospheric Administration 2009). The after end of the flattened spar deck section is sheared mid-hatch from the remaining midship and stern section, which are largely intact (FIGURE 6). The break occurred in the middle of a cargo hatch. The stern section incorporates a section of spar deck, propulsion machinery, and aft deck. Two cargo hatches offer divers entry into the intact portion of GRECIAN's open cargo holds where a combination of steel and oak deck stanchions retain the framework for the main and lower decks. Both the main and lower decks were planked with one-inch white pine atop two-inch oak boards, some of which remain fastened to their deck beams (FIGURE 7). The lower deck rests atop a single-tank ballast system that served as a watertight bulkhead between cargo holds and the bilge. GRECIAN was light when it sank and was likely stern-heavy. The hull break suggests that GRECIAN sank stern first and, when it struck bottom, the less-reinforced section forward of the boilers sheared from the stern in one motion.

Between each of these two cargo hatches, or chutes, are smaller coaling hatches that measure sixteen feet port to starboard and seven-and-a-half feet fore and aft. Crews loaded coal through these dedicated coal hatches by wheelbarrow, or mechanized chute systems available at larger ports. Just aft of the coaling hatches, GRECIAN's two fourteen-foot by twelve-foot-six-inch scotch boilers are exposed through the spar deck with assorted steam pipes and wooden remnants of the boiler house scattered around them (FIGURE 8).

GRECIAN's triple expansion steam engine is visible as the entire aft upper works were detached, likely during the wrecking event (FIGURE 9). The engine remains fastened to its mounts positioned on the lower deck. This portion of the hull was reinforced with a double-tank ballast design to further protect the propulsion system from grounding or collision damage.

A twenty-foot-four-inch section of spar deck is mostly collapsed aft of the engine room. This area would have housed the main dining room, ship stores, pantry, and berths for the engineers, firemen, stewards, porters, and cook (Globe Iron Works 1889). Two bits, two deck ventilation holes, capstan, and the tiller are several other features noted along GRECIAN's aft deck (FIGURE 10). From the top of the cap rail to the lake bottom, GRECIAN's round stern measures twenty-six-feet-three-inches (National Oceanic and Atmospheric Administration 2009). Its rudder was sheared near the top of the rudder stock but beneath the tuck of the stern. The rudder is buried in a debris field nearby. The propeller, however, remains in place affixed to its shaft and hub assembly including two of the original four six-inch-long propeller blades. The remains

of the Staud canalon that imploded on 6 October 1909, rests just aft of the propeller on the lake bottom.

SITE INVESTIGATIONS

Sport divers rediscovered GRECIAN in the early 1970s. Its proximity to Alpena and one-hundred-foot water depth makes the site accessible to most sport divers. In 2000, the Thunder Bay National Marine Sanctuary was established and GRECIAN was among the forty-eight shipwreck sites in the 448- square mile boundary. Federal and state maritime archaeologists began researching and monitoring GRECIAN immediately. Initial physical data collection at the site consisted of sonar imagery acquired during an expedition led by Dr. Robert Ballard of the Institute for Exploration. The following year, the University of Minnesota Large Lakes Observatory acquired similar acoustic data. With these datasets as a baseline to understand the site's distribution and orientation, the sanctuary installed two moorings buoys at GRECIAN's stern and bow, respectively, in July of 2003. The mooring systems are composed of repurposed single train wheel anchors, and a combination of polypropylene and chain up-line. The bow and stern buoys were positioned to not interfere with or damage any part of the shipwreck, but provide a rigid downline that divers could use to make safe descents and ascents in visible range of the shipwreck (FIGURE 11).

Following the installation of the independent mooring systems, sport divers and researchers could thereafter easily location and access the site. As a result, sanctuary staff collected photographic datasets on an annual basis to track changes to the vessel's remains. In July 2009 a team of maritime archaeologists from Thunder Bay National Marine Sanctuary and Monitor National Marine Sanctuary used traditional documentation methods to create a comprehensive archaeological site plan (FIGURE 12). Since then, sanctuary teams and partnering organizations have gathered a wide array of digital data using new digital imaging systems. These products range from high-definition photo and video to 3D video and 360-degree panoramic photos. These data products inform sanctuary managers on the condition of the shipwreck, and are also utilized in interpretive exhibits at the Great Lakes Maritime Heritage Center in Alpena, Michigan, and in various forms of print and online media to further engage the public.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [X] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [X] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark “x” in all the boxes that apply.)

- [ ] A. Owned by a religious institution or used for religious purposes
- [ ] B. Removed from its original location
- [ ] C. A birthplace or grave
- [ ] D. A cemetery
- [ ] E. A reconstructed building, object, or structure
- [ ] F. A commemorative property
- [ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
_COMMERCE_____
_ENGINEERING_____
ARCHAEOLOGY: HISTORIC – Non-aboriginal
_____
_____
_____
_____

Period of Significance
_1891-1906_____
_____
_____

Significant Dates
February 1891 (Launch)
_ June 15, 1906 (Sinking)_
_____

Significant Person
(Complete only if Criterion B is marked above.)
_N/A_____
_____
_____

Cultural Affiliation
_Non-Aboriginal_____
_____
_____

Architect/Builder
Globe Iron Works, Cleveland, Ohio
_____
_____

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The GRECIAN Shipwreck Site qualifies for listing under National Register of Historic Places Criterion A and is significant in the area of Commerce based on its critical role of transport vessel during the formative period of Lake Superior's iron ore industry. Iron ore was fundamental to America's industrial boom and steel manufacturing growth in the late nineteenth century. During this period America witnessed incredible industrial growth largely attributed to bigger, faster, and more efficient means to extract iron ore from deposits throughout the upper Great Lakes region and deliver it to foundries in Cleveland, Pittsburgh, and other "cities of steel". GRECIAN was built as part of an early commercial fleet to help supply the iron ore demand during America's late nineteenth century industrial demand. Its place in this commercial history certainly qualifies GRECIAN as eligible under Criterion A: Commerce.

The GRECIAN Shipwreck Site qualifies for listing under National Register of Historic Places Criterion C: Engineering based on its hull design and propulsion system. GRECIAN is an early example of the steel-hulled bulk freighter: a unique, standardized Great Lakes vessel type that greatly increased cargo capacity and efficiency of the Lake Superior iron ore transportation network. When launched in 1891, GRECIAN represented the cutting edge in large steel hulls and efficient triple expansion steam engines that were concurrently built to power these massive steel bulk freighters up and down the Great Lakes. From an Engineering area of significance, the GRECIAN Shipwreck Site is eligible under Criterion C as an intact example of early steel-hulled bulk freighters.

The GRECIAN Shipwreck Site qualifies for listing under Criterion D with high potential to yield important archaeological data. A comprehensive survey of GRECIAN will greatly supplement current understanding of the construction, arrangement, and design features of early steel-hulled bulk freighters. A comparative archaeological study between GRECIAN and sister ship Norman (also intact) located twelve miles away will illuminate the degree of homogeneity between sisters of early corporate Great Lakes fleets. Without question the GRECIAN shipwreck site offers an important opportunity to study an intact example of a transitional vessel class whose period of lake transportation supremacy lasted until the middle of the twentieth century.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Criterion A
Commerce

GRECIAN was purpose-built for the Great Lakes iron ore trade that supplied the region's burgeoning steel industry. The iron ore trade expansion began in the late 1880s largely due to the increasing tonnage and number of dedicated ore boats visiting the ore docks throughout Michigan's Upper Peninsula. Beginning in 1888, iron ore became the chief exported material from the Great Lakes region (Lake Carriers Association 1911:123). As a result, the iron ore mines along Lake Superior's coast simultaneously proliferated during the1880s (FIGURE 13).

Of the 16,036,043 tons of iron ore produced in the United States in 1890, 56.95 percent was produced and shipped from the Lake Superior mines (United States Department of the Treasury 1892:xxii). The United States Department of the Treasury reported:

> The prosperity of this industry, so far as the Lake Superior ore district is concerned, is almost if not quite, entirely due to the cheap transportation afforded by the water ways. The bulk and weight of this product is so great, compared to its value, that it is not probable the railroads could afford a rate sufficiently low to transport this ore to the furnaces in Illinois, Ohio, and Pennsylvania, notwithstanding this ore is the best in quality and the most valuable iron ore mined in the United States (1892:xxii).

Bulk freighters and the Great Lakes maritime highway quickly became key to the Lake Superior iron ore industry. As reported by the Department of the Treasury above, railroads could not keep up with ore production because of iron ore's density and the massive quantities being extracted. There simply were not enough rail cars or miles of track to keep up with the insatiable demand for iron ore. In 1890, an estimated 1,321,544 tons of iron ore were shipped by rail from the mines, while 3,792,009 tons were shipped by water out of Escanaba, Michigan, alone (Lawton 1891:57). Most of this iron ore was bound for furnaces and foundries in Ohio and western Pennsylvania (Reynolds 2011:25).

Escanaba (where GRECIAN loaded) offered one important advantage over Marquette, Michigan, Duluth, Minnesota, Ashland, Wisconsin, and the other iron ore ports located on the shores of Lake Superior. Ships leaving ports located on the shore of Lake Superior had to pass through the Saint Marys Falls Canal (commonly called Soo Locks) at Sault Ste. Marie, Michigan. The locks at Sault Ste. Marie were inevitably congested during peak shipping months, as a great number of ships traveled to ports along the lower lakes. Consequently, distance and time (most importantly) were reduced by loading ore boats at Escanaba situated at the northern extent of Lake Michigan. Leaving from Escanaba, vessels did not need to pass through the Soo Locks. Since the first

shipment left Escanaba in 1866, it has remained an important iron ore hub. Escanaba principally serviced iron mines from the Menominee Range, a series of eight mines located in the Western Upper Peninsula of Michigan, including the famously high-producing Chapin Mine (American Society of Mechanical Engineers 1987).

Since its discovery in 1879, the Chapin Mine, of Iron Mountain, Michigan was one of the largest producers in the Lake Superior district. Chapin was established relatively late in terms of iron ore production in the area. Swampy terrain made shaft sinking especially difficult as miners constantly battled subterranean aquifers, but Chapin's high quality ore kept investors optimistic. The Menominee Range's location further complicated mining operations and delayed industrial settlement. Located near the center of Michigan's Upper Peninsula, the iron ore necessitated rail transit to the Escanaba docks fifty-five miles to the west where GRECIAN and other bulk freighters loaded the ore and brought it south to distribution centers in Cleveland and Detroit. Compared to the iron fields in the Marquette Range which only had to travel twelve to fifteen miles to the Marquette docks, it is no surprise that the Menominee Range developed later than its neighbors (Reynolds 2011:61).

Nevertheless, Chapin was known for its high-grade ore. Michigan's Commissioner of Mineral Statistics remarked in 1890:

> No finer body of ore has ever been found in the State than the Chapin. It is so large, of such uniformity, of such excellent quality, so easily broken in the mine, so fully tested, with no diminution, that it certainly is not excelled, if equaled, by any other deposit that has ever been found in the Lake Superior Region (Lawton 1887:34).

In 1901 the Chapin Mine was bought by the Oliver Iron Mining Company: a subsidiary company of United States Steel Corporation, America's first billion-dollar firm and the largest business enterprise ever launched at the time (*Engineering and Mining Journal* 1902:118). Production continued until 1934 when the Chapin shut its doors due to economic impacts associated with the Great Depression. Despite the topographical and geographical hurdles, Chapin Mine was the most profitable iron mine in the Upper Peninsula during its tenure between 1879 and 1934 and an important asset for the United States Steel Corporation. Bulk freighters like GRECIAN on the Great Lakes maritime highway were a pivotal part of US Steel's success continuing into the 20th century:

> Greater than the number of vessels in the combined fleets of the United States Navy… is the colossal force of vessels gathered together on the Great Lakes to carry iron ore for the United States Steel Corporation (Beeson 1901:172).

Lake Superior iron ore's higher purity compared to ore from the rest of the nation was an important reason for the industrial development of the region (Van Hise 1901:315). The Bessemer process, invented in 1875 by Henry Bessemer, particularly heightened demand for high grades of iron ore. Many nationally-significant industries, therefore, relied on Superior ore. This new process of manufacturing led to heightened demand for domestic steel for use as

railroad ties, commercial construction, shipbuilding, automobiles, and numerous military and civilian industries.

In 1885, Chicago's Home Insurance Company headquarters became the first building constructed with a steel-reinforced skeleton and considered the first skyscraper (Koram Jr 2008:93). Like ship hulls, steel frames allowed architects to experiment with new building designs that "culminated in the introduction of the skyscraper that today dominates the urban skyline of cities around the world" (Bowlus 2010:153). Masonry construction had a known height limit of fourteen stories, while steel-framed buildings had no such restriction (Domosh 1996:73). Consequently, urban landscapes were not only growing laterally, but vertically, and at a staggering rate. Buildings like the Manhattan Life Insurance building (1894), the New York World Building (1890), and others competed for the title of worlds' tallest building. All of these structures relied upon the vast supply and effective transportation network of the Lake Superior iron ore industry. Steel bulk freighters like GRECIAN, therefore, were instrumental in providing the necessary construction materials for the largest buildings in North America.

Lake Superior iron ore was perhaps most essential in the construction and expansion of a national railroad network (Bogue 2007:55). America's vast rail network was the principle force behind the rapid national industrialization that occurred in the late 19th and early 20th centuries (Rostow 1960). Its "giant web broke down the barriers of regionalism and gave all but the most remote villages access to markets previously unavailable" (Bowlus 2010:9). Railroading was a key factor in the success of every American industry as it brought raw materials to manufacturing centers, and finished products to market. The tracks, ties, engines, and rail cars of American's transportation system were all built with Bessemer steel beginning in the 1880s through the 1920s. Bessemer steel, of course, was best produced with the pure, low-phosphorus iron ore found in Michigan's Upper Peninsula.

GRECIAN was one of six massive steel steamers commissioned by the Menominee Transit Company in 1890 at Globe Iron Works of Cleveland, Ohio. Ferdinand Schlesinger, M. A. Hanna, and H. M. Hanna incorporated the Menominee Transit Company in 1890. Ferdinand Schlesinger was also the owner of the Chapin Mining Company in 1890. M. A. Hanna and Company, another Menominee subsidiary, was the Chapin Mining Company's sales agent and fleet manager. Schlesinger and his agents wanted a private fleet to control all aspects of iron ore production at Chapin Mine and achieve vertical integration (which included product transportation). Contract vessel owners were rarely bound by strict contracts to mine agents. Bulk freighter owners and captains chased the highest rate per ton of bulk cargo, which often varied week by week between grain and iron ore. By the late 1880s it became apparent to mining agents that it was more reliable and cost-effective to purchase their own fleets and control all aspects of production and transportation than rely on the unstable contract vessel market. Menominee Transit Company was formed to fill this void, and six ships were contracted to be built by Globe Iron Works, hull numbers 36-41: NORMAN, SAXON, GERMAN, BRITON, GRECIAN, and ROMAN (*Buffalo Evening News* 6/1/1895). They were signed to a ten-year contract to bring ore down from the Chapin Mine at $1.10 per ton who also paid ten percent of the fleets' value each year (*Iron Age* 1892:1124).

Criterion C
Engineering

As an early steel bulk freighter GRECIAN has a significant place in the evolution of Great Lakes shipbuilding and, specifically, the development of Great Lakes ore carriers. Great Lakes bulk freighters trace their origins to R.J. HACKETT, built in 1869, by Peck and Masters in Cleveland, Ohio (Thompson 1991:22). With its innovative forward pilothouse and aft engine and crew cabin, R.J. HACKETT's main deck was relatively uninterrupted with eight-foot cargo hatches spaced twenty-four feet on center that matched up with the spacing of loading nozzles at iron ore pocket docks (Wright 1969:5). Not only did this "fore-and-aft" cabin arrangement allow for more tonnage due to the consolidation of unprofitable ship spaces (large engine rooms located amidships, expansive cabins on deck) but also accelerated cargo loading/unloading. Time at dock was greatly reduced as R.J. HACKETT's cargo hatches were spaced according to dockside loading equipment.

Having the pilothouse forward offered a better vantage point for handling the ship in low visibility and congested waterways (very common along the Great Lakes) and allowed the majority of the hull to consist of a long, uninterrupted section comprised solely of cargo holds (Thompson 1994:23). In addition to maximizing carrying capacity, this design provided unobstructed access to the cargo hold which, in turn, aided in moving bulk items to and from the ship. Just as vessel design was evolving to suit the special demands imposed by navigating the Great Lakes, shore-side facilities likewise adapted and were developing loading systems to mirror the deck arrangement of the bulk carriers. As a result, a technological symbiosis emerged where the infrastructure associated with moving bulk commodities across the land-sea interface (conveyor belts, cranes, loading docks, etc.) developed simultaneously with a specialized ship arrangement to allow for expedient handling of cargo. GRECIAN's spar deck featured eight such cargo hatches that were twenty-eight feet in width (National Oceanic and Atmospheric Administration 2009).

GRECIAN's early triple expansion steam engine offers additional grounds for its significance in maritime history and is illustrative of GRECIAN's place at the forefront of innovative steamship technology. In 1886 package freighter SUSQUEHANNA was the first vessel on the Great Lakes to be outfitted with a triple expansion engine, just five years before GRECIAN was launched in Cleveland, Ohio (Thompson 1994:41). Before 1886, bulk freighters and other steam-powered vessels were propelled by different variations of the compound steam engine; these engines had two cylinders, as opposed to GRECIAN's three. The triple expansion engine was twenty-four percent more efficient than the two-cylinder compound engines of the 1870s and seventy-nine percent more efficient than the single cylinder direct-acting engines that were standard in all steam vessels before the compound engine was introduced (Bowlus 2010:150). Steam engine efficiency relates to the amount of horsepower that can be produced per steam cycle. In the single cylinder engines, once steam was injected into the cylinder it was then exhausted and lost. The triple expansion engine forced the exhausted steam used in the smallest cylinder to the medium-sized cylinder, and then again to the largest cylinder (Thompson 1991:61). The triple expansion engine works on the principle that greater surface areas at lower pressures generate the

same force as higher pressures on a smaller surface area. This technology greatly improved steam efficiency, increased horsepower, and gave Globe Iron Works a propulsion system that could propel ever- growing steel hulls (Bowlus 2010:149).

This system also made ships more efficient by requiring less coal per mile of travel. CORONA, built in 1888, by Globe Iron Works, was the first bulk freighter that was outfitted with both a steel hull and a triple expansion engine (Bowlus 2010:149). GRECIAN was built just three years later, making it part of the first generation of Great Lakes steel bulk freighters. In 1897 marine architect Walter Miller recognized triple and later quadruple expansion engines as one of the three "great developments of the previous ten years" (Miller: 1897:245). The triple expansion engine was the standard means of steam propulsion until steam turbines were invented just before World War II (Thompson 1994:41).

The specialized Great Lakes bulk freighter evolved quickly, with the first iron-hulled version launched in 1882: ONOKO. SPOKANE, launched four years later in 1886, was the first steel-hulled bulk freighter and thought of as "the most modern freighter on the lakes" (Thompson 1991:22). Both ONOKO and SPOKANE were built at Globe Iron Works of Cleveland, Ohio, which had become the premiere builder for Superior-bound ore ships (Lake Carriers Association 1911:110). GRECIAN was launched just five years after SPOKANE placing it very early on steel bulk freighter's chronology. Steel hulls allowed shipbuilders to build mammoth vessels as big as regional locks, canals, and harbors would allow. Wooden hulls like on R.J. HACKETT flexed, sagged, and hogged (warped), often creating frustrating leaks. Heavy ore cargoes accentuated Hull warping.

Steel's rigid properties dismissed this problem. It did not take long for steel-hulled bulk freighters to become the standard in iron ore transportation. Globe Iron Works was an industry leader in building these fast steel "flyers". Between 1887 and 1900, 108 steel vessels were launched in Cleveland, seventy of these were built by Globe Iron Works (Wright 1969:29).

Globe Iron Works began as Sanderson & Company in 1853. Henry Coffinberry, Robert Wallace, and John Pankhurst bought the operation in 1869, renaming the foundry Globe Iron Works. In 1880 they constructed a new shipyard on West 49th Street, Cleveland, on the west bank of the winding Cuyahoga River (Colton 2010). With the addition of a shipyard, the company again changed names, this time to a more encompassing Globe Shipbuilding Company, with a specific interest in the design and construction of steel vessels for the bulk cargo trade.

With increasing demands in the middle-1880s it was clear that to maximize ore cargo capacity, shipyards had to standardize ship design (Bowlus 2010:147). GRECIAN, and its five sister ships, were products of this shipbuilding strategy spearheaded by Globe Iron Works. Ships were no longer built as unique stand-alone craft; they were built commercially under large contracts to supply the seemingly-endless demand for ore transportation by mine owners. In 1888, Globe Iron Works boasted that they could launch "six large steel steamers" each year (Hutchins 1941:457).

The company changed hands, again, in March 1899, when the Cleveland Shipbuilding Company,

Globe Iron Works (including Globe Shipbuilding Company), the Ship Owners Dry Dock, and various other shipyards in Buffalo, Detroit, Milwaukee, West Superior, West Bay City, and Chicago were all incorporated as the American Shipbuilding Company (Ehle 1996:26). For a detailed review of the corporate history of American Shipbuilding Company see Richard J. Wright's *Freshwater Whales: A History of the American Ship Building Company and Its Predecessors*.

By 1902 the American Shipbuilding Company was the third largest shipyard in the world (*Marine Review* 1902:21). This massive conglomerate of industry leaders chose Cleveland as their headquarters. Cleveland remained a major steel shipbuilding hub through World War II, and by 1952, the American Shipbuilding Company was the largest ship builder in the Great Lakes region (Blume 2012:109).

GRECIAN was launched on the front lines of this important evolution in the standardization of Great Lakes steel shipbuilding and the rise of steel bulk freighters. GRECIAN was also built at the dawn of triple expansion steam engines, which became the Great Lakes standard in steam propulsion between 1886 and 1940. It is a very early example of a ship type that lasted through the 1940s. One can see the clear resemblance between the 1891-built GRECIAN and the 1942-built *Alpena* that still carries bulk cargoes across the inland seas (FIGURE 14).

Criterion D

The GRECIAN Shipwreck Site is a significant archaeological resource. It represents the beginning of commercialized iron ore fleets and vertical integration within corporate iron ore companies operating in the Lake Superior region. The site has already yielded significant information on the design and construction of early steel bulk freighters of the late nineteenth century. Its cargo hatch spacing, deck arrangements, compound steam engine configuration, and pilothouse have supplemented the Lake Superior iron ore industry's historical record from a unique, submerged perspective. Especially when compared to wooden bulk freighters of the 1870s like *Joseph S. Fay*, GRECIAN conveys the increases in vessel strength and design brought on by the iron ore industry's transportation demands.

GRECIAN was launched at the transition from wood to steel-hulled vessels, and during the rise of commercial fleets incorporated by companies focusing on one or two bulk freight materials. GRECIAN was one of six identical vessels launched by Globe Iron Works for the Menominee Transit Company. The insatiable demand and profits garnered by iron ore mining companies permitted these massive shipbuilding contracts for the first time in Great Lakes history. Iron ore company fleets were now being identified by standardized hull paint schemes, ship names, and especially, construction. Of the six hulls launched at Globe Iron Works for the Menominee Transit Company (GRECIAN, SAXON, NORMAN, GERMAN, ROMAN, BRITON) only two, including GRECIAN, remain as archaeological sites that reflect their initial construction (TABLE 1).

Name	Date of Disposition	Reason for Disposition

GRECIAN	6/7/1906	Sunk; Foundered
SAXON	1927	Scrapped
ROMAN	1925	Scrapped
BRITON	11/13/1929;1932	Wrecked Buffalo, NY; Dynamited as navigation hazard
GERMAN	6/11/1919	Sunk; Collision
NORMAN	5/30/1895	Sunk; Collision

Table 1. Comparison of dates and reasons for disposition among the six Menominee Transit Company.

GERMAN rests in 110 feet of water off Long Island, New York, after discovery by wreck divers in the middle 1990s. Two years before its fatal collision with steamer ARGENTINA in 1919, GERMAN had been cut in half for transit through the Welland Canal. It was rebuilt, renamed YANKEE, and served as a coal carrier on the Atlantic coast (Thunder Bay Sanctuary Research Collection: German) until colliding with the ARGENTINA.

NORMAN was sunk after a collision with steamer JACK on 20 May 1895, off Presque Isle, Michigan, roughly twelve nautical miles from GRECIAN's remains. Cold freshwater coupled with its final resting place 210 feet beneath the surface of Lake Huron have kept NORMAN completely intact. It was listed to the National Register of Historic Places in 2016, under Criteria A, C, and D (#16000819). GRECIAN and NORMAN are the only two of the original fleet that are preserved in their original configuration, intact, and in freshwater. The intact presence and proximity of both NORMAN and GRECIAN offer exciting potential to yield data important to maritime archaeology and the construction of early steel-hulled bulk freighters.

BRITON ran hard aground off Buffalo, New York, due to navigation errors. Its wrecking presented a significant hazard to vessels entering and departing the port of Buffalo. Three years later it was dynamited.

A comprehensive, comparative archaeological survey of GRECIAN and NORMAN would assist archaeologists and historians in understanding the degree of homogeneity in construction between these two sister ships. Shipbuilding plans exist for some contemporary Globe Iron Works (GIW) hulls, but those specific to GIW Hull 36 (NORMAN) and GIW Hull 40 (GRECIAN) are missing. Detailed archaeological documentation of both sites could illuminate how "identical" claimed sister ships really were. Furthermore, NORMAN was the first built of the six Menominee Transit Company bulk freighters, and GRECIAN was the second-to-last which offers an ideal separation in vessel launchings to compare accuracy of structural equivalence.

Three identical hulls separate NORMAN and GRECIAN (SAXON, GERMAN, BRITON). Did GIW employ any significant structural improvements that appear on GRECIAN, but not NORMAN? Are interior spaces at the stern identical in layout? Do NORMAN and GRECIAN feature identical cargo hatch spacing? Answers to these questions, and more, can greatly enhance our knowledge of the true standardization in construction of the Menominee Transit Company

bulk freighters.

As GRECIAN, NORMAN, and their counterparts in the Menominee Transit Company fleet reflect the beginnings of Great Lakes-based corporate iron ore fleets, this comparative survey will also yield more information pertinent to the human experience of working aboard these early steel bulk freighters. Because vessels on the Great Lakes often had long, well-documented careers they developed distinct personalities. Is there any evidence of sailor enhancement or customization in either vessel? Does any present material culture speak to the degree that these vessels had their own identities that was recognized and appreciated by sailors? Detailed survey of both vessels will yield important data on the effect and changes in human experience with the coming of standardized, corporate iron ore fleets and make the GRECIAN Shipwreck Site eligible under Criterion D.

Eligibility Conclusion

GRECIAN is eligible under Criterion A for its role in facilitating the Lake Superior iron ore trade which was of fundamental importance to America's industrial growth and steel manufacturing in the late nineteenth century. During this period, America's industrial growth was largely propelled by bigger, faster, and more efficient means to convey Lake Superior iron ore to foundries in Cleveland, Pittsburgh, and other cities of steel. GRECIAN is also eligible under Criterion A in the Engineering area of significance as an early example of the steel bulk freighter: a unique, standardized Great Lakes vessel type that greatly increased cargo capacity and efficiency of the marine transportation system on the Great Lakes. It was on the forefront of technologies that revolutionized Great Lakes shipbuilding like the triple expansion steam engine. The shipwreck's incredible state of preservation and historical significance to the iron ore industry and Great Lakes shipbuilding warrant attention, preservation, and protection as a listed property on the National Register of Historic Places.

The GRECIAN Shipwreck Site is also eligible under Criterion D for its high potential to yield important data about the first corporate iron ore fleet of steel bulk freighters as part of the Menominee Transit Company. GRECIAN and nearby *Norman* are the only two that remain intact and, coincidentally, are located in close proximity to each other. A comprehensive, comparative archaeological survey of both vessels will greatly add to present understanding of early iron ore corporate fleets. The degree, or lack, of homogeneity in construction and design will illuminate and help interpret the corresponding changes in the human experiences of sailors aboard these institutionalized fleets. Further, this comprehensive survey of GRECIAN will shed important light on the nuances in ship construction and structural arrangement. GRECIAN's upright, intact position on the lakebed provides a rare window into the past of the first corporate fleets and the earliest steel bulk freighters.

Integrity Conclusion

The GRECIAN Shipwreck Site has retained a high level of integrity that support its eligibility for listing to the National Register of Historic Places under Criteria A and D.

Materials

Since its wrecking event on 15 June 1906, GRECIAN has retained key material components including its steel hull and propulsion system. The site remains largely intact and is a clear historic resource and remains intact with the materials used during its 1891 construction.

Workmanship

GRECIAN is the product of Globe Iron Works, one of the largest shipbuilding firms in Cleveland, Ohio, and one of the earliest firms to begin building standardized vessels for iron ore fleets. GRECIAN was constructed at the beginning of the steel-hulled bulk freighter era which lasted through the middle twentieth century. Its location in one hundred feet of freshwater has preserved its remains to an excellent degree where the workmanship of Globe Iron Works' shipbuilders is present and relevant to its significance.

Design

GRECIAN has retained its design integrity as an early steel-hulled bulk freighter. Design features like the fantail stern, triple expansion steam engine, twin scotch boilers, expansive two decks, cargo hold, and blunt bow are well preserved and remain intact. Between its two dates of significance (launching in February 1891 and sinking on 15 June 1906) GRECIAN retained its original configuration and equipment without any major refitting which enhances its level of design integrity.

Association

GRECIAN has retained its integrity of association, as its remains exist today as they did on 15 June 1906, when the vessel sank off Alpena, Michigan. Despite short-lived efforts at raising GRECIAN, GRECIAN's shipwreck site appears today as it did and remains where it did when it sunk more than one hundred years ago.

Feeling

Due to its intact position on the lakebed, GRECIAN greatly exudes a high degree of integrity of feeling. Its upright hull clearly speaks to the gargantuan nature of early steel-hulled bulk freighters and the iron ore industry that demanded their development. Most of its physical characteristics that identify with its design and vessel history are present and add to GRECIAN's high level of integrity of feeling.

Setting

GRECIAN has remained submerged since it sunk on 15 June 1906. As a shipwreck site that has not been raised or moved, it has retained all historic fabric and integrity of setting. The shipwreck has a stable, indefinite relationship with the cobblestone lakebed of Lake Huron.

GRECIAN Shipwreck Site | Alpena, Michigan
Name of Property | County and State

Location

The GRECIAN Shipwreck Site remains in its original location after its shipwrecking event in 1906, and will not be raised. It is stable in its current state and will best aid archaeologists and maritime historians in situ.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

American Society of Mechanical Engineers
1987 *Chapin Mine Pumping Engine: National Historic Mechanical Engineering Landmark*. American Society of Mechanical Engineers Press, New York, NY.

Beeson, Harvey
1901 *Beeson's Marine Directory of the Northwestern Lakes*. Beeson's Marine Directory, Chicago, IL.

Blume, Kenneth J.
2012 *Historical Dictionary of the U.S. Maritime Industry*. Scarecrow Press, Lanham, MD.

Bogue, Margaret B.
2007 *Around the Shores of Lake Superior: A Guide to Historic Sites*. University of Wisconsin Press, Madison, WI.

Bowlus, Bruce
2010 *Iron Ore Transport on the Great Lakes: The Development of a Delivery System to Feed American Industry*. McFarland and Company, Jefferson, NC.

Buffalo Evening News
1895 Lake Disaster: Big Steel Steamer NORMAN Sent to the Bottom with Three of Her Crew. *The Buffalo Evening News* 1 June. Buffalo, NY. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Buffalo Inquirer
1895 Lake Disaster: Steamer Norman Sunk In A Collision Three People Drowned. *Buffalo Inquirer* 31 May. Buffalo, NY. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Colton, Tom
2010 Globe Iron Works. Biographical entry at www.shipbuildinghistory.com. Delray Beach. FL. http://www.shipbuildinghistory.com/history/shipyards/2large/inactive/globe.htm

Domosh, Mona
1996 *Invented Cities: The Creation of Landscape in Nineteenth-Century New York and Boston*. Yale University Press, New Haven, CT.

Duluth Evening Herald
1897 To Raise the Norman. Duluth Evening Herald 14 May. Duluth, MN. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Ehle, Jay C.
1996 *Cleveland's Harbor: The Cleveland-Cuyahoga County Port Authority*. Kent State University Press, Kent, OH.

Engineering and Mining Journal
1902 General Industry Notes: Michigan. Volume 73: January 18. The Engineering and Mining Journal, New York.

Globe Iron Works
1889 Plans and Sections Hull Number 30. Cleveland, OH. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Great Lakes Marine Historical Collection
2014 Official Number 130505: Norman Ship Information and Data Record. Held at The Milwaukee Public Library, Milwaukee, WI.

Hutchins, John G.
1941 *The American Maritime Industries and Public Policy: 1789-1914*. Harvard University Press, Cambridge, MA.

Iron Age
1892 A Review of the Hardware, Iron and Metal Trades. Vol 49, 7 January. David Williams, Publisher. New York, NY.

Iron Trade Review
1906 The Chapin Mine-Its Record and Prospects. September 27. Volume 39. Penton Publishing Company, Cleveland, OH.

Koram Jr., Joseph J.
2008 *The American Skyscraper 1850-1940: A Celebration of Height*. Branden Books, Boston, IL.

Lake Carriers' Association
1911 *Annual Report of the Lake Carriers' Association 1910*. P. N. Bland Printing Company, Detroit, MI.

Lawton, Charles
1887 State of Michigan Mines and Mineral Statistics. Thorp and Godfrey, Lansing, MI.

1891 State of Michigan Mines and Mineral Statistics. Robert Smith & Company, Lansing, MI.

Mansfield, John Brandt
1899 *General History*. J. H. Beers & Company, Chicago, IL.

Marine Review

1896 A Diving-Bell Shipped to Alpena. *Marine Review* 13 August. Cleveland, OH.

1902 Built on the Lakes for Ocean Service. *Marine Review* 30 January. Cleveland, OH.

Miller, Walter
1897 Marine Engineering on the Great Lakes – Past and Present. In *Beeson's Marine Directory*, pp.245-246. Harvey C. Beeson, Chicago, IL.

National Oceanic and Atmospheric Administration
2009 Survey Results of the Grecian. Thunder Bay National Marine Sanctuary, Alpena, MI.

Reynolds, Terry S.
2011 *Iron Will: Cleveland-Cliffs and the Mining of Iron Ore*. Wayne State University Press, Detroit, MI.

Rostow, Walt W.
1960 *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge University Press, Cambridge, MA.

Sheboygan Evening Telegram
1895 The Big Steel Norman and the Canadian Steamer Jack Collided. Sheboygan Evening Telegram 1 June. Sheboygan, WI. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Thompson, Mark L.
1991 Steamboats and Sailors of the Great Lakes. Wayne State University Press, Detroit, MI.

1994 *Queen of the Lakes*. Wayne State University Press, Detroit, MI.

Thunder Bay Island Life Saving Station
1895 Daily Log for 31 May 1895. Located in Record Group 41Chicago National Archives, Chicago, IL.

Thunder Bay Sanctuary Research Collection
2017 Grecian Ship File. Located in the Thunder Bay Sanctuary Research Collection housed in the Alpena County Public Library, Alpena, MI.

Thunder Bay Sanctuary Research Collection
2017 German Ship File. Located in the Thunder Bay Sanctuary Research Collection housed in the Alpena County Public Library, Alpena, MI.

United States Department of Commerce and Labor
1891 *Certificate of Enrollment of the Steam Prop Grecian*. Bureau of Navigation. Located in the Thunder Bay Sanctuary Research Collection housed in the Alpena County Public Library, Alpena, MI.

United States Department of the Treasury

1892 *Report on the Internal Commerce of the United States*. Bureau of Statistics. Government Printing Office, Washington DC.

United States District Court
1895 Case 4478: The Menominee Transit Company vs. Steamer Jack. 9th District, Eastern District of Michigan. 6 June. Located in Record Group 21 Chicago National Archives, Chicago, IL.

United States District Court
1895 Case 4480: In the Mater of the Petition of the Calvin Company, Limited, Owners of the Steamer Jack. 10 June. Located in Record Group 21 Chicago National Archives, Chicago, IL.

Van Hise, C. R.
1901 *The Iron-Ore Deposits of the Lake Superior Region*. Government Printing Office, Washington D. C.

Wright, Richard J.
1969 *Freshwater Whales: A History of The American Ship Building Company and Its Predecessors*. Kent State University Press, Kent, OH.

Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
____recorded by Historic American Engineering Record # _____
____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

_X___ State Historic Preservation Office
____ Other State agency
_X___ Federal agency
____ Local government
____ University
____ Other
Name of repository: _____

Historic Resources Survey Number (if assigned): _20UH046_____

10. Geographical Data

Acreage of Property 109.07 acres

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates (decimal degrees)
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)

Bow
1. Latitude: 44.968620 Longitude: -83.201100

Stern
1. Latitude: 44.968320 Longitude: -83.199900

Boundary Box Coordinates
1. Latitude: 44.971000 (Northwest Corner) Longitude: -83.205000
2. Latitude: 44.966000 (Southwest Corner) Longitude: -83.205000
3. Latitude: 44.966000 (Southeast Corner) Longitude: -83.196000
4. Latitude: 44.971000 (Northeast Corner) Longitude: -83.196000

Or
UTM References
Datum (indicated on USGS map):

☐ NAD 1927 or ☐ NAD 1983

1. Zone:	Easting:	Northing:
2. Zone:	Easting:	Northing:
3. Zone:	Easting:	Northing:
4. Zone:	Easting :	Northing:

Verbal Boundary Description (Describe the boundaries of the property.)

The GRECIAN Shipwreck Site rests 11 nautical miles southeast of Alpena Township and 4 nautical miles south of Thunder Bay Island in Lake Huron. The steel bulk freighter's remains lie within the boundaries of the National Oceanic and Atmospheric Administration (NOAA)

Thunder Bay National Marine Sanctuary, which is under the jurisdiction of the United States Department of Commerce. 44.968620 latitude and -83.201100 longitude mark the bow of the shipwreck and 44.968320 latitude and -83.199900 longitude mark the stern. The bow and stern are positioned in the center of the boundary box. The boundaries of the box are defined by a rectangle with west-east axis measuring 691.72 meters and north-south axis measure 633.30 meters, with a perimeter of 2,661.94 meters. The area of the boundary box is 109.07 acres. The northwest corner is located at latitude 44.971000 longitude -83.205000. The southwest corner is located at latitude 44.966000 longitude -83.205000. The southeast corner is located at latitude 44.966000 longitude -83.196000. The northeast corner is located at latitude 44.971000 longitude -83.196000.

Boundary Justification (Explain why the boundaries were selected.)

The National Register boundaries of the GRECIAN Shipwreck Site encompass the footprint of its articulated remains within the coordinates listed above to capture the wreck site, hull structure, associated artifacts, and debris field. Diver and acoustic surveys conducted by the Thunder Bay National Marine Sanctuary have revealed the extent of GRECIAN's hull structure, associated artifacts, and debris field are centralized in the proposed boundary box. Each side of the boundary box is 300 meters from the shipwreck site. The justification for this boundary box buffer surrounding the main hull structure is that GRECIAN has a scattered debris field around the wreck site's primary footprint. The examination of this debris field in the future may yield information important to history, and provide information about shipboard life, vessel design, use, cargo stowage, and GRECIAN's wrecking event.

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11. Form Prepared By

name/title: Philip Alexander Hartmeyer / Maritime Archaeologist
organization: Thunder Bay National Marine Sanctuary
street & number: 500 West Fletcher Street
city or town: Alpena state: Michigan zip code:49707
e-mail: phil.hartmeyer@noaa.gov
telephone: (989) 884-6205
date: February 21, 2017

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.

- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Description of Photograph(s) and number, include description of view indicating direction of camera:

Photograph/Figure 1 of 16	GRECIAN, Historic Image Name of Author: Unknown Date of Image: 1891-1906 Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI MI_Alpena_Grecian Shipwreck Site_01
Photograph/Figure 2 of 16	R. J. HACKETT, Historic Image Name of Author: Unknown Date of Image: 1870-1905 Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI MI_Alpena_Grecian Shipwreck Site_02

Photograph/Figure 3 of 16
Ximénez Canalon, Patent
Name of Author: Fernando Staud y Ximénez
Date of Image: 6 August 1906
Location of Image: Google Patents
https://www.google.com/patents/US865130
MI_Alpena_Grecian Shipwreck Site_03

Photograph/Figure 4 of 16
GRECIAN, Underwater Image of Bow
Name of Author: Thunder Bay National Marine Sanctuary
Date of Image: 2007
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_04

Photograph/Figure 5 of 16
GRECIAN, Underwater Image of Bow Debris Field
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_05

Photograph/Figure 6 of 16
GRECIAN, Underwater Image Spar Deck Break
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 23 May 2010
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_06

Photograph/Figure 7 of 16
GRECIAN, Underwater Image of Main and Lower Decks
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 23 May 2010
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_07

Photograph/Figure 8 of 16
GRECIAN, Underwater Image of Boilers
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 2007
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_08

Photograph/Figure 9 of 16
GRECIAN, Underwater Image of Steam Engine
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 2 June 2011
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_09

Photograph/Figure 10 of 16
GRECIAN, Underwater Image of Stern
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_10

Photograph/Figure 11 of 16
GRECIAN, Underwater Image of Diver on Stern Buoy
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_11

Photograph/Figure 12 of 16
GRECIAN, Site Plan
Name of Author: Thunder Bay National Marine Sanctuary
Date of Image: 2010
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_12

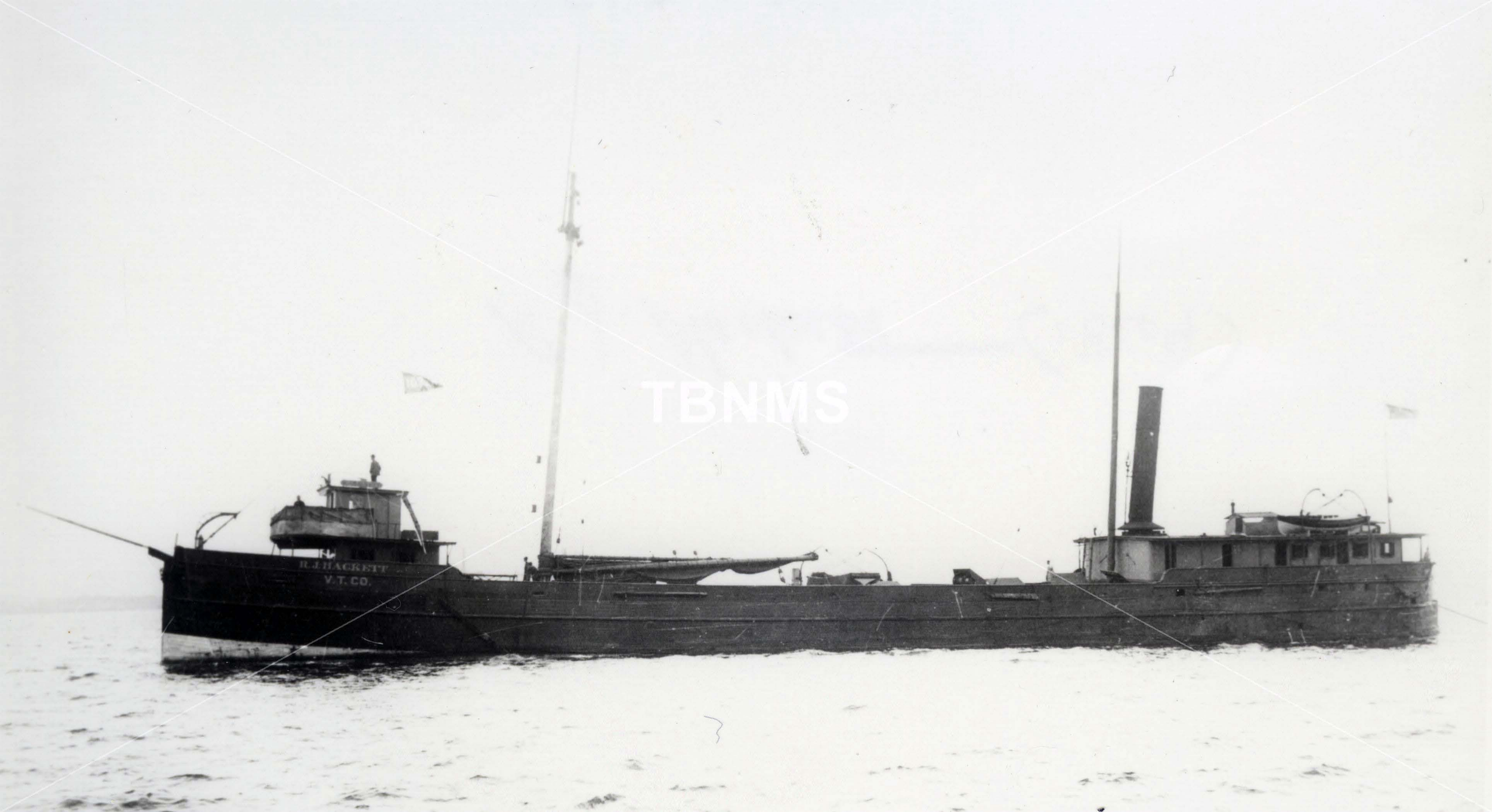
Photograph/Figure 13 of 16
Chart of Tons of Iron Ore Shipped from Lake Superior
Name of Author: Philip Hartmeyer
Date of Image: 10 January 2015
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_13

Photograph/Figure 14 of 16 ALPENA, Present-Day Photograph
Name of Author: Tom Banfai Date of Image: 24 March 2014
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_14

Photograph/Figure 15 of 16 GRECIAN, Location on Nautical Chart
Name of Author: Philip Hartmeyer
Date of Image: 21 February 2017
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_15

Photograph/Figure 16 of 16 GRECIAN, Boundary Box
Name of Author: Philip Hartmeyer
Date of Image: 21 February 2017
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_16


GRECIAN.



No. 865,130. PATENTED SEPT. 3, 1907.

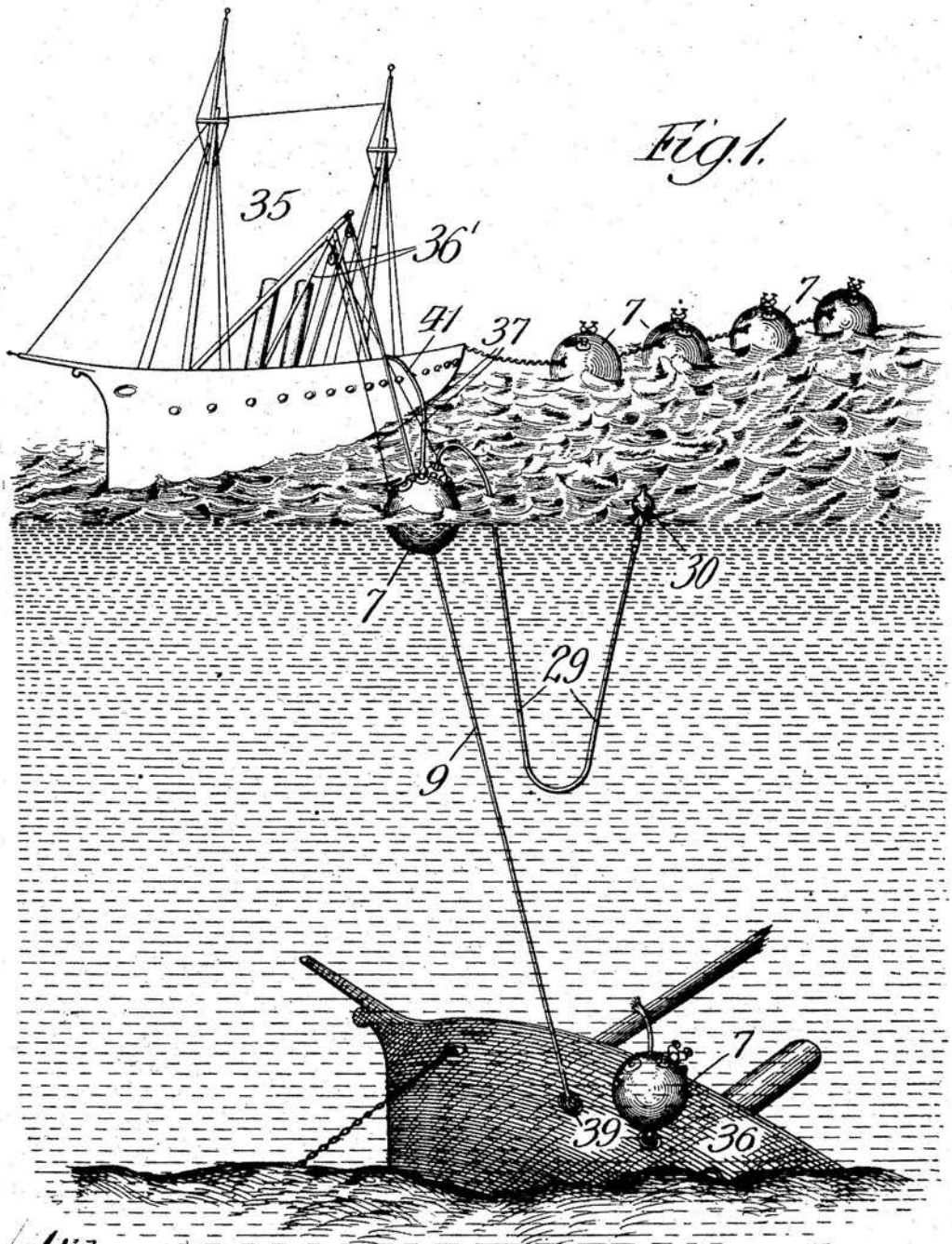
F. S. Y XIMÉNEZ.

APPARATUS FOR RAISING SUNKEN VESSELS.

APPLICATION FILED AUG. 6, 1906.

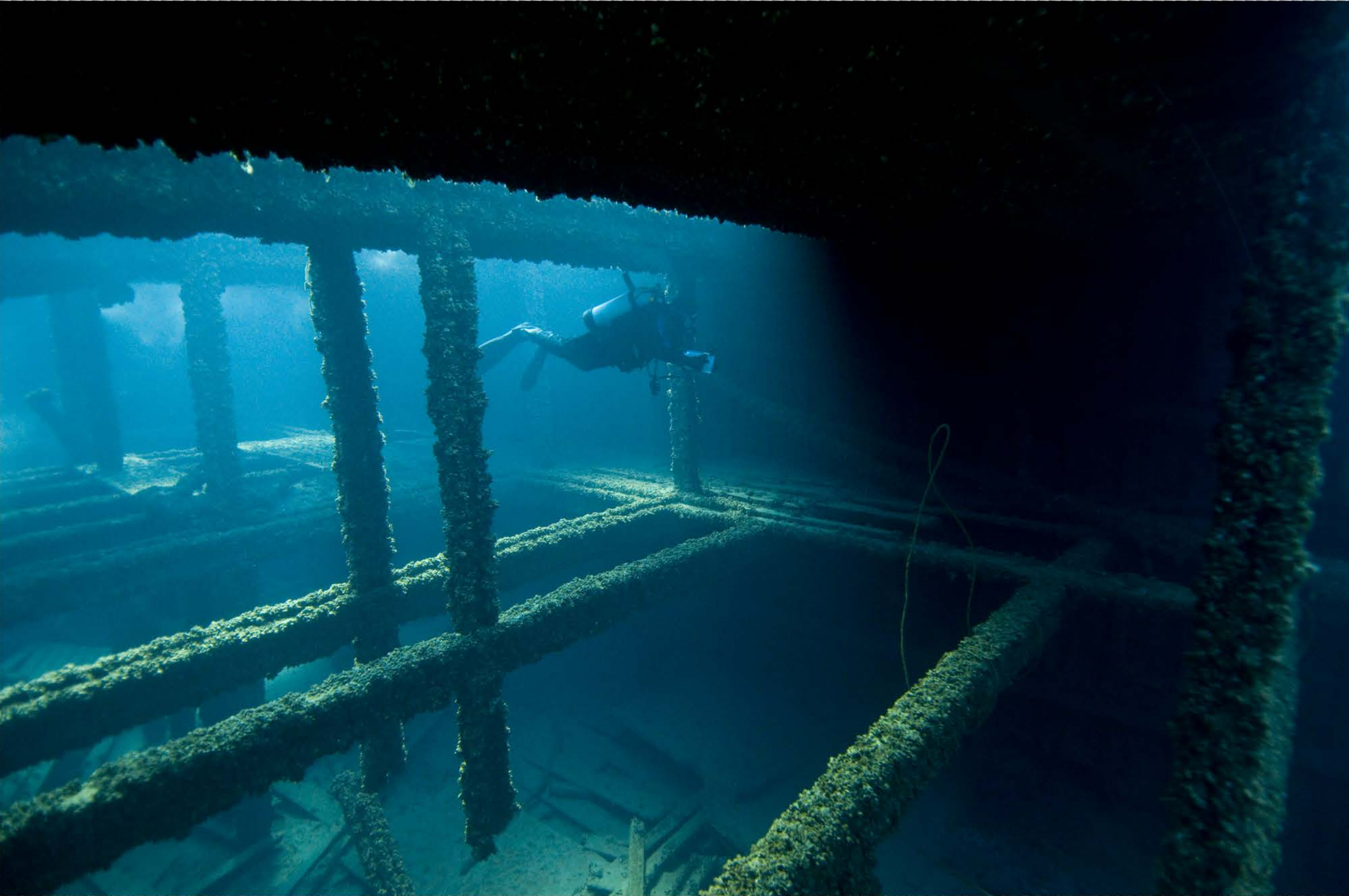
2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Chas. Gaylord.
Chas. H. Buell.

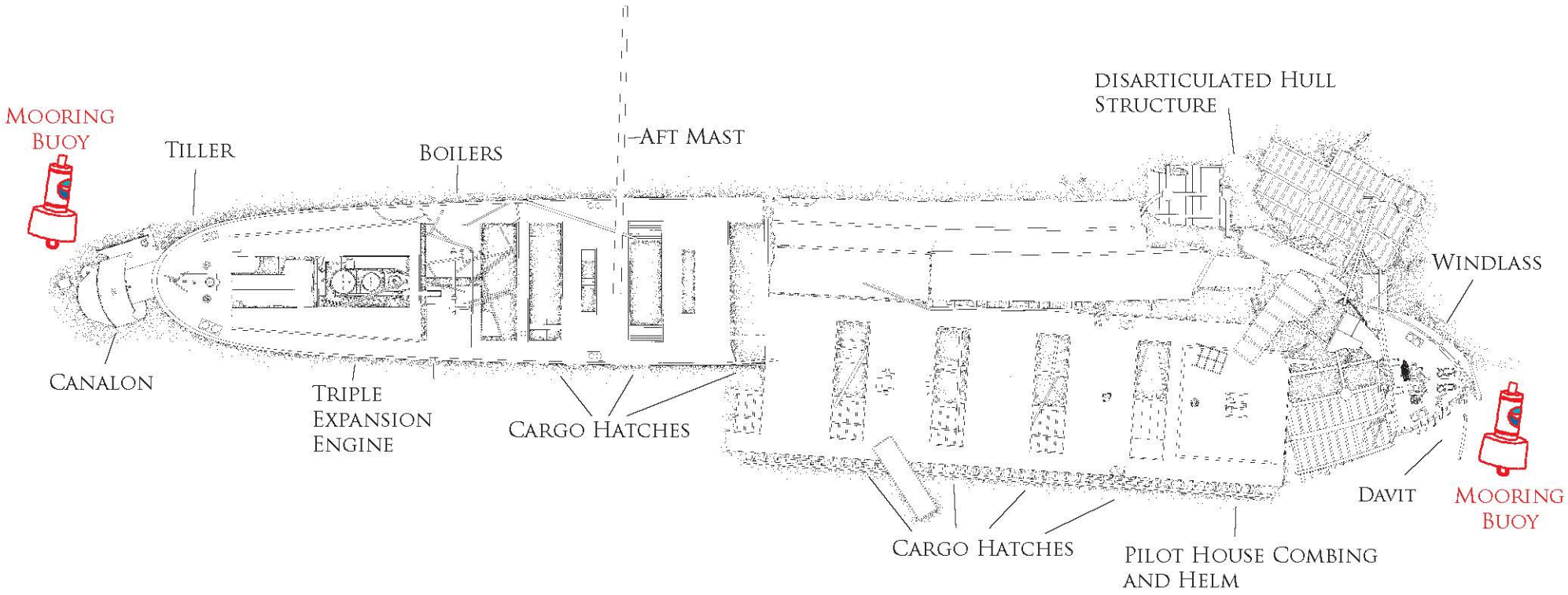
Inventor:
Fernando Stanid y Ximénez,
By Dyrenforth, Dyrenforth, Lee & Wiles,
Attys.



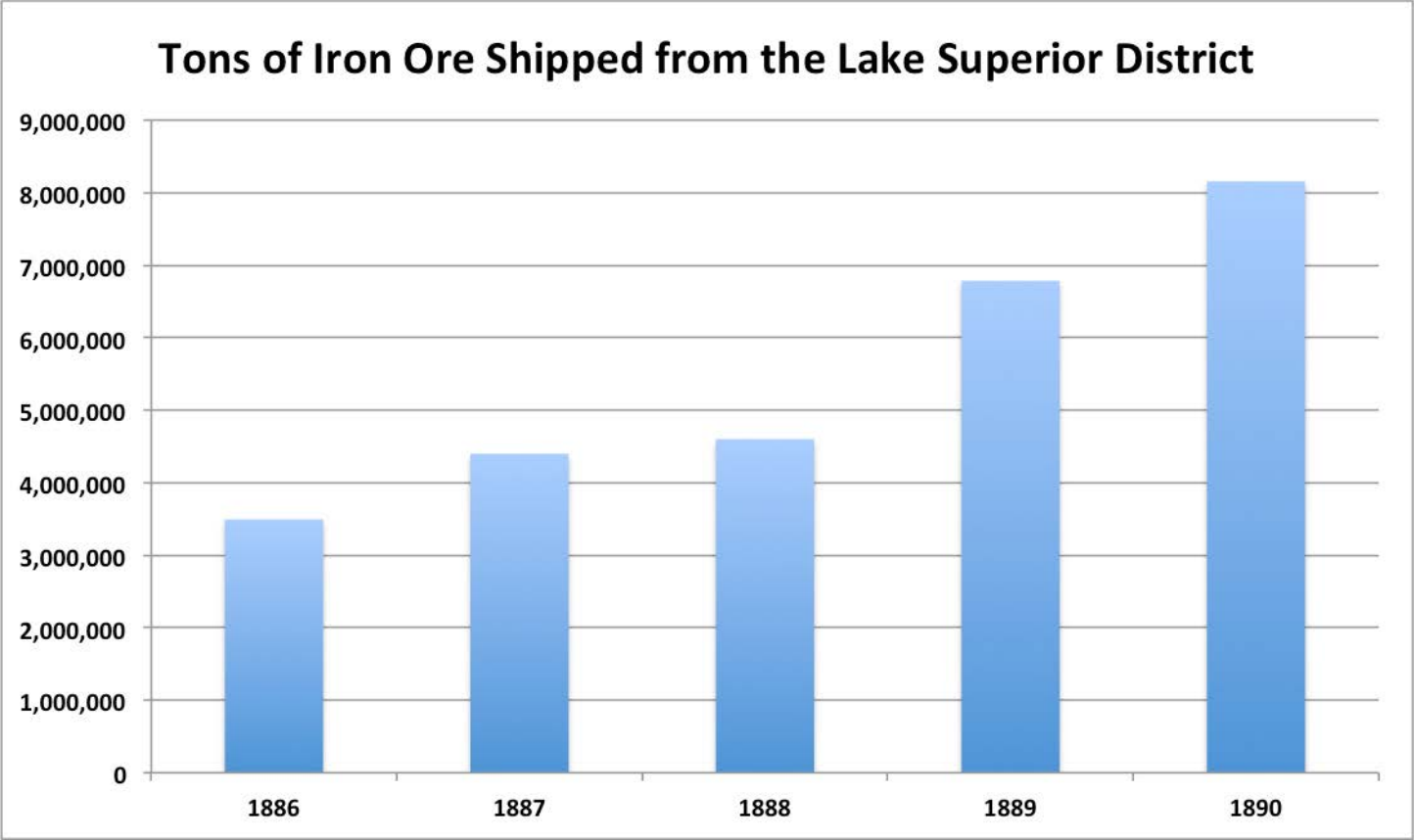
Thunder Bay National Marine Sanctuary

GRECIAN
STEEL BULK FREIGHTER
1891-1906

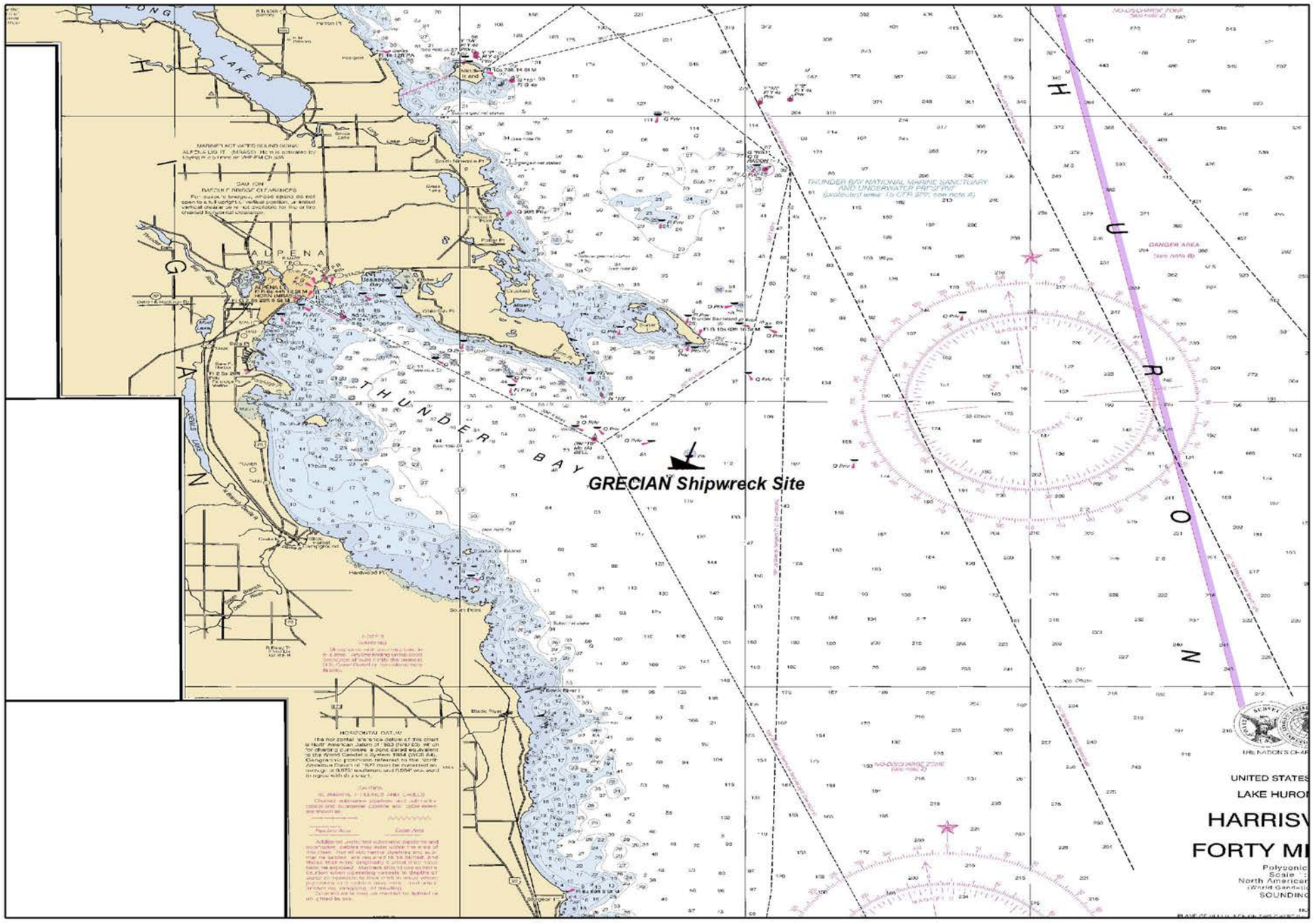
GPS Location: N44° 58.099' W 83° 11.991' (stern)
Depth: 100 feet
Wreck Length: 300 feet Beam: 40 feet



Site Plan by Thunder Bay NMS, 2010


Tons of Iron Ore Shipped from the Lake Superior District
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
1886
1887
1888
1889
1890


ALPENA
LIM



GRECIAN SHIPWRECK SITE

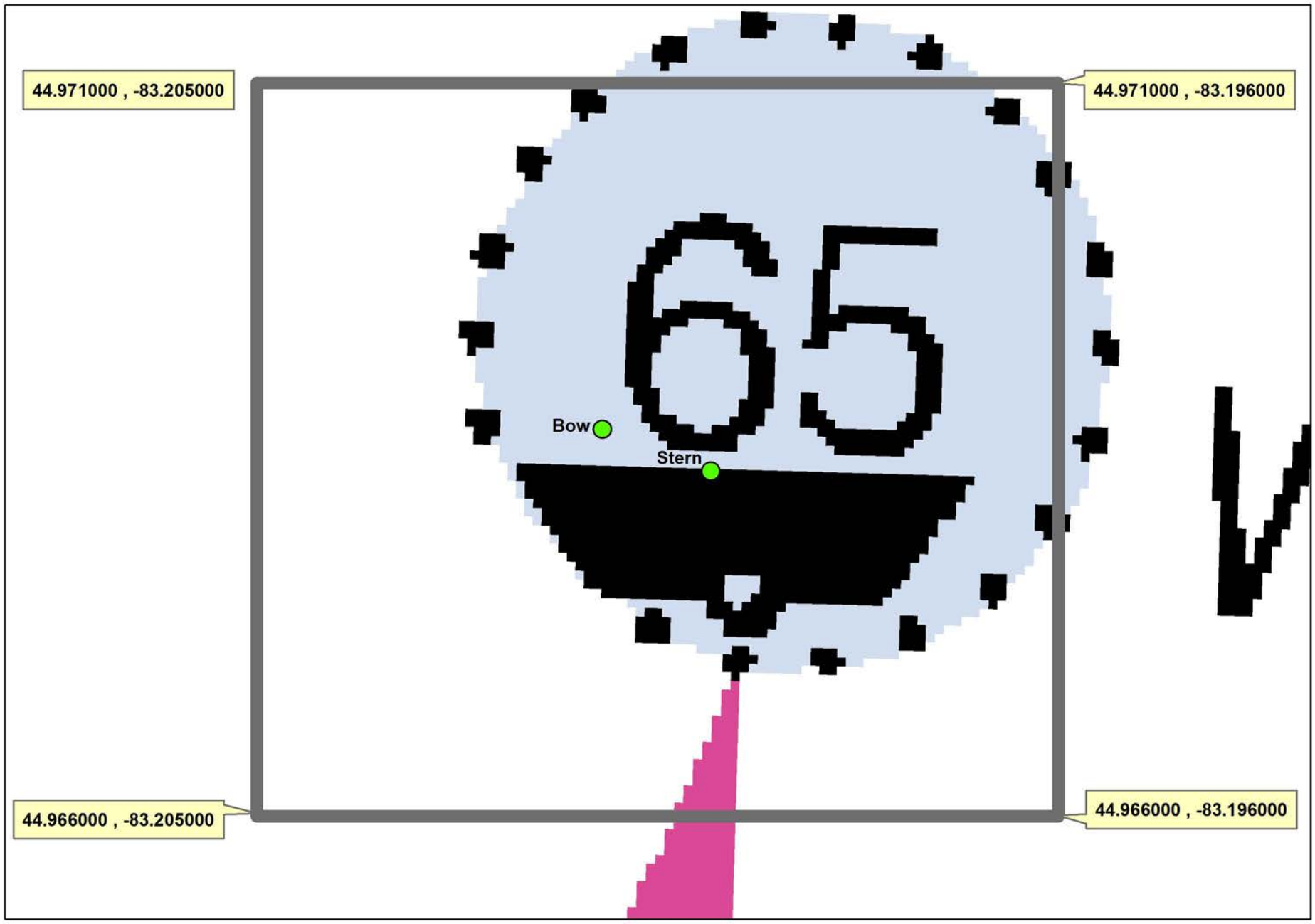
Alpena County, Michigan

0 2.25 4.5 9 Miles

N
W E
S

BOW:	44.968620	-83.201100	NW Corner:	44.971000	-83.205000
STERN:	44.968320	-83.199900	NE Corner:	44.971000	-83.196000
			SE Corner:	44.966000	-83.196000
			SW Corner:	44.966000	-83.205000

NOAA Chart 14684



GRECIAN SHIPWRECK SITE

Alpena County, Michigan

N W E S

0 0.03 0.06 0.12 Miles

BOW:	44.968620	-83.201100
STERN:	44.968320	-83.199900

NW Corner:	44.971000	-83.205000
NE Corner:	44.971000	-83.196000
SE Corner:	44.966000	-83.196000
SW Corner:	44.966000	-83.205000

NOAA Chart 14684

National Register of Historic Places
Memo to File

Correspondence

The Correspondence consists of communications from (and possibly to) the nominating authority, notes from the staff of the National Register of Historic Places, and/or other material the National Register of Historic Places received associated with the property.
Correspondence may also include information from other sources, drafts of the nomination, letters of support or objection, memorandums, and ephemera which document the efforts to recognize the property.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Requested Action:	Resubmission
Property Name:	GRECIAN Shipwreck Site
Multiple Name:	
State & County:	MICHIGAN, Alpena

Date Received:	Date of Pending List:	Date of 16th Day:	Date of 45th Day:	Date of Weekly List:
1/24/2018			3/12/2018	

Reference number:	RS100001835
Nominator:	State

Reason For Review:

__X__ Accept _____ Return _____ Reject **2/8/2018** Date

Abstract/Summary Comments:

Recommendation/ Criteria

Reviewer Julie Ernstein Discipline Archeologist

Telephone (202)354-2217 Date 2/8/18

DOCUMENTATION: see attached comments : No see attached SLR : No

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
STATE HISTORIC PRESERVATION OFFICE

EARL J. POLESKI
EXECUTIVE DIRECTOR

September 27, 2017

Mr. J. Paul Loether, Keeper
National Register of Historic Places
Mail Stop 7228
1849 C St, NW
Washington, D.C. 20240

Dear Mr. Loether:

The enclosed discs contain the true and correct copy of the nomination for the **GRECIAN Shipwreck Site, Alpena, Alpena County, Michigan**. Disc 1 contains correspondence and the National Register of Historic Places Registration Form, which includes site maps. Disc 2 contains photographs of this site. This property is being submitted for listing in the National Register of Historic Places. No written comments concerning this nomination were submitted to us prior to our forwarding this nomination to you.

Questions concerning this nomination should be addressed to Todd A. Walsh, Interim National Register coordinator, at (517) 373-1979 or WalshT@michigan.gov.

Sincerely yours,

Brian D. Conway
State Historic Preservation Officer

SG-1835

NPS Form 10-900 OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: GRECIAN Shipwreck Site
Other names/site number: Michigan Site Number: 20UH046
Name of related multiple property listing:
n/a
(Enter "N/A" if property is not part of a multiple property listing)

2. Location

Street & number: Lake Huron
City or town: Alpena State: Michigan County: Alpena
Not For Publication: ☐ Vicinity: ☐

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this _ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national **_x_statewide** **___local**

Applicable National Register Criteria:

_x_A **___B** **___C** **_x_D**

Brian LaMarre, SHPO 9/28/17

Signature of certifying official/Title: **Date**

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

Title : **State or Federal agency/bureau or Tribal Government**

GRECIAN Shipwreck Site | Alpena, Michigan
Name of Property | County and State

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register
___ determined eligible for the National Register
___ determined not eligible for the National Register
___ removed from the National Register
___ other (explain:) _____

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private:	☐
Public – Local	☐
Public – State	X
Public – Federal	☐

Category of Property

(Check only **one** box.)

Building(s)	☐
District	☐
Site	X
Structure	☐
Object	☐

GRECIAN Shipwreck Site | Alpena, Michigan
Name of Property | County and State

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
		buildings
1		sites
		structures
		objects
1		Total

Number of contributing resources previously listed in the National Register _____

6. Function or Use
Historic Functions
(Enter categories from instructions.)
TRANSPORTATION / WATER-RELATED

Current Functions
(Enter categories from instructions.)
LANDSCAPE / UNDERWATER / UNDERWATER SITE

7. Description

Architectural Classification
(Enter categories from instructions.)
N/A

Materials: (enter categories from instructions.)
Principal exterior materials of the property: N/A

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The shipwreck site of 296-foot-long steel bulk freighter GRECIAN is located 11 miles southeast of Alpena, Michigan and 4 miles south of Thunder Bay Island in Lake Huron. GRECIAN was built in 1891 and foundered in 1906 while under tow from Detour Village, Michigan to Detroit, Michigan. The wreck site lies in 102 feet of water and is in an excellent state of preservation. GRECIAN carried iron ore and coal cargoes between Lake Erie ports and Escanaba, Michigan, during a period of rapid economic expansion at the dawn of the United States' steel industry. The vessel's remains constitute an excellent example of an early-period Great Lakes Bulk Freighter, a vessel-type unique to the Great Lakes region whose proliferation throughout the 19th and 20th centuries was integral to the region's accelerated industrial, economic, and social growth.

Narrative Description

GRECIAN (Registry Number US. 086136) was launched on 26 February 1891, with an overall length of 296.2 feet, a 40.4 foot beam, 21 foot depth of hold, and a gross tonnage of 2,348 tons and net tonnage of 1,875 tons (United States Department of Customs 1891). Bulk freighter GRECIAN was designed and built to run between the lower lake ports of Ashtabula and Cleveland, Ohio, and Chapin Iron Mining Company's docks at Escanaba, Michigan, on the northwest shore of Lake Michigan. When fully loaded, draft fluctuated between 21 and 24 feet. For GRECIAN, a typical 1,094-mile round-trip between Cleveland, Ohio and Escanaba, Michigan took nine days and delivered 2,650 tons of iron ore.

GRECIAN was one of six identical steel bulk freighters commissioned by the Menominee Transit Company that were completed between September 1890 and July 1891 at Globe Iron Works in Cleveland, Ohio (FIGURE 1). GRECIAN featured prominent characteristics of early steel bulk freighters, like the forward pilothouse and unobstructed spar deck that were first introduced when Peck and Masters built R.J. HACKETT in 1869 (FIGURE 2). After R.J. HACKETT, the forward cabin became one of the defining characteristics of the "laker", or bulk freighter ship type.

The aft cabin housed GRECIAN's propulsion machinery. GRECIAN was outfitted with a triple expansion steam engine also built by Globe Iron Works. Its three cylinders measured 24, 38, and 61 inches in diameter, each with a 42-inch stroke. At 40 revolutions per minute, the engine produced 1200 horsepower. Supplying this engine were two 14 foot by 12 ½-foot Scotch boilers, each producing 160 pounds-per-square-inch of steam pressure. The boilers were also made by the Globe Iron Works Company (Historical Collections of the Great Lakes 2016).
On June 7, 1906 GRECIAN struck a rock five miles south of Detour Village while underway to lower lake ports with a full cargo of iron ore. None of the 20 crew were injured in the accident, and GRECIAN, damaged, returned to Detour Village where it later sunk at dock in 21 feet of water (*Buffalo Evening News* 6/8/1906). Several days later GRECIAN was pumped out, floated,

fixed with a temporary hull patch, and hitched to the propeller SIR HENRY BESSEMER for delivery to Detroit Shipbuilding Company for repairs. On June 15, 1906 the vessels were 11 miles offshore Alpena, Michigan when GRECIAN's temporary hull patch failed. The vessel filled with water and sank quickly, finally resting in 102 feet of water. The crew escaped in the lifeboats and were rescued by SIR HENRY BESSEMER, which had hastily given up the tow to save itself (*Door County Advocate* 6/22/1906). At the time of loss GRECIAN was valued at $75,000 - $100,000.

In an effort to recover some value from the vessel, the Pittsburgh Steamship Company, owners of GRECIAN at the time of wrecking, contracted Dr. Fernando Staud y Ximénez three years later to raise the steel bulk freighter. Dr. Staud had patented a submersible canalon for raising ships several years prior, on September 3, 1907 (Fernando Staud y Ximénez 1907). Its operation was based upon filling the canalon with water at the surface, allowing it sink to the bottom where divers would affix a cable that ran through the center of the canalon to the shipwrecked vessel (FIGURE 3). Once secured to the vessel, the flooding valve was shut and a surface-supplied high-pressure air hose then displaced the water inside with air by means of a one-way exhaust valve. The inherent buoyancy of the now air-filled volume would exert a massive upward force on any object to which it was attached. Dr. Staud believed four of his canalons used in concert could raise GRECIAN (*Door County Advocate* 8/5/1909).

On July 24, 1909 the barge WEEAH departed Muskegon with Dr. Staud and four canalons. Work began immediately upon arrival in Alpena on wrecking steamer SEARCHLIGHT; Dr. Staud was confident that GRECIAN would break Lake Huron's surface in just ten days (*Alpena Argus Pioneer* 10/6/1909). Dr. Staud's confidence quickly vanished, however, as equipment failure jeopardized the venture and safety of crew:

> Friday one of the big steel canalons, the second sunk beside the wreck, burst and for awhile there something doing. The huge steel tank had just been pumped full of air and exerted an enormous lifting power. It was not very long before the water above the tank was churning with a terrible sea from the force of the air escaping

> to the surface. The water bubbled up like an immense fountain for maybe a hundred feet and then the steamer SEARCHLIGHT was tossed around like a cork, but escaped injury. The action of the water was a beautiful site for a few moments. The total cost of the canalon was $12,000 (*Alpena Argus Pioneer* 10/6/1909).

Having lost a necessary canalon with no ability to replace it, the accident marked the end for Dr. Staud and his $50,000 commission if GRECIAN was successfully raised. Seven days after the accident Staud suspended salvage operations for the season. In fact, Dr. Staud never returned to Alpena, and GRECIAN disappeared from public eye until it was relocated by sport divers in 1971 (Historical Society of Michigan 1983).

The shipwreck rests in 102 feet of water 11 miles southeast of Alpena, and 4 miles south of Thunder Bay Island in Lake Huron. Most of the features that make this early steel bulk freighter historically significant remain preserved on GRECIAN's shipwreck site. The bow, stern, and after portion of the midships section remain intact while the forward majority of the midships section has collapsed. Starting forward, the bow stands 25 feet off the bottom with a slight starboard list. A single davit remains affixed at the forward end of the foredeck with the anchor windlass positioned just aft. A small hatch positioned aft of the starboard windlass drum leads to the chain locker which houses GRECIAN's anchor tackle, part of whose chain is deposited on the foredeck. According to ship build plans for a near identical Globe Iron Works hull, berthing space and restroom facilities for deck hands and porters were also accessed through this forward hatch. Portions of GRECIAN's oak railing wrap around the bow. Two iron bitts are present on both port and starboard sides of the foredeck and served as anchor posts for docking lines.

The bow section sheared at the foredeck aft coaming (FIGURE 4). The remains of the forward pilot house (including quarters for the Captain, wheelsman, watchmen, and mates), and the forward-most section of the spar deck lay disarticulated on the lake bed just aft of the break at the bow (Globe Iron Works 1889). Much of this debris field spills out off the port side (FIGURE 5). Aft of this debris field is a 100-foot-long section of spar deck that encompasses four cargo

hatches, forward deck winch, pilot house coaming, and oak railing. This section lays almost flat on the lake bottom and is off-center. Every cargo hatch on GRECIAN measures a standard 28' port to starboard and 7.5' fore and aft (National Oceanic and Atmospheric Administration 2009). The after end of the flattened spar deck section is sheared mid-hatch from the remaining midship and stern section, which are largely intact (FIGURE 6). The break occurred in the middle of a cargo hatch. The stern section incorporates a section of spar deck, propulsion machinery, and aft deck. Two cargo hatches offer divers entry into the intact portion of GRECIAN's open cargo holds where a combination of steel and oak deck stanchions retain the framework for the main and lower decks. Both the main and lower decks were planked with 1" white pine atop 2" oak boards, some of which remain fastened to their deck beams (FIGURE 7). The lower deck rests atop a single-tank ballast system that served as a watertight bulkhead between cargo holds and the bilge. GRECIAN was light when it sank and was likely stern-heavy. The hull break suggests that GRECIAN sank stern first and, when it struck bottom, the less-reinforced section forward of the boilers sheared from the stern in one motion.

Between each of these two cargo hatches, or chutes, are smaller coaling hatches that measure 16' port to starboard and 7.5' fore and aft. Crews loaded coal through these dedicated coal hatches by wheelbarrow, or mechanized chute systems available at larger ports. Just aft of the coaling hatches, GRECIAN's two 14' x 12'6 scotch boilers are exposed through the spar deck with assorted steam pipes and wooden remnants of the boiler house scattered around them (FIGURE 8).

GRECIAN's triple expansion steam engine is visible as the entire aft upper works were detached, likely during the wrecking event (FIGURE 9). The engine remains fastened to its mounts positioned on the lower deck. This portion of the hull was reinforced with a double-tank ballast design to further protect the propulsion system from grounding or collision damage.
A 20'4" section of spar deck is mostly collapsed aft of the engine room. This area would have housed the main dining room, ship stores, pantry, and berths for the engineers, firemen, stewards, porters, and cook (Globe Iron Works 1889). Two bits, two deck ventilation holes, capstan, and the tiller are several other features noted along GRECIAN's aft deck (FIGURE 10). From the top

of the cap rail to the lake bottom, GRECIAN's round stern measures 26'3" (National Oceanic and Atmospheric Administration 2009). Its rudder was sheared near the top of the rudder stock but beneath the tuck of the stern. The rudder is buried in a debris field nearby. The propeller, however, remains in place affixed to its shaft and hub assembly including two of the original four 6'-long propeller blades. The remains of the Staud canalon that imploded on 6 October 1909 rests just aft of the propeller on the lake bottom.

SITE INVESTIGATIONS

Sport divers rediscovered GRECIAN in the early 1970s. Its proximity to Alpena and 100-foot water depth makes the site accessible to most sport divers. In 2000, the Thunder Bay National Marine Sanctuary was established and GRECIAN was among the 48 shipwreck sites in the 448-square mile boundary. Federal and state maritime archaeologists began researching and monitoring GRECIAN immediately. Initial physical data collection at the site consisted of sonar imagery acquired during a 2001 Institute for Exploration expedition led by Dr. Robert Ballard. The following year, the University of Minnesota Large Lakes Observatory acquired similar acoustic data. With these datasets as a baseline to understand the site's distribution and orientation, the sanctuary installed two moorings buoys at GRECIAN's stern and bow, respectively, in July of 2003. The mooring systems are composed of repurposed single train wheel anchors, and a combination of polypropylene and chain uplines. The bow and stern buoys were positioned to not interfere with or damage any part of the shipwreck but provide a rigid downline that divers could use to make safe descents and ascents in visible range of the shipwreck (FIGURE 11).

Following the installation of the independent mooring systems, sport divers and researchers could thereafter easily location and access the site. As a result, sanctuary staff collected photographic datasets on an annual basis to track changes to the vessel's remains. In July 2009, a team of maritime archaeologists from Thunder Bay National Marine Sanctuary and Monitor National Marine Sanctuary used traditional documentation methods to create a comprehensive archaeological site plan (FIGURE 12). Since then, sanctuary teams and partnering organizations have gathered a wide array of digital data using new digital imaging systems. These products

range from high-definition photo and video to 3D video and 360-degree panoramic photos. These data products inform sanctuary managers on the condition of the shipwreck, and are also utilized in interpretive exhibits in Alpena, Michigan's Great Lakes Maritime Heritage Center and various forms of print and online media to further engage the public.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [ ] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [X] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

- ☐ A. Owned by a religious institution or used for religious purposes
- ☐ B. Removed from its original location
- ☐ C. A birthplace or grave
- ☐ D. A cemetery
- ☐ E. A reconstructed building, object, or structure
- ☐ F. A commemorative property
- ☐ G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
COMMERCE
ENGINEERING

Period of Significance
1891-1906

Significant Dates
February 1891 (Launch)
June 15,1906 (Sinking)

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
Non-Aboriginal

Architect/Builder
Globe Iron Works, Cleveland, Ohio

Statement of Significance Summary Paragraph

The GRECIAN Shipwreck Site qualifies for listing under National Register of Historic Places Criteria A and is significant in the area of Commerce based on its critical role of transport vessel during the formative period of Lake Superior's iron ore industry. Iron ore was fundamental to America's industrial boom and steel manufacturing growth in the late nineteenth century. During this period America witnessed incredible industrial growth largely attributed to bigger, faster, and more efficient means to extract iron ore from deposits throughout the upper Great Lakes region and deliver it to foundries in Cleveland, Pittsburgh, and other "cities of steel". GRECIAN was built as part of an early commercial fleet to help supply the iron ore demand during America's late nineteenth century industrial demand. Its place in this commercial history certainly qualifies GRECIAN as eligible under Criteria A: Commerce.

The GRECIAN Shipwreck Site qualifies for listing under National Register of Historic Places Criteria A: Engineering based on its hull design and propulsion system. GRECIAN is an early example of the steel-hulled bulk freighter: a unique, standardized Great Lakes vessel type that greatly increased cargo capacity and efficiency of the Lake Superior iron ore transportation network. When launched in 1891, GRECIAN representing the cutting edge in large steel hulls and efficient triple expansion steam engines that were concurrently built to power these massive steel bulk freighters up and down the Great Lakes. From an Engineering area of significance, the GRECIAN Shipwreck Site is eligible under Criteria A.

As an intact example of early steel-hulled bulk freighters, the GRECIAN Shipwreck Site qualifies for listing under Criteria D with high potential to yield important archaeological data. A comprehensive survey of GRECIAN will greatly supplement current understanding of the construction, arrangement, and design features of early steel-hulled bulk freighters. A comparative archaeological study between GRECIAN and sister ship *Norman* (also intact) located 12 miles away will illuminate the degree of homogeneity between sisters of early corporate Great Lakes fleets. Without question the GRECIAN Shipwreck Site offers an important opportunity to study an intact example of a transitional vessel class whose period of lake transportation supremacy lasted until the middle twentieth century.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Criteria A
Commerce

GRECIAN was purpose-built for the Great Lakes iron ore trade that supplied the region's burgeoning steel industry. The iron ore trade expansion began in the late 1880s largely due to the increasing tonnage and number of dedicated ore boats visiting the ore docks throughout Michigan's Upper Peninsula. Beginning in 1888, iron ore became the chief exported material from the Great Lakes region (Lake Carriers Association 1911:12). As a result, the iron ore mines along Lake Superior's coast simultaneously proliferated during the1880s (FIGURE 13). Of the 16,036,043 tons of iron ore produced in the United States in 1890, 56.95 percent was produced and shipped from the Lake Superior mines (United States Department of the Treasury 1892:xxii). The United States Department of the Treasury reported:

> The prosperity of this industry, so far as the Lake Superior ore district is concerned, is almost if not quite, entirely due to the cheap transportation afforded by the water ways. The bulk and weight of this product is so great, compared to its value, that it is not probable the railroads could afford a rate sufficiently low to transport this ore to the furnaces in Illinois, Ohio, and

> Pennsylvania, notwithstanding this ore is the best in quality and the most valuable iron ore mined in the United States (1892:xxii).

Bulk freighters and the Great Lakes maritime highway quickly became keystone to the Lake Superior iron ore industry. As reported by the Department of the Treasury above, railroads could not keep up with ore production because of iron ore's density and the massive quantities being extracted. There simply were not enough rail cars or miles of track to keep up with the insatiable demand for iron ore. In 1890, an estimated 1,321,544 tons of iron ore were shipped by rail from the mines, while 3,792,009 tons were shipped by water out of Escanaba alone (Lawton 1891:57). Most of this iron ore was bound for furnaces and foundries in Ohio and western Pennsylvania (Reynolds 2011:25).

Escanaba, Michigan (where GRECIAN loaded) offered one important advantage over Marquette, Duluth, Ashland and the other iron ore ports located on the shores of Lake Superior. The locks at Sault Ste. Marie inevitably introduced a bottleneck for shipping during peak months. Consequently distance and time (most importantly) was reduced by loading ore boats at Escanaba situated at the northern extent of Lake Michigan, were vessels did not need to pass through the Soo Locks. Since the first shipment left Escanaba in 1866, it has remained an important iron ore hub. Escanaba principally serviced iron mines from the Menominee Range including the famously high-producing Chapin Mine.

Since its discovery in 1879 the Chapin Mine, of Iron Mountain, Michigan was one of the largest producers in the Lake Superior district. Chapin was established relatively late in terms of iron ore production in the area. Swampy terrain made shaft sinking especially difficult as miners constantly battled subterranean aquifers, but Chapin's high quality ore kept investors optimistic. The Menominee Range's location further complicated mining operations and delayed industrial settlement. Located near the center of Michigan's Upper Peninsula, the iron ore necessitated rail transit to the Escanaba docks 55 miles to the west where GRECIAN and other bulk freighters loaded the ore and brought it south to distribution centers in Cleveland and Detroit. Compared to the iron fields in the Marquette Range which only had to travel 12 to 15 miles to the Marquette

docks, it is no surprise that the Menominee Range developed later than its neighbors (Reynolds 2011:61).

Nevertheless, Chapin was known for its high-grade ore. Michigan's Commissioner of Mineral Statistics remarked in 1890:

> No finer body of ore has ever been found in the State than the Chapin. It is so large, of such uniformity, of such excellent quality, so easily broken in the mine, so fully tested, with no diminution, that it certainly is not excelled, if equaled, by any other deposit that has ever been found in the Lake Superior Region (Lawton 1887:34).

In 1901 the Chapin Mine was bought by the Oliver Iron Mining Company: a subsidiary company of United States Steel Corporation, America's first billion-dollar firm and the largest business enterprise ever launched at the time (*Engineering and Mining Journal* 1902:118). Production continued until 1934 when the Chapin shut its doors due to economic impacts associated with the Great Depression. Despite the topographical and geographical hurdles, Chapin Mine was the most profitable iron mine in the Upper Peninsula during its tenure between 1879 and 1934 and an important asset for the United States Steel Corporation. Bulk freighters like GRECIAN on the Great Lakes maritime highway were a pivotal part of US Steel's success continuing into the 20th century:

> Greater than the number of vessels in the combined fleets of the United States Navy… is the colossal force of vessels gathered together on the Great Lakes to carry iron ore for the United States Steel Corporation (Beeson 1901:172).

Lake Superior iron ore's higher purity compared to ore from the rest of the nation was an important reason for the industrial development of the region (Van Hise 1901:315). The Bessemer process, invented in 1875 by Edgar Thomson, particularly heightened demand for high grades of iron ore. Many nationally-significant industries, therefore, relied on Superior ore. This new process of manufacturing led to heightened demand for domestic steel for use as railroad ties, commercial construction, shipbuilding, automobiles, and numerous military and civilian industries.

In 1885, Chicago's Home Insurance Company headquarters became the first building constructed with a steel-reinforced skeleton and considered the first skyscraper (Koram Jr 2008:93). Like ship hulls, steel frames allowed architects to experiment with new building designs that "culminated in the introduction of the skyscraper that today dominates the urban skyline of cities around the world" (Bowlus 2010:153). Masonry construction had a known height limit of fourteen stories, while steel-framed buildings had no such restriction (Domosh 1996:73). Consequently, urban landscapes were not only growing laterally, but vertically, and at a staggering rate. Buildings like the Manhattan Life Insurance building (1894), the New York World Building (1890), and others competed for the title of worlds' tallest building. All of these structures relied upon the vast supply and effective transportation network of the Lake Superior iron ore industry. Steel bulk freighters like GRECIAN, therefore, were instrumental in providing the necessary construction materials for the largest buildings in North America.

Lake Superior iron ore was perhaps most essential in the construction and expansion of a national railroad network (Bogue 2007:55). America's vast rail network was the principle force behind the rapid national industrialization that occurred in the late 19th and early 20th centuries (Rostow 1960). Its "giant web broke down the barriers of regionalism and gave all but the most remote villages access to markets previously unavailable" (Bowlus 2010:9). Railroading was a key factor in the success of every American industry as it brought raw materials to manufacturing centers, and finished products to market. The tracks, ties, engines, and rail cars of American's transportation system were all built with Bessemer steel beginning in the 1880s through the 1920s. Bessemer steel, of course, was only produced with the pure, low-phosphorus iron ore found in Michigan's Upper Peninsula.

GRECIAN was one of six massive steel steamers commissioned by the Menominee Transit Company in 1890 at Globe Iron Works of Cleveland, Ohio. Ferdinand Schlesinger, M. A. Hanna, and H. M. Hanna incorporated the Menominee Transit Company in 1890. Ferdinand Schlesinger also owned the Chapin Mining Company. M. A. Hanna and Company, another Menominee subsidiary, was the Chapin Mining Company's sales agent and fleet manager. Schlesinger and

his agents wanted a private fleet to control all aspects of iron ore production at Chapin Mine and achieve vertical integration (which included product transportation). Contract vessel owners were rarely bound by strict contracts to mine agents. Bulk freighter owners and captains chased the highest rate per ton of bulk cargo, which often varied week by week between grain and iron ore. By the late 1880s it became apparent to mining agents that it was more reliable and cost-effective to purchase their own fleets and control all aspects of production and transportation than rely on the unstable contract vessel market. Menominee Transit Company was formed to fill this void and six ships were contracted to be built by Globe Iron Works, hull numbers 36-41:NORMAN, SAXON, GERMAN, BRITON, GRECIAN, and ROMAN (*Buffalo Evening News* 6/1/1895).

Criteria A
Engineering

As an early steel bulk freighter GRECIAN has a significant place in the evolution of Great Lakes shipbuilding and, specifically, the development of Great Lakes ore carriers. Great Lakes bulk freighters trace their origins to R.J. HACKETT, built in 1869 by Peck and Masters in Cleveland, Ohio (Thompson 1991:22). With its innovative forward pilothouse and aft engine and crew cabin, R.J. HACKETT's main deck was relatively uninterrupted with eight-foot cargo hatches spaced twenty-four feet on center that matched up with the spacing of loading nozzles at iron ore pocket docks (Wright 1969:5). Not only did this "fore-and-aft" cabin arrangement allow for more tonnage due to the consolidation of unprofitable ship spaces (large engine rooms located amidships, expansive cabins on deck) but also accelerated cargo loading/unloading. Time at dock was greatly reduced as R.J. HACKETT's cargo hatches were spaced according to dockside loading equipment.

Having the pilothouse forward offered a better vantage point for handling the ship in low visibility and congested waterways (very common along the Great Lakes) and allowed the majority of the hull to consist of a long, uninterrupted section comprised solely of cargo holds (Thompson 1994:23). In addition to maximizing carrying capacity, this design provided unobstructed access to the cargo hold which, in turn, aided in moving bulk items to and from the

ship. Just as vessel design was evolving to suit the special demands imposed by navigating the Great Lakes, shore-side facilities likewise adapted and were developing loading systems to mirror the deck arrangement of the bulk carriers. As a result, a technological symbiosis emerged where the infrastructure associated with moving bulk commodities across the land/sea interface (conveyor belts, cranes, loading docks, etc.) developed simultaneously with a specialized ship arrangement to allow for expedient handling of cargo. GRECIAN's spar deck featured eight such cargo hatches that were 28' in width (National Oceanic and Atmospheric Administration 2009).

GRECIAN's early triple expansion steam engine offers additional grounds for its significance in maritime history and is illustrative of GRECIAN's place at the forefront of innovative steamship technology. In 1886 package freighter SUSQUEHANNA was the first vessel on the Great Lakes to be outfitted with a triple expansion engine, just five years before GRECIAN was launched in Cleveland, Ohio (Thompson 1994:41). Before 1886, bulk freighters and other steam-powered vessels were propelled by different variations of the compound steam engine; these engines had two cylinders, as opposed to GRECIAN's three. The triple expansion engine was 24 percent more efficient than the two-cylinder compound engines of the 1870s and 79 percent more efficient than the single cylinder direct-acting engines that were standard in all steam vessels before the compound engine was introduced (Bowlus 2010:150). Steam engine efficiency relates to the amount of horsepower that can be produced per steam cycle. In the single cylinder engines, once steam was injected into the cylinder it was then exhausted and lost. The triple expansion engine forced the exhausted steam used in the smallest cylinder to the medium-sized cylinder, and then again to the largest cylinder (Thompson 1991:61). The triple expansion engine works on the principle that greater surface areas at lower pressures generate the same force as higher pressures on a smaller surface area. This technology greatly improved steam efficiency, increased horsepower, and gave Globe Iron Works a propulsion system that could propel ever-growing steel hulls (Bowlus 2010:149).

This system also made ships more efficient by requiring less coal per mile of travel. CORONA, built in 1888 by Globe Iron Works, was the first bulk freighter that was outfitted with both a steel hull and a triple expansion engine (Bowlus 2010:149). GRECIAN was built just three years

later, making it part of the first generation of Great Lakes steel bulk freighters. In 1897, marine architect Walter Miller recognized triple and later quadruple expansion engines as one of the three "great developments of the previous ten years" (Miller: 1897:245). The triple expansion engine was the standard means of steam propulsion until steam turbines were invented just before World War II (Thompson 1994:41).

The specialized Great Lakes bulk freighter evolved quickly, with the first iron-hulled version launched in 1882: ONOKO. SPOKANE, launched four years later in 1886, was the first steel-hulled bulk freighter and thought of as "the most modern freighter on the lakes" (Thompson 1991:22). Both ONOKO and SPOKANE were built at Globe Iron Works which had become the premiere builder for Superior-bound ore ships (Lake Carriers Association 1911:110). GRECIAN was launched just five years after SPOKANE placing it very early on steel bulk freighter's chronology. Steel hulls allowed shipbuilders to build mammoth vessels as big as regional locks, canals, and harbors would allow. Wooden hulls like on R.J. HACKETT flexed, sagged, and hogged, often creating frustrating leaks and warping was accentuated by heavy ore cargoes. Steel's rigid properties dismissed this problem. It did not take long for steel-hulled bulk freighters to become the standard in iron ore transportation. Globe Iron Works of Cleveland, Ohio, was an industry leader in building these fast steel "flyers". Between 1887 and 1900, 108 steel vessels were launched in Cleveland, 70 of these were built by Globe Iron Works (Wright 1969:29).

Globe Iron Works of Cleveland began as Sanderson & Company in 1853. Henry Coffinberry, Robert Wallace, and John Pankhurst bought the operation in 1869, renaming the foundry Globe Iron Works. In 1880 they constructed a new shipyard on West 49th Street, Cleveland, on the west bank of the winding Cuyahoga River (Colton 2010). With the addition of a shipyard, the company again changed names, this time to a more encompassing Globe Shipbuilding Company, with a specific interest in the design and construction of steel vessels for the bulk cargo trade. With increasing demands in the middle-1880s it was clear that to maximize ore cargo capacity, shipyards had to standardize ship design (Bowlus 2010:147). GRECIAN, and its five sisters, were products of this shipbuilding strategy spearheaded by Globe Iron Works. Ships were no

longer built as unique stand-alone craft; they were built commercially in large contracts to supply the seemingly-endless demand for ore transportation by mine owners. In 1888 Globe Iron Works boasted that they could launch "six large steel steamers" each year (Hutchins 1941:457).

The company changed hands, again, in March 1899 when the Cleveland Shipbuilding Company, Globe Iron Works (including Globe Shipbuilding Company), the Ship Owners Dry Dock, and various other shipyards in Buffalo, Detroit, Milwaukee, West Superior, West Bay City, and Chicago were all incorporated as the American Shipbuilding Company (Ehle 1996:26). For a detailed review of the corporate history of American Shipbuilding Company see Richard J. Wright's *Freshwater Whales: A History of the American Ship Building Company and Its Predecessors*.

By 1902 American Shipbuilding Company was the third largest shipyard in the world (*Marine Review* 1902:21). This massive conglomerate of industry leaders chose Cleveland as their headquarters. Cleveland remained a major steel shipbuilding hub through World War II and by 1952, American Shipbuilding Company became the largest builder in the Great Lakes (Blume 2012:109).

GRECIAN was launched on the front lines of this important evolution in the standardization of Great Lakes steel shipbuilding and the rise of steel bulk freighters. GRECIAN was also built at the dawn of triple expansion steam engines, which became the Great Lakes standard in steam propulsion between 1886 and 1940. It is a very early example of a ship type that lasted through the 1940s. One can see the clear resemblance between the 1891-built GRECIAN and the 1942-built *Alpena* that still carries bulk cargoes across the inland seas (FIGURE 14).

Criteria D

The GRECIAN Shipwreck Site is a significant archaeological resource. It represents the beginning of commercialized iron ore fleets and vertical integration within corporate iron ore companies operating in the Lake Superior region. The site has already yielded significant information on the design and construction of early steel bulk freighters of the late nineteenth century. Its cargo hatch spacing, deck arrangements, compound steam engine configuration, and

pilothouse have supplemented the Lake Superior iron ore industry's historical record from a unique, submerged perspective. Especially when compared to wooden bulk freighters of the 1870s like *Joseph S. Fay*, GRECIAN conveys the amplification in vessel strength and design brought on by the iron ore industry's transportation demand.

GRECIAN was launched at the transition from wood to steel-hulled vessels that also witnessed the rise of commercial fleets incorporated by companies focusing one, or two bulk freight materials. GRECIAN was one of six identical vessels launched by Globe Iron Works for the Menominee Transit Company. The insatiable demand and profits garnered by iron ore mining companies permitted these massive shipbuilding contracts for the first time in Great Lakes history. Iron ore company fleets were now being identified by standardized hull paint schemes, ship names, and especially, construction. Of the six hulls launched at Globe Iron Works for the Menominee Transit Company (GRECIAN, *Saxon*, *Norman*, *German*, *Roman*, *Briton*) only two remain have survived as archaeological sites that reflect their initial construction (TABLE 1).

Name	Date of Disposition	Reason for Disposition
GRECIAN	6/7/1906	Sunk; Foundered
Saxon	1927	Scrapped
Roman	1925	Scrapped
Briton	11/13/1929;1932	Wrecked Buffalo, NY; Dynamited as navigation hazard
German	6/11/1919	Sunk; Collision
Norman	5/30/1895	Sunk; Collision

Table 1. Comparison of dates and reasons for disposition among the six Menominee Transit Company.

German rests in 110 feet of water off Long Island, New York after discovery by wreck divers in the middle 1990s. Two years before its fatal collision with steamer *Argentina*, *German* had been

cut in half for transit through the Welland Canal. It was renamed *Yankee* and served as a coal carrier on the Atlantic coast (Thunder Bay Sanctuary Research Collection 2017).
Briton ran hard aground off Buffalo, New York due to faulty navigation. Its wrecking presented a significant hazard to navigation to vessels entering and departing the port of Buffalo. Three years later it was dynamited.

Norman was sunk after a collision with steamer *Jack* on 20 May 1895 off Presque Isle, roughly 12 nautical miles from GRECIAN's remains. Cold freshwater coupled with its final resting place 210 feet beneath the surface have kept *Norman* completely intact. It was listed to the National Register of Historic Places in 2016 under Criteria A, C, and D (#16000819). GRECIAN and *Norman* are the only two of the original fleet that are preserved in their original configuration, intact, and in freshwater. The intact presence and proximity of both *Norman* and GRECIAN offer exciting potential to yield data important to maritime archaeology and the construction of early steel-hulled bulk freighters.

A comprehensive, comparative archaeological survey of GRECIAN and *Norman* would assist archaeologists and historians in understanding the degree of homogeneity in construction between these two sister ships. Shipbuilding lines plans do exist for some contemporary Globe Iron Works (GIW) hulls, but those specific to GIW Hull 39 (*Norman*) and GIW Hull 40 (GRECIAN) are missing. Detailed archaeological documentation of both sites could illuminate how "identical" claimed sister ships really were. Furthermore, *Norman* was the first built of the six Menominee Transit Company bulk freighters, and GRECIAN was the second-to-last which offers an ideal separation in vessel launchings to compare accuracy of structural equivalence. Three identical hulls separate *Norman* and GRECIAN (*Saxon*, *German*, *Briton*). Did GIW employ any significant structural improvements that appear on GRECIAN, but not *Norman*? Are interior spaces at the stern identical in layout? Do *Norman* and GRECIAN feature identical cargo hatch spacing? Answers to these questions, and more, can greatly enhance our knowledge of the true standardization in construction of the Menominee Transit Company bulk freighters.

As GRECIAN, *Norman*, and the Menominee Transit Company fleet reflect the beginnings of Great Lakes-based corporate iron ore fleets, this comparative survey will also yield more information pertinent to the human experience of working aboard these early steel bulk freighters. Because vessels on the Great Lakes often had long, well-documented careers they developed distinct personalities. Is there any evidence of sailor enhancement or customization in either vessel? Does any present material culture speak to the degree that these vessels had their own identities that was recognized and appreciated by sailors? Detailed survey of both vessels will yield important data on the effect and changes in human experience with the coming of standardized, corporate iron ore fleets and make the GRECIAN Shipwreck Site eligible under Criteria D.

Eligibility Conclusion

GRECIAN is eligible under Criteria A: Commerce for its role in facilitating the Lake Superior iron ore trade which was of fundamental importance to America's industrial growth and steel manufacturing in the late nineteenth century. During this period, America's industrial growth was largely propelled by bigger, faster, and more efficient means to convey Lake Superior iron ore to foundries in Cleveland, Pittsburgh, and other "cities of steel". GRECIAN is also eligible under Criteria A in the Engineering area of significance as a rare example of the steel bulk freighter: a unique, standardized Great Lakes vessel type that greatly increased cargo capacity and efficiency of the marine transportation system on the Great Lakes. It was on the forefront of technologies that revolutionized Great Lakes shipbuilding like the triple expansion steam engine. The shipwreck's incredible state of preservation and historical significance to the iron ore industry and Great Lakes shipbuilding warrant attention, preservation, and protection as a listed property on the National Register of Historic Places.

The GRECIAN Shipwreck Site is also eligible under Criteria D for its high potential to yield important data about the first corporate iron ore fleet of steel bulk freighters: the Menominee Transit Company. GRECIAN and nearby *Norman* are the only two that remain intact and, coincidentally, are located in close proximity to each other. A comprehensive, comparative archaeological survey of both vessels will greatly add to present understanding of early iron ore

corporate fleets. The degree, or lack, of homogeneity in construction and design will illuminate and help interpret the corresponding changes in the human experiences of sailors aboard these institutionalized fleets. Further, this comprehensive survey of GRECIAN will shed important light on the nuances in ship construction and structural arrangement. GRECIAN's upright, intact position on the lakebed provides a rare window into the past of the first corporate fleets and the earliest steel bulk freighters.

Integrity Conclusion

The GRECIAN Shipwreck Site has retained a high level of site integrity that support its eligibility for listing to the National Register of Historic Places under Criteria A and D.

Materials

Since its wrecking event on 15 June 1906, GRECIAN has retained key material components including its steel hull and propulsion system. The site remains largely intact and is a clear historic resource and remains intact with the materials used during its 1891 construction.

Workmanship

GRECIAN is the direct product of Globe Iron Works, one of the largest shipbuilding firms in Cleveland, Ohio, and one of the earliest to begin building standardized vessels for iron ore fleets. GRECIAN was constructed at the beginning of the steel-hulled bulk freighter era which lasted through the middle twentieth century. Its location in 100 feet of freshwater has preserved its remains to an excellent degree where the workmanship of Globe Iron Works' shipbuilders is ever-present and relevant to its significance.

Design

GRECIAN has retained its design integrity as an early steel-hulled bulk freighter. Its design features like the fantail stern, triple expansion steam engine, twin scotch boilers, expansive two decks, cargo hold, and blunt bow are well preserved and remain intact. Between its two dates of significance (launching in February 1891 and sinking on 15 June 1906) GRECIAN retained its original configuration and equipment without any major refitting which has enhanced its level of design integrity.

Association

GRECIAN has retained its integrity of association, as its remains exist today as they did on 15 June 1906 when the vessel sank off Alpena, Michigan. Despite short-lived efforts at raising GRECIAN, GRECIAN's shipwreck site appears today as it did and where it did when it sunk.

Feeling

Due to its intact position on the lakebed, GRECIAN greatly exudes a high degree of integrity of feeling. Its upright hull clearly speaks to the gargantuan nature of early steel-hulled bulk freighters and the iron ore industry that demanded their development. Most of its physical characteristics that identify with its design and vessel history are present and add to GRECIAN's high level of integrity of feeling.

Setting

GRECIAN has remained submerged since it sunk on 15 June 1906. As a shipwreck site that has not been raised or moved, it has retained its historic fabric and integrity of setting. The shipwreck has a stable, indefinite relationship with the cobblestone lakebed of Lake Huron.

Location

The GRECIAN Shipwreck Site remains in its original location after its shipwrecking event in 1906 and will not be raised. It is stable in its current state and will best aid archaeologists and maritime historians in situ.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

Beeson, Harvey
1901 *Beeson's Marine Directory of the Northwestern Lakes*. Beeson's Marine Directory, Chicago, IL.

Blume, Kenneth J.
2012 *Historical Dictionary of the U.S. Maritime Industry*. Scarecrow Press, Lanham, MD.

Bogue, Margaret B.
2007 *Around the Shores of Lake Superior: A Guide to Historic Sites*. University of Wisconsin Press, Madison, WI.

Buffalo Evening News
1895 Lake Disaster: Big Steel Steamer NORMAN Sent to the Bottom with Three of Her Crew. *The Buffalo Evening News* 1 June. Buffalo, NY. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Buffalo Inquirer
1895 Lake Disaster: Steamer Norman Sunk in A Collision Three People Drowned. *Buffalo Inquirer* 31 May. Buffalo, NY. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Colton, Tom
2010 Globe Iron Works. Biographical entry at www.shipbuildinghistory.com. Delray Beach. FL. http://www.shipbuildinghistory.com/history/shipyards/large/inactive/globe.htm

Domosh, Mona
1996 *Invented Cities: The Creation of Landscape in Nineteenth-Century New York and Boston*. Yale University Press, New Haven, CT.

Duluth Evening Herald
1897 To Raise the Norman. *Duluth Evening Herald* 14 May. Duluth, MN. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Ehle, Jay C.
1996 *Cleveland's Harbor: The Cleveland-Cuyahoga County Port Authority*. Kent State University Press, Kent, OH.

Engineering and Mining Journal
1902 General Industry Notes: Michigan. Volume 73: January 18. The Engineering and Mining Journal, New York.

Globe Iron Works
1889 Plans and Sections Hull Number 30. Cleveland, OH. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Great Lakes Marine Historical Collection
2014 Official Number 130505: Norman Ship Information and Data Record. Held at The Milwaukee Public Library, Milwaukee, WI.

Hutchins, John G.
1941 *The American Maritime Industries and Public Policy: 1789-1914*. Harvard University Press, Cambridge, MA.

Iron Trade Review
1906 The Chapin Mine-by-Mine Record and Prospects. September 27. Volume 39. Penton Publishing Company, Cleveland, OH.

Koram Jr., Joseph J.
2008 *The American Skyscraper, 1850-1940: A Celebration of Height*. Branden Books, Boston, IL.

Lake Carriers' Association
1911 *Annual Report of the Lake Carriers' Association 1910*. P. N. Bland Printing Company, Detroit, MI.

Lawton, Charles
1887 State of Michigan Mines and Mineral Statistics. Thorp and Godfrey, Lansing, MI.

1891 State of Michigan Mines and Mineral Statistics. Robert Smith & Company, Lansing, MI.

Mansfield, John Brandt
1899 *General History*. J. H. Beers & Company, Chicago, IL.

Marine Review
1896 A Diving-Bell Shipped to Alpena. *Marine Review* 13 August. Cleveland, OH.

1902 Built on the Lakes for Ocean Service. *Marine Review* 30 January. Cleveland, OH.

Miller, Walter
1897 Marine Engineering on the Great Lakes – Past and Present. In *Beeson's Marine Directory*, pp.245-246. Harvey C. Beeson, Chicago, IL.

Reynolds, Terry S.
2011 *Iron Will: Cleveland-Cliffs and the Mining of Iron Ore*. Wayne State University Press, Detroit, MI.

Rostow, Walt W.
1960 *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge University Press, Cambridge, MA.

Sheboygan Evening Telegram
1895 The Big Steel Norman and the Canadian Steamer Jack Collided. *Sheboygan Evening Telegram* 1 June. Sheboygan, WI. Courtesy of the Thunder Bay Sanctuary Research Collection, Alpena, MI.

Thompson, Mark L.
1991 *Steamboats and Sailors of the Great Lakes*. Wayne State University Press, Detroit, MI.

1994 *Queen of the Lakes*. Wayne State University Press, Detroit, MI.

Thunder Bay Island Life Saving Station
1895 Daily Log for 31 May 1895. Located in Record Group 41Chicago National Archives, Chicago, IL.

Thunder Bay Sanctuary Research Collection
2017 German Ship File. Located in the Thunder Bay Sanctuary Research Collection housed in the Alpena County Public Library, Alpena, MI.

United States Department of the Treasury
1892 *Report on the Internal Commerce of the United States*. Bureau of Statistics. Government Printing Office, Washington DC.

United States District Court
1895 Case 4478: The Menominee Transit Company vs. Steamer Jack. 9th District, Eastern District of Michigan. 6 June. Located in Record Group 21 Chicago National Archives, Chicago, IL.

United States District Court
1895 Case 4480: In the Mater of the Petition of the Calvin Company, Limited, Owners of the Steamer Jack. 10 June. Located in Record Group 21 Chicago National Archives, Chicago, IL.

Van Hise, C. R.
1901 *The Iron-Ore Deposits of the Lake Superior Region*. Government Printing Office, Washington D. C.

Wright, Richard J.
1969 *Freshwater Whales: A History of The American Ship Building Company and Its Predecessors*. Kent State University Press, Kent, OH.

Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
____recorded by Historic American Engineering Record # _____
____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

__X__State Historic Preservation Office
____ Other State agency
__X__ Federal agency
____ Local government
____ University
____ Other
Name of repository: _____

Historic Resources Survey Number (if assigned): 20UH046

10. Geographical Data

Acreage of Property: 109.07 Acres

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates (decimal degrees)
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)
Bow: Latitude: 44.968620 Longitude: -83.201100
Stern: Latitude: 44.968320 Longitude: -83.199900

Boundary Box Coordinates

1. Latitude: 44.971000 (Northwest Corner)	Longitude: -83.205000
2. Latitude: 44.966000 (Southwest Corner)	Longitude: -83.205000
3. Latitude: 44.966000 (Southeast Corner)	Longitude: -83.196000
4. Latitude: 44.971000 (Northeast Corner)	Longitude: -83.196000

Verbal Boundary Description (Describe the boundaries of the property.)

The GRECIAN Shipwreck Site rests 11 nautical miles southeast of Alpena Township and 4 nautical miles south of Thunder Bay Island in Lake Huron. The steel bulk freighter's remains lie within the boundaries of the National Oceanic and Atmospheric Administration (NOAA) Thunder Bay National Marine Sanctuary, which is under the jurisdiction of the United States Department of Commerce. 44.968620 latitude and -83.201100 longitude mark the bow of the shipwreck and 44.968320 latitude and -83.199900 longitude mark the stern. The bow and stern are positioned in the center of the boundary box. The boundaries of the box are defined by a rectangle with west-east axis measuring 691.72 meters and north-south axis measure 633.30 meters, with a perimeter of 2,661.94 meters. The area of the boundary box is 109.07 acres. The northwest corner is located at latitude 44.971000 longitude -83.205000. The southwest corner is located at latitude 44.966000 longitude -83.205000. The southeast corner is located at latitude 44.966000 longitude -83.196000. The northeast corner is located at latitude 44.971000 longitude -83.196000.

Boundary Justification (Explain why the boundaries were selected.)

The National Register boundaries of the GRECIAN Shipwreck Site encompass the footprint of its articulated remains within the coordinates listed above to capture the wreck site, hull structure, associated artifacts, and debris field. Dive and acoustic surveys conducted by the Thunder Bay National Marine Sanctuary have revealed the extent of GRECIAN's hull structure, associated artifacts, and debris field are centralized in the proposed boundary box. Each side of the boundary box is 300 meters from the shipwreck site. The justification for this boundary box buffer surrounding the main hull structure is that GRECIAN has a scattered debris field around the wreck site's primary footprint. The examination of this debris field in the future may yield information important to history, and provide information about shipboard life, vessel design, use, cargo stowage, and GRECIAN's wrecking event.

11. Form Prepared By

name/title: Philip Alexander Hartmeyer / Maritime Archaeologist
organization: Thunder Bay National Marine Sanctuary
street & number: 500 West Fletcher Street
city or town: Alpena state: Michigan zip code:49707
e-mail: phil.hartmeyer@noaa.gov
telephone: (989) 884-6205
date: February 21, 2017

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Photograph/Figure 1
GRECIAN, Historic Image
Name of Author: Unknown
Date of Image: 1891-1906
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_01

Photograph/Figure 2
R. J. HACKETT, Historic Image
Name of Author: Unknown
Date of Image: 1870-1905
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_02

Photograph/Figure 3
Ximénez Canalon, Patent
Name of Author: Fernando Staud y Ximénez
Date of Image: 6 August 1906
Location of Image: Google Patents
https://www.google.com/patents/US865130
MI_Alpena_Grecian Shipwreck Site_03

Photograph/Figure 4
GRECIAN, Underwater Image of Bow
Name of Author: Thunder Bay National Marine Sanctuary
Date of Image: 2007
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_04

Photograph/Figure 5
GRECIAN, Underwater Image of Bow Debris Field
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_05

Photograph/Figure 6
GRECIAN, Underwater Image Spar Deck Break
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 23 May 2010
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_06

Photograph/Figure 7
GRECIAN, Underwater Image of Main and Lower Decks
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 23 May 2010
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_07

Photograph/Figure 8
GRECIAN, Underwater Image of Boilers
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 2007
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_08

Photograph/Figure 9
GRECIAN, Underwater Image of Steam Engine
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 2 June 2011
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_09

Photograph/Figure 10
GRECIAN, Underwater Image of Stern
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_10

Photograph/Figure 11
GRECIAN, Underwater Image of Diver on Stern Buoy
Name of Author: National Oceanic and Atmospheric Administration
Date of Image: 6 May 2016
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_11

Photograph/Figure 12
GRECIAN, Site Plan
Name of Author: Thunder Bay National Marine Sanctuary
Date of Image: 2010
Location of Image: Thunder Bay Sanctuary Research Collection, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_12

Photograph/Figure 13
Chart of Tons of Iron Ore Shipped from Lake Superior
Name of Author: Philip Hartmeyer
Date of Image: 10 January 2015
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_13

Photograph/Figure 14 ALPENA, Present-Day Photograph
Name of Author: Tom Banfai
Date of Image: 24 March 2014
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_14

Photograph/Figure 15 GRECIAN, Location on Nautical Chart
Name of Author: Philip Hartmeyer
Date of Image: 21 February 2017
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_15

Photograph/Figure 16 GRECIAN, Boundary Box
Name of Author: Philip Hartmeyer
Date of Image: 21 February 2017
Location of Image: Thunder Bay National Marine Sanctuary, Alpena, MI
MI_Alpena_Grecian Shipwreck Site_16

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Requested Action:	Nomination
Property Name:	GRECIAN Shipwreck Site
Multiple Name:	
State & County:	MICHIGAN, Alpena

Date Received:	Date of Pending List:	Date of 16th Day:	Date of 45th Day:	Date of Weekly List:
10/13/2017	11/14/2017	11/29/2017	11/27/2017	

Reference number:	SG100001835
Nominator:	State

Reason For Review:

__ Appeal	__ PDIL	X Text/Data Issue
__ SHPO Request	__ Landscape	__ Photo
__ Waiver	__ National	__ Map/Boundary
__ Resubmission	__ Mobile Resource	__ Period
__ Other	__ TCP	__ Less than 50 years
	__ CLG	

_____ Accept __X__ Return _____ Reject **11/27/2017** Date

Abstract/Summary Comments:

Recommendation/ Criteria

Reviewer Julie Ernstein Discipline Archeologist

Telephone (202)354-2217 Date 11/27/17

DOCUMENTATION: see attached comments : Yes see attached SLR : Yes NO

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.

United States Department of the Interior
National Park Service
National Register of Historic Places

Evaluation/Return Sheet

Property Name: GRECIAN Shipwreck Site
Property Location: Alpena, Alpena Co., Michigan
Reference Number: SG 100001835
Date of Comments: 12/1/2017

Summary and Overview
As detailed in the National Register of Historic Places Registration Form received in this office on October 13, 2017, the GRECIAN Shipwreck Site is a roughly 109-acre site containing the wreck and material culture associated with the 296-foot steel, bulk freighter that sank on June 15, 1906 and lies in 102 feet of water in Lake Huron, within the bounds of Thunder Bay National Marine Sanctuary. The wreck is nominated under significance criteria A and D, and the areas of significance identified are commerce and engineering. The associated period of significance is 1891-1906.

This National Register documentation is being returned for a procedural error and two technical errors, each of which is outlined below.

Procedural Error: Absence of Signature by Proper Certifying Authority
The property proposed for listing in the National Register is located within the bounds of Thunder Bay National Marine Sanctuary. As such, it represents a concurrent state-federal nomination, and is to be processed in the manner outlined in Federal regulation at 36 CFR §60.10. This point was noted in the course of e-mail and telephone conversations with both SHPO and Federal agency staff, and a strategy for remedying the situation and ultimately proceeding to listing this property in the National Register were discussed. These comments document the process for achieving this shared goal.

The above-named nomination was submitted to our office directly from the Michigan State Historic Preservation Office without affording NOAA's Federal Preservation Officer the opportunity to comment on the merits of the nomination on behalf of that agency. Here is that individual's contact information:

Mr. Randolph Ghertler
Federal Preservation Officer
National Oceanic & Atmospheric Administration
Project Planning & Management Division
Office of the Chief Administrative Officer
1305 East-West Highway
Silver Spring, MD 20910
tel.: 301.628.0979
email: randolph.ghertler@noaa.gov

Two Technical Items

Two additional technical items warrant consideration:

- Archeology: Historic—Non-aboriginal should be added to the Areas of Significance identified in Section 8, p. 11; and
- when identifying Engineering as an Area of Significance, it is associated with significance criterion C and not A. We would recommend making this addition to the current nomination, which will involve checking that criterion in Boxes 3 and 8 and editing the narrative throughout the nomination to reflect this change. This would result in a revised nomination that invokes significance criteria A, C, and D.

Finally, I have checked the nominations that are currently in my queue for review and do not see any that appear to likewise be concurrent state/federal nominations on which NOAA's FPO has not yet had the opportunity to comment. Thank you for your patience while I took a couple of days to do that reconnaissance work.

Please be sure to forward revised versions of the nomination to NOAA's FPO for signature and forwarding to the Keeper of the Register at the National Register Program, 1849 C St., NW (mail stop 7228), Washington, DC 20240.

Thank you for the opportunity to read the nomination of this important resource. Once the resubmission is prepared and submitted, I will be prepared to ensure a timely review and listing. Please feel free to call me at 202.354.2217 or e-mail me at: julie_ernstein@nps.gov if you have any questions regarding these comments.

Julie H. Ernstein, Ph.D., RPA
Supervisory Archeologist, National Register of Historic Places

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
STATE HISTORIC PRESERVATION OFFICE

RICK SNYDER
GOVERNOR

EARL J. POLESKI
EXECUTIVE DIRECTOR

Friday, January 19, 2018

Mr. J. Paul Loether, Keeper
National Register of Historic Places
Mail Stop 7228
1849 C St, NW
Washington, D.C. 20240

Dear Mr. Loether:

The enclosed discs contain the true and correct copy of the nomination for the **GRECIAN Shipwreck Site, Alpena, Alpena County, Michigan**. Disc 1 contains correspondence and the National Register of Historic Places Registration Form, which includes site maps. Disc 2 contains photographs of this site. This property is being submitted for listing in the National Register of Historic Places.

This nomination was returned to us on December 1, 2017, for a procedural error and two technical items. The previous version omitted the signature of the Federal Preservation Officer for the National Oceanic and Atmospheric Administration. Additionally, the previous version did not identify "Archeology: Historic—Non-aboriginal" as an Area of Significance, and Criterion C was not selected even though Engineering was identified as an Area of Significance.

All of these errors have been addressed and corrected.

No written comments concerning this nomination were submitted to us prior to our forwarding this nomination to you.

Questions concerning this nomination should be addressed to Todd A. Walsh, Interim National Register coordinator, at (517) 373-1979 or WalshT@michigan.gov.

Sincerely yours,

Brian D. Conway
State Historic Preservation Officer

Equal Housing Lender

State Historic Preservation Office
Michigan Library and Historical Center • 702 West Kalamazoo Street • PO BOX 30740 • Lansing, Michigan 48909-8240
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