United States Department of 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 *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an 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. Place additional entries and narrative items on continuation sheets (NPS Form 10-900A). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name *Artic* Shipwreck (Tug)

other names/site number 47-MN0414

2. Location

street & number 1.5 miles northeast of the Manitowoc Breakwater Light, in Lake Michigan — N/A — **not for publication**

city or town Manitowoc — x — **vicinity**

state Wisconsin **code** WI **county** Manitowoc **code** 171 **zip code** 54220

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 _ nationally _ statewide _ locally. (_ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

In my opinion, the property _ meets _ does not meet the National Register criteria.
(_ See continuation sheet for additional comments.)

Signature of commenting official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:
__ entered in the National Register.
___ See continuation sheet.
__ determined eligible for the National Register.
___ See continuation sheet.
__ determined not eligible for the National Register.
___ See continuation sheet.
__ removed from the National Register.
__ other, (explain:)

Signature of the Keeper | Date of Action

5. Classification

Ownership of Property
(check as many boxes as as apply)

	private
	public-local
x	public-State
	public-Federal

Category of Property
(Check only one box)

	building(s)
	district
	structure
x	site
	object

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

contributing	noncontributing	
		buildings
1		sites
		structures
		objects
1		total

Name of related multiple property listing:
(Enter "N/A" if property not part of a multiple property listing.)
Great Lakes Shipwrecks of Wisconsin

Number of contributing resources previously listed in the National Register
0

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)
Other-Tug

Materials
(Enter categories from instructions)
foundation N/A
walls N/A
roof N/A
other N/A

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

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

_ 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.)

Property is:

_ 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 of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

ARCHAEOLOGY/ HISTORICAL-NON-ABORIGINAL
MARITIME HISTORY
COMMERCE

Period of Significance

1881-1930

Significant Dates

1881

Significant Person
(Complete if Criterion B is marked)

N/A

Cultural Affiliation

Euro-American

Architect/Builder

C.S. Rand

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographic References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous Documentation on File (National Park Service):
- 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 #

Primary location of additional data:
X State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local government
- University

Other
Name of repository:

10. Geographical Data

Acreage of Property 8.1 Acres

UTM References (Place additional UTM references on a continuation sheet.)

(N43 34.253 / W 08746.962)

	Zone	Easting	Northing
1	16T	0449637mE	4884753mN
2	16T	0449448mE	4884472mN
3	16T	0449717mE	4884692mN
4	16T	0449384mE	4884542mN

☐ See Continuation Sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet)

11. Form Prepared By

name/title	Victoria Kiefer, Tamara Thomsen and Caitlin Zant				
organization	Wisconsin Historical Society			**date**	09/15/2017
street & number	816 State Str.			**telephone**	608-221-5909
city or town	Madison	**state**	WI	**zip code**	53706

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs Representative black and white photographs of the property.

Additional Items (Check with the SHPO or FPO for any additional items)

Property Owner

Complete this item at the request of SHPO or FPO.)

name/title	Jonathan Barry, Executive Secretary				
organization	Wisconsin Board of Commissioners of Public Lands			**date**	09/15/2017
street & number	PO Box 8943			**telephone**	608-267-2233
city or town	Madison	**state**	WI	**zip code**	53708-8943

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects, (1024-0018), Washington, DC 20503.

Summary
Partially covered by sand 1.5 miles northeast of the Manitowoc Breakwater Light, Manitowoc, Wisconsin, the tug *Arctic* lies in 10 -15 feet of water on the bottom of Lake Michigan. The vessel lies in two large pieces approximately 800 feet apart. The stempost and much of the vessel's upper hull structure remain intact in the northern section of wreckage; the southern section contains the rudder, bilge structure, and boiler. The *Arctic* was owned by the Goodrich Transportation Company and operated primarily for towing and ice breaking for the company on Lake Michigan. Early in 1930, after 49 years of service, old age and hard work finally deemed the *Arctic* too costly to maintain. The vessel was stripped of anything valuable and towed north of Manitowoc harbor where it was beached, burned and left to the elements. Though the tug was abandoned in such a way, the remaining intact upper hull structure ,firebox steam boiler, and upright rudder with tiller give the site a level of integrity. The *Arctic* is one of the only examples of a Great Lakes harbor tug, and provides historians and archaeologists the rare chance to study and document this unique vessel type.

The *Arctic* meets the registration requirements for Criterion D at the state level as a good example of a tug vessel type as described in the Multiple Property Documentation Great Lakes Shipwrecks of Wisconsin (Cooper and Kriesa 1992). As part of a grant funded by the University of Wisconsin Sea-Grant Institute, the site was fully documented in July 2017 by Wisconsin Historical Society archaeologists and students from the Wisconsin Underwater Archaeology Association (WUAA) and Great Lakes Shipwreck Preservation Society (GLSPS). Shifting sands cover *Arctic's* bilge, bow section, and associated debris field, uncovering newly exposed portions of the site and possibly protecting associated artifacts from looting and damage from divers and kayakers visiting the site. The *Arctic* site has already produced a wealth of archaeological knowledge regarding tug hull construction and adaptations for use in towing, wrecking, and ice breaking on the Great Lakes. The site also has great potential to yield further archaeological information in future years as sand moves around the site.

Site Description
A search of Wisconsin Historical Society's shipwreck database, generated from historic newspaper accounts of vessels causalities, revealed that four vessels have been lost or abandoned approximately one mile north of the Manitowoc Harbor. The steamer *Francis Hinton*, surveyed by Wisconsin Historical Society in 1991 is buoyed and frequently visited by divers. Three vessels of the Goodrich Line were also abandoned in this area. Two of these abandonments were sidewheel steamers, the *Sheboygan* and the *Muskegon* (both approximately 200 feet in length), while the third was the 76-foot-long tug *Arctic.* Dimensional data and artifacts that remain on the site indicate that the vessel described in this document belong to the tug *Arctic*. At the time of her registration, *Arctic* was described as a wooden screw-propelled tug with one deck, measuring 64.55 feet in length, 18.01 feet in beam, with a 9-foot depth of hold, and a gross tonnage of 52.97 tons (Bureau of Navigation 1881).

The *Arctic*'s wreck site lies in Lake Michigan 1.5 miles northeast of the Manitowoc Breakwater Light, Manitowoc, Wisconsin. The vessel lies in two distinct disarticulated sections, 805 feet apart in 10-15 feet of water. The bow section contains the stempost and upper hull structure, while the bilge section contains the rudder, lower hull/bilge, boiler, and machine remnants. Wisconsin Historical Society archaeologists initially investigated the site's bilge section in 1994 but a complete site survey was never completed. The bow was surveyed, as well as a resurvey of the bilge section, by Society archaeologists and field school participants from Wisconsin Underwater Archaeology Association (WUAA) and the Great Lakes Shipwreck Preservation Society (GLSPS) during the summer of 2017.

During the 2017 archaeological survey of the bow section, a temporary baseline was attached to the stempost and extended toward the stern of the vessel ending in the sand aft of the broken hull. All measurements were taken in reference to the baseline. The bow of the vessel sits upright between 8 and 14 feet below the surface on a heading of 69 degrees. The extant hull structure measures 73 feet long, therefore it is estimated that the section contains most the upper hull structure of the vessel. The stern and transom are non-extant, or remain buried beneath the sands. The hull sides are splayed out aft of the stem to a width of 37 feet.

The stempost of *Arctic* rises 7 feet out of the sand with a 48-degree list to starboard and 30-degree pitch forward. Both the port and starboard sides of the upper hull of *Arctic*'s bow are exposed. The stempost remains attached to the starboard side of the hull while the port side has fallen away. The interior of the bow section is covered in sand, which likely covers other interior hull features. The stempost is comprised of two timbers that together measure 0.8 feet sided by 2.3 feet molded. An iron cutwater is attached to the front of the stempost measuring 0.8 feet sided and 0.1 feet molded. The stem angles back twelve feet to the deadwood. Just aft of the stempost and deadwood are the remnants of iron cable that was left on the vessel at the time of its abandonment. Two wooden knees are located just aft of the stempost partially buried in sand. The first measures 3.0 feet long with a maximum width of 2.1 feet. The second, located just aft of the first, measures 3.8 feet long with a maximum width of 1.5 feet. Both knees measure 0.4 feet in thickness and appear to be attached to each other. On the outside of the vessel near the stempost, one foot above the sand, remains scant evidence of the tug's iron sheathing.

The port side hull leans 30-degree outward from the bow to a point 38 feet along the baseline. At this point there is a break and the remainder of the port hull lays flat, visible above the sand until it disappears 73 feet aft of the stem. The first 38 feet of the port side contains frames, outer hull planking, and ceiling planking. On the outside of this portion of the hull, iron sheathing was observed falling away from the hull into the sand. Cant frames are located in the first 15 feet along the baseline. These cant frames measure 1.0 foot sided and 0.6 feet molded, and are placed almost side-by-side. They gain spacing as the hull extends aft and frames measure 0.8 feet sided and 0.6 feet molded with 1.0 foot

spacing between. Measured on the port side, the outer hull planking measures 0.5 feet sided and 0.3 feet molded. The ceiling planking measures 0.6 feet sided and 0.2 feet molded.

The starboard side of the bow wreckage extends into sand 73.5 feet aft of the stempost. Near the stempost on the starboard side, two hawsepipes are located at the top of the hull structure. The first hawsepipe is 1.1 feet long, 0.6 feet high, and 1.3 feet thick. The second hawse pipe, located 1.8 feet aft of the first, measures of 1.3 feet long, 0.4 feet high, and 1.3 feet thick. There is no evidence of a hawsepipe on the port side of the hull. The starboard hull, containing frames, ceiling planking, and outer planking and stands at a 48-degree angle that gradually increases aft to 40 feet along the baseline where the piece ends in sand. Between 42 feet and 64 feet along the baseline is a section of collapsed decking. A deck beam 1.0 feet sided and molded can be seen under multiple deck planks.

An indicator of the ice breaking capacity of this ship, multiple wooden and iron-hogging trusses are extant on the bow portion of wreckage. On the port side three wooden trusses are extant. The first is located at 12 feet along the baseline and extends 16 feet aft, measuring 1.3 feet sided and 0.4 feet molded. The second wooden truss on the port side is located at 24 feet along the baseline and extends 13 feet aft, measuring 1.6 feet sided and 0.9 feet molded. The third wooden truss on the port side is located at 34 feet along the baseline and extends 4 feet aft, measuring 1.3 feet sided and 0.4 feet molded. An iron-hogging truss along the port side begins at 39 feet along the baseline and ends at 72 feet, measuring 1.1 feet sided and 0.1 feet molded. Along the starboard side, the first wooden hogging truss is located also 12 feet along the baseline, and extends 12 feet ending in sand. It measures 1.3 feet sided and 0.4 feet molded. The second wooden-hogging truss was located at 20 feet along the baseline and extends 14.5 feet before ending in sand. It measures1.6 feet sided and 0.9 feet molded. On the starboard side the iron hogging truss begins at 32 feet along the baseline and extends into the sand at 73.5 feet, measuring 1.1 feet sided and 0.1 feet molded.

Between 55 feet and 61.5 feet on the baseline, near the center the structure is evidence of a step. *Arctic* was a towing and wrecking vessels so this may be a remnant of a tow bitt that was stepped into the vessel. The hull is fastened with rove fasteners 0.1 feet in diameter. Evidence of burning can be found throughout the site; the wood is charred and the iron trusses are warped.

Eight hundred and five feet southwest (229 degrees) of *Arctic's* bow structure is the tug's bilge. The bilge section lays on a heading of 43-degrees and contains lower hull structure, boiler, steering quadrant, rudder, propeller, and other machinery.

A temporary cable baseline was strung between fence posts driven into the sand forward of the wreckage and extending 130 feet toward the stern of the vessel, ending aft of the rudder. All measurements for the bilge section were taken in reference to the baseline. Between 6 and 27 feet along the baseline, a 15-foot section of hull lays 30 feet to starboard. This section contains single

frames measuring 0.5 feet sided and 0.4 feet molded. One piece of planking was extant on this piece, measuring 1.0 foot wide and fastened to the frames with roves, 0.2 feet in diameter, and bolts, 0.1 feet in diameter. The forward end of this piece contains two metal plates measuring 0.25 feet wide and 2.65 feet apart. The metal plates disappeared into the sand and were covered by planking so no overall length measurement could be taken. The plates are attached to the planking by square bolts measuring 0.1 feet by 0.1 feet. Both plates ended in a circular bend, one with a shackle attached. The shackle is a U-shaped piece of iron that is attached to the metal plate at the open end by a screw pin. The shackle measures 0.4 feet in length with maximum width of 0.25 feet and thickness of 0.05 feet. The pin that holds the shackle to the plate measures 0.55 feet in length and 0.075 feet in diameter. Near this section disarticulated wooden fragments extend from the sand. Mussel growth is heavy on the upper frames, and light to nonexistent on the planking and lower frames, indicating recent sand movement around the site. All the wood is charred, indicating burning.

A few disarticulated wooden fragments extend from the sand on the starboard side of the baseline at 42 feet. These fragments measure between 0.4 and 0.6 feet in width and also contain evidence of burning. Little to no mussel growth is found on the wood indicating that these pieces have been recently washed out of the sand.

At 65 feet along the baseline the firebox boiler and its attached steam drum are lying on their side. The firebox doors face forward indicating that the boiler fell towards the port side from its supports. The firebox measures 12.0 feet long and 8.0 feet wide, and stands 7.4 feet above the sand. The steam drum measures 5.7 feet long with a 3.3 feet diameter. The forward end of the firebox contains two doorways measuring 1.6 feet long and 1.3 feet wide. Since the boiler is laying on its side the doorways are located vertically on the left side of the boiler face. Both firebox doors are attached and lie open underneath each doorway. The top door measures 1.3 feet wide and 1.0 foot long. The bottom door measures 1.3 feet wide, but extends into the sand preventing a length measurement. To the right of the firebox doorways are sixteen rows of six flue-tubes. The flue-tubes measure 0.9 feet in diameter and are located 0.1 feet apart, totaling 96 flue-tubes visible on the firebox. Starboard of the firebox (near the bottom of the boiler) a piece of metal and a 5.0 feet by 2.6 feet piece of grating is located. This may be the remains of the firebox's fire grate and boiler bed. The fire grate was located just above the ash pan and collected pieces of coal (still burning) and allowed the ash to settle in the ash pan. The metal may have been a support for the heavy machinery to be secured to and/or a barrier between the heat of the firebox and the wooden hull.

Disarticulated wood and metal is located between 80 and 100 feet along the baseline. Floor timbers extend from the sand on the starboard side of the baseline. These floors measure 0.2 feet sided, 0.9 feet molded, with 1.4 feet spacing. Some ceiling planking 0.5 feet wide is partially uncovered over four floors. On top of the floors and ceiling, four timbers lie parallel with the floors. These timbers measure 0.5 feet wide. Just to the port side of this floor section is a mass of disarticulated metal and wood.

From what remains in this area and its placement near the boiler, this may have been the location of the engine. The additional timbers atop the floors and ceiling planking were possibly added support for the heavy machinery. At 90 to 100 feet along the baseline, 7 feet to starboard, is the engine mount. Timbers for the engine mount measure 0.8 feet wide and are fastened with roved bolts. The scattered metal and wood debris in this area are likely a result of the removal of the engine and its machinery.

At 100 feet on the baseline, a metal tank lies on its side, partially covered in sand 10.5 feet to starboard. The tank measures 1.5 feet wide and 3.5 feet long and has a 0.2 feet diameter pipe protruding from its side. Just aft of the metal tank, 2.0 feet to the port side is the propeller shaft bearing. The top of the shaft bearing is partially covered in sand. The shaft measures 1.5 feet in length with a width between 1.0 and 2.0 feet. Only 0.5 feet of propeller shaft extends aft from the shaft bearing into sand. Between the shaft bearing and the rudder, metal fasteners protrude slightly out of the sand indicating that more of the site is still buried.

At 130 feet on the baseline, the intact rudder assembly, consisting of rudder blade, rudderstock, and tiller, extends 5.75 feet above the sand. The rudder lists 28-degrees to port, with a 6-degree pitch aft. The tiller is a 4.4 feet long metal piece that joins the rudderstock at the rudder head. The shaft of the tiller is 0.5 feet in diameter and ends at the round connection 1.2 feet in diameter. The rudderstock measures 4.0 feet from the top of the tiller to the top of the rudder with a diameter of 0.6 feet. A round metal plate 1.8 feet in diameter connects the rudderstock and blade. The rudder blade runs parallel to the baseline, extending 2 feet forward from the rudderstock and 4.5 feet aft of the rudderstock, giving the rudder blade and rudderstock an overall length of 6.5 feet. Only 2.7 feet of rudder blade is visible above the sand; its full height was unable to be measured. Just forward of the rudder blade on the starboard side, the top edge of a propeller blade is visible just above the sand.

During the research and reporting on the *Arctic,* documentation of an unknown shipwreck called "Maritime Bay Unidentified Wreck" was discovered. This site drawing and description was determined to be an early survey of the bilge portion of the *Arctic* site, documented by the Wisconsin Historical Society archaeologists and volunteers in July 1994. The survey produced multiple underwater measured drawings, a brief site description, and a partial site map. This fortunate accident allowed the opportunity to compare the site as it lies today with how it was twenty-three years prior. Comparison of the 1994 and 2017 surveys indicate massive sand movement especially on the forward portion of the bilge and near the boiler. An entire 16-foot section of hull structure, visible in 1994, is now nearly covered with only 1.0 foot visible in 2017. The 1994-survey showed a boiler ventilation hood just forward and to the starboard side of the boiler. The hood was searched for at length, but was not located in 2017. The hood may have been moved elsewhere by ice or waves, buried by sand, or looted by divers. Additionally, the metal tank located near the propeller shaft has fallen over and is now mostly buried in sand.

Both sections of the Arctic site display clear evidence of fire damage, from burned wood to warped metal. This indicates that the vessel was set on fire as part of its abandonment. The most intense burning can be found in the bilge section, while evidence of burning is located on the inner hull of the bow section, but not the outer hull. Evidence supports that the fire was probably started inside the hull of the vessel. This hypothesis supports the way the vessel is broken up. As fire damaged the lower hull, the bilge portion, loaded with heavy machinery, broke apart from the upper hull section. The bilge portion is facing southwest while the bow portion, 800 feet to the Northeast, is facing East. Wave action, and winter ice may be the cause of the bow section's location and heading.

Summary
Located 1.5 miles northeast of the Manitowoc Breakwater Light, in Manitowoc, Wisconsin, the tug *Arctic* (47-MN0414) lies in 10-15 feet of water in Lake Michigan and is partially covered by sand. The *Arctic* was built in the Rand & Burger shipyard in Manitowoc, Wisconsin. The tug was commissioned for the Goodrich Transportation Company to aid their passenger/packet steamers and keep navigational channels open during the winter. The vessel was in service for 49 years, but with age came more maintenance and repair costs. It was decided that the tug was not worth keeping in service and it was stripped and beached north of Manitowoc Harbor. Today, the *Arctic* provides historians and archaeologists the rare chance to study and document this vessel type. The *Arctic* meets the registration requirements for Criterion D at the state level as a good example of a tug vessel type as described in the Multiple Property Documentation *Great Lakes Shipwrecks of Wisconsin* (Cooper and Kriesa 1992). The period of significance (1881-1930) begins with the *Arctic*'s date of construction and ends with the date its enrollment documents were surrendered.

The Goodrich Transit Company

The Goodrich Transit Company is heralded as one of the longest running companies dedicated to the transportation of people and goods on the Great Lakes. Under its various iterations, the Goodrich line provided seventy-seven years of continual and dependable routes on what arguably were as some of the most luxurious steamers on the lakes. The company's prosperity and longevity can be directly attributed to the actions of its founder, Captain Albert Edgar "A.E." Goodrich.

A.E. Goodrich was born in 1826, the sixth of seven children, to one of the founding families of New Buffalo, Michigan (Elliott 1995:13). He acquired a passion for ships and shipping at a young age and by the age of twenty-one became a clerk on the Ward Line steamer *A.D. Patchin*, with the help of his uncle Captain Henry Whittaker *(*Elliott 1995:16). Through years of hard work and dedication he became a distinguished captain and prominent figure of the Ward Line of Steamers. In the late 1830s, a massive inflow of immigrants traveled westward and Ward line passenger steamers were the vessels of choice. Through the 1840s the Ward Line of Steamers was the only carrier with regular service on lower Lake Michigan. Captain Goodrich observed this growing industry and decided to come together with others of the Ward line to incorporate under the Clement Steamboat Line in 1856. The Clement line chartered vessels from the Ward Line for transportation out of Chicago (Elliott 195:18). Within a year A.E. Goodrich sold his stock in the Clement line, partnered with George C. Drew and formed a new company under his name, initially organized as the Goodrich Steamboat Line.

The Goodrich Steamboat Line acquired docks and offices in Chicago and Milwaukee and maintained routes between these ports and others along the western Wisconsin coast. The first vessel of the Goodrich line was the sidewheeler *Huron*, which was chartered by the Ward line (Elliott 1995:18-22). Within three years the Goodrich line purchased the *Huron,* the propeller *Ogontz,* and the sidewheeler

Comet (Elliott 1995:23, 26). The line also established a cross-lake route from Chicago to Grand Haven and Muskegon, Michigan as well as extended their western route as far north as Green Bay. The cross-lake route was essential for the Goodrich line because it was a direct link for railway service in Michigan before railroads crossed to Wisconsin. The railway was not fully established in Wisconsin until the 1870s, so the line provided fast and reliable transportation for break-bulk railway freight and passengers westward (Hilton 2002:55).

In 1861 Goodrich contracted the construction of the company's first new vessel, the propeller *Union,* with the Bates Shipyard in Manitowoc *(*Elliott 1995:37). The *Union* was a very strong, well-built vessel. This began the long relationship between Manitowoc shipyards and the Goodrich line. Bates constructed two other steamers for Goodrich (Elliott 1995:37). After the Civil War C.S. Rand purchased the Bates yard. This did not hinder the relationship with Goodrich, and by 1867 the shipyard was contracted to build the sidewheeler *Northwest* (Elliott 1995:49). Under Rand, two more vessels were constructed and two were remodeled for the Goodrich line (Elliott 1995:49, 76, 51). In the early 1880s shipwright Henry Burger joined C.S. Rand to form the Rand & Burger shipyard. Rand & Burger built the tug *Arctic* and the steamer *City of Ludington* for Goodrich (Elliott 1995:81, 83, 294; *Manitowoc Pilot* 1882a). When C.S. Rand passed away in 1885, George Burger joined his cousin and reformed the company as Burger & Burger Shipbuilding Company. Burger & Burger built three more steamers for the Goodrich line until the Manitowoc Shipbuilding and Dry Dock Company purchased the yard in 1903 (Elliot 118, 120, 294). Even after this purchase Goodrich continued vessel construction, maintenance, and repair in Manitowoc.

The early 1860s were tough for the Goodrich Steamboat Line. Two of the vessels owned by the line, *Wabash Valley* and *Sunbeam*, wrecked on the lakes costing the company a total of $61,000 (Elliott 1995: 289). Outside of these losses, the Civil War brought financial burden and emotional distress to the United States diminishing the passenger trade on the lakes. Captain Goodrich no longer thought of expanding, but focused inward on how to use the property he had to maintain business. Between 1857 and 1865 the Goodrich line purchased ten vessels. Out of these, three were dismantled and engines reused, two were wrecked, one was sold, and four remained in service.

In 1867 Captain Goodrich purchased docks in Manitowoc and began using the harbor as the company's main port (Elliott 1995:57). Manitowoc provided a central location between Milwaukee, Door County ports, and Grand Haven and Muskegon, Michigan for ready access to repair disabled vessels at the city's shipyards. On 18 April 1868 the Goodrich Steamboat Line became incorporated as the Goodrich Transportation Company. A.E. Goodrich became president; Joseph Goodrich, Vice President; W. Wright, Treasurer; and T. Butlin, Superintendent. The corporate offices were located in Chicago while the port of hail for the vessels was Manitowoc. The Goodrich Transportation Company ran the steamers *Alpena, Comet, Truesdell, Manitowoc, Northwest,* and *Ottawa.* Under this new name,

Captain Goodrich focused on consistency and reliability (Elliott 1995:59). Goodrich vessels were identified by their black hulls, white cabins, red smoke stacks, and white dove-tail pennants embroidered with the initials "G.T.Co". In 1868, A.E. and his wife were blessed with a baby boy named Albert Whaling "A.W." Goodrich.

The 1870s were prosperous for the Goodrich line. Contracts with railway service in Grand Haven and Muskegon, Michigan maintained profitable cross-lake routes and passenger transport north from Chicago was constant. To keep this traction, the wooden sidewheeler *Corona* was purposely built for year-round transportation (Elliott 1995: 64). After *Corona*, six new steamers were built for the company at Manitowoc, including the *Muskegon, Navarino, Oconto, Menominee, De Pere,* and *Chicago.* These new steamers were built to withstand the busy cross-lake and western shore traffic. Unfortunately, the steamer *Navarino* was not in service long. In 1871, the steamer was tied to the Goodrich docks in Chicago during the Great Chicago Fire. Captain Goodrich could not save the vessel or his warehouses from the flames, but he was able to save the majority of the company's records (Elliott 1995:64-68). The fire was a great loss of property to the Goodrich Transportation Company, but the line prevailed, and continued prospering into the 1880s.

In 1881 the Goodrich Transportation Company launched five vessels. The first was the wooden tug *Arctic*. The cross-lake route was essential to the Goodrich line so it was imperative that the navigational channels be kept open through the winter season. *Arctic* was tasked with breaking ice for winter navigation and assisting the Goodrich vessels in any way deemed necessary. Captain A.E. Goodrich was a progressive man, striving to make contemporary improvements to the fleet. To this vein, he contracted the construction of one iron sidewheeler, *City of Milwaukee*, and two iron propellers, *Michigan* and *Wisconsin*, built solely for the growing railroad traffic that the cross-lake route produced. Built at the Detroit Dry Dock Company in Detroit, Michigan, these were the first ships built for Goodrich outside of a Manitowoc yard (Elliott 1995:95). Unfortunately, these new iron-hulled steamers did not stay long under Goodrich ownership. In 1882 the Flint & Pere Marquette Railroad Company purchased two steamers for their own use and terminated their contract with Goodrich (Elliott 1995: 93, 96). By 1883 the Goodrich line lost their remaining railroad contracts and to avert financial ruin, sold their iron steamers (Elliott 1995: 96-97).

The stress of losing the railroad business took a toll on A.E. Goodrich's health and on 14 September 1885, the stalwart captain passed away (Elliott 1995: 100). Superintendent Captain Butlin was appointed interim president to act as steward of the Goodrich line until A.W. Goodrich could step into his father's shoes. The Goodrich Transportation Company was vulnerable financially, so for three years Captain Butlin refused to acquire new vessels and focused on the economic restoration of the company (Elliott 1995: 112). In December of 1889, A.W. Goodrich was appointed President of the Goodrich Transportation Company. With the company financially stable and a new generation of

Goodrich at the helm, it was decided new vessels were needed to replace the old passenger steamers.

To stay competitive in passenger transportation these new steamers focused on speed and dependability, as well as luxurious accommodations (Elliott 1995: 115-117). Before 1890 the Goodrich company employed sixteen sidewheel steamers and fifteen steam propellers. After 1890, no sidewheel steamers were built for the company. The first three vessels contracted by A.W. Goodrich were the *City of Racine (*1889*), Indiana (*1890*),* and *Atlanta (*1891*).* These three vessels were built with overnight passengers in mind. Each had staterooms for over 150 guests and spacious parlors, all with ornate décor and lavish furnishings. The *Virginia*, also built in 1891, was the first all steel-hulled, twin-screw steamer built and owned by the Goodrich line. The steamer was built at the Globe Shipbuilding Company of Cleveland, Ohio for $301,163.89, the most expensive vessel ever built for the line. The cost was well invested as *Virginia* was considered the most beautiful vessel of the Goodrich line and was often compared to the grandness of the trans-Atlantic steamers of the time (Elliott 1995:127-129).

Another progressive move was the purchase of the whaleback steamer *Christopher Columbus.* The *Christopher Columbus* was the world's first whaleback passenger steamer originally built as an excursion boat for the 1893 Columbian Exposition (World's Fair) in Chicago. After the Exposition the whaleback was purchased by Hurson Line and was put on a round trip excursion route between Chicago and Milwaukee. This was in direct competition with the Goodrich line. In order to meet that competition, *Virginia* was also put on that same route. To the public's amusement, and company's benefit, these two vessels would race each other from port to port. Though popular, having the grandest, strongest, and most expensive vessel travel between these relatively close cities was consideration to be a ridiculous waste of resources. In 1908, the Goodrich Transportation Company bought the *Christopher Columbus*, which terminated the competition *(*Elliott 1995:153-157). The whaleback continued on the Chicago-Milwaukee route for the Goodrich line until the company's end. The vessel was a very popular attraction, each year setting records for most passengers handled by an American vessel (Elliott 1995: 165).

For the year 1900, the Goodrich Transportation Company vessel roster included *Atlanta, Chicago, Christopher Columbus, City of Racine, Georgia, Indiana, Iowa, Sheboygan, Virginia, and Arctic. Christopher Columbus* was placed on day trip excursions where the steamers *Virginia* and *Racine* were on night service between Chicago and Milwaukee. *Iowa* and *Indiana* routes were cross-lake between Chicago and Grand Haven/Muskegon. *Atlanta, Sheboygan,* and *Chicago* continued steaming from Chicago to various ports along the western shore, including Manitowoc, Sheboygan, Green Bay, and ports of Door County. The steamer *Georgia* was on a seven-day route from Chicago to Mackinac Island with various stops at western ports. The tug *Arctic* continued to work as icebreaker and support vessel for all of the Goodrich steamers (Elliott 1995: 166). In its the first forty-four years, the Goodrich Transportation Company owned thirty-eight vessels of which ten were still in use. Of these,

only three steamers were involved in accidents resulting in loss of life.

In 1906 the Goodrich Transportation Company (under the Laws of the State of Wisconsin) was dissolved and a new corporation, the Goodrich Transit Company was established in Maine. The new officers included; A.W. Goodrich, President; E.L. Upton, Vice-President; H.W. Thorp, Secretary; and W.J. Louderback, Treasurer. A.W. Goodrich believed that incorporation in Maine would prove beneficial to the company's bottom line. Goodrich vessels' port-of-hail was transferred from Milwaukee to Duluth, Minnesota. The Goodrich colors stayed the same, the corporate offices remained in Chicago, and the base of shore operations continued at Manitowoc (Elliott 1995:169).

Operation of the Goodrich Transit Company was very different than under its former name. The company built the steel-hulled steamer *Alabama.* This steamer was engineered for year-round navigation of the cross-lake route. It was designed to provide luxurious travel for the summertime excursion passenger, but also provided maximum cargo capacity for freight and a strong hull for ice breaking during the winter months. *Alabama* quickly became the Goodrich Transit Company's flagship and the most photographed vessel of the line (Elliott 1995:179, 181). Six years after the steel steamer's launch, Goodrich finally retired the sidewheeler *Sheboygan* after forty-four years of service. The next vessel built for the line would replace the forty-two year-old sidewheeler *Chicago.* In 1915 the steel-hulled propeller *Nevada* was built, but unlike the other steamers, this one was not built with the passenger in mind.

After the *Titanic* disaster in April 1912, working conditions of seamen and safety at sea began to be questioned. In 1915, Congress enacted the LaFollette Seamen's Act to improve the living and working conditions for seamen. This Act regulated wages, determined lifeboats per passenger capacity, along with other managing requirements. According to the Act, it took four years of service to become an able-bodied seaman. This requirement impacted whom the company could hire and what wages these seamen would receive. During the winter months, many of the Goodrich vessels would, essentially, become freighters. Little to no passengers would be aboard, but the vessel would transport a full load of cargo. Unfortunately, crew management requirements were based on license capacity rather than actual passenger numbers. This meant that even if a vessel were used as a freighter, the ship would need to employ the same number of crew at full passenger capacity. The LaFollette Seamen's Act regulations made it difficult to manage the Goodrich line economically. The steamer *Nevada* was built in response to this act, but inevitably was the last steamer Goodrich built.

At U.S. entry into World War I in 1914, *Nevada* and *Virginia* caught the eye of wanting governments. In April 1917, the United States Navy requisitioned *Virginia,* relocated the ship to Boston, and renamed it *Blue Ridge*. The vessel was later moved to California for service and the steamer never returned to the Great Lakes (Elliott 1995:135). In May 1917, Goodrich sold the *Nevada* to the Russian

Imperial Navy to be used as an icebreaker in Russian ports. The steamer was never used in Russia, however, following a collision on the coast of California it was seized by the U.S. government. The *Nevada* was returned to the Great Lakes in the 1920s as a freighter for the Pere Marquette line (Elliott 1995:221).

By 1920 the Goodrich Transit Company vessels included the tug *Arctic,* the wooden-hulled propellers *City of Ludington, City of Racine*, and *Indiana,* and the steel-hulled propellers *Christopher Columbus, Alabama,* and *Florida.* The economic damage of the war and the natural decline of the industry were observed by A.W. Goodrich and in July 1920 he decided to dissolve the company and retire. Local investors under the name, Maritime Securities Company purchased majority shares of the company. H.W Thorp became the new president but everything from the vessel colors to the company name remained the same (Elliott 1995: 236). Thorp understood that the industry was dying but decided the best way to be profitable was to absorb other lines on the lakes, consolidate terminals, and decrease competition (Hilton 2002:275).

In 1922 the Goodrich Transit Company purchased all of the property of the Chicago, Racine, and Milwaukee Steamship Company. The property included two propellers *Illinois* and *Pilgrim* (Elliott 1995:241). The *Pilgrim,* originally the Goodrich steamer *Wisconsin*, finally returned to its company of origin and original name. Thorp's first attempt at combining companies went well and the next two years remained profitable for the Goodrich line. In 1924 Goodrich Transit Company merged with the second largest transportation company on the lakes, Graham & Morton (Elliott 1995: 253). The vessels acquired by the merger included: *City of Benton Harbor, City of Grand Rapids, City of St. Joseph, City of Holland,* and *City of Saugatuck.* With the exception of one, all of these vessels were sidewheelers and quite old. It was said that the merger between the top two steamship companies, accelerated the death of the line. Goodrich owned a substantial amount of property, yet did not have the means for the management and maintenance of it. 1925 was the last profitable year in the company's history; afterwards it plunged deeper and deeper into debt.

By 1928 H.W. Thorp resigned from his post and Captain E. Taylor became the new president. Taylor began his leadership with the tug *Arctic* and steamers *Alabama, Carolina, Christopher Columbus, City of Benton Harbor, City of Grand Rapids, City of Holland, City of St. Joseph, City of Saugatuck, Illinois, Indiana, Theodore Roosevelt,* and *Wisconsin* on the company roles *(Elliott 1995: 271, 272).* Taylor continued to consolidate transportation companies and purchased the Benton Transportation Company in 1929 (Elliott 1955:274). There was a proposed merger in 1929 of the Goodrich line, Pere Marquette line, and the Wisconsin & Michigan Transportation Company, but this never occurred (Elliot 1995: 276). Goodrich merged with the West Ports Steamship Company in 1930 (Elliott 1995:277). By this time, the Great Depression was well underway. Coupled with the decrease in passenger transport in favor of rail, and Goodrich line's growing debt; this was the catalyst to the

Goodrich line's demise. By 1931 the steamers *Alabama, Columbus, Illinois, Carolina, and Arizona* were all out of service and in foreclosure. Freight docks at various ports began to close. On 20 December 1932 the Goodrich Transit Company filed for bankruptcy and all the companies' property were sold at public auction (Elliott 1995: 277-279). As the years passed, other steamship companies followed suit and met with the same fate as the Goodrich Transit Company.

The Goodrich line endured seventy-seven years, of which a Goodrich family member led the firm for sixty-five. From the beginning, A.E. Goodrich expressed his savvy business sense and ingenuity. Class and consistency was essential to the Goodrich line. People easily recognized the black and white hulls with red smokestacks, the company colors of Goodrich steamers. Even the whistles carried a distinct and clear tone bringing familiarity and dependability to ports around the lakes. The Goodrich line strived to find ways to improve the line to impress the customers, like building the luxurious floating palaces *Virginia* and *Alabama* or purchasing the popular whaleback steamer *Christopher Columbus*. There was always a desire to impress, but financial management was the true focus of the line. Goodrich was known for purchasing old vessels to reuse their machinery and sell the hulls as barges. The *Michigan* was purchased so its engine could go to the *Orion* and *Skylark's* Machinery went to the *Oconto (*Elliott 1995: 48, 69). The *Ogontz* and *Comet* were purchased to be dismantled, but were found worthy enough to be used for a couple of years, later they both were dismantled for their engines, boilers, and cabin fittings (Elliott 1995:26, 31, 37). Steamship machinery is very durable, especially in fresh water, and can last an extremely long time. Reuse of machinery was more cost effective then purchasing brand new for every newly built vessel. An example of great financial prowess was the sale of the three iron steamers, *City of Milwaukee, Michigan,* and *Wisconsin*. Goodrich spent a great amount of money to construct these vessels solely to support the business from railroad contracts. When these contracts were terminated, Goodrich knew they must be sold to pay off debt, even though they were the best in the line. When the LaFollette Seamen's Act restricted management, Goodrich responded by building the freighter *Nevada*. All of these careful economic decisions positioned Goodrich to become the longest running passenger/freight transportation company on the lakes.

Tug *Arctic* Operational History

The tug *Arctic*, official number 106040, was built at the Rand & Burger Shipyard in Manitowoc, Wisconsin. The Goodrich Transportation Company commissioned the ice-breaking tug *Arctic* to aid stranded and distressed vessels, and keep navigation channels open enabling cross-lake trade throughout the winter. Rand & Burger accomplished this request by building the tug with heavy frames set close together and sheathing the hull in iron from stem to stern. The *Arctic* also contained a high pressure, non-condensing engine with 225 horsepower and one steel boiler, 14 feet in length and 6 feet in diameter, from the A.C. Mason Company of Chicago. When launched, the *Arctic* was a sturdily built tug 65 feet in length, 18 feet in beam, 9 feet in draft, and 52 gross tons, costing Goodrich $17,000 (Bureau of Navigation 1881a, 1881b, 1882; *Door County Advocate* 1882a; Elliott 1995:81; *Manitowoc*

Pilot 1881, 1882a).

The first working season for the tug *Arctic* was 1882 under the command of Captain Perry H. Edwards (Bureau of Navigation 1882). During the summer months, the vessel was stationed as a harbor tug in Manitowoc. Here the tug had access to a top-of-the-line 12-inch steam pump and other necessary equipment to aid stranded and distressed vessels in the area (*Chicago Daily Tribune* 1882b, 1882c*; Detroit Free Press* 1882a, 1882b; Elliott 1995:82; *Manitowoc Pilot* 1882b, 1882c). During this season, *Arctic* assisted in the rescue of the Goodrich vessels *DePere* and *City of Milwaukee*, as well as the schooners, *Minnie Mueller, Mexico, Goodfellow, Barbarian, C.C. Barnes*, and the scows *Hercules* and *Contest* (*Chicago Daily Tribune* 1882a, 1882d, 1882e, 1882f; *Door County Advocate* 1882b; Elliott 1995: 75; *Manitowoc Pilot* 1882e, 1882g, 1882i). Although the tug's purpose was to aid vessels, some accidents did occur during its first season. The schooner *H.B. Burger* was damaged when it hit a bridge while *Arctic* provided a tow down river. Damage was estimated at $50, which included the loss of the vessel's jibboom (*Manitowoc Pilot* 1882d). Additionally, the scow *Maria* collided with a bridge abutment under *Arctic's* tow. Damage was sustained to the vessel's port side, headgear, and anchor (*Detroit Free Press* 1882c; *InterOcean* 1882). *Arctic* struck the schooner *A.M. Peterson*'s head rigging as the tug was placing the schooner along the Manitowoc wharf, which destroyed the tug's pilothouse (*Door County Advocate* 1882c; *Manitowoc Pilot* 1882f). In December 1882 Captain Edwards broke his hand at the wheel. While towing up the river in Manitowoc, a log broke the vessel's rudder causing the ships wheel to revolve rapidly and forcefully, catching the captain's hand in one of the spokes (*Door County Advocate* 1882d; *Manitowoc Pilot* 1882h).

By the end of December, *Arctic* transferred to Milwaukee to keep transportation channels open for Goodrich steamers during the winter months (*Door County Advocate* 1882e; Elliott 1995:82). In February 1883 ice collected on Lake Michigan and *Arctic* was busy clearing the ice from Milwaukee and Grand Haven harbors. For the next couple of months, the tug was busy monitoring and aiding the Goodrich steamers *Michigan* and *Wisconsin* during their cross-lake routes (*Chicago Daily Tribune* 1883a; *Door County Advocate* 1883a; *InterOcean* 1883a; *Manitowoc Pilot* 1883a). The heavy build of the *Arctic* proved its worth and allowed for success for the Goodrich line's winter season. Many publications commended the tug's, "valiant service in keeping the Grand Haven & Milwaukee route across Lake Michigan open this winter" (*Chicago Daily Tribune* 1883a; *Detroit Free Press* 1883a). In March 1883 *Arctic* participated in a major rescue of the Goodrich steamer *DePere* that went ashore near Two Rivers. The steamer ran aground in December and its removal was delayed by the weather. Within 24 hours the *Arctic* dredged a 14-foot-deep channel to *DePere* and pulled it to freedom with the assistance of the tug *Goldsmith* (*Door County Advocate* 1883b; *Detroit Free Press* 1883b; *InterOcean* 1883b; *Manitowoc Pilot* 1883b). News reports declared this to be, "One of the most speedy and successful jobs of the kind in marine annals" (*Manitowoc Pilot* 1883b). Throughout 1883 the *Arctic* came to the aid of the barge *Allen* and the schooners *Imperial* and *Norman* (*Chicago Daily Tribune*

1883b, 1883c, 1883d; *Detroit Free Press* 1883c, 1883d; *Manitowoc Pilot* 1883c).

As winter fell the tug was returned to clearing ice in Milwaukee and Grand Haven. March 1884 proved rough for the tug and other vessels as reports of ice as much as twenty-five feet thick extended across all of Lake Michigan and obstructed harbors. The propellers *Michigan* and *Wisconsin*, both serving the railroads, found themselves stranded in the ice. *Arctic* was tasked with breaking a channel across the lake and freeing the propellers. This was not an easy task for the tug, and no channel was completely open for fifteen days (*Chicago Daily Tribune* 1884a; *Detroit Free Press* 1884a, 1884b, 1884c, 184d). This was the first time in three years that the *Arctic* could not break through the ice.

On 9 April 1884 the *Arctic* came into Manitowoc for repairs to its engines. The tug had been inspected the month before and was cleared (*Detroit Free Press* 1884e; *InterOcean* 1884a). In July a major squall occurred on the lakes as the *Arctic* towed the iron laden barge *Transfer* and schooner *C.O.D.* to Escanaba. While off Muskegon, Michigan the tug broke its piston rod and the schooner lost its mast and rigging. Little of note occurred for the remainder of the 1884-season and *Arctic* was positioned to assist disabled and stranded vessels near Grand Haven, Michigan (*Chicago Daily Tribune* 1884c; 1884d; 1884e; *InterOcean* 1884b).

The 1885 winter proved harsh for the *Arctic.* Before the end of January, both the steamers *Oneida* and *Michigan* were stranded in large ice floes drifting in the lake. The *Arctic* made every attempt to break through the ice outside Grand Haven to aid the stranded vessels, but to no avail (*Detroit Free Press* 1885a; *InterOcean* 1885a). On 4 February the propeller *Wisconsin* also became stuck in the ice leaving three Goodrich vessels stranded on the lake (*Detroit Free Press* 1885b). Finally, by 10 February the steamers *Michigan* and *Wisconsin* freed themselves. Without hesitation, they began searching for the drifting *Oneida* without knowing that the *Arctic* had already found the stranded steamer and was towing it into port (*Detroit Free Press* 1885c). While looking for *Oneida* both the *Wisconsin* and *Michigan* once again found themselves caught in the ice fields (*Chicago Daily Tribune* 1885a; *Detroit Free Press* 1885d). For forty-two days from 9 February to 23 March, *Michigan was* stranded in ice near Grand Haven, Michigan. The *Arctic* managed to break ice to within six miles of the steamer before the tug also became stuck in the ice. Some provisions were unloaded and dragged over to the stranded *Michigan*. Days later, the ice punctured *Michigan's* hull. *Michigan's* crew made the dangerous trek over the ice and boarded the *Arctic* before the steamer was lost to the lake. After a brief rest, the crew of the *Michigan* walked fourteen miles to the safety of shore. The tug was still stranded near where *Michigan* went down and *Wisconsin* remained trapped in ice in an unknown location (*Chicago Daily Tribune* 1885b, 1885c; *Detroit Free Press* 1885e; Elliott 1995:97-98; *Freeport Journal-Standard* 1885). On 29 March, fifty-six days from the vessel's departure, *Wisconsin* was discovered fifteen miles from the Grand Haven harbor (*Chicago Daily Tribune* 1885d; *Detroit Free Press* 1885f). The tug and steamer eventually free themselves from the ice and made their way to

Grand Haven (*Weekly Expositor Independent* 1885). Shortly thereafter, the *Arctic* left Grand Haven for Manitowoc (*Chicago Daily Tribune* 1885e; *InterOcean* 1885b).

On 1 April 1886 the *Arctic* was placed in dry dock at Manitowoc for recalking (*Manitowoc Pilot* 1886a). The tug reportedly towed a dredge in June and July 1886, but no other details are known (*Manitowoc Pilot* 1886b; 1886c). No other reports of the vessel's actions were discovered for the 1886-season.

During the 1886-87 winter, the *Arctic* again was tasked with breaking ice across the lake and in harbors keeping navigation channels open (*Manitowoc Pilot* 1886d; 1887a). During the summer months of 1887 the tug was stationed at Manitowoc. There, the vessel towed the schooners *Nellie Redington, Paige, H.C. Richards, John Raber,* and the barge *D.P. Dobbin (Manitowoc Pilot* 1887b, 1887d; *InterOcean* 1887a, 1887b). In October, the *Arctic* came to the aid of the tug *Charley* after the vessel lost its wheel while towing a stone laden scow (*Door County Advocate* 1887a). The same month, the *Arctic* towed a dredge owned by O.B. Green to Marinette, Michigan for a large project by Robert Merryman (*Door County Advocate* 1887b; *InterOcean* 1887c; *Manitowoc Pilot* 1887c). The tug was so often seen in the harbor that the *Manitowoc Pilot* (1888a) commented,

> "The tug *Arctic,* which belongs to the [Goodrich] company gets all its business at this point and the bridges have been swung for it a greater number of times than for all other craft combined."

As late as April 1888 *Arctic* was breaking ice on the lake and in ports. An ice damn formed on the river in Manitowoc that was broken up by the tug (*Manitowoc Pilot* 1888b). On 27 September, the tug towed Kewaunee's *Dredge No. 1* to Ahnapee for harbor work and returned the dredge to Kewaunee in December for a rebuild (*Ahnapee Record* 1888; *Door County Advocate*1888b). On 19 October the Goodrich steamer *Corona* was disabled off Cedar River, Michigan. One of the pins connecting the walking beam to the engine broke leaving the steamer adrift. The tug *Pilot* towed the steamer into Cedar River then telegrammed Manitowoc for the *Arctic.* The *Arctic* towed the *Corona* back to Manitowoc for repairs (*Door County Advocate* 1888a; *Independent* 1888; *Manitowoc Pilot* 1889a). In early June 1889 the propeller *DePere* broke its wheel while entering Green Bay's harbor. The vessel's rudder struck a log, which disabled its wheel and jarred a hole in its hull. Passengers were transferred to the propeller *Moore* and the *Arctic* towed the steamer to Manitowoc for repairs (*Door County Advocate* 1889; *Independent* 1889). Kewaunee's *Dredge No. 1* was towed in June by the *Arctic,* back to Ahnapee for continuation of harbor work. The dredge deepened the channels between piers and dredged stone from the river to sink cribs (*Ahnapee Record* 1889). On 7 November, the schooner *Golden Fleece* split its sail and jib and was towed into port by the *Arctic (Manitowoc Pilot* 1889b).

Very little is written about events involving the *Arctic* during the year of 1890. The tug assisted in

towing the disabled Goodrich steamer *Ludington* into port. In November 1889 the steamer became stranded near Eagle Bluff, Door County in bad weather and it remained grounded until May 1890. The wrecking tug *Monarch* lifted the vessel with hydraulic jacks to plug holes in the hull and refloat the vessel. After the *Ludington* was freed from the rocks *Arctic* and *Monarch* towed it into Manitowoc for repairs (*Door County Advocate* 1890; Elliott 1995:86; *Independent* 1890).

Little was reported about the *Arctic*'s service in 1891, but the *Door County Advocate* (1891b) mentioned that "shipping is terrible dull this season, arrivals, except coastwise, being few and far between." The tug *Temple Emory* was the only reported vessel that was aided by the *Arctic* during that year (*Door County Advocate* 1891a). The spring of 1891 brought repairs and modifications to the ice-breaking tug. In January, the *Arctic's* deck was raised and in May some machinery was repaired (*Manitowoc Pilot* 1891a; 1891b). By December the *Arctic* began to break ice to clear navigation channels in Manitowoc (*Manitowoc Pilot* 1891c.

During the early months of 1892 the *Arctic* continued to break lake ice. Cross-lake winds packed ice onto the western shore. The steamer *Osceola* required the assistance of the tug (*Door County Advocate* 1892a). In June and July *Arctic* assisted with the bridge work in the Manitowoc River as well as with vessels in the harbor (*Door County Advocate* 1892b; *Manitowoc Pilot* 1892a). While in Manitowoc, the tug received repairs to its boiler (*Manitowoc Pilot* 1892b).

News reports indicated that the *Arctic's* 1893-season began under new command. In April, Captain John Gilbraith replaced Captain Edwards as Master of the tug (*Manitowoc Pilot* 1893a, 1893b). Unfortunately, no enrollment documents for this year are available to support this claim. *Arctic*'s first task for the year was the removal of an ice dam under the Main Street Bridge in the Manitowoc River (*Manitowoc Pilot* 1893a). In both June and July the *Arctic* assisted the tug *Temple Emory. Temple Emory* first broke its engine while towing a log raft off of Two Rivers, then broke it again a month later in between the Sturgeon Bay Canal and Two Rivers (*Door County Advocate* 1893a, 1893b). In September, the *Arctic* removed the steamer *W.H. Barnum* from the beach after it came ashore south of Manitowoc (*Chicago Daily Tribune* 1893; *Detroit Free Press* 1893).

In April of 1894 the tug ran into a bridge on the Manitowoc River losing its pilothouse and smokestack. No one was injured, but the vessel was once again laid up for repairs (*Manitowoc Pilot* 1894a). A large squall during the second week of November 1894 stranded many vessels. The steamer *W.L. Wetmore* went ashore with its consort, the schooner *Brunette*. The Sheboygan Lifesaving Service managed to rescue the crew of the *W.L. Wetmore* while *Arctic* located and towed the *Brunette* into Manitowoc. During this storm the tug also located and rescued the barge *Manitowoc* and schooner *Charles Wall* (*Door County Advocate* 1894; *InterOcean* 1894; *Manitowoc Pilot* 1894b).

In July of 1895 Captain Munger became Master of *Arctic*; in November Captain Louis Sinclair succeeded him (*Door County Advocate* 1895a, 1895b; *Manitowoc Pilot* 1895b). In 1896 Captain Chauncey R. Thayer took command of the tug and remained at the helm until the early 1900s (*Advocate* 1898a; Bureau of Navigation 1896; 1898; *InterOcean* 1899b; *Manitowoc Pilot* 1898a 1899c).

The *Manitowoc Pilot* reported that the tug *Arctic* "is kept quite busy these times" for the 1895-1897 seasons (*Manitowoc Pilot* 1895a, 1896, 1897a). Within these two years the *Arctic* assisted five schooners, five steamers, and a dredge (*Advocate* 1897a, 1897b; Anhapee Pilot 1895; *Door County Advocate* 1896a; 1896b; *Detroit Free Press* 1896; *InterOcean* 1896; *Manitowoc Pilot* 1895c; 1895d; 1895e). In December of 1897 the *Manitowoc Pilot* (1897b) mentioned that the Goodrich Transportation Company intended to build a new tug. This proposed tug was to be larger than the *Arctic* and would be ready by next season. No other evidence of a second tug or even its proposal could be found in the research.

Late in the summer of 1898 *Arctic* was taken to the Burger & Burger shipyard for a hull extension and complete overhaul. The hull was extended twelve feet increasing its overall length to 76.5 feet with the gross tonnage increasing from 52 tons to 71 tons (*Advocate* 1898b, 1898c; Bureau of Navigation 1898; *Detroit Free Press* 1898; Elliott 1995:83). After the hull extension, the *Manitowoc Pilot* (1899a) described the tug as having "a roll like the hip and shoulder movement of a thumper when he is about to wade into an opponent. It is communicated by means of the helm and greatly aid in ice crushing". This "roll" was thought to be more helpful in ice breaking, and it was proven during the extreme weather the following winter. The *Arctic's* new hull was put to use in December 1899. The steamer *Rand* went ashore on the reefs at Jacksonport. The crew tried to float and kedge the vessel off, without success. Other tugs attempted to aid the steamer but they could not free it from the ice. *Arctic* managed to release the *Rand* within ten minutes with no damage (*Advocate* 1898d, 1898e; *Manitowoc Pilot* 1898b).

In February 1899, two weeks of winter storms caused serious ice buildup on the lake. *Arctic* had the chore of opening channels for the Goodrich steamers *Iowa, Atlanta,* and *Georgia* (*Advocate* 1899a, 1899b). The Goodrich steamer *Iowa* became trapped in an ice floe, but *Arctic,* along with the steamer *Georgia,* freed the *Iowa* from the ice within seventy-two hours (*Chicago Daily Tribune* 1899; *InterOcean* 1899a). In March the steamer *Atlanta* went ashore near Racine while en route from Chicago to Manitowoc. The captain attempted to navigate around an ice floe and ended up in shallow water. The *Arctic* released the vessel after experiencing difficulty in ice itself near Sheboygan (*Manitowoc Pilot* 1899b).

The *Ann Arbor Ferry No. 1* became stuck in ice in Green Bay in February 1900. The tugs *Arctic* and

Algomah attempted to release the ferry, but failed when *Algomah* was disabled during the effort. Although *Arctic* held its own, representatives of the Goodrich Company pulled the tug from the rescue and moved it to Manitowoc to maintain open navigation channels (*Algoma Record* 1900; *Manitowoc Pilot* 1900). In the following months *Arctic* continued to break ice, tow vessels, and come to the aid of those in distress (*Advocate* 1900a; *Detroit Free Press* 1900; *InterOcean* 1900). Few reports discuss *Arctic's* ice breaking for the following years. It is known that the tug wintered in the Grand Haven and Muskegon areas and opened cross-lake channels to ports along the western shore (*Detroit Free Press* 1907; *Manitowoc Herald-Times* 1929a; 1932).

In September 1900 the *Arctic*'s Captain Thayer resigned command and was succeeded by Captain Thomas McGinn. Captain Berlin Sniffin took command a few months later (*Advocate* 1900b, 1900c, 1900d; Bureau of Navigation 1898). Captain Sniffin remained Master of the tug until he was afflicted by a stroke in 1914 (*Advocate* 1903, 1905, 1907a, 1908a, 1909b, 1910; Bureau of Navigation 1903, 1913; *Door County News* 1916a).

The early 1900s were challenging for Goodrich Transportation Company steamers. In September 1901 the Goodrich steamer *Atlanta* ran ashore outside of Sturgeon Bay. The *Arctic,* along with tugs *Albert J. Wright, Geo. Nelson, O.M. Field,* and *Leathem*, spent four days attempting to pull the vessel from the sand. After unsuccessful attempts, *Arctic* instead used its propeller wash to dredge under the steamer. Finally, with *Arctic's* dredging and the strength of wrecking tug *Monarch*, *Atlanta* was freed (*Advocate* 1901a, 1901b; *Door County Democrat* 1901). *Arctic* came to the steamer's rescue again four months later when *Atlanta* went ashore again while maneuvering out from the Sturgeon Bay Canal in January 1902. The tug released *Atlanta* easily with some dredging and pulling (*Advocate* 1902a; *Door County Democrat* 1902). In September 1902 *Arctic* came to the rescue of the Goodrich steamer *Sheboygan*. The steamer went ashore in a heavy fog just north of Algoma. *Arctic* and the wrecking tug *Favorite*, both dispatched from Chicago, assisted in its removal. *Arctic* towed a schooner to the stranded vessel to transfer all of the cargo. Once lightered, the tugs pulled the steamer into deeper water (*Advocate* 1902b; *Algoma Record* 1902; *InterOcean* 1902b). Historic research shows that the *Arctic* was moved to Chicago harbor sometime after 1900, so the tug could accompany the popular Goodrich steamers *Christopher Columbus* and *Virginia* for towing in the Chicago River (*Detroit Free Press* 1902; *InterOcean* 1902a).

The *Arctic* saved the yacht *Toxeth* in the summer of 1903 after the vessel ran into a pier in the Manitowoc harbor. The yacht veered into the pier to escape a collision with the steamer *Chicago*. The tug also came to the aid of the *Temple Emery* with its consort of scows and the schooner *Glen Cuyler* (*Detroit Free Press* 19030a, 1903b; *InterOcean* 1903a; *Manitowoc Pilot* 1903). In 1903 while docked in the Manitowoc harbor, a fire began on the steamer *Pewaukee* when a lantern exploded in the aft cabin. During this time a northeast gale was blowing pushing the flames toward the warehouse of the

Chicago & Northwestern Railway. The *Arctic* used its pumps to douse the flames with water saving the warehouse and vessel (*Door County Democrat* 1903; *InterOcean* 1903b).

In 1904 the *Arctic* maintain station in and around the Manitowoc harbor. In January, the tug towed the steamer *Atlanta* to the shipyard for a general overhaul (*Manitowoc Pilot* 1904a). In July, the *Arctic* towed the barge *Warmington* to Two Rivers (*Manitowoc Pilot* 1904b). In October 1904 the steamer *Phoenix* became disabled on the lake and was towed back to port by the tug (*Manitowoc Pilot* 1904c). A month later the steamer *City of Racine* struck a pile at the Sheboygan pier and broke three blades from its propeller. The disabled steamer offloaded all of its cargo at that port and *Arctic* towed it to Manitowoc for repair (*Advocate* 1904; *Door County Democrat* 1904).

In November of 1906 *Arctic* came to the aid of the Goodrich steamer *Iowa.* On the way to Escanaba the steamer ran aground in a fog at Hill's Point near Sturgeon Bay. The *Eugene Hart* and steamer *Saugatuck* took turns trying to free the *Iowa*, without success. The tug *Thos. Thompson* brought a lightering scow to the vessel, so the *Arctic* could pull the steamer free. No damage was reported to the *Iowa* and it continued on its route to Escanaba (*Advocate* 1906; *Detroit Free Press* 1906; *Door County Democrat* 1906).

In March 1907 the *Arctic* was in Grand Haven and Muskegon, Michigan breaking ice and keeping navigation channels open (*Detroit Free Press* 1907a). A month later the tug was in Manitowoc where it came to the aid of the disabled steamer *R.J. Gordon.* Outside of Manitowoc the steamer's piston rod broke disabling the vessel. The second engineer shut off the vessels steam to prevent any further damage, and suffered serious burns in the process. The *Arctic* towed the steamer into harbor quickly so the engineer could be hospitalized (*Advocate* 1907b; *Detroit Free Press* 1907b). In July, the steamer *James P. Walsh* went ashore carrying 9,000 tons of coal. The *Arctic* brought a lighter and transferred some of the cargo. The tug returned and successfully pulled the *James P. Walsh* off the shoal (*Advocate* 1907c; *Detroit Free Press* 1907c; *InterOcean* 1907).

In January 1908 the *Arctic* came to the rescue of the Manitowoc Assistant Lightkeeper Edward Warren. Warren was on duty at the fog station on the breakwater during one of the worst storms of the year. The large seas washed Warren's boat away, broke up the station steps, and beat in the walls of the station, threatening the structure itself. Captains of the car ferries *Ann Arbor* and *Pere Marquette* could not position their ships close enough to rescue the man. After a day and a half, the *Arctic* rescued Warren (*Edwardsville Intelligencer* 1908). During the summer months of 1908 the *Arctic* was used to improve Algoma's harbor. The tug towed stone from the Green Stone Company and Termansen & Jenson's quarry of Sturgeon Bay loaded on the Great Lakes Company's *Scow 37* to Algoma. The construction equipment towed included pile drivers, derricks, and cement caissons, all from Kewaunee (*Advocate* 1908b, 1908c; *Door County Democrat* 1907, 1908a, 1908b, 1908c, 1908d). In August, the

schooner *Cora White* lost its foremast, main topmast, and jibboom in a squall twelve miles south of Manitowoc. The *Arctic* towed the schooner into the harbor for repairs (*Eau Claire Leader* 1908).

In January 1909 *Arctic* was placed in dry dock at Manitowoc to receive new frames and ceiling planking around its boiler and the boiler itself was overhauled (*Advocate* 1909a). Around this time rumors were spread that the Manitowoc City Council was going to install pumps on the *Arctic* to make the vessel into a fire tug (*Door County Democrat* 1909). There was no evidence to support this claim found in the historical research. In October the steamer *Wyoming* became stranded on South Point Reef, three miles south of Manitowoc while en route from Buffalo, New York to Chicago with a load of steel. The *Arctic* and the Two Rivers Lifesaving crew went to the aid of the badly leaking steamer. A lighter was brought in and its cargo transferred. The *Pere Marquette* and tug *Ottawa* both attempted to pull the vessel off the reef to no avail. The duel effort of *Ottawa* and *Arctic* released the steamer and the tugs towed *Wyoming* to Manitowoc where it was put in dry dock for repairs (*Advocate* 1909c; *Algoma Record* 1909).

Little is known of the *Arctic*'s 1910-season. The tug came to the aid of the schooner *Oscar Newhouse*. The schooner was overloaded with wood and became waterlogged. The vessel was equipped with a gas engine, but ran out of fuel and was unable to make port without assistance (*Algoma Record* 1910; *Door County Democrat* 1910).

In June 1911 the car ferry *Ann Arbor No. 5* went ashore north of Manitowoc harbor. *Arctic* rapidly came to its assistance, and was able to release the car ferry after two hours of work with little damage (*Algoma Record* 1911). In October the tug *Lorens*, hauling dump scows, was disabled outside of Manitowoc. The *Arctic* towed the vessel into port for repairs (*Advocate* 1911).

From January to March 1914 the tug went into dry dock for a general overhaul and rebuild (*Sturgeon Bay Advocate* 1914a, 1914b; *Manitowoc Herald-Times* 1929b). After *Arctic* received repairs, it also received a new captain. Captain Sniffin's stroke paralyzed his arm and ultimately resulted in his death. Captain Edward Stoke took command of the *Arctic* (Bureau of Navigation 1913; *Door County News* 1916a). In September 1914 the *Arctic* towed the Goodrich steamer *Sheboygan* out of the Manitowoc harbor for the last time. *Sheboygan*, now forty-five years old, was retired from service. The sidewheel steamer was gutted, beached, and set on fire one mile north of the Manitowoc harbor pier (*Detroit Free Press* 1914; *Escanaba Morning Press* 1914).

Little is known about the tug's movements in 1915. In July, the steamer *Arizona* went ashore near Little Traverse Bay, Michigan in a dense fog. The *Arctic* had little trouble releasing the vessel and towed *Arizona* back to Manitowoc for a thorough inspection (*Door County Democrat* 1915; *Sturgeon Bay Advocate* 1915a). On 14 October 1915 the steamer *Tempest* lost its consort, the barge *Filer*, in a

storm. The steamer could not reconnect with the barge so it came into Manitowoc and sent the *Arctic* out to recover the drifting barge (*Sturgeon Bay Advocate* 1915b).

On 3 December 1916 the Goodrich steamer *Carolina* ran aground on the rocky shore near Stoney Creek in Door County. It took a team of vessels eighteen days to free the steamer. The tug *Arctic* used its pumps to empty the hull of water while the crew of the *Advance* spent most of the days repairing damage to the bottom of its hull. On 21 December, the wrecking tug *Favorite* arrived and successfully pulled the steamer off the rocks. The steambarge *J.S. Crouse* and tug *Arctic* furnished steam to *Carolina's* machinery, while the *Favorite* towed it to Manitowoc for repairs (*Door County Democrat* 1916; *Door County News* 1916b; *Sturgeon Bay Advocate* 1916a, 1916b, 1916c).

In June 1917 the schooner *J.V. Taylor* was rescued in a heavy gale. The schooner was bound for Chicago with a load of wood when it was caught in the storm. The vessel was taking on water in immense waves when the *Arctic* and the Two Rivers Lifesaving crew came to its rescue. The tug towed the schooner safely into port (*Algoma Record* 1917; *Sturgeon Bay Advocate* 1917a).

Three years after Stokes took command of the vessel in June 1917, he passed away. His leg had been injured and reinjured while working on the *Arctic* and a month prior to his death the captain underwent an operation to amputate the leg. Complications arose after the amputation resulting in his death (*Door County Democrat* 1917; *Grand Rapids Tribune* 1917; *Sturgeon Bay Advocate* 1917a). Captain William Vaughn took command (*Sturgeon Bay Advocate* 1918). A few months later engineer Otto Sperlich resigned his post on the tug to take up farming and Jack Myers, former engineer of the tug *Industry*, took his place (*Door County News* 1917; *Sturgeon Bay Advocate* 1917b, 1918). Captain Vaughn was Master only three years and succeeded by Captain William Clark (Bureau of Navigation 1913; *Escanaba Daily Press* 1928; *Manitowoc Herald-Times* 1927b). Clark remained captain of the *Arctic* until its abandonment (*Manitowoc Herald Times* 1930a).

On 14 November 1919 the car ferry *Pere Marquette No. 18* ran ashore near Manitowoc in heavy seas. The *Arctic* along with the tug *Smith* pulled the car ferry from the beach (*Door County Advocate* 1919). On 18 November the *Arctic* towed the McMullen & Pitz dredge *Algoma* and two dump scows to Sheboygan when a heavy sea washed over the dredge and capsized it. The five men aboard the *Algoma* were all able to board the tug safely before the dredge sank beneath the waves. The *Algoma* was declared a total loss with an estimated value of $40,000 (*Door County News* 1919).

In November of 1920 a massive lake-wide volunteer search was conducted for a missing Great Lakes Naval Station seaplane. The search party included the tugs *Arctic* and *Reiss*, the Two Rivers Coast Guard crew, airplanes from the Great Lakes Naval Station, and the head of aviation from Culver Military Academy. The search covered the entirety of central Lake Michigan from coast to coast.

Some debris thought to be part of the plane was located, but the hull and passengers where never recovered (*Eau Claire Leader* 1920; *Manitowoc Herald-Times* 1920a; 1920b).

From 1923-1926 newspaper entries portray *Arctic*'s service as a railroad car ferry keeper. In April 1923 *Arctic* came to the aid of the *Ann Arbor Ferry No. 3* when it became disabled outside of Manitowoc (*Door County News* 1923; *Manitowoc Herald Times* 1923a). In May 1923 *Arctic* towed the car ferry *Ann Arbor No. 4* across the lake from Frankfort, Michigan to Manitowoc for repair after the vessel was disabled in a storm (*Manitowoc Herald-Times* 1923b). In March 1924 *Arctic* was the first to tow the *Pere Marquette No. 21*, the first of the two new steel-hulled railroad car ferries constructed in Manitowoc (*Manitowoc Herald-Times* 1924a). In January 1926 during a heavy snowstorm the car ferry *Pere Marquette No. 18* ran aground south of Manitowoc. The car ferry *Pere Marquette No. 17* and tug *Arctic* were charged with releasing the vessel. Their efforts seemed to have little effect and it was thought that the twenty-six railroad cars aboard the ferry would need to be removed. The *No. 22* of the Marquette Line and the wrecking tug *Favorite* came to assist the *Arctic* and *Pere Marquette No. 17.* The *Pere Marquette No. 18* was released within a few days of incident (*Ironwood Daily Globe* 1926; *Manitowoc Herald-Times* 1926a, 1926b).

In March 1924 the Goodrich Transportation Company was charged for negligence by McMullen & Pitz Company, for the actions of the *Arctic* and its crew in the loss of the dredge *Algoma*. McMullen & Pitz claimed $20,000 in damages. The federal court decided in favor of the tug *Arctic* and the Goodrich Company determining that stormy weather and sea conditions were to blame (*Door County Advocate* 1924; *Manitowoc Herald-Times* 1924b).

During the summer months in this period *Arctic* frequented the port of Chicago, but could mostly be found in Manitowoc aiding distressed vessels (*Door County Advocate* 1928; Elliott 1995:83; *Manitowoc Herald-Times* 1924c; 1924d; 1925; 1928). During the months of February and March 1927 the bridge in Manitowoc was lifted sixty-nine times for the tug *(Manitowoc Herald-Times* 1927a, 1927c).

As the *Arctic* aged, it required repair and overhaul more frequently. The Goodrich Transportation Company ultimately determined that it had reached a threshold where it would cost more to rebuild the tug than to acquire a new vessel. The *Arctic* was dismantled and beached north of Manitowoc harbor. On 17 January 1930 the tug's enrollment documents were surrendered declaring *Arctic* beached and abandoned (Bureau of Navigation 1930).

Arctic, built in 1881, spent forty-nine years servicing vessels in Manitowoc, Chicago, and Muskegon (*Door County Advocate* 1903; Elliott 1995:83; *Manitowoc Herald-Times* 1930a). *Manitowoc Herald-Times* (1930b) paid homage to the tug in an article saying, "to recount the items of service this craft

has rendered throughout its life, would fill volumes-- its responses to the four blasts of vessels on the lake in need of help; its assistance to grounded boats; its welcome stream of water on dock property being destroyed by flames; its charges into ice jams that threatened destruction of boats and bridges; and breaking of ice that enabled navigation to continue—all are legion in number, and no man can recount them all.

Archaeological Significance

The Multiple Property Documentation *Great Lakes Shipwrecks of Wisconsin* (Cooper and Kriesa 1992) places tugs into the categories harbor tug and lake tug. Harbor tugs were generally 40 to 70 feet long steam propellers with pilothouse and galley forward and an open deck aft. These vessels were generally used to maneuver large vessels in, around, and out of harbors as well as breaking ice collecting in said harbors and rivers to keep lake navigation open. Lake tugs looked very similar to harbor tugs but ranged from 90 to 150 feet in length. These vessels were used for towing lumber rafts, scows, and barges across the lake, while also being used for the aiding and salvage of disabled vessels. At 65 feet in length, later extended to 76 feet, the *Arctic* was a representative of the subclass of harbor tug. Unique to *Arctic*, is that though it was built for this subclass, historic documentation indicates that the strong hull construction of the *Arctic* allowed for participation in tasks set for wrecking tugs. Historic documents indicate that the *Arctic* participated in tasked designated for both harbor and lake tugs. Not only could the *Arctic* hold her own alongside the large wrecking tugs, the vessel also continued this hard labor as the longest running vessel in Goodrich line history.

Arctic meets the registration requirements for Criterion D at the state level as a good example of a tug vessel type as described in the Multiple Property Documentation *Great Lakes Shipwrecks of Wisconsin* (Cooper and Kriesa 1992) and in the area of service for its 49 year role in towing, wrecking, and ice breaking throughout the Great Lakes. The *Arctic* is an example of a vessel type that was vital (and remains essential) to maritime transportation in the Great Lakes. Many opportunities remain for future archaeological research on *Arctic* as sands shift, and the site becomes more exposed with changing lake levels; additional information from the site may significantly add to our understanding of Great Lakes towing vessels.

Historical research also indicates that Goodrich abandoned two other vessels in the same location as the *Arctic*. These vessels where sidewheel steamers that wore out their usefulness, were towed into the area north of Manitowoc harbor (by the *Arctic*), beached, then burned to the waterline. Future survey of this area may lead to the location of these vessels. Once found and documented these vessels, along with the tug *Arctic* make up a maritime landscape that could provide knowledge of abandonment behavior of the Goodrich Transit Company.

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1926a *Manitowoc Herald-Times.* 13 January.
1926b *Manitowoc Herald-Times.* 14 January.
1927a *Manitowoc Herald-Times.* 3 March.
1927b *Manitowoc Herald-Times.* 11 March.
1927c *Manitowoc Herald-Times.* 3 June.
1928 *Manitowoc Herald-Times*. 9 October.
1929a *Manitowoc Herald-Times.* 9 March.
1929b *Manitowoc Herald-Times.* 20 March.

1930a *Manitowoc Herald-Times.* 3 January.
1930b *Manitowoc Herald-Times.* 6 January.
1932 *Manitowoc Herald-Times.* 15 March.

Manitowoc Pilot (Manitowoc, Wis.)
1881 *Manitowoc Pilot*. 1 December.
1882a *Manitowoc Pilot.* 26 January.
1882b *Manitowoc Pilot.* 30 March.
1882c *Manitowoc Pilot.* 6 April.
1882d *Manitowoc Pilot.* 13 April.
1882e *Manitowoc Pilot.* 13 July.
1882f *Manitowoc Pilot.* 5 October.
1882g *Manitowoc Pilot.* 19 October.
1882h *Manitowoc Pilot.* 9 November.
1882i *Manitowoc Pilot*. 7 December.
1883a *Manitowoc Pilot.* 15 February.
1883b *Manitowoc Pilot.* 26 April.
1883c *Manitowoc Pilot.* 21 June.
1886a *Manitowoc Pilot.* 1 April.
1886b *Manitowoc Pilot.* 24 June.
1886c *Manitowoc Pilot.* 1 July.
1886d *Manitowoc Pilot*. 2 December.
1887a *Manitowoc Pilot.* 31 March.
1887b *Manitowoc Pilot.* 28 April.
1887c *Manitowoc Pilot.* 21 July.
1887d *Manitowoc Pilot.* 4 August.
1887e *Manitowoc Pilot*. 17 November.
1888a *Manitowoc Pilot.* 5 January.
1888b *Manitowoc Pilot.* 12 April.
1889a *Manitowoc Pilot.* 18 July.
1889b *Manitowoc Pilot.* 7 November.
1891a *Manitowoc Pilot.* 29 January.
1891b *Manitowoc Pilot*. 28 May.
1891c *Manitowoc Pilot.* 3 December.
1892a *Manitowoc Pilot.* 9 June.
1892b *Manitowoc Pilot.* 14 July.
1893a *Manitowoc Pilot.* 6 April.
1893b *Manitowoc Pilot* 13 April.

1894a *Manitowoc Pilot.* 5 April.
1894b *Manitowoc Pilot.* 15 November.
1895a *Manitowoc Pilot.* 13 June.
1895b *Manitowoc Pilot.* 11 July.
1895c *Manitowoc Pilot.* 5 September.
1895d *Manitowoc Pilot.* 3 October.
1895e *Manitowoc Pilot.* 31 October.
1896 *Manitowoc Pilot.* 23 April.
1897a *Manitowoc Pilot*. 30 September.
1897b *Manitowoc Pilot.* 23 December.
1898a *Manitowoc Pilot.* 17 March.
1898b *Manitowoc Pilot*. 22 December.
1899a *Manitowoc Pilot.* 9 February.
1899b *Manitowoc Pilot.* 23 March.
1899c *Manitowoc Pilot.* 30 March.
1900 *Manitowoc Pilot.* 22 February.
1903 *Manitowoc Pilot.* 6 August.
1904a *Manitowoc Pilot*. 28 January.
1904b *Manitowoc Pilot*. 7 July.
1904c *Manitowoc Pilot*. 13 October.

Sturgeon Bay Advocate, The (Sturgeon Bay, Wis.)
1914a *Sturgeon Bay Advocate.* 8 January.
1914b *Sturgeon Bay Advocate.* 26 March.
1915a *Sturgeon Bay Advocate.* 22 July.
1915b *Sturgeon Bay Advocate.* 14 October.
1916a *Sturgeon Bay Advocate.* 14 December.
1916b *Sturgeon Bay Advocate.* 21 December.
1916c *Sturgeon Bay Advocate.* 28 December.
1917a *Sturgeon Bay Advocate*. 14 June.
1917b *Sturgeon Bay Advocate.* 6 September.
1918 *Sturgeon Bay Advocate.* 27 June.

Weekly Expositor Independent (Sturgeon Bay, Wis.)
1885 *Weekly Expositor Independent.* 17 April.

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Verbal Boundary description:

The *Arctic* shipwreck site is bounded by a four-sided polygon drawn to encompass the extent of the wreck site, associated artifacts and potentially undiscovered shipwreck material associated with the vessel. The first side of the polygon extends from Point 1 at Zone 16 0449637 Easting 4884753 Northing and extends 330 feet on a bearing of 128 degrees to Point 2 at Zone 16 0449717 Easting 4884692 Northing. From Point 2, the boundary extends 1,138 feet on a bearing of 230 degrees to Point 3 located at Zone 16 0449448 Easting 4884472 Northing. The third side extends from this point 316 feet on a bearing of 317 degrees to Point 4, located at Zone 16 0449384 Easting 4884542 Northing. The final side extends 1,078 feet on a bearing of 50 degrees to close the polygon.

Boundary justification:

This boundary expansion encompasses the *Arctic*'s bow section, bilge section, and areas of possible artifact deposition. This additional area is important as associated artifacts in the vicinity of the wreck may be uncovered as sand shifts in the area, making the expansion of the boundary pertinent in the protection of the integrity of the site and encompassing the known artifact field.

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tug

Photo #1 of 4
Arctic Shipwreck (Tug)
Manitowoc County, Wisconsin
Photographer Tamara Thomsen
June 2017
Wooden hogging trusses, bow section on port side looking aft.

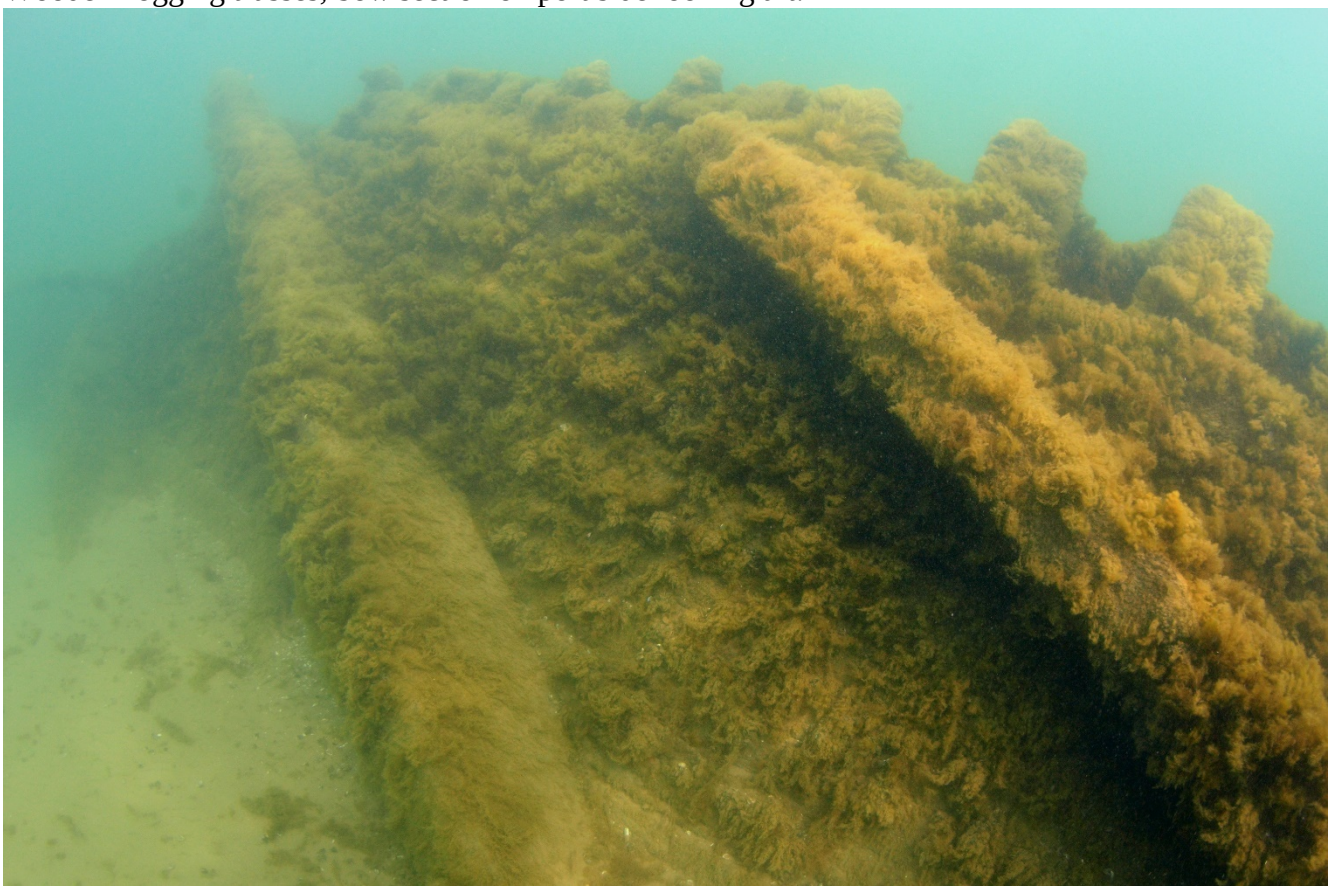

Photo #2 of 4
Arctic Shipwreck (Tug)
Manitowoc County, Wisconsin
Photographer Tamara Thomsen
June 2017

Starboard hull of bow section looking forward.

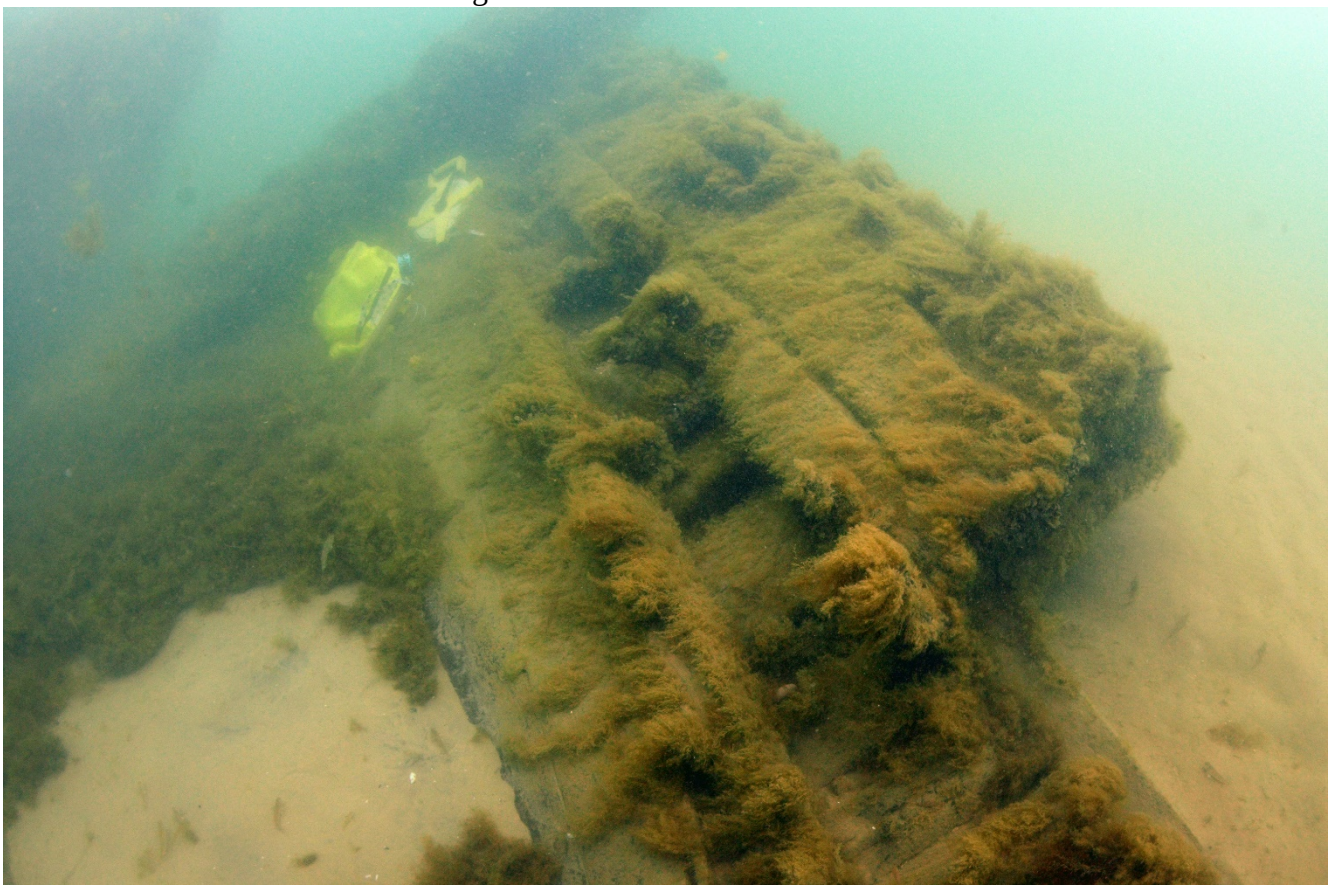

Photo #3 of 4
Arctic Shipwreck (Tug)
Manitowoc County, Wisconsin
Photographer Tamara Thomsen
June 2017
Rudder in bilge section looking forward.

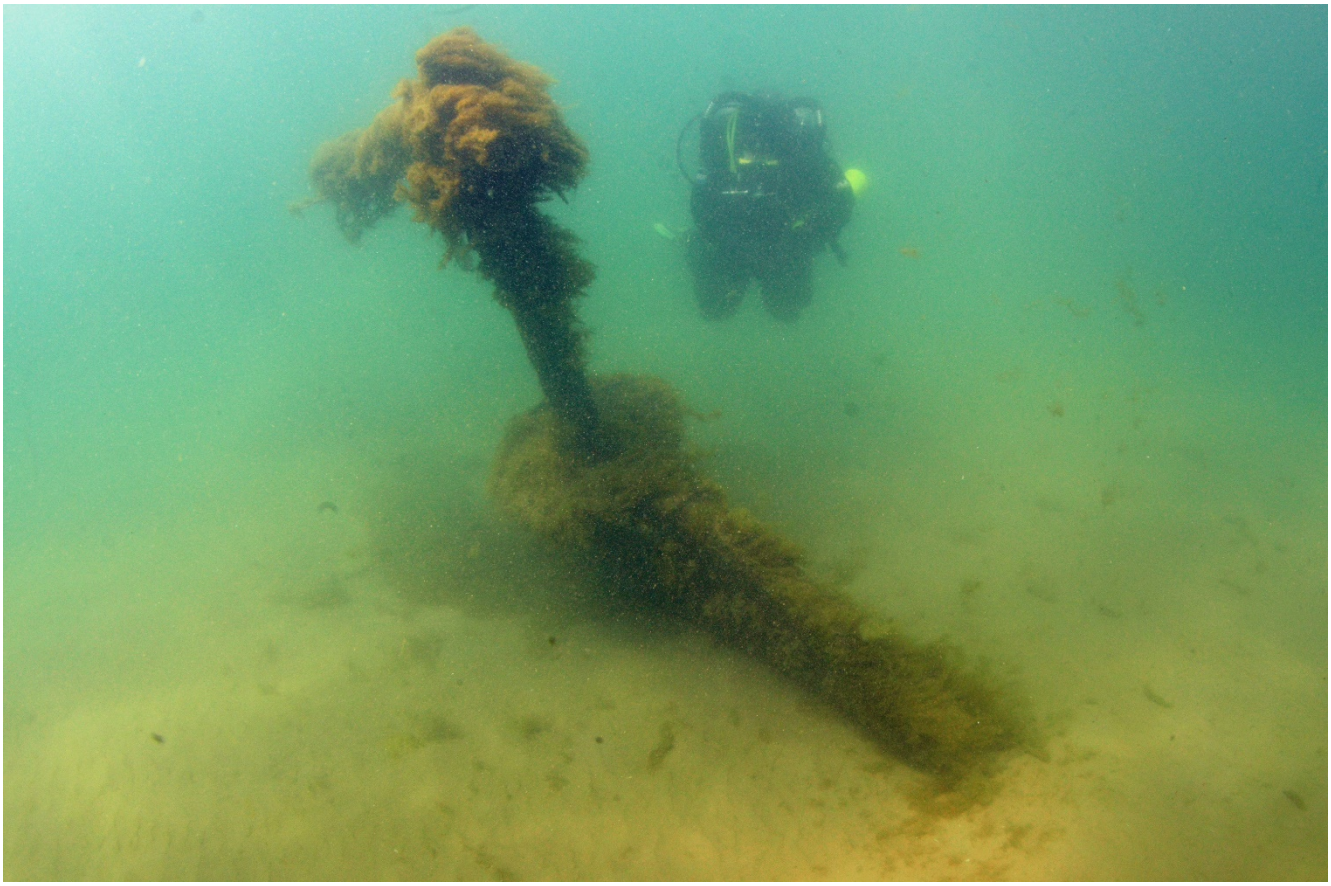

Photo #4 of 4
Arctic Shipwreck (Tug)
Manitowoc County, Wisconsin
Photographer Tamara Thomsen
June 2017
Firebox boiler with steam drum and debris. Bilge section looking to starboard.

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Figure #1 of 5
Arctic Shipwreck (Tug)
Site plan of the *Arctic* bow
September 2017

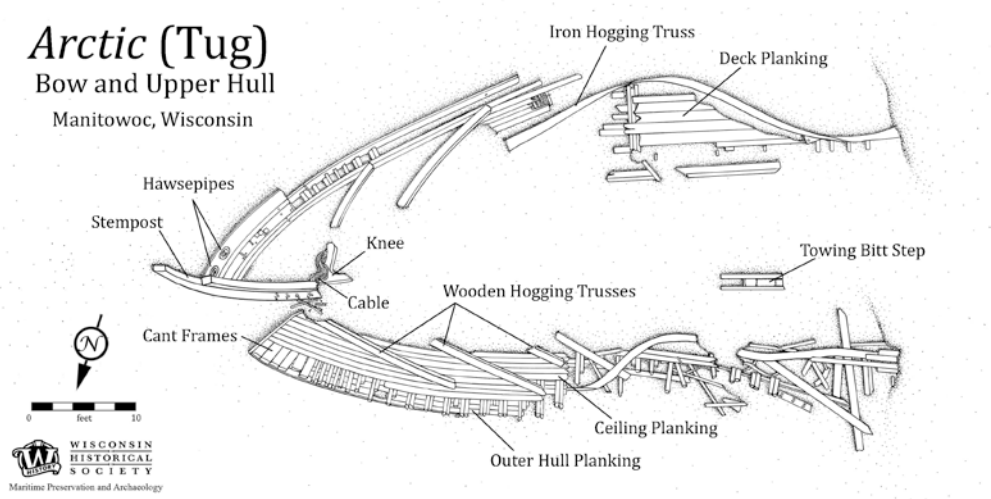

Figure #2 of 5
Arctic Shipwreck (Tug)
Site plan of the *Arctic* bilge
September 2017

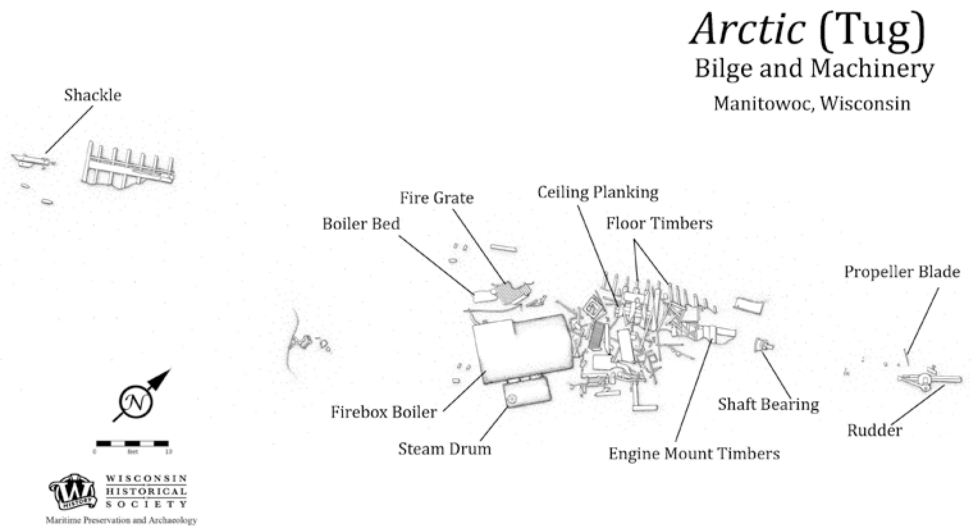

Figure #3 of 5
Arctic Shipwreck (Tug)
Location of the *Artic*
August 2017

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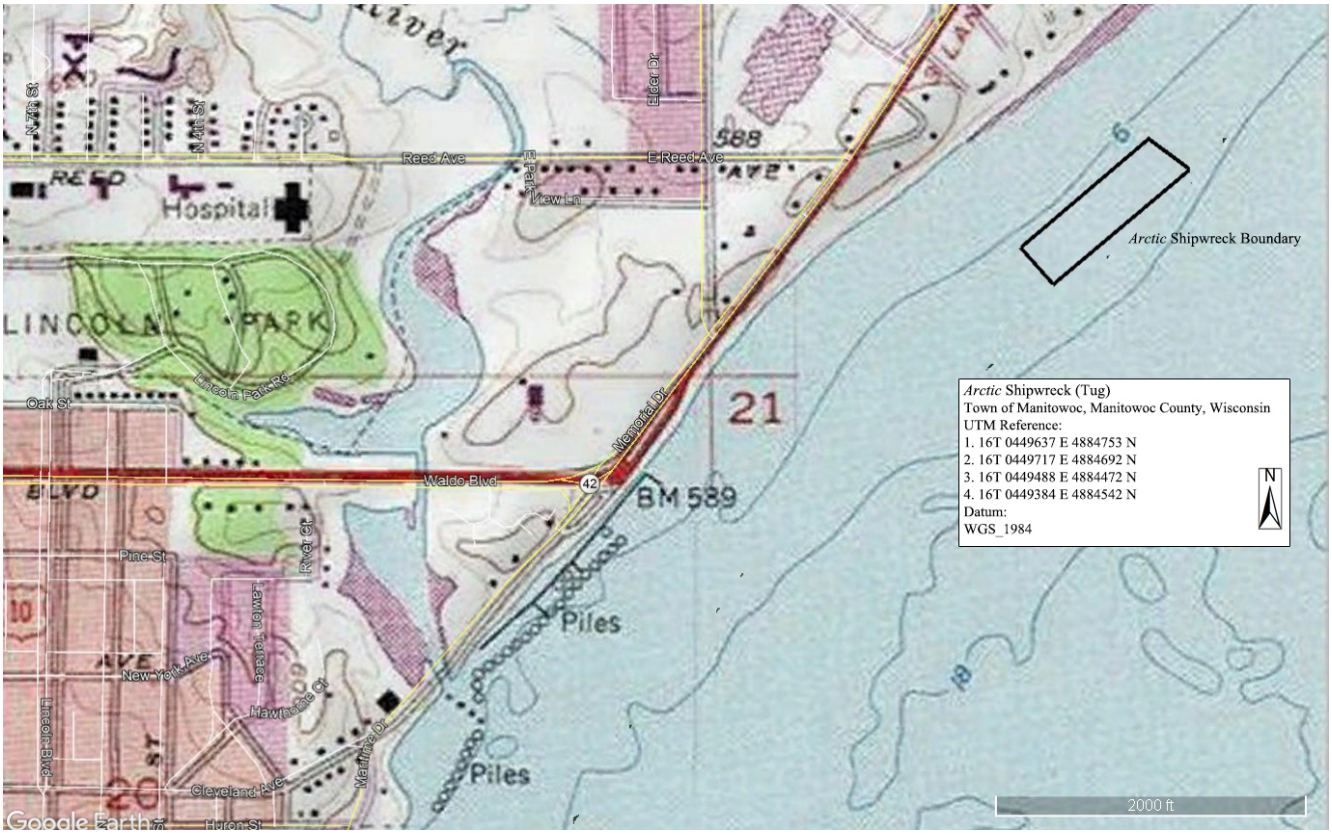

Figure #4 of 5
Arctic Shipwreck (Tug)
Manitowoc County, Wisconsin
Photographer Unknown
Original photo courtesy of Wisconsin Maritime Museum
Ca. 1897-98
Tug *Arctic* maneuvering Goodrich steamer *Virginia* in Manitowoc River

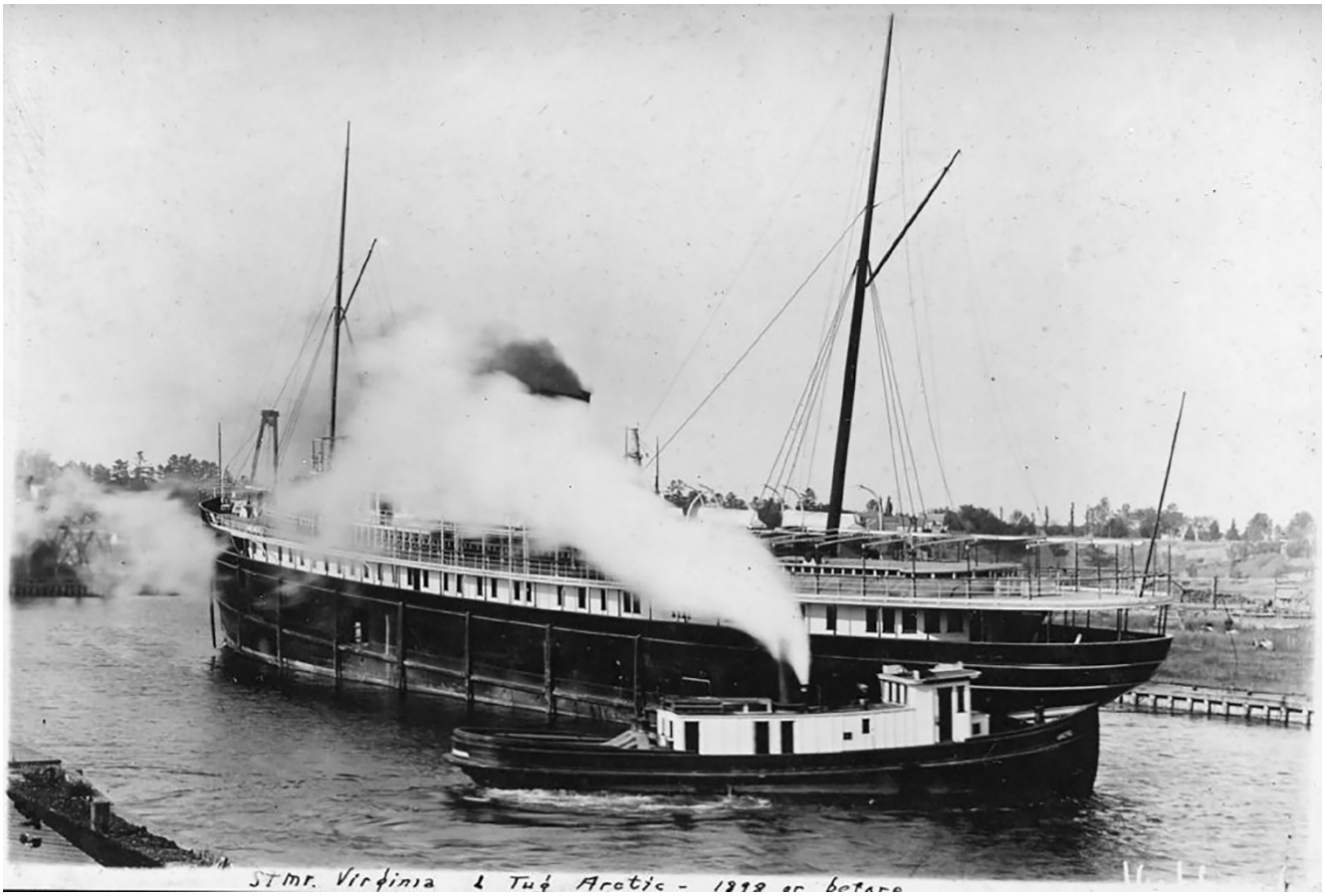

Figure #5 of 5
Arctic Shipwreck (Tug)
Photographer Unknown
Original photo courtesy of Wisconsin Maritime Museum
Ca. 1920
Tug *Arctic* aiding Goodrich steamer *Georgia*