NPS Form 10-900
(Expires 5/31/2012)
Wisconsin Word Processing Format (Approved 1/92)

OMB No. 10024-0018

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 *Silver Lake* Shipwreck (Scow-schooner)
other names/site number

2. Location

street & number	7 miles northeast of Sheboygan in Lake Michigan						N/A	**not for publication**	
city or town	Town of Mosel						X	**vicinity**	
state	Wisconsin	**code**	WI	**county**	Sheboygan	**code**	117	**zip code**	53081

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 X statewide __locally. (_ See continuation sheet for additional comments.)

Signature of certifying official/Title — Date 1/31/13

State Historic Preservation Officer - Wisconsin

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

Silver Lake Shipwreck (Scow-schooner)	Sheboygan County	Wisconsin
Name of Property	County and State	

4. National Park Service Certification

I hereby certify that the property is:

X 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:)

Edson H. Beall — 3.27.13

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	0 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 – Three-masted, double centerboard, scow-schooner

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.

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.)

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 / HISTORIC – NON-ABORIGINAL
MARITIME HISTORY
COMMERCE
ENGINEERING

Period of Significance

1889-1900

Significant Dates

1889

Significant Person
(Complete if Criterion B is marked)

N/A

Cultural Affiliation

Euro-American

Architect/Builder

Johnson, M. L.

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 **Less than one acre**

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

	Zone	Easting	Northing
1	16	453493	4850477
2			
3			
4			

☐ 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	Tamara Thomsen and Keith Meverden				
organization	Wisconsin Historical Society			**date**	08/16/2011
street & number	816 State Street			**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
organization **date**
street&number **telephone**
city or town **state** **zip code**

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
Located seven miles northeast of Sheboygan, Wisconsin, in Lake Michigan, the scow schooner *Silver Lake* lies upright in 200 feet of water with nearly all hull structure and rigging intact. M. L. Johnson constructed the small scow schooner in 1889 at a remote shipyard in Little Point Sable, Michigan. She operated primarily in the Lake Michigan lumber trade at the height of the lumber boom. While en route from Eagle Harbor (Ephraim) to Racine, Wisconsin, the *Silver Lake* encountered a dense fog off Manitowoc and was run down by the car ferry *Pere Marquette* with the loss of one of her crew. Today, the *Silver Lake* is the only known example of a double centerboard scow schooner in Wisconsin waters, perhaps the Great Lakes, and provides historians and archaeologists the rare chance to study and document this vessel type.

Site Description
The *Silver Lake* lies in Lake Michigan in 200 feet of water seven miles northeast of Sheboygan, Wisconsin, on a heading of 318 degrees. Overall length of the hull is 98.5 feet with a beam of 20.5 feet. All hull components are present with the exception of the lower portion of the broken mainmast, which could not be located on the site. The forward half of the hull is exceptionally intact and includes a standing foremast that remains rigged with topmast and yard. The forward half of the hull rests on the bottom with a 9.0 degree list to starboard and a 9.0 degree downward angle towards the hull break.

The hull was broken in two amidships from the collision, and the aft half of the vessel is somewhat more broken than the forward. The collision damage and hull break is located 48.0 feet aft of the stem. Immediately aft of the hull break the hull has collapsed to starboard and lies mostly flat, but the hull sides and deck remain intact and attached to one another. The transom is completely intact and upright, however, and rests on the lakebed with a 36 degree starboard list and a slight angle to the vessel's forward half.

The starboard anchor was removed by divers in the 1970s and donated to the Smithsonian Institution. The Smithsonian later traded the anchor with the Great Lakes Shipwreck Museum in Paradise, Michigan, in exchange for the anchor from the steamer *Indiana*. The port anchor remains on site and is an iron stock that remains attached to the anchor chain and hangs from the starboard hawsepipe, standing upright on the lake bed.

The bowsprit has a diameter of 0.9 feet and extends 12.9 feet forward of the bow rail at an angle of 19.0 degrees to the hull. The jib boom is 0.85 feet in diameter and is broken flush with the end of the bowsprit; the forward half of the jib boom, along with the martingale, lay on the lakebed beneath the bowsprit. The aft half of the jib boom remains in place atop the bowsprit. The base of the jib boom abuts the forward edge of a 0.5 foot wide monkey rail that is attached to the top of the forward rail.

The bow features a cross-planked bow ramp that curves upward from the bottom. The stem protrudes from the center of the ramp, and is marked with Roman numeral draft marks carved into the sides of the stem. There is much green paint visible on the bow ramp. Two chain bobstays are fastened to the stem just above the lakebed. The outer bobstay is intact, but the inner bobstay is broken at the stem and hangs from the underside of the bowsprit and drapes over the stock of the port side anchor. A chain bowsprit guy is extant on either side of the bowsprit. The guys are anchored to the outside of the covering board on either side of the hull on either corner of the bow. The bottom of the double wire forestay is extant, attached to the hull on either side of the bowsprit, but the forestay has parted a few inches above where the two wire forestays are seized together.

A temporary baseline was established on the hull to which all hull measurements were referenced. The baseline originated at the forward peak of the monkey rail immediately aft of the jib boom, passed to the starboard side of the samson post and foremast, and continued over the top center of the rudder post to where it terminated at the center of the stern rail.

The center of the samson post is located at 8.1 feet on the baseline. It rises 4.0 feet above deck level and is 1.05 feet square. The patent windlass crosshead is fastened to the forward side of the samson post. The overall width of the windlass barrel is 9.7 feet. The centers of the carrick bitts are located at 8.75 feet on baseline, and the top of each bitt is 0.3 feet wide, 1.3 feet long, and rise 3.3 feet above deck level.

An iron capstan is fastened to the deck on the vessel's centerline between the windlass and the foremast. The center of the capstan is located at 13.8 feet on the baseline. The drum head is 1.2 feet in diameter, the pawl rim is 2.2 feet in diameter, and it rises 2.9 feet above deck level.

The forecastle scuttle is located to port of the capstan. The leading edge of the scuttle coaming is located at 12.0 feet on the baseline, and starboard edge of the coaming is located 2.1 feet to port from the vessel's centerline. The inside dimensions of the scuttle coaming are 2.1 feet long by 2.4 feet wide. The coaming is .05 feet thick and slopes towards the bow so that the forward end of the coaming rises 0.8 feet above deck level, while the aft end rises 1.2 feet above deck level.

Two additional samson posts protrude from either side of the deck somewhat aft and outboard of the windlass. The center of both samson posts are located at 11.55 feet on the baseline and are 0.8 feet wide by 0.9 feet in length and rise 3.0 feet above deck. Either post is located 5.55 feet from the vessel's centerline. A double-acting bilge pump is fastened to the deck immediately aft of the foremast.

The hull utilizes traditional "gunnel-built" construction techniques. The hull bottom, including the bow and stern ramps, are cross-planked and fastened to the longitudinally-planked hull sides with a chine

log. The bottom planks vary in width; planks measured on the stern ramp range between 0.5 and 0.82 feet in width and are 0.25 feet thick.

The hull's sides are constructed of longitudinal planks that are 0.65 feet high by 0.45 feet thick. The planks are edge-bolted together, as well as to the chine long. The joint between side hull planks is caulked, and green paint is visible over much of the outer hull. The chine log is 0.5 feet wide by 0.9 feet tall. The side hull planks are fastened to the top of the chine log flush with the chine log's outside edge so that the chine log forms the turn of the bilge. A sister chine log, 0.6 wide by 0.65 feet tall, is fastened to the inside of the chine log. The sister chine log serves as both a reinforcement to the chine log and as a chock upon which the ends of the athwartship ceiling planks are supported and fastened. The ceiling planks are 0.15 feet tall by 0.75 feet wide and abut the inside edge of the chine log with the tops of the ceiling planks flush with the top of the chine log. The bottom is additionally strengthened by longitudinal bilge keelsons that are visible in the collision damage. The outermost bilge keelsons has a space of 2.2 feet between itself and the sister chine log. This bilge keelson measures 0.6 feet wide by 0.7 feet tall.

King posts are not utilized in the construction, but the hull side planks are protected from damage from cargo by approximately 0.1 foot thick vertical planks that ceil the hold. The hull sides are reinforced by three iron tie bolts that hold the hull sides together. The tie bolts penetrate the hull just beneath the covering board and are fastened with nuts and washers outside the hull. The tie bolts are equally spaced along the hull, with the first located approximately halfway between the foremast and mainmast, the second is forward of the aft centerboard trunk, and the aft-most is located immediately forward of the aft cargo hatch.

The deck beams are 0.4 feet high by 0.5 feet wide and are fastened atop a large deck shelf that is 0.5 feet tall by 0.85 feet wide. Deck planks are 0.2 feet thick and vary in width between 0.45 and 0.5 feet. The deck beams are fastened atop this shelf with no chocks or filler pieces between deck beams. Between the deck beams, the bulwark stanchions are butted against the top of the deck shelf and fastened to the inside of the hull side planks. The covering board is then fastened atop the deck beams and is mortised along its inside edge to fit around the bulwark stanchions. The covering board's dimensions are 0.6 feet wide by 0.2 feet tall, and it extends outboard of the side hull planks to form a rubbing strake at deck level. The bulwark stanchions are 0.4 feet square and have a space of 3.9 feet between stanchions. The bulwark stanchions are topped by a rail that is 1.15 feet wide and 0.3 feet thick and rises 2.6 feet above deck level. The outside of the bulwark stanchions are completely planked over with the exception of a small gap between the bottom of the bulwark and the covering board that serves as a freeing port for water that runs the length of the bulwarks. A single bulwark plank is fastened on the inside of the stanchions immediately below the rail that is 0.7 feet high and 0.2 feet thick.

A second rubbing strake is located below the former on either side of the hull. This strake is 0.4 feet in height and protrudes 0.2 feet outboard from the hull side planks. The top of the strake is located 7.26 feet from the top of the rail and 3.15 feet from the bottom of the chine log.

None of the hatch covers is extant on site, but all three cargo hatches remain intact. The forward most hatch begins at 22.7 feet on the baseline with outside dimensions of 4.55 feet long by 7.6 feet wide. The hatch coaming rises 0.9 feet above deck level and is 0.3 feet thick. A plank fastened to the inside of the coamings is 0.3 feet from the upper edge. The outermost edge of the coaming is chamfered, and an iron bar that serves as chaffing gear is fastened around the top perimeter of the coaming.

The second cargo hatch begins at 36.7 feet on the baseline and has outside dimensions of 6.7 feet long by 7.55 feet wide. The coaming rises 1 foot above deck level, but otherwise exhibits the same construction as the first hatch.

The third and aft most hatch is located at 58.3 feet on baseline and has outside dimensions of 10.5 feet long by 7.5 feet wide. The coaming rises 1.1 feet above deck level, but otherwise exhibits the same construction details as the forward two hatch coamings.

The stern cabin's bulkheads have collapsed, but the cabin roof is extant and lies in the opening where the cabin formerly stood. The stern cabin was 9.5 feet in length and 14.3 feet in width, with the cabin's forward bulkhead located at 82.7 feet on the baseline. The cabin roof was longitudinally planked over athwartship frames. Cabin roof planks are 0.55 feet wide by 0.12 feet thick. Roof frames are 0.21 feet tall by 0.16 feet thick with a spacing of 1.3 feet. A skylight was built into the center of the cabin roof that is no longer extant. The skylight was 3.2 feet wide and ran the entire length of the cabin roof's centerline. The cabin scuttle was located near the port quarter and is 2.2 feet wide and extends 2.9 feet forward of the cabin roof's aft edge. A 0.6 foot diameter hole for the stove pipe is cut into the cabin roof 1.05 feet from the port side edge and 1.25 feet aft from the forward edge (measured to the center of the hole).

The *Silver Lake*'s most unusual feature is that she was constructed with two centerboards. The forward centerboard trunk begins forward of the first cargo hatch at 21.0 feet on the baseline, extends through the center of that hatch, and terminates nearly a foot into the second cargo hatch at 37.4 feet on the baseline. The centerboard was not raised and lowered via a dedicated deck winch as was the norm on single centerboard vessels, but instead was raised and lowered with tackle hung from the rigging. The chain used to raise and lower the centerboard passes through a vertical wooden box fastened to the deck that is 0.75 feet wide by 0.8 feet long and rises 4.5 feet above deck level. The box is no longer fastened to the deck but lies on deck next to the centerboard trunk with the chain passing through the

box. Presumably the purpose of this box was to allow centerboard chain to run freely and prevent fouling due to deck cargo.

The aft centerboard trunk begins within the aft cargo hatch at 65.5 feet on the baseline and terminates just before the mizzenmast at 79.3 feet on the baseline. The centerboard chain protrudes from the deck at 76.3 feet on the baseline. Like the forward centerboard, the aft does not have a dedicated winch mounted on deck level but instead is raised and lowered via the ships rigging. Likewise, the chain also passes through a wooden box that is 0.55 feet wide and 0.9 feet long and rose 4.7 feet above deck level.

The ends of both centerboard trunks are reinforced with large vertical iron tie rods that compress the hull around the trunks. The bolts are fastened on deck level with large nuts and an iron plate that crosses overtop the trunk.

The *Silver Lake* is the only known schooner in Wisconsin waters with a standing foremast with extant topmast and square-rigged yard. The foremast is located at 17.5 feet on the baseline and has a diameter of 1.2 feet above deck level. The foremast leans 12 degrees aft, and it appears this is due to degradation in hull integrity and not an intentionally raked mast. The top of the fore topmast is at a water depth of 127 feet, or 62 feet above deck level. The head of the foremast is at a water depth of 145 feet, or 44 feet above deck level. The yard truss is fastened to the foremast at a water depth of 149 feet. The fore top is extant on the port side, but has been broken away on starboard. Much of the masthead is a tangle of commercial fishing nets and abandoned mooring lines from dive boats. None of the wire shrouds remain connected between the chainplates and masthead, but instead lie in a tangle on deck around the foremast. Many of the wood sail hoops that fastened the foresail to the mast are extant atop the mast table.

In the collision, the mainmast was broken below the main masthead. The lower portion of the mainmast is not extant, but the remainder of the mainmast, from the break upwards, lies over the starboard rail. The main topmast remains stepped to the mainmast, and even the tops remain intact. The mainmast's exact location on the hull could not be determined, as the hull break occurred at the mainmast step and the mainmast partners could not be located.

The mizzenmast is broken immediately above the mast table, and the lower portion of the mast remains stepped in the hull and protrudes from the deck at 81.1 feet on the baseline. At the break, the mizzenmast has a diameter of 1.1 feet. The upper portion of the mizzen mast is intact and lies across the starboard quarter, extending off the vessel's transom. Like the mainmast, the mizzen topmast remains stepped to the mast and the tops are likewise intact.

Much of the running rigging is strewn about the foredeck and in a debris field off the starboard side. All booms and gaffs are extent on site with the exception of one spar, and all have intact jaws and most have intact rigging blocks.

The rudder post protrudes from the quarterdeck at 96.7 feet on the baseline and is 0.5 feet in diameter. The rudder blade is unusually long and extends 5.6 feet aft of the transom. Angular iron supports extend from the bottom of the stern post on either side and extend outward to fasten to the bottom of the stern ramp near the chine. One of the stern ramp planks is missing above the port side stern post support, and planks in this area are 0.55 feet wide by 0.25 feet thick.

Summary Paragraph

Located seven miles northeast of Sheboygan, Wisconsin, in Lake Michigan, the scow schooner *Silver Lake* lies upright and mostly intact in 200 feet of water. Little historical documentation exists on scow schooner construction and operation. Much of our understanding of this type of vessel lies on the lakebed and comes from archaeological data recovered from wreck sites like the *Silver Lake*. The *Silver Lake* meets the registration requirements for Criterion D at the state level for the property type sailing vessel as described in the Multiple Property Documentation *Great Lakes Shipwrecks of Wisconsin* (Cooper and Kriesa 1992). The *Silver Lake* also meets the MPD's eligibility criteria under Criterion C because of its exceptional integrity and its ability to provide a visual example of engineering design and construction techniques. Due to the wreck's extreme depth, the *Silver Lake* remained lightly visited by divers in her early years when looting was prevalent, and only recently has the site witnessed an increase in visitation. The *Silver Lake* site has produced a wealth of knowledge on double centerboard scow schooner construction and use, and holds vast potential to yield additional significant archaeological data in the future.

Summary
Resting in 200 feet of water in Lake Michigan seven miles northeast of Sheboygan harbor, Sheboygan County, Wisconsin, the mostly intact scow schooner *Silver Lake* represents an example of one of the least understood vessel classes, the small trading schooner. The *Silver Lake* had a relatively short 11-year career working in the Lake Michigan lumber trade. Constructed in 1889 by M. L. Johnson shipyard at Little Point Sable, Michigan, the *Silver Lake* sank in a collision with the *Pere Marquette* car ferry in a dense fog in 1900. The operation and use of scow schooner was largely undocumented in contemporary times, and today archaeological examples of the scow schooner are few. The *Silver Lake* is the only known example of a double centerboard scow schooner in Wisconsin waters (and likely all of the Great Lakes), providing an exceptional opportunity for historians and archaeologists to study scow schooner construction and operation. As such, the *Silver Lake* is eligible under criteria C and D at the state level. The period of significance is 1889 to 1900.

The Scow Schooner
Scow schooners were vital to many small communities around Lake Michigan, connecting them with regional markets through the lakeshoring trade. As vessel size grew throughout the nineteenth century, so too did their draft, making stops at small lakeshore communities with shallow harbors difficult or impossible. The flat-bottomed scows, however, were well-suited to shallow harbors. Inexpensive transportation, the scow schooner was the life-blood of many lakeshore communities and immigrant families, providing an entry point for many into the Great Lakes maritime trades as sailors, masters, and vessels owners.

Scows were used in great numbers throughout North America, wherever there was a need for low-cost, shoal-draft transportation. Scows saw use along the Atlantic Coast from the Maritime Provinces to Mexico, the Great Lakes, the Gulf Coast, San Francisco Bay, and on nearly every river large enough for small craft (Chapelle 1951:45; Merchant Vessels of the United States 1885; Merriman 1997). Despite its proliferation, or perhaps as a result of it, it is difficult to trace the scow's introduction to the New World. It is also unknown when the term "scow" came into popular usage, but it was likely derived from the Dutch term "schouw", indicating a square-ended hull possessing a flat, or nearly flat, bottom. The first recorded use of the term appears well into the eighteenth century (Chapelle 1951:33). Flat-bottomed craft were numerous for several reasons. One was that vessels with flat bottoms and sides were easily constructed by people with limited shipwright skills working under primitive conditions. Flat surfaces and angular corners did not require the advanced woodworking skills necessary to construct vessels with round hulls and fine lines. An equally important reason was that flat-bottomed craft easily navigated shallow water with little difficulty. If they ran aground, they were easier to refloat and less likely to sustain damage. They were also a very stable craft able to carry large cargoes relative to their size.

Little recorded information has been discovered for colonial flat-bottomed craft. Considering that planked canoes and scows were the easiest boats to build with the least skill, scows were numerous in the New World by 1670. Nearly every community used the scow or some other form of flat-bottomed boat (Chapelle 1951:15). There were several variants of flat bottom boats common to the New World, but differentiation in lineage is often blurred, as there were more similarities than differences between vessel types. The scow-type hull appeared under several names, including punt, flat, radeau, periaugua, gondalow, and gondolo. Sloop-rigged scows were common as early as 1725, and by the time of the American Revolution the scow rig expanded to schooners and occasionally square-riggers (Chapelle 1951:32-38). Prior to the war of 1812, few commercial craft sailed the western Great Lakes. Following the war, the scow schooner made its appearance alongside conventional sailing craft and expanded onto the western lakes (Inches and Partlow 1964:289). The Great Lakes scow schooner's earliest record appears in the mid-1820s, with reports of several scows on Lake Ontario and New York's Finger Lakes, as well as the 60-ton *Bolivar* constructed at Erie, Pennsylvania in 1825. By the 1840s, scows were common throughout the Great Lakes, surviving into the twentieth century and the last days of lake sail (Labadie and Herdendorf 2004:5; Martin 1991:4).

Other North American regions mirrored the scow's Great Lakes expansion, including the Atlantic coast, Gulf coast, and San Francisco Bay. The scow expanded all the way to the Pacific Islands, and if imitation is the highest form of flattery, much can be said by the fact that New Zealand scows were descendants of those of the Great Lakes. New Zealand's first scow was built in 1873 and named *Lake Erie*, followed by the *Lake Superior* in 1875, and the *Lake St. Claire* and *Lake Michigan* in 1876 (McGregor 1982:120; Hawkins 1987:23). Even today, the "Jon boat" is common on shallow waters throughout the United States. Built of aluminum, the Jon boat's lines are nearly identical to those of early colonial flat bottom craft.

The term "scow" refers to hull form rather than the rig type, resulting in the terms "scow schooner" or "scow sloop" to describe these vessels. Despite a wide range of regional variation, the scow is defined as a vessel with a flat bottom, vertical sides, and a hard chine. They more closely resembled a barge than conventional sailing craft. Conventional sailing vessels had rounded bottoms and sides with a relatively gentle curve at the turn of the bilge, where the hull bottom and sides met. As in other regions, there was wide variation in Great Lakes construction techniques, and the term "scow" was used to describe variety of vessels. One of the clearest contemporary definitions is found in Merchant Vessels of the United States (1885):

> Scows are built with flat bottoms and square bilges, but some of them have the ordinary schooner bow....The distinctive line between the scow and the regular-built schooner is, in the case of some

> larger vessels, quite obscure but would seem to be determined by the shape of the bilge, the scow having in all cases the angular bilge instead of the curve (futtock) bilge of the ordinary vessel.

As the above definition points out, there was occasional difficulty in distinguishing conventional craft from scows. This problem was not limited to Great Lakes vessels. A dispute arose in New Zealand's Auckland Anniversary Day scow race in 1884. Scow captains refused to race until the *Vixen*, a round-bilged vessel over which there was some dispute whether or not she was indeed a scow, withdrew from the competition (Hawkins 1987:24). Despite occasional confusion, several traits were characteristic of scows and used to differentiate them from conventional vessels. These traits are most easily understood when viewed in cross section. Scows are boxy vessels with a flat bottom and sides, connected by a hard chine, or a nearly ninety-degree angle where the bottom meets the side. Conventional sailing vessels, whether flat-floored or with deadrise[1], possessed a soft chine, or a smooth, rounded edge where the bottom and sides meet.

Scow construction varied from hull to hull as well as from region to region. This variation included obvious features such as sheer lines, transoms, and bows, in addition to less obvious features like cross or diagonal planking and longitudinal framing. Several bow variations are visible in historic photographs, including the square butt-end bow with little or no forward projection of the stempost, the pointed flat-iron bow that produced a finer entry (similar to conventional craft), and the rounded spoonbill, swim-headed, or barrel-shaped ends (Labadie and Herdendorf 2004:8).

Martin (1991:2) categorizes scows into three distinct types: (1) full scow with angular bilge along its entire length, (2) half scow with angular bilge along only part of its length with the bow and stern being similar to that of a conventional hull, and (3) a less defined category for hulls not clearly exhibiting an angular bilge, but flat-bottomed enough to be considered scows by contemporaries. Martin supports this classification with evidence from insurance registers that list both "scow" and "half scow" hulls as well as vessels with a "scow stern" or "scow bottom" (Martin 1991:2) This model illustrates the large variation within the scow vessel type, but may be too simplified. Problems arise when attempting to define a vessel with a bow or stern "similar" to a conventional hull. The flat-iron bow, while having a fine entry not unlike a conventional vessel, remains an obvious scow with an angular joint where the bow meets the hull side. More historical and archaeological research is needed to determine the extent of variation within the scow vessel type, and how dissimilar from conventional hulls they needed to be for consideration as a scow. This may be a daunting task, as contemporaries appear to have been as confused as modern researchers.

[1] Due to the shallow nature of many Great Lake harbors, as well as the Welland Canal locks, wooden vessels developed flat floors as they increased in size. Flat floors, or a flat hull bottom, allowed greater cargo capacity while limiting draft, but retained conventional soft hull lines.

Scow bottoms could be longitudinally, cross, or diagonally planked, the latter two methods requiring nontraditional framing. Hull sides were also subject to variation, from the traditional frame-on-plank construction to the scow-specific "gunnel-built" sides. Gunnel-built scows were constructed with thick longitudinal hull planks edge-bolted with iron drift bolts that ran through two or more side planks (Inches and Partlow 1964:290). These edge bolts not only clamped the side hull planking together, but served as reinforcement against horizontal forces, eliminating or reducing the need for frames as in conventional hulls. Gunnel-built planking averaged four inches think in vessels of sixty to ninety feet in length. Inches and Partlow (1964:291) suggest that gunnel-built construction, with few, if any, frames, was one characteristic common to nearly all Great Lakes scows. A second trait unique to scows, and perhaps equally as common as the gunnel-built side, was the use of a chine log at the turn of the bilge. The scow's hard chine was a weak point in the hull, strengthened through the incorporation of a heavy longitudinal timber. These six to eight inch stringers were the principle framing members of the hull, fitted along both sides for the entire length of the bilge (Inches and Partlow 1964:291).

It is open to debate whether the scow's development and popularity resulted from a need for vessels capable of transiting shallow waters or because their unsophisticated hull form was economical to build and maintain (Labadie and Herdendorf 2004:8; Inches and Partlow 1964:290). It is certain, however, that scows required the simplest construction techniques of any freight-carrying vessels. The great variation in construction and appearance is likely a combination of the builder's shipbuilding skill, the type and quality of construction materials available, and available funding.

Variation in construction was not limited to the Great Lakes. Despite the fact that New Zealand's scows were based on a Great Lakes model, there were many adaptations to fit local needs. For example, New Zealand's scows carried all of their cargo above decks. While proportional in length and beam to Great Lakes scows, New Zealand's scows carried half the depth of hold with no provisions for internal cargo. Registration documents stated that "no cargo is to be carried below deck, everything carried above; in fact, no hatchways are provided" (Hawkins 1987:23). There were several variations in hull framing as well. New Zealand scows utilized either a "post and rail" construction that used longitudinal stringers and stanchions, or a "solid partition" construction that utilized longitudinal bulkheads that partitioned the vessel into compartments. Centerboards were not as common as on the Great Lakes, and both the drop keel and pivoting centerboard was used (Hawkins 1987:26).

San Francisco's scows were more similar to Great Lakes' scows than New Zealand's, but even they exhibited an equal amount of variation in both construction and hull lines. San Francisco Bay had both longitudinal- and cross-planked hulls, but the latter was less common. Longitudinally-planked hulls

were framed similarly to conventional vessels, with transverse floors scarphed into frames at the chine, precluding the need for a chine log. Ceiling planking was usually longitudinal, as was the ceiling planking on both the hull bottom and sides.

Cross-planked scows were of an entirely different construction, called "log built" in local vernacular. These vessels used several longitudinal floor keelsons with a heavy outer hull and ceiling planking that was edge bolted. The sides were sometimes stiffened with widely spaced frames. The most noticeable difference between longitudinal and cross planked vessels was the angle of the bow and stern ramps. Longitudinally planked vessels required steaming the bow and stern hull planks and resulted a more gradual upward curve of the bow and stern ramps. Cross-planked vessels did not require steamed hull planks, allowing a more abrupt angle where the bow and stern ramps met the bottom. This created a boxy hull with a nearly vertical bow and stern. Local opinion held that the boxy cross-planked hulls were less handy and slower than the finer longitudinally-planked ones. Many builders, however, opted for the cross planked construction as it was cheaper to build and provided more cargo capacity (Olmsted 1988:67-72).

Scows were generally considered good sailors and were as fast, or faster, than conventional schooners, perhaps with the exception of sailing in heavy seas. Their shallow draft and flat bottoms created little water drag. Sailing to windward was their worst point of sail. The wide, flat bows took a beating in head seas and their shallow draft allowed considerable leeway in strong winds (Chapelle 1951:50; Inches and Partlow 1964:292; Kristiansen 1981:3; Olmsted 1988:19). Despite how seaworthy a scow may or may not have been, insurance companies held little faith in the scow's seaworthiness, and even less confidence in cross-planked bottoms and gunnel-built sides. Construction rules for 1866 note:

> Frame built scows, well-constructed and of good material, with fore-and-aft bottom planking, may be entitled to Class B1, [for] five years, but in no case will scows be entitled to the B1 grade if built with gunwale sides or athwartships bottom" (Board of Lake Underwriters 1866:14).

Vessels built according to underwriters' rules were given a classification rating that determined a vessel's insurance premium. Ratings of A1, A2, B1, B2, C1, C2, or "not insurable" were assigned, A1 being the highest rating with the lowest premium - a rating scow schooners never achieved. In 1876, the Board of Lake Underwriters (1876:74) categorized scows with barges and even describes them as "of unseaworthy form."

Service History
The scow schooner *Silver Lake* was constructed over the winter of 1888-1889 in the remote shipyard of M. L. Johnson in Little Point Sable, Michigan. Built with one deck, three masts, and a square head and

stern, her measurements were 95 feet in length, 20 feet in beam, and 7.6 feet in depth of hold with a tonnage of 105.53 net and 111.08 gross. She was constructed for George A. Wagen of Mears, Michigan, and her initial enrollment was entered at Grand Haven, Michigan, on 18 May 1889. She was assigned the official number 116263 (Bureau of Navigation 1889).

Wagen owned the vessel for only one season, selling her the following winter to John Joys and John Fitzgerald, co-owners of the Milwaukee Shipyard Company. Joys and Fitzgerald purchased equal shares of the *Silver Lake* and moved her across the lake to their hometown of Milwaukee. A new enrollment was entered on 11 January 1890 that listed John Joys as the vessel's new Master (Bureau of Navigation 1890a). Three weeks later, on 1 February 1890, the *Silver Lake* changed hands again when Nels Johnson and Jacob Schenkenberger became equal partners in the vessel's ownership. Her home port was changed to their hometown of Racine, Wisconsin, and Captain John Schenkenberger, brother of co-owner Jacob, became her new Master (Bureau of Navigation 1890b).

Little appears in newsprint of the *Silver Lake*'s early days on Lake Michigan. The few reports of her activity that did make print were incidental mentions of her voyages that told little of her operations other than loading lumber at northern Lake Michigan ports that was bound for the larger cities in southern Wisconsin and northern Illinois, with an occasional layover to wait out a storm at the ports in between (*Door County Advocate* 1890; *Manitowoc Pilot* 1890).

One noteworthy mention appears in the *Milwaukee Sentinel* (1891) late in the 1891 season when the *Silver Lake* was laid up in Racine and unable to find a crew. As sailors' wages commonly increased late in the season due to the greater dangers of sailing during the unpredictable fall gales, the *Silver Lake*'s crew demanded the Captain increase their wages to $2.50 per day prior to getting underway from Racine. Meeting a refusal from the vessel's captain, the entire crew shouldered their sea bags and abandoned the vessel. Unfortunately, it is unknown how long the *Silver Lake* remained in port before she found a new crew, or if she was laid up in Racine for the remainder of the season.

The *Silver Lake*'s 1893 season proved to be a bit more exciting than her previous seasons. The *Silver Lake* got an early start in the spring of 1893, and was the first vessel to clear Jacksonport, Wisconsin, after taking a cargo of wood at LeMere's Pier that was bound for Racine (*Door County Advocate* 1893a). On 20 August 1893, the *Silver Lake* was involved in some sort of accident that required the Racine Lifesaving Service to rescue Captain John Schenkenberger and four crew members from the vessel. Little is known of the incident, which only elicited a brief notation in the Station's log book (United States Life Saving Service 1893). Whatever the accident was, it appears the *Silver Lake* did not receive significant damage, as a little more than a month later she was listed as among the fleet of lumber vessels that has sought shelter from a "heavy southeaster" in Sturgeon Bay, Wisconsin,

from 7-9 October 1893 (*Door County Advocate* 1893b). The *Silver Lake* laid up for the1893-1894 winter in Racine Harbor the week of 30 December 1893 (*Door County Advocate* 1893c).

On 8 March 1894, Nels Johnson bought out his partner for $600 to become the *Silver Lake*'s sole owner (*Door County Advocate* 1894a). Her home port remained at Racine, and Hans Christiansen became the vessel's Master (Bureau of Navigation 1894; 1899). Schenkenberger used the $600 from the *Silver Lake* to purchase the schooner *Rob Roy* in a new partnership with Harrison Fellows of Racine (*Door County Advocate* 1894b).

On Wednesday, 26 September 1894, the *Silver Lake* had her second accident when she went ashore during a storm at Jacksonport, Wisconsin. She was lying at anchor off Jacksonport when she began dragging her anchors toward shore as the wind and seas increased. She slipped both of her cables and attempted to sail toward the open lake, but was unable to make any way into the head wind and was driven ashore a short distance north of the Hibbard's Pier. Although a tug was dispatched from Sturgeon Bay that Friday to render assistance to the *Silver Lake*, the crew was able to kedge the *Silver Lake* off the beach by use of the vessel's windlass and anchors. The *Silver Lake* sustained no damage in the incident and was promptly loaded with wood at LeMere's Pier and departed for Racine (*Door County Advocate* 1894a, 1894b; *Marine Review* 1895).

The only newspaper mention of the *Silver Lake* during the 1895 season reports an arrival at Whitefish Bay for the first time that season on 17 April, where the *Silver Lake* took on a cargo of wood and cleared for Racine that same day (*Door County Advocate* 1895). The newspapers document somewhat more of the *Silver Lake*'s 1896 season. On 18 April 1896 the *Silver Lake* sought shelter from a storm at Sturgeon Bay (*Door County Advocate* 1896a). She again sought shelter at there on 1 October 1896. The vessel came into Sturgeon Bay under her own canvas and lay at anchor at the head of the bay until 3 October, when she got a tow back out to the lake. Upon release from the tow, the *Silver Lake* continued northward for Jacksonport to pick up a load of wood (*Door County Advocate* 1896b).

In mid-April 1897, the *Silver Lake* took on a cargo of wood from Baileys Harbor (*Door County Advocate* 1897a). On 21 August 1897, the *Silver Lake* arrived at Sturgeon Bay, sailing light and riding high in the water. Sailing into the bay under her own canvas, she ran hard aground off the channel near the range light. Unable to free herself, she required assistance from the tug *Golden* to pull her free (*Door County Advocate* 1897b).

The *Silver Lake* cleared Jacksonport with wood during week of 19 June 1898 (*Door County Advocate* 1898a). She took on another wood cargo at Reynolds Pier in Jacksonport on Monday, 22 August 1898 (*Door County Advocate* 1898b). She immediately returned and cleared Jacksonport again the following

week with another load of wood (*Door County Advocate* 1898c). All cargos were the property of the vessel's owner, Captain Nels Johnson, and all bound for Racine.

There is no record of the *Silver Lake*'s operation during the 1899 season, and she does not reappear in the newspapers until the following spring, when she passed through the Sturgeon Bay Canal at 5:45AM on Sunday, 6 May 1900 (*Door County Advocate* 1900a).

On the morning of Sunday, 27 May 1900, the *Silver Lake* cleared Eagle Harbor (Ephraim) in Door County loaded with 80 cords of maple wood bound for Racine. Aboard the vessel were Captain Samuel Martin, First Mate Harry Eastman, and Seamen Olle Williamson and Sigwald Anderson. She passed through the Sturgeon Bay Canal around noon that day, and by late afternoon the *Silver Lake* was passing Kewaunee, Wisconsin. There was a light breeze from the northeast and moderate seas, and throughout the day the visibility was reduced by patches of scattered fog (*Detroit Free Press* 1900; *Door County Advocate* 1900b; Milwaukee Public Library 1959; *Saginaw Courier-Herald* 1900a).

That same Sunday afternoon, the steel car ferry *Pere Marquette* was loading at Ludington, Michigan. The *Pere Marquette* was the first steel car ferry in service on Lake Michigan, and considered a behemoth for her time. Built in West Bay City, Michigan, in 1896, she was 338 feet in length, 57.7 feet in beam, and had a 34.9 foot depth of hold for a capacity of 5,580.28 gross tons (Bureau of Navigation 1897). The *Pere Marquette* was designed for year-round service on Lake Michigan, which included a swept back, reinforced forefoot that allowed the vessel to ride up on, and break, thick ice sheets during the winter months. The *Pere Marquette* departed her Ludington slip about 10:00 PM that Sunday, bound for Manitowoc (Milwaukee Public Library 1959).

Around 2:30 AM Monday morning, the *Silver Lake* was approximately fifteen miles east of Manitowoc, sailing southward amidst a dense fog with her fog horn regularly blowing. In the distance toward the middle of the lake, First Mate Eastman heard the faint sound of a steamer's fog signal as the other crew members slept below deck. Around 2:50 AM, alarmed that sound of the steamer's whistle was growing louder and closing, Eastman roused the sleeping crew from below. Just as the drowsy crew members emerged on deck to sound of the *Pere Marquette*'s rushing bow wake punctuated by her booming steam whistle, the car ferry's immense steel bow loomed out of the fog and smashed into the *Silver Lake*'s port side almost directly amidships (*Detroit Free Press* 1900; *Door County Advocate* 1900b; Milwaukee Public Library 1959; *Saginaw Courier-Herald* 1900a; *Sheboygan County News* 1900; *Sheboygan Telegram*1900).

Amidst a crash of splintering wood, the *Silver Lake* violently lurched to starboard from the impact, an impact so forceful that Eastman was thrown overboard from his position at the wheel. Broken and

stuck to the *Pere Marquette*'s bow, the *Silver Lake* was pushed sideways through the fog as the big steamer slowly lost her headway. Seaman Sigwald Anderson jumped onto one of the *Pere Marquette*'s anchors and climbed up the side of the ship to the safety of her deck. Captain Martin and the other crewmen quickly launched the yawl and clambered aboard; some reports indicated that all three survivors climbed the schooner's rigging and boarded the car ferry (*Detroit Free Press* 1900; *Door County Advocate* 1900b; *Marine Review* 1900; Milwaukee Public Library 1959; *Saginaw Courier-Herald* 1900a).

With no one left aboard the *Silver Lake* and her broken remains mangled on the *Pere Marquette*'s bow, her tangled rigging was cut free from the steamer and she quickly sank from sight. The crew members aboard the yawl were taken aboard the *Pere Marquette*, but the 46 year-old First Mate Eastman could not be found. The body of the unmarried Norwegian immigrant from Racine was never recovered (*Detroit Free Press* 1900; *Door County Advocate* 1900b; *Marine Review* 1900; Milwaukee Public Library 1959; *Saginaw Courier-Herald* 1900a).

At the time of her sinking, the *Silver Lake* was eleven years old. Some reports valued the vessel between $1,200 and $1,500, while others state the vessel was only worth $600 - but added that Nels Johnson had spent $400 in repairs that spring. The cargo was also owned by Captain Johnson and valued at $500. Nothing was saved from the vessel and neither the hull or cargo were insured (Bureau of Navigation 1894; *Detroit Free Press* 1900; *Door County Advocate* 1900b; Milwaukee Public Library 1959; *Sheboygan County News* 1900).

Captain Samuel Martin (Simen Martin Torbjørnson) had his share of bad luck during his sailing career. Born in Kragerø, Norway, on 15 December 1840, he began sailing at the age of twelve. In the early 1860s, while in harbor at Nassau, Bahamas, he was pressed into service under false pretenses aboard the Confederate privateer and blockade runner *Oreta* (later renamed the *Florida*). He moved to Racine, Wisconsin, after the War and began his carrier on the Lakes (Gjerset 1979). In 1892, he lost the 96-ton schooner *Persia* on North Point reef off Racine. The following year, in a storm off Milwaukee, he lost the small 55 ton schooner *Laurina* with a load of lumber. In 1894, Sam Martin was a seaman aboard the schooner *Rainbow*. That vessel was wrecked in a fierce gale off Chicago on the 18th of May. After the loss of the *Rainbow*, his luck held out until the sinking of the *Silver Lake* six years later (Gjerset 1979; *Marine Record* 1901; Milwaukee Public Library 1959).

Because of the severity of the collision, the *Silver Lake* was thought to have been cut in two and sunk immediately, but on Thursday, 31 May 1900, the schooner *Eliza Day* came upon wreckage eight miles due east of Sheboygan, twenty-five miles south of where the *Silver Lake* was originally reported to have gone down. Surprisingly the ship was intact, but in bad shape and *Eliza Day*'s crew removed her mainsail (Milwaukee Public Library 1959). A few days later, the hydrographic office was notified by C.P. Theyer,

Captain of the tug *Arctic* of Manitowoc, of a derelict vessel had been spotted off Sheboygan presumed to be the *Silver Lake* which lay directly in the track of vessels up the west shore. There was additional concern expressed over vessels striking flotsam from the wreck, particularly the cargo of maple slabs (*Saginaw Courier-Herald* 1900b). On 17 September 1900, a storm on Lake Michigan brought a large piece of wreckage, 40 feet long by 10 feet wide, ashore a half a mile north of the Racine harbor piers. After examination of the wreckage, a part of a name was visible on the side. Locals claimed that it was from the wrecked scow *Silver Lake* (*Detroit Free Press* 1900). This is unlikely.

The loss of the *Silver Lake* did not prevent steamers running at full speed in a fog. The Supervising Inspector of Steamboats allowed this practice to continue as steamers could whistle which side they proposed to take when hearing another fog signal. Review of the incident lead to a suggestion that the Supervising Inspector of Steamboats might consider the adoption of a steam or electric calliope, so that the exact points of the compass over which a steamer was heading in fog might be indicated by note. This was rejected, as it would require "the higher development of a musical ear in lake pilots" (*Marine Review* 1900).

Significance

The *Silver Lake* meets the registration requirements for Criteria C and D at the state level, as established in the Multiple Property Documentation *Great Lakes Shipwrecks of Wisconsin* (Cooper and Kriesa 1992). The *Silver Lake* is a rare and highly intact example of a vessel type that was vital to Wisconsin's economic and transportation infrastructure, especially in areas that were difficult to reach in the expanding road and rail networks. Scow schooners like the *Silver Lake* were an important link for small northeastern Wisconsin communities, connecting them economically and culturally with the wider regional markets through the lakeshoring trade. Significantly intact, *Silver Lake* retains excellent archaeological integrity. In addition, the *Silver Lake* demonstrates the construction methods of the scow schooner vessel type, a vessel that was often crudely built by carpenters rather than skilled shipwrights. Scow schooners were not built to any plans, and there was a large amount of variation in construction between hulls. No historical record of their construction exists today, making archaeological examples particularly significant. The techniques employed in their construction and the economic rationale behind their design and operation are not fully understood today, especially the role and use of the double centerboard design. The *Silver Lake* is one of the best preserved examples of a scow schooner discovered to date anywhere on the Great Lakes, and is currently the only known example of a double centerboard scow schooner in Wisconsin, and possible the entire Great Lakes. Information gathered from the *Silver Lake* site has filled many gaps in the scow schooner's incomplete historical documentation and has vastly increased our understanding of scow schooner construction and use on the Great Lakes. The *Silver Lake* site retains the potential to yield even greater insight into this rare vessel type in future years.

References

Board of Lake Underwriters

1866 *Rules Relative to the Construction of Lake Sail and Steam Vessels, Adopted by the Board of Lake Underwriters, 1866*. Mathews & Warren, Buffalo, NY. <http://www.hhpl.on.ca/GreatLakes/Documents/Rules1866/default.asp>

1876 *Lake Vessel Register, System of Classification.* Board of Lake Underwriters, Buffalo, NY.

Bureau of Navigation

1889 *Silver Lake* Permanent Certificate of Enrollment No.105, Port of Grand Haven, Michigan, Record Group 41, U.S. National Archives. Washington D.C.

1890a *Silver Lake* Permanent Certificate of Enrollment No.47, Port of Milwaukee, Wisconsin, Record Group 41, U.S. National Archives. Washington D.C.

1890b *Silver Lake* Permanent Certificate of Enrollment No.49, Port of Milwaukee, Wisconsin, Record Group 41, U.S. National Archives. Washington D.C.

1894 *Silver Lake* Permanent Certificate of Enrollment No.57, Port of Milwaukee, Wisconsin, Record Group 41, U.S. National Archives. Washington D.C.

1897 *Annual List of Merchant Vessels of the United States*. United States Government Printing Office, Washington, DC.

1899 *Annual List of Merchant Vessels of the United States*. United States Government Printing Office, Washington, DC.

Chapelle, Howard I.

1951 *American Small Sailing Craft: Their Design, Development, and Construction.* W. W. Norton and Company, NY.

Cooper, David J. and Paul P. Kriesa

1992 Great Lakes Shipwrecks of Wisconsin. National Park Service National Register of Historic Places Multiple Property Documentation Form. Division of Historic Preservation – Public History, Wisconsin Historical Society, Madison, WI.

Detroit Free Press
1900 *Detroit Free Press*, 19 September.

Door County Advocate (Sturgeon Bay, Wisconsin)
1890 *Door County Advocate*, 14 May.
1893a *Door County Advocate*, 22 April.
1893b *Door County Advocate*, 10 October.
1893c *Door County Advocate*, 30 December.
1894a *Door County Advocate*, 17 March.
1894b *Door County Advocate*, 24 March.
1894c *Door County Advocate*, 29 September.
1894d *Door County Advocate*, 6 October.
1895 *Door County Advocate*, 20 April.
1896a *Door County Advocate*, 18 April.
1896b *Door County Advocate*, 3 October.
1897a *Door County Advocate*, 24 April.
1897b *Door County Advocate*, 21 August.
1898a *Door County Advocate*, 25 May.
1898b *Door County Advocate*, 26 August.
1898c *Door County Advocate*, 3 September.
1900a *Door County Advocate*, 12 May.
1900b *Door County Advocate*, 2 June.

Gjerset, Kurt
1979 *Norwegian Sailors on the Great Lakes*. Arno Press. New York, New York.

Hawkins, Clifford
1987 The Hard Times and Romance of the Sailing Scow. *Sea Spray,* May:22-28.

Inches, H.C., and Chester J. Partlow
1964 Great Lakes Driftwood Schooner-Scows. *Inland Seas,* 20(4):289-294. Cleveland, OH.

Kristiansen, Soren
1981 *Diary of Captain Soren Kristiansen, Lake Michigan Schooner Captain 1891-1893*. Mid-Peninsula Library Cooperative, Iron Mountain, Michigan.

Labadie, C. Patrick, and Charles E. Herdendorf
2004 Wreck of the Scow Schooner *W.R. Hannah*: An Archaeological Investigation in Lake Erie at Kelleys Island, Ohio. Great Lakes Historical Society, *Peachman Lake Erie Shipwreck Research Center Technical Report No. 2*. Vermillion, OH.

Manitowoc Pilot
1890 *Manitowoc Pilot*, 16 October.

Marine Review (Cleveland, Ohio)
1895 *Marine Review*, 10 January.
1900 *Marine Review*, 31 May.
1901 *Marine Review*, 7 November.

Martin, Jay C.
1991 Not for Shallow Water Only: Scow Construction Along the Maumee River, 1825-1859. *Marine History Lines: Journal of the Western Lake Erie Historical Society* 10(1):2-6. Perrysburg, OH.

MacGregor, David R.
1982 *Schooners in Four Centuries*. Model and Allied Publications, Hemel Hempsted, Hert, England.

Merchant Vessels of the United States
1885 United States Printing Office, Washington DC.

Merriman, Ann M.
1997 The Cypress Landing Shipwreck of Chockwinity Bay: A North Carolina Sail Flat, An Archaeological and Historical Study. East Carolina University, *Program in Maritime Studies Research Report No. 9*. Greenville, NC

Milwaukee Public Library
1959 *Silver Lake* Great Lakes Ship Files (formerly the Runge Collection), Milwaukee Public Library. Milwaukee, Wisconsin.

Milwaukee Sentinel
1891 *Milwaukee Sentinel*, 3 October.

Olmsted, Roger R.
1988 Scow Schooners of San Francisco Bay. California History Center, *Local History Studies Volume 33*. Cupertino, CA.

Saginaw Courier-Herald
1900 *Saginaw Courier-Herald*, 29 May.
1900 *Saginaw Courier- Herald*, 5 June.

Sheboygan County News
1900 *Sheboygan County News*, 30 May.

Sheboygan Telegram
1900 *Sheboygan Telegram*, 2 May.

United States Life Saving Service
1893 *United States Life Saving Service Report*, August 20. (p R253-R255. R363.123-U582)

Boundary Description

The boundary for the *Silver Lake* site is marked by a circle with a radius of 275 feet, centered on the UTM coordinates 453493 Easting, 4850477 Northing, Zone 16.

Boundary Justification

The site boundary was chosen to encompass the wreck site and associated debris field.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Photo #1 of 1
Silver Lake Shipwreck (Scow-schooner)
Sheboygan County, Wisconsin
Photographer Tamara Thomsen
30 July 2011
View of bow looking aft

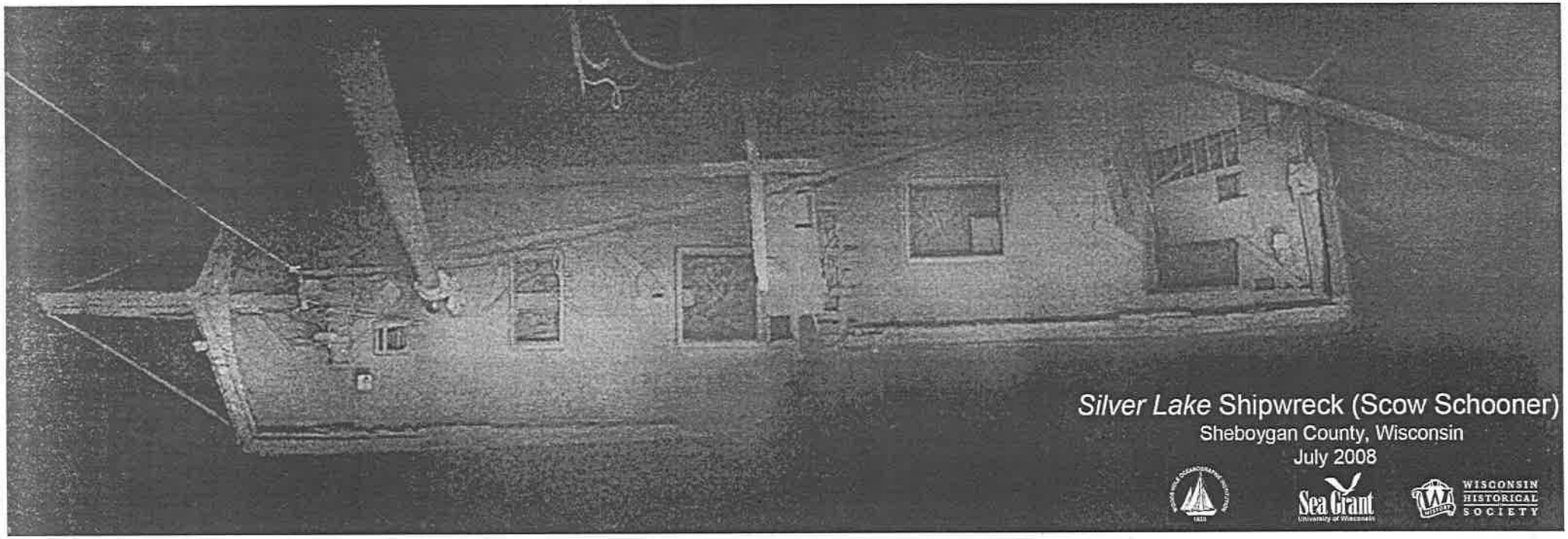


FIGURE 1:
***SILVER LAKE* SHIPWRECK**
(SCOW-SCHOONER)
SHEBOYGAN COUNTY, WISCONSIN

This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Chief, Marine Chart Division (N/CS2), National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

PRINT-ON-DEMAND CHARTS
NOAA and its partner, OceanGrafix, offer this chart updated weekly by NOAA for Notices to Mariners and critical corrections. Charts are printed when ordered using Print-on-Demand technology. New Editions are available 5-8 weeks before their release as traditional NOAA charts. Ask your chart agent about Print-on-Demand charts or contact NOAA at 1-800-584-4683, http://NauticalCharts.gov, help@NauticalCharts.gov, or OceanGrafix at 1-877-56CHART, http://OceanGrafix.com, or help@OceanGrafix.com.

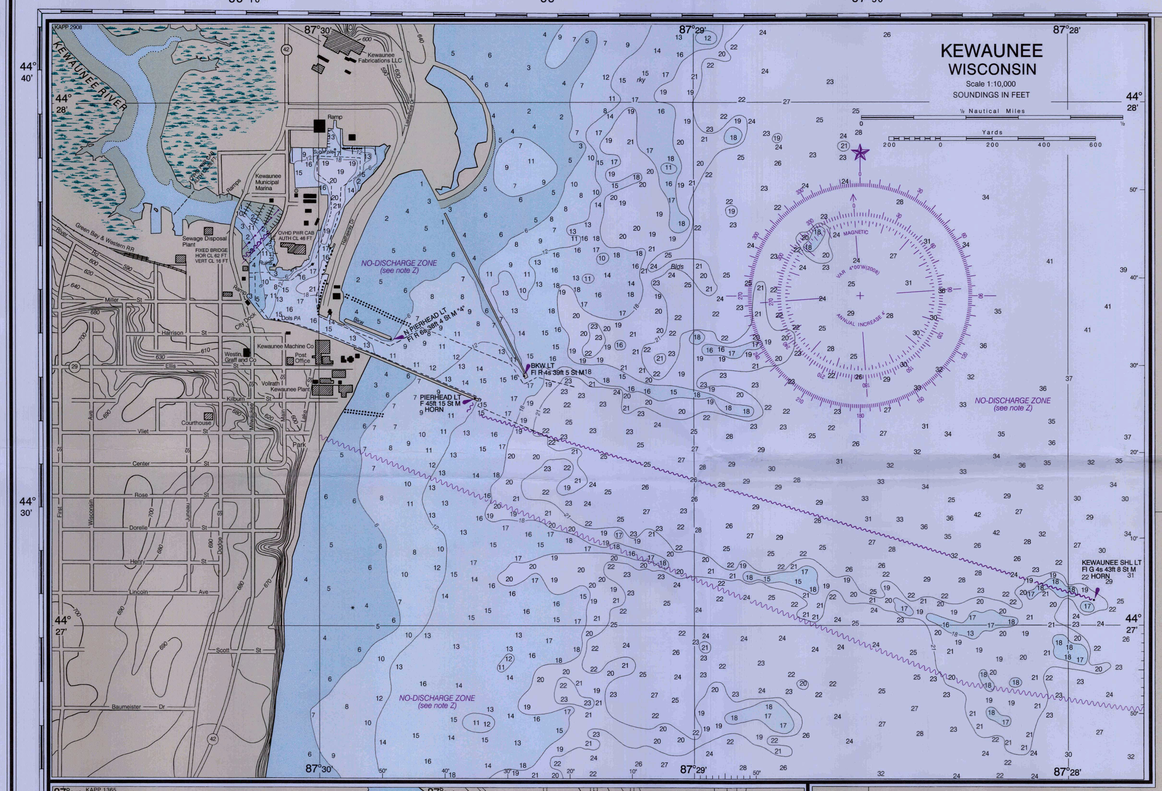
Formerly LS 73, 1st Ed., Jan. 1916 KAPP 1363

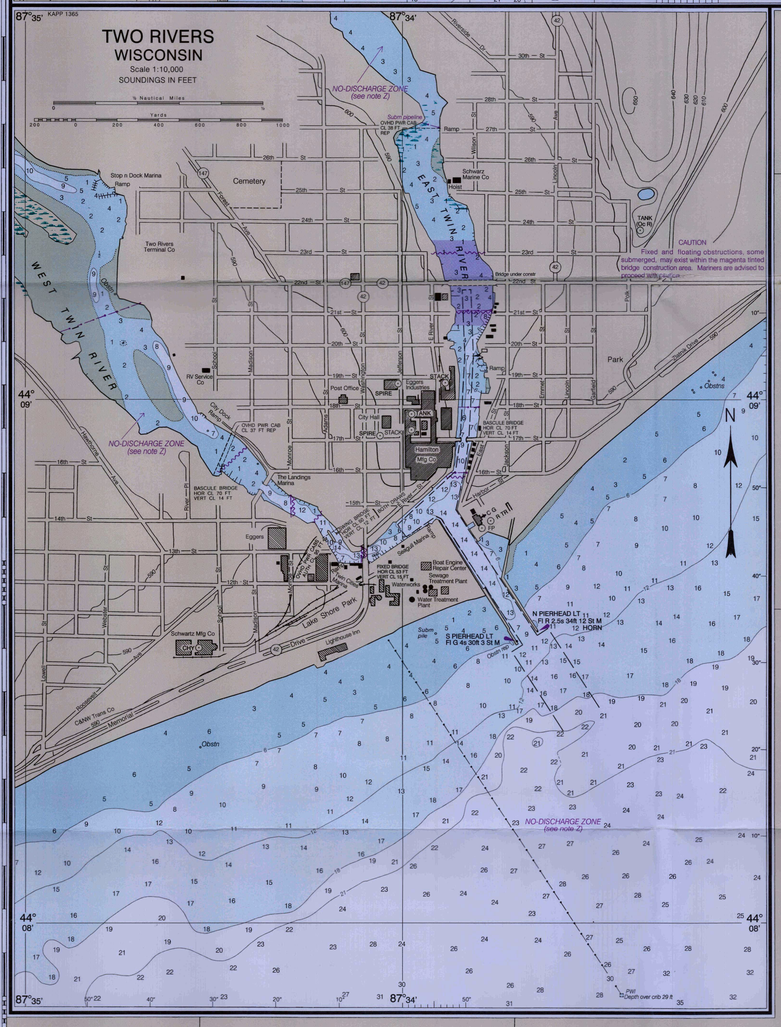
SOUNDINGS IN FEET

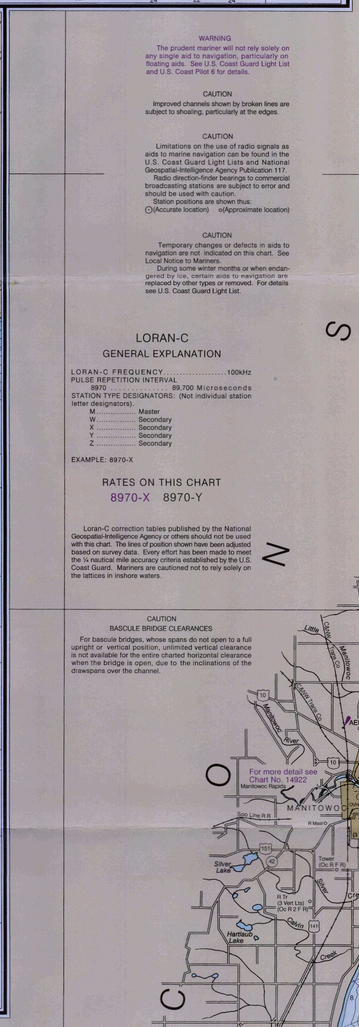
14903 LORAN-C OVERPRINTED

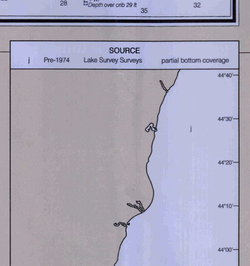
88°10' 88° 87°50' 87°40' 87°30' 87°20' 87°10'

44°40' 44°30' 44°20' 44°10' 44° 43°50' 43°40' 43°30'

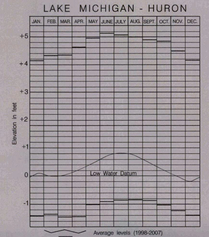








NOTE D
Mariners are warned that numerous uncharted stakes and fishing structures, some submerged, may exist in the area of this chart. Such structures are not charted unless known to be permanent.



Low Water Datum: For practical navigation purposes, the levels shown on the above hydrograph are to serve as the plane of reference for the charted depths. If the lake level is above or below Low Water Datum, the existing depths are correspondingly greater or lesser than the charted depths.

THE NATION'S CHARTMAKER SINCE 1807

UNITED STATES - GREAT LAKES

LAKE MICHIGAN - WISCONSIN

ALGOMA TO SHEBOYGAN

Polyconic Projection
Scale 1:120,000
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET

NOTES

NOTE A
Navigation regulations are published in Chapter 2, U.S. Coast Pilot 6. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 9th Coast Guard District in Cleveland, Ohio or at the Office of the District Engineer, Corps of Engineers in Detroit, Michigan.
Refer to charted regulation section numbers.

RADAR REFLECTORS
Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

POLLUTION REPORTS
Report all spills of oil and hazardous substances to the National Response Center via 1-800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
This chart falls entirely within the limits of a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage shall include graywater. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

PLANE OF REFERENCE OF THIS CHART (Low Water Datum) . . . . . 577.5 ft. Referred to mean water level at Rimouski, Quebec, International Great Lakes Datum (1985).
SAILING DIRECTIONS. Bearings at sailing courses are true and distances given thereon are in statute miles between points of departure.
AIDS TO NAVIGATION. Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
SYMBOLS AND ABBREVIATIONS. For complete list of symbols and abbreviations see Chart No. 1.
AUTHORITIES. Hydrography and topography by the National Ocean Service, Coast Survey with additional data from the Corps of Engineers, Geological Survey, and U.S. Coast Guard.
BRIDGE AND OVERHEAD CABLE CLEARANCES. When the water surface is above Low Water Datum, bridge and overhead clearances are reduced correspondingly. For clearances see U.S. Coast Pilot 6.

Additional information can be obtained at nauticalcharts.noaa.gov.

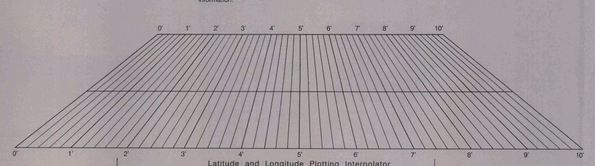
SUPPLEMENTAL INFORMATION
Consult U.S. Coast Pilot 6 for important supplemental information.

CAUTION
Due to periodic high water conditions in the Great Lakes, some features charted as visible at Low Water Datum may be submerged, particularly in the near shore areas. Mariners should proceed with caution.

Sailing courses and limits indicated in magenta are recommended by the Lake Carriers Association and the Canadian Shipowners Association.

HORIZONTAL DATUM
The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System of 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.022" southward and 0.346" westward to agree with this chart.

CAUTION
POTABLE WATER INTAKE
Vessels operating in fresh water lakes or rivers shall not discharge sewage, or ballast, or bilge water within such areas adjacent to domestic water intakes as are designated by the Commissioner of Food and Drugs (21 CFR 1250.93). Consult U.S. Coast Pilot 6 for important supplemental information.



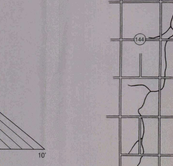
SCALE 1:120,000
Nautical Miles
Statute Miles
Yards
Meters

NOTE B
Mariners should use caution as military craft may be operating within the area. For further information consult the U.S. Coast Guard Local Notice to Mariners.

WARNING
Unexploded ordnance has been found along the western shore of Lake Michigan. Anyone finding unexploded ordnance should notify the nearest U.S. Coast Guard or law enforcement facility.

NOAA WEATHER RADIO BROADCASTS
The NOAA Weather Radio stations listed below provide continuous weather broadcasts. The reception range is typically 20 to 40 nautical miles from the antenna site, but can be as much as 100 nautical miles for stations at high elevations.

Green Bay, WI	KIG-65	162.550 MHz
Milwaukee, WI	KEC-60	162.400 MHz
Sheboygan, WI	WWG-91	162.425 MHz
Sister Bay, WI	WXN-69	162.425 MHz



CONTINUED ON CHART 14910
JOINS CHART 14904
JOINS CHART 14907

Silver Lake Shipwreck (Schr Schooner)
Sheboygan County, Wisconsin
453493 Easting
4860477 Northing
Zone 16

24th Ed., Sep. / 08 ■ Corrected through NM Sep. 27/08
Corrected through LNM Sep. 30/08
14903
LORAN-C OVERPRINTED

CAUTION
This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner. Chart updates corrected from Notice to Mariners published after the dates shown in the lower left hand corner are available at nauticalcharts.noaa.gov.

SOUNDINGS IN FEET

Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
COAST SURVEY

FATHOMS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
FEET 6 12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102
METERS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Algoma to Sheboygan
SOUNDINGS IN FEET - SCALE 1:120,000

14903
LORAN-C OVERPRINTED

SCALE 1:120,000
Nautical Miles
Statute Miles
Yards
Meters

ISBN 7842014010586
NOAA REFERENCE No. 14AOC014903