

CULTURAL LANDSCAPE REPORT • HISTORIC STRUCTURE REPORT

APOSTLE ISLANDS NATIONAL LAKESHORE
LIGHT STATIONS OF MICHIGAN ISLAND, OUTER ISLAND, DEVILS ISLAND,
LONG ISLAND AND SAND ISLAND
VOLUME III

100% DRAFT
MARCH 2011



Apostle Islands National Lakeshore – Bayfield, Wisconsin

VOLUME III OF VI: OUTER ISLAND CLR/HSR

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CHAPTER 1: INTRODUCTION

ORGANIZATION OF THE VOLUME

This volume presents the overall Light Station History, the Cultural Landscape Report (CLR), and the Historic Structure Report (HSR) for the Outer Island Light Station. This document is one of six volumes that present the comprehensive CLR/HSR for five of the six light stations in Apostle Islands National Lakeshore (park or APIS). The five light stations are Michigan Island, Outer Island, Devils Island, Long Island, and Sand Island. The light station at Raspberry Island was previously addressed separately.

This volume presents detailed documentation of the light station's physical evolution and historical development; an evaluation of existing condition of its associated buildings, structures, features and vegetation; an analysis of the cultural landscape and historic structures; and the recommended treatment for the Outer Island Light Station. Supplemental information applicable to all of the light stations, including Outer Island, is presented in Volume I, Introduction and Overall Development History.

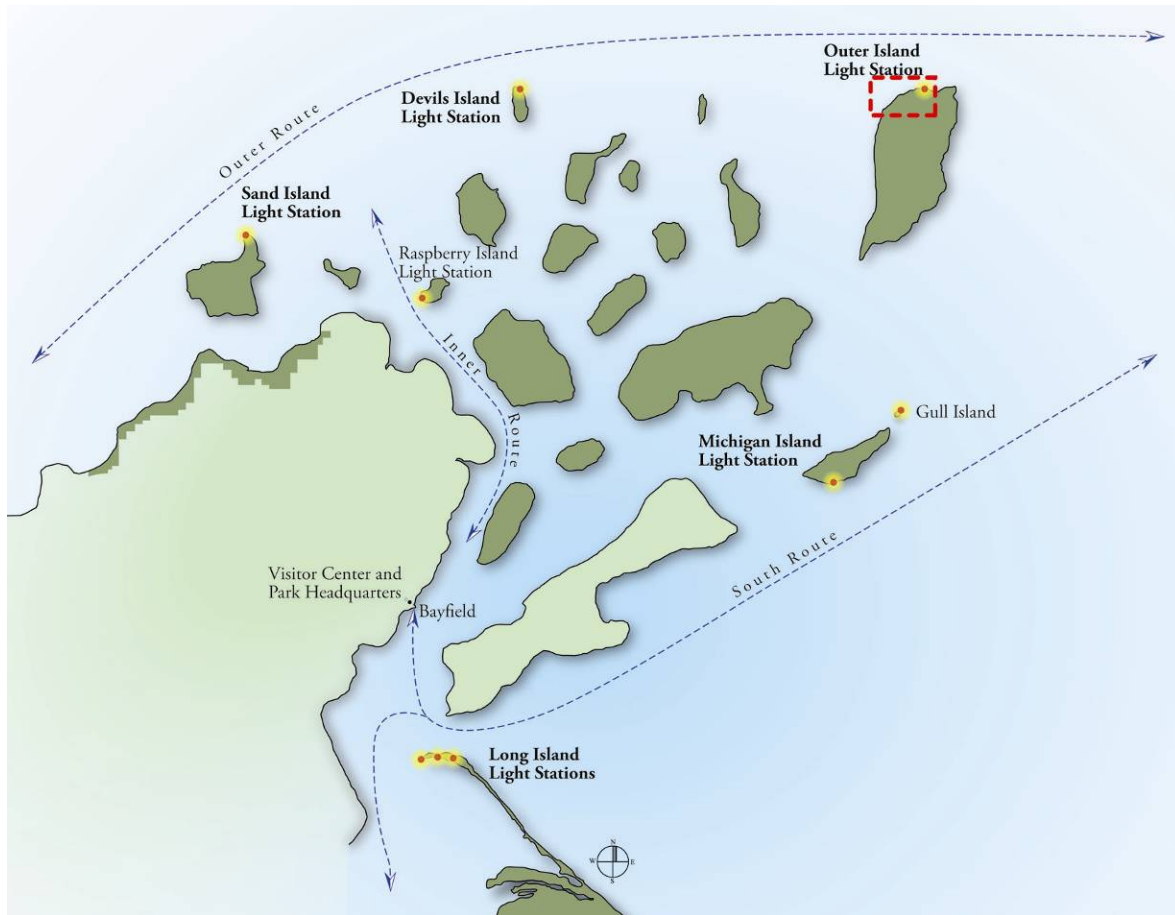
The island history is presented first, followed by the CLR and finally the HSR. Together, the combined CLR/HSR will guide the treatment and use of the significant resources associated with the Outer Island Light Station. In addition, this CLR/HSR provides guidance for the continued management of these resources consistent with the park's General Management Plan (GMP).

STUDY AREA

Outer Island is one of seven islands within the park, the six light stations and Gull Island, which provide aids to navigation for Lake Superior. The study area encompasses the Outer Island Light Station Reservation and the light station grounds. Outer Island is 7.0 miles long, 2.8 miles wide, and approximately 7,999 acres in size. The island is located on the furthest northeastern edge of the park, approximately 27 miles from Bayfield, Wisconsin and 28 miles from Little Sand Bay. The Outer Island Light Station Reservation is located on the north end of the Island and occupies approximately 200 acres. The remainder of the island outside the light station reservation is part of the Gaylord Nelson Wilderness area, designated in 2004.

Outer Island is the first navigational aid encountered when traveling west from eastern Lake Superior. The light station is located on a bluff above Lake Superior and is surrounded by maturing second-growth and old-growth northern hardwood forest. Six structures on the island are on the List of Classified Structures (LCS) and include: the Outer Island Tower, Keepers Quarters, Fog Signal Building, Oil Storage, Privy, and Dock.

Today, the island's land use is as the Apostle Islands National Lakeshore under the jurisdiction of the National Park Service (NPS). The light station continues to serve as an aid to navigation with the automated light operated and maintained by the United States Coast Guard (USGS). The NPS maintains the site and buildings, and the light station grounds are open to visitation and is frequented by visitors and park staff for its cultural and natural resources.



Outer Island Light Station Context (Source: MBD 2010)

SIGNIFICANCE OF OUTER ISLAND LIGHT STATION

Outer Island is the furthest northeast of all the light stations in the Apostle Islands, signaling either the beginning or terminus of the outer shipping route of the Apostle Islands to passing ships on Lake Superior. In 1874, the Outer Island Light Station housed the first fog signal of its kind in the Apostle Islands. The period of significance is 1874 to 1961, beginning with the initial development of the light station and continuing until automation of the Outer Island Tower. The island plays an important role in depicting the history of the light stations and navigational aid technology in the Apostle Islands because of its remote location and architecture. The entire 200 acres of the Outer Island Light Station Reservation comprises its cultural landscape. However, the majority of its contributing features occur on a core area of 1.5 acres associated with the light station grounds at the northern end of the island.

Contributing buildings include the Outer Island Tower and Keepers Quarters, the Fog Signal Building, the Oil Storage, and the Privy. Contributing features include the historic clearing, vegetation, organization of buildings and structures, boat dock, tramway, tram tracks, concrete walks, small scale features and the bluff.

With many of its original features intact and in good condition, the Outer Light Station Reservation clearly portrays the history of the light station as an aid to navigation. It continues to convey the development of navigational technology, the story of the people who resided at the light station and the management of the station.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Outer Island Light Station are focused on revealing the role that the light station has had in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general treatment approach for the Outer Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for those repairs, alterations, and additions necessary for the compatible use of the island.¹

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following.²

- 1) Reestablish portions of the historic cleared area of the light station;
- 2) Reestablish views from Lake Superior to the light station;
- 3) Repair and maintain circulation features including the tramway, tram tracks, and concrete walks;
- 4) Retain the historic location and configuration of the boat dock;
- 5) Maintain extant landscape plantings;
- 6) Remove noncompatible features;
- 7) Rehabilitation of the Outer Island Tower, Keepers Quarters, and Fog Signal Building;
- 8) Preservation of the Oil Storage and Privy.

The recommendations for treatment are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations a phased approach for construction activities will be required. Initial actions may include basic preservation measures to protect and stabilize contributing features followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to provide for improved efficiency of park operational and maintenance activities; and improved protection of the light station's natural systems.

¹ Page et al 1998

² A glossary of terms used to describe treatment recommendations is included in the appendix of this volume.

CHAPTER 2: LIGHT STATION HISTORY

LIGHT STATION HISTORY

The Wisconsin State Legislature requested an appropriation from Congress for a new light station on Outer Island in 1868. The Legislature's March 6 plea said "This (island) is the easternmost of a dangerous group of islands lying off a point right on the course of vessels bound in and out of the important and much frequented harbor of Superior..."⁵ Apparently Congress needed to be further convinced because they did not provide the funding. After repeated requests, a \$40,000 appropriation finally came through for Outer Island Light Station on March 3, 1873.

Lighthouse District Engineer, Major Orlando M. Poe, obtained the lighthouse reservation that year. Louis Lederle supervised the work crews, who began work in August of 1873, but extremely bad weather made for a brief construction season. The crews were only able to complete the boat landing and the foundations for the house and tower before the weather forced them off the island in early October.

The work resumed by May of 1874 and proceeded until it was discovered that the station was in the wrong place. The correct site was actually located about 1,300' away. Crews cleared four new acres and started over at a feverish pace to build the house, privy, tower and fog signal building. They completed the project in September of 1874. The lamp was placed in a third order revolving Fresnel lens built by Sautter and Company. "It gives a splendid light," remarked the lighthouse keeper in the log entry for the light's inaugural day on October 20, 1874.⁶ Located high above the water, atop a bluff, the light from the more than 80-foot tall tower was visible for more than 19 miles. The ten-inch fog steam whistle blasted for the first time on November 5. It was the first fog whistle in the Apostle Islands, but it would not survive for long.

The brick Keepers Quarters (LCS ID 101140) was constructed on a locally quarried brownstone foundation. A one-story passageway connected the house to the conical whitewashed-brick tower (LCS ID 006376). The lighthouse was very similar to one under construction at Au Sable, which was also instigated while Major Poe was the District Engineer.

After a distinguished career during the Civil War, Major Orlando Poe was appointed the Chief Engineer of the 11th Lighthouse District and served from 1870 to 1873. Lighthouse designs under Poe's supervision were elegant departures from the previously plain schemes used on these utilitarian structures. The Outer Island Light Station incorporated details such as a cut stone foundation for the brick house, 16 ornate brackets supporting the tower walkway and hooded arched windows gracing the whitewashed tower. The designs of the Poe-influenced stations incorporated elements used in the Italianate architectural style and brought praise from Army Quartermaster General Montgomery Meigs, who wrote, "I rejoice to see that the Board is paying some attention to architectural design in the newer lighthouses, and that there is a prospect that hereafter the Bald (sic) towers which for so many years... have offended all persons of taste... will give place, at very little increase of original cost, to buildings which it will be a pleasure to regard."⁷

⁵ Memorial, Letter 234, page 39 in Snyder, David L. "A Compendium of Written Communication of the Light House Board for the Twelve Light Stations of the Midwest Region, the National Park Service, 1839-1881." 1992 .Page 61. Manuscript on file at the Apostle Islands National Lakeshore.

⁶ Keepers logs are located on file at the Apostle Islands National Lakeshore. 1992.

⁷ Letter of January 9, 1873 in Snyder, David L. "A Compendium of Written Communication of the Light House Board for the Twelve Light Stations of the Midwest Region, the National Park Service, 1839-1881." Manuscript on file at the Apostle Islands National Lakeshore. 1992.

Masonry light towers with bracket-supported walkways and decorative window surrounds were popular design choices at the time. At least eight other similar towers were built between 1871 and 1880 on the Great Lakes.

The Privy (LCS ID 006380) was designed in a manner worthy of the elegant new lighthouse, including a beadboard interior and an arched entry. It was constructed at the same time as the lighthouse.

Exposed to the fury of Lake Superior, the Outer Island station battled with the elements from day one. On October 28, eight days after the first lighting, the keeper noted in the log “The dock has all washed away, and our new boat would have gone with the dock if it had not been for the assistance of the gentleman working on the fog whistle.” Two days later a storm washed the bank away, creating a new shoreline within 8’ of the new fog signal building.

The signal building went down in a landslide in November within weeks of the first whistle blast. It was too late in the year to do anything about the lost building, but the keeper built a new boat dock. The next year, the keeper worked on remodeling the dock to try to keep the boats from “...getting smashed to peaces (sic)”. The keeper turned the light off for the season in December and remained on the island through the winter.

Crews constructed a new fog signal building in June and July of 1875. The signal was a ten-inch steam powered whistle with a coal fired boiler. The keeper’s logs provide some insight into the difficulty of running the fog signal. The log entries note the coal was of poor quality and it was difficult to generate adequate heat to produce steam in the colder months. The tanks to the boiler also suffered from cracks and leaks, requiring steady vigilance of the system.

In late 1876 the well providing the water source for the steam ran dry and did not replenish itself until May of 1877. A new well and cistern were eventually installed. Just getting fuel to the signal house was a challenge. While they were at Outer Island to complete the new signal building, the crew from the supply ship *Dahlia* unloaded 26 tons of coal, which the crew “wheeled” up the hill, presumably using a hand powered hoist for the tram. The transfer of coal took two full working days.⁸

A duplicate signal building was constructed in September of 1878 and held a second fog signal whistle. H. Bamber’s (1893) survey map of the light station shows “Whistle House 1” and “Whistle House 2” located about 100’ apart. The cistern is just south of Whistle House 1. The Outer Island fog signals were the first steam powered whistles to be established in the Apostle Islands.⁹

Bamber’s survey map also illustrates the pier and dock configuration, which was constructed to provide a protected landing for the boats and to attempt to reduce erosion of the shoreline. On October 16 and 17, 1880, the Keeper reported the fiercest storm he had ever seen on the lake. The light tower “...swayed like the top of a tree”, and the boat dock was entirely washed away. Inspection reports in 1882 noted the bluff was washing away and addressed plans to build a boathouse and pier.

In 1883 crews remodeled the boathouse and constructed a new pier. The estimated total cost for both projects was \$7,572. Over time the boat dock, pier and shoreline received more than five major alterations or adjustments. Two new cribs were added in 1894. The boat landing was rebuilt in 1901, 1948 and 1958. In the 1960s the boathouse was washed away by heavy storms. Work in the 1980s, 1990s and the early 2000s continued to address shoreline erosion.

⁸ Information in this paragraph derived from log entries for 1876-1877.

⁹ Letter from the Lighthouse District Engineer written May 1, 1879 and included in Snyder’s compendium of Lighthouse Board correspondence.

Other elements of the light station did not suffer quite as much as the boat dock. In 1886 work crews installed a steam powered injector that delivered water from the lake to the signal houses and the Keepers Quarters. The next year the crew extended the tram tracks down the pier and replaced the old hand powered tram hoist with a steam powered mechanism.

Up on the bluff, in August 1892, Henry Crump the District Lampist replaced the lard oil lamps with kerosene fueled lamps. A brick Oil Storage Building (LCS ID 006379) was constructed in 1895 to provide storage for the volatile fuel. The two fog signal buildings received new brick foundations in 1894.¹⁰ In 1900, the western most fog signal building (#2) was taken down and salvaged to add on to the eastern fog signal building. The tram route was rerouted slightly to accommodate the remodel. The steam powered tram hoist machine shared quarters with the fog signal equipment in the newly reconfigured building, which is the currently standing building (LCS ID 006378). A new pair of diaphones with diesel powered compressors was installed in the signal building in 1929. The keeper noted the occasion with a terse “Air signal in commission.” in his October 31, 1929, entry. The keeper built a saddle for the fuel barrel in April of 1930.

A. Klette, the District Lampist, replaced the wick lamp with an incandescent oil vapor lamp on May 28, 1913.¹¹ The lamp was put into use on June 5, and subjected to some on-the-job trial and error training by the keeper.

Dormers were added to the house in 1925 to convert the third floor attic space into comfortable quarters for a new second assistant keeper. Other improvements on the island are only briefly noted in various records. Siblings Walter Daniels and Isabel Daniels Cassidy revisited their childhood home (1917-1937) and remembered gardens located between the house and the privy. The Daniels children remembered the garden had corn, potatoes and vegetables.¹²

The keeper’s logs refer to storing potatoes at the end of the chicken coop and also reference a cow that was brought over to the island in at least two different years. A barn and a chicken coop burned down in 1930. Former keeper, Ben Hudak, served at Outer Island in the 1930s. He remembered keeping a goat and commented that there were no other buildings at the station beyond the tower, house, privy, oil house and signal building. Entries in the keeper’s logs in the 1930s refer to a shed and to a smokehouse. Lighthouse Keeper A.G. Carpenter built the ladder rack in July of 1939, noting the work in his keeper’s log.

Nearby Activity

Outer Island was a remote and lonely place to work. The island saw a little more activity when the Schroeder Lumber Company established a logging operation on the opposite end of the island. The lumber company, anticipating profits from escalating post-World War I demands, had purchased the timber rights by 1920. A five-mile long railroad line and a 650-foot dock were completed and logging began in 1924. The last year the company worked on the island was 1930, when 225 men cut six million board feet of timber.¹³ The logging camp provided a mail station and an alternative landing site for employees of the light station.

¹⁰ *Ashland Daily Press*. “Outer Island Most Isolated Place in State of Wisconsin”. September 4, 1958. describes the work completed in 1886-1895. Also see the Keepers Logs for the dates noted in the text.

¹¹ Lighthouse Keepers logs for that date on file at the Apostle Island National Lakeshore.

¹² Notes to the file regarding the Daniels visit in 1987 are located in the Apostle Islands National Lakeshore topical file on Outer Island.

¹³ Busch, Jane C. “People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore” Bayfield: Apostle Islands National Lakeshore. 2008. Page 229.

The Lullabye Furniture Company purchased the remaining productive logging acreage on Outer Island - effectively all of the island that was not within the lighthouse reservation - in 1936 and the loggers returned in 1942. Lullabye built a logging camp about 1.5 miles southeast of the lighthouse and an airstrip at the south end of the island." They used gas powered vehicles. Logging ended on the island in the 1960s.

New Technology

Technological advances continued. The United States Coast Guard (USCG) assumed responsibility for all lighthouses in 1939 and worked to modernize and streamline the operations. The *Amaranth* lighthouse tender delivered a radio transmitter on September 14, 1939, as part of the Apostle Islands radio system. In that same year the rotating mechanism for the light was electrified. The light and fog signal system were electrified in May, 1942. The first electric lamp (bulb) shone on May 15.¹⁴ New radio equipment with a radio phone was installed later that year.

Currently the Fog Signal Building contains two compressors made by the Ingersoll Rand Company. Identical plates on the compressors identify the machinery as provided under Purchase Order No. CG-12627-C, dated December 17, 1948. A General Motors Diesel motor Model PTA-2109, serial number 91491, is also in the building along with other equipment. It appears the USCG replaced some equipment as part of the extensive repair and restoration work they did to the boat dock and pier in 1948. The tram track is extant.

A three person crew tended the Light Station until it was automated on October 5, 1961. A solar powered 12 volt DC optic was installed and was replaced in 1992 with a VEGA VRB-25 solar powered optic.

HISTORIC EVIDENCE

The historic photos date back to 1893 and show the no longer existing west fog signal building, boathouse and dock, and tramway ramp. For more detailed descriptions of the photos, see the CLR and each building's Chronology of Alterations and Use in the HSR.

A historic site plan states that on July, 21, 1871, the site was officially reserved for the lighthouse by the President, the first buildings were built in 1874, and the area of the reservation is 200 acres (although noted in the document "Questionnaire covering real estate owned by the United States" from the National Archives that the reservation in 1871 was precisely 278.94 acres). In 1877 and 1893, two site plans depict two "Whistle Houses," both connected to the tramway. (HSR Historic Drawings OI-01 and 02) A 1901 or 1910 version of the site plan shows only one building in the location, now called the "Fog Signal House." (HSR Historic Drawing OI-03) There was a well to the southeast of the quarters (also shown in 1893), a cistern to the south of the Fog Signal Building (also shown in 1893), and a boathouse and station house on the dock in the 1910 plan. There was a boathouse shown in the 1893 plan, but its orientation and size indicate that the 1910 boathouse was a different structure. (HSR Historic Drawing OI-02 and 03) In a construction drawing from 1930, titled "Reconstruction of Boathouse," a wood frame structure with vertical board and batten siding and a painted sheet metal roof is shown. The "plank crib," as it's called on both site plans, is described as a "pier filled with stone" and is in the same location on both the 1893 and 1910 plans, but today does not appear to exist.

Undated drawings show the Light Tower and Keepers Quarters plans and elevations. (HSR Historic Drawings OI-04 and 05) Also, a set of 1925 plans shows the Keepers Quarters existing 2nd floor conditions with two separate living areas. The drawings indicate conversion of the attic into a new living area,

¹⁴ Researchers will note that this date is later than what has been given in most of the available material, which suggests electrification in 1941. This date is taken from the keeper's log and clearly indicates this is the first date of electrification of the light.

installation of a stair from the 2nd floor to the attic, the addition of dormers on the west and east elevations, and the addition of a wood frame entry to the “Wood Shed”/ Kitchen exterior door. (HSR Historic Drawings OI-06 and 07) The Fog Signal Building’s 1929 drawing for installing new fog horns details the space and equipment used during that period. (HSR Historic Drawings OI-08)

OVERVIEW OF DEVELOPMENT AND USE

Date	Work Described
1852	Congress authorizes construction of 1 st lighthouse in the Apostle Islands (J. Busch, 2008)
1868	Wisconsin State Legislature requests new light station on Outer Island from Congress (J. Busch, 2008)
Annual Report of 1871	“Outer Island, Lake Superior. – The through commerce to and from the western end of Lake Superior, increasing so rapidly as the railroads having their termini at Du Luth are extended to the westward, all passes outside the Apostle Islands, and is greatly in need of a Light-house on the northern end of Outer Island. This should be respectfully recommended to be appropriated.” Repeated in 1872 (“1871 Annual Report of the Lighthouse Board,” Outer Island Light in annual reports 1850-1920)
Annual Report of 1873	“Outer Island, Lake Superior, Wisconsin. – Under the appropriation made by act of March 3, 1873, the construction of the buildings required at this new station will be begun during the present season and pushed to completion as soon as possible.” (“1873 Annual Report of the Lighthouse Board,” Outer Island Light in annual reports 1850-1920)
1873	Congress appropriates \$40,000 for Outer reservation; District Engineer Orlando Poe obtains reservation control (J. Busch, 2008)
1874	Lighthouse, Fog Signal Building, and Privy completed (LCS, 2009 and J. Busch, 2008) Oct 30: “The bank around the fog whistle has caved in very much on the Lake side. The sea has washed it away within 6 or 8 feet of the building.” (O.K. Hall, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
1875	Fog Signal Building re-built due to caved-in bank (LCS, 2009 and J. Busch, 2008) July 8: “The fog whistle completed today so that we was able to get up steam and sound the alarm.” (O.K. Hall, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
1877, Oct 1	“Mr. G.W. Bond finished work on the cistern....Mr. Jerome Sauzon is in charge of the building of the Signal and Light House now being constructed.” (H.A. Kuchli, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
1878, June 27	“Government boat ‘Warrenton’ arrived at 6 AM; left material for a duplicate [sp] Fog Signal, lumber for building, and all the machinery; unloaded by means of a scow.” (H.A. Kuchli, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
1877-1879	West Fog Signal Building built next to 1875 East Fog Signal (Letter from District Engineer, 1879)
1880, October 16	“The cap on top of the chimney blowed off...The Tower swayed like the top of a tree; and the Lens, well, it is a wonder to me that a piece of it is left.” (H.A. Kuchli, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
1880-1947	Documented painting of the interior of buildings 29 times; including at times the following buildings: Keepers Quarters (in 1914, mentioned change of color of kitchen and upstairs from gray to green); Tower, regularly mentioned the Lantern, Watch Room, and stairs (part of stairs painted in 1916 “metallic brown”); Fog Signal Building; Oil Storage; and Privy (in 1937, painted gray inside). (OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I and II)
1880-1947	Documented painting of the exterior of buildings 30 times; including at times the following buildings: Keepers Quarters, specifically mentioned the kitchen portion that was painted white in 1917 (in 1928, the Quarter’s dormers were painted red while west end and gable end windows were painted white, in 1938 the Quarters’ windows and trim were painted gray); Tower (brackets and trim consistently painted black with whitewash as primary color); Fog Signal Building (in 1931, trim, floors, and windows were painted green, in 1938 the windows were black, and in 1946 the eaves and windows were gray); Oil Storage and the Privy. (OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I and II)

Date	Work Described
1883	Shore protection and boat harbor for pier protection built (<i>Ashland Daily Press</i> 9/4/58: <i>Outer Island – Most Isolated Place In State of Wisconsin</i>)
1886	Pipe box constructed pumping water from the Siphon House to the East Fog Signal Building (<i>Ashland Daily Press</i> 9/4/58: <i>Outer Island – Most Isolated Place In State of Wisconsin</i>)
1887	Tramway improvements (<i>Ashland Daily Press</i> 9/4/58: <i>Outer Island – Most Isolated Place In State of Wisconsin</i>)
Annual Report of 1887	“ <i>Outer Island, one of the Apostle Group, Lake Superior, Wisconsin.</i> – In October, 1886, a steam injector was installed to pump water from the lake to the fog-signals and dwelling, and it works well and gives an abundant supply of water. The work of erecting a steam-hoisting engine-house, extending and improving the tramway, and converting an old well into a cistern, was commenced late in June and has been finished. Repairs were made to the boilers and machinery of the signals.” (“1887 Annual Report of the Lighthouse Board,” <i>Outer Island Light</i> in annual reports 1850-1920)
1892	Lard oil lamps replaced by kerosene lamps (J. Busch, 2008 and LCS, 2009)
1895	Oil Building constructed (<i>Ashland Daily Press</i> 9/4/58: <i>Outer Island – Most Isolated Place In State of Wisconsin</i>)
Annual Report of 1895 Fiscal Year	“ <i>Outer Island, Apostle Group, Lake Superior, Wisconsin.</i> – A brick oil house was erected, with iron roof, door, and shelving, located 60 feet southwest of the dwelling.” (“1895 Annual Report of the Lighthouse Board,” <i>Outer Island Light</i> in annual reports 1850-1920)
1897-1945	Documented whitewashed buildings 23 times; including at times the following buildings: Tower, exterior and interior; Keepers Quarters “Storm House” and the interior of the basement and kitchen; and the exterior of the Privy. (OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I and II)
1900, July	July 23: “... helping to raise Signal House No. 2.” July 25: “... helping to move Signal House.” (John Irvine, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I)
Annual Report of 1900	“ <i>Outer Island, Lake Superior, Wisconsin.</i> – Material for building the fog signal houses into one building, providing new fog signal boilers, changing machinery, rebuilding the tramway, renewing defective timbers and decking of the landing wharf, providing screens and storm doors for dwelling, and making other minor repairs was delivered at the station. Minor repairs were made.” (“1900 Annual Report of the Lighthouse Board,” <i>Outer Island Light</i> in annual reports 1850-1920)
Annual Report of 1901	“ <i>Outer Island, Lake Superior, Michigan.</i> – Fog-signal house No. 2 was built on the east side of building No. 1, and the two structures were connected. The old plant of signal No. 1 was removed, the new Plant was placed, and the steam and water pipes were changed as needed. The landing was rebuilt and refilled with stone, and the structure was re-decked. A crib was sunk in the gap at the rear of the old pier, and filled with stone. A tramway was built from the brow of the bluff to the signal house. Various repairs were made.” (“1901 Annual Report of the Lighthouse Board,” <i>Outer Island Light</i> in annual reports 1850-1920)
1908	Aug 24: “The work done here is as follows: layed cement walks, shingled all roofs with metallic shingles, layed new planks on cribs, plastered the foundation with cement, layed drain tile all around dwelling and relayed sewer pipes, by Alex H. Young.” Sept 7: “Made steps on tramway.” (Otto Olson, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1910, August 2	“John W. Miller arrived with a carpenter ... they come here to ... lay the hardwood floors, and put hand rail in Tower.” (Otto Olson, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1912, Nov 20	“Brought new Vapor Light soap and Timemarker, and stove fittings.” (Otto Olson, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1912-1947	Documented painting of the roofs of buildings 17 times; including the Keepers Quarters, Tower, Oil Storage, Privy and Fog Signal Building (tar shingled in 1944) (OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I and II)
1913	Wick lamp replaced by incandescent oil vapor lamp (Otto Olson, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1915, November	Nov 2: “Setting up frame of storm house.” Nov 5: “Got siding on storm house, also roof. Started to put on lining in side.” Nov 6: “Working on storm house. Putting in window.” Nov 16: “Fitting door on storm house.” (Otto Olson, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1925	Keepers Quarters had dormers added and attic and 2 nd floor converted into separate living spaces

Date	Work Described
	for 1 st and 2 nd assistants (Historic Drawings, 1925) Oct 23: "Making new platform for whistles." (Daniels, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1926-1943	Documented varnishing of floors seven times; including at times the following buildings: Keepers Quarters, specifically mentioned hallways, handrails, and 1 st and 2 nd assistants quarters (linoleum was installed in Quarters in 1945); and the Tower, specifically mentioned the Watch Room floor. (OI Log, Sept 17, 1874 – Dec 10, 1947, Vol I and II)
1929	Diesel-powered air diaphones (2) installed in Fog Signal Building (J. Busch, 2008) Oct 1: "Painted new siding on Signal." Oct 31: "Air signal in commission." (Daniels, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1930, Oct 29	"Piped shower bath." First mention of indoor plumbing. (Daniels, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1933, November	Nov 18: "Devils [boat] arrived with O. Joiner to install Winter Light." Nov 20: "Winter Light in commission." (Daniels, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1934	July: Tramway improvements Oct 10: "Installed new radio." Oct 12: "Bolted stand on balcony for Winter Light." (Daniels, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1937, April	April 22: "Mr. F. C. Biesel came out with us to work on engines and put in new Light." April 23: "Put in new Light, and put No. 1 Engine in commission and painted water tanks inside with cement..." (A. G. Carpenter, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1939, May	May 19: "Amaranth" arrives with supplies and "Mr. R.H. Robson came ashore at 6:45 A.M. to put [in] electric motor to drive Lens." (A. G. Carpenter, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1941	Nov 4: "Received part of a message stating that the Coast Guard will, after November 1, operate as part of the U.S. Navy." (V.T. Barningham, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II) -United States Coast Guard (USCG) renovates radio and electrical systems in Fog Signal Building (Electrical Plans)
1942	May 13: "Worked in Fog Signal and Tower. Wiring and putting partition in." May 15: "Put partition in... Turned Light on to electricity for the first time. Now is a full pledge [fledge] Coast Guard Station." Oct 29: "Worked on radio equipment; installing the same. Went on the air at 7 P.M. this date; all working good." (V.T. Barningham, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1943, September	Sept 1: "Digging cesspool for bathroom. Getting up gravel." Sept 2: "Tearing down partition." Sept 3: "Left for Bayfield via Michigan Island to pick up bathroom equipment." Sept 4: "Installing hot water tank." Sept 7: "Working on bathroom and water pipes for hot water tank." (V.T. Barningham, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1944, October	Oct 13: "... tarring shingles." Oct 19: "Tarring roofs." (V.T. Barningham, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1945	May 4: "Installing hot water tank in kitchen." May 9: "Cutting doorway in upstairs quarters." May 14: "Working on entry to bedroom in second floor quarters." June: "Laying linoleum..." throughout Keepers Quarters (V.T. Barningham, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1947	May 28: "Dismantled old fish house on dock and hauled it up the hill back of the Fog Signal building to be used to build a coal bin." July 23: "Captain Wodyhosesfue and Mr. Porter and Field Mechanic arrived on picket boat to inspect ground in front of Light Tower and find means of checking edge of bank from getting closer to Tower." (Ted Schelnan, OI Log, Sept 17, 1874 – Dec 10, 1947, Vol II)
1948	Diesel-driven air compressors installed in Fog Signal Building (Electrical Plans)
1952	Mechanical and electrical remodel of Light Station Quarters (Mechanical Plans)
1961	Light automated (J. Busch, 2008)

CHAPTER 2: LIGHT STATION HISTORY

Date	Work Described
1970	Apostle Islands National Lakeshore authorized
1976	Stabilization of USCG tower and Light Station (APIS/NPS Business Office File # D3423-Outer)
1977	Installed ¼" lexan for Tower windows, repoint and paint the Tower (APIS/NPS Business Office File # D3423-Outer)
1978	Repair and paint Oil Storage and Privy (APIS/NPS Business Office File # D3423-Outer)
1982	Repoint brickwork and paint trim for Oil Storage, Privy, Light Station, and Fog Signal Building; whitewash exterior Tower walls; installed generator on roof of Fog Signal Building and ran cable underground to connect to Quarters (APIS/NPS Business Office File # D3423-Outer)
1984	Removed existing lexan glass in lantern, installed new single pane ¼" laminated safety glass with new gaskets (APIS/NPS Business Office File # D3423-Outer)
1992	VEGA VRB-25 solar powered optic replaced 12 volt DC optic (J. Busch, 2008)
2002	Keepers Quarters and Fog Signal Building re-roofed (HSPT Reports, 2009)
2004	Erosion control efforts on the Light Station's banks: rock revetment and drainage trench installed (2005 park newspaper article)
2005	Erosion control efforts on the Light Station's banks: bioengineering techniques used to stabilize slope (2005 park newspaper article)

1
2

CHAPTER 3: CULTURAL LANDSCAPE REPORT

OUTER ISLAND EXISTING CONDITIONS

Introduction

The cultural landscape of Outer Island Light Station is a composition of features that remain from its development over the last 135 years as a light station and aid to navigation. As one of six light stations in the Apostle Islands, the Outer Island Light Station plays an important role in the development of the system. The intent of the Cultural Landscape Report (CLR), in conjunction with the Historic Structures Report (HSR) is to guide treatment and use of the aboveground resources associated with the Outer Island Light Station. The CLR provides park managers with a comprehensive understanding of the physical evolution of the cultural landscape and provides guidance for its management.

The CLR was conducted at a limited level of research, investigation and documentation. This level of research uses select documentation of known and presumed relevance, including primary and secondary sources that are readily available. The periods of landscape change are described using narrative text, historic photographs and annotated historic drawings and maps. Archeological investigations are not included.¹⁵ A more detailed description of the CLR methodology is included in Volume I, Chapter 2: Methodology.

The CLR begins with a description of the site development of the Outer Island Light Station that documents the physical changes that have occurred on the light station reservation and light station grounds. The light station reservation is the land initially set aside for the development of the light station. The portion of the reservation that contains structures and buildings is referred to as the grounds in the CLR. These in total are referred to as a light station. The site development is presented by the five periods of landscape change.

The second section presents the existing condition and analysis of the cultural landscape. This section is organized by cultural landscape characteristics. In September 2009, field investigations were conducted to document the existing condition of the cultural landscape characteristics: spatial organization, topography, views and vistas, circulation, buildings, structures, small scale features and vegetation. The documentation of the island's existing condition is illustrated with existing condition plans, diagrams and photographs that document its cultural landscape.

The analysis compares the island's history with its existing condition, and identifies those landscape characteristics that retain integrity and contribute to the significance and integrity of the Outer Island Light Station.

The existing condition plans were created in AutoCAD using a variety of sources including: historic and current maps and photographs provided by the NPS APIS Archives; field work conducted in September 2009; and additional information was provided by park staff.

¹⁵ Page et al. 1998.

1 SITE DEVELOPMENT

2 A period of significance of 1852 to 1972 is recommended for the light stations of the Apostle Islands as a
 3 whole to recognize the role of the light at each island and as a connected system of navigational aids for
 4 Lake Superior. The beginning date is the first act of Congress authorizing construction of the first
 5 lighthouse in the Apostle Islands in 1852. The period of significance for Outer Island begins with the
 6 construction of the Outer Light Tower and Keepers Quarters in 1874, and ends when the Light Tower was
 7 automated in 1961. Six periods of landscape change document the evolution of the light station's cultural
 8 landscape. Three of the six periods of landscape change are within the Outer Island Light Station's period
 9 of significance, these periods are noted by italics:

- 10 • Pre-Light Station (1852 – 1873)
- 11 • *Early Light Station (1874-1900)*
- 12 • *Light Station (1901-1938)*
- 13 • *Coast Guard (1939-1960)*
- 14 • Automated Light Station (1961 – 1969)
- 15 • National Park Service (1970 to present)

16
 17 The beginning and end of each period of landscape change corresponds to major physical changes related
 18 to either the site's use, technological advances, and/or governmental control of the island. The periods
 19 consider the social history of the island, however there are instances where the social history differs since
 20 physical change in the cultural landscape is the primary rationale in defining the beginning and end of each
 21 period.

22
 23 Brief narrative text, graphic illustrations (where applicable), and historic maps and photographs where
 24 available, describe each period of landscape change. Additional information regarding the period of
 25 significance for the Apostle Islands light stations is presented in Volume I, Chapter 3: Context, Current
 26 Designations, and Park Significance.

27 28 29 **Pre-Light (1852–1873)**

30 This period began in 1852 with Congress authorizing the construction of the first lighthouse in the Apostle
 31 Islands, originally to be built at La Pointe Harbor on Madeline Island. The location was later revised to
 32 Long Island. Before construction began, the location was again revised, and the first lighthouse was
 33 ultimately built on Michigan Island in 1856.¹⁶

34
 35 In 1871, District Engineer Major Orlando M. Poe recognized the need for additional lighthouses and made
 36 efforts to secure land and funds for a light station at Outer Island. Gull, Sand and Devils Islands were also
 37 considered, but Outer Island was selected because of its northeastern-most location of the archipelago. In
 38 1873, the light station reservation was established on Outer Island.¹⁷ No permanent physical improvements
 39 related to the light station were built on Outer Island during this period. Construction of the Outer Island
 40 Tower and Keepers Quarters began in 1873 but was halted when it was discovered that the foundations
 41 were placed in the wrong location.¹⁸

¹⁶ Busch, Jane C. "People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore" Bayfield: Apostle Islands National Lakeshore. 2008. Page 126

¹⁷ Ibid, page 128

¹⁸ Ibid, page 128

Early Light Station (1874–1900)

In 1874, construction resumed on the Outer Island Tower and Keepers Quarters in the corrected location. The reservation was located on the center peninsula of the island's north shore (at its most northern point). The level bluff was cleared of trees to allow for construction of the light station buildings and features. The bank was cleared to allow greater visibility of the tower on the light station site (Site Image OI-01).

The Outer Island Tower and Fog Signal were completed in the early autumn of 1874. The Fog Signal was the first of its kind to be built in the Apostle Islands. The original Fog Signal Building was built into the bank, which was a poor location, and caved in around the building the week following its construction. The Fog Signal Building was rebuilt west of the Keepers Quarters and Tower in 1875. In 1879, a second Fog Signal (2) was built west of the original Fog Signal (1). H. Bamber's 1893 map (Site Image OI-02) refers to those structures as Whistle House 1 and Whistle House 2.

The initial docks at Outer Island were troublesome, requiring many repairs and modifications during this period. The keeper's logs document the dock being washed away several times during the light station's earliest years. In 1883, a boat dock and pier were built creating a boat harbor.¹⁹ The dock extended north-south with a pier extending to the west (Site Image OI-02).

Heavy wave action, storms and winter conditions of Lake Superior make any structure built along its shorelines susceptible to damage. The Boathouse had to be rebuilt on multiple occasions during this period. The date of the first Boathouse is unknown, but historic photographs indicate a Boathouse present in 1891. The 1893 map (Site Image OI-04) shows the Boathouse at the base of the cliff on the shore, oriented in a north to south direction. A Siphon House was built c. 1886 north of the Boathouse in the lake to pump water up to the Fog Signal Buildings and Keepers Quarters.²⁰

Wooden walkways predated concrete walks on the light station grounds during this period. Site Image OI-10, a historic photo from 1893, clearly shows the wooden walkways leading to a well located southeast of the Keepers Quarters. A cistern was built south of Fog Signal 1. The cistern is still extant today, and the former location of the well is marked by two wooden boards.

Keeper's logs and historic photographs indicate that early in this period, an inclined, wooden tramway was built on the bank and dock, and was used for transporting goods and fuel from the boat dock up to the light station.²¹ A wooden pipe box and staircase connected the Siphon House with both Fog Signals through a pipe that ran east-west in front of the buildings. The box provided water needed to operate the Fog Signal. The pipe box followed the cliff and was parallel to, and west, of the tramway. Both the Tramway and the staircase associated with the pipe box provided pedestrian routes up the bank, but the staircase was the primary route. Tramway improvements and modifications were done in 1887 and again in 1908.

The Oil Building (Storage) was built in 1895 west of the Tower and Keepers Quarters.²²

By the end of this period the basic spatial arrangement of the light station was in place. The grounds were cleared of forest vegetation, the primary structures were in place and access (boat dock) and circulation routes were established.

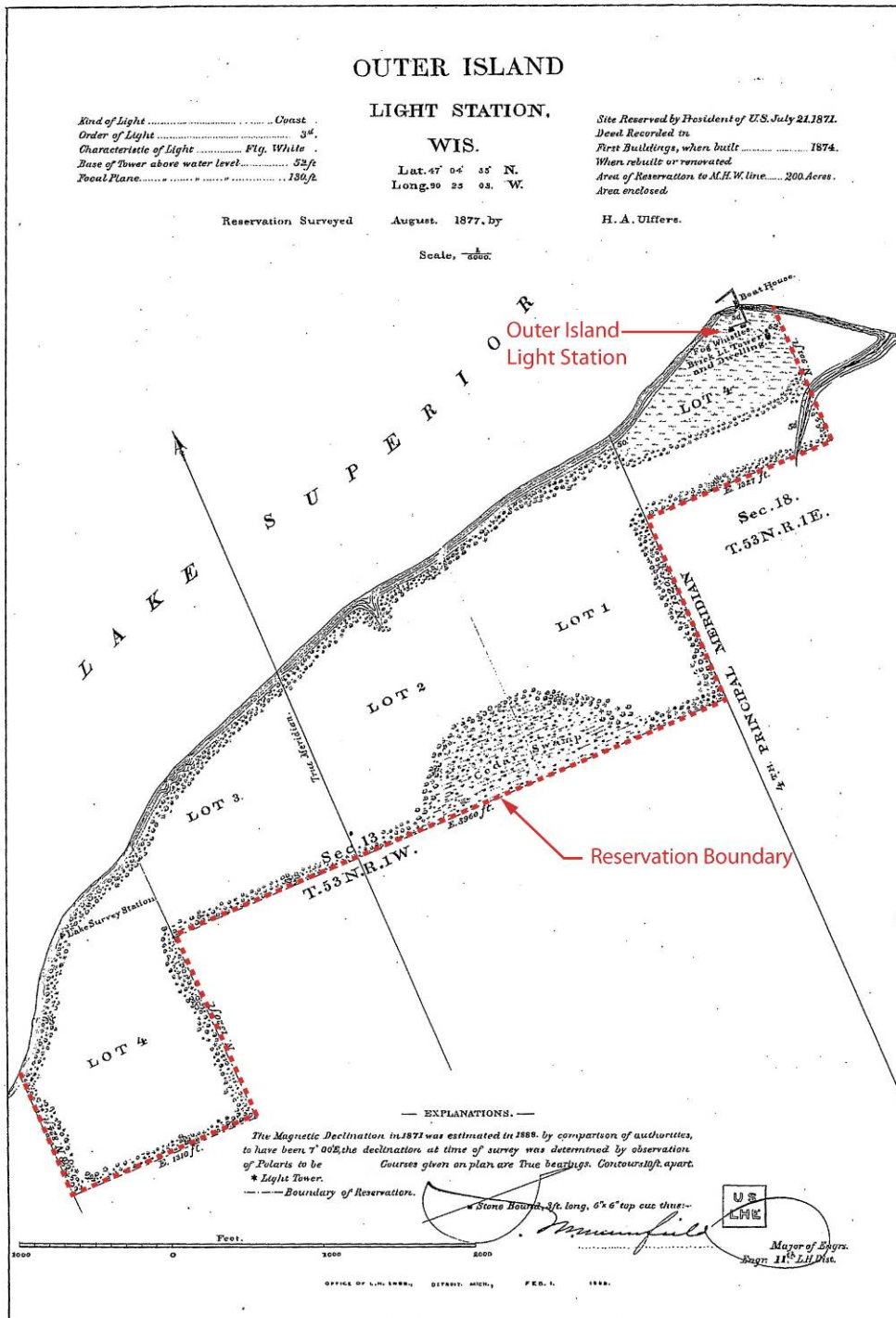
¹⁹ Ashland Daily Press 9/4/58: *Outer Island – Most Isolated Place In State of Wisconsin*

²⁰ Ashland Daily Press 9/4/58: *Outer Island – Most Isolated Place In State of Wisconsin*

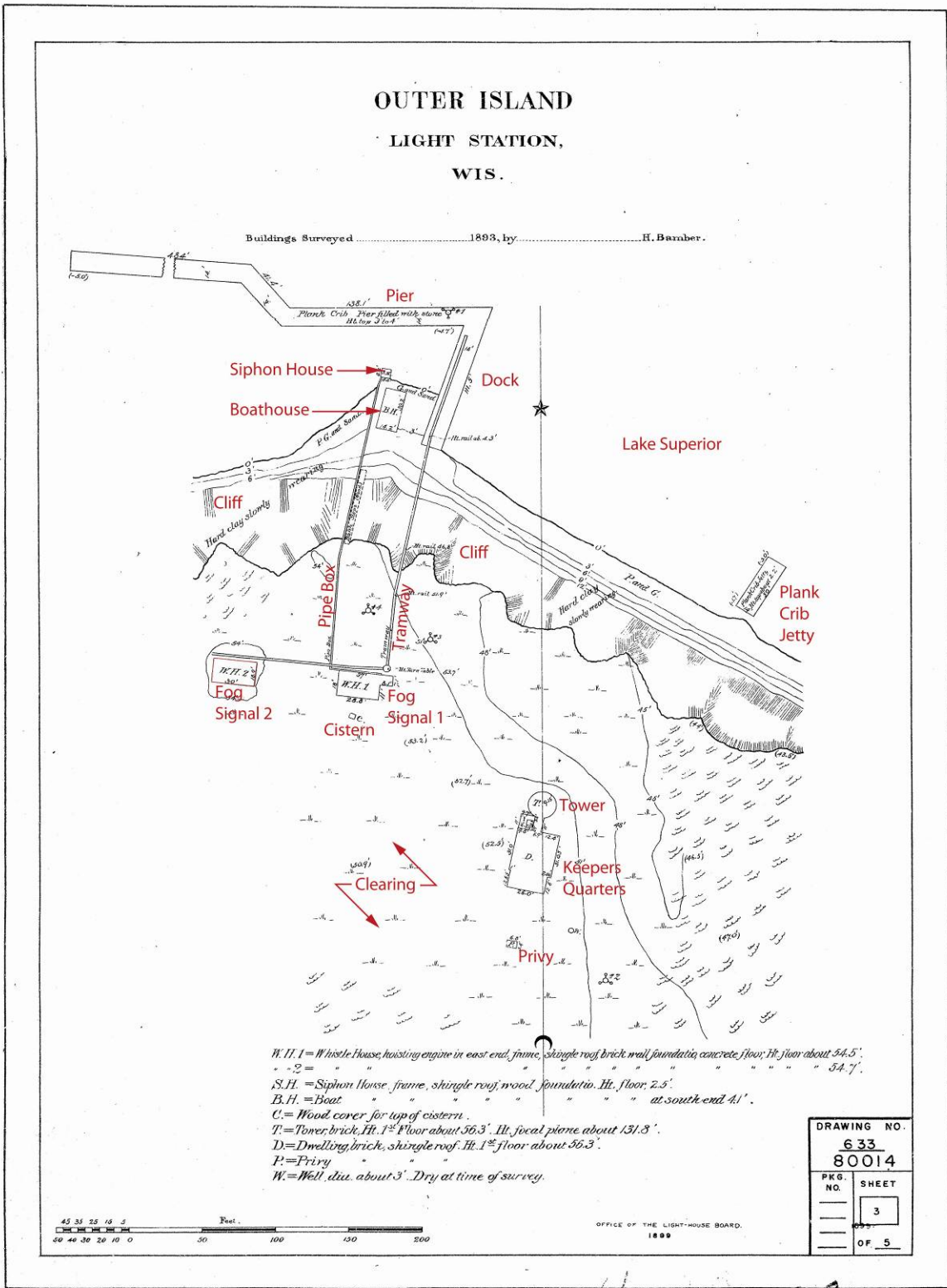
²¹ Outer Island Keepers Log, page 4

²² Ashland Daily Press 9/4/58: *Outer Island – Most Isolated Place In State of Wisconsin*

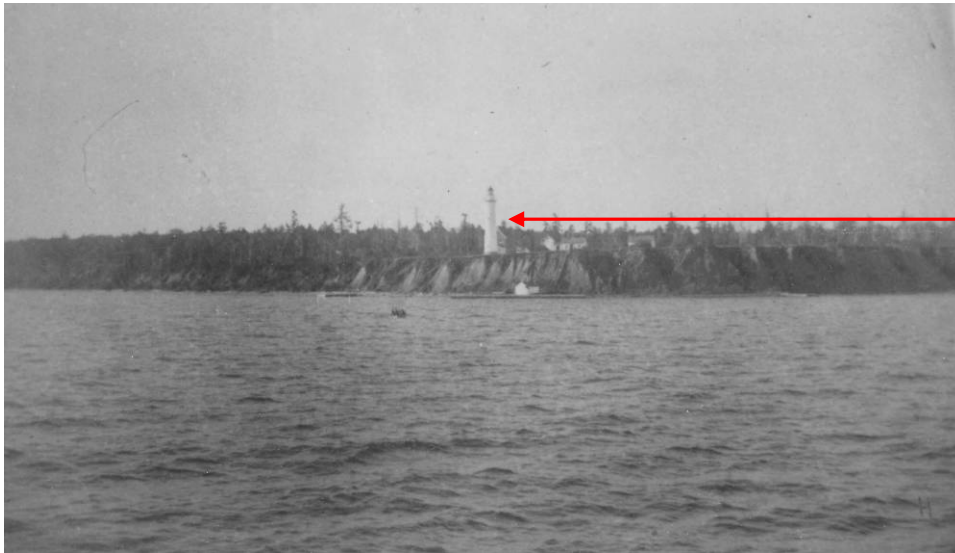
1 Pre-Light and Early Light Station Historic Survey and Photographs



Site Image OI-01: Outer Island Light Station Reservation Map, 1877, updated 1888 (Source: NPS APIS Archives)

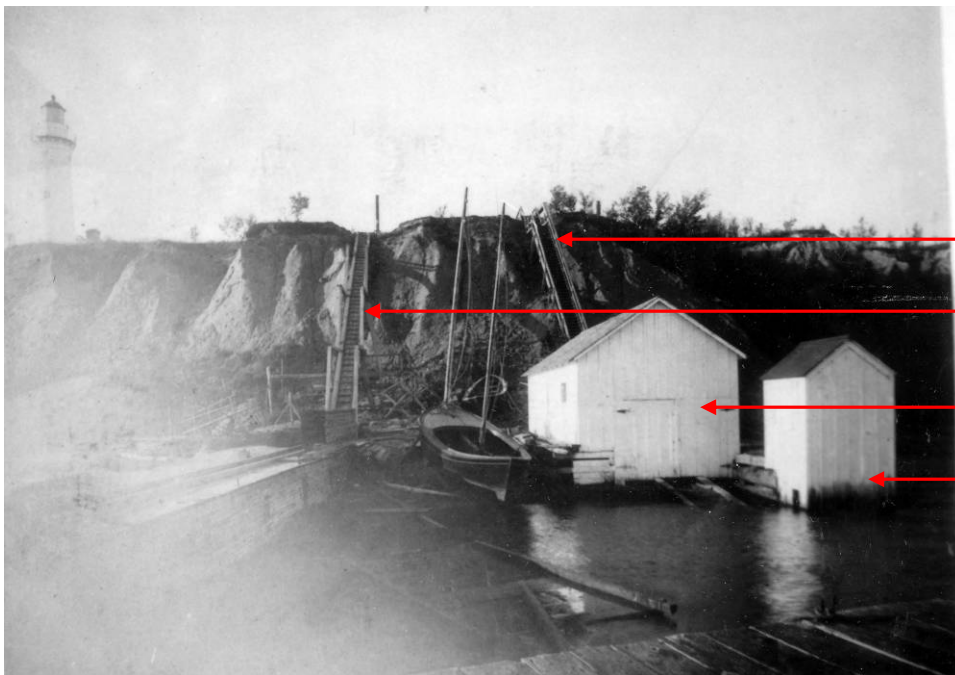


Site Image OI-02: Outer Island Light Station, 1893, represents the Early Light Station (1874-1900) period (Source: NPS APIS Archives)



Open View of
Tower

Site Image OI-03: Outer Island Light Station from Lake Superior, note cleared top of bluff, 1891 (Source: NPS APIS Archives)



Pipe box and
Wooden Staircase

Wooden Tramway

Boathouse

Siphon House

Site Image OI-04: Outer Island Boathouse and Siphon House, the pipe box extends up the cliff on the right and the original wooden tramway is on the left. Tower at left, c. 1893 (Source: NPS APIS Archives)

1



Pipe box and
Wooden Staircase

Wooden Tramway

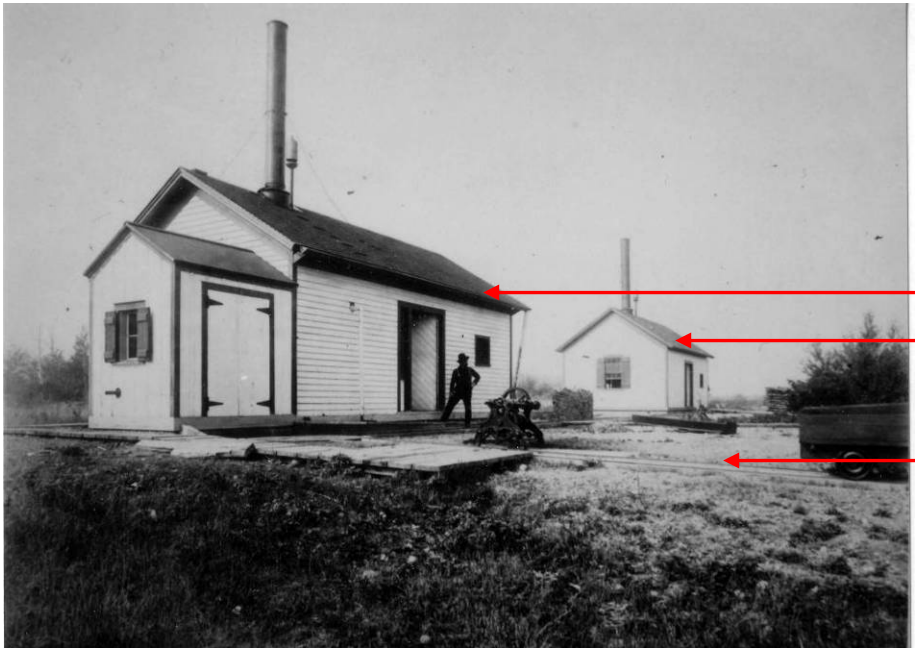
2

Site Image OI-05: Outer Island original wooden tramway (left) and pipe box (right) Tower at left, c. 1893 (Source: NPS APIS Archives)

3

4

5



Fog Signal 1

Fog Signal 2

Tram Tracks

6

7

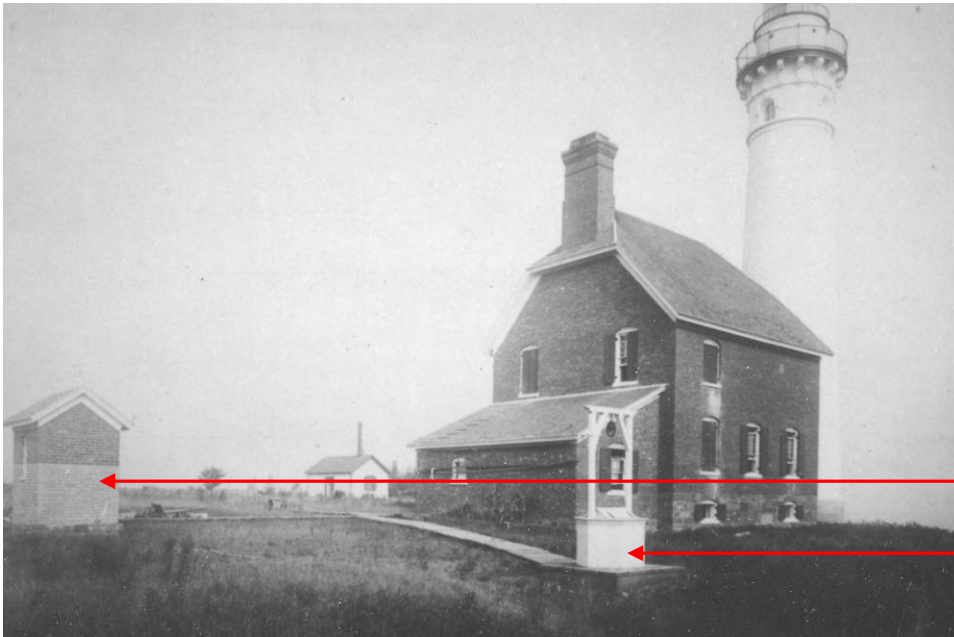
Site Image OI-06: Outer Island Fog Signal Building 1 in foreground with tram tracks inset on wooden platform; and Fog Signal Building 2 with pipe box in background, c. 1893 (Source: NPS APIS Archives)

8



Wood Plank Walks

Site Image OI-07: Outer Island Tower and Keepers Quarters, note wood planks in foreground, c. 1893 (Source: NPS APIS Archives)



Privy

Original Well

Site Image OI-08: Outer Island Tower and Keepers Quarters, Privy, Fog Signal Building 2 and well, note wood planks to well, c. 1893 (Source: NPS APIS Archives)

Light Station (1901–1938)

Change to the landscape during this period included the removal of Fog Signal (2) and the expansion of Fog Signal (1). It appears that the materials from #2 were used for the addition to #1.²³ The pipe box and staircase structures were removed and a new pipe constructed adjacent to the new concrete tramway. The new concrete tramway and adjacent pipe changed the appearance of the entryway to the station; now just one structure ascended the embankment, rather than two.

Heavy wave action, storms and winter conditions of Lake Superior continued to be problematic to the structures along the shoreline during this period. In the 1910s, a new Boathouse and Siphon House were built in the previous Boathouse location, but re-oriented in an east to west direction (Site Image OI-11). The Boathouse was again modified in the 1930s and placed in a new location further out and adjacent to the pier.

In the early 1930s, the wooden tramway structure was removed and replaced with a concrete structure. The wooden tram track platform between the top of the tramway and Fog Signal Building was replaced with a concrete pad for the tracks. Historic photos indicate this was complete prior to 1934.²⁴ The boat dock was also modified and repaired during this period. Brown's annotation in 1910 of H. Bamber's 1893 map indicates that a seawall was built northwest of the dock. The map also indicates that a plank crib jetty existed southeast of the dock, at the bottom of the bank northwest of the Outer Island Light Tower and Keepers Quarters.

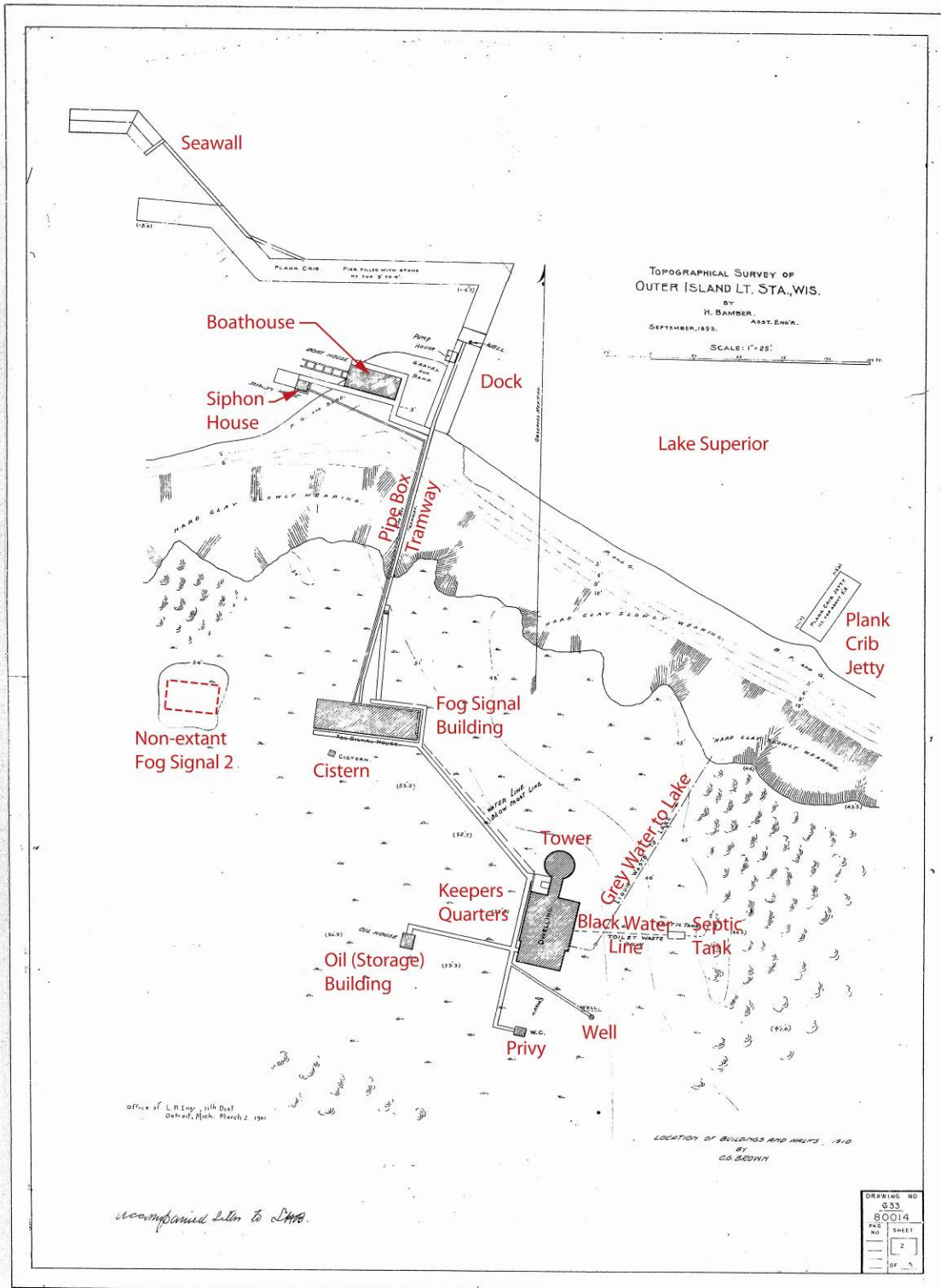
The keeper's logs refer to a culture of husbandry at the light station grounds. A garden with corn, potatoes, and vegetables was planted between the Keepers Quarters and the Privy and currants and raspberry bushes were planted along the west side of the Keepers Quarters. The logs refer twice to a cow being brought to the light station. The logs also refer to a chicken coop, barn, shed and smokehouse, none of which are extant today and their previous locations are unknown.²⁵

²³ Ashland Daily Press 9/4/58: *Outer Island – Most Isolated Place In State of Wisconsin*

²⁴ Outer Island Keeper's Log, page 1032

²⁵ Outer Island Keeper's Log

1 Light Station Historic Survey and Photographs



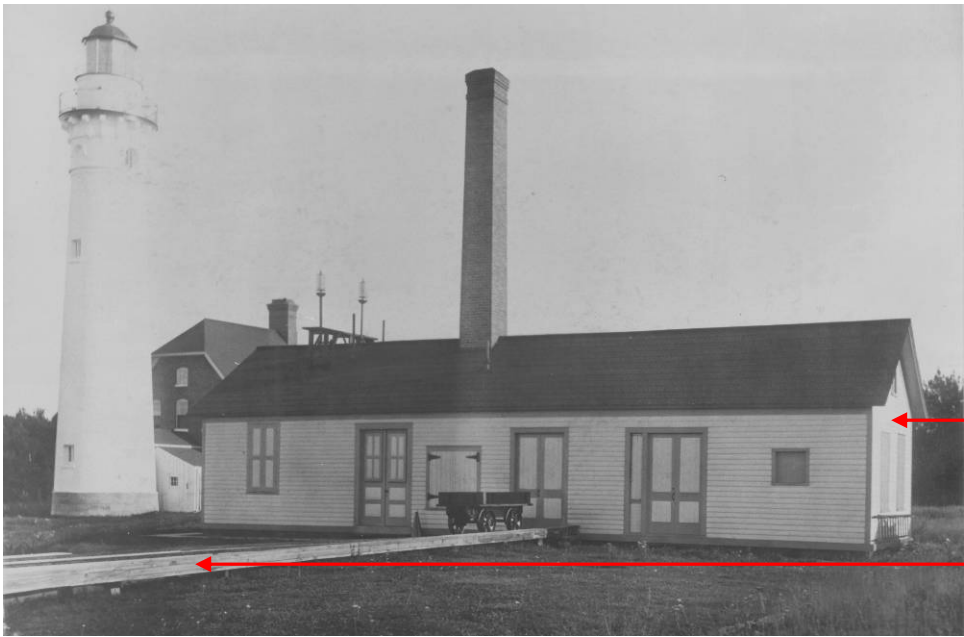
Site Image OI-09: Outer Island Light Station, 1910, represents the Light Station (1901-1938) period (Source: NPS APIS Archives)



Note Extent of
Cleared Area

Note Meadow
Condition of Light
Station Grounds

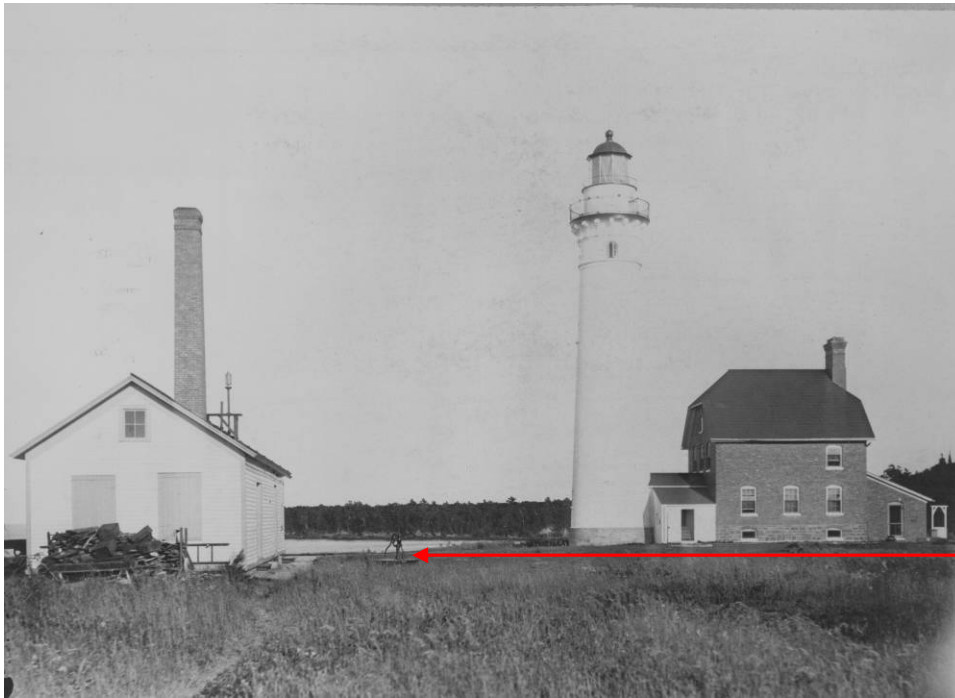
Site Image OI-10: From left: Fog Signal Building, Outer Island Tower and Keepers Quarters, Oil Storage, and Privy, c. 1905 (Source: NPS APIS Archives)



Fog Signal Building (Formerly
Fog Signal 1 with a new west
addition)

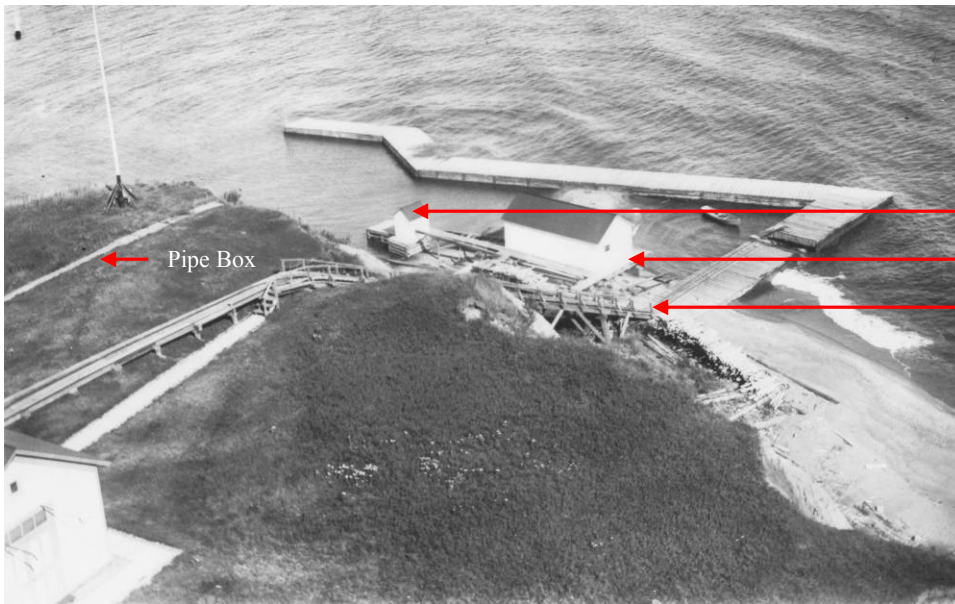
Wood Plank Platform and
Tram Tracks connecting
Tramway to Fog Signal Building

Site Image OI-11: Outer Island Fog Signal Building, c. 1913 (Source: NPS APIS Archives)



Cistern with
Hand pump

Site Image OI-12: Outer Island Fog Signal Building and Outer Island Tower and Keepers Quarters. Note cistern with hand pump, c. 1913 (Source: NPS APIS Archives)

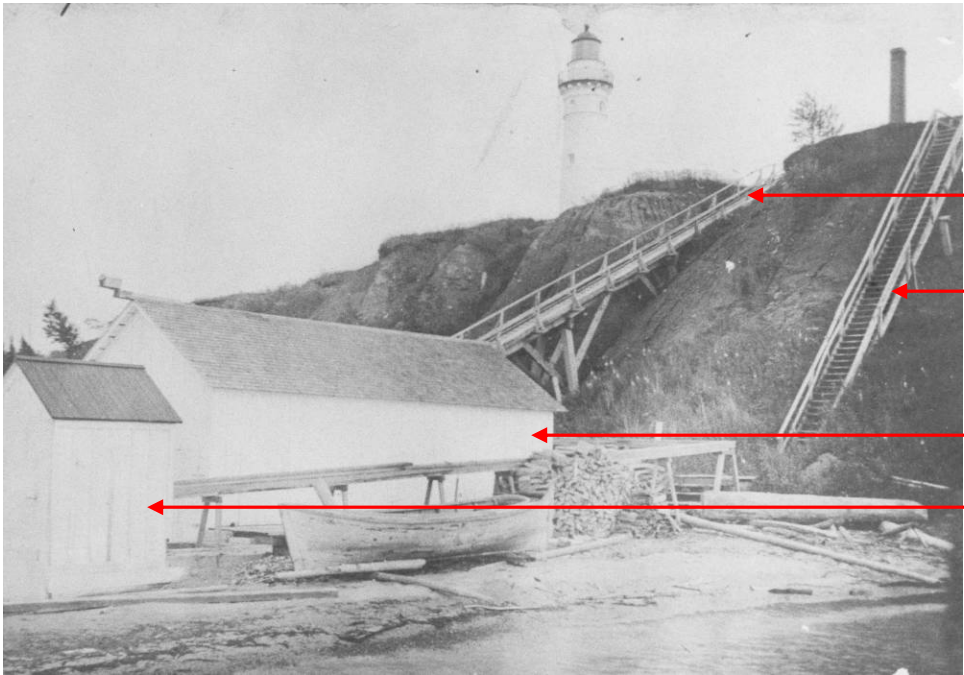


Siphon House

Boathouse

Wooden Tramway

Site Image OI-13: Outer Island Siphon House, Boathouse, original wooden tramway, and dock, c. 1913 (Source: NPS APIS Archives)

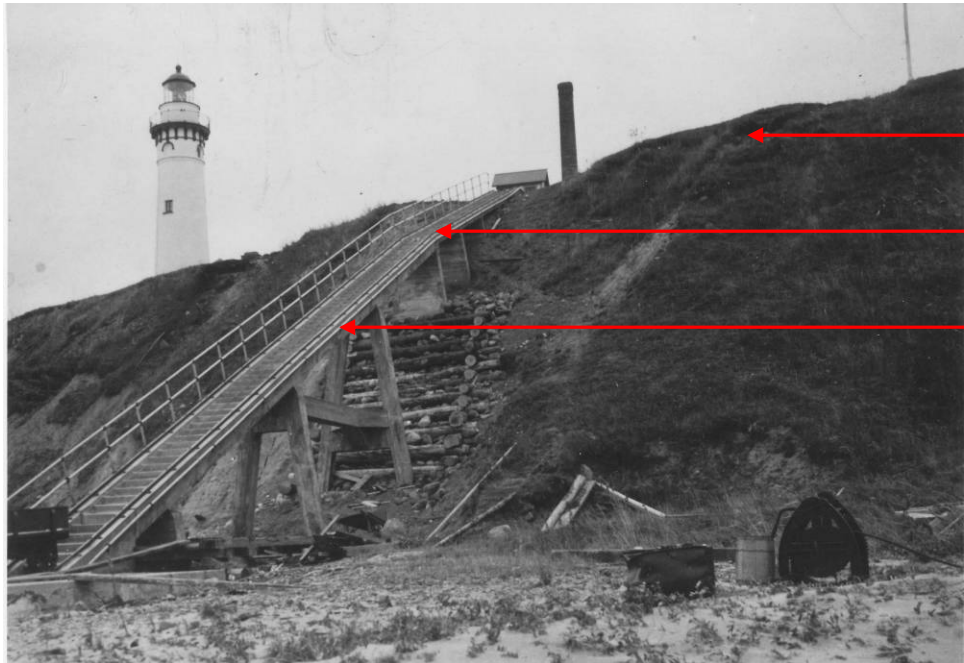


Wooden
Tramway

Pipe Box and
Wooden Staircase

Boathouse

Siphon House



Pipe Box and
Wooden Staircase
Removed

Concrete
Tramway

Pipe from
Siphon House
Adjacent to
Concrete Tramway

Site Image OI-14: Outer Island tramway. Above, c. 1904; below, c. 1938 (Source: NPS APIS Archives)



Seawall

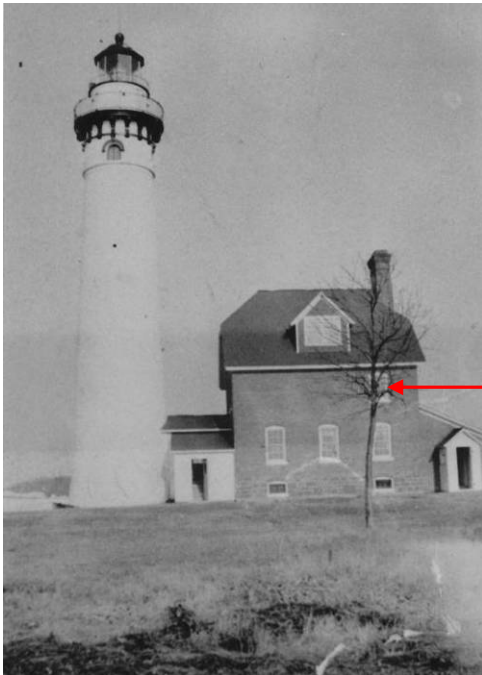
Dock

Site Image OI-15: Outer Island Boathouse and dock, c. 1937 (Source: NPS APIS Archives)



Seawall

Site Image OI-16: Outer Island Boathouse and dock, c. 1937 (Source: NPS APIS Archives)



Domestic Vegetation
At Light Station

Site Image OI-17: Outer Island Tower and Keepers Quarters. Note tree in foreground, c. 1937 (Source: NPS APIS Archives)



Shed
(Currently nonextant)

Site Image OI-18: Outer Island Keepers Quarters from west. Note small white building in background, c. 1937 (Source: NPS APIS Archives)

Coast Guard (1939-1960)

In 1939, the United States Bureau of Lighthouses was eliminated and the United States Coast Guard (USCG) took over the operation of the Outer Island Light Station. The light station was also converted to electricity in 1939.²⁶ Soon after, civilian lighthouse keepers were replaced by Coast Guard staff. A Coast Guard crew remained on Outer Island until automation in 1961.

This period resulted in limited additions to the light station grounds and landscape with only a few improvements added. The large fuel tank west of the Keepers Quarters (currently extant) was added to the light station, obscuring the open space between the Keepers Quarters and the Fog Signal Building. The tramway and boat dock received extensive repair and restoration in 1948. After the departure of the light keeper, many of the domestic plantings installed by the lighthouse keepers, such as the vegetable garden, no longer received annual maintenance and slowly fell into disrepair or were eliminated.

The cleared area of the light station remained open during this period, with clear views between the light station and Lake Superior (Site Image OI-19).

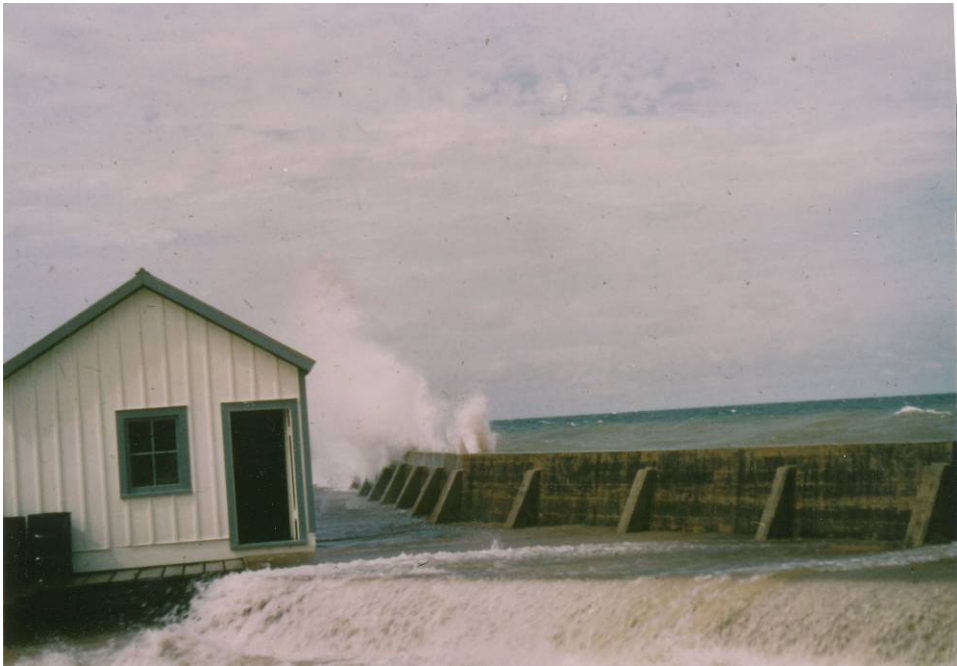
Coast Guard (USCG) Photographs



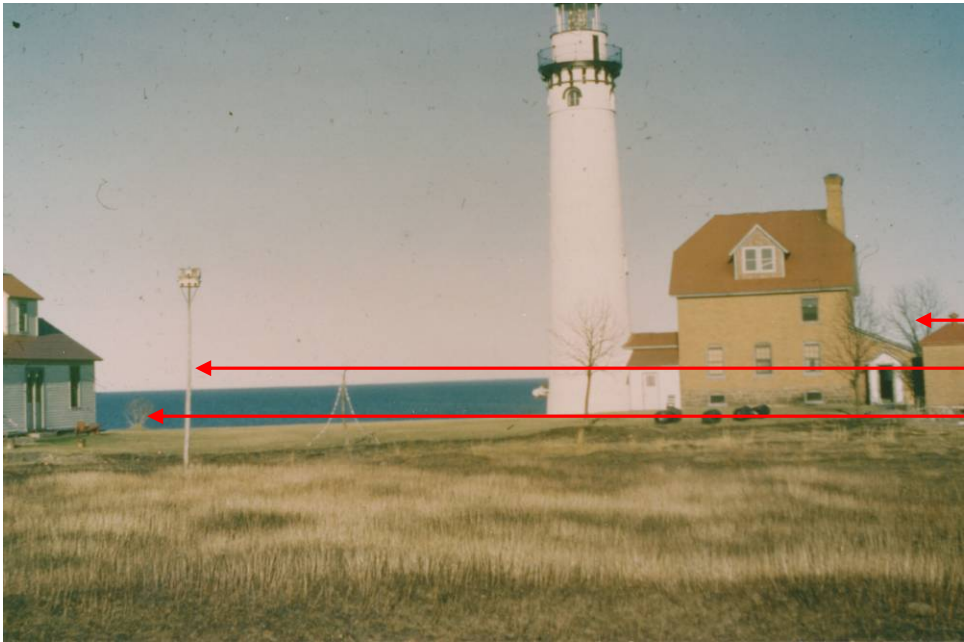
Note Extent of Clearing

Site Image OI-19: Outer Island Boathouse, Fog Signal Building, Tower and Keepers Quarters viewed from the west, c. 1943 (Source: NPS APIS Archives)

²⁶ Busch, Jane C. "People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore" Bayfield: Apostle Islands National Lakeshore. 2008. Page 132



Site Image OI-20: Outer Island Boathouse and seawall, c. 1943 (Source: NPS APIS Archives)



Site Image OI-21: Outer Island Tower, Keepers Quarters, Oil Building (Storage), and Fog Signal Building. Note three trees near Keepers Quarters, c. 1943 (Source: NPS APIS Archives)

Automated Lighthouse (1961-1969)

This period began in 1961 with the automation of the Light Tower. Automation eliminated the need for a USCG to maintain a manned presence on the island. The primary physical changes during this period were associated with the loss or diminishment of landscape features. The open, cleared area of the reservation was slowly reduced as the adjacent forest vegetation continued to encroach into the light station grounds.

National Park Service (1970 to present)

In 1970, the Apostle Islands National Lakeshore was established. This is the beginning of the NPS Period that continues to present day. This period opened the island to visitors and brought about changes in the landscape that primarily related to island access, recreation and visitor use, and maintenance. The alterations to the light station included the addition of visitor trails, park signage, a vault toilet restroom, a solar panel and preservation actions for the buildings and structures.

The most substantial modifications to the light station cultural landscape were related to a stabilization project undertaken in 2004 and 2005 to reduce erosion of the steep shoreline banks. At the edge of the bluff, a drainage system was installed to intercept surface and ground water before it reaches the highly erodible shoreline banks. The drainage swale extends along the entire north end of the grounds, subtly altering the topography. Additional erosion control work on the shoreline banks included the placement of rip-rap at the toe of the bank and the terracing and planting of other portions of the bank.

Park Service Photographs



Site Image OI-22: Outer Island Tower, Keepers Quarters, flagpole, and Privy. Note encroaching vegetation in foreground, c. 1974 (Source: NPS APIS Archives)



1
2 Site Image OI-23: Outer Island Tower, Keepers Quarters, and Fog Signal Building. Note encroaching vegetation in
3 foreground and behind Tower and Keepers Quarters, c. 1977 (Source: NPS APIS Archives)
4



5
6 Site Image OI-24: Outer Island Fog Signal Building. Note encroaching vegetation in foreground, c. 1977 (Source: NPS
7 APIS Archives)



1
2 Site Image OI-25: Outer Island Tower, Keepers Quarters, Fog Signal Building. Note bank stabilization work to the left of
3 the tramway, 1981 (Source: NPS APIS Archives)
4

ENVIRONMENTAL CONTEXT

Outer Island is 7.0 miles long and 2.8 miles wide and is 7,999 acres in size. The maximum elevation above the lake is 268'.²⁷ The presettlement forest on Outer Island was dominated by large hemlock, white pine, and yellow birch, with sugar maple, white cedar, balsam fir, red oak, white birch, and red maple also present.²⁸ Most of the island was commercially logged from the 1920s through the 1950s. Currently, the majority of the vegetation on Outer Island is dominated by the mesic forest type, which includes the hemlock/white pine/hardwood community.²⁹ The lighthouse reservation on Outer Island was not commercially logged. A 200 acre old growth forest occurs on the northern end of the island within the lighthouse reservation, and is one of the oldest remaining stands of northern hardwood hemlock forest remaining in the Great Lakes region.³⁰ This stand also is unique because the island has never had a resident population of deer, and the forest has not been subjected to deer browsing. Canada yew and mountain maple form a dense understory in this unlogged tract. The vegetation within the light station is mostly a mowed lawn with scattered trees and shrubs. Forest trees now grow in formerly cleared areas to the west, south, and east of the light station grounds. Nonnative species are present, including weedy species on the steep clay bank and steps in front of the lighthouse.³¹ Unusual plant communities are found along the ledges and bluff, and include rare species such as marsh grass-of-parnassus and butterwort (*Pinguicula vulgaris*).³²

As with the other islands, wildlife on Outer Island is not as diverse or abundant as that on the mainland.³³ Common mammal species include red squirrel (*Tamiasciurus vulgaris*), snowshoe hare (*Lepus americanus*), deer mouse (*Peromyscus maniculatus*), masked shrew (*Sorex cinereus*), and boreal redback vole (*Clethrionomys gapperi*). Outer Island is one of only several islands without a history of deer.³⁴ Outer Island is a very important migratory bird concentration area, especially during the fall.

²⁷ National Park Service (NPS). 2006. Apostle Islands National Lakeshore Website. Island Statistics. Last updated August 23, 2006. Available at <http://www.nps.gov/apis/parkmgmt/upload/island%20statistics.PDF>. Accessed December 7, 2009.

²⁸ Judziewicz and Koch 1993

²⁹ NPS 2009

³⁰ Judziewicz and Koch 1993

³¹ Judziewicz and Koch 1993

³² see the Federal and State Threatened and Endangered Species section

³³ *ibid*

³⁴ *ibid*

EXISTING CONDITION ASSESSMENT AND LANDSCAPE ANALYSIS

The existing condition assessment and landscape analysis for the Outer Island Light Station are presented in this section. The light station reservation and grounds are documented as one entity through those landscape characteristics that together comprise its cultural landscape. The presentation of the existing conditions assessment and analysis is organized by landscape characteristics - spatial organization, topography, views and vistas, circulation/accessibility, structures, small scale features and vegetation. The landscape analysis identifies those buildings, structures, small scale features and vegetation that contribute to the significance and integrity of the cultural landscape of the light station. An overview of the CLR methodology is presented in Volume I, Chapter 2: Methodology.

The landscape analysis, presented as narrative text, follows and provides an evaluation of the significance and integrity of each characteristic. The landscape characteristics for the Outer Island Light Station are as follows. Their associated character-defining features contribute to the overall integrity of location, design, materials, workmanship, setting, association, and feeling.

- Spatial Organization - is the arrangement of elements creating the ground, vertical and overhead planes that define and create space, including the arrangement of topography and buildings.
- Topography - is the three-dimensional configuration of the landscape surface characterized by features and orientation; includes bluffs, cliffs, slopes and drainages.
- Views and Vistas - are features that create or allow a range of vision which can be natural or designed and controlled; these include views of the light stations from Lake Superior and views from the light towers and lighthouses.
- Circulation - are spaces, features, and materials that constitute systems of movement.
- Buildings - buildings that are either currently or were historically habitable are presented in the Historic Structure Report.
- Structures - are smaller nonhabitable buildings or significant features (now or historically) such as tramways and vault toilets.
- Small Scale Features - are elements that provide detail and diversity combined with function and aesthetics; including paving, structural remnants, site walls, signs, and walls of building ruins.
- Vegetation - are indigenous or introduced trees, shrubs, vines, ground covers, and herbaceous materials; including lawns, shrubs and landscape garden areas.

The existing condition of the Outer Island Light Station is presented first as a paragraph description. Annotated photographs support the condition assessment. The following criteria were used to evaluate condition:

- **GOOD** - Those features of the landscape that do not require intervention; only minor or routine maintenance is needed at this time.
- **FAIR** - Some deterioration, decline, or damage is noticeable; the feature may require immediate intervention; if intervention is deferred, the feature will require extensive attention in a few years.
- **POOR** - Deterioration, decline, or damage is serious; the feature is seriously deteriorated or damaged, or presents a hazardous condition; due to the level of deterioration, damage, or danger the feature requires extensive and immediate attention.

The landscape analysis compares the site history with its existing condition to identify and evaluate those landscape characteristics that retain integrity and contribute to the significance of the light station.

1 The Outer Island Light Station has integrity as it retains the majority of its character-defining features and
2 buildings that depict its role in the development of navigational aids in the Apostle Islands. The most
3 important features include the buildings, tramway, and dock as these defined the setting and lifestyle of the
4 keepers that created many of the landscape features.

5 6 7 **Spatial Organization**

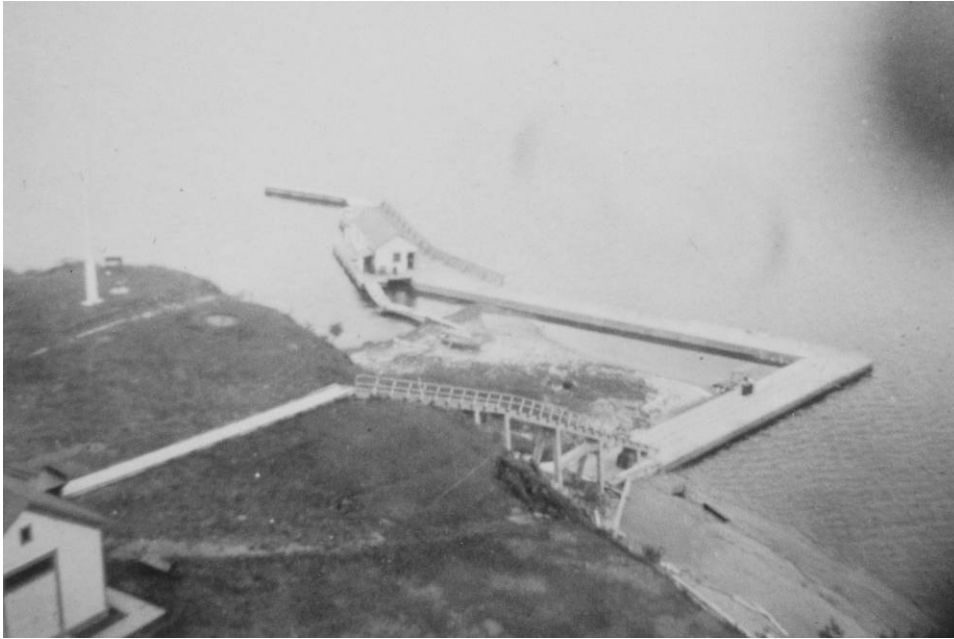
8 Spatial organization at the Outer Island Light Station is of two distinct scales, the organization of the
9 reservation and that of the light station grounds. While they are distinct they are also directly related. The
10 cleared area of the reservation is also discussed in the vegetation section.

11
12 **Existing Condition.** The spatial organization of the light station reservation is simply defined by the
13 relationship of the forest to the cleared area of the reservation. Spatially this creates wide open areas that
14 contrast with the heavily forested areas outside of the clearing. The amount of cleared area is significantly
15 less than present during the period of significance, more specifically the Light Station period.

16
17 The light station grounds are arranged in a southeast progression from the top of the tramway, with the
18 buildings and forest edge defining the core of the light station grounds. Within the grounds, the structures,
19 tram tracks, and concrete walks reinforce this outdoor common space. The dominant elements are the Outer
20 Island Tower and Keepers Quarters, defining the east edge of the light station grounds. The siting of the Oil
21 Storage directly west of the Keepers Quarters, along with the mountain ash tree and lilacs, creates the
22 feeling of separated areas within the light station grounds, one south between the Oil Storage and Privy,
23 and one north between the Oil Storage and the Fog Signal Building. The north perimeter of the grounds
24 along the cliffs is edged by new growth on the embankment and is more open and exposed than the
25 remaining three sides. The overall feeling is one of enclosure, as the maintained landscape is surrounded by
26 the encroaching forest. Overall the spatial organization of the light station, reservation and grounds, is in
27 poor condition.

28
29 **Analysis.** The spatial composition of the light station reservation has significantly changed from the
30 island's early history as an aid to navigation. While the spatial organization of the light station's buildings,
31 structures, and small scale features remains in place from the period of significance, the surrounding
32 clearing has been greatly reduced due to forest encroachment (Site Image OI-24, OI -25). Automation of
33 the light eliminated the need for a manned presence on the light station. After the USCG removed this
34 presence, the grounds and reservation were not cleared as extensively or as regularly. Spatial composition
35 is an important contributing feature to the cultural landscape. The encroachment of the forest and reduction
36 in the cleared area has diminished the integrity of this feature and the light station.

1 ***Spatial Organization Photographs***



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Drainage Swale

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Site Image OI-26: View west from Light Tower with boat dock, tram tracks, and concrete walk from Fog Signal Building to the Keepers Quarters: above, after 1934 (Source: NPS APIS Archives); below, 2009 (Source: MBD P1010893.JPG)



Site Image OI-27: Light station grounds from Light Tower, looking west to Fog Signal Building. Note the vegetation on the embankment, 2009 (Source: MBD P1010887.jpg)



Site Image OI-28: View of light station grounds from Light Tower looking south, 2009 (Source: MBD P1010890.jpg)

Topography

Existing Condition. The light station grounds on Outer Island are located on a bluff, rising approximately 50' above Lake Superior. The overall island topography consists of a landscape of gently rolling, forested hills ending in steep banks that slope down to rocky or sandy beaches. The light station grounds are primarily flat with the Outer Island Tower, Keepers Quarters, and Fog Signal Building occupying the highest points of the site. The remainder of the site slopes gently south, east, and west towards the bordering forest. A drainage swale (2005) runs the length of the light station grounds along the northern perimeter. At the north edge of the grounds, steep banks slope down to Lake Superior. The embankment slope is highly erodible but currently stable. The shoreline adjacent to the light station has stone revetment approximately 50' wide at the bottom of the bank. Overall, the condition of the light station's topography is good, with the exception of the shoreline bank, which is fair with high erosion potential.

Analysis. The topography of the reservation generally remains as it has since development of the light station with one exception. Extensive erosion control measures on the northern banks were implemented in the early 1980s and again in 2005 to reduce erosion of the banks and potential impacts to the light station grounds and structures. The work included stone revetment covering the shoreline zone (which was once a sandy beach); bioengineering along the shoreline banks primarily with log cribs and planting of native shrubs and forbs; a drainage swale along the northern edge of the light station grounds; and terracing of portions of the banks. The drainage swale has created a subtle change to the landscape while the terracing has a more apparent impact to the topography of the light station.

The topography of the reservation and light station grounds is a contributing feature. The erosion control work has diminished the integrity of the cultural landscape.

1 **Topography Photographs, 2009**



2
3 *Site Image OI-29: Banks and shoreline with erosion control and stone revetment looking east from the dock, 2009 (Source:*
4 *MBD DSC00606.JPG)*



6
7 *Site Image OI-30: Banks and shoreline with erosion control and stone revetment looking west from the dock, 2009 (Source:*
8 *MBD P1010839.JPG)*



Site Image OI-31: Drainage swale along northern edge of the site, view east from north of the Outer Island Tower, 2009 (Source: MBD P1020009.JPG)



Site Image OI-32: View south from the Keepers Quarters of the ground's gentle slope south and west, 2009 (Source: MBD P1010953.JPG)

Views and Vistas

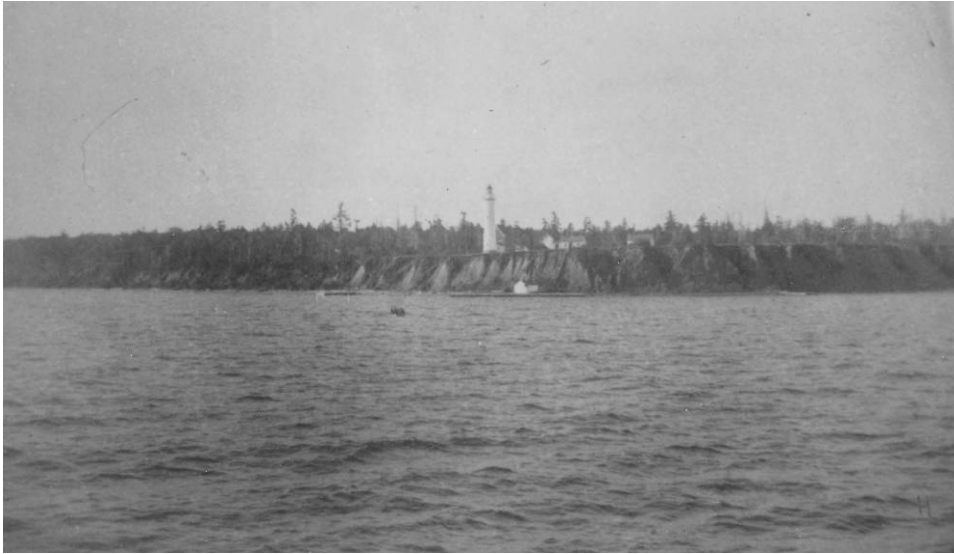
Existing Condition. Notable views to Outer Island include those of the Light Tower from passing ships and pleasure boats on Lake Superior. Notable views from the island include those to the north over Lake Superior from the light station grounds, and those from the top of the Light Tower across the island and outward over the water. Selective clearing projects have been undertaken and have opened views to and from the light station. Views and vistas are generally in poor condition.

Analysis. The Outer Island Tower is the furthest east and north of all the Apostle Islands light stations. The view to the Tower historically served as a reference point and as an aid to navigation for passing ships on Lake Superior. This continues today with the Tower signaling either the beginning or terminus of the Apostle Islands.

The extent of views to and from the light station grounds has been reduced due to the encroachment of forest vegetation resulting from a reduction in vegetation clearing on the reservation. Views from Lake Superior to the Light Tower are greatly obscured by vegetation. A review of historic photographs indicates that the Light Tower, Keepers Quarters and Fog Signal Building were clearly visible from the water during the period of significance. Today, the Keepers Quarters and Fog Signal Building are only visible from Lake Superior where recent erosion control activities have re-opened vistas. The Light Tower remains visible above the trees due to its height, reducing the navigational need for clearing of the forest. Views from the light station grounds are also obscured due to encroaching and maturing vegetation. Views from the Light Tower over Lake Superior and south over the Island remain intact due to the height of the tower.

Views and vistas are an important contributing feature to the cultural landscape of the Outer Island Light Station. The loss of these diminishes the integrity of the light station.

1 ***Views and Vistas Photographs***



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Site Image OI-33: View to Tower from Lake Superior; above, 1891 (Source: NPS APIS Archives); below, current view obscured by encroaching vegetation, 2009 (Source: MBD P1010831.JPG)



Site Image OI-34: View from Tower to the west, 2009 (Source: MBD P1010881.JPG)



Site Image OI-35: View from Tower to the north, 2009 (Source: MBD P1010897.JPG)



Site Image OI-36: View from Tower to the east, 2009 (Source: MBD P1010894.JPG)

Circulation/Accessibility

Existing Condition. Circulation on Outer Island is focused on the boat dock and light station grounds. Access to the island is water based and the boat dock is the only formal boat landing on the island. The boat dock is used by NPS staff and visitors in small pleasure boats. The dock cannot be accessed by large day-cruise boats. The inclined, concrete tramway provides pedestrian circulation from the boat dock to the light station grounds and a method of transporting goods between the two. Tram tracks atop concrete paving connect the tramway and the Fog Signal Building. Concrete walks connect the Fog Signal Building, Tower, Keepers Quarters, buildings and small scale features. A natural surface trail originates approximately 50' south of the Privy and leads south, through the forest across the island.

The boat dock, tramway and tram tracks are described in detail under the Structures section. The concrete walks are described under the Small Scale Features section.

In general, circulation at the light station is in good condition. The condition of individual features is discussed within their respective sections.

Analysis. Circulation on Outer Island has remained similar to the original access and basic routes that were established during the Early Light Station period (1874-1900). Primary transit to the island was historically, and continues to be by boat, landing at the boat dock on the island's north side. Originally, pedestrian circulation from the shore to the light station was along the wooden staircase associated with the pipe box leading to Fog Signal 2 in the area west of the current tramway. An inclined wooden tramway leading to Fog Signal 1 existed in the area of the current tramway. During the Light Station period (1901-1928), the wooden tramway was removed and the concrete tramway was built in the same location. The pipe box was rerouted as part of the new construction and ascended the bank adjacent to the tramway. This substantial change brought new technology and a more efficient method of transporting goods and water up to the light station. The concrete tramway remains to present day. The tram tracks from the top of the tramway to the Fog Signal Building served as both a means for moving goods and fuel as well as pedestrian circulation.

The concrete sidewalks were installed on the grounds during the Lighthouse Period, and remain today. Typical to the Apostle Islands light stations, the concrete walks were precast units, narrow in width, and placed on the ground surface in straight lines connecting buildings and other site features. Concrete walks linked the Fog Signal Building to the Tower and Keepers Quarters, then south to the Privy, and eventually west to the Oil Storage. The concrete walks were preceded by wooden plank walks, laid on the ground surface. In the 1990s, a trail was built leading from the light station south into the forest.

Today, the historic circulation system, consisting of: the primary access at the boat dock; the inclined tramway; the tram tracks; and the concrete walks on the light station grounds contribute to the island's significance as a cultural landscape. The 1990s trail does not detract from the cultural landscape.

Accessibility (ABAAS). Visitor accessibility to the light station, including its buildings and structures, is limited due to the extreme difference in elevation from the boat dock to the light station and limited ABAAS compliant improvements. Barriers to universal accessibility include: 108 steps on the tramway connecting the boat dock to the light station; steps leading into and through buildings and structures; the narrow width of site walks (30") and isolated areas of site walk settlement that present tripping hazards (>1/2"). The terrain of the light station grounds are generally flat and present few barriers to improved accessibility. The buildings present individual accessibility barriers and are discussed in the HSR.

Circulation Photograph



Site Image OI-37: View west from Tower with boat dock, tram tracks, and concrete walk from Fog Signal Building to the Keepers Quarters, 2009 (Source: MBD P1010893.JPG)

Buildings

The Outer Island Light Station buildings include: the Outer Island Tower, Keepers Quarters, Fog Signal Building, Oil Storage and Privy. For information refer to the Historic Structure Report directly following the CLR.

Structures

The structures on Outer Island provide a human scale to the island and convey important history and use of the light station. The structures include the boat dock, tramway, and tram tracks. A physical description of each structure and its condition is presented first. An analysis of each structure follows and includes a determination of whether the structure is contributing or noncontributing.

Boat Dock

Existing Condition. The concrete boat dock is 14' wide and extends from the shore in an 'L' shape to the north (100') and then jogs west (200'), to form the breakwater. The existing dock was constructed in 1958. It is a steel sheet pile structure infilled with stone rubble and capped and sided with concrete. The top of the boat dock has approximately 80' of tram rails set into the surface, which are connected to the inclined tramway. The boat dock is in good condition.

Analysis. The existing location and "S" shape of the boat dock is designed to protect the harbor and it reflects the design of the original 1883 crib construction. The dock has been modified and repaired multiple times since the initial implementation in the Early Light Station period but remains in the same locations and retains a similar configuration. The boat dock received extensive repair and restoration in 1948.

Several Boathouses have previously existed near the dock, in varying orientations, but always within the protected area southwest of the dock. There is no extant boathouse remaining on the site. The current boat dock dates to 1958 and is a contributing feature.

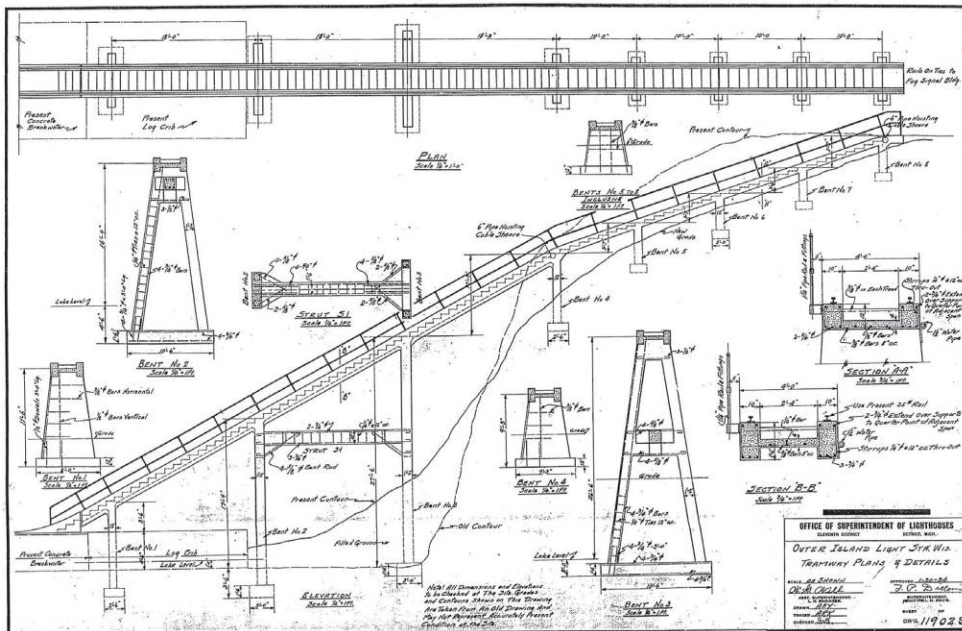
Boat dock planning work is currently under study by the NPS under separate but related projects.

Tramway

Existing Condition. The inclined concrete tramway is 105' long and connects the boat dock to the top of the bluff, rising approximately 50' above the shoreline. The tramway consists of: concrete structural support footings; cast iron tram rails with formed concrete steps between the rails; a tram hoist at the top of the tramway; and a steel pipe railing located on the east side of the structure. The tramway is built of cast-in-place, reinforced concrete and is supported by eight concrete structural supports with footings, four spaced evenly at 18' along the lower portion, and four spaced evenly at 10' along the upper portion. The structural supports and footings are the same width as the tramway (4') at the top and have a wider base as they reach the ground. All exposed portions of the footings have a board form finish. The tram bed is 4' wide with 25-pound rails spaced at 36" on center. The rails are secured to the concrete with flats and embed bolts at approximately 24" on center. The steps are 28" wide and centered in the structure. The lower portion of the tramway has 9.5" treads and the upper portion has 10.5" treads. The 108 risers vary between 5" to 6" in height. The steel pipe railing is secured to the outside vertical surface of the tramway structure with steel brackets. The upper portion of the tramway structure (approximately 40') is constructed at a slope of approximately 19 degrees. The lower portion (approximately 65') is constructed at a steeper slope of approximately 28 degrees.

The tramway is in good condition and retains all of its original elements including: concrete structural supports with footings and stairs, steel handrail, and cast iron tram rails.

Historic Drawing of Tramway, 1934



Site Image OI-38: Historic Drawing of the Outer Island Tramway, 1934 (Source: NPS APIS Archives)

Analysis. The tramway was built in 1934 and, with the tram tracks, was a major improvement in technology providing a more durable structure and more efficient method of transporting goods up to the light station. The tramway and stairs replaced the original wooden tramway in the same location. The concrete tramway also eliminated the need for the pipe box and wooden staircase west of the tramway as the water line that previously ran up the pipe box was rerouted to run along the tramway, much like that of Michigan Island. The concrete tramway and tram tracks retained the physical organization of the landscape and improved the efficiency of the light station's operations.

The tramway received extensive repair and restoration in 1948. The tramway underwent minor repairs during the 2004-2005 erosion control efforts along the Outer Island Light Station shoreline. Spalling sections around construction joints were repaired and sealed, a spalled stair tread was repaired, and the steel pipe handrails were recoated.

The tramway presents several issues with regard to ABAAS and code compliance. The width of the steps, at 28", falls short of the required 36" width; the treads of the steps, 9.5" on the lower portion, and 10.5" on the upper portion, do not meet the 11" requirement; the handrails are too far from the edge of the steps (currently 12", should be directly adjacent); and a handrail and guardrail are lacking on the west side of the structure. The tramway is considered a contributing feature.

Tram Tracks

Existing Condition. The tram tracks lead from the top of the tramway to the Fog Signal Building. The tracks are cast iron 25-pound rails, spaced 36" on center matching the tramway and secured to concrete paving. The tracks are a system and are intact and remain in place, although vegetation is beginning to encroach on the edges of the concrete paving. Overall the tram tracks are in good condition.

Analysis. The tram tracks were built in 1934 towards the end of the Light Station period as part of the tram system and were an integral part of the technological advances in equipment on the light station. Tram tracks are a feature common to Devils, Michigan, and Raspberry islands, making the transportation of goods within the station easier and more efficient. The tram tracks were originally set on a wooden platform that was located in the same area as the extant tracks. In 1934, the tracks were reset on a 4' wide concrete base. This work was associated with the construction of the tramway. Because the tracks are set on concrete paving, they are in much better condition than the tracks at other stations. The tram tracks are a contributing feature.

Remnant Structures

There are currently no extant sheds or small structures on the light station grounds. The Privy and Oil Storage are described as buildings in the HSR. The historic photos and the keeper's log indicate small structures on the site that are no longer in existence. A 1937 photograph shows a shed-like structure south of the Privy (Site Image OI-18 in the Light Station period section earlier in this chapter).

The remnants of a cabin exist in the forest southeast of the Light Tower and Keepers Quarters.³⁵

³⁵ NPS APIS Staff, 2010

NPS Vault Toilet

Existing Condition. The NPS vault toilet is a wood-framed structure and vault located south of the historic Privy. The NPS vault toilet is not an accessible structure and is in fair condition.

Analysis. The NPS Vault Toilet is a recent addition to the station and is a noncontributing feature. The location of the Vault Toilet does not detract from the spatial organization of the light station because it is set in the forest and is a compatible feature.

Table OI-1: Structures

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Boat Dock (c. 1958)	OI-39, OI-40	see above	Good	Contributing
Tramway (c. 1934)	OI-41, OI-42, OI-43	see above	Good	Contributing
Tram Tracks (c. 1934)	OI-39, OI-42, OI-44	see above	Good	Contributing
NPS Vault Toilet (1970–2009)		NPS wood-framed Vault Toilet	Good	Noncontributing – contemporary Compatible
Remnant Cabin		A remnant cabin exists in the forest east of the Light Tower and Keepers Quarters		

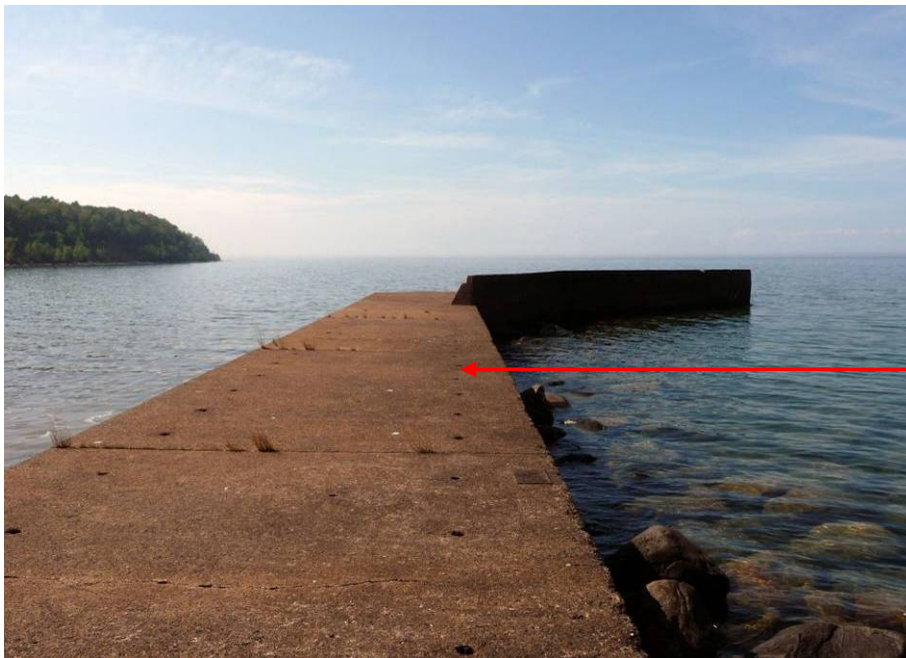
1 ***Site Structure Photographs, 2009***



Boat Dock

Tramway Rails

Site Image OI-39: Concrete boat dock viewed from the south, tram tracks in center, 2009 (Source: MBD P1010860.JPG)



Concrete Boat Dock

Site Image OI-40: Western portion of concrete boat dock, viewed from the east, 2009 (Source: MBD P1010863.JPG)



Tramway

Tram Rails

Site Image OI-41: Tramway viewed from the north, 2009 (Source: MBD P1010865.JPG)



Steel Pipe Handrail

Concrete Staircase (28" width)

Tram Rails

Site Image OI-42: Tramway steps and tram tracks, 2009 (Source: MBD P1010868.JPG)



Water Line

Concrete Structural
Support Footing

Site Image OI-43: Tramway concrete footing, 2009 (Source: MBD P1010844.JPG)



Concrete Paving

Tram Rails

Cable Roller

Site Image OI-44: Tram tracks from tramway to Fog Signal Building viewed from the north, 2009 (Source: MBD P1010860.JPG)