Point Wilson Light Station Harbor Defense Way Port Townsend Vicinity Jefferson County Washington HAER No. WA-171

WAIT!

## **PHOTOGRAPHS**

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Columbia Cascades Support Office
National Park Service
909 First Avenue
Seattle, Washington 98104

## HISTORIC AMERICAN ENGINEERING RECORD POINT WILSON LIGHT STATION HAER NO. WA-171

Location:

Harbor Defense Way

Access via Fort Worden State Park

Confluence of the Strait of Juan de Fuca and Admiralty Inlet, two miles NNW of Port Townsend, Washington on

the Olympic Peninsula.

Jefferson County, Washington

U.S.G.S. Port Townsend North Quadrangle Universal Transverse Mercator Coordinates:

10 518281E 5332110N

Dates of Construction:

1879. Significant additions and alterations 1913, 1962, 1982,

1987

Architect:

Carl Leick (1913 light and fog signal building)

Contractor:

Holt (1879 structures)

Present Owner:

**United States Coast Guard** 

Present Use:

Aid to navigation and dwelling for Coast Guard personnel

Significance:

Strategically placed at the confluence of the Strait of Juan de Fuca and Admiralty Inlet, Point Wilson Light Station has warned mariners away from the dangerous shallows at its base for more than a century. With the establishment of the station in 1879, shipwrecks in the area declined significantly,

making local navigation far safer. Together with

neighboring Fort Worden, Point Wilson Light Station was one of three paired forts and light stations guarding the entrance to Puget Sound.<sup>1</sup> The 1913 lighthouse and fog signal building is an excellent example of the work of architect Carl Leick, who designed many early twentieth-century lighthouses in the Pacific Northwest. The light itself

is an historic, fourth-order Fresnel lens crafted at the

<sup>&</sup>lt;sup>1</sup> The others were Fort Casey and Admiralty Head Light on the Western shore of Whidbey Island, and Fort Flagler and Marrowstone Point Light on Marrowstone Island at the southeastern entrance to Port Townsend Harbor.

workshop of Sautier and Lemonnier in Paris. It is one of the few remaining Fresnel lenses still in operation in the United States. Since 1982, the light station has also housed a Vessel Traffic Service radar tower, which guides and regulates marine traffic in the area.

For over one hundred years, the Point Wilson Light Station has aided military, commercial and passenger traffic to a significant degree, thus contributing in untold ways to local, regional, national, and even international concerns.

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Date:

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#### I. DESCRIPTION

Not far from the town of Port Townsend, Point Wilson Light Station lies at the northeastern tip of the Olympic Peninsula in Washington State. The station is located on a sandy spit of land at the confluence of the Strait of Juan de Fuca and Admiralty Inlet. The point, first named Kam-Kum, or Kam-Kam-ho by local Native Americans,<sup>1</sup> extends northeastward from the peninsula, thus marking the divide between the Strait of Juan de Fuca and Admiralty Inlet. George Vancouver, one of the first European explorers in the area, named the point for his friend, British naval captain, George Wilson. The narrow strait between Point Wilson and Whidbey Island acts as an outer gateway to Puget Sound, through which most marine traffic entering or leaving the sound must pass. This strategic spot is also home to heavy fogs, shifting winds, dangerous shoals, and riptides created by the meeting of several currents. Point Wilson's 19.9 acres are ringed by fencing and dotted with low vegetation. Large areas of the shoreline have been reinforced with rip-rap and a gabion wall at the tip of the point provides protection from erosion. Immediately to the south of the station, atop a bluff, lies historic Fort Worden, now a state park. The road from Fort Worden, Harbor Defense Way, provides access to the station.

In continuous operation since 1879, the Point Wilson Light Station is a place where the traditions of the historic Lighthouse Service meet the modernity of today's Coast Guard. While the station's late nineteenth-century origins are clearly visible, so too, is the hand of ever-advancing, technological change. Over the years, new structures have been built at Point Wilson and old ones remodeled and removed. From plumbing to power, the station's systems have been modified and modernized, yet always, the imprint of the old remains, linking today's station with that of yesterday. Of the major structures at the light station, only two are original—the two-and-a halfstory, wooden duplex dwelling and the boathouse (now a woodshop). All other structures are from a later date. The most significant changes to the infrastructure, include the construction of a new fog-signal building with an integral light tower in 1913, the building of a new masonry keeper's house in 1962, and the installation of the Vessel Traffic Service radar in 1982.<sup>2</sup> At present, there are nine significant structures on the site. In addition to the original duplex dwelling and boathouse, long used as a carpenter's shed and woodshop, and the 1913 lighthouse, there are two small, corrugated fiberglass storage buildings,3 which date from the same era, a double garage near the entrance to the station, a concrete-block keepers' house, built in 1962, the radar

<sup>&</sup>lt;sup>1</sup> James A. Gibbs, Sentinels of the North Pacific. The Story of Pacific Coast Lighthouses and Lightships (Portland, Oreg.: Binford and Mort, 1955), 151.

<sup>&</sup>lt;sup>2</sup> Although earlier site plans indicate a radar tower, the Vessel Traffic Service radar was not installed at Point Wilson until 1982.

<sup>&</sup>lt;sup>3</sup> Early storage buildings were often built of corrugated iron.

tower, and the present fog-signal baffle and emitter house, built in 1987. Although the original light tower has long since been removed, the 1879 wooden duplex still provides housing-these days for Coast Guard personnel stationed on the cutter *Osprey* out of Port Townsend. In the center of the complex, a fenced yard with lawn offers recreational space for the families attached to the station. Although a trail provides public access to the surrounding beach, the light station itself is open only on a limited basis.

Technological changes at the station have been both continuous and numerous. As new technologies, particularly navigational technologies, became available, they were, when feasible, integrated into the existing station. While the present light station is still an important aid to navigation, the mechanisms that perform that function have changed considerably over the years. The light station, once manned by a lighthouse keeper and his assistant, has been automated since 1977. Although the original Fresnel lens continues to shine from the lantern room, it is now powered by a 1000-watt GE light bulb and run by a synchronous inductor motor. The present fog-signal, believed to be the third in the station's history, is triggered automatically by a camera on the roof of the fog signal building. Finally, the Vessel Traffic Service radar tower, one of nine towers between Cape Flattery and Olympia has, in all functionality, come to eclipse the light for which the station is so well known.

Although Carl Leick's 1913 fog-signal building, the building that is most commonly thought of as the Point Wilson Lighthouse, provides a focal point for the station, it is important to emphasize that the lighthouse is only part of the much larger light station. Before automation, the lighthouse could not have functioned without the many support structures of the station. In our own era, the high-tech capabilities of the station prove much more valuable to the mariner than the beautiful Fresnel lens in the light tower. It is however, this seamless blending of old and new that lends significance to the Point Wilson Light Station. For more than a century, the art and science of lighthouse building and keeping have together marked the sandy promontory at Point Wilson, making regional navigation far safer than it otherwise would be. In so doing, the light station has had a significant impact, particularly on local society and commerce.

#### II. HISTORICAL INFORMATION

The history of Point Wilson, that northeastern-most tip of the Quimper<sup>4</sup> and Olympic peninsulas, is bound up with the geological processes that created it. Between fifteen thousand and eleven thousand years ago, the Fraser glaciation put the final touches on the Puget Sound basin, scouring out deep channels and creating many of the

<sup>&</sup>lt;sup>4</sup> The Quimper Peninsula is a small peninsula on the northeastern-most tip of the Olympic Peninsula.

present landforms.<sup>5</sup> As the ice receded, it left an expanse of water, dotted with islands. The first human inhabitants of the area arrived only a few thousand years later.<sup>6</sup> By the time Europeans first sailed into the straits, in the late eighteenth century, the descendants of those earliest peoples were navigating local waters in shallow-bottomed canoes, well adapted to local conditions. European, and later American ships, however, were much larger, with greater draft and mass. The coastal waterways of what came to be Washington Territory, in particular the area near Point Wilson, proved a challenge for many of these ships. The confluence of waters at Point Wilson, and the resulting riptides, in combination with shoals, and especially fog, made for one of the most dangerous places in territorial waters. Over the years, hundreds of ships lost their way, or were forced aground in the unforgiving waters off the point. By the late nineteenth century, the loss of goods, ships, and lives had become a mounting concern for many in the area.

Although the establishment of a light station in 1789 did much to make local maritime travel safer, conditions at the point remain hazardous even to this day. The two most famous accidents off Point Wilson occurred after the building of the light station. In 1879, the schooner, *David Hoadley*, ran aground on the beach near the lightstation. Unable to tow the ship back out to deeper waters, crews were forced to abandon the wreck on the beach, where wind and waves eventually disposed of its remains. Fortunately, all were able to walk ashore and no lives were lost. In 1921, however, the collision of the passenger liner, the *Governor*, and the freighter, the *West Hartford*, resulted in the loss of eight lives. <sup>7</sup> As the two ships struck one another, the thick fog amplified the sound and alerted lighthouse keeper, William Thomas, who raised the alarm and organized the rescue that likely saved many who otherwise would have perished.

By the second half of the nineteenth century, Port Townsend, founded in 1851, had taken its place among the rising towns of the Oregon Territory.<sup>8</sup> As Americans

<sup>&</sup>lt;sup>5</sup> Arthur R. Kruckeberg, "A Natural History of the Puget Sound Basin," in *Northwest Lands, Northwest Peoples: Readings in Environmental History*, ed. Dale D. Goble and Paul W. Hirt (Seattle, Wash.: University of Washington Press, 1999), 55-57.

<sup>&</sup>lt;sup>6</sup> Estimates range from eight thousand to ten thousand years ago. See Kruckeberg, 70 and Douglas Deur, "Salmon, Sedentism, and Cultivation: Toward an Environmental Prehistory of the Northwest Coast," in *Northwest Lands, Northwest Peoples: Readings in Environmental History*, ed. Dale D. Goble and Paul W. Hirt (Seattle, Wash.: University of Washington Press, 1999). 133.

<sup>&</sup>lt;sup>7</sup> For accounts of both incidents see, Bruce Roberts and Ray Jones, *Western Lighthouses: Olympic Peninsula to San Diego* (Old Saybrook, Conn.: The Globe Pequot Press, 1933), 22. According to the *Umbrella Guide to Washington Lighthouses*, nine lives were lost in the 1921 accident. See also, Roberts and Jones, 55.

<sup>&</sup>lt;sup>8</sup> U.S. sovereignty over the area was established in 1846. Two years later, Oregon Territory, which included present-day Washington, came into being. Washington was granted territorial status in 1853 and statehood in 1889.

migrated westward, lured by inexpensive land, abundant timber, and reports of great mineral wealth, the territorial population swelled. The founding of lumber mills on the Olympic Peninsula and the Fraser River Gold Strike of 1858 brought an influx of settlers to the frontier town. By 1885, Port Townsend was booming. Goods and sailors from around the world stopped at the seaport, making it one of the busiest on the west coast. As ships continued to meet an untimely end off Point Wilson, however, concerned citizens, as well as those whose investments were being lost to the point's unforgiving conditions, began to call for a remedy. In 1865, one such citizen, Captain J. W. Sheldon, donated a bell for the newly constructed St. Paul's Church. The bell, according to legend, came with a stipulation—it had to be rung on foggy days. A few years later, a thankful mariner whose ship had been safely guided into port by the church bell penned a hymn of thanksgiving, appropriately titled, "Harbor Bells." 10

In 1857, realizing a need for lights and fog signals in the increasingly busy intercoastal waterways of the area, the Lighthouse Service built New Dungeness Light Station, the first on the Strait of Juan de Fuca. The effort to provide navigational aids continued, and by 1860 a light shone from Admiralty Head, across the inlet from Point Wilson. Negotiations for the purchase of land for the establishment of a light at Point Wilson were underway as early as 1868. Final approval for a lighthouse and fogsignal at the point, however, did not come until 1878. Although the point was

<sup>&</sup>lt;sup>9</sup> Gibbs, Sentinels of the North Pacific, 150.

<sup>&</sup>lt;sup>10</sup> Sharlene Nelson and Ted Nelson, *Umbrella Guide to Washington Lighthouses*, 2nd ed. (Kenmore, Wash.: Epicenter Press, 1998), 53.

<sup>&</sup>lt;sup>11</sup> The first lighthouse in what is now the United States, the Boston Lighthouse on Little Brewster Island in Boston Harbor, was built in 1716. The Alcatraz Lighthouse in San Francisco Bay, completed in 1854, was the first light on the West Coast. The first known use of fog bells in the United States was at West Quoddy Head in Maine in 1820. In 1851, the first air fog whistle in the U.S. was placed at Beavertail Lighthouse in Narragansett Bay. Several years later, in 1854, a steam whistle was installed in its place. Although this early steam whistle proved ineffective and was ultimately decommissioned, it was the first use of such a fog whistle in the U.S.

During the colonial era, lighthouses were built and maintained by individual colonies. In 1789, Congress, in one of its first acts, created the Lighthouse Establishment to oversee all lighthouses in the United States. The establishment was placed under the jurisdiction of the Treasury Department. By 1797, all lighthouses in the United States were administered by the federal government. In 1852, the Lighthouse Board was established, again within the Department of Treasury. From this point on, the Lighthouse Establishment was frequently referred to as the Lighthouse Service, although both terms were used. In 1903, the Service was transferred from the Department of the Treasury to the newly created Department of Commerce and Labor. Several years later, in 1910, the Lighthouse Board was abolished and replaced by the Bureau of Lighthouses, which administered the Service until 1939, when it was subsumed by the Coast Guard. As of March 1, 2003, the Coast Guard, and thus all U.S. lighthouses, are part of the newly created Department of Homeland Security.

<sup>&</sup>lt;sup>12</sup> Washington Standard, 1 August 1868, Down Sound News section.

hazardous, the main channel was closer to Whidbey Island, and thus Admiralty Head. It was there, near the eastern side of the inlet, that ships made the turn that led them out to the strait, or south to the sound. The western side of the inlet, near Point Wilson was too dangerous for heavy, unresponsive vessels to approach. Over time, as ships became both more powerful and more maneuverable, the turning lane moved closer to Point Wilson, and eventually, in 1927, the light at Admiralty Head was decommissioned. Point Wilson alone, now guided ships into and out of the narrow waters of the inlet. Marrowstone Point, the third light in the area, was first erected in 1888, although the present light dates from 1918.

By 1878, to the relief of local citizens and visiting captains, Congress had approved the necessary monies to build a new light station at Point Wilson. As the Washington Standard reported in its July 13 edition, "the sum of \$8000 has been appropriated for a light and fog signal at Point Wilson, and the inspector and engineer of this district has been authorized to select the site." <sup>14</sup> Two months later U.S. Deputy Surveyor, D. S. B. Henry was sent to the point. Henry drew up field notes and surveyed the site, making several detailed maps, one of which is the earliest know site plan. 15 It includes a dwelling, a fog-signal building, a water shed and cistern, a boathouse, barn, flagpole and a tramway. 16 On April 18, of the following year, the 19.91-acre parcel was purchased from Mary Fowler, widow of the late Enoch Fowler, for the sum of \$400. The deed of sale was accompanied by a document attesting that Fowler was indeed a widow and had consented to sell the property. The new owner, the United States of America, could now get on with building the much-needed lighthouse. J.S. Wheeler, Superintendent of Construction for the Thirteenth Lighthouse District, <sup>17</sup> as per standard practice, hired a contractor named Holt to build the light station.18

Work on the new station probably began during the summer of 1879, and seems to have progressed quickly.<sup>19</sup> The fog signal building, about which little is known, other than its location and general shape, was built first.<sup>20</sup> Far out on the spit, the wooden building housed a 12-inch steam whistle fueled by coal, and sometimes by

<sup>&</sup>lt;sup>13</sup> James A. Gibbs, Jr., Twilight on the Lighthouses (Atglen, Pa.: Schiffer Publishing, 1996) 62-63.

<sup>&</sup>lt;sup>14</sup> Washington Standard, 13 July 1878.

<sup>&</sup>lt;sup>15</sup> The plan is dated September 10, 1878.

<sup>&</sup>lt;sup>16</sup> Old Title Records. Copies of Deeds, Maps, Surveys, etc-to 1879-, pp. 98-103. Thirteenth District Lighthouse Title Record, 1817-1889, Records of the U.S. Coast Guard, Record Group 26, National Archives and Records Administration–Pacific Alaska Region (Seattle).

<sup>&</sup>lt;sup>17</sup> Old Title Records, p. 103. RG 26, NARA (Seattle).

<sup>&</sup>lt;sup>18</sup> Washington Standard, 18 July 1879.

<sup>&</sup>lt;sup>19</sup> Ibid., 5 September 1879; 3 October 1879.

<sup>&</sup>lt;sup>20</sup> The original fog-signal building was razed in 1913 to make way for the new lighthouse and fog-signal building.

wood.<sup>21</sup> On September 5, 1879, the *Washington Standard* finally reported that the fog whistle was "ready to give hesitating ships the . . . alarm." Several years later, in 1903, the *Annual Report of the Lighthouse Board* recorded that a duplicate fog-signal was installed at Point Wilson and a boiler was purchased.<sup>22</sup> Given the crucial importance of the fog-signal at Point Wilson, the duplicate machinery served as an important safeguard.

Shortly after the completion of the fog-signal building, work on the lighthouse itself was begun. On December 15, 1879, the Point Wilson Light shone for the first time.<sup>23</sup> Almost a century and a quarter later, that same light, albeit much improved, still provides a beacon in the night.

The original, white, wood-framed lighthouse with wood siding served as both a keeper's dwelling and a lighthouse. The integral lighthouse, a fairly common type, was easily built and relatively inexpensive when compared with its freestanding cousins. In the case of the integral lighthouse, the tower projects from the roof of the dwelling, as it did at Point Wilson until the construction of a new lighthouse in 1913.

Because Point Wilson was manned by two keepers, the T-shaped lighthouse was originally designed as a duplex. The two, two-story, side-by-side apartments were entered from the east side of the dwelling, via a small porch. The front doors opened onto a hallway that led back towards the center of each apartment. The first floors of both apartments were mirror images, with a sitting room in front and a dining room in back. This front section of the building had two floors, plus attic space. Towards the back of the duplex, a one-story section of building, accessed via the dining rooms, housed side-by-side kitchens. Behind each kitchen was an L-shaped room, perhaps a utility room, with a locker and a back door. Behind the utility room, at the rear of each apartment, was a bathroom. Plumbing, and perhaps even the bathrooms themselves, likely date from 1905, when the station was connected to Port Townsend's new water main. Plans from 1913 indicate bathrooms with sink, toilet, and bathtub at the rear of both apartments. A small back porch, or lean-to, now gone, completed the early building.

<sup>&</sup>lt;sup>21</sup> List of Light-Houses, Lighted Beacons, and Floating Lights on the Atlantic, Gulf, and Pacific Coasts of the United States, Corrected to January 1, 1879 (Washington, D.C.: Government Printing Office, 1879); Light-House Board, Annual Report of the Light-House Board of the United States to the Secretary of the Treasury (Washington, D.C.: Government Printing Office, 1898); Light-House Board, Annual Report of the Light-House Board of the United States to the Secretary of the Treasury (Washington, D.C.: Government Printing Office, 1891), 173.

<sup>&</sup>lt;sup>22</sup> Lighthouse Service, Annual Report of the Commissioner of Lighthouses to the Secretary of Commerce and Labor (Washington, D.C.: Government Printing Office, 1903), 117.

<sup>&</sup>lt;sup>23</sup> Washington Standard, 19 December 1879.

The second floor of the dwelling was accessed via side-by-side, central staircases leading up from the front entry hall. When the duplex was built in 1879, it is likely that both apartments had a front and back bedroom.<sup>24</sup> Each apartment also had a central chimney and fireplace openings in the sitting room, dining room, and two bedrooms. At present, only one chimney remains. A stove provided heat in the kitchens. Finally, each unit had access to the cellar below via a small stairway behind the main hallway.

Although Point Wilson's original 1879 lighthouse remains substantially intact, it has been remodeled several times. After the completion of the new lighthouse and fogsignal building, the old tower, no longer needed, was removed from the dwelling. At that point, the floor plans of the two apartments deviated, creating unequal spaces on the second floor. While the old bedrooms continued to exist, the space beneath the tower was turned into an additional bedroom and added to the westernmost apartment, presumably that of the lightkeeper. The smaller, two-bedroom apartment was likely home to the assistant lightkeeper. In 1919, an improved front porch, designed by architect Carl Leick, was added.<sup>25</sup> Finally, in 1964, the extra bedroom at the center rear of the second floor was divided in two, providing space for an upstairs bathroom for each unit. In addition, attic space was used to create one, new third-floor bedroom in each apartment. A single window at the gable ends provides light for these rooms. Downstairs the remodel opened up the old sitting room/dining room areas, creating one large living room in each apartment. The walls between the old sitting rooms and hallways were also opened up, further enlarging the living room and reducing the size and importance of the hallway. This was in keeping with contemporary home design.

The first light at Point Wilson shone from atop the keepers' dwelling. The wooden light tower rose fifty-three feet above sea level from the rear, central section of the house, supported underneath by brick walls rising from the foundation.<sup>26</sup> A cylindrical iron and glass lantern, with black paint, topped the tower and housed a

<sup>&</sup>lt;sup>24</sup> See "Repairs and Modification to Dwellings, Point Wilson, Wash." 1913 [Architectural Drawing] [Electronic Record], Drawing Group Port Angeles H-17 087, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.; and "Double Dwelling Remodeling, Point Wilson Light Station, Port Townsend, Washington," 1964 [Architectural Drawing] [Electronic Record] Plans Group Port Angeles H-17 034, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

<sup>&</sup>lt;sup>25</sup> See "Porch for Dwelling, Point Wilson Light Station" 1919 [Architectural Drawing] [Electronic Record] H-17 010, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

<sup>&</sup>lt;sup>26</sup> Department of Commerce and Labor, *List of Lights, Buoys, and Daymarks on the Pacific Coast,* (Washington, D.C.: Government Printing Office, 1908), 85.

lamp nestled within a fourth-order Fresnel lens.<sup>27</sup> While there was nothing remarkable about the architecture at the early site, the hand-cut, crystal Fresnel lens atop the tower was state-of-the-art. Designed by Augustin Fresnel, a French physicist, earlier in the century, and made in Paris by the firm of Sautter, Lemonnier, the lens's many prisms concentrate light in a powerful beam that is visible for over twelve miles, depending on conditions. The original Point Wilson lens produced a fixed, white light. In 1894, however, red panels were added producing a new signature—a "fixed white light, varied by a red flash every 20 seconds."<sup>28</sup> For more than a century, this red and white signature has marked the Point Wilson light.

In 1822, the Fresnel lens made its first appearance atop the Cardovan Tower Light in France. It was not until 1841, however, that a Fresnel lens was installed in the United States, at the Navesink Lighthouse, at the entrance to New York Harbor, in Highlands, New Jersey.<sup>29</sup> The Lighthouse Board, which took over the administration of U.S. lighthouses in 1852, realized the importance of the new lenses and installed them in both old and new lighthouses thus greatly improving navigation in American waters. <sup>30</sup> Appropriately sized lenses, from the great first order lenses which stood ten to twelve feet in height and had a circumference of six feet, to the much smaller, sixth order lenses, took their places atop lighthouses from Cape Hatteras to Cape Flattery and from the Great Lakes to the Mississippi Delta.<sup>31</sup> The fourth-order lens installed at Point Wilson, while common for inland sites, was nevertheless a weak cousin to its much larger and brighter first-order counterparts that now shone in lantern rooms on both the Pacific and Atlantic coasts.

By the mid-nineteenth century, the advent of the Fresnel lens had rendered obsolete the older Argand lamps that had graced lighthouses around the world. By

<sup>&</sup>lt;sup>27</sup> Department of the Treasury, *List of Beacons, Buoys, and Day Marks of the Pacific Coast* (Washington D.C.: Government Printing Office, 1898), 67.

<sup>&</sup>lt;sup>28</sup> Department of the Treasury, *List of Beacons, Buoys, and Day Marks of the Pacific Coast* (Washington D.C.: Government Printing Office, 1898), 67. According to Nelson and Nelson, 54, in 1894 "a new lens with revolving apparatus was substituted for the old one." While it is likely that both red panels and a revolving apparatus were added in 1894, the evidence suggests that the Fresnel lens itself was not replaced. Removing the lens would not only have entailed considerable effort and expense, it would have served no apparent purpose. Finally, photographs of the lens taken in 1916 are consistent with descriptions of the original lens.

<sup>&</sup>lt;sup>29</sup> Bruce Watson, "Science Makes a Better Lighthouse Lens," *Smithsonian Magazine* [Internet], August 1999. [cited 20 Aug 2002]: Available from: http://www.smithsonianmag.si.edu/smithsonian/issues99/aug99/object\_aug99.html

<sup>&</sup>lt;sup>30</sup> See Department of Commerce, Lighthouse Service, *The United States Lighthouse Service*, 1915, p. 32. <sup>31</sup> The order of a lens is determined by the distance from the center of the lamp to the inside of the lens (i.e. the radius of the lamp). This distance is 36.2 inches for a first-order lens and only 9.8 inches for a fourth-order lens.

employing a series of lenses and prisms, the Fresnel lens could concentrate and project light much more efficiently than the older lamp and reflector system. In addition, the lens could be modified to produce a variety of light signatures. The simplest Fresnel lenses, like that first employed at Point Wilson, projected a fixed, white light. More complex lens arrangements, however, produced a light with periodicity. A clockwork system, driven by weights, regulated the light and insured its rotation once per minute. In most cases, including that at Point Wilson, the weights were suspended from the tower inside the hollow iron cylinder that supported the lens. A staircase, which provided access to the lantern, spiraled around the column. Finally, colored panels, usually red, mounted around the outside of the lens could produce a dual-color, or alternating, signature. In addition to its great candlepower, the Fresnel lens made it possible for each lighthouse in a given area to have a unique signature, thus rendering navigation easier.

Behind every Fresnel lens, was an oil-burning lamp that necessitated a watchful keeper. In keeping with the Lighthouse Service's *Instructions*, the first lamp at Point Wilson was probably a Hain's Mineral Oil Lamp.<sup>32</sup> Keepers were instructed that "Lights must be lighted punctually at sunset, and must be kept burning at full intensity until sunrise."<sup>33</sup> Because the lamps burned, on average, 1.7 gallons of oil per hour, the supply had to be replenished frequently.<sup>34</sup> Lamps, and their attendant lanterns also had to be properly ventilated in order to keep the flame burning. Lanterns were thus designed with vents to circulate air. By the late nineteenth century, most lamps burned mineral oil, <sup>35</sup> as kerosene was then commonly known. This was likely the fuel of choice at Point Wilson for many years.

Over the years, as technology improved, so too did lamps. Oil burning lamps were gradually replaced by incandescent oil-vapor lamps, which produced greater candlepower without any increase in oil consumption. The compressed air required by these lamps was generated by a hand pump, which had to be operated every few hours.<sup>36</sup> The cut, crystal lenses also required daily cleaning with a feather brush, linen,

<sup>&</sup>lt;sup>32</sup> United States Light-house Establishment, *Instructions to Light-keepers*, July 1881 (Washington, D.C.: Government Printing Office, 1881), plate 3.

<sup>33</sup> Ibid., 7.

<sup>&</sup>lt;sup>34</sup> This figure is for fourth-order lamps. See United States Light-house Establishment, *Instructions to Light-keepers and Masters of Light-house Vessels*, 1902 (Washington, D.C.: Government Printing Office, 1902; photo reproduction, Allen Park, Mich.: Great Lakes Lighthouse Keepers Association, 1989), 14.

<sup>&</sup>lt;sup>35</sup> Early lights burned oil from the sperm whale. In the mid-nineteenth century, colza oil began to replace sperm oil, but itself was quickly replaced by lard oil. Kerosene, or mineral oil, came into use in 1878, and by 1884, most lighthouses in the U.S. were burning it. Department of Commerce, Lighthouse Service, *The United States Lighthouse Service*, 1915 (Washington, D.C.: Government Printing Office, 1916). 33.

<sup>&</sup>lt;sup>36</sup> For a full description of the incandescent oil-vapor lamp, see Department of Commerce, Lighthouse Service, *The United States Lighthouse Service* (Washington D.C.: Government Printing Office, 1916), 33-34.

and a buff-skin.<sup>37</sup> Point Wilson's first keeper, David Littlefield, who served until 1883, received an annual salary of \$800 and worked twelve-hour shifts. His assistant, despite the same work schedule, received only \$600 a year.<sup>38</sup> Much later, when a third lightkeeper was hired, eight-hour shifts became the rule. In addition to keeping the light and fog signal functioning, the Point Wilson keepers maintained the property and kept a watch-book, a journal, a general account book, and a book of daily expenditures.<sup>39</sup> Supplies came by tender and were hauled over the beach on a narrow tramway.

Because the Quimper Peninsula does not have any sizable streams or bodies of fresh water, early residents at the point had to rely on either wells or cisterns for water. One of the most important buildings on the early reserve was thus the water shed, which was torn down when the new lighthouse was built. This large rectangular building had an inverted roof that sloped downward in the middle. This allowed rainwater to drain off and be collected for later use. While some of the water was evidently funneled off into a cistern for drinking and household use, the remainder was likely stored in tanks and used to generate steam for the fog signal machinery. At many stations, as rainwater fell on the roof and ran down through pipes to the cistern or collecting basin, lead leached into the water. Keepers were therefore instructed to put powdered chalk or whiting in their cisterns to purify the water for drinking.<sup>40</sup> In 1905, the city of Port Townsend contracted with a local company to provide municipal drinking water and shortly thereafter both Fort Worden and the light station were connected with the city water mains.<sup>41</sup>

The early light station also had boathouse and a barn, both of which were later remodeled and adapted for other uses.<sup>42</sup> These outbuildings, together with the oil and coal sheds, the tramway down to the beach, and the lighthouse and fog-signal building,

<sup>&</sup>lt;sup>37</sup> United States Light-house Establishment, *Instructions to Light-keepers*, July 1881 (Washington, D.C.: Government Printing Office, 1881), 8.

<sup>&</sup>lt;sup>38</sup> Registers of Lighthouse Keepers, 1845-1912 (National Archives Microfilm Publications, M1373, roll 6) West Coast, Alaska, and Hawaii, (Washington, D.C.: National Archives and Records Service, 1985).

<sup>&</sup>lt;sup>39</sup> United States Light-house Establishment, *Instructions to Light-keepers*, July 1881, 9. <sup>40</sup> Ibid., 29.

<sup>&</sup>lt;sup>41</sup> Department of Commerce, *Annual Report of the Lighthouse Board* (Washington, D.C.: Government Printing Office, 1905), 172.

<sup>&</sup>lt;sup>42</sup> As early as 1916 the barn was used as a storehouse and shop. See Photograph of "Store-house and Shop from the E." 1916, Point Wilson Lightstation, Washington, Thirteenth Naval District (Northwestern Sector) as it appears in this report. In a 1945 photo the barn appears as "the shop" and in a 1956 photo as "oil shed converted to bachelor's quarters." See Photographs, Point Wilson Folder, Light and Lifeboat Stations, 1944-48, Thirteenth District, Records of the United States Coast Guard, Record Group 26, National Archives and Records Administration–Pacific Alaska Region (Seattle).

made up the light station and ensured its relative self-sufficiency. The station could function for months on end without reprovisioning.<sup>43</sup>

The greatest problem faced by the new light station was the constant erosion of the spit, by both wind and waves. Over the years, numerous attempts were made to remedy the situation. In 1886, "A rough picket fence, 5 feet high, 440 feet long, was built across the low part of the spit in the rear of the buildings, to catch drifting sand, for building up the neck where a breach by the sea was threatened." Again, in 1889, additional fencing was built "to prevent the wind from cutting the sand away." A few years later, in 1905, over fifteen hundred "tons of stone were placed . . . around the easterly and northerly sides of the reservation to protect the buildings from the inroads of the sea." There is no indication, however, that these measures, or the later placement of rip-rap and a gabion wall, have provided anything other than a partial remedy. Recently, a storm-whipped tide breached the doors of the 1913 lighthouse, filling the front room with logs, sand and seaweed.

Despite the constant threat of wind and wave, the 1879 lighthouse has stood the test of time. It is therefore unclear, why, in 1913, a new light and fog-signal building was constructed and the tower on the original house taken down. Although there is much information on the new building, there is little to tell us why it was built in the first place. Some have concluded that erosion was undermining the old lighthouse. This seems unlikely not only because it is still standing, but also because the new lighthouse was built even farther out on the sandy spit where erosion continued to be a problem. It is possible, however, that by 1913, waves and water had undermined the foundation of the original, and presumably wooden, fog-signal building, which had been located at the far end of the point. This scenario would explain the demolition of

<sup>&</sup>lt;sup>43</sup> See "L. & F. Sig Bldg, Point Wilson, Wash." 1912, [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 012, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.; and "Sketch of Proposed Fog Signal Building, Point Wilson, Wash.," 1912 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 013, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash. <sup>44</sup> Light-House Board, Annual Report of the Light-House Board of the United States to the Secretary of the Treasury, (Washington, D.C.: Government Printing Office, 1886), 92.

<sup>&</sup>lt;sup>45</sup> Light-House Board, Annual Report of the Light-House Board of the United States to the Secretary of the Treasury, (Washington, D.C.: Government Printing Office, 1889), 186.

<sup>&</sup>lt;sup>46</sup> Department of Commerce, *Annual Report of the Lighthouse Board*, (Washington, D.C.: Government Printing Office, 1905), 172.

<sup>&</sup>lt;sup>47</sup> See "Repairs to Shore Protection, Point Wilson Light Station, Port Townsend, Washington," 1984 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 065, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.; and " Gabion Wall Details, Pt. Wilson Lighthouse, Port Townsend, Washington," Group Port Angeles 13-0809903, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

the old fog-signal building as well as the stronger, reinforced masonry construction of the new building at approximately the same site. The decision to build a new lighthouse may also have been a reflection of the state of the Lighthouse Service itself. Long under the administration of the Treasury Department, in 1903, the Lighthouse Service was transferred to the newly created Department of Commerce and Labor. The administration of the service, however, continued to be a problem. In 1910, the governing body of the service, the Lighthouse Board, was reorganized. The result was both increased efficiency and a surge of new activity. In the years following 1910, construction of new lighthouses and the rebuilding of old ones increased. Between 1900 and 1920 a number of local lighthouses, also designed by Carl Leick, were either newly constructed or rebuilt.

As Point Wilson was within the Thirteenth Lighthouse District, headquartered in Portland, Oregon, a Portland firm was hired to construct the new lighthouse.<sup>49</sup> Carl Leick, the district designer, was also the project architect. Born in Germany in 1854, Leick immigrated to Astoria, Oregon, after finishing his studies. After working on a number of local projects, Leick moved on to Portland where he found work designing lighthouses for the U.S. Engineer's Office and then later for the Superintendent of Engineering. In the course of his career, Leick shaped the face of lighthouse design in the Pacific Northwest. His lighthouses can be found on the shores of Oregon, Washington and Alaska. Altogether, he designed approximately thirty-five lighthouses in three states.<sup>50</sup> Although most of his structures were wood-frame, he also designed concrete and masonry structures, including the concrete light and fog-signal building at Point Wilson. This structure, one of his last designs, is also one of his most refined. While similar to the lighthouses he designed at Mulkiteo (1906), Ediz Hook (1908) and Cape Arago (1908), and at Alki Point (1913) and Lime Kiln (1914), Point Wilson represents perhaps the apex of his work as an architect.<sup>51</sup> Its clean lines, graceful proportions, and steeply pitched roofs all draw the eye upward to the top of the octagonal tower and its elegant Fresnel lens. 52

<sup>&</sup>lt;sup>48</sup> George Weiss, *The Lighthouse Service: Its History, Activities and Organization* (Baltimore: Johns Hopkins University Press, 1926) 20-21.

<sup>&</sup>lt;sup>49</sup> "Work to Begin Soon—Contractors for Point Wilson Light Assembling Material," *Port Townsend Leader*, 15 April 1913.

<sup>&</sup>lt;sup>50</sup> See Ray Aliberti, *Lighthouses Northwest: The Designs of Carl Leick* (Coupeville, Wash.: Lighthouse Press, 2000),s 25-29. Because of the current paucity of information on Leick, the exact number of lighthouses he designed cannot be determined.

<sup>&</sup>lt;sup>51</sup> Mulkiteo, Ediz Hook and Cape Arago share the same design. Alki and Lime Kiln share another. Point Wilson is unique.

<sup>&</sup>lt;sup>52</sup> The only published work on Carl Leick is Ray Aliberti's, *Lighthouses Northwest: The Designs of Carl Leick*. All information on Leick in this report is from Aliberti's book.

Octagonal towers, like round towers, are fairly common, in part because their design reduces wind pressure on the structure. Lit in 1764, the light at Sandy Hook, at the entrance to New York harbor, was probably the first octagonal tower erected in the colonies. Many of Leick's towers are octagonal, and although some are reinforced concrete like that at Point Wilson, others are constructed of wood. The reinforced concrete masonry of the new Point Wilson building was, in its day, state-of-the-art. Although the Romans pioneered the use of cement, knowledge of this medium was lost in subsequent years. It was not until the eighteenth century that cement was once again used as a building material, and even then, only on a limited basis. By the early to midnineteenth century, American builders were using concrete, a mixture of cement, gravel, sand and water, in the construction of bridges, tunnels, and canals. Construction of concrete block structures soon followed.<sup>53</sup> At the same time that concrete was being reintroduced to engineering and architecture, engineers and builders began to reinforce structures with iron. By the late nineteenth century, the development of reinforced concrete had begun to alter the shape of American building, particularly on the west coast, where it offered a solution to the problems of building in earthquake country.<sup>54</sup> The Lighthouse Service was quick to realize the potential of reinforced concrete. Its strength, durability, and relatively lower cost, as compared to other building materials, made it an obvious choice for the construction of many lighthouses, particularly on the west coast.

The first reinforced-concrete tower in the country was erected in 1910 at Point Arena in California. The new light and fog-signal building at Point Wilson was built only three years later. The building blueprints show the inclusion of "rib bar," as early re-bar was called. The one-and-a-half story building, with hip roof, has a square footprint of twenty-nine feet, six inches, on a side. From its foundation to the metal tip of the lantern, the light tower rises fifty-five feet.<sup>55</sup> The tower is lined with clay tiles, which have been painted over. The cast iron and glass lantern, which opens onto a small deck, was removed from the old tower and placed atop the new one. The lantern is accessed via a narrow staircase that spirals around a central cast iron column. The center of the post is hollow and once housed the weight mechanism that turned the

<sup>&</sup>lt;sup>53</sup> Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building*, 1900-1930 (Baltimore: Johns Hopkins University Press, 2001), 15.

<sup>&</sup>lt;sup>54</sup> Slaton, 16-17.

<sup>&</sup>lt;sup>55</sup> "Exterior Painting Elevations, Point Wilson Light Station, Port Townsend, Washington," 1982 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 064, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash. See also Department of Commerce, Lighthouse Service, *Light List, Pacific Coast, United States, Canada, Hawaiian and Samoan Islands* (Washington, D.C.: Government Printing Office, 1929) which records that the top of the lantern is fifty-three feet above ground and fifty feet above the water.

Fresnel lens on top. This mechanism has long since been replaced with gears, but the small weight-hole door at the base of the column still provides a glimpse into the interior. For the first six years of its life, the outside of the new building was gray, having received a cement-wash as prescribed by the Light-house Establishment.<sup>56</sup> By 1919, the building had received its familiar coat of whitewash.<sup>57</sup>

At least as important as the Point Wilson light, the fog-signal sounded from two horns that projected from the roof of the new building. A new first-class air siren replaced the old twelve-inch steam whistle, likely with the advent of the new building. Inside, the machinery room housed the fog signal mechanism, which rested on a deep, reinforced concrete pad. The steam tank, approximately four feet in diameter and nineteen and a half feet long, was suspended from the ceiling and provided the steam that sounded the first-class air siren. Behind the machinery room, which also had a sink and a stove, on either side of the tower, was a vestibule with two closets, and a workroom. Later, when the fog signal machinery was removed, the inside of the building was remodeled.

When the new light and fog-signal building was constructed, two small, flanking sheds, one for oil and one for coal, were also built. Because of its combustible nature, it was important to store the kerosene in an oil shed, away from the machinery of the fog-signal. While the kerosene kept the light burning, the coal powered the fog signal.<sup>60</sup> Later, when the station was electrified, the sheds were used to store paint and other supplies.<sup>61</sup>

<sup>&</sup>lt;sup>56</sup> United States Light-house Establishment. *Instructions to Light-keepers*, July 1881, 26-29; and Department of Commerce, Lighthouse Service, *Light List Pacific Coast*, 1915.

<sup>&</sup>lt;sup>57</sup> Department of Commerce, Lighthouse Service, *Light List: Pacific Coast, United States, Canada, Hawaiian and Samoan Islands*, 1919 (Washington, D.C.: Government Printing Office, 1919), 80-81.

<sup>&</sup>lt;sup>58</sup> Department of Commerce, Lighthouse Service, *Buoy List, Oregon and Washington, Seventeenth Lighthouse District*, 1914 (Washington, D.C.: Government Printing Office, 1914), 29.

<sup>&</sup>lt;sup>59</sup> Ibid., 29. See also "Plan. Fog Signal Machinery, Point Wilson Light Station," 1912 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 008, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.; and " Elevation. Fog Signal Machinery, Point Wilson Light Station," 1912 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 009, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

<sup>&</sup>lt;sup>60</sup> See Photographs, Point Wilson Folder, Light and Lifeboat Stations, 1944-48, Thirteenth District, Records of the United States Coast Guard, Record Group 26, National Archives and Records Administration–Pacific Alaska Region (Seattle); and "Repairs and Modification to Dwellings, Point Wilson, Wash.," 1913 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 087, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

<sup>&</sup>lt;sup>61</sup> "Exterior Painting, Site Plan, Elevations, Point Wilson Light Station, Port Townsend, Washington," 1982 [Architectural Drawing] [Electronic Record], Group Port Angeles H-17 063, on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

Over the years, both maintenance and improvements were ongoing at Point Wilson. In 1924, the candlepower of the lamp was only 1700 for white light and 1900 for red light.<sup>62</sup> In 1925 improvements were made so that the lamp shone at 6500/8000 candlepower.<sup>63</sup> In 1939, the candlepower was increased to 17,000/25,000.<sup>64</sup> In 1931 the first radiobeacon, operating on 314 kilocycles, was put into operation at the station.<sup>65</sup> Six years later, in 1937, the radiobeacon and fog signal at Point Wilson were synchronized, making Point Wilson a distance finding station and adding greatly to its ability to aid mariners.<sup>66</sup> In 1930, the station was finally electrified and a 200-watt, PS-30 lamp was installed behind the lens.<sup>67</sup> Today, a 1000-watt bulb powers the lamp at Point Wilson.

In 1977, the end of an era that had begun almost one hundred years earlier, arrived. The Point Wilson Light Station, like so many others, was automated. Its last keepers left the station to be replaced by remote technology. Although the automation of U.S. lighthouses had begun as early as 1922,68 the station at Point Wilson, perhaps because of its importance to local maritime traffic, was able to remain a manned light station even as other lights were being automated in the 1960s. While the automation of lights, including that of Point Wilson, carries much significance, marking as it does the true end of the Lighthouse Establishment and Service, it does little to alter the significance of light stations themselves. Point Wilson, as other stations around the country, continues as an important aid to local navigation. And although the lightkeepers are gone, the old duplex continues as a home for Coast Guard personnel. Indeed, despite many improvements, the light station retains much of its earliest form and function.

Although automation brought an end to an era, it did not bring an end to change at the point. A year later, in 1978, remote control of Marrowstone Point and Point

<sup>&</sup>lt;sup>62</sup> Department of Commerce, Lighthouse Service, *Light List: Pacific Coast, United States, Canada, Hawaiian and Samoan Islands*, 1924 (Washington, D.C.: Government Printing Office, 1924), 106-107.

<sup>&</sup>lt;sup>63</sup> It is possible that the increased candlepower represented the change from a wick lamp to an incandescent oil vapor lamp, although 1925 seems a bit late for this improvement as the Ediz Hook lamp was changed to an oil vapor lamp in 1914.

Department of Commerce, Light List (Washington, D.C.: Government Printing Office, 1925), 112-113;
 and Department of Commerce, Light List (Washington, D.C.: Government Printing Office, 1939), 168.
 Department of Commerce, Light List (Washington, D.C.: Government Printing Office, 1931), 202; and Weiss, 38.

Department of Commerce, Light List (Washington, D.C.: Government Printing Office, 1937), 159.
 "Electric Lt. Installation, Point Wilson Lt. Station," 1930 [Architectural Drawing] [Electronic Record],
 Group Port Angeles H-17 011, on file at Cultural Resources Division, Columbia Cascades Support Office,
 National Park Service, Seattle, Wash.

<sup>&</sup>lt;sup>68</sup> See Department of Commerce, Annual Report of the Commissioner of Lighthouses to the Secretary of Commerce for the Fiscal Year Ended June 30, 1922 (Washington, D.C.: Government Printing Office, 1922).

Hudson light stations was established from Point Wilson. In 1987, the Coast Guard replaced the station's old fog siren. A new, steel fog-signal baffle and concrete emitter house were built at the far tip of the point, just above the breakers. The old machinery room in the 1913 lighthouse has been divided into three separate rooms and its historic fog siren is now gone. The new fog signal is activated automatically by a camera on the roof of the lighthouse. In the yard, not far from the 1962 ranch-style house, the modern radar tower soars above Carl Leick's monument. In the octagonal tower below, the Fresnel lens continues to wink at passing ships, a reminder of the brilliance of its designer and the importance of its mission. It is indeed a rare sight in the early twenty-first century. Most of its brethren have been sold or placed in museums, yet, here, in the northwest corner of the United States, nineteenth-century engineering meets twenty-first century technology, reminding us that yesterday's art and science can still provide elegant solutions for our modern world. Today at Point Wilson, technologies of the past and present coexist and the station continues to carry out the duties for which it was built over a century ago.

#### III. SOURCES

#### A. Collections Consulted

Coast Guard Museum Northwest, Seattle, Washington King County Libraries

Library, Columbia Cascades Support Office, National Park Service, Seattle, Washington

National Archives and Records Administration, Pacific Northwest Region, Seattle, Washington

The Richard F. McCurdy Historical Research Library at the Jefferson County Historical Society, Port Townsend, Washington

Seattle Public Library

University of Washington Libraries

University of Washington, Special Collections

## B. Selected Bibliography

## Government Documents-Unpublished

- Thirteenth District Lighthouse Title Record, 1817-1889. Copies of Deeds, Maps, Surveys, etc to 1889. Old Title Records. Record Group 26. National Archives and Records Administration–Pacific Alaska Region, Seattle, Washington.
- Photographs, Light and Lifeboat Stations, 1944-48. Record Group 26. National Archives and Records Administration–Pacific Alaska Region, Seattle, Washington.

#### Government Documents Published

- Bureau of Lighthouses. Department of Commerce. *Lighthouse Service Bulletin*. nos. 1-38., Washington, D.C.: Government Printing Office, no date. Photoreproduction on file at Coast Guard Museum Northwest, Seattle, Wash.
- Department of Commerce. Annual Report of the Commissioner of Lighthouses to the Secretary of Commerce, Washington, D.C.: Government Printing Office, 1922-1932.
- Department of Commerce Lighthouse Service. *Buoy List. Oregon and Washington, Seventeenth Lighthouse District,* Washington, D.C.: Government Printing Office, 1914.
- Department of Commerce. Lighthouse Service. *Light List, Pacific Coast, United States, Canada, Hawaiian and Samoan Islands*. Washington, D.C.: Government Printing Office, 1915,1918, 1919, 1924-1939.
- Department of Commerce. Lighthouse Service. *The United States Lighthouse Service*. Washington, D.C.: Government Printing Office, 1916.
- Department of Commerce and Labor. *List of Beacons, Buoys, and Day Marks of the Pacific Coast*. Washington, D.C.: Government Printing Office, 1905, 1908, 1909.
- Department of Commerce and Labor. *List of Lights and Fog Signals of the United States*. Washington, D.C.: Government Printing Office, 1909.

- Department of Treasury. *List of Beacons, Buoys, and Day Marks of the Pacific Coast,* 1898. Washington, D.C.: Government Printing Office, 1898.
- Department of Treasury. *List of Light-Houses, Lighted Beacons, and Floating Lights on the Atlantic, Gulf, and Pacific Coasts of the United States.* Corrected to January 1, 1879. Washington, D.C.: Government Printing Office, 1879.
- Department of Treasury. United States Light-House Establishment. *Instructions to Light-Keepers*, July 1881. Washington, D.C.: Government Printing Office, 1881.
- Light-House Board. *Annual Report of the Light-House Board of the United States to the Secretary of the Treasury*. Washington: Government Printing Office, 1875, 1877, 1884-1886, 1889, 1891, 1898.
- Lighthouse Service. Annual Report of the Commissioner of Lighthouses to the Secretary of Commerce and Labor. Washington: Government Printing Office. 1903, 1905, 1910, 1911.
- Registers of Lighthouse Keepers, 1845-1912. West Coast, Alaska, and Hawaii. Washington, D.C.: National Archives Archives and Records Service, 1985. Microfilm.
- United States Light-House Establishment. *Instructions to Light-Keepers and Masters of Light-House Vessels*. 1902. Washington, D.C.: Government Printing Office, 1902. Photo reproduction, Allen Park, Mich.:Great Lakes Lighthouse Keepers Association, 1989.

#### **Books and Articles**

- Aliberti, Ray. *Lighthouses Northwest: The Designs of Carl Leick*. Coupeville, Wash.: Lighthouse Press, 2000.
- Browning, Robert. *Lighthouse Evolution and Typology*. United States Coast Guard. [Internet] [cited 2002 Aug 20]: Available from: http://www.uscg.mil/hq/g-cp/history/Lhevolution.html
- The Fresnel Lens, [Internet] [cited 2002 Aug 20]: Available from http://www.lanternroom.com

- Gibbs, James A., Jr. Sentinels of the North Pacific: The Story of Pacific Coast Lighthouses and Lightships. Portland, Oreg.: Binford and Mort, 1955.
- Gibbs, James A., Jr. Twilight on the Lighthouses. Atglen, Pa.: Schiffer Publishing, 1996.
- Goble, Dale D., and Paul W. Hirt, eds. *Northwest Lands, Northwest Peoples: Readings in Environmental History.* Seattle, Wash.: University of Washington Press, 1999.
- Hunt, Mrs. Gerald A. National Register of Historic Places Inventory. Nomination Form. Point Wilson Light House, Jefferson County, Washington. 1970.
- Inventory of Historic Light Stations. Candace Clifford, Project Manager. Washington, D.C.: National Maritime Initiative, National Park Service, History Division, 1994.
- Johnson, Arnold Burges. *The Modern Light-House Service*. Washington, D.C.: Government Printing Office, 1889.
- Jones, Ray. American Lighthouses. Old Saybrook, Conn.: Globe Pequot Press, 1998.
- McCurdy, James G. By Juan de Fuca's Strait: Pioneering along the Northwester Edge of the Continent. Portland, Oreg.: Metropolitan Press, 1937.
- National Park Service. Maritime Heritage Program. Lighthouse Construction Types. [Internet] [cited on 2003 Mar 16]: Available from: http://www.cr.nps.gov/maritime/contype.htm
- National Park Service. Maritime Heritage Program. Lighthouses: An Administrative History. [Internet] [cited on 2003 Mar 16]: Available from: http://www.cr.nps.gov/maritime/light/admin.html
- National Park Service. Maritime Heritage Program. Light Station Components. [Internet] [cited on 2003 Mar 16]: Available from: http://www.cr.nps.gov/maritime/ltcomp.html
- Nelson, Sharlene and Ted Nelson. *Umbrella Guide to Washington Lighthouses*. 2nd ed. Kenmore, Wash.: Epicenter Press, 1998.

- Roberts, Bruce. *Pacific Northwest Lighthouses: Oregon to the Aleutians*. Old Saybrook, Conn.: Globe Pequot Press, 1997.
- Roberts, Bruce and Ray Jones, *Western Lighthouses: Olympic Peninsula to San Diego*. Old Saybrook, Conn.: The Globe Pequot Press, 1993.
- Slaton, Amy E. Reinforced Concrete and the Modernization of American Building, 1900-1930. Baltimore: The Johns Hopkins University Press, 2001.
- Strobridge, Truman R. *Chronology of Aids to Navigation and the United States Lighthouse Service*, 1716-1939, [Internet] [cited 2002 Aug 20]: Available from: s http://www.uscg.mil/hq/g-cp/history/h\_USLHSchron.html
- Watson, Bruce. "Science Makes a Better Lighthouse Lens," Smithsonian Magazine [Internet]. August 1999 [cited 20 Aug 2002]: Available from: http://www.smithsonianmag.si.edu/smithsonian/issues99/aug99/object\_aug99.html
- Weiss, George. *The Lighthouse Service: Its History, Activities and Organization*. Baltimore: The Johns Hopkins University Press, 1926.

#### **Newspapers**

Port Townsend Leader

Port Townsend Daily Leader

Washington Standard

#### Plans and Drawings

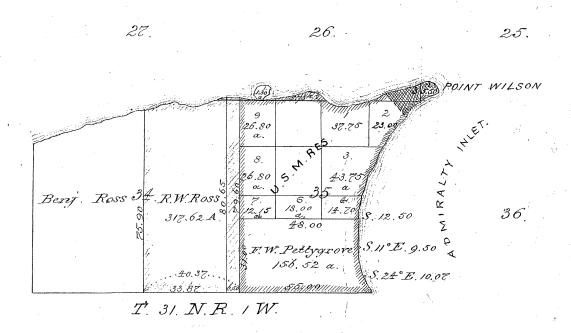
- Architectural Drawings. Point Wilson Light Station, Wash. Civil Engineering Unit, Electronic Records on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.
- Architectural Drawings. Point Wilson Light Station, Wash. Office of the Lighthouse Inspector, Seventeenth District. Electronic Records on file at Cultural Resources Division, Columbia Cascades Support Office, National Park Service, Seattle, Wash.

Point Wilson, W.T. Site Plan, 1883. Accession no. 84.89/7. Coast Guard Museum Northwest, Seattle, Wash. Photo reproduction.

## IV. PROJECT INFORMATION

This report has been prepared at the request of the United States Coast Guard. The project manager was Hank Florence, Historical Architect at the Columbia Cascades Support Office of the National Park Service. The written documentation was prepared by Gina Ottoboni, Historical Consultant to the National Park Service. David Louter, Historian, Columbia Cascades Support Office, reviewed the project. Kimber Keagle, also of the National Park Service, conducted additional research. The project photographer was Mary Peck. Material was collected in local and regional depositories and libraries in Washington State. The staff at the Coast Guard Museum Northwest, Seattle, provided invaluable help. A limited site visit provided additional information. Further information on the Point Wilson Light Station can be found at the National Archives and Records Administration's Washington, D.C., and College Park, Md., locations.

#### **APPENDIX**

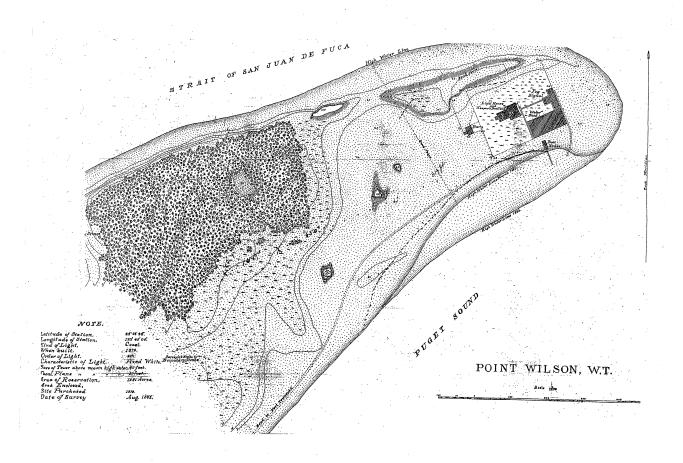


PLAT PLAN, POINT WILSON, 1878. The above drawing, by U.S. Deputy Surveyor, D. S. B. Henry, shows the land purchased for the future light station as well as nearby parcels. Source: Old Title Records, Copies of Deeds, Maps, Surveys, etc-to 1879-, p. 101. Thirteenth District Lighthouse Title Record, 1817-1889, Records of the U.S. Coast Guard, Record Group 26, National Archives and Records Administration—Pacific Alaska Region (Seattle).

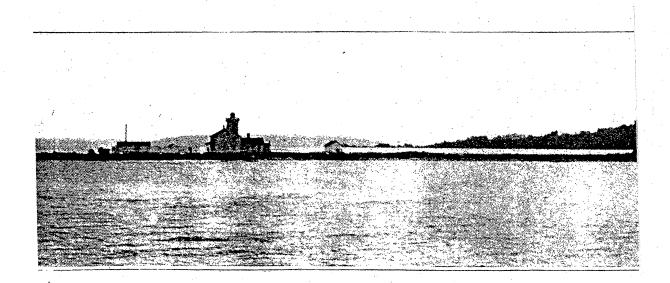
# POINT WILSON, W.T. Plat of track of land surveyed by D.S.B. Henry, Sept. 20th 1878, for a site for United States Light. House at Point Wilson, Jefferson Co. Washington Texritory, being parts of Sections 25, 26 and 35 of Township 31 N. of range 1 West, Willamette Meridian and containing 19.91 Acres. The adjoining land is owned by Mary Fowler, Robert Caines, Mary Jane Tucker, A. H. Tucker and P. S. Fowler, heirs at law of Enoch S. Fowler, deceased Scale: 3 chains = / inch.

SURVEY WITH PROPOSED SITE PLAN EMBEDDED, POINT WILSON, 1878. The above survey, by U.S. Deputy Surveyor, D. S. B. Henry, contains the earliest known site plan for the Point Wilson Light Station. Source: Old Title Records, Copies of Deeds, Maps, Surveys, etc-to 1879-, p. 101. Thirteenth District Lighthouse Title Record, 1817-1889, Records of the U.S. Coast Guard, Record Group 26, National Archives and Records Administration—Pacific Alaska Region (Seattle).

(Reduced from 1 100 ch = 1 inch)



SITE PLAN, POINT WILSON LIGHT STATION, 1883. This site plan shows the early light station, including the original fog signal building and the water shed. Source: Point Wilson, W.T. Site Plan, 1883, Accession no. 84.89/7, Coast Guard Museum Northwest, Seattle, Wash.



Point Wilson Light Station, c. 1909. Reproduction of photograph showing the early light station, including the original fog signal building (left) and the keeper's dwelling with integral light tower (right). Source: Department of Commerce and Labor, *List of Lights and Fog Signals of the United States* (Washington, D.C.: Government Printing Office, 1909), plate VII.

#### HISTORIC AMERICAN ENGINEERING RECORD

#### INDEX TO PHOTOGRAPHS

POINT WILSON LIGHT STATION Harbor Defense Way Port Townsend Vicinity Jefferson County Washington HAER No. WA-171

- Mary Peck, Photographer, February March 2003 Note: 8" X 10" images were enlarged from 4" X 5" negatives.
- WA-171-1 Context view from Fort Worden State Park, looking Northeast
- WA-171-2 General view of entrance, duplex and light station, looking East
- WA-171-3 General view from light station of masonry keeper's house and original boathouse, looking Southwest
- WA-171-4 General view from light station of duplex residence, looking West
- WA-171-5 General view of duplex residence, original boathouse, light station and fog-signal, looking North
- WA-171-6 General view of original boathouse, light station, and fogsignal, looking Northwest
- WA-171-7 General view of light station, fuel storage building, and fog-signal, looking North
- WA-171-8 Light station, south elevation, and fuel storage building, looking North
- WA-171-9 Light station, west elevation, fuel storage building, and fog-signal, looking East
- WA-171-10 Light station, west elevation, looking East
- WA-171-11 Light station, east elevation, looking West
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- WA-171-31 Masonry keeper's house, looking Southeast
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- WA-171-33 Photocopy of photograph (from Coast Guard Museum NW, Seattle WA No. 76.165/35) View of light station looking West

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- WA-171-34 Photocopy of aerial photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.) General view of the light station
- WA-171-35 Photocopy of aerial photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.) General view of the light station
- WA-171-36 Photocopy of aerial photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.) General view of the light station 1951
- WA-171-37 Photocopy of photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.)
  General view of the light station from the Southwest 1916
- WA-171-38 Photocopy of photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.) Fogsignal machinery 1916
- WA-171-39 Photocopy of photograph (original print located in the U.S. Coast Guard, Civil Engineering Unit, Oakland, Calif.) Air & oil tanks for illuminating apparatus 1916