

Trip Report
Seldovia Harbor Improvements
September 10, 2009

Participants

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Summary

This trip report documents the site visit to Seldovia, Alaska to investigate harbor improvements as part of the AKV292 (326049) Seldovia Harbor Improvements Denali Commission project.

Photos taken during the site visit are located at O:_Projects by Location\Seldovia\AKV292 (326049) Seldovia Harbor Improvements Denali Commission\06 Photos-Maps-Drawings

Background

Seldovia Harbor is a Federal project with two pertinent authorizations

(1) Rivers and Harbors Act, 2 March 1945 (House Doc. 702, 76th Congress, 1st Session) as adopted, provides for removal of obstructions in the entrance channel near Watch Point to a depth of 24 feet below MLLW.

(2) Rivers and Harbors Act, 3 July 1958 (House Doc. 34, 85th Congress, 1st Session) as adopted, provides for a small boat basin 300 feet long by 700 feet wide to a depth of 12 feet below MLLW protected by two rock breakwaters 400 and 600 feet long.

The small boat basin provides protected moorage for 140 fishing vessels. Improvement of the outer channel eliminates delays due to tides, permits use of larger vessels, facilitates deep-draft cargo operations at the port, and assures greater safety for vessels calling at Seldovia. Project depth is effectively available throughout the deep draft channel, June 2003. The vast majority of the Federal basin also meets or exceeds project depth, but the float configuration is such that for vessels transiting the local basin, -9.5 feet MLLW controls. The following figures are available in Alaska District Project Maps and Index Sheets, Revised to 30 September 2007.

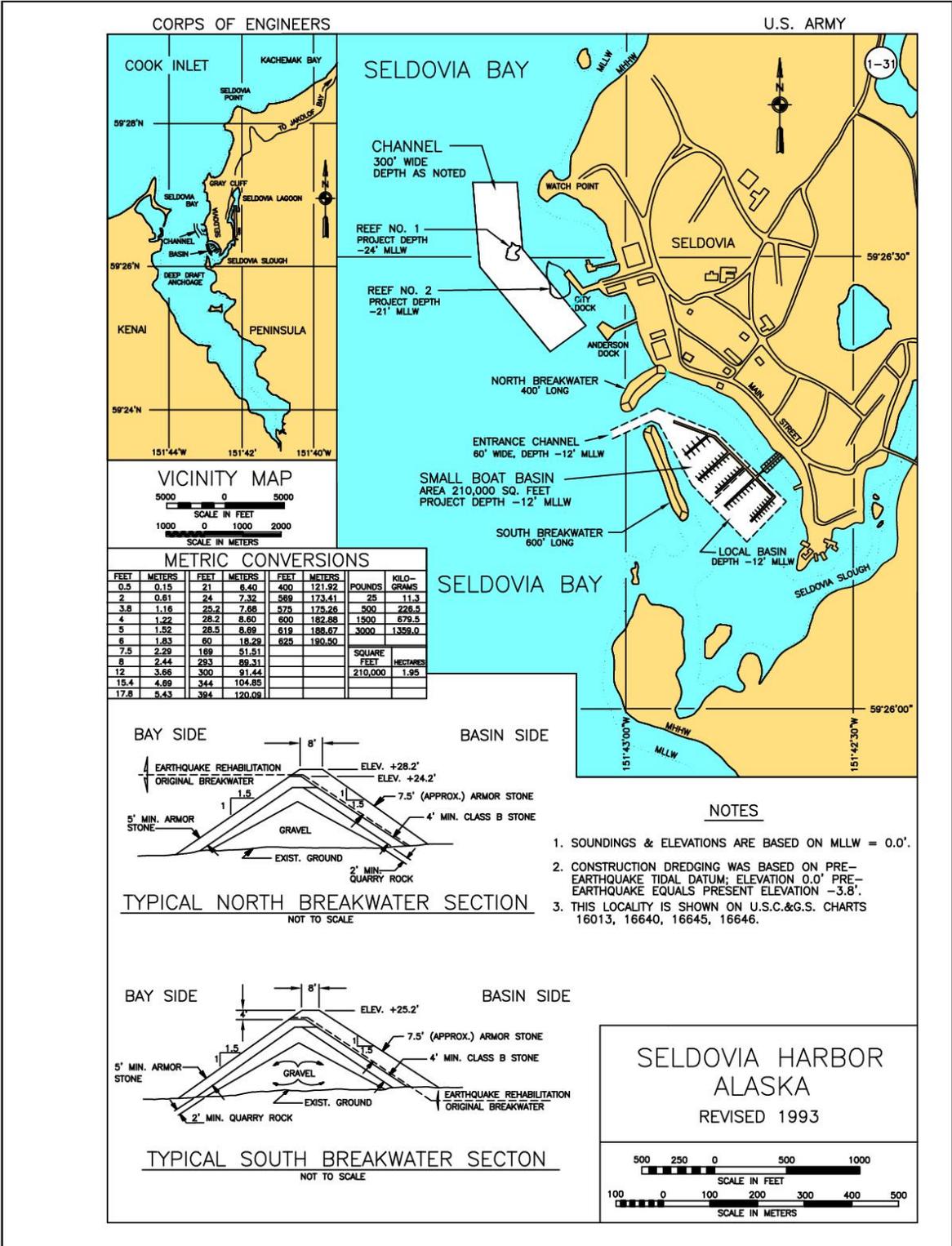


Figure 1 Project Index Drawing from the 2007 Project Index Book

Seldovia Harbor



View taking in the main city dock and the small boat harbor, 2000.



The small boat harbor and downtown Seldovia, 2000.

Figure 2 - Photo from the 2007 Project Index Book

The following documents the various Federal activities listed in the Alaska District Project Maps and Index Sheets, Revised to 30 September 2007

1960 - Hydrographic surveys and predesign investigations are carried out.

1961 - The project is modified during the design stage as follows: Reef No. 2 is to be removed completely to the -21 foot depth (instead of partial removal to -24 feet), minor relocation of the basin and breakwaters, and modification of the basin's shape. Basin dredging begins in October with suitable material utilized as breakwater core.

1962 - Drilling and blasting operations begin in the outer channel in February and are completed in April; final dredging in the basin is finished in April as well. Work on the breakwaters continues until completion in December.

1964 - The earthquake of 27 March 1964 damages the breakwaters and inner harbor facilities; a subsidence of 3.8 feet is reported. Rehabilitation of the Federal project by increasing the elevation of the breakwaters by 4 feet is initiated in June and completed in October.

2000 - A condition survey is conducted in May of both the harbor and the deep draft channel.

2002 - Vertical aerial photography is taken in June.

2003 - A condition survey of both the harbor and the deep draft channel is conducted in June.

2006 - The latest condition surveys of both the channel and harbor are completed in May.

Trip Report

The Corps team travelled to Seldovia, Alaska on September 10, 2009 to investigate harbor improvements as part of the AKV292 (326049) Seldovia Harbor Improvements Denali Commission projects.

Travel was via Pen Air to Homer, then Homer Air to Seldovia. Note that one must take a taxi from the main Homer air terminal to the other side of the airport where the Homer Air facilities are located.

The team arrived in Seldovia at about 8:15 AM and was greeted by Tim Dillon, Seldovia City Manager. After a brief tour of Seldovia proper, the team gathered at the Seldovia Harbor offices to discuss the project with Mr Dillon and the harbormaster Susan Carlough. The discussion centered on the various needs for harbor improvement. The remainder of this document will detail the concerns of the city, information gathered, and requests for information left with the city.

City Concerns and Ideas

The City of Seldovia has several concerns with the existing condition of the harbor facilities. These include docks, power and water systems, seaplane facilities, lack of kayak/rowboat/non powered boat facilities, old pilings, and shallow depths available in significant portions of the harbor. The city's specific concerns are as follows.

Harbor Depth – From C Dock southward, the harbor is shallower than the Federal harbor depth of 12 feet. For reasons unknown to the city, this portion was never dredged. Several boats are limited in their ability to maneuver at low tides and many groundings have been reported. When boats are moored at the ends of the docks nearest the breakwater, deeper draft vessels cannot navigate around them because the channel is too shallow away from the docks. Moorage of vessels at the D and E docks are limited to either shallow draft vessels or to the few spots where deeper water exists. The harbormaster reports that many vessels use the channel to the south of the main breakwater for entrance and egress even though this channel goes dry during negative tides.

Docks – The harbormaster repeatedly described the docks as being old, suffering from rot, and in need of significant upgrade, overhaul, and/or replacement. She has particular concerns with the bull rails which are showing signs of rot. She reports several incidences of cleats pulling out and boats breaking loose because of a lack of mooring points and cleats. Work had been done by a previous contractor but was not completed for a variety of reasons. This worked upgraded much of the B dock decking, but most of the bull rails, and some of the decking still needs replacement.

Pilings – As previously mentioned, the harbor had some upgrades already completed. Many of the harbor's wood piling have been replaced by modern aluminum pile. However, as the city reports, several of the new piling were unable to be placed. Resident Jim Hopkins worked on the project to replace the piling and reported that several of the locations for new piling were located on material that was far too rocky to achieve an adequate pile depth. In a few instances, there was no penetration at all. He said the pile driving record was on file with the city. Mr Hopkins also stated that in order to drive the remainder of the pilings, a drill rig would likely be needed.

Power – As part of the previously attempted upgrades, significant portions of the electrical system has been upgraded, though there are multiple features that are still needed. The city specifically mentioned light standards are needed on A dock, along with new 30 Amp service.

Water – The city manager said water has been a maintenance nightmare. Early in his tenure, he found that he had to send his crews to the harbor almost daily to perform repairs to the water system. After conversations with other harbormasters, he discovered Homer utilizes a system of fire hoses that are laid out every year, then drained and stored every winter. Seldovia has put this system into practice and has found this approach may very well meet their needs. The city manager and harbormaster both commented that work was needed to make this system safe and effective for the long run, but would be very willing to use this as their long term water system.

Seaplane – The city reports the seaplane facility located at the end B dock is in poor condition. In addition, they find the seaplanes tend to cause navigation hazards as they enter in through the main harbor entrance. Though the opening to the south of the main breakwater is not considered a navigable channel, seaplanes do tend to utilize this access point as well at higher tides when the shoal is covered. The city has expressed some interest in dredging a channel in this opening.

Kayak/rowboat/non powered boat facilities – The city has noticed a substantial increase in the number of non powered vessels (kayaks, rowboats, small sail boats) utilizing the city docks. There is very limited room for this type of use so the city did express interest in developing an additional pier for this purpose.

Fast Ferry – The proposed Seldovia ferry may also need to be incorporated into the improvements.. The Alaska Native Village of Seldovia has expressed interest in constructing a wharf outside the harbor, though once the derelict vessel (the Husky II) has been scrapped, there will be ample space for moorage of the ferry in the harbor. The city would like this item examined.

Harbor Expansion – Though the existing harbor is operating without a substantial waiting list, there is desire by some in the community to explore harbor expansion. Seldovia Harbor has been utilized by the commercial fishing fleet as a harbor of refuge for shelter during storms or as a port for making repairs without going further to the harbor at Homer. In addition, the city is considering development of a value added fish processing facility. Harbor expansion could help support these activities.

Corps Inspection

The following are the observations of the Corps staff from inspection of the Seldovia harbor facilities. The investigations were mostly visual, with some impromptu tests of wood integrity using a screw driver to jab at wood to find rotted sections.

MAIN RUN

The main run of the dock system has worn decking and bull rails. Both appear solid, but have a fair amount of moss, wear marks, and cracking. In some areas, the bull rail has vegetation growing out of cracks. Towards the north end, the main run appears warped as if the floatation is unevenly distributed. In the same northern area, the dock appears to be significantly undersized for the type of vessels that are moored to it. The main run needs 6, 3-phase meters replaced. The water system being used is a series of fire hoses with connections to previously installed water spigots. The city reports they are using this system now because the older system was breaking daily and had become a maintenance burden. The city reports that if the fire hose system were adjusted for easy installation and safe placement, they would be very satisfied. To the south along the main run the decking and bull rail show similar signs of wear as the north end. There is also warping of the main run dock showing an uneven distribution of floatation.



Figure 3 – Main Run Show Decking Wear and Hose Watering System



Figure 4 - Main Run Warping

A DOCK

A Dock has worn decking and bull rails. Both appear solid, but have a fair amount of moss, wear marks, and cracking. In some areas, the bull rail has vegetation growing out of cracks. The finger piers are fastened using a pin system leaving the fingers to not be stable. The slippery nature of the decking in combination with the finger pier instability provides for a potential safety hazard. The float is in need of 3 light standards and 3 30 Amp service pillars. There are 2 groups of piling (three piling each) that are not utilized and can be removed.



Figure 5 - A Dock Showing Decking and Bull Rail Condition



Figure 6 - A Dock Typical Finger Pier



Figure 7 - Typical Finger Pier Pin Connection

B DOCK

B Dock has worn decking and bull rails. Both appear solid, but have a fair amount of moss, wear marks, and cracking. Some sections of B Dock have been replaced. The finger piers have a solid connection that is integrated into the main run of B Dock. This provides a stable finger pier. The city commented the fillet that is integrated into the finger pier connection does not allow vessels to back into their slips. Two piles that were to be installed are missing. Two wooden piles need to be removed. The electrical system on B Dock is satisfactory.



Figure 8 - B Dock Finger Pier



Figure 9 - B Dock Bull Rail Rot

C DOCK

C Dock has worn decking and bull rails. Both appear solid, but have a fair amount of moss, wear marks, and cracking. In some areas, the bull rail has vegetation growing out of cracks. The finger piers are fastened using a pin system leaving the fingers to not be stable. The slippery nature of the decking in combination with the finger pier instability

provides for a potential safety hazard. 3 of the new metal piles are missing. 21 wood piles need to be removed. The city reports that vessels cannot pass the end of C Dock at low tide when a boat is moored at the end because the water is too shallow.



Figure 10 - C Dock Typical Deck and Bull Rail

D DOCK

D Dock has worn decking and bull rails. Both appear solid, but have a fair amount of moss, wear marks, and cracking. In some areas, the bull rail has vegetation growing out of cracks. The finger piers are fastened using a pin system leaving the fingers to not be stable. The slippery nature of the decking in combination with the finger pier instability provides for a potential safety hazard. About 3 to 5 of the new metal piles are missing. 10 wood piles need to be removed. D dock has no finger piers to the north. If installed, these finger piers could provide more moorage.



Figure 11 - D Dock - Decking Damage

E DOCK

E Dock has worn decking and bull rails. Both appear solid, but do have a fair amount of moss, wear marks, and cracking. The finger piers are fastened using a pin system leaving the fingers to not be stable. The slippery nature of the decking in combination with the finger pier instability provides for a potential safety hazard. x of the new metal piles are missing. 14 wood piles need to be removed. E dock needs lighting. The floatplane dock attached to the outside end of E dock is very worn and needs replacing.



Figure 12 - Float Plane Dock

BOAT LAUNCHES

The community boat launch facilities appear to be in satisfactory condition with the city reporting no issues. There are two launches. The large vessel launch is to the north of the harbor and the City dock. The city operates a tractor and trailer to haul larger vessels out of the water. The inner harbor boat launch is at the northern end of the boat harbor. This launch is available for regular trailered boat launching and recovery. Neither launch facility has a dock.



Figure 13 – Large Vessel Launch



Figure 14 - Inner Harbor Boat Launch

CITY DOCK

The city has their main dock located to the north of the boat harbor. The city reports no problems with the facility. Recent upgrades have improved the dock electrical system and have rehabilitated and/or wrapped several piling to extend their structural life span. The gangway utilized by the Alaska Marine Highway System (AMHS) is in poor condition, as well as the safety net that stretches out below the gangway. The city stated they are working with the AMHS and others on a plan to replace/fix these two issues.



Figure 15 - City Dock

ENVIRONMENTAL OBSERVATIONS

Water quality within the harbor basin appeared to be good, based on visual observations.

Turbidity appeared to be low, and the large numbers of invertebrates (e.g., *Meretridium* anemones, barnacles, mussels, etc.) seen growing on substrates such as ship hulls and piers suggested a reasonably high dissolved oxygen content. Several fuel sheens were seen floating on the water around the float system.

We arrived at Seldovia during an ebb tide, and were able to see water flowing at a high rate out of Seldovia Slough. The water flowing out of the slough was very clear, suggesting that the slough is not a significant source of sediment for the harbor basin.

At low tide, the reef that extends south from the end of the main breakwater was clearly visible.

Large blades of kelp-like brown algae were growing from the bottoms of the float systems. A large clump of uprooted bull kelp (probably *Nereocystis* sp.) was floating in the harbor basin east of the float system. The harbormaster stated the kelp did not grow in the harbor but washed in from Seldovia Bay. Clumps of eel grass (*Zostera* sp.) were seen in the water and on piers around D float and further south. The eel grass did not appear to have come from the harbor basin; the harbormaster said the eel grass grew in the Seldovia Slough estuary.

Bird life around the harbor consisted mostly of glaucous wing gulls and northwestern crows, with smaller numbers of bald eagles, fox sparrows, and kingfishers. One northern sea otter was seen resting a few dozen feet south of E float. The remains of a recently-killed northwestern crow were found on A float. The harbormaster believed that a mink had most likely killed the crow, based on the state of the carcass; she stated that she had previously seen mink hunting on the harbor floats.

The harbormaster and city manager stated that few people fished within the harbor basin, although the nearby slough was a popular fishing area, especially for king and silver salmon. Some king salmon are caught off the north end of the harbor breakwater, and off the city dock outside the harbor basin.

[The ADFG fish distribution database lists chum, coho, and pink salmon as spawning in Seldovia Slough; the king salmon are stocked in Seldovia Bay as part of an ADFG program.]

Dungeness crab used to be caught in Seldovia Bay, but have not been actively fished in many years.

Initial Assessment of Proposed Project

DREDGING

After reviewing the 2006 project condition survey and discussions with the Harbor Master and harbor users there exists a need to dredge the 'locally' maintained portion of the harbor. An initial quantity estimate for the amount of material to be dredged in the locally maintained area around floats D and E to a depth of -12 MLLW is 5500 cubic yards. Several items of work quickly come to mind to reach this goal:

A. Establish the limits and depth of dredging for this project through consultation with the city and an analysis of harbor usage to determine a recommended depth for the locally maintained area. This analysis could also include looking at the federal area and determining if -12 MLLW is the appropriate depth for the entrance channel and the large boat berthing areas. Original harbor planning documents indicate the project depth was initially -14 MLLW and then reduced to -12 MLLW. Most of the federal area is several feet deeper than the required -12 federal depth due to subsidence in the 1964 Earthquake. The local basin area ranges from -10 to -13 MLLW with the extreme southern corner around the airplane float much shallower (~ -5 MLLW).

B. Characterize material proposed to be dredged. This would include all of the required sediment sampling to determine if the material is contaminated and scope the work for dredging (hard till, loose sediment, rock etc.). This should not be completed until we are fairly confident in both the location and depth of required dredging. A brief review of the original harbor documents indicates the local basin area is likely silty gravelly sand. Geotech will need to review the historical reports and determine if additional geotech investigations are necessary. Additional information, if required, could be gathered at the same time as samples are collected for chemical analysis.

C. One thing discussed in previous reports that might address some of the groundings brought up by the harbor master would be including channel navigation markers for the entrance channel. The channel extends for some distance beyond the breakwaters and some historical groundings occurred not because of inadequate water depth but due to drifting of boats outside of the channel. Installation of channel navigation markers have been recommended in the past and could eliminate some groundings that are due to traveling outside of the entrance channel.

PILINGS

The remaining wooden creosote pilings should be removed and replaced as originally designed during the recent harbor upgrades. The number required and the scope of work to install these will require input from geotech. This would include driving piles in the areas that already have hoops installed and removing and replacing the wooden piles that are still in place. The driving logs from the 2005 harbor improvements would be valuable for defining this future work.

WATER AND POWER

The scope of work for the electrical and water systems is straight forward and would require a site visit and detailed condition survey by the respective disciplines prior to developing designs/alternatives.

DOCKS

With regards to the wood decking and bull rails a brief inspection of the harbor facilities shows that some of the bull rails show signs of rotting and a smaller percentage of the decking is showing signs of rotting. A rough estimated 20-30% of the bull rails and decking could use replacement including the airplane float that is weathered and in need of replacement. The under structure appeared to be in fair condition with no areas of rot noted in this brief site visit. We might consider developing a few options to deal with the decking and bull rails. Areas of flotation under the floats had been recently repaired; one obvious area along the main run may require additional replacement/repair of the existing flotation system.

A. Targeting repairs for unacceptable areas would extend the life of the float system with the city then preparing to replace the float system in 10-15 years. We would need to do a detailed assessment and redline areas to be repaired/replaced.

B. A complete re-decking of the float system with replacement floats installed in say 20-30 years.

C. Consider complete replacement of the float system. The system is nearing 50 years old and past the expected life of most systems.