City and Borough of Sitka

FY 2022 PIDP Transportation Discretionary Grants

Marine Service Center

Sheet Pile Wall and Crane

Amount Requested: $7,842,488

Contact: Michael Harmon, Public Works Director
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Field Name	Response
Name of Applicant	City and Borough of Sitka
Is the applicant applying as a lead applicant with any private entity partners or joint applicants?	No
What is the project name?	Marine Service Center Sheet Pile Wall and Crane
Project description	This project will fund a design, bid, build process to construct a new, similar bulkhead design located slightly seaward of the existing bulkhead. This will provide an upgraded facility with superior materials and improved cathodic protection systems and a replacement of a 2-ton crane for continued operation of this vital Sitka port.
Is this a planning project?	No
Is this a project at a coastal, Great Lakes, or inland river port?	coastal port
GIS Coordinates (in Latitude and Longitude format)	Latitude, Longitude: 57.0583, -135.3448
Is this project in an urban or rural area?	Rural area
Project Zip Code	99835
Is the project located in a Historically Disadvantaged Community or a Community Development Zone? (A CDZ is a Choice Neighborhood, Empowerment Zone, Opportunity Zone, or Promise Zone.)	No to Disadvantaged Community or Community Development Zone and no to Choice Neighborhood, Empowerment Zone, and Opportunity Zone, or Promise Zone.
Has the same project been previously submitted for PIDP funding?	PIDP FY 2020, PIDP FY 2021
Is the applicant applying for other discretionary grant programs in 2022 for the same work or related scopes of work?	RAISE FY 2022
Has the applicant previously received TIGER, BUILD, RAISE, FASTLANE, INFRA, or PIDP funding?	No
PIDP Grant Amount Requested	$7,842,488
Total Future Eligible Project Costs	$9,803,109
Total Project Cost	$9,803,109
Total Federal Funding	$7,842,488
Total Non-Federal Funding	$1,960,622
Will RRIF or TIFIA funds be used as part of the project financing?	No

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Project Description

Facility and Project Background and Users

The City and Borough of Sitka is a small rural municipality located on Baranof Island in southeastern Alaska. Sitka's Harbor is a critical transportation facility for the community that supports the marine, fishing, tourism, and freight transportation sectors. Sitka Harbor has 1,272 vessel berths and numerous facilities to support the maritime community and associated valued added activities, including vessel repair, crew lodging, freight transloading, and seafood processing. The Harbor includes a facility called the Marine Service Center (MSC) The MSC consists of a dockside on the north side of the Harbor with 350 feet of berth space dredged to 22 feet in depth, with a small crane, industrial buildings and parking, along Katlian Street.

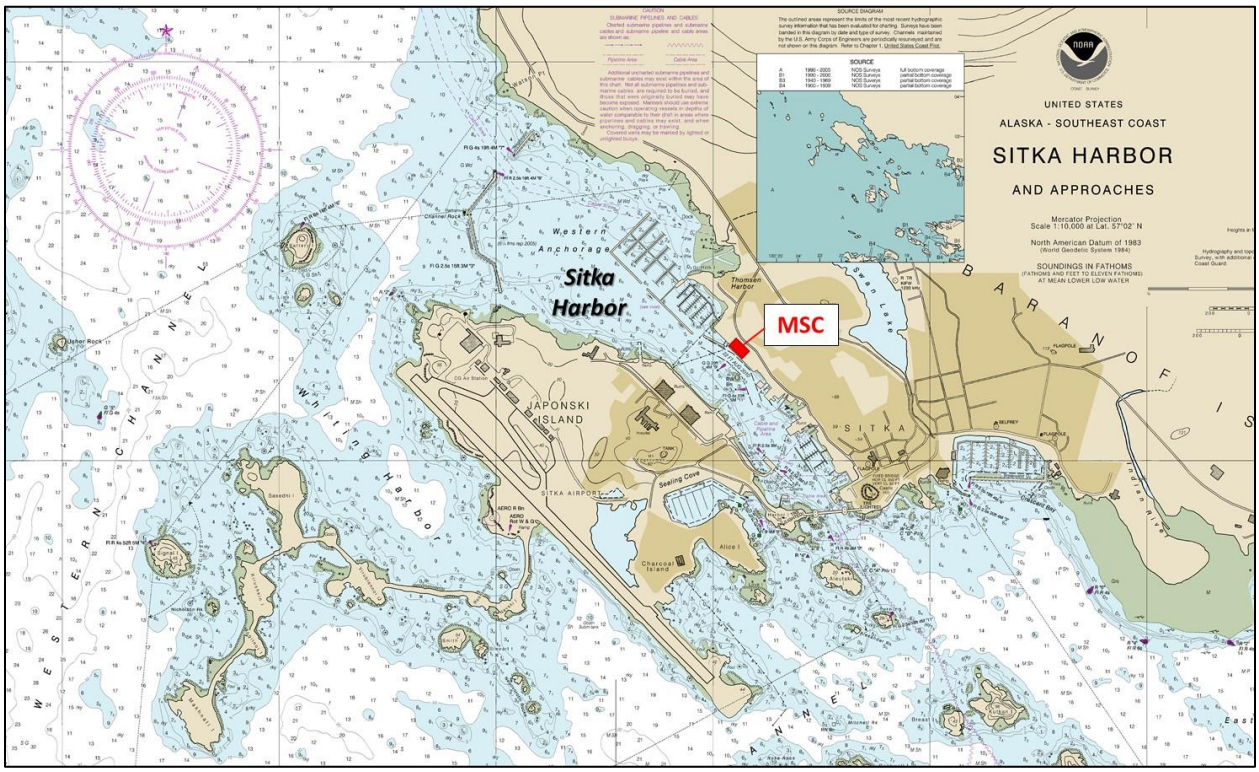


Figure 1 - Sitka Harbor and the Marine Service Center

The waterfront side of the cold storage property is supported by a sheet pile retaining wall. The wall is utilized as a berth for commercial vessels. Marine vessels including small passenger vessels, freighters, and fishing boats utilize the retaining wall to transfer goods, cargo, and passengers to/from vessels. However, its primary purpose is for commercial cargo to benefit the city and residents of Sitka. The Marine Service Center building contains about 21,000 square feet of which about 16,500 square feet is presently operated as cold storage. Container vans are hand loaded and shipped direct to Asia and Europe markets as well as transferred by barge to Washington state for domestic markets. Adjacent to the Northwest end of the retaining wall is a 2-ton electro-hydraulic telescope boom slewing crane with main boom, tele boom, winch, wire,

rope, load block with safety latch, controls, over booming cut out, and hoses / fittings. The crane is available for public use and used for offloading fish product and loading of mail, supplies, and groceries. It is manufactured by the North American Crane and Equipment Company.

The City and Borough of Sitka (Sitka) operates the seawall and crane facility and owns the cold storage. The cold storage facility was constructed to provide infrastructure for economic development and enhancement of direct and indirect employment opportunities in the community. Sitka has leased the facility to Seafood Producers Cooperative since 1991 and ths Cooperative operates a service cold storage business in the leased space. The Cooperative is contracted to provide uniform and competitive rates with a requirement that rate changes must be approved by Sitka. This requirement allows Sitka to ensure accessibility and equality to the public.

The Marine Service Center in Sitka serves a variety of customers. Fishing vessels, trampers, sailing vessels, small passenger vessels, government vessels including US Coast Guard and National Oceanic and Atmospheric Administration (NOAA) ships, and barges are all users.

The Marine Service Center fishing vessels currently deliver harvest for cold storage or processing, pick up bait and ice, and collect crew, supplies, and equipment from this seawall. Alternate docks in the downtown area where fishing vessels could conduct their business have a variety of issues. Vessels will generally deliver product to the dock that can most efficiently get the product either to the processing plant or into cold storage in the shortest amount of time. Other docks in Sitka are busy with vessels who have established relationships and are already at capacity. The traffic from this facility if it were unavailable, could not be absorbed by other Sitka docks.

Figure 2- Seafood workers produce product for MSC and export

The Seafood Producers Cooperative processing plant has been in operation since 1944 and is located adjacent to the cold storage facility at MSC. Seafood product from the plant can travel from the dock to the processing plant and then another 100 yards back to the cold storage facility in a short amount of time. "The Seafood Producers Cooperative is owned by over 500 members who fish the waters of the North Pacific. Each member is a small boat hook and line fisherman and owner of the cooperative, and therefore receives the benefits of ownership"[1]

Another processing plant that uses the MSC and its convenient location is Sitka Sound Seafoods, located 0.2 miles from the cold storage facility or a 1-minute drive. "The Sitka Sound Seafoods plant started processing in the late 1960s, with North Pacific Seafoods and its sister companies

[1] https://www.spcsales.com/co-op

purchasing a majority interest in 1990. A full merger of Sitka Sound and North Pacific was completed in 1997. This plant location has access to northern harvesting areas of Southeast Alaska, from Yakutat to the south end of Baranof Island. The plant processes all species of salmon from all gear types, halibut, sablefish, rockfish, herring, sea cucumbers, lingcod, Pacific cod, shrimp and Dungeness crab."[2]

The Transportation Challenge and the No-Build Scenario

The MSC seawall needs repair. It is approximately 46 years old and has surpassed the end of its useful design life. A condition assessment report from October 2011 estimated that the existing seawall structure had a remaining life of 5 years. See attachment 4, MSC Condition Assessment Oct. 2011.pdf. A 2021 inspection confirmed the defects from the 2011 inspection and noted some additional concerns. See attachment 5 MSC Inspection Report June 2021.pdf.

Figure 3- Sheet Pile Corrosion in Splash Zone, July 2021

Figure 4- Sheet Pile Corrosion in Splash Zone, July 2021

Due to the proximity of the existing Sitka Cold Storage Building, demolition and in-kind replacement of the existing bulkhead is not feasible. One option was to remove the bulkhead wall entirely, but this was quickly ruled out due to the importance of the seawall to the community.

The seawall will eventually fail, which would involve some elements of the structure collapsing into the Harbor.

If the seawall fails, the upland seafood cold storage facility which sits partially on the seawall will need to be condemned. If the cold storage facility is condemned, there is insufficient cold storage space in Sitka to capture the overflow. Cold storage users suggest they would need to get 25 to 40 freezer vans to accommodate their needs.

Trampers offload about 160 tons of product per visit to the MSC. If the seawall fails, the facility could not be used by trampers for freight transload. Trampers have averaged 6 visits per year over the last three years with 11 visits in 2019. The northbound freight carried by these cargo vessels consist of fiber, salt, machinery, and bait supporting economic activity in Sitka. Their

[2] https://www.northpacificseafoods.com/sitka-sound-seafoods.html

southbound freight consists of frozen fish which is destined for Asia, Europe, and Washington state. Trampers can offload at alternate ports in Sitka but vessel owners would need to wait for available space to do so, and the MSC is the ideal – most efficient – point of call for these vessels. The inbound (northbound) freight would need to be transported to alternate ports for vessel retrieval. Without the cold storage facility, outbound frozen fish would need to be stored in freezer vans until transport. All of these responses to the loss of the seawall would add additional costs for the tramper industry in the no-build scenario.

When the seawall fails and the cold storage facility is condemned in the no-build scenario, seafood processors will have to secure temporary freezer space until they can ship the product. Seafood processors have suggested that they would need refrigerated vans, or reefers, to keep product frozen. Storing frozen fish in freezer vans for transport adds a new dimension of difficulty to the fish processing industry. Cold storage at MSC currently allows users to accumulate enough product to ship fish that have been consolidated. Each lot is defined by fish type, quality, and size, meaning a load of chum salmon could have up to 16 different lots based on size and quality. There are five different kinds of salmon harvested in the Sitka region along with halibut, sablefish, rockfish, herring, crab, and shrimp. Storing fish in freezer vans would not allow this option for the accumulation and consolidation, so fish would have to be shipped in bulk to Seattle/Bellingham where it would then be sorted. If there is insufficient fish product to fill a particular container with the same species, quality, and size of fish, the shipper would still need to pay the full fee for that partially filled container. Storage costs could be as much as five times higher in Seattle due to minimum lot expense and the pounds of fish.

Much of the harvested fish in Sitka have value added with smoking and packaging and again this product would have to compete for limited cold storage space in town.

Figure 5- F/V Eyak

Support for the fishing industry is not the only use of the MSC dock. The Eyak is a fishing vessel making at least weekly visits to the MSC dock to pick up mail, fuel, and groceries for outlying villages. Small geographically challenged communities face barriers in accessing basic amenities and they rely on the Eyak. The Eyak serves the city of Port Alexander, Armstrong Keta Hatchery, Little Port Walter NOAA Research Station, and Sitka.

In the past three years, the Eyak has averaged 80 visits to the MSC annually. If the seawall were unavailable, it would be a challenging hardship for their program and would limit these outlying communities' ability to access Sitka vendors. The Eyak would need longer periods of time between mail deliveries to the surrounding Alaska Native villages for three reasons: 1) there is limited space at other docks, 2) wait times for other docks will be longer, and 3) the docks farther away. Without this downtown facility, mail and groceries would need to be delivered to the Gary Paxton Industrial Park (GPIP) location which has no place to store product at the site. It is

estimated that three vehicles would need to travel the extra distance of 7.7 miles as well to deliver mail, groceries, fish food, and construction materials. Total avoided travel for both the Eyak and the supply vehicles is valued at $48,046 annually. See Table 3 in the attached MCS Wall and Crane BCA Analysis.

This project facilitates tourism opportunities by providing infrastructure to welcome over 1,200 visitors to Sitka each year. The MSC dock serves smaller passenger vessels although the primary purpose of the dock is the import and export of commercial goods and services. The small passenger vessels calling at the MSC are in the 176 – 240-foot range and have averaged 12 visits annually to the MSC dock. If the dock were unavailable, they would have to anchor offshore and lighter customers or seek alternate ports of call. While passenger activity was light in 2020 due to COVID-19, activity returned in July 2021 and will exceed any previous activity of almost double in 2022.

History of the Project

The Marine Service Center sheet pile bulkhead dock was originally constructed in 1976. The wall is 36-ft high (from mudline) by 356-ft long along the face, with approximately 10-ft long end/return walls at each end of the bulkhead. The sheet piles are driven approximately 10-ft to underlying bedrock and are laterally restrained by exterior walers at the waterline and 10-ft below the water line. Each waler is connected via tie-rods to a sheet pile anchor wall approximately 70-ft behind the bulkhead face. Creosote-treated timber fender piles protect the face of the bulkhead and a 12x12 timber bullrail caps the top of the wall. Steel pipe bollards and access ladders are positioned at varied spacing along the dock face. See existing wall details in Figure 5.

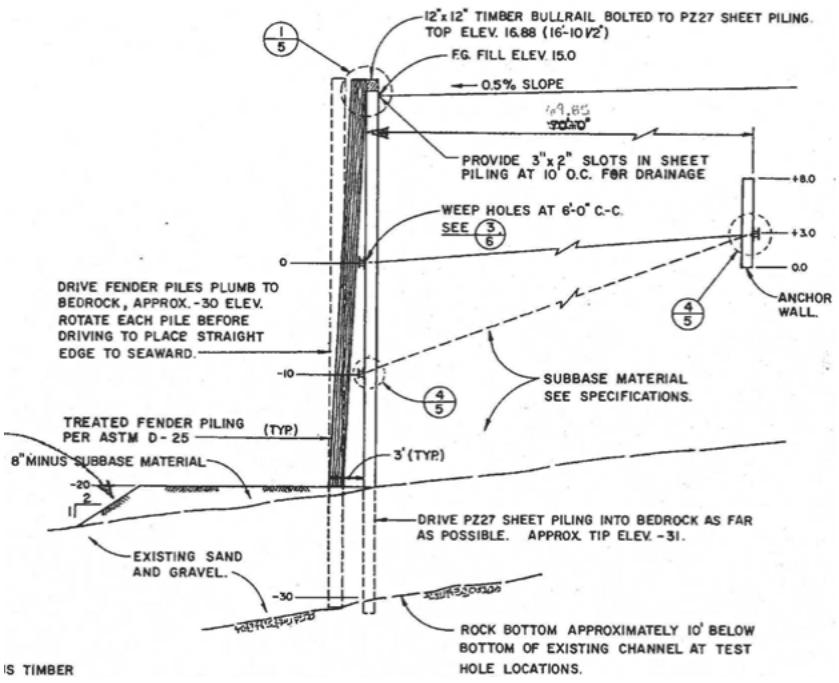


Figure 6- Existing wall as-built

In 1990, Sitka contracted for the design and construction of a 140-ft wide by 150-ft long cold storage building that is positioned approximately 30-ft behind the face of the bulkhead. The building is a "user" of the seawall. In 1993, Sitka contracted with WS Construction Inc. to install 22 anodes along the face of the bulkhead and perform associated electrical bonding work. In November of 1999, Sitka engaged Tryck Nyman Hayes, Inc. (TNH) to perform an inspection and condition assessment of the facility which did not include an underwater inspection.

Shortly thereafter, in April of 2000, Foreshore Technologies, Inc. (FTI) performed a dive

inspection. Potential readings were taken during the underwater inspection which indicated that the structure was actively corroding. Both the TNH and FTI reports noted significant corrosion existed throughout the bulkhead face sheet piles as well as at the walers and tie-rod ends. In 2002, in response to the TNH and FTI inspections, Sitka again contracted with WS Construction Inc. to install an additional 36 anodes along the face of the bulkhead, and in 2003, Sitka retained the local engineering company, Structural Solutions, to design a complete cathodic protection system for the facility. See attachment 4 MSC Condition Assessment October 2011.pdf.

The Proposed Project

The proposed project is to construct a new tied-back steel sheet pile wall on the seaward side of the original wall with a high slope tie-back anchored sheet wall in bedrock. Minor upgrades include a concrete wall cap and replacement of mooring bollards and 2-ton jib crane. A cathodic protection system will be installed to control corrosion.

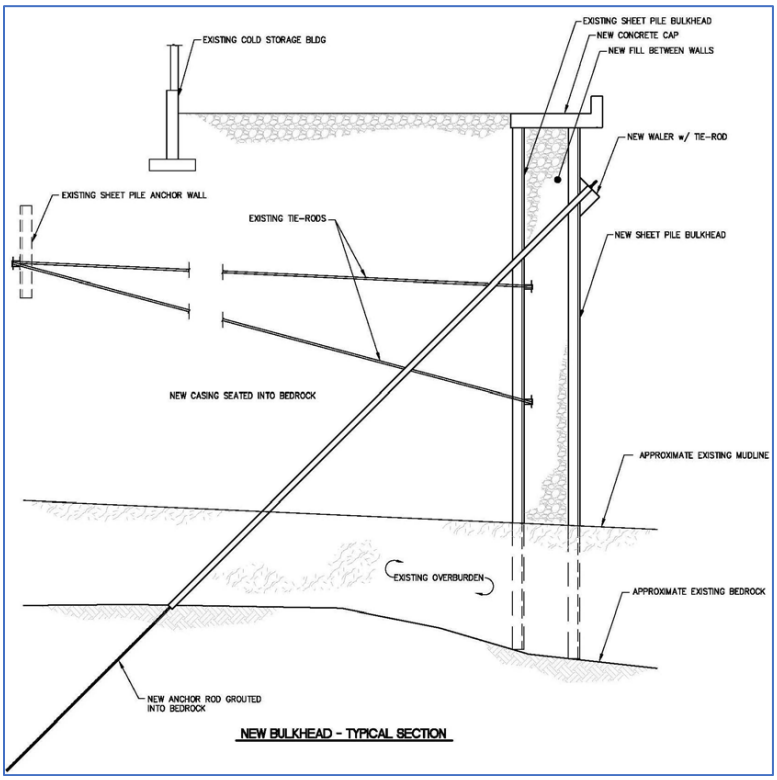


Figure 7 - Typical Replacement Bulkhead Wall Section

This project proposes to construct a new, similar bulkhead design located slightly seaward of the existing bulkhead, utilizing grouted anchor rods drilled through the existing fill material and into the underlying bedrock (See Figure 7). The rough order of magnitude estimate provides for an upgraded facility with superior materials and improved cathodic protection systems. In addition to the seawall repair, the project calls for replacement of the existing crane. The crane is an Electro-Hydraulic Telescope boom slewing crane with main boom, tele boom, winch, wire rope, load block with safety latch, controls, over booming cut out, and hoses / fittings. See attachment 4 the NPC Company Crane Specs.pdf.

Sitka will follow a traditional design, bid, build process in which a professional design consultant team will be competitively selected based on Federal best practices and qualifications. Design and permitting will be completed by way of contracting consultant services who specialize in marine design and permitting following traditional 30/60/90 percent review process managed by Sitka's Engineering Department. The construction phase will be bid and awarded to the lowest qualified bidder.

The contractor will mobilize the site with a large crane and barge and construct a new wall from the water side with the same function of the exiting wall. The new wall will have the same function and size as the existing wall approximately 356 feet in length and 36 feet in height. It

will be similar to the existing structure with sheet pile walls utilizing a stem of walers and tie-rods that will be drilled deep into bedrock. By drilling the tie-rods that will be drilled deep into bedrock, it will help improve maintenance and inspection access for the future. All sheet piles and walers will be able to be prefabricated off site and coated to ensure maximum corrosion protection.

The new wall will have an anticorrosion anode system to significantly increase the life span compared to the existing wall and a fender system similar to the existing wall with piling to protect it from vessel damage, safety ladders, and mooring cleats. Dredging or major dewater will not be necessary.

The ability to use the existing wall to hold back the embankment while building the new wall in front of the old wall with greatly reduce impacts to the marine environment. From a barge, the contractor can float in place, drive the sheet piles, the tie-rods and piling with very little marine disturbance or footprint increase. Once the new wall is in place, the relatively small gap between the new wall will be isolated from the marine environment and can be filled in with high density fill and a cap on top.

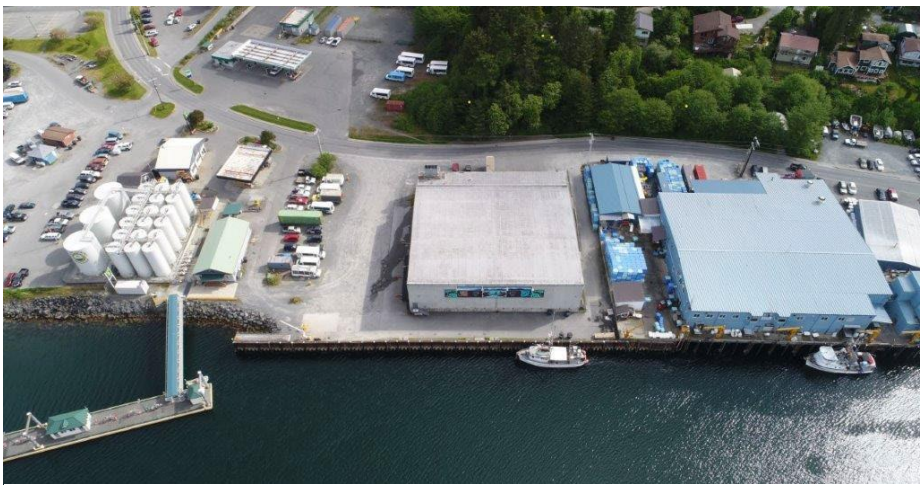


Figure 8- Marine Service Center cold storage facility adjacent seafood processing plant

Other Transportation Infrastructure Investments

Sitka as a remote location accessible only by boat or plane must be self-sustaining since there are no other cities or boroughs in close proximity to rely on. Therefore, all transportation infrastructure projects that Sitka invests in are integral to this project. Sitka is actively working on a major airport renovation project of $20 million in order to accommodate those flying in and out of Sitka for fishing and tourism.

The Marine Service Center Sheet Pile Wall and Crane replacement is part of the working waterfront vital to Sitka's economy. Additional projects include construction of a new Seaplane Base that is in final permitting with construction scheduled to begin in 2024 for $18 million; the Fisherman's Work Float at $3 million that allows for a convenient dock for repairs; Crescent Harbor, which is considered a Safe Harbor in Phase 2 for $6 million, the Sea Walk project that connects a bikeable and walkable path along the waterfront at $2 million, and Eliason Harbor Electrical at $3.5 million. The Critical Secondary Water project at $18 million to be completed

by the end of 2022 summer which will supply a safe source of drinking water to serve the public when the Blue Lake source is down for maintenance or when there is high turbidity in the water to name a few of the Sitka project investments.

Project Location

The MSC is located at 600 Katlian Street, Sitka adjacent to the Seafood Producers Cooperative. See Figure 7. It is a rural area of Alaska with no road or rail connection to other communities. It is outside a 2010 Census-designated urban area. This project in Sitka is a coastal port. The waterfront land parcel contains about 71,014 square feet. The legal description is Tract A Port Development, a portion of ATS 15.

The waterfront and the harbors located in Sitka allow the community to conduct business and form the lifeblood of the economic activity of this small port town. This grant follows the application for small port project as we are requesting an amount less than $11.25 million as listed in the NOFO.

The U.S. Army Corps of Engineers has not listed this port for 2017 through 2019. This data confirmed by Waterborne Commerce Statistics produced by the U.S. Army Corps of Engineers annual publication of tonnages by port.[3]

NOAA Chart 17327 (August 2010, see Figure 1) shows at a mean lower low water or 0.0 tide it is 22 feet at the MSC dock face while the PND drawings show the toe of the bulkhead at minus 20 feet.

Figure 9- Map of Alaska with Sitka location

Geographical Description

Sitka is located on the west coast of Baranof Island fronting the Pacific Ocean, on Sitka Sound. An extinct volcano, Mount Edgecumbe, rises 3,200 feet above the community. It is 95 air miles southwest of Juneau and 185 miles northwest of Ketchikan. Seattle, Washington, lies 862 air miles to the south. The project location within the Harbor is at Latitude, Longitude: 57.0583, -135.3448.

[3] https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/1474/rec/1

Sitka falls within the southeast maritime climate zone, characterized by cool summers, mild winters, and heavy rain throughout the year. This zone lacks prolonged periods of freezing weather at low altitudes and is characterized by cloudiness and frequent fog. The combination of heavy precipitation and low temperatures at high altitudes in the coastal mountains of southern Alaska accounts for the numerous mountain glaciers. Sitka encompasses 2,874 square miles of land and 1,937.5 square miles of water.

Map of Project's Location

Figure 10- Project Location in relation on Sitka infrastructure

This is a coastal port project at tidal water and forms one of the elements of the Sitka Port system. The City and Borough of Sitka is not in an Area of Persistent Poverty nor is it close to any of those areas in the State of Alaska. The project is census tract 2 and not located in a Historically Disadvantaged Community nor located in any of the four Federally designated community development zones. However, the residents of Sitka are very much dependent on this harbor for bringing in and exporting vital goods and services, especially fish. According to the U.S. Census Bureau, a combination of more than one race that includes American Indian and Alaska Native percentage population of Sitka is 14.9 percent relative to 2.8 percent for the U.S.[4]

Connections to Existing Infrastructure

The Marine Service Center is in downtown Sitka. It is linked by road to several other harbors owned and operated by Sitka and its harbor department. Sitka operates five boat harbors with 1,350 stalls and a seaplane base on Sitka Sound. The Sitka Sound Cruise Terminal is a privately-owned deep-water moorage facility in Sitka capable of accommodating large vessels. The community has a state-owned public-use airport, the Rocky Gutierrez Airport, serving the community with daily jet service and located just west of the central business district. There is no road access to outside communities from Sitka, but vehicles can be transported to town using the Alaska Marine Highway ferry system located six miles north of town or through barge operators.

Grant Funds, Sources, and Uses of all Project Funding

[4] https://www.census.gov/quickfacts/fact/table/US,sitkacityandboroughalaska/PST045221

Budget (Uses of Funds)

Total project costs for the sheet pile wall and crane replacement are $9.8 million. Cost estimates for this project were obtained from the Marine Service Center Steel Pile Bulkhead Inspection Report prepared by DOWL Engineering in July 2021, provided as attachment 5 to this application.

See Table 2 and attachment 3, Detailed Project Cost Estimate.

Table 1- Budget Cost-share for Sheet Pile Wall and Crane Replacement

Description	Amount ($2021)
Mobilization	$ 575,000
Demolition & Disposal	$ 200,000
Misc Underground Utility mods/extensions	$ 30,000
Misc Site Work - grading, aggregate surfacing	$ 40,000
Steel Sheet Pile Wall (PZ35)	$ 1,480,000
Horizontal strong-back/water system	$ 520,000
Grouted tie-back anchors into bedrock - upper	$ 819,000
Grouted tie-back anchors into bedrock - lower	$ 588,000
Washed rock fill btwn original and new wall	$ 225,500
Steel Sheet Pile Wall week holes	$ 32,000
Reinforced Concrete wall cap	$ 281,250
Steel Access Ladder coated	$ 16,000
Mooring Bollards	$ 32,500
Berthing Fenders (not used)	-
Timber bull rail	$ 50,000
Timber Fender piles	$ 360,000
Riprap	$ 25,000
Cathodic Protection System	$ 500,000
2-ton Service Standalone Jib Crane	$ 35,000
Subtotal	**$ 5,809,250**
Contingency @ 25%	$ 1,452,313
Environmental, NEPA & permitting @5%	$ 363,078
Design and Geotechnical Engineering @15%	$ 1,089,234
Construction Phase Admin/Eng/Testing @15%	$ 1,089,234
Total Budget Sheet Pile Wall and Crane Replacement	***$ 9,803,109***

Sources of Funds

Sitka offers non-federal matching funds at 80% of future eligible project costs. The matching funds shall be provided from working capital in the MSC Enterprise Fund and the Harbor Fund. There are no restrictions on these funds and Sitka's Assembly directed funds be set aside for this purpose at their meeting of May 10, 2022.

Table 2- Project Cost Allocation

Total Project Costs:	**$ 9,803,109**	**100%**
Funding Sources:	**Amount:**	**Percent:**
Other Federal Funds Secured	$ 0	0 %
Non-Federal - City of Sitka (resolution attached)	$ 1,960,622	20 %
Federal PIDP Funds Requested	**$ 7,842,488**	**80 %**

Funding Commitment

See the attached City and Borough of Sitka signed resolution number 2022-XX passed on May 10, 2022, committing the funding for this project. See attachment 9 (Assembly Signed Res 2022-XX.pdf). There are no previously incurred expenses included in the budget and no other Federal funds authorized for this project.

Merit Criteria

Achieving Safety, Efficiency, or Reliability Improvements

The National Oceanic and Atmospheric Administration reports that Sitka is 8th in Alaska and 19th in the Nation for value of fishery landings.[5] In addition the MSC dock has seen more than 1,200 passengers disembark in a year according to harbormaster's records. The five species of salmon harvested in the region make up the majority of the pounds landed even though the price per pound is less than other fish species. See Table 3.

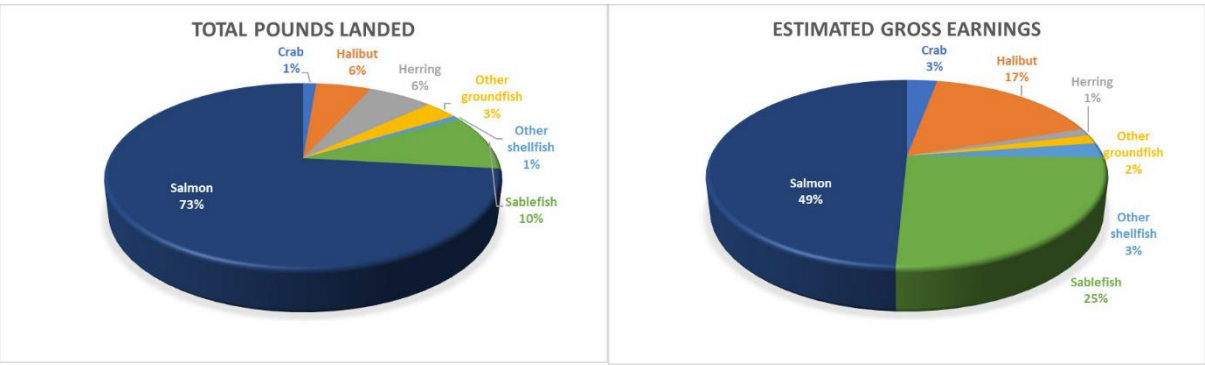


Figure 8 – Average pounds landed and estimated gross earnings 2000 - 2019

Figure 8 and Table 3 demonstrate the importance of the fishing industry to the rural community of Sitka. Salmon fishing induces the majority of effort for the fishing industry while halibut, sablefish, and other shellfish provide the greatest return for fishing effort.

Table 3 – Average fishery landings and earnings 2000 - 2019

[5] Fisheries of the United States 2019 – Current Fishery Statistics No. 2019 published May 2021.

10-Year Average	Number of Fishermen Who Fished	Number of Permits Fished	Total Pounds Landed	Estimated Gross Earnings	Average Earnings Per Pound
Crab	21.1	23.8	402,131	$1,219,249	$3.03
Halibut	158.5	159.2	1,696,606	$7,043,687	$4.15
Herring	13.9	16.3	1,985,028	$550,605	$0.28
Other groundfish	31.7	37.3	1,013,283	$623,501	$0.62
Other shellfish	39.5	46.2	256,049	$1,064,089	$4.16
Sablefish	112.4	126.5	3,021,381	$10,585,101	$3.50
Salmon	314.4	321.9	22,875,779	$20,469,571	$0.89

Note: Gross earnings are as of the year recorded and have not been adjusted for inflation.

Loading and unloading of goods at a port

Repairing the sheet pile wall at the MSC is an important solution to ensuring the safety of people and equipment working in the fish harvesting business and the many tourists that visit Sitka annually. Failure of this wall could be catastrophic and will certainly lead to inefficiencies for the varied users of the facility. Failure could also lead to unintended releases of hazardous materials into Sitka's waterfront such as fuel and fluids from vessels caught in the failure or vehicles which may be parked on the seawall at the time.

This facility and the replacement of the crane is imperative to the loading and unloading of goods especially for the F/V Eyak. Supplying small communities of southern Baranof Island for almost three decades, the F/V Eyak is a user of the seawall to load mail, freight, and groceries and the communities consider as a part of the infrastructure of their communities. The F/V Eyak services Armstrong-Keta Hatchery, a private non-profit Alaskan salmon hatchery to support the commercial and sport fishing fleets, the rural communities and fishing-related businesses of Southeast Alaska with research into salmon enhancement, and the production of additional salmon. The F/V Eyak also services the city of Port Alexander, a small community accessible by float plane or small boat which provides a safe harbor during the gales and storms that frequent Chatham Strait and is an ice-free port during the winter. Little Port Walter, and NOAA research station, is also serviced by the F/V Eyak. It is the oldest year-round biological research station in Alaska accessible only by boat or seaplane.

Movement of goods into, out of, around, or within a port

The MSC is centrally located in Sitka so that vessels like the F/V Eyak can stop at one location to receive multiple shipping orders going to neighboring villages. Benefits to the F/V Eyak business are estimated at almost $50,000 annually for the vessel and the vehicles needed to supply the vessel of total avoided travel for the F/V Eyak and the supply vehicles.

The MSC warehouse is important infrastructure that support freight operations for the seafood processors. This port is in a protected area with a breakwater that can withstand extreme weather events.

Operational improvements, including projects to improve port resilience

This project will contribute to a reduction in crashes, fatalities, and injuries due to avoided additional sea miles as vessel owners will be able to continue functioning as they have in the past by using this optimal harbor location with a new protected seawall. In the no-build scenarios, these users would need to travel to alternate ports for product delivery, introducing new risks as vessels compete for limited space to conduct their business. We estimate that almost 700 nautical miles of travel annually can be avoided with this project. In the no-build scenario the addition of several hundred vehicles on Sitka roads traveling between alternative harbors, seafood processing plants, and competing with the summer tourist traffic and road construction will lead to more congestion and the potential for unwanted interactions between vehicles and pedestrians. We estimate about 2,600 annual vehicle miles can be avoided thanks to the project. Additional miles traveled by vessels and vehicles increases the risks of accidents and incidents which could be avoided.

Environmental and emission mitigation measures

Benefits to repairing this seawall not only ensure the continuation of an established culture and an economy, benefits also derive from avoided travel, additional transportation costs for vessels seeking alternate docks, opportunity cost of time for captain and crew, and avoided emissions for the induced travel. Avoided emissions from vehicles and vessels are estimated at more than $12,000 annually. This includes harmful air pollutants such as PM2.5, NOx and Sox as well as CO2, which contributes to climate change. Depending on the timing for the eventual failure of the seawall, environmental damages could also result from vehicles and vessels that might be caught in the collapse.

Supporting Economic Vitality

This project is not intended to create an advantage for Sitka residents or the commercial operator currently using this facility. However, it is intended to avoid a serious disadvantage should the seawall and cold storage facility become unusable. Replacement of the sheet pile wall and crane at the MSC will allow users to continue benefitting from this important community infrastructure. The cost of cold storage in Sitka can be a full $0.05 a pound less than cold storage in the Pacific Northwest. The seafood processors conducting business from Sitka would need to weigh the benefits of continuing to operate in this higher operating cost environment. One processor revealed to us that there would be a loss of 10-20 jobs in Sitka if the seawall were to fail and the cold storage facility became unusable.

The ability for seafood processors to consolidate product at Sitka prior to shipment to customers is also of extreme value as processors would need to lease additional cold storage space to fill containers for shipping. The MSC is a facility that supports value-added U.S. agricultural exports. MSC users reveal that 72.22 percent of their product gets shipped directly to customers in Asia and Europe by consolidating outbound product in Sitka, thereby allowing for continuity of operations to reliability, velocity of goods movement, and multimodal freight mobility. There are less supply chain bottlenecks when export directly from

Sitka to other countries can be accomplished.

The cost to supply alternate cold storage with the use of refrigerated vans is estimated between $259,000 and $457,000 depending on the number of vans, currently estimated between 25 and 40.

In addition to the cost of establishing a system of refrigerated vans to accommodate the frozen seafood product, there are demands on the city's electric utilities to supply power to these storage units. The cost differential of electric utilities between the cold storage facility and the freezer vans is between $486,000 and $900,000 annually.

This project also facilitates tourism opportunities by providing infrastructure to welcome over 1,200 visitors to Sitka each year. The MSC dock serves smaller passenger vessels although the primary purpose of the dock is the import and export of commercial goods and services. The small passenger vessels calling at the MSC are in the 176 – 240-foot range and have averaged 12 visits annually to the MSC dock. If the dock were unavailable, they would have to anchor offshore and lighter customers or seek alternate ports of call. While passenger activity was light in 2020 due to COVID-19, activity returned in July 2021 and is projected to exceed any previous activity of almost double in 2022.

Sitka currently employs union workers through the Alaska State Employees Association that manages and maintains the facility. Depending on who gets the contract for the construction of this project, there could be additional union construction workers involved in carrying out the project.

Users of the facility rely on the fishing industry that provides essential products from the natural resources that are abundant in and around Sitka. This project will allow for a continued variety of industry's high quality, good paying jobs and will continue the economic strength and resiliency of Sitka. Adapting and recovering from a seawall failure can be done but at much higher costs and risks to the local economy. This project addresses a known point of failure prior to the event taking place.

Benefit Cost Analysis

A benefit/cost analysis is not required for a small project at a small port. However, one was previously conducted for this port improvement, and we include the results of that evaluation here. The following assumptions form the basis of the benefit/cost analysis. These assumptions have been vetted with the Sitka harbormaster, users of the cold storage facility, the director of the Sitka Economic Development Association, and vessel owners operating in the area.

Assumptions

- The seawall at the Marine Service Center is in danger of imminent failure. A 2011 report suggested there were 5 more years of useful life to the seawall. We assume

that, in the build scenario construction begins in 2023 and benefits begin accruing in Fall of 2024.

- In the no-build scenario, once the seawall fails, the cold storage facility will be condemned and unusable as the building partially sits on the seawall. The crane used at the MSC is more than 20 years old. The existing crane has an estimated remaining life of about 3-4 years.
- Vessels delivering seafood product at this location will need to find alternate drop-off points for unloading their catch.
- Vessels with disembarking passengers may need to lighter passengers to shore on smaller vessels.
- The cold storage facility receives between 11 million (low case) and 18 million (high case) pounds of fish product annually.
- There is insufficient cold storage available in Sitka to replace the Marine Service Center 21,000 square foot facility.
- Refrigerated freezer vans can help fill that gap but at a much higher cost.
- Of the two main tenants at the cold storage facility, one would continue to operate out of Sitka with the freezer vans and the other would flash freeze product and immediately ship from town.
- The ability to consolidate product is an important component for keeping costs down in the export of frozen fish. Freezer vans will not allow for this activity.
- The loss of one of the cold storage users will result in the loss of 10-20 jobs for 4 months of the year as consolidation will need to take place in the Pacific Northwest rather than Sitka.

Users of the MSC seawall engage in the following primary activity:

Table 3- MSC Seawall Users

Users	Cold Storag	Commodity over wall	Crane/hoist
North Pacific Seafoods (previously, Sitka Sound Seafoods)	yes	Bait	yes
Seafood Producers Cooperative (SPC)	yes	Fiber, salt, machinery, bait, ice, and inbound/outbound fish	yes
F/V Eyak (supplies to outlying villages)	No	Fuel, groceries, mail, outbound fish food for hatchery	yes
Small Passenger Vessels	no	Passengers	no
Government	no	Crew changes, supplies	no
Fishing Vessels	Yes	Fish, bait, ice, and supplies	yes

There are two primary tenants of the cold storage facility, both seafood processors, each renting half of the space. One seafood processor reveals they move between 5 and 8 million pounds of product annually and that they rent 20 percent of their space to the public or private entities. Using these same percentages for the second processor, they would move between 6.25 and 10 million pounds of product annually as all their space is utilized. The cold storage facility allows

seafood processors to consolidate product by species, size, and quality. Without the cold storage facility, product must be shipped to Pacific Northwest facilities and sorting/consolidation would take place there.

Methodology

We examine two future scenarios for this evaluation, a low case of 10 million pounds of product and a high case of 16 million pounds of product. See the economics appendix for further detail on the changed conditions when the seawall fails.

Present Value Costs

Initial cost estimates are $9.3 million (in 2020$) spread over a 2-year construction season. Periodic maintenance for the facility is assumed at 1 percent of initial construction cost every five years over the 20-year period of analysis. Cathodic protection is needed in year 15 of the analysis. See Table 4.

Table 4- Sheet pile Wall and Crane Replacement Cost Estimate – Select Years

Year	Construction	Periodic Maintenance	Total Cost	NPV Factor	Net Present Value
2022	$ 4,686,188		$ 4,686,188	0.87344	$ 4,093,098
2023	$ 4,686,188		$ 4,724,700	0.81630	$ 3,825,325
2028		$ 93,724	$ 93,724	0.58201	$ 54,548
2033		$ 93,724	$ 93,724	0.41496	$ 38,892
2038		$ 571,724	$ 571,724	0.29586	$ 169,152
2043		$ 93,724	$ 93,724	0.21095	$ 19,771
Totals	**$ 9,372,375**	**$ 852,895**	**$10,225,270**		**$ 8,200,786**
Total Present Value Construction Cost and Maintenance					**$ 8,200,786**

Present Value Benefits

Benefit calculations for this evaluation include avoided travel costs, avoided product transportation costs, opportunity costs of time, and emissions avoided. The economics appendix describes these in more detail. The present value of benefits for the low case scenario are $9 million (in 2020$) over the 20-year period of analysis. See Table 5.

Table 5- Low Case Scenario Benefit Calculations – Select Years

Year	Avoided Travel	Add'l Trans Costs	Cold Storage Alt	OCT	Emissions Avoided	Noise & Congestion	Total	NPV Factor (3%)	Net Present Value (3%)
2024	$ 63,091	$ 437,490	$ 258,675	$ 11,837	$ 35,447	$ 360	$ 806,900	0.888	$ 620,032
2025	$ 63,091	$ 437,490	$ 486,000	$ 11,837	$ 35,886	$ 360	$ 1,034,664	0.862	$ 743,071
2029	$ 63,091	$ 437,490	$ 486,000	$ 11,837	$ 37,646	$ 360	$ 1,036,424	0.766	$ 572,122
2034	$ 63,091	$ 437,490	$ 486,000	$ 11,837	$ 38,245	$ 360	$ 1,037,023	0.661	$ 412,628

2039	$ 63,091	$ 437,490	$ 486,000	$ 11,837	$ 38,268	$ 360	$ 1,037,046	0.570	$ 297,994
2043	$ 63,091	$ 437,490	$ 486,000	$ 11,837	$ 38,287	$ 360	$ 1,037,065	0.506	$ 230,089
Totals	**$1,261,822**	**$8,749,800**	**$ 9,492,675**	**$ 236,739**	**$ 754,876**	**$7,201**	**$ 20,503,112**		**$ 8,976,061**

Note: Emissions have been calculated at the 3% discount rate and all other categories are discounted at 7%.

The present value of benefits for the high case scenario are $14.7 million (in 2020$) over the 20-year period of analysis. See Table 6.

Table 6- High Case Scenario Benefit Calculations – Select Years

Year	Avoided Travel	Add'l Trans Costs	Cold Storage Alt	OCT	Emissions Avoided	Noise & Congestion	Total	NPV Factor (3%)	Net Present Value (3%)
2024	$ 63,091	$ 699,984	$ 456,868	$ 11,837	$35,447	$ 360	$ 1,267,587	0.8884	$ 971,488
2025	$ 63,091	$ 699,984	$ 900,000	$ 11,837	$35,886	$ 360	$ 1,711,158	0.8626	$ 1,225,401
2029	$ 63,091	$ 699,984	$ 900,000	$ 11,837	$37,646	$ 360	$ 1,712,918	0.7664	$ 940,090
2034	$ 63,091	$ 699,984	$ 900,000	$ 11,837	$38,245	$ 360	$ 1,713,517	0.6611	$ 674,984
2039	$ 63,091	$ 699,984	$ 900,000	$ 11,837	$38,268	$ 360	$ 1,713,540	0.5702	$ 485,050
2043	$ 63,091	$ 699,984	$ 900,000	$ 11,837	$ 38,287	$ 360	$ 1,713,540	0.5066	$ 372,793
Totals	**$1,261,822**	**$13,999,680**	**$ 17,556,868**	**$236,739**	**$ 754,876**	**$7,201**	**$ 33,817,185**		**$ 14,661,656**

Note: Emissions have been calculated at the 3% discount rate and all other categories are discounted at 7%.

Benefit Cost Ration (BCR)

Replacement of the MSC seawall and installation of a new crane has positive benefit to cost ratios of 1.23 and 1.95 for the low and high case scenarios, respectively. Net benefits are almost $2 million for the low case scenario and $7.5 million for the high case scenario. See Table 7.

Table 7- Benefit to Cost Ratios for the Low and High Case Scenario

NPV Summary of Calculations	Low Case PV Emissions at 3%	High Case PV Emissions at 3%
Benefit calculations - 2020 $$		
Vessel avoided travel	$ 546,000	$ 546,000
Additional Transport Cost	$ 3,783,000	$ 6,053,000
Opportunity Cost of time	$ 102,000	$ 102,000
Emissions reduced	$ 512,000	$ 512,000
Cold storage replacement	$ 4,029,000	$ 7,445,000
Noise and Congestion	$ 3,000	$ 3,000
Subtotal benefits summary	**$ 8,975,000**	**$ 14,661,000**
Residual Value	$ 480,000	$ 480,000
Repair and maintenance	$ 282,000	$ 282,000
PV Benefits summary	**$ 9,737,000**	**$ 15,423,000**

Cost Calculations - 2020 $$		
PV Cost of Project	$ 7,918,000	$ 7,918,000
PV Net benefits (benefits - costs)	**$ 1,819,000**	**$ 7,505,000**
Benefit/cost ratio (benefits/costs)	**1.23**	**1.95**

See MSC Wall and Crane BCA Appendix for further details.

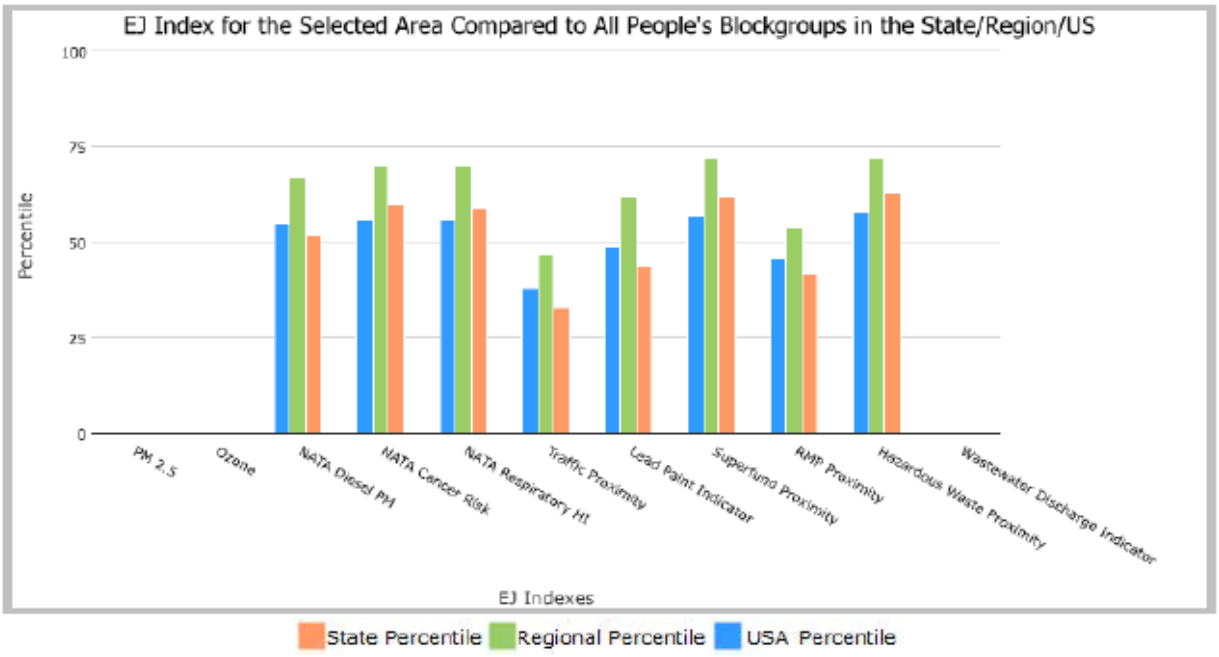
Addressing Climate Change and Environmental Justice Impacts

The project will mitigate climate impacts in that vessels and vehicles will not need to travel additional miles to conduct business. The changes in climate are already being seen in the fishing industry and repair of this seawall will allow Sitkans to navigate those changes with relative ease.

The existing seawall is more than 46 years old and in danger of failure. Replacing the seawall prior to failure will protect the environment from the damage that could result from this old structure or vessels/vehicles using the seawall at the time from falling in the water. The construction plan calls for constructing a new bulkhead to the seaward side of the existing structure. This approach will allow for visual inspection of the deteriorated seawall and removal of environmentally damaging material prior to filling in the open spaces.

Clear and direct benefits of the project:

1. The EJSCREEN report for the City and Borough of Sitka shows higher than State and Nation Environmental Justice readings for all categories. The EJ Index highlights which block groups contribute the most toward low-income/minority residents nationwide having a higher environmental indicator score on average than the rest of the US population. See attachment ejscreen_report.pdf.



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

Figure 11- EJ Index for Sitka

2. The project supports reduced air pollution and greenhouse gas emissions by vessels' ability to utilize this port rather than travelling longer distances for other ports and the walkable/bikeable proximity to amenities supported by this dock.
3. The project supports reduced truck travel demand on roads in Sitka by not having to drive out to the GPIP dock.
4. The project supports fiscally responsible land use and transportation efficient design.
5. There are no wetlands affected by this construction project.
6. The project avoids adverse environmental impacts to air and water quality and wetlands.
7. The project promotes energy efficiency because once the seawall fails, the cold storage facility will no longer be usable, and the only alternative at this point is for freezer vans with much higher rates of electric utility consumption.
8. This project improves resiliency of at-risk infrastructure through reconstruction of the sheet pile wall and crane.

Sitka's Climate Action Plan Task Force created by Resolution No. 2020-29A is responsible for studying and making recommendations to the Sitka Assembly on ways to plan for and mitigate the impacts of climate change on the City and Borough of Sitka's economy, infrastructure and future development, and methods Sitka can employ to reduce the emission of greenhouse gases. This project is in alignment with Climate policies in this Resolution.

This development is consistent with the Sitka Comprehensive Plan 2030 adopted May 2018.

Improving Sitka's marine infrastructure and providing employment and economic development are key components of this document.

Southeast Conference, the state and federal designated regional economic development organization for Southeast Alaska through the US Economic Development Administration has developed the regional Comprehensive Economic Development Strategy (CEDS) 2021-2025 for the region which identifies regional priorities for economic and community development. See page 3. This project is in line with their priorities of: Transportation 4) Move freight to and from markets more efficiently and 5) Ports and harbors infrastructure improvements.

Avoiding the risk of failure of this seawall will allow Sitkans to enjoy the benefits of the economic activity already occurring in the area. The primary purpose of this grant application is to keep the dock and crane in a state of good repair as the aged infrastructure is at significant risk of failure resulting in damage to the surrounding environment and loss of jobs to Sitka and the surrounding Alaskan villages.

FEMA and the State of Alaska began a coastal Risk MAP Study in the City and Borough of Sitka in 2013. The entire Sitka coastline is subject to the evaluation and includes the MSC location. The final multi-hazard risk report and risk assessment database is not yet completed. However, the MSC dock location is at sufficient height to avoid any future flood damages.

Advancing Equity and Opportunity for All

Advance Equity

The MSC and associated uplands infrastructure are important components to the Sitka fishing industry. Maintaining this infrastructure allows Sitkans to continue to work where they live and maintain active community ties. If the seawall were to fail, the need to travel to other harbors to conduct business will negatively affect fishing, tourism, and commodity movements within the community, by raising costs and reducing efficiency of the transportation system and supply chains. There are no fiber or broadband deployments envisioned for this project. This project has clear and direct benefits for planning, designing, or building infrastructure to:

1. The MSC is a walkable, bikeable, and bus transit-served job center. The project will allow for continued economic development near the RIDE's public transportation shed and along Katlian Street, a main street with close amenities in this walkable neighborhood.
2. Improves freight transportation with close proximity to the employment centers of the seafood processing plant and the cold storage facility.
3. Improves ship to shore freight movement with the replacement crane.
4. Allows the community to avoid the costly deterioration of their working seawall thereby protecting the unique characteristic of Sitka.
5. Protects the Sitka workers on the vessels, at the processing plants, and those leasing cold storage space from unnecessary travel and added expenses.
6. Continues the current efficient value chain movement of product.
7. Continues to proactively address racial equity or other disparities with the continued

lease agreements for the cold storage facility includes the following language, "it will not, on grounds of race, color or national origin, discriminate or permit discrimination against any person or group of people in any manner by Federal, State or Local laws or regulations promulgated thereunder, and the lessee further grants the City the right to take such action to enforce such local covenant as it deems necessary or as it is directed pursuant to any Federal, State or Local law or regulation."

8. Removes barriers for individuals and leads to business opportunities with the following language, "Subject to the storage rights granted to the lessee, cold storage will be made available to the public without discrimination to all customers that meet operating requirements."

Without this facility, freight that is offloaded at this facility which travel both northbound and southbound would cause delays in shipment as there would be a wait time for them to offload. Sitka simply does not have enough capacity/other dock space for this type of movement and the delays may affect the efficient systems in place that link them to their suppliers. Delays in producing and distributing goods and products will occur.

Sitka's population, according to the U.S. Census Bureau is roughly 8,500 people of which 23.6 percent are a combination of more than one race that includes American Indian and Alaska Native.[6] Many Alaska Natives are involved in the commercial fishing and marine service sector and have strong connections to Sitka and the region supported by the Sitka marine infrastructure.

A Walk Friendly Community is a city or town that has shown a commitment to improving and sustaining walkability and pedestrian safety through comprehensive programs, plans, and policies. Sitka has a long history dating back to 2008 of a bike friendly community with the highest percentage of bicycle commuters in the state and was the first Alaska community to earn a Bicycle Friendly designation. According to the League of American Bicyclists, in 2008, Sitka was designated as a Bronze-level community and in 2016, Sitka moved up to the Silver Level designation in the program which has a rigorous application that promotes safer streets and better bicycling. Sitka has been in the program and a Bronze Level designation since 2011 due to its consistently ranked high due to high walking mode share and low crash rates, exceptional trail system and community support for walking initiatives and events. Sitka is bustling, especially in the summer months, and many of those working in the fishing industry and processing facilities bike to/from their workplace. This project is highly pursued because this facility is in a close walkable location to many amenities.

Superior logistics: A major benefit to the location of this facility and the need to replace it is its proximity to downtown Sitka with many amenities nearby and opportunities for non-motorized travelers. It is a main reason why this facility and dock is so sought after. Without the facility, it would decrease the accessibility for all users of the project particularly non-motorized travelers. Users of this facility can easily access non-motorized ways to the gas station, grocery store, gear

[6] https://data.census.gov/cedsci/table?tid=ACSDP5Y2020.DP05&g=0400000US02_860XX00US99835

store, and more. The following is a list showing easily walkable or bikeable distances from the MSC:

- Petro Marine gas station, 350 feet
- The RIDE bus stop, 0.1 mile, and 0.2 mile, 0.3 mile
- Sitka Medical Center, 0.1 mile
- Hotel and restaurant, Fly in Fish Inn, 0.1 mile
- LFS Marine Supply, 0.2 mile
- AC Lakeside, which houses a local grocery store, retail store, outdoors shop, 0.3 mile
- Moller Park, 0.3 mile
- McDonald's, 0.4 mile
- Mountainside Clinic and urgent care, 0.4 mile
- Sitka Laundry Center, a laundromat and dry-cleaning service, 0.4 mile

The transit system in Sitka is excellent and the MSC provides a transit-accessible facility that benefits workers, and Sitka has invested to make sure this facility is transit served. Owned and operated by the Sitka Tribe of Alaska which is partly funded by Sitka and includes three bus routes that run on the hour or half-hour. The system includes an accessibility service to provide transportation for persons with disabilities and services for seniors aged 60 or older. The MSC is a short walking distance to two Sitka RIDE stations on the Green Line.

Sitka as a local government entity is subject to the Americans with Disabilities Act requirements (ADA) since 1991 and in accordance with the ADA Title II Regulations Nondiscrimination on the Basis of Disability in State and Local Government Services. The ADA Compliance Program coordinates statewide implementation of disability rights laws to ensure people with disabilities have access to facilities, programs, and services within the executive branch of state government. Since this facility is owned by Sitka, the project will follow all ADA regulations and Sitka has an ADA Title II coordinator on staff to ensure compliance.

Promote Workforce Opportunities

This project will continue to benefit the seafood processing facilities in Sitka, fishing industry harvesters, passengers of small vessels, government workers, and barge operators in the area. The lease agreement for the cold storage space between Sitka and the Seafood Producers Cooperative has a discrimination clause and storage rights are available to the public without discrimination to all customers. The processing plants that Sitka

Figure 12- Seafood workers processing product for MSC and export

partners with for the cold storage will continue to benefit with their workforce and supply chain. The Seafood Producers Cooperative Sitka plant employs up to 75 mostly Hispanic and Filipino workers who live and work in Sitka year-round in various departments of the plant: administration, freezer, line processing, and shipping with opportunity for advancement. North Pacific Seafoods is committed to diversity, equity and inclusion and value diversity as a strategic advantage. Their Diversity and Equity Taskforce identifies opportunities to become more diverse, equitable and inclusive by developing goals and action items to implement throughout the company. Their peak season employs up to 180 active processors and has a year-round office staff of 10 with opportunity for upward mobility. The company demographic is over three-quarters ethnically diverse. They recently set an increase in wages by 28% for all tiers of employment.

The MSC also serves as a storage for the Fish to School's program. The Sitka Conservation Society, all processors, fishermen, and other volunteers donate to the program with the mission of deepening youth understanding of local seafood resources by integrating locally caught seafood into the school lunch program. The program also introduces stream to plate curricula and fosters a connection to the local fishing culture giving our students access to nutritious, local food that drives our local economy and represents the interconnectedness of the community.

Figure 13- Fish to School's Program

Sitka discusses this project with users of the seawall and crane regularly to provide updates on the project during public meetings and at the request of users. Sitka will continue to operate the seawall and crane facility under the Harbormaster's purview and the cold storage users will continue to function with the lease agreement with the city. Sitka owns the cold storage facility but relies on the partnership with two main leaseholders that manage the facility. Operations and maintenance will be covered by user fees in future years.

Stakeholders include:

- Upwards of 60 Sitka cold storage users
- North Pacific Seafoods (formerly Sitka Sound Seafoods)
- Seafoods Producers Cooperative
- F/V Eyak and the outlying villages
- State of Alaska Department of Environmental Conservation

- Operators of small passenger vessels
- City and Borough of Sitka Harbor Department
- U.S. Coast Guard
- National Oceanic and Atmospheric Administration
- Fishing vessels utilizing the seawall

Leveraging Federal Funding

A working waterfront is Sitka's top legislative priority and that includes this project. This process takes Assembly approval. This project was a Legislative Priority from FY 2013 through FY 2017 and from FY 2021 to FY 2022.

Total project costs for the sheet pile wall and crane replacement are $9.8 million with approximately $7.84 million in Federal funds. Sitka is committed to a 20 percent match at $1.96 million even though the federal share could be increased as this project is located in a rural area and is a small project at a small port. In this respect, Sitka is leveraging federal funds to a greater degree than the minimum required by the PIDP program.

Project Readiness

Technical Capacity

Sitka has a very successful track record of finishing large scale projects on time and within budget. Risks are managed on projects through incorporation of high-level experienced staff and consultant teams to ensure best practices are followed in planning, organizing, and executing projects. Sitka has extensive experience in marine projects and has over the last several years, completed four major marine projects in excess of $5 million each, including an award-winning harbor project. The harbor project award was based on superb project delivery methods that saved the project time and money.

Sitka has been recognized with several awards for their projects and delivery methods over the last 10-years. Sitka regularly manages projects with grant funds including Federal funding and understands well how to manage such projects to success including all the necessary procurements. Sitka is staffed with professional engineers, contract managers, procurement specialists, construction inspectors, and project managers skilled in risk management of contracts and projects of this nature.

Sitka's team is continually and successfully executing over $20 million in projects per year including having carried out projects up to $150 million. The Public Works Director was certified in managing Federally funded projects under the State of Washington's Department of Transportation program for managing Federal Highway funds and his work has been referenced in training manuals for local government. The best practices used in managing Federal Highway funds has been carried over to Sitka policy and staffing efforts to mitigate risk on projects and has served Sitka well over the last 12 years executing over $240 million

in projects without incident or contractor claims

Sitka understands that obligation occurs when a selected applicant and DOT enter into a written grant agreement. Final design, engineering, and NEPA permitting along with construction calls for a 32-month schedule. Users of the facility will be notified and directed/scheduled elsewhere during construction. Funds will be fully expended within 5-years of obligation. See Table 8.

Table 8- Pro Forma Sheet pile Wall and Crane Replacement Schedule

Overall Task	Date
Grant award	Aug 2022
Final Design & Permitting inc. NEPA completion	Sept 2023
Mobilization	Mar 2024
Demolition/Disposal	May 2024
Sheet pile installation	June 2024
Rock fill	Oct 2024
Lighting & Crane installation	Feb 2025
Final inspection	Apr 2025
Grant closeout	May 2025

Environmental Risk

The technologies recommended here are similar yet improved from the previous design and construction. Building a wall on the seaward side of the existing wall is innovative in that only once the new wall has been built, will fill be placed between the two walls which is an added protectant to the ocean. By constructing a wall slightly seaward of the existing bulkhead, the necessary fill will be trapped between the walls.

A new anchor rod grouted into existing bedrock rather than relying on the current tied back sheet pile anchor wall will allow for a safer mechanism to hold the bulkhead in place. The existing sheet pile anchor wall sits underneath the cold storage facility and does not allow for repairs or the ability to assess its reliability. (See Figure 6)

Using tried and true technologies yet new mechanisms helps to minimize risks of project overruns and increases risk of quality construction. This project plays on both strengths of using existing infrastructure and new technologies.

Sitka will invite respondents to the request for proposals to suggest innovative project delivery for consideration. In addition, Alaska is currently one of the states engaged in the program with FHWA on responsibilities assigned through a Memorandum of Understanding for NEPA compliance.

There is no need for non-traditional mechanisms to raise additional funds for development of the project as Sitka will finance the 20 percent match.

Environmental permits and reviews

Sitka has contacted and discussed this project with the MARAD regional office and will engage all Federal, State, and local agencies for approvals and permits quickly once grant funds have been obligated. Sitka will coordinate MARAD and USACE to avoid the risk of time-consuming rework of NEPA documents. Sitka fully intends to meet the requirements of NEPA for this project including public meetings.

Sitka believes that this project qualifies as Categorically Excluded, (Catex), but have included $363,000 in the budget if an Environmental Assessment class of action under NEPA is necessary.

Construction scheduling will include windows of time when construction will be interrupted to account for fish migration and other marine interactions. This is common for Alaska projects near and in the water. Monitors will be on hand for the construction period to ensure that fish migration is unaffected.

State and Local Approvals

A listing of State environmental and operational permits include:

- Alaska Department of Fish and Game - Fish Habitat Permit
- Alaska Department of Environmental Conservation - Stormwater Treatment & Runoff Design Review
- ADEC Water & Sewer Utilities
- ADEC Multi Sector General Permit - Operational SWPPP for Boatyards

Local Building Permits will be completed with the City and Borough of Sitka.

Risk Mitigation

Risks to this project include site specific conditions, scheduling, funding, and project management. Additional time was built into the schedule to allow some delay for obtaining permits and to anticipate construction holds due to fish migration. Given the current environment for construction material increases, the city is prepared to cover any overages that may occur. It is anticipated that construction of a new sheet pile wall seaward of the existing structure will limit any unforeseen site-specific conditions that warrant special treatment.

Other risks and mitigation strategies follow:

- While Sitka does not have previous experience with PIDP or RAISE grants, the city does have an active Public Works Department with experience in projects of similar size and nature size along with a Grant Accountant that is knowledgeable in the post-award stage of state harbor facility grants and other Federal grants.
- The footprint of this project is owned by the city so real estate acquisitions will not be required.

- Coordination with current tenants of the seawall will be required and could pose a risk which will be mitigated with routine and regular updates to those users.
- Environmental concerns are always an unknown but since this property was constructed by the city in 1976, the soil composition is expected to be similar and the construction of the seawall to the seaward side of the existing wall will mitigate any unforeseen changes to the substrate.
- The windows of fish migration in Sitka are well known and will be incorporated into construction contracts to limit adverse impacts.
- The timeline for construction could have an adverse effect on current users but Sitka would mitigate this impact with frequent updates to the community on the project status and alternative ports for use. There may be periods of time when the seawall is unusable and vessel owners will need to secure alternate mooring options. These will be coordinated with the Sitka harbormaster office.
- Sitka reached out to USDOT headquarters to confirm the proposed schedule was reasonable.

Domestic Preference

Sitka does not anticipate requiring any waiver for Buy America on the equipment or supplies needed for this project. Supplies and materials for this project are available from U.S. manufacturers. The North Pacific Crane Company, located in Seattle, WA will be the provider of the crane proposed for this application.

Determinations

Project Determination	Response to Guidance
The project improves the safety, efficiency, or reliability of the movement of goods through a port or intermodal connect to the port.	This project will allow vessels and crew to avoid travel to alternate ports to conduct business. It will also reduce vehicle traffic that is currently serving vessels calling at Sitka harbors. Replacement of the seawall and crane are not independent of each other as the vessels calling at the seawall need the crane to load/unload cargo.
The project is cost effective.	This is a small project at a small port, so a benefit/cost analysis is not required but has been completed. Under the low case scenario, the project has a benefit/cost ratio of 1.23 with a present value of net benefits at $1.8 million, and the high case scenario has benefit/cost ratio of 1.95with net benefits of $7.5 million.

The eligible applicant has the authority to carry out the project.	The City and Borough of Sitka is a home rule municipality under the Constitution of Alaska and as such is an eligible applicant for these grant funds. The Department of Commerce Community and Economic Development describes home rule municipality in more detail. Sitka owns the property and has the authority to carry out the project.
The eligible applicant has sufficient funding available to meet the matching requirements.	The Sitka Assembly met on May 10, 2022 and authorized the expenditure of the match funds for this project. Funds will be obtained from the MSC Enterprise Fund Working Capital and/or the Harbor Fund. Resolution 2022-XX is attached to this application.
The project will be completed without unreasonable delay.	The CBS is ready to begin permitting, design, and review processes immediately upon notification of the grant application success. Project risks have been mitigated to the extent possible and additional time elements have been incorporated to the schedule to allow for completion in a timely manner.
The project cannot be easily and efficiently completed without Federal funding or financial assistance available to the project sponsor.	Sitka does not have sufficient funds to complete this project on its own. The State of Alaska has limited funds in recent years to contribute to capital projects. The project is long overdue for repairs and without PIDP funds, the risk of catastrophic failure of the seawall is imminent. If Federal funds are not received, Sitka would continue to look for grant funds next year and the potential for closure of the cold storage facility would be greatly enhanced. If project funds are not received, there is potential for increased costs and environmental risks in coming years.

Additional Considerations

The rural community of Sitka, Alaska is heavily dependent on a working waterfront for the fishing and other industries. Sitka has the largest fleet of vessels and harbor system in the state and is 19th in the nation in harvest and value of fish landings according to current fishery statistics by NOAA, page 39. The loss of the Marine Service Center seawall and crane will affect all commercial, small passenger vessels, barges, and government vessels presently using this facility. The ability to retain this important asset for the City and Borough of Sitka and the surrounding communities cannot be understated.

Benefit-Cost Analysis for the Marine Service Center Sheetpile Wall and Crane Replacement Sitka, Alaska

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Introduction

The Marine Service Center bulkhead wall in Sitka is in danger of imminent failure. A 2011 PND Engineers report states that the wall had perhaps another five years of useful life. A 2021 update to that report by PND reveals that repair of the existing wall is not recommended and that a new wall to the seaward side of the existing structure should be built. The City and Borough of Sitka wishes to replace this more than 46-year-old seawall because if the seawall fails the upland cold storage facility which sits partially on the wall will need to be condemned. The tie-backs used for the seawall sit under the cold storage facility.

The Marine Service Center at Sitka serves a variety of customers. Passenger ships, fishing vessels, trampers, sailing vessels, government vessels, and barges can all use it. Many of these vessels can find workarounds using other harbors in Sitka though overcrowding conditions will get worse as a result. Table 1 describes some of the seawall users, whether they need cold storage or the crane, and the commodity typically coming over the seawall.

Table 1 -MSC Seawall Users

Users	Cold Storage	Commodity over wall	Crane/hoist
North Pacific Seafoods (previous Sitka Sound Seafoods)	yes	Bait	yes
Seafood Producers Cooperative (SPC)	yes	Fiber, salt, machinery, bait, ice, and inbound/outbound fish	yes
Eyak (supplies to outlying villages)	no	Fuel, groceries, mail, outbound fishfood for hatchery	yes
Passenger Ships	no	Passengers	no
Coast Guard	no	Crew changes, supplies	no
Fishing Vessels	yes	Fish, bait, ice, and supplies	yes

The Seafood Producers Cooperative mentioned in Table 1 is owned by over 500 members who fish the waters of the North Pacific. Each member is a small boat hook and line fisherman and owner of the cooperative, and therefore receives the benefits of ownership.[1]

North Pacific Seafoods (previously known as Sitka Sound Seafoods) is located .2 miles from the cold storage facility or a 1-minute drive. "The Sitka Sound Seafoods plant started processing in the late 1960s, with North Pacific Seafoods and its sister companies purchasing a majority interest in 1990. A full merger of Sitka Sound and North Pacific was completed in 1997. This plant location has access to northern harvesting areas of Southeast Alaska, from Yakutat to the south end of Baranof Island. The plant processes all species of salmon from all gear types,

[1] https://www.spcsales.com/co-op

halibut, sablefish, rockfish, herring, sea cucumbers, lingcod, Pacific cod, shrimp and Dungeness crab."[2]

Assumptions Used for this Analysis

- The seawall at the Marine Service Center is in danger of imminent failure.
- Once the seawall fails, the cold storage facility will be condemned and unusable as the building partially sits on the seawall.
- The crane used at the MSC is more than 20 years old and in need of replacement.
- Vessels delivering seafood product at this location will need to find alternate drop-off points for unloading their catch.
- Vessels with disembarking passengers may need to lighter passengers to shore on smaller vessels.
- The cold storage facility receives between 11 million (low case) and 18 million (high case) pounds of fish product annually.
- There is insufficient cold storage available in Sitka to replace the Marine Service Center 21,000 square foot facility.
- Refrigerated freezer vans can help fill that gap but at a much higher cost.
- Of the two main tenants at the cold storage facility, one would continue to operate out of Sitka with the freezer vans and the other would flash freeze product and immediately ship from town.
- The ability to consolidate product is an important component for keeping costs down in the export of frozen fish. Freezer vans will not allow for this activity.
- The loss of one of the cold storage users will result in the loss of 10-20 jobs for 4 months of the year as consolidation will need to take place in the Pacific Northwest (PNW) rather than in Sitka.

Transportation Cost Differential

Fish harvest arrives at the cold storage facility from the various seafood processing plants in Sitka. It is estimated that freezer vans can be used to supplement the loss of the cold storage facility once it is condemned. The cost of using freezer vans will be much higher and will put additional strain on the City's electrical system. Estimates of that additional cost to the electric utility company are not included in this assessment but could be substantial.

[2] https://www.northpacificseafoods.com/sitka-sound-seafoods.html

Additional costs to the seafood processers estimated in this analysis derive from the lack of storage space and capability to consolidate product using the cold storage facility. The capability to consolidate product in advance of transport cannot be accomplished with freezer vans. Consolidation is a necessary function of the fish harvest as lots of fish are purchased by fish type, quality, and size. So, a load of chum salmon, for instance, could have 16 different lots based on the fish's quality and size. The inability to consolidate product at Sitka means that all product is shipped to the Pacific Northwest, either Seattle or Bellingham, and consolidation must take place there. The challenge then becomes one of filling each cold storage container with the same lots of fish. Partial lots result in the shipper paying for the entire container, even if only partially full.

Interviews conducted with users of the MSC dock asked what they would do when the seawall fails, and the cold storage facility is condemned. All responses indicated that conducting their business in Sitka would get much harder. There are other docks in town where they might be able to deliver their catch, but the harbors are busy and there would undoubtedly be delays. Some said they would deliver to tenders who would then attempt to find dock space to offload the product. Some said they would lighter their catch by small vessel to other port locations. Those finding other port locations would then have to truck their catch to the processing plant.

Once the seafood product is in its finished state at the processing plant, the product would then need transport to another location for cold storage. The cost of cold storage in Sitka is about $0.043 per pound and the electric utility bill for the cold storage facility is shared by the two main tenants. One option is to store the product in freezer vans until transport can be arranged to a cold storage facility where consolidation and packaging can be completed. The cost of cold storage space on a per pound basis is higher in the Pacific Northwest by about $0.05 per pound.

Cold storage users reveal that 72.22 percent of their product gets shipped directly to customers once they have been able to consolidate. The inability to consolidate in Sitka requires that seafood processors must now pay for PNW storage space until consolidation can take place. Shippers give a discount to their customers for these through rates of about $0.01 per pound of product. So, the product can be consolidated in Sitka, put in a van for the customer, and then shipped directly to places like Japan without having to stopover in the Pacific Northwest. The inability to consolidate in Sitka adds this additional cost of product storage in the PNW to the processor to bear.

The inability to consolidate in Sitka also puts strain on the processor's financial cash flow as a bill of lading issued in Sitka can be 4 to 6 weeks ahead of a bill of lading issued in Seattle. Both seafood processors said that loss of cold storage capability would put financial strain on their organizations and would require a rethinking of their business model. Some product may no longer be viable. One processor who has cold storage space in PNW said it would add about $250,000 in annual costs to their bottom line. The other processor who does not currently have cold storge space in PNW said it would add between $400,000 and $800,000 in costs to their bottom line. Some of this cost has been captured with the additional storage fees and the loss of discount to their customers. Another portion of this cost is the additional labor requirements in the PNW. We have not estimated these costs as it is a transfer from one region to another.

The amount of product moving through the cold storage facility fluctuates from year to year given harvest success, regulatory environment, and sometimes weather and abilities of the fishing fleet. For this reason, this benefit analysis uses a low and high calculation to account for those fluctuations over time.

Equation 1 demonstrates the calculation for these additional transportation costs.

Equation 1: $TCD_{(year)} = [FP_{(year)} \times P \times CD] + [(1-P) \times (CD + TR)]$

Where:

$TCD_{(year)}$ is the value of the transportation cost differential for in a particular year

$FP_{(year)}$ is the pounds of frozen product for the given year

P is the percent of product shipped straight through to customers after consolidation in PNW

CD is the cost differential between Sitka and Pacific Northwest cold storage facilities

TR is the through rate differential for product which must now travel to PNW prior to shipping on to customer

Table 2 -Additional Transportation Costs Associated with Frozen Fish Product – Low and High Case

	Low Case	High Case
Year	**Add'l Transport Costs**	**Add'l Transport Costs**
2024	$ 437,490	$ 699,984
2025	$ 437,490	$ 699,984
2026	$ 437,490	$ 699,984
2027	$ 437,490	$ 699,984
2028	$ 437,490	$ 699,984
2029	$ 437,490	$ 699,984
2030	$ 437,490	$ 699,984
2031	$ 437,490	$ 699,984
2032	$ 437,490	$ 699,984
2033	$ 437,490	$ 699,984
2034	$ 437,490	$ 699,984
2035	$ 437,490	$ 699,984
2036	$ 437,490	$ 699,984
2037	$ 437,490	$ 699,984
2038	$ 437,490	$ 699,984
2039	$ 437,490	$ 699,984
2040	$ 437,490	$ 699,984
2041	$ 437,490	$ 699,984
2042	$ 437,490	$ 699,984
2043	$ 437,490	$ 699,984
Totals	**$ 8,749,800**	**$ 13,999,680**

Avoided Travel

The F/V Eyak provides a special service to Sitka and the surrounding villages as it delivers mail, groceries, building supplies, fuel, and other necessities. F/V Eyak made 80 trips to the MSC seawall in 2019 to complete these activities. If the MSC seawall were unavailable, deliveries would have to be made to the Gary Paxton Industrial Park (GPIP) dock, 7.7 miles away, and F/V Eyak would have to travel 5.3 nautical miles to reach that destination and pick up delivery items.

This benefit category estimates the number of vehicle trips and vessel trips that would have to be made as a result of the seawall failure. Mail and groceries would be delivered to the GPIP location when it is known that the Eyak will be arriving as there is no place to store product at the site. It is estimated that at least two vehicles would need to travel to GPIP for this purpose, one for the mail and one for groceries. It is further estimated that half of the annual trips would require a third vehicle to deliver fish food or construction materials for delivery to neighboring villages.

Vessel/Vehicle Avoided Travel

The F/V Eyak made 80 trips to the MSC seawall in 2019 in order to pick up groceries, mail, fuel, fish food, and construction supplies for the outlying villages. Fish food is delivered to the Port Armstrong Fish Hatchery. Once the seawall fails, all of these deliveries will need to go to the Gary Paxton Industrial Park dock as this dock can support these activities. It is 7.7 miles from the MSC seawall to the GPIP dock. The USPS and the grocery stores are each expected to meet the Eyak when it arrives for transport of mail and other purchases. Using the RAISE guidance for mileage at $0.94 per mile, both the mail delivery and the grocery deliveries add $1,158 in additional travel costs to the Eyak's business. It is estimated that about half of Eyak's trips include fish food for the fish hatchery and building materials for the outlying villages. Each of these trips add $579 annually in additional travel costs.

The F/V Eyak must travel from the MSC seawall to the GPIP dock to pick up these supplies. It is a distance of 5.3 nautical miles. Assuming a travel rate of 8.3 nautical miles per hour and a vessel hourly operating cost of $436, the round-trip cost of this additional travel is $44,572 annually. It could be expected that population growth would increase these trips over time. However, the population of Sitka and the surrounding villages has been mostly stable in recent years (in some cases declining) so the avoided travel is at a consistent rate over the 20-year period of analysis. There is no difference between the low and high case scenarios as it pertains to avoided travel for the Eyak and the supply vehicles.

Total avoided travel for both the Eyak and the vehicles supplying it is valued at $48,046 annually. See Table 3.

Table 3 -Avoided travel benefit calculation for F/V Eyak

Avoided Travel					
Eyak Transportation Calculations	**NM**	**# of annual trips**	**Hourly Operating Costs**	**Time for round trip (hrs)**	**Added Transport Cost**
		(a)	**(b)**	**(c)**	**(a * b * c)**
Vessel mileage reason					
Difference in travel from MSC to GPIP	5.3	80	$436	1.28	$44,572.01

Vehicle mileage reason	**Miles**	**# of annual trips**	**Mileage Rate (per mile)**	**Round Trip Miles**	**Added Transport Cost**
	(a)	**(b)**	**(c)**	**(a * b * 2 = d)**	**(c * d)**
MSC to GPIP for mail delivery	7.7	80	$0.94	1,232	$1,158.08
MSC to GPIP for grocery delivery	7.7	80	$0.94	1,232	$1,158.08
Travel from seafood processing plant to GPIP with fish food	7.7	40	$0.94	616	$579.04
Travel from downtown to GPIP with construction materials	7.7	40	$0.94	616	$579.04

Value of Additional Travel for Eyak pick-ups and deliveries	**$48,046.25**

In addition to the Eyak, fishing vessels currently delivering to the MSC for fish processing will need to modify their behavior once the MSC seawall fails. Telephone interviews with vessels currently using the MSC dock for seafood transport reveals that 65 percent of the vessels would travel to Silver Bay, the Gary Paxton Industrial Park, to offload their vessel and then transport their catch by vehicle to their respective fish processing plants, either Sitka Producers Cooperative (SPC) or the North Pacific Seafoods (previously Sitka Salmon Shares) locations. Other respondents thought they might deliver to a floating processor, one of the other docks in town, anchor out and lighter their catch to shore, and all said it would be harder to schedule and will put additional pressure on already crowded docks in town. This additional travel by vessels and vehicles can be avoided with improvements to the MSC seawall.

Avoided vessel traffic for the fishing vessels is valued at $13,705 and the avoided vehicle traffic is valued at $1,340 for a total avoided travel of fishing vessels of $15,045 annually. See Table 4.

Table 4 -Avoided travel benefit calculation for fishing vessels

Avoided Travel					
Fishing Vessel Transportation Calculations	**NM**	**Number of annual trips**	**Hourly Operating Costs**	**Time for round trip (hrs)**	**Added Transport Cost**
		(a)	**(b)**	**(c)**	**(a * b * c)**
Vessel mileage reason					
MSC to Silver Bay (GPIP)	5.3	43.55	$246	1.28	$13,656.70
MSC to NPS dock	0.17	4.69	$246	0.04	$48.23

Vehicle mileage reason	**Miles**	**Number of annual trips**	**Mileage Rate (per mile)**	**Round Trip Miles**	**Added Transport Cost**
	(a)	**(b)**	**(c)**	**(a * b * 2 = d)**	**(c * d)**
Travel from Silver Bay (GPIP) to NPS	5.9	108.88	$0.94	1,285	$1,207.64
Travel from Silver Bay (GPIP) to SPC	6.0	11.73	$0.94	141	$132.26

Value of Additional Travel for Fishing Vessel pick-ups and deliveries	**$15,044.83**

This additional time for fish product to get from fishing vessel to processing plant can lead to degradation of the fish product and a reduced price to the fishermen. There is no attempt made here to quantify this reduction in fish value. In addition, the local fishing fleet and the processing plants have learned that value-added seafood product has higher returns on the investment than the raw product. Fisheries throughout the State of Alaska have improved these value-added activities in recent years that have allowed fishermen to weather the ups and downs of the fishing industry.

Vessel and Vehicle Emissions Avoided

"Transportation infrastructure projects may also reduce the transportation system's impact on the environment by lowering emissions of air pollutants that result from production and combustion of transportation fuels. The economic damages caused by exposure to air pollution represent externalities because their impacts are borne by society as a whole, rather than by the travelers and operators whose activities generate those emissions. Transportation projects that reduce overall fuel consumption, either due to improved fuel economy or reduction in vehicle miles traveled, will typically also lower emissions, and may thus produce climate and other

environmental benefits. Conversely, projects that lead to increased vehicle miles traveled, such as through induced demand, may lead to an increase in emissions."[3]

Once the MSC seawall fails, the F/V Eyak will need to drop off and receive product at the GPIP dock and vehicles will need to travel the additional distance to get products to the dock when the Eyak is scheduled to arrive. Mileage, nautical miles, and number of trips are the same as the avoided travel calculations.

This analysis takes a conservative approach for vessel emissions and uses the 2010 total cost per cylinder for Stoichiometric Gasoline Direct Injections[4] and assumes at least one 8-cylinder engine for the Eyak. The 2010 cost per cylinder from the National Highway Transportation Safety Administration Final Regulatory Impact Analysis was $67.00. Updating this to 2020 dollars using deflator indexes from the Bureau of Economic Analysis results in $74.26 per cylinder in emissions reduction. (Calculation: $67 * 113.648(2020$) / 102.532(2010$) = $74.26)

The value of vessel emissions due to additional travel when the MSC dock is no longer useable is $12,019 annually. The avoided travel is comprised of activity for the F/V Eyak and the fishing vessels currently delivering product at the MSC dock. This amount rises slightly throughout the 20-year period of analysis as the damage costs of emissions per metric ton rise. See Table 5 for emissions calculations for the Eyak and Table 6 for emissions calculations for fishing vessels currently using the MSC dock.

Equation 2: $E_{(year)} = T_{(year)} \times H \times VE + M_{(year)} \times MT$

Where:

$E_{(year)}$ is the value of the emissions during a particular year

$T_{(year)}$ is the number of trips per year

H is hours of traveling for the given year for vessels

VE is the vessel emissions per hour

M is the miles of travel for vehicles in a given year

MT is the value of metric tons of emissions per mile traveled

The benefit/cost analysis guidance for the FY2022 RAISE grant applications provides an estimate of 0.01018 metric tons of CO_2 emissions for gas light-duty trucks which we use here for the emissions calculations. We also assume that these vehicles are getting about 10 miles to the gallon and that the speed for vehicles will average about 45 miles per hour. The value of a metric ton of CO_2 emissions is $55.00 for the 2024 and then rises to $77.00 by 2043. There is no

[3] Benefit-Cost Analysis Guidance for Discretionary Grant Programs – March 2022.
[4] https://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FRIA_2017-2025.pdf

difference between the low and high case for the Eyak and fishing vessels transportation benefit category.

Table 5 -Avoided Emissions for F/V Eyak

Emissions

Eyak Transportation Calculations	NM	# of annual trips	Time for round trip (hrs)	Vessel Emissions per Hour	Vessel Emissions
		(a)	(b)	(c)	(a * b * c)
Vessel mileage reason					
Difference in travel from MSC to GPIP	5.3	80	1.28	$74.26	$7,587.43

Vehicle mileage reason	Miles	# of annual trips	Total Miles Round Trip	Metric Tons of CO2 [1]	Vehicle Emissions
	(a)	(b)	(a * b * 2 = c)	(c /10 * .01018 = d)	(d * 1) thru 2030 then (d * 2)
GPIP with construction materials	7.7	80	1,232	1.25	$68.98
MSC to GPIP for grocery delivery	7.7	80	1,232	1.25	$68.98
MSC to GPIP for mail delivery	7.7	40	616	0.63	$34.49
Travel from seafood processing plant to GPIP with fish food	7.7	40	616	0.63	$34.49

Emissions Calculations for Eyak pickups and deliveries	**$7,794.37**

Notes: 1. Metric tons of CO2 assumes 10 miles to the gallon for gas and .01018 MT to the gallon per RAISE monetized values

In addition to the avoided travel for Eyak deliveries, fishing vessels will also have added transportation costs for their operations. Telephone interviews with fishermen delivering product at the MSC dock reveal that 65 percent of them would deliver their catch to Silver Bay, the Gary Paxton Industrial Park, and then truck the harvest to the Sitka Producers Cooperative where they have processing agreements. In addition, 7 percent of respondents said they would deliver to the Sitka Salmon Shares dock rather than the MSC dock. Both of these calculations form the avoided emissions calculations for the MSC seawall.

Table 6 -Avoided Emissions for fishing vessels

Emissions					
Fishing Vessel Transportation Calculations	**NM**	**Number of annual trips**	**Time for round trip (hrs)**	**Vessel Emissions per Hour**	**Vessel Emissions**
		(a)	**(b)**	**(c)**	**(a * b * c)**
Vessel mileage reason					
MSC to Silver Bay (GPIP)	5.3	43.55	1.28	$74.26	$4,130.41
MSC to NPS dock	0.17	4.69	0.04	$74.26	$14.59

Vehicle mileage reason	**Miles**	**Number of annual trips**	**Total Miles Round Trip**	**Metric Tons of CO2 [1]**	**Vehicle Emissions**
	(a)	**(b)**	**(a * b * 2 = c)**	**(c /10 * .01018 = d)**	**2023 values**
Travel from Silver Bay (GPIP) to NPS	5.9	108.88	1,285	1.31	$71.93
Travel from Silver Bay (GPIP) to SPC	6.0	11.73	141	0.14	$7.88

Emissions Calculations for fishing vessel pickups and deliveries	**$4,224.81**

Notes: 1. Metric tons of CO_2 assumes 10 miles to the gallon for gas and .0108 MT to the gallon per RAISE monetized values

Total emissions avoided for the Eyak and the fishing vessels is $11,732 in the first year of the benefit calculations. These emissions avoided rise slightly in accordance with the RAISE damage costs per emissions for CO_2 greenhouse gases.

Opportunity Cost of Time

The opportunity cost of time measures the choice of the next best alternative to the thing chosen. In this case, vessel operators must stay on their vessel during travel to alternate harbors. Vessel operators would generally elect to continue with fishing activity, but they could elect to do something else with their time. For instance, being with family, visiting with friends, and enjoying all that Alaska has to offer. Given the absence of data supporting additional fishing effort, we assume that the leisure rate of 1/3 the hourly rate is the opportunity cost of time.

The vessel operator's opportunity cost of time is based on the leisure rate for captain, deckhand, and two mates operating the vessel and those hourly rates were obtained from the Alaska Department of Labor and Workforce Development.[5] Total value of the opportunity cost of time for the vessels – both Eyak and fishing vessels - is $8,709 annually.

[5] http://live.laborstats.alaska.gov/wage/index.cfm?at=01&a=000000#g53

The vehicle operator's opportunity cost of time uses the same numbers of trips and mileage as the avoided travel calculation. The hourly rate for the truck drivers is based on the values from the FY 2022 Benefit Cost Analysis Guidance from the US DOT site.[6] The hourly rate is $32.00, and we use the same time estimate as the avoided travel benefit. See Table 7 for OCT of Eyak crew and Table 8 for OCT for fishing vessel crews. We do not increase this benefit over time as the future is unknown for the demand for additional travel to the neighboring communities. Nor do we have data to support additional harvests of fishing vessels. Total opportunity cost of time for the vehicle operators is $3,077 annually.

Equation 3: $OCT_{(year)} = C_{(year)} \times H \times W \times R_{vessel} + C_{(year)} \times T \times R_{vehicle}$

Where: $OCT_{(year)}$ is the value of cost of time for workers on transported vessels and vehicles in a given year

$C_{(year)}$ is the number of trips for the year

H is the hours associated with travel to alternate ports

W is the number of workers in that particular position on the vessel

R_{vessel} is the wage rate from the State of Alaska Dept. of Labor and Workforce Development for May 2018 divided by 3 to determine the leisure rate

T is the travel time from MSC to GPIP dock

$R_{vehicle}$ is the wage rate for the truck driver

Total OCT for the added travel for the F/V Eyak as a result of loss of the MSC seawall is $5,632 annually. The OCT for vehicle drivers is $2,082 annually based on $32.00 hourly rate for light truck drivers. The opportunity cost of time for fishing vessel crew is $3,076[7] and the OCT for vehicle drivers associated with fishing vessels is $1,046. Total OCT for both the Eyak and fishing vessels is $11,837 annually. This amount remains consistent over the 20-year period of analysis as the change in vessel deliveries are not known at this time. The opportunity cost of time calculation is the same for the low and high case scenarios.

[6] https://www.transportation.gov/sites/dot.gov/files/2022-03/Benefit%20Cost%20Analysis%20Guidance%202022%20%28Revised%29.pdf

[7] Wage rates for fishing captain and crew based on March 2020 published hourly rates from the Alaska Department of Labor and Workforce Development. https://live.laborstats.alaska.gov/wage/index.html

Table 7 -Opportunity Cost of Time for F/V Eyak

Opportunity Cost of Time

Eyak Transportation Calculations	Leisure Rate Captain	Leisure Rate Deckhand	Leisure Rate Mate (2)	Number of annual trips	Time for round trip (hrs)	Added Transport Cost
	(a)	(b)	(c)	(d)	(e)	[(a + b + c) * d *e]
Vessel mileage reason						
MSC to GPIP	$17.94	$14.05	$23.13	80	1.28	$5,631.88

Vehicle mileage reason		Truck Driver Hourly Value	Number of annual trips	Time for round trip (hrs)	Added Transport Cost
		(a)	(b)	(c)	(a * b * c)
MSC to GPIP for mail delivery		$32.00	80	0.27	$694.04
MSC to GPIP for grocery delivery		$32.00	80	0.27	$694.04
Seafood processing plant to GPIP with fish food		$32.00	40	0.27	$347.02
Downtown to GPIP with construction materials		$32.00	40	0.27	$347.02

Opportunity Cost of Time for Eyak pickups and deliveries	**$7,714.01**

Similar to the F/V Eyak, fishing vessels must also engage in additional travel, both for their vessels and for vehicles that must now get product from one dock to another or to the processing plant. The Opportunity Cost of time for the fishing vessel operators is $3,076 annually and the vehicle drivers have an OCT of $1,046 annually.

Table 8 -Opportunity Cost of Time for fishing vessels

Opportunity Cost of Time

Fishing Transportation Calculations	Leisure Rate Captain	Leisure Rate Deckhand	Leisure Rate Mate (2)	Number of annual trips	Time for round trip (hrs)	Added Transport Cost
	(a)	(b)	(c)	(d)	(e)	[(a + b + c) * d *e]
Vessel mileage reason						
MSC to Silver Bay (GPIP)	$ 17.94	$14.05	$23.13	43.55	1.28	$3,065.85
MSC to NPS dock	$ 17.94	$14.05	$23.13	4.69	0.04	$10.83

Vehicle mileage reason		Truck Driver Hourly Value	Number of annual trips	Time for round trip (hrs)	Added Transport Cost
		(a)	(b)	(c)	(a * b * c)
Silver Bay (GPIP) to NPS		$32.00	108.88	0.27	$944.55
Silver Bay (GPIP) to SPC		$32.00	11.73	0.27	$101.72

Opportunity Cost of Time for fishing vessels pickups and deliveries	**$4,122.95**

Noise and Congestion

Noise and congestion, while admittedly low for rural areas, still have impact on the local population and can be quantified as per the BCA Guidance updated in 2022. Using the miles traveled for the vehicles serving both the F/V Eyak and the various fishing vessels delivering product to the seafood processing plants, we can estimate those benefits. See Table 9.

Table 9 - Noise and Congestion benefits from avoided vehicle traffic

Vehicle mileage reason	Round Trip Miles Annually		Noise	Congestion	Totals
	Eyak	Fishing			
Travel from MSC to GPIP for mail delivery	1,232		$0.0033	$0.0670	$86.61
Travel from MSC to GPIP for grocery delivery	1,232		$0.0033	$0.0670	$86.61
Travel from seafood processing plant to GPIP with fish food	616		$0.0033	$0.0670	$43.30
Travel from downtown to GPIP with construction materials	616		$0.0033	$0.0670	$43.30
Travel from Silver Bay (GPIP) to NPS		1,285	$0.0033	$0.0670	$90.32
Travel from Silver Bay (GPIP) to SPC		141	$0.0033	$0.0670	$9.89
Value of Noise and Congestion to Additional Travel for Eyak and fishing vessels					**$360.04**

Note: Noise and Congestion values use the rural bus and truck values from the updated Benefit Cost Analysis Guidance for 2022.

Table 10 summarizes Avoided Travel benefits for vessels. vehicles, and workers described so far.

Table 10 – Avoided Travel Benefits Summary – Year One

Benefit Category	First year of benefits	
Avoided vessel travel Eyak	$	44,572
Avoided vessel travel fishing vessels	$	13,705
Avoided vehicle travel Eyak	$	3,474
Avoided vehicle travel fishing vessels	$	1,340
Additional transport costs (low case)	$	437,490
Opportunity Cost of Time vessel operators -Eyak	$	5,632
Opportunity Cost of Time fishing vessel operators	$	3,077
Opportunity cost of time vehicle operators - Eyak	$	2,082
Opportunity cost of time vehicle operators - fishing vessels	$	1,046
Emissions reduced vessel operators - Eyak	$	7,587
Emissions reduced fishing vessel operators	$	4,145
Emissions reduced vehicle operators for Eyak	$	207
Emissions reduced vehicle operator for fishing vessels	$	80
Noise and Congestion vehicle operators	$	360
Total	**$**	**524,797**

Note: This table is showing the 2024 benefits prior to evaluating the net present value.

Avoided Cold Storage Replacement

Additional costs for cold storage in the PNW are not the only cold storage expenditure. Once the seawall fails and the cold storage facility is condemned, seafood processors must find temporary freezer space until they can ship the product. There will not be sufficient space to conduct consolidation of product in the freezer vans so that would still occur in the PNW and is estimated in the Additional Transportation Costs previously described. Seafood processors have suggested they would need refrigerated vans, or reefers, to keep product frozen. One seafood processor said they would just flash freeze product and ship it south on trampers or freighters to their facility in the PNW. It is estimated that the remaining cold storage user would need 25 to 40 vans to hold the product they currently process on an annual basis.

The cost to purchase these vans, if they were to find that many available, is $7,750 per van for a new insulated container. Container vans throughout the country are in short supply. We assume that there will be a need for both used and new equipment as empty vans are in high demand for other reasons. Both the used vans and the new vans will need new refrigeration units as the vans do not generally come equipped with that capability and used vans would no doubt need an upgrade. Costs for new reefer units is $14,427 to $16,174 depending on the age of the unit.[8]

[8] Quote from https://www.marketbook.ca/listings/trailers/for-sale/list/category/804/semi-trailers-reefer-unit-only

The City has sufficient land space to accommodate the freezer vans needed to replace the cold storage facility.

Refrigerated vans needed from the low case to the high case is assumed to be mostly new vans shipped from Seattle and delivered to Sitka. Estimates from Container Specialists of Alaska reveals they do not currently have containers in Seattle, but they have some coming in from overseas and expect to see them shortly. Container Specialists of Alaska also revealed that they have had only a handful of used vans in the past two months.[9] New vans cost $7,750 each and shipping is $1,829.30 per container.[10]

In addition to the cost of establishing a system of refrigerated vans to accommodate the frozen seafood product, there would be additional demands on the City's electric utilities to supply power to these storage units. The City's electric grid is fed primarily by the hydroelectric plant. It is estimated that the City would be able to accommodate this additional usage with current power generation. However, the charge to the customer would be significantly higher as each of the refrigerated vans would need to be tied to the grid. This would allow vans not in use to be shut down, but it would put additional expense on the power operators to service these units. The cold storage unit currently has a monthly electric bill of about $17,000. Customers in Sitka using refrigerated vans have an average monthly bill of about $2,300 per van according to the City's utility engineer.

The cost to supply alternate cold storage with the use of refrigerated vans is estimated between $258,675 and $456,868 depending on the number of vans. The existing seawall is in danger of imminent failure and has been for years, so the cost of replacement freezer capacity begins in the benefit begin year of 2024. The cost differential of electric utilities between the cold storage facility and the freezer vans is between $486,000 and $900,000 annually. See Table 11 and Table 12.

Table 11 -Cold Storage Refrigerated Container Cost estimates

	Low Case 25 Vans			High Case - 40 Vans		
	Number Vans	Cost Each	Total	Number Vans	Cost Each	Total
Refrigerator Vans - Used	2.5	$3,000	$7,500	4	$10,000	$40,000
Reefer units - Used	2.5	$14,427	$31,068	4	$16,174	$64,696
Refrigerator Vans - New	22.5	$7,750	$174,375	36	$7,750	$279,000
Shipping Seattle to Sitka	25	$1,829	$45,733	40	$1,829	$73,172
Total Cost			**$258,675**			**$456,868**

Note: Cost estimates for vans from Alaska Container Specialists of Alaska, cost estimates for reefer units from Marketbook CA, and shipping costs from Samson Tug and Barge.

[9] https://containerspecialtiesak.com/containers/index.htm

[10] Per Samson Tug and Barge which serves Sitka.

Table 12 -Cost Differential in Electric Utilities using Freezer Vans

Electric Utility Expense	Existing Cold Storage [1]	Reefer Vans low case [2]	Reefer vans high case [2]
Annual cost to consumer	$204,000	$690,000	$1,104,000
Total	$204,000	$690,000	$1,104,000
Differential (i.e. increased cost)		**$486,000**	**$900,000**

1. Existing cold storage electric utility bills run about $17,000 per month.
2. Reefer vans in Sitka at another location runs about $2,300 per month for 40-ft van.

Note: Electric utility engineer at City provided cost estimates.

Summary Benefits Calculations

The low case scenario has a net present value for benefits of $8.8 million over the 20-year period of analysis using a 7 percent discount rate for all categories. The net present value increases to $9 million when using the 3 percent discount rate for emissions and 7 percent for all other categories.

The high case scenario has a net present value for benefits of $14.5 million for the same period using the 7 percent discount rate for all categories. The net present value of benefits increases to $14.7 million when using the 3 percent discount rate for emissions and 7 percent discount rate for all other categories.

See Table 13 and Table 14.

Table 13 -Low Case Scenario Net Present Value Benefit Summary

Low Case

Year	Avoided Travel	Add'l Transport Costs	Cold Storage Alternative	OCT	Emissions Avoided	Noise & Congestion	Total	NPV Factor (3%)	NPV Factor (7%)	Net Present Value (3%)	Net Present Value (7%)
2024	$63,091	$437,490	$258,675	$11,837	$35,447	$360	$806,900	0.88849	0.76290	$620,032	$615,580
2025	$63,091	$437,490	$486,000	$11,837	$35,886	$360	$1,034,664	0.86261	0.71299	$743,071	$737,701
2026	$63,091	$437,490	$486,000	$11,837	$36,325	$360	$1,035,103	0.83748	0.66634	$695,950	$689,733
2027	$63,091	$437,490	$486,000	$11,837	$36,764	$360	$1,035,542	0.81309	0.62275	$651,881	$644,884
2028	$63,091	$437,490	$486,000	$11,837	$37,207	$360	$1,035,985	0.78941	0.58201	$610,669	$602,953
2029	$63,091	$437,490	$486,000	$11,837	$37,646	$360	$1,036,424	0.76642	0.54393	$572,122	$563,746
2030	$63,091	$437,490	$486,000	$11,837	$38,230	$360	$1,037,008	0.74409	0.50835	$536,175	$527,162
2031	$63,091	$437,490	$486,000	$11,837	$38,234	$360	$1,037,012	0.72242	0.47509	$502,133	$492,677
2032	$63,091	$437,490	$486,000	$11,837	$38,238	$360	$1,037,016	0.70138	0.44401	$470,289	$460,447
2033	$63,091	$437,490	$486,000	$11,837	$38,242	$360	$1,037,020	0.68095	0.41496	$440,498	$430,326
2034	$63,091	$437,490	$486,000	$11,837	$38,245	$360	$1,037,023	0.66112	0.38782	$412,628	$402,176
2035	$63,091	$437,490	$486,000	$11,837	$38,249	$360	$1,037,027	0.64186	0.36245	$386,554	$375,866
2036	$63,091	$437,490	$486,000	$11,837	$38,257	$360	$1,037,035	0.62317	0.33873	$362,161	$351,280
2037	$63,091	$437,490	$486,000	$11,837	$38,260	$360	$1,037,038	0.60502	0.31657	$339,336	$328,300
2038	$63,091	$437,490	$486,000	$11,837	$38,264	$360	$1,037,042	0.58739	0.29586	$317,979	$306,823
2039	$63,091	$437,490	$486,000	$11,837	$38,268	$360	$1,037,046	0.57029	0.27651	$297,994	$286,752
2040	$63,091	$437,490	$486,000	$11,837	$38,272	$360	$1,037,050	0.55368	0.25842	$279,293	$267,993
2041	$63,091	$437,490	$486,000	$11,837	$38,275	$360	$1,037,054	0.53755	0.24151	$261,793	$250,462
2042	$63,091	$437,490	$486,000	$11,837	$38,279	$360	$1,037,057	0.52189	0.22571	$245,415	$234,077
2043	$63,091	$437,490	$486,000	$11,837	$38,287	$360	$1,037,065	0.50669	0.21095	$230,089	$218,766
Total	**$1,261,822**	**$8,749,800**	**$9,492,675**	**$236,739**	**$754,876**	**$7,201**	**$20,503,112**			**$8,976,061**	**$8,787,705**

Note: The Net Present Value at 3% discount rate is 3% for Emissions only. All other categories are discounted at 7%. The Net Present Value at 7% is all categories discounted at that rate.

Table 14 -High Case Scenario Net Present Value Benefit Summary

	High Case										
Year	**Avoided Travel**	**Add'l Transport Costs**	**Cold Storage Alternative**	**OCT**	**Emissions Avoided**	**Noise & Congestion**	**Total**	**NPV Factor (3%)**	**NPV Factor (7%)**	**Net Present Value (3%)**	**Net Present Value (7%)**
2024	$63,091	$699,984	$456,868	$11,837	$35,447	$360	$1,267,587	0.88849	0.76290	$971,488	$967,036
2025	$63,091	$699,984	$900,000	$11,837	$35,886	$360	$1,711,158	0.86261	0.71299	$1,225,401	$1,220,032
2026	$63,091	$699,984	$900,000	$11,837	$36,325	$360	$1,711,597	0.83748	0.66634	$1,146,726	$1,140,509
2027	$63,091	$699,984	$900,000	$11,837	$36,764	$360	$1,712,036	0.81309	0.62275	$1,073,168	$1,066,170
2028	$63,091	$699,984	$900,000	$11,837	$37,207	$360	$1,712,479	0.78941	0.58201	$1,004,395	$996,678
2029	$63,091	$699,984	$900,000	$11,837	$37,646	$360	$1,712,918	0.76642	0.54393	$940,090	$931,714
2030	$63,091	$699,984	$900,000	$11,837	$38,230	$360	$1,713,502	0.74409	0.50835	$880,070	$871,058
2031	$63,091	$699,984	$900,000	$11,837	$38,234	$360	$1,713,506	0.72242	0.47509	$823,531	$814,074
2032	$63,091	$699,984	$900,000	$11,837	$38,238	$360	$1,713,510	0.70138	0.44401	$770,660	$760,819
2033	$63,091	$699,984	$900,000	$11,837	$38,242	$360	$1,713,514	0.68095	0.41496	$721,219	$711,047
2034	$63,091	$699,984	$900,000	$11,837	$38,245	$360	$1,713,517	0.66112	0.38782	$674,984	$664,532
2035	$63,091	$699,984	$900,000	$11,837	$38,249	$360	$1,713,521	0.64186	0.36245	$631,746	$621,059
2036	$63,091	$699,984	$900,000	$11,837	$38,257	$360	$1,713,529	0.62317	0.33873	$591,313	$580,431
2037	$63,091	$699,984	$900,000	$11,837	$38,260	$360	$1,713,532	0.60502	0.31657	$553,496	$542,461
2038	$63,091	$699,984	$900,000	$11,837	$38,264	$360	$1,713,536	0.58739	0.29586	$518,129	$506,974
2039	$63,091	$699,984	$900,000	$11,837	$38,268	$360	$1,713,540	0.57029	0.27651	$485,050	$473,808
2040	$63,091	$699,984	$900,000	$11,837	$38,272	$360	$1,713,544	0.55368	0.25842	$454,112	$442,812
2041	$63,091	$699,984	$900,000	$11,837	$38,275	$360	$1,713,548	0.53755	0.24151	$425,175	$413,844
2042	$63,091	$699,984	$900,000	$11,837	$38,279	$360	$1,713,551	0.52189	0.22571	$398,109	$386,771
2043	$63,091	$699,984	$900,000	$11,837	$38,287	$360	$1,713,559	0.50669	0.21095	$372,793	$361,470
Total	**$1,261,822**	**$13,999,680**	**$17,556,868**	**$236,739**	**$754,876**	**$7,201**	**$33,817,185**			**$14,661,656**	**$14,473,300**

Note: The Net Present Value at 3% discount rate is 3% for Emissions only. All other categories are discounted at 7%. The Net Present Value at 7% is all categories discounted at that rate.

Qualitative Considerations

Safety

This project will contribute to a reduction in crashes, fatalities, and injuries as vessel owners will be able to continue functioning as they have in the past. The need to travel to alternate ports for product delivery introduces new risks as vessels compete for limited space to conduct their business. The addition of several hundred vehicles on Sitka roads traveling between harbors, seafood processing plants, and competing with the summer tourist traffic will undoubtedly lead to more congestion and the potential for unwanted interactions between vehicles and pedestrians. Telephone interviews with fishermen using the MSC wall to conduct their business reveals that there would be serious inefficiencies to losing this access. Replacing the sheetpile wall at the MSC is an important solution to ensuring the safety of people and equipment working in the fish harvesting business and the many tourists that visit Sitka annually.

Quality of Life

The MSC and associated uplands infrastructure are important components to the Sitka fishing industry. Maintaining this infrastructure allows Sitkans to continue to work where they live and maintain active community ties. Telephone interviews with fishermen using the MSC dock reveals that their ability to continue living and working in this community without the seawall would be strained at the least when the seawall fails.

Community Cohesiveness

The MSC provides an important stopping point for vessels needing to offload product and onload supplies and cargo. It also is an active point of disembarkation for small passenger ship passengers, with almost 1,000 passengers disembarking annually. This location allows for easy access to many downtown activities for tourists.

Vessel and Infrastructure Damage

Vessel and infrastructure damage have not been qualified for this evaluation. The MSC seawall is already beyond its useful life and could fail at any time. Hopefully, that failure would not be catastrophic or involve ships moored at the location or passengers disembarking. There is the potential for vessel damages as vessels such as the Eyak must now traverse longer distances to complete their business.

Employment

There are three employees currently working at the MSC cold storage facility. The loss of the facility would result in the loss of these jobs. One seafood processor reveals that there would be a loss of 10 to 20 seasonal employees if they can no longer conduct consolidation activity in Sitka.

Cost Estimates

Initial cost estimates are $9.4 million in 2020 dollars spread over an 18-month construction season. Contingency is estimated at 25 percent, environmental and permitting at 5 percent, and engineering, design, and construction phase administration are estimated at 15 percent each. See Table 15.

Table 15 – Sheetpile Wall and Crane Replacement Cost Estimate

Description	Units	Qty	Unit Cost ($2021)	Amount ($2021)	Amount ($2020)
Budget as to Sheetpile wall repair and crane replacement:					
Mobilization	LS	1	575,000	575,000	550,000
Demolition & Disposal	LS	1	200,000	200,000	191,000
Misc Underground Utility mods/extensions	LS	1	30,000	30,000	29,000
Misc Site Work - grading, aggregate surfacing	LS	1	40,000	40,000	38,000
Steel Sheet Pile Wall (PZ35)	LF	400	3,700	1,480,000	1,415,000
Horizontal strong-back/water system	LF	800	650	520,000	497,000
Grouted tie-back anchors into bedrock - upper	EA	42	19,500	819,000	783,000
Grouted tie-back anchors into bedrock - lower	EA	42	14,000	588,000	562,000
Washed rock fill btwn original and new wall	CY	2050	110	225,500	216,000
Steel Sheet Pile Wall week holes	EA	320	100	32,000	31,000
Reinforced Concrete wall cap	CY	225	1,250	281,250	269,000
Steel Access Ladder coated	EA	4	4,000	16,000	15,000
Mooring Bollards	EA	5	6,500	32,500	31,000
Berthing Fenders (not used)	LF	0	500	-	-
Timber bull rail	LF	400	125	50,000	48,000
Timber Fender piles	EA	48	7,500	360,000	344,000
Riprap	TON	250	100	25,000	24,000
Cathodic Protection System	LS	1	500,000	500,000	478,000
2-ton Service Standalone Jib Crane	LS	1	35,000	35,000	33,000
Subtotal				**5,809,250**	**5,554,000**
Contingency @ 25%				1,452,313	1,388,500
Environmental & Permitting @5%				363,078	347,125
Design and Geotechnical Engineering @15%				1,089,234	1,041,375
Construction Phase Admin/Eng/Testing @15%				1,089,234	1,041,375
Total Budget Sheetpile Wall and Crane Replacement				***9,803,109***	***9,372,375***

Note: The 2020 cost column is derived using the GDP deflator from Bureau of Economic Analysis. The original cost estimate is from DOWL Engineers and dated July 2021.

At the end of the 20-year period of analysis, there is still value to the project components. See Table 16 for residual value calculations. Total discounted residual value at the end of the 20-year period of analysis is $479,528.

Table 16 – Sheetpile Wall and Crane Replacement Residual Value

Improvement Component	Expected useful life (years)	Residual value after 20 years
Sheetpile Wall	40	$ 1,651,500
Fill	40	$ 258,000
Timber Fenders	40	$ 208,000
Crane	25	$ 7,000
Total Residual Value of improved infrastructure		**$ 2,124,500**
Net Present value of Residual		**$ 479,528**

Periodic maintenance for the facility is assumed at 1 percent of initial construction cost every five years over the 20-year period of analysis. The expected useful life of the cathodic protection is estimated at 15 years so additional cathodic protection is incorporated to the total project cost at year 15. The net present value of the sheetpile wall and crane replacement and periodic maintenance is $8.2 million over the 20-year period of analysis.

The net present value of construction in 2020 dollars is $7,918,423 and the net present value of the periodic maintenance is $282,363. See Table 17.

Table 17 – Net Present Value Sheetpile Wall and Crane Replacement in 2020 dollars

Year	Construction	Periodic Maintenance	Total Cost ($2020)	NPV Factor (7%)	Net Present Value Construction	Net Present Value Periodic Maintenance
2020						
2021						
2022	$4,686,188		$4,686,188	0.87344	$4,093,098	$ -
2023	$4,686,188		$4,686,188	0.81630	$3,825,325	$ -
2024			$-	0.76290		$ -
2025			$-	0.71299		$ -
2026			$-	0.66634		$ -
2027			$-	0.62275		$ -
2028		$93,724	$93,724	0.58201		$ 54,548
2029			$-	0.54393		$ -
2030			$-	0.50835		$ -
2031			$-	0.47509		$ -
2032			$-	0.44401		$ -
2033		$93,724	$93,724	0.41496		$ 38,892
2034			$-	0.38782		$ -
2035			$-	0.36245		$ -
2036			$-	0.33873		$ -
2037			$-	0.31657		$ -
2038		$571,724	$571,724	0.29586		$ 169,152
2039			$-	0.27651		$ -
2040			$-	0.25842		$ -
2041			$-	0.24151		$ -
2042			$-	0.22571		$ -
2043		$93,724	$93,724	0.21095		$ 19,771
Totals	**$9,372,375**	**$852,895**	**$10,225,270**		**$7,918,423**	**$ 282,363**
Total Construction Cost and Maintenance						**$8,200,786**

Note: One percent of total construction cost is assumed at 5-year intervals for maintenance. Additional cathodic protection assumed in year 15 of project.

Benefit-Cost Summary

The low case scenario for the seawall and crane replacement has $3.15 million in net benefits with a benefit to cost ratio of 1.4 when using the 7 percent discount rate. Net benefits rise to $3.3 million with a benefit to cost ratio of 1.42 when using the 3 percent discount rate for emissions and 7 percent discount rate for all other categories.

The high case scenario has net benefits of $10 million with a benefit to cost ratio of 2.27 when using the 7 percent discount rate for all benefits. The high case net benefits rise to $10.2 million

with a benefit to cost ratio of 2.29 when using the 3 percent discount rate for emissions. The project period of analysis of 20 years and dollar value are based on the year 2020.

Table 18 -Seawall and Crane Replacement Benefit to Cost Summary in 2020 dollars

NPV Summary of Calculations	Low Case PV Emissions at 7%	Low Case PV Emissions at 3%	High Case PV Emissions at 7%	High Case PV Emissions at 3%
Benefit calculations - 2020 $$				
Vessel avoided travel	$546,000	$546,000	$546,000	$546,000
Additional Transport Cost	$3,783,000	$3,783,000	$6,053,000	$6,053,000
Opportunity Cost of time	$102,000	$102,000	$102,000	$102,000
Emissions reduced	$324,000	$512,000	$324,000	$512,000
Cold storage replacement	$4,029,000	$4,029,000	$7,445,000	$7,445,000
Noise and Congestion	$3,000	$3,000	$3,000	$3,000
Subtotal benefits summary	**$8,787,000**	**$8,975,000**	**$14,473,000**	**$14,661,000**
Residual Value	$480,000	$480,000	$480,000	$480,000
Repair and maintenance	$282,000	$282,000	$282,000	$282,000
PV Benefits summary	**$9,549,000**	**$9,737,000**	**$15,235,000**	**$15,423,000**
Cost Calculations - 2020 $$				
PV Cost of Project	$7,918,000	$7,918,000	$7,918,000	$7,918,000
PV Net benefits (benefits - costs)	**$1,631,000**	**$1,819,000**	**$7,317,000**	**$7,505,000**
Benefit/cost ratio (benefits/costs)	**1.21**	**1.23**	**1.92**	**1.95**

Note: All values have been rounded to the nearest 1,000th.

Risk and Uncertainty

Some assumptions were used in the evaluation of this project and so the question becomes one of risk if some assumptions are incorrect. Assumptions made in this evaluation are quite conservative to begin with, but we made the following changes to the model to determine the effects:

- If cold storage users changed their business model to flash freeze product and move it directly to market – say 90 percent and that decreases the need for reefer vans to 20 under the low case and 30 under the high case, then the BCR falls to 1.06 for the low case and 1.66 under the high case. It is unlikely that this scenario would happen as the consolidation of fish product by species, size, and quality is what sets the market price.
- If the cost of reefer vans increases – as it undoubtedly has done since our initial inquiry in 2020 – then the BCR under both the high and low cases rise significantly.
- Project costs can increase by 20 percent and the BCR falls to 1.0 for the low case and 1.62 for the high case scenarios.

Interview Results

Interview Protocol for Marine Service Center Wall and Crane - Summary

For the following, questions that need to be asked are in this font. *Background information for you to have handy as to why you are asking a question will be in italics. It might be handy to number these responses either on a hard copy of the questions or using the spreadsheet I've provided.* Responses from interviewees follow the questions in this orange font. There were 20 respondents in total.

Hello, my name is _____ and I'm assisting the City and Borough of Sitka in a Federal grant application for improvements at the Marine Service Center. The grant application is asking for funds to repair the seawall and purchase a new crane. My questions will take about 10 minutes of your time. Is this a good time to talk? *(If the answer is no, ask for a better time for you to connect with them.)*

1. Do you currently use the Marine Service Center facilities? __20____ yes __0____ no
    a. If no, why not? _____*(If no, thank them for their time.)*
2. What services do you use at the MSC? *(Choose all that apply.)*
    a. __15___Moorage *(answer Q3)*
    b. __6___Offloading seafood product *(answer Q4)*
    c. __5___Offloading equipment *(answer Q5)*
    d. __2___Offloading passengers *(answer Q6)*
    e. __1___Crane *(answer Q7)*
    f. __2___Mail delivery *(answer Q8)*
    g. __2___Grocery delivery *(answer Q9)*
    h. __1___Fish food *(answer Q10)*
    i. __2___Construction materials *(answer Q11)*
    j. __4___Other *(please describe)* Gear_____*(answer Q12)*
    k. __6___Other *(please describe)* Fuel_____*(answer Q13)*
    l. __1___Other *(please describe)* Offload Cargo_____*(answer Q12)*
    m. __1___Other *(please describe)* Wood_____*(answer Q13)*
    n. __2___Other *(please describe)* Laundry_____*(answer Q12)*
    o. __2___Other *(please describe)* Supplies_____*(answer Q13)*
    p. __2___Other *(please describe)* Groceries_____*(answer Q13)*

3. If **moorage** is selected as a service being used, how often to you moor at the MSC? __1 to 52 times annually from 19 respondents_____ *(need a number here so if they are having trouble ask for a range.)*

a. How long would you typically stay moored? __1 to 120 hours at a time from 17 respondents_____ (hours)

Summary of responses concerning moorage:

Q3 - Moorage	Low	High	Totals
Annual Moorage	1	52	339
Annual Hours	1	120	483

4. If **offloading seafood product** is selected as a service being used, what would you say is the average annual pounds of product offloaded? Some respondents provided a range. There was a low of 642,000 pounds and a high of 710,000 pounds from 5 respondents. All product was going to the seafood processing plant._____ (pounds)
    a. Of these pounds, what portion is salmon? ___80 to 100%_____ (percentage)
        i. Is this product headed to cold storage or seafood processing? __Processing_____
    b. What portion is Halibut? _____no responses_____ (percentage)
        i. Is this product headed to cold storage or seafood processing? _____
    c. What portion is crab? ____no responses_____(percentage)
        i. Is this product headed to cold storage or seafood processing? _____
    d. What portion is herring? ___no responses_____(percentage)
        i. Is this product headed to cold storage or seafood processing? _____
    e. What portion is other groundfish? __no responses_____(percentage)
        i. Is this product headed to cold storage or seafood processing? _____
    f. What portion is other shellfish? ___no responses_____(percentage)
        i. Is this product headed to cold storage or seafood processing? _____
    g. What portion is sablefish? _____5 to 20%_____ (percentage)
        i. Is this product headed to cold storage or seafood processing? __Processing_____
5. If **offloading equipment** is selected as the service being used, how often on average would you say that you do this annually? ___63 to 64 times annually from 4 respondents_____ times a year *(need a number here so if they are having trouble ask for a range.)*
6. If **offloading passengers** is selected as the service being used, how often would you say that you do this annually? __21 to 52 times annually from 2 respondents_____ times a year *(need a number here so if they are having trouble ask for a range.)*
    a. How many passengers would you say embark/disembark from this location annually? ___no answer provided_____*(this will probably be a range.)*

7. On average, how many times a year does your activity require the use of the **crane** at the MSC? __once every other year from one respondent____*(this might also be a range.)*
8. How often does **mail delivery** occur at the MSC dock? __4 to 5 times a week from 2 respondents_____ times a week
9. How often does **grocery delivery** occur at the MSC dock? __4 to 5 times a week from 2 respondents_____ times a week
10. How often does **fish food delivery** occur at the MSC dock? ___once a week from 1 respondent_____times a week
11. How often are **construction materials** delivered at the MSC dock? __54 times annually from 2 respondents_____times annually
12. How often does the **other** activity occur at the MSC dock? __Other gear was 18 to 20 times annually, Other laundry was 10 times annually_____
13. How often does the **other** activity occur at the MSC dock? __Other groceries was 6 to 8 times annually, and Other cargo/supplies was twice a year._____
14. What are the dimensions of your vessel?
    a. Length _____ (feet) Average length was 65.53 feet from 19 respondents
    b. Draft _____(feet) Average draft was 9.16 feet from 16 respondents
    c. Beam _____(feet) Average beam was 19.51 feet from 16 respondents.
15. The MSC dock is aged and in need of repair. If the MSC dock were no longer available for use, how would you conduct the business you just described in the previous questions? _____
    Responses that follow have not been edited.

Not sure. Need vehicle access. Tried the dock out the road but it didn't work well
Poorly, slowly, more cost. Possibly use a processor
Use Eliason harbor but it gets quite busy. There isn't much space
Anchor out which is very inconvenient.
Would use transient, but not much space
Has a slip in Eliason would use that, but not as convenient
Don't know. It would be a struggle to conduct business in Sitka.
May be able to use the walk down ramp at the end of the road. Possibly run freight across the processor's dock. But couldn't do it easily and would probably not be able to get the stuff off the semi-trailers.
Would have to use the drive down at Silver Bay
Possibly use SSS dock
It would be challenging. He is contracted with SPC to tender so would use SPC however, that creates a problem while they also try to service their fleet
Would use the processing plant but would be harder to schedule
It would suck. It would put more pressure on the harbor scene.
Transient float and at birth 9 or 10 but it's difficult to tie and untie when it's windy.
Would use Silver Bay or New Thompsen
Anchor out and have to do goofy stuff to get the gear to shore.
Would tie up to the fuel dock until they were kicked off
ANB or stall/transient at Eliason
Would have to deliver to tenders

(I think we need to leave this open-ended depending on how many activities were selected above. If multiple activities selected, you might need to ask about each one separately.)

16. Do you use the cold storage facility on the MSC dock? ___4___ yes __8____ no and 9 did not respond to this question.
    (If no, skip to Q19.)
17. As we just mentioned, the MSC dock is aged and needs repairs which may impact the cold storage facility. If cold storage were not available at the MSC dock, where would you store your product?
    a. __2___ another facility in Sitka *(skip to Q19.)*
    b. _____ would get a freezer van *(skip to Q19.)*
    c. _____ would ship to PNW storage facility
    d. _____ other _____
18. If you had to ship your frozen product to another area for storage, how would this impact your operations? There were no responses to this question.
    a. _____ would have to pay additional transportation fees.
        i. Cost estimate $_____
    b. _____ would have to pay for sorting of product at the new location.
        i. Cost estimate $_____
    c. _____ would have to pay higher storage fees.
        i. Cost estimate $ _____
    d. _____ would not be able to continue selling frozen seafood.
    e. _____ Other consequence
    _____
19. A portion of this grant application pertains to social equity and environmental justice. For that reason, we are asking respondents if they identify as a minority group. Do you identify as:
    a. __2___ White/Caucasian
    b. _____ Alaska Native
    c. _____ Black/African American
    d. _____ Asian or Pacific Islander
    e. _____ Other _____
20. Do you have other comments or suggestions that you would like to share with the City and Borough of Sitka as it pertains to the MSC dock and crane and the cold storage facility? _____
    The following responses have not been edited.

The facility is extremely important. It is always busy.
Preparing the sheet pile bulkhead is not a good answer. Build a pier, its less costly.
It is highly convenient. Larger vessels need it.
The CBS needs to come up with a better plan for transient moorage for the summer. It changed a few years ago.

Before the facility was available, he shipped his product to Bellingham and used freezer vans. Without the cold storage it would drastically change the way he does things. Spend the money wisely.
It is a great location.
It is a very important facility.
He really likes the facility. It is useful for his business.
It is a valuable asset for the public.
Would hate to see it become a non-public usage.
There is metal between the pilings that makes it difficult to tie up and not scratch the boat and the ladder is dangerous.
All for upgrading. Any harbor upgrades especially with federal dollars.
It's nice to have a separate place because New Thompsen gets crowded.
It is a great addition to the port facilities in Sitka especially when it gets crowded. Boats can stack up, it's a nice spot when there are no other places for boats to be.
Suggested having the pilings further away from the wall, right now they are so close it pinches the line and a better ladder is needed.
Appreciates the public use of the facility

Thank you for your time today.
We appreciate your assistance with the data for this grant application.