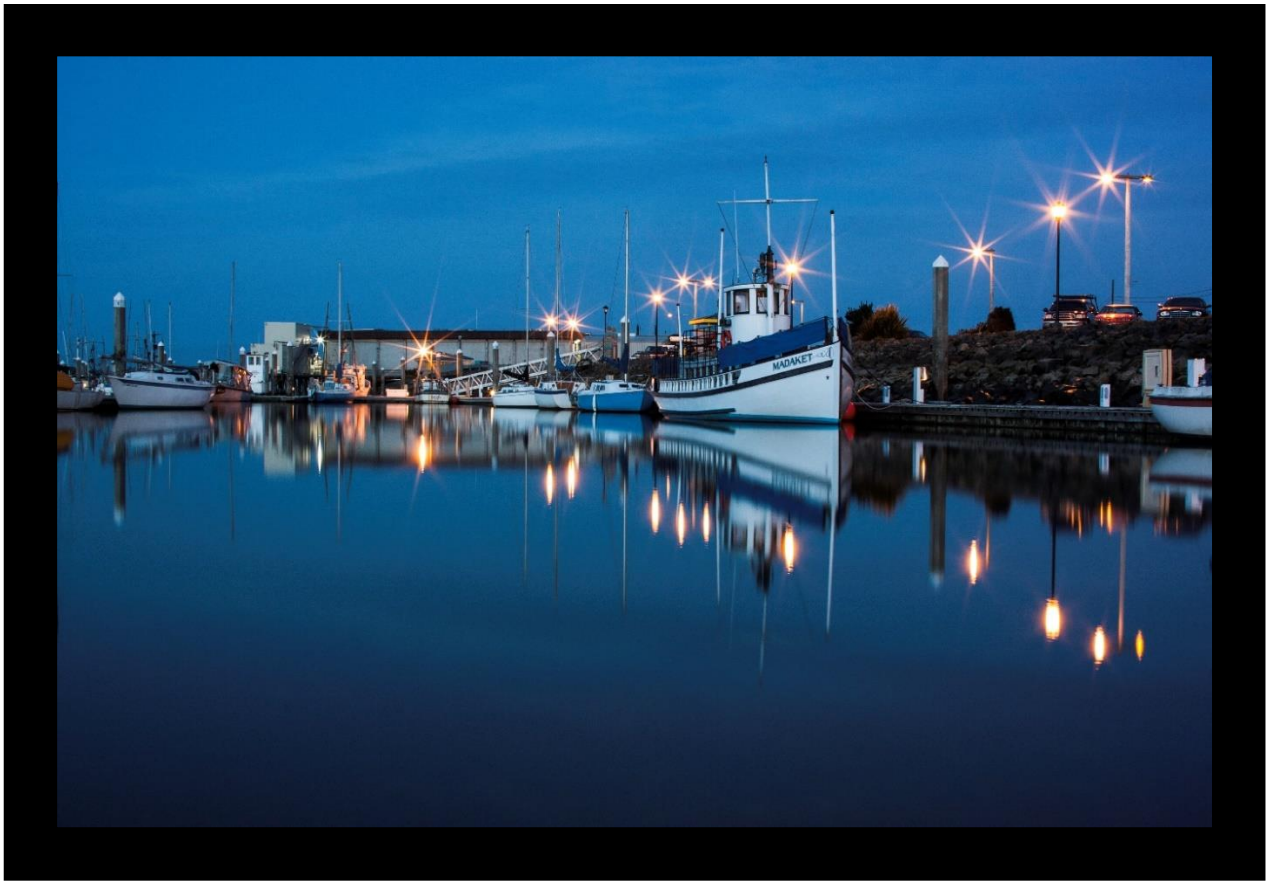
Regional Cold Storage Facility

Technical Study

September 15, 2015



Prepared by Greenway Partners for the City of Eureka

This Technical Study was prepared by Greenway Partners, Inc., under a contract with the City of Eureka's, Development Services Department. The report assesses the economic viability of a facility/business that would serve the needs of the local fishing and specialty food industries. The financial performance of the project is based on a demand assessment study, a basis of design report, a siting study, and consideration of various ownership models. Any statements, recommendations, or conclusions made in this report are the opinion of Greenway Partners and not necessarily those of the City of Eureka.

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Executive Summary

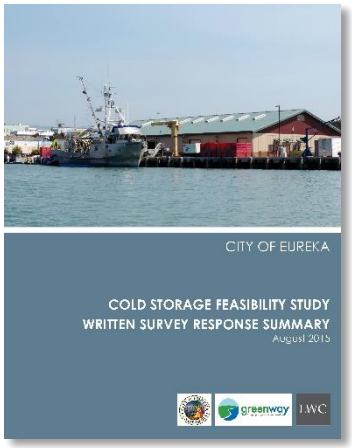
A cold storage facility primarily provides warehouse space for products that need to be kept cold or frozen. A cold storage facility will often include processing areas for various products, quick freezing services and cube, block, or flake ice. In 2008, the closing of Eureka Ice and Cold Storage resulted in the loss of the largest cold storage facility in Coastal Northern California. It was primarily used by the commercial fishing industry. The City of Eureka explored the possible renovation of the facility but determined that it was not economically feasible due to the condition and age of the plant (pre-WW2).

Humboldt County's 2012 Comprehensive Economic Development Strategy (CEDS) (Prosperity 2012) indicated that the current amount of cold storage serving Humboldt Bay is inadequate. The need for additional cold storage capacity was identified by Prosperity 2012 as a "Prioritized Infrastructure Public Works Project" that was crucial to the growth and competitiveness of the region's Specialty Food, Flower and Beverage Industries (the Specialty Foods Industry Cluster).

The City paid for this study with a grant from the US Economic Development Administration (EDA) and their own matching funds. The goal of the study was to provide the information necessary to determine the economic viability of a regional cold storage facility.

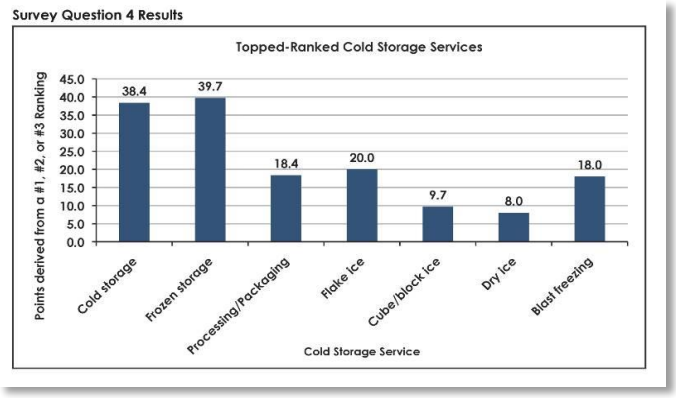
This technical Study Includes:
Demand Assessment to determine the needs of the Specialty Foods Industry Cluster
Basis of Design Report to provide criteria for a conceptual design
Conceptual Design & Construction Cost Estimate to outline potential capital needs
Siting Study to identify potential locations for a cold storage facility
Financial Analysis and Pro Forma to analyze revenue and operating capital needs
Management and ownership options to evaluate operational opportunities

The Demand Assessment documented a strong demand from the fishing and seafood industries for cold and frozen storage space, processing and freezing facilities and flake ice. The demand from the meat industry sector was a distant second. Most of the other industries within in the Specialty Food Industry Cluster were interested in but indicated that they were "getting by" with what was currently available to them. A number of businesses expressed concern about storing their products with fish/seafood, citing odor and bacterial contamination issues. A well-developed market for block, cube and dry ice was also discovered. A private company is currently developing a business plan around this demand. This business could be incorporated into this facility.



Due to the strong and immediate demand expressed by the fishing/seafood industries, the Technical Study focused on the fishing/seafood industry. A review of existing, local, processing, freezing, cold storage and flake ice facilities found their capacity

to be very limited and far below that required to support the existing and potential users. After the closure of the Eureka Ice and Cold Storage Company the City utilized redevelopment funds and a grant from the Headwaters Fund of Humboldt County to complete the purchase and installation of a flake ice machine on their dock at the foot of Commercial Street but no additional cold/frozen storage space was developed. The City then built the Fisherman's Terminal (with EDA grant funding) to provide more processing and storage space for the local fishing/seafood companies. The two warehouse spaces there have been occupied and small, temporary freezers have been installed. Some local and regional fishing/seafood companies have constructed their own facilities to serve their own needs. Other regional fish buyers bring in refrigerated/freezer trucks on a seasonal basis and haul all of their product out of the County.



The tonnage of fish and seafood landed in Eureka is widely variable over the year and shrinks and swells over a much longer time frame. This seasonal and cyclical nature of the industry makes it difficult to accurately gauge the most efficient design capacity of a facility. The facility should incorporate a modern "step-up" freezer system that separately control isolated rooms or cells. The cells allows for the complete isolation of various products at different temperatures and for individual rooms to be shut down when the demand is low. The facility should also be laid out so that it could be expanded if the demand increases.

Based on the Demand Assessment, on additional follow up interviews, and on running a few scenarios through the financial analysis pro forma; it was decided that the preliminary facility design would be able to accommodate 800 tons of product at any one time and would be able to quick freeze 30 tons of product/day. Additionally, the facility would have between 5,000 and 10,000 sf of processing areas and multiple loading docks. A flake ice machine would be able to produce 40 tons/day and hold up to 60 tons in storage.

Suggested Facility Design

Total Storage Capacity: 800 tons

Quick Freeze: 30 tons/day

Flake Ice: 40 tons/day

Processing Area: 5,000-10,000 sqft

Cold rooms: 4

Loading docks: 2

Total Floor Area: 20,000 sqft

Construction cost: $ 4 million

Location: Eureka Waterfront

A preliminary Basis of Design Report was developed and a conceptual plan and construction cost estimate were prepared. The design calls for a metal or concrete shell with a footprint of approximately 20,000 sf. It has four cold rooms each able to hold 200 tons of product. It will have two loading docks and a gangway out to a boat dock. Design, construction and equipment will cost between $175 and $225/sf for a total construction cost of approximately $4 million. The facility will be designed in such a way that it can be expanded upon in the future. Depending on the site chosen the operation could incorporate temporary, shipping container-style cold storage units and additional blast freezers to accommodate the peak seasonal demands.

The facility provides some separate space for other products and block/cube ice. The City may consider pursuing a second facility if the demand from the other sectors of the Specialty Foods Industry Cluster grows. The fish/seafood facility should be located on the waterfront and a possible second facility could be located at an inland location.

The Siting Study identified, evaluated and rated 27 publicly and privately owned parcels on the Eureka Waterfront, on the Samoa Peninsula and in the Fields Landing/King Salmon area. The top-three rated sites were Commercial Street, Dock B and the old Eureka Ice and Cold Storage site. All three could work but they all had pros and cons as described in the Siting Study. Other sites are available and could be used for the project.

The financial performance of the facility was evaluated and a pro forma was prepared. Based on the assumptions presented in the financial analysis, the project is economically viable and could be quite profitable if the debt load was sufficiently small. The project could be scaled up or down and/or developed in phases. Various ownership and management options including a public/private partnership, a co-op, and private ownership were evaluated and are presented.

The Consulting Team recommends the City plan for building the facility and leasing its operation out to a private entity. Next steps include: identify potential collaborative partners and funding sources; prepare a more detailed design and economic analysis, shop it around to various funding agencies; apply for economic development grant funding and; build the facility.

Next Steps:

Identify potential collaborative partners and funding sources	**Prepare a more detailed design and economic analysis**	**Apply for economic development grant funding**	**Select and secure a development site and build the facility**

Background

This Technical Study was prepared by Greenway Partners, under a contract with the City of Eureka's, Development Services Department. The Study assesses the economic viability of a facility/business that would serve the needs of the local fishing and specialty food industries. The financial performance of the project is based on a demand assessment study, a basis of design report, a conceptual plan, a siting study, and consideration of various ownership models. Detailed information about each part of the study are presented in the sections below.

In early 2013, as the result of an economic business forum at the Humboldt State University School of Business, a diverse group of citizens formed a committee to investigate regional cold storage demand. With this group, the City of Eureka and Humboldt State University initiated the formation of the Regional Cold Storage Technical Advisory Committee (TAC). The TAC is made up of representatives from the Humboldt Fishermen's Marketing Association, commercial fishing and seafood processing industries, Chamber of Commerce, Humboldt Bay Harbor, Recreation and Conservation District, Humboldt State University, Redwood Acres Fairgrounds, Redwood Regional Development Corporation, local beef producers and the City of Eureka.

Demand Assessment

Introduction

The purpose of the Demand Assessment was to quantify the demand for cold storage and related services such as quick freezing and ice, in the Specialty Foods, Flowers, and Beverages Industry Cluster. This group includes but is not limited to fresh produce, prepared foods, dairy, cheese, meat, fish and other seafood, beer, wine, and flowers. Other potential users also surveyed included grocery stores, food distribution companies, the local food bank, a block and cube ice distributor, several new small businesses related to specialty foods, and local high schools and the university. Representatives from the marijuana industry also weighed in with an unexpected demand for dry ice. It is also suspected that there will be an as of yet unquantified, future demand for cold storage from specialty food companies that are being spawned by the Humboldt Made brand line of specialty food products.

Responses from the commercial fishing industry in personal interviews, group discussions, site visits and through the written survey indicate the current cold storage and flake ice capacity is insufficient and during busy times of the year, completely inadequate.

Goals and Objectives

The goals and objectives of the Demand Assessment were to engage stakeholders from a wide variety of potential user sectors and identify the highest priority needs for cold storage and related services in order to develop a realistic assessment of the level and type of demand. The Demand Assessment effort also sought to establish preferences on location. Findings from the Demand Assessment are intended to guide and inform decision makers at the City and

potential users on what data should be considered before next steps are taken to establish a cold storage and related services facility, in Eureka.

From the beginning of the project, the City and the TAC stressed the importance of relying on stakeholders to drive the process, advise on the highest priority cold and freezer storage-related services, and help estimate potential demand. As such, the project was focused on gathering input through a variety of methods including a written survey, one-on-one interviews, group meetings, and site visits.

Methodology

The project approach employed a multi-step process aimed at meaningful and varied engagement of potential local cold storage users. The Consultant Team worked closely with the City and the TAC to develop a written survey which was distributed to potential users and potential users groups via email with a link to an on-line application (Survey Monkey) and an attached PDF. Hard copies were made available at City Hall and distributed to interested parties at meetings. A detailed summary of the survey results is provided in Appendix A.

In addition to the survey, the City and the Consultant Team also worked closely to increase awareness of the project and inform interested parties of opportunities to participate through articles in the *Times Standard*, announcements on local TV as well as attendance at special interest group meetings such as Humboldt Made and the Humboldt Food Policy Council. The Consultant Team ultimately conducted dozens of in person and phone interviews, email follow ups, group meetings and site visits to further explore the quantity and type of demand for a cold storage facility.

Senior LWC Researcher interviews a commercial albacore fisherman for a previous project as part of a Strategic Business Plan for a Working Waterfront.

Summary of Findings

The Demand Assessment resulted in the following key findings.

Broad Support – There is support from a range of user types from large commercial fishing and processing operations to artisanal food producers to the grass-fed beef industry. Respondents to the written surveys and a general consensus of input from personal interviews revealed the broad support for a cold storage/freezer/ice facility located, in Eureka. Respondents included a wide range of potential users: fish/seafood, aquaculture, meat, hospitality/tourism, fresh produce, food processing and packaging, dairy, and decorative plants and flowers. Support was also voiced by brewers, bee keeper, marijuana processors and representatives from the real estate industries. The majority of participants in the Demand Assessment supported the City's efforts and felt that the next steps in the process should be taken; site selection, finalized design, environmental review, pursuit of funding and construction. Such broad support in the community

will improve the City's competitiveness in the pursuit grant and other funding sources (low cost, low interest loans).

Separation of Uses – There was an insistence from potential users and related industry participants that fish/seafood should be kept in physically separate facilities from all other products (meat, produce, floral, artisanal food). Responses primarily from the individual and group interviews indicated that a facility which handles seafood should be physically separate from one that handles meat, produce and other types of products. Several respondents cited regulatory requirements associated with Hazard Analysis & Crucial Control Point (HACCP) Plans and USDA regulations as well as potential odor contamination. Some respondents warned that even the perception that cross contamination was possible could affect the demand for the facility. As such, the Consultant Team focused on fish/seafood in the design and evaluation and recommends that the City consider pursuing a second facility for meat and other products. The fish/seafood facility should be located on the waterfront and the other facility could be located at an inland location. An acceptable alternative may be to designate a separate cold/frozen cell for other products that would be accessed from a separate entrance with separate equipment.

Waterfront Preference – The majority of respondents supported a fish/seafood-related facility on the waterfront and agreed that other products and industries could and should be addressed at a separate, inland facility. There was a strong preference in the written surveys and interviews for a seafood-related cold storage facility to be located on the Eureka waterfront. This is the historic and the existing centroid of the Humboldt Bay fishing industry. Most of the fishing fleet's boats are moored at the Woodley Island Marina, directly across the channel from the Eureka waterfront. Most of the processing and shipping centers and the only flake ice machine between Fort Bragg and Crescent City are located there. It also enjoys easy access to Highway 101 and other amenities such as grocery stores and a fueling dock for boats.

Demand for Services – The majority of the demand was expressed by the fish/seafood industry. The respondents generally identified rapid freezing systems (IQF tunnel, brine or blast), cold and frozen storage space, processing space and flake ice as highest priority needs. The demand expressed by the beef industry was a distant second. Some of the products arriving at the facility would need to be processed, frozen and stored while others would arrive already frozen and would just need to be stored. Processing ranged from cooking of crab and shrimp to boxing up the fish/seafood and freezing them. There is also a range of temperatures required for frozen storage. Representatives from the commercial fishing industry also indicated the need for brine freezers and Individually Quick Frozen (IQF) blast freezers. Table 1 provides a summary of the demand showing the how many tons of what type of fish/seafood could potentially be delivered to the facility each month.

Space and Capacity – The space and capacity requirements of the facility are based on the demand presented in Table 1. Some months the incoming tonnage was zero while other months it exceeded 2,000 tons. This wide range of seasonable variability makes it difficult to estimate the most efficient and profitable size of the fixed infrastructure and the capacity of freezer space and equipment. If the size/capacity is large enough to accommodate the maximum tonnage; most of the facility will be idled four months of the year and it will take longer to amortize the development cost. If the facility is too small and runs at maximum capacity; most of the revenue from the peak demand will be lost. In order to develop a reasonable estimate of the size and

capacity of the facility; the historic, the current and the potential future capacity and demand were considered.

Historic Capacity

Historically, Humboldt Bay was the home of one of the largest fishing fleets on the west coast. At its peak, the seafood industry provided hundreds of jobs and millions of dollars in related economic activities.

The Eureka Ice and Cold Storage provided services to the fishing and other industries for over 50 years. The facility could produce 60 tons of flake ice or block and cube ice per day and store 200 tons. The facility also had the capacity to blast freeze 100 tons/day and to store 1,000 to 1,500 tons of frozen fish/seafood at any one time. In addition, it had extensive processing areas for a variety of fish and crab lines. The Lazio Family also had extensive fishing, processing and storage facilities in and around Humboldt Bay. A fire wiped out their main facility in Eureka in the early 1970's. In the mid-1970's, Eureka built the processing and cold storage facility and dock located at the foot of Commercial Street with EDA funds. The Tom Lazio Fish Company occupied the new EDA Fish Plant until 1986 when the company was purchased by Pacific Choice. It has been occupied by Pacific Choice Seafood ever since then. The closing of the Eureka Ice and Cold Storage plant in 2008 significantly reduced availability of ice and cold storage services, in Eureka.

Table 1. Freezing and Cold/Frozen Storage Demand

Products	Blast or Plate Freezing -- Tons of Product Needing to be Frozen/Day											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shrimp				15	15	15	15	15	15	15		
Sardines							6.5	6.5	6.5			
Squid								300	300	300		
Meat/Other						3	3	3	3	3		
Totals	0	0	0	15	15	18	25	325	325	318	0	0
Block/Cube Ice	10	10	10	10	10	10	10	10	10	10	10	10
Products	Stored Products -- Tons of Product at Any One Time During the Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Albacore								100	100	100		
Shrimp				80	80	80	80	80	80	80		
Bait	75	75			100	100	100	100	100	100	175	175
Sardines							1000	1000	1000			
Squid								1000	1000	1000		
Meat/Other						30	30	30	30	30		
Totals	75	75	0	80	180	210	1210	2310	2310	1310	175	175
Block/Cube Ice	150	150	150	150	150	150	150	150	150	150	150	150
Flake Ice (ton/day)	40	40	40	60	60	60	60	60	60	60	40	40
Dry Ice (tons/mo)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

Current Capacity

Declining oceanic resources, strict fishing quotas and increasing costs have significantly reduced the size and changed the character of Eureka's fishing fleet. Rather than providing inexpensive, bulk products, the industry has shifted to specialty and "sustainably harvested" products. Oysters and other seafood stocks such as squid are also gaining market share. The demand for cold storage is not what it once and the industry may never return to its peak. However, the lack of cold storage and related facilities is impacting the economics and limiting the growth of value-added businesses and putting the buyers/processors working out of Humboldt Bay at a competitive disadvantage.

The Demand Assessment arrived at an estimate of the current unmet demand for cold storage and related services on a month by month basis. It is mostly coming from four local and regional commercial, fish/seafood processors currently operating in Humboldt Bay. There are also a number of oyster processing facilities. The buyers/ processor are private businesses that buy fish/seafood from independent fishing contractors based on formal or informal contracts.

Pacific Choice Seafood is the largest buyer/processor. Their operation is located in the EDA fish plant at the foot of Commercial Street dock. The 50,000 square foot building, the dock and the flake ice machine that is located on the dock are owned by the City of Eureka. Pacific Choice leases the building and manages the flake ice machine on behalf of the City. Ice produced by this machine is available for purchase by any fishing boat seeking to purchase ice. However, the approximately 4,000 sf of frozen storage space in the Pacific Choice building is exclusively used by Pacific Choice and does not satisfy any other users' current or future demand for frozen storage. As soon as Pacific Choice has accumulated a couple trucks worth of product, they ship it to other facilities outside of the area for further processing and/or storage.

Caito Fisheries is another buyer/processor with their own facility 6,000 sf facility located at the foot of I Street. They have a very limited frozen storage capacity (a 40' container) which is for their exclusive use and no flake ice machine. They also ship to other facilities as soon as they have a truckload ready to go. They rely on the flake ice provided by Pacific Choice.

Wild Planet is another buyer/processor. They are located in the Fisherman's Terminal at the foot of C Street. Similarly, they have a small amount of cold storage (2 -40' containers) for their own use and ship as soon as they have a couple truckloads ready to go. They do not have a flake ice machine and rely on Pacific Choice for that product. There is also a hag fish processing facility on the Redwood Dock, in Samoa.

SoCal Seafood lands squid in Humboldt Bay. This fishery is fairly new for the north coast but appears to be growing as the climate and ocean water temperatures change. Their boats unload directly into refrigerated trucks that immediately move the product to storage and processing facilities outside the area. There are other fishing/processing companies that also arrange for refrigerated trucks to meet their boats, in Eureka. This creates extra costs and logistical problems if the boats and trucks are out of sync. In general, due to lack of local cold storage capacity, there is a strong reliance on refrigerated trucking and complying with distributor's schedules.

Responses from the commercial fishing industry in personal interviews, group discussions, site visits and through the written survey indicate the current cold storage and flake ice capacity is insufficient and during busy times of the year, completely inadequate.

Redwood Meat Company is only one cold storage facility for the meat industry, in Humboldt County. It is open to the public and offers slaughtering, butchering, packaging, freezing and storage services. Humboldt Bay Packers is a cold storage facility located in Fairhaven. It stores and distributes frozen food. There are an unknown number of cold storage facilities used by the other sectors of the Specialty Foods Industry Cluster. Of the dozens of interviews with representatives from the meat and produce industries, most respondents had small-scale dedicated freezers, coolers, refrigerated containers or relied on facilities outside of the community. Primary interest and potential demand was voiced from the beef and meat industries for processing and packaging capacity, cold storage, curing/ageing, freezer storage and slaughtering. In general, respondents indicated that the current capacity is insufficient, not centralized, inconvenient, limited in size and capacity, not suited for expansion, and does not allow for value-added processing (e.g. sausage-making). Interest in processing and cold storage capacity was also voiced from smaller specialty food producers, gelato and ice cream, chocolate and baked/packaged goods, brewers and an apiologist (bee keeper). These specialty producers are currently relying on small on-site systems, refrigerated trucks or rental of freezer and cold storage space at a third-party facility, many outside the community.

Future

As the fishing industry evolves, adequate cold storage and processing facilities will help with the economic development of this industry sector. Further, it is expected that the construction of a cold storage facility could stimulate the development of new businesses within the Specialty Foods Industry Cluster.

Based on the Demand Assessment, the Project Team has determined a range of services and capacities for a proposed new regional cold storage facility to be located on the Eureka waterfront. Due to the ever changing nature of the industry cluster and uncertainties inherent in predicting the future, the findings of this study are estimates. The design of the facility should allow for expansion if the industry grows and for its seasonal partial shutdown to conserve energy during the off-peak season.

Table 2 lists the historic and current capacities of the cold storage facilities, in Eureka. It also provides an estimate of the current unmet demand and a projected future demand. The following pieces of information should be considered in the development of the preliminary Basis of Design and in establishing the size and capacity of the facility.

- There is a local and regional demand for 400 to 500 tons of cube and block ice per month during the summer (4 month season). A new local business (Stone Cold Chillin') is designing a facility to satisfy that demand. They indicated that they would utilize 150 to 200 tons of frozen storage space and 10 tons per day of production capacity, if there was a cold storage facility in Eureka. The block and cube ice would be manufactured with specialized equipment and have to be stored in a freezer room isolated from fish/seafood rooms.
- There are potential users who did not participate in the written survey or interviews who may want to use the facility and services. Conversely, there may be potential customers that choose not to use the facility. This may be the more likely scenario. One of the fish processors interviewed stated that they freeze and store only a couple truck loads of

product (50 tons) before they ship it to cold storage facilities outside the area for processing and distribution. They said they would be unlikely to use a local cold storage facility citing better access to markets and lower energy/cold storage costs elsewhere.

- During the peak season, much of the capacity of the facility will be taken up by processors moving their products through the facility. They will gather up a few trucks loads of products then ship it to other facilities outside of the area for additional processing and distribution. The space occupied by one ton of storage might host five or ten tons of product over the course of the month.
- The estimate of current unmet demand for fish and seafood storage and blast freezing is based on the data collected during the demand survey. The demand for cold storage ranges from 0 to 2,310 tons per month. This wide range is caused by the unusual tonnage of squid landed last year, in Eureka. This has only happened once in the last 30 years but could occur more frequently as the climate changes. The squid and sardine landing (also cyclical) overwhelmed the base demand for all the other fish/seafood combined. The average value of the demand for frozen storage over a 12-month period is 676 tons. If 676 tons is used as the design capacity; the facility would be 175% – 350% under capacity four months out of the year and only 0% to 31% full or the other 8 months. If squid and sardines are removed from the calculation, the base average unmet demand falls to around 200 tons.
- The facility should have individual cells/storage rooms that could be turned on or off to accommodate the fluctuating demand. A standard capacity cell should be designed and the cost/revenue analysis used to determine how many cells would produce the greatest revenue. The facility should be easily expandable so that additional cells could be added as the demand is proven.

Table 2. Historic, Current, Unmet and Potential Future Demand

Products/Services	Historic Capacity (closed in 2008)	Current Capacity	Current Unmet[1] Demand	Potential Future Demand
Cold Storage (tons of storage capacity)	2,000	508	200	2,500
Blast Freezer (tons/day)	90	40	15	300
Flake Ice (tons/day)	60	30	40	100
Flake Ice (tons stored)	200	50	60	120
Cube/Block Ice (tons/day produced)	20	0	10	15
Cube/Block Ice (tons stored)	60	0	150	400
Dry Ice (tons/day distributed)	0	0	1.0	5
Dry Ice (tons held in special containers)	0	0	10	40
Processing Area (sf)	100,000	10,000	5,000 – 8,000	15,000

1 – Unmet Demand is above and beyond the current capacity.

The unmet demand over a 12 month period ranges from 0 to 2,310 tons of storage per month. The total annual unmet demand is 7,960 tons. The average monthly demand is 863 tons. If the facility is designed to hold 800 tons, it will be at full capacity for approximately 6 months out of the year and be at 50% for three months and 25% capacity for 3 months. The average utilization over 12 months would be 550 tons/month. If the capacity is limited to 600 tons; the facility will be at capacity for 6 months and 75% for three months and 50% for three months. A number of scenarios were run using the pro forma spreadsheet to investigate the cash flow and internal rate of return for various different capacities. The same exercise was performed for the blast freezers. As expected, the greater capacity that is fully utilized, the better the cash flow and the higher the rate of return. Unfortunately, there are a number of variables that are not included in the pro forma at this level of analysis that are required to accurately estimate the most efficient/profitable design capacity.

Cold storage and blast freeze plant, Port of Los Angeles, Terminal Island Land Use Plan, LWC

It is recommended that the preliminary Conceptual Plan be designed around the services and capacities presented in Table 3 and that additional blast freezing capabilities and storage capacity be brought online if the demand is proven. The add-on frozen storage rooms could take the form of 40' shipping containers retrofitted to serve as freezers (similar to what Caito and Wild Planet use). The blast freezers could be set up relatively quickly in stand-alone buildings. A facility with the services and capacities list in Table 3 will cost approximately $4.0 million to develop and if the City receives a $2.5 million grant, will have an average net cash flow of $82,987 and an internal rate of return of 6.6%. There are a host of other assumptions that go into those numbers and they are quite sensitive to the net development cost and the amount of blast freezing capability present. A number of questions/issues will have to settled and additional detailed design work will have to be performed in order to develop a more precise estimate of development and construction costs.

Table 3. Recommended Services and Capacities for Preliminary Facility Design

Service Category	Capacity
Fish/Seafood Cold Storage	800 tons storage space
Cube/Block Ice	200 tons storage space
Tunnel or Spiral Blast Freezer and/or Brine Freezer	45 (tons/day maximum)
Flake Ice (out on the dock)	40 (tons/day)
Flake Ice (out on the dock)	60 (tons stored)
Cube/Block Ice (special equipment/isolated room	10 (tons/day)
Dry Ice (shipped to the facility in special containers)	1.0 (tons/day)
Dry Ice (stored in special containers in secure area)	10 (tons/day sold)
Processing Area (inside main building)	5,000 (sf)

Conclusions

Much of the documented demand is coming from the commercial fishing industry with additional demand from the expanding grass-fed beef industry. The demand for blast freezing and cold storage is extremely seasonal as well as being cyclical over the decades. There is clearly a demand for additional cold storage and blast freezing capacity on the Eureka Waterfront. The facility should be designed so that individual freezer storage rooms could be turned on or off depending on the seasonal demand. The facility should be sized to accommodate at least a portion of the cyclical demand.

Additionally, there appears to be a demand for cold storage, processing, assembly, production (commercial kitchen space) and packaging space for smaller, local artisanal producers, many who require cold storage and space to establish or grow their businesses. The City should consider a more targeted study for these industries and perhaps a facility in an inland location.

Basis of Design

Design Intent

The Design Intent is the driver of the Basis of Design. It helps define the objectives of the project. The Basis of Design then provides the criteria by which the Intent will be satisfied. The City's intent in pursuing this project is to create a facility that will help the fishing and specialty foods industries to expand and become more economically viable. The primary objective of this project is to provide additional, local capacity for processing, freezing and storing fish and seafood products and for providing flake ice needed by boats going out to sea. If possible, some space should be made available for use by the meat industry and for storage of cube and block ice. The intent is for the facility to be flexible in the types of products that be processed and stored and for the storage rooms to be independent from each other so that they can be turned on and off in response to seasonal and cyclical demand.

Fish processing, Salinas, Calif., LWC

Projects often fail because their goals and objectives are not explicitly defined or well understood by the design team. Projects can also fail to perform as intended due to lack of agreed upon design criteria and conflicting assumptions and priorities within the design team. Development of a comprehensive Basis of Design report is the key to a successful project. This Basis of Design report is an evolving document, subject to change and revision by the design team but only in a controlled manner after consideration and approval by the project proponent. At this point, the City of Eureka is the project proponent.

The Preliminary Basis of Design report provides basic design criteria that is used in the development of the Conceptual Plan and an initial construction cost estimate. The design criteria used in the development of this Conceptual Plan are presented below. A more comprehensive Basis of Design is required prior to the preparation of the construction plans.

Additional design criteria that will need to be considered as the design is brought to completion are presented in Appendix B (General Basis of Design for Fish Processing Plant).

Preliminary Basis of Design

The preliminary design criteria for the Eureka Icehouse and Cold Storage Facility includes the features and services listed below.

- A one to three acre site with a boat dock or a site where a dock can be constructed,
- The site's surface elevation should be at least 12' (NAVD 88) to allow for sea level rise,
- Approximately ½ acre of paved parking for trucks and trailers as well as cars,
- The building should have a metal frame or concrete tip-up walls. It should be designed for the marine environment. The cold storage rooms will be erected inside the shell.
- The building's floor should be concrete and elevated three feet above the surrounding site grade. The first three feet of walls above the finished floor should concrete or fiberglass or stainless steel.
- Two truck loading docks with two spaces each at grade (no pit-style loading bays),
- Direct access to a boat dock where raw product is being unloaded,
- 4" to 6" sewer line,
- 1" water service with a 4" fire connection,
- 3 phase electrical power, 480 volts, 1,000 amp service
- High speed internet and communication services,
- Flake ice machine located out on the boat dock,
- A rapid freezing system such as blast, plate or brine freezers,
- Separate, heavily insulated cold and frozen storage rooms erected inside the metal shell that can be turned on or off in response to seasonal demand,
- Some of the rooms should be isolated from the fish/seafood rooms to avoid contamination of meat, ice and other products. Possible second entrance.
- Processing areas that could be set up seasonally for specialty operations such as crab/shrimp cooking, fish filleting, and other preparations,
- Space for offices, employee facilities, equipment room, and ancillary dry and outside storage to accommodate the required operations.
- Consider using shipping container-style freezer units located outside the building to provide extra seasonal capacity.

The frozen/cold storage rooms will occupy the bulk of the facility. To meet the preliminary design requirements, a Conceptual Plan was developed around a standardized cold/frozen storage room. The standard storage room will have the capacity to hold approximately 200 tons of product. This number was chosen because that is approximately the current, base, unmet demand for fish/seafood storage and for cube and block ice storage.

In a typical cold storage facility, the products are palletized or placed in totes and then staked on shelves. The standard dimensions of a tote or pallet are 40" x 48". Totes come in range of heights which determines how much weight they can hold. A 65" tall tote can hold

approximately 2,000 pounds (1 ton). Each room will need shelf space for 200 pallets or totes. The allowed space for each pallet/tote should be 48" x 48" x 72" to allow maneuvering room for placement and removal and for circulation of cold air. Figure 1 illustrates the standard tote and layout.

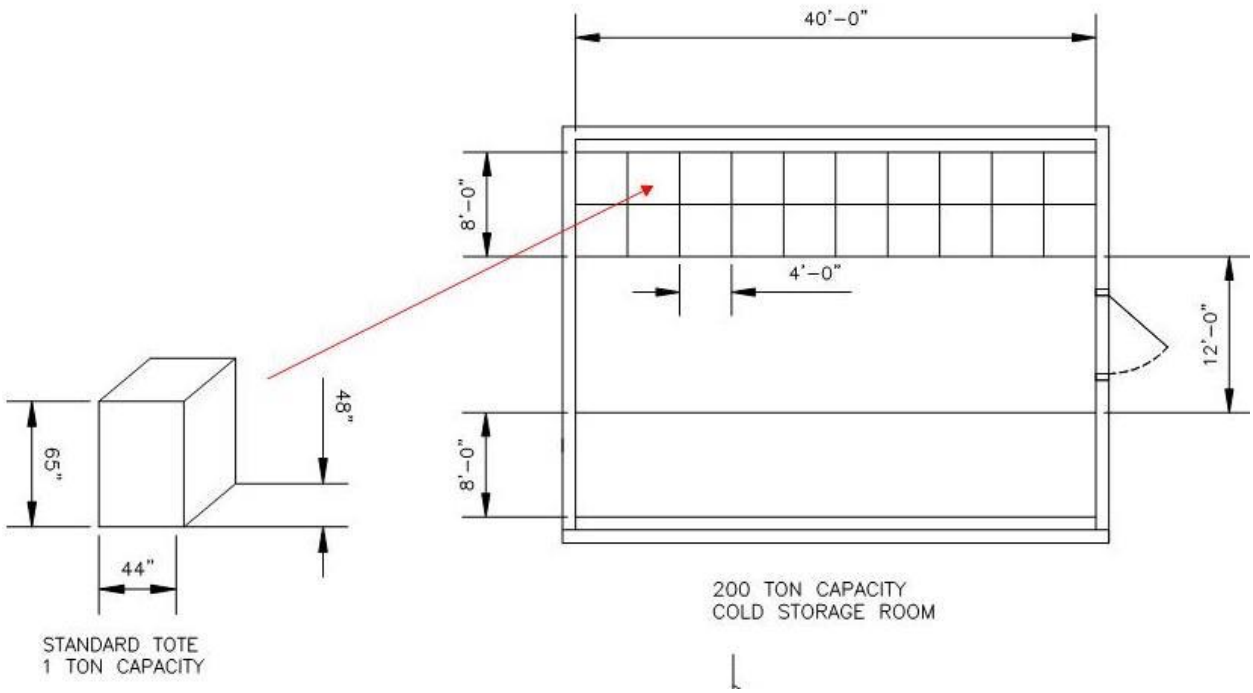


Figure 1. Standard Tote and Layout

The standard electric forklift can lift a 4,000 pound load off a shelve 24' above the ground and needs about 12' of maneuvering room in the isles between shelves. The pallets/tote can be placed two deep on the shelves (one behind the other). If the totes/pallets are stacked 5 high on shelves that are 72" from platform to platform, the bottom tote will be on the floor and the top tote will be on a shelf 24' above the ground.

The cold storage rooms will be constructed from rigid insulation panels specifically designed for this purpose. An allowance of 12" will be given for the panels outside of the surface are of the shelves. The racking for the shelves will be square steel tubing. An allowance of 12" will be given for the shelf racking outside the surface area of the shelves. The inside dimensions of the standard storage room will be 28' x 40'. The racking arrangement for a standard cold storage room with 200 tons of storage capacity is shown in Figure 2. This room will be used as a building block and the building will designed around a number of these units. The building must include space for the frozen storage rooms, maneuvering space to access the rooms, processing areas, equipment rooms for the freezers, offices and restrooms.

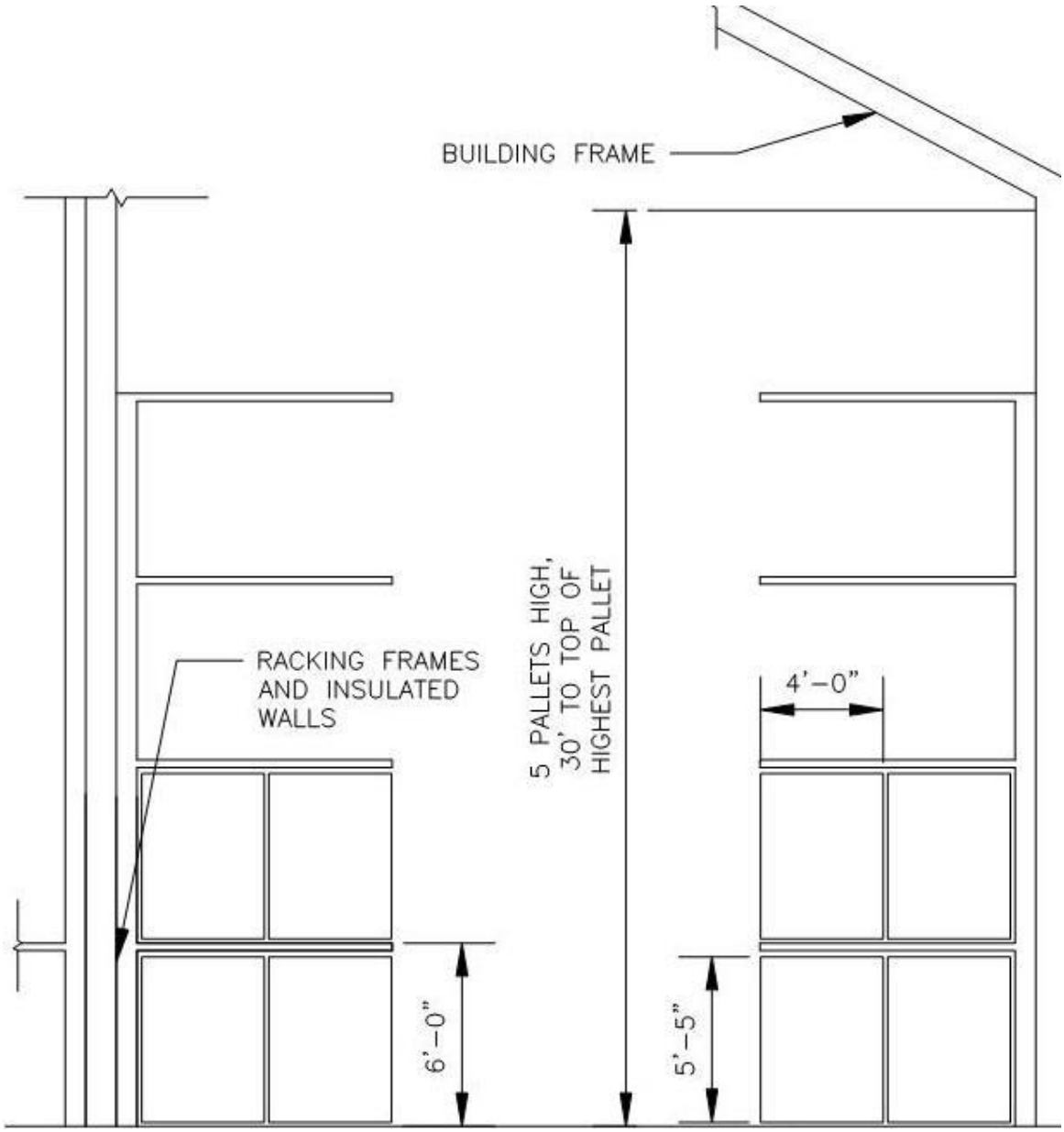


FIGURE 2. Cold Storage Room Racking Arrangement

Conceptual Plan and Cost Estimate

Table 3 provides the equipment capacities and spaces that were used in the initial Conceptual Plan. The Conceptual Plan is presented in Figure 3. It illustrates one possible layout for the facility based on the preliminary design criteria presented in the Basis of Design. It includes four storage rooms that are independent of each of other but share the same cooling system. Each room/cell can hold approximately 200 tons of products. It also includes space for processing areas, mechanical equipment, employee's areas and other required ancillary spaces. The Conceptual Plan also shows the truck loading docks, the gangway to the boat dock and the flake ice machine out on the dock.

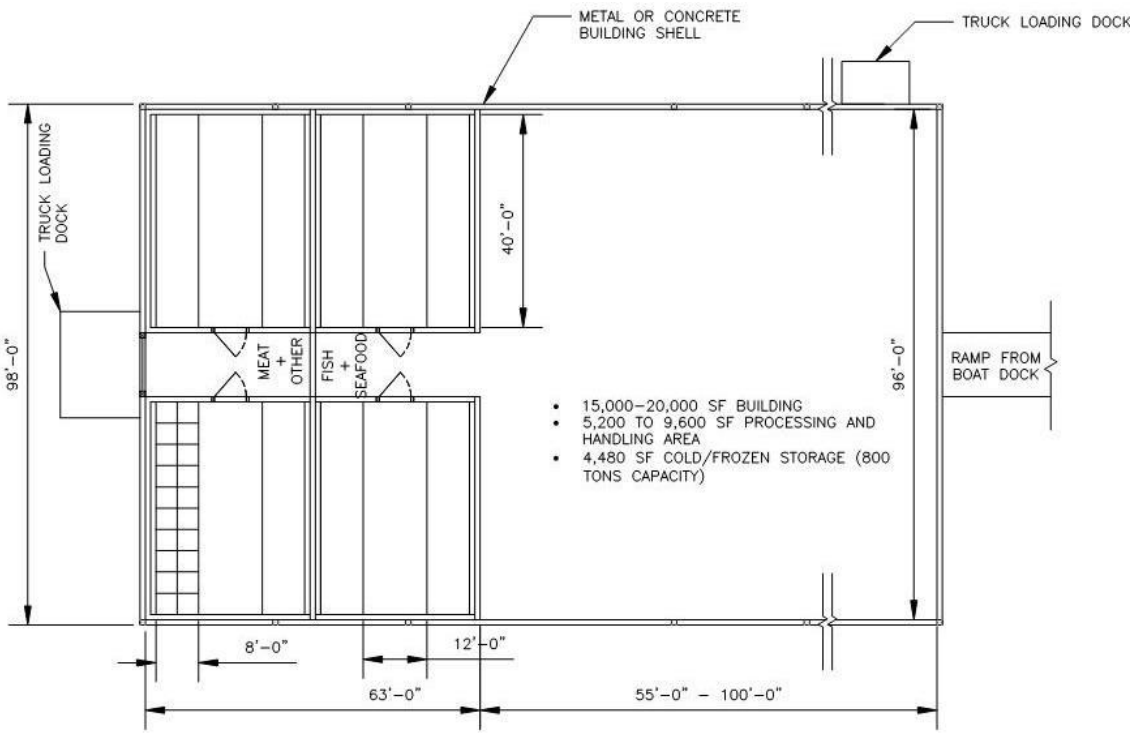


Figure 3. Conceptual Plan for the Eureka Icehouse and Cold Storage Facility

The development costs for the facility could include land acquisition, site improvements, utilities, construction of the building, equipment and miscellaneous items within the plant, wastewater pre-treatment systems, final design work, engineering plans and specifications, architectural services, construction management, and environmental compliance permitting.

Conversations with other cold storage facility operators on the West Coast revealed that the design, permitting, construction and equipment for a cold storage of this size class should cost between $175 and $225/sf, at prevailing wage rates, not including land acquisition costs. It is estimated that a 20,000 sf building with 800 tons of storage capacity, blast freezers, processing

areas, employee areas and ice makers will cost between $3.5 million and $4.5 million. This cost estimate will be refined as the facility design progresses and detailed equipment schedules and building materials and other development cost are established.

Siting Study

The purpose of the Siting Study was to identify a number of potential sites for the cold storage facility and to evaluate their suitability for the project. This was not a site "selection" process. It will be up to the project proponent to make a final selection and negotiate with the owner(s) for its sale or lease.

Selecting an appropriate site for any manufacturing and processing facility is a complex task, and especially so for a cold storage facility. The decision should be based on a number of physical, environmental, economic, and political considerations as well as a reasonable estimate of the potential impacts, constraints and opportunities. A properly sited facility will be easier to develop, it will function better, and it will receive fewer complaints from its neighbors.

Aerial view of Eureka, Calif.

Based on the results of the Demand Assessment; the fishing industry would be the primary user group of the proposed facility. They need a dock to unload fish, a flake ice machine next to the water, space inside a building to process fish, a blast or IQF freezers, and cold/frozen storage space. The next biggest user group would be the meat industry. Their needs are similar. In general, these two industries cannot be co-located due to health and safety requirements and permit conditions. Many other potential user groups, such as fresh produce, flowers, marijuana, dairy, and confectionary would also be incompatible due to odors associated with the fish. Another potential user (possibly facility operator) would be one that manufactures and distributes block, cube and dry ice. This business would require specialized processing equipment and probably need separate freezer space but could be co-located on the same property.

The siting study focused on serving the needs of the fishing and seafood industries and so, focused on sites the Eureka Waterfront, the Samoa Peninsula and Fields Lands/King Salmon areas. A separate facility could be located inland and may be able to support a slaughterhouse, cold/frozen storage, processing areas, cutting, wrapping, and commercial kitchen facilities. It should be the subject of a separate technical study.

The search for potential sites identified twenty-seven potential sites (Figures 1 – 23). Some of the "sites" included more than one parcel. The "sites" are outlined in blue and the City-owned parcels are outlined in red. The various criteria used in the evaluation are listed in the Siting Matrix (Table 1).

Google Earth and other aerial photographs were used in evaluating the sites. Geographic Information Systems (GIS) software was used in delineating the boundaries of the sites and for

gathering other information such as: zoning, property boundaries, acreage, ownership, utilities, elevation, distance to Highway 101, distance to the fueling dock, and projected year of tidal inundation due to sea level rise. Each site was visited on foot and viewed from a boat. The history and future plans for each site were discussed with a number of people including the City of Eureka's Development Services Director and staff, the Cold Storage Technical Advisory Committee (TAC), commercial real estate agents, The Humboldt Bay Fishermen's Marketing Association, the Humboldt Bay Harbor Commission Executive Director, and some of the site owners.

Each of the sites were given an overall rating number based on the evaluation criteria and perceived hurdles to its development. The ratings are on a scale of 1 – 10 with 1 being the best suited and 10 being the least desirable. The top three sites are listed below. They are all suitable but each have pros and cons that need to be considered during the next phase of the project.

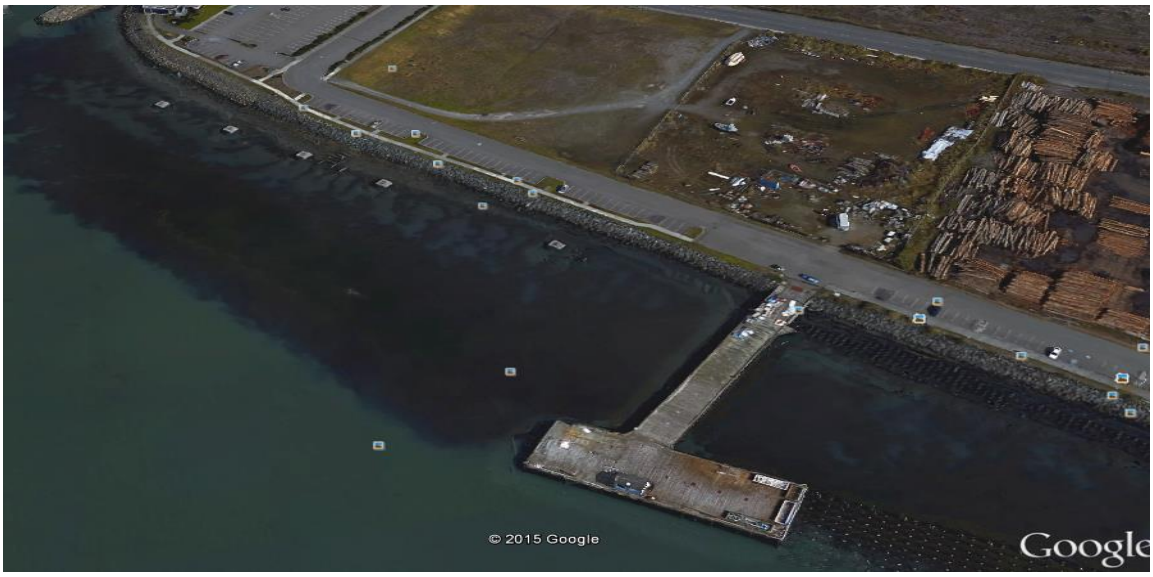
1. Dock B: The property is owned by the City. It is located about 0.5 miles by street or water to the other fishing docks and the fueling dock. Most of the actual dock has burned down and the portion remaining would have to be at least partially rebuilt. The terrestrial portion of the site has ample space for expansion and good access to Highway 101. In the 1980s, engineered fill was placed, compacted and graded. The site is well-suited and ready for development. The TAC considered Dock B to be the top-rated site due to the ownership status, the room to expand and the other potential benefits that could be realized by repair of the dock. It is also above the anticipated sea level rise for the at least the next 50 years.

Pros:

- *Owned by City*
- *Plenty of room for development and expansion*
- *Ready for development*
- *Other potential uses for upgraded dock*

Cons:

- *Dock will need significant repairs/upgrade*
- *Dredging required to reopen dock*
- *0.5 miles from other fishing infrastructure, forklifts on Waterfront*
- *Other potentially conflicting uses for upgraded dock*



2. <u>Foot of Commercial Street</u>: This is also a City-owned property. It is paved, ready for development and properly zoned. It has an existing, functional dock and currently serves as the public fueling dock for the fishing industry and other boats. The site is located in close proximity to other fishing docks and processing plants on Waterfront Drive. It is only 1.1 acres and there is a small parcel and an existing business (the Bar Fly, formerly Vista Del Mar) in the parking lot. The site is small and lack room for potential expansion but there is an adjacent parcel, to the east (approximately 0.3 acres, privately held), that could accommodate future expansion if the owner was willing to sell. Additionally, 3.4 acres exist across Waterfront Drive (the east end of the Balloon Track) that could be leased for truck parking and storage, or administrative offices. The flake ice machine would be located on the dock. The site has good access from other fishing docks along Waterfront Drive.

Pros:

- *Owned by City*
- *Ready for development*
- *Existing dock*
- *In the heart of the existing fishing infrastructure*

Cons:

- *Small site*
- *No room for expansion unless adjoining property owners sell/lease*

3. Eureka Ice and Cold Storage: This site is privately-owned and was on the market and listed at $400,000 at the time of this study. It is close to fueling dock. It is approximately 1.3 acres in size and could accommodate some future expansion. It is also adjacent to the privately held 0.3 acre site (to the west) and the adjacent parcel across Waterfront Drive (3.4 acres, Balloon Track) could be leased for parking and storage. The existing building would need significant remodeling work and it may be more economical to demolish it and start fresh. An asbestos report has already been completed and some remediation done. A Phase 1 Environmental Site Assessment should be completed to determine the status of soil contamination at the site. The existing dock is small and damaged and would have to be at least partially rebuilt and/or expanded. This site was rated number three due to the potential acquisition cost, the development costs, the lack of a sound dock and potential presence of environmental contamination.

Pros:

- *In the heart of the fishing infrastructure*
- *Adequate size and room for expansion after existing building is removed*

Cons:

- *Privately owned, City would have to purchase site*
- *Existing building must be demolished or significantly remodeled*
- *Potential for environmental contamination*
- *Dock will need significant repairs/upgrade*

The other sites could be more closely evaluated if none of the first three sites are deemed suitable or cannot be acquired. The evaluation matrix showing how the sites were prioritized and aerial photographs showing the locations of the sites are included as Appendix C.

Figure 4 shows the Conceptual Plan superimposed on the Commercial Street Site and the old Eureka Ice and Cold Storage Site. This is considered to be the heart of the commercial fishing industry in Eureka. Figure 5 shows the Conceptual Plan superimposed on the Dock B site and Figure 6 show the relationship between the two areas.

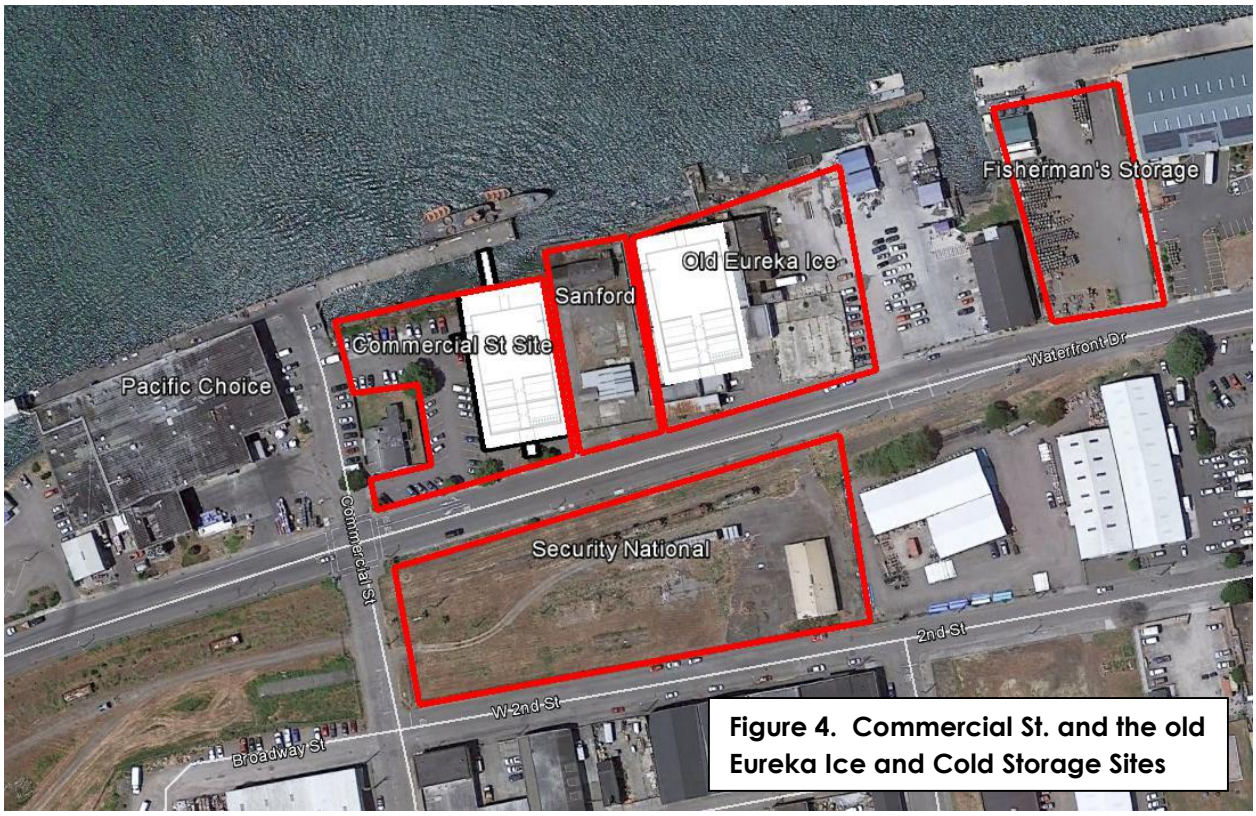


Figure 4. Commercial St. and the old Eureka Ice and Cold Storage Sites

Figure 5. Dock B Site

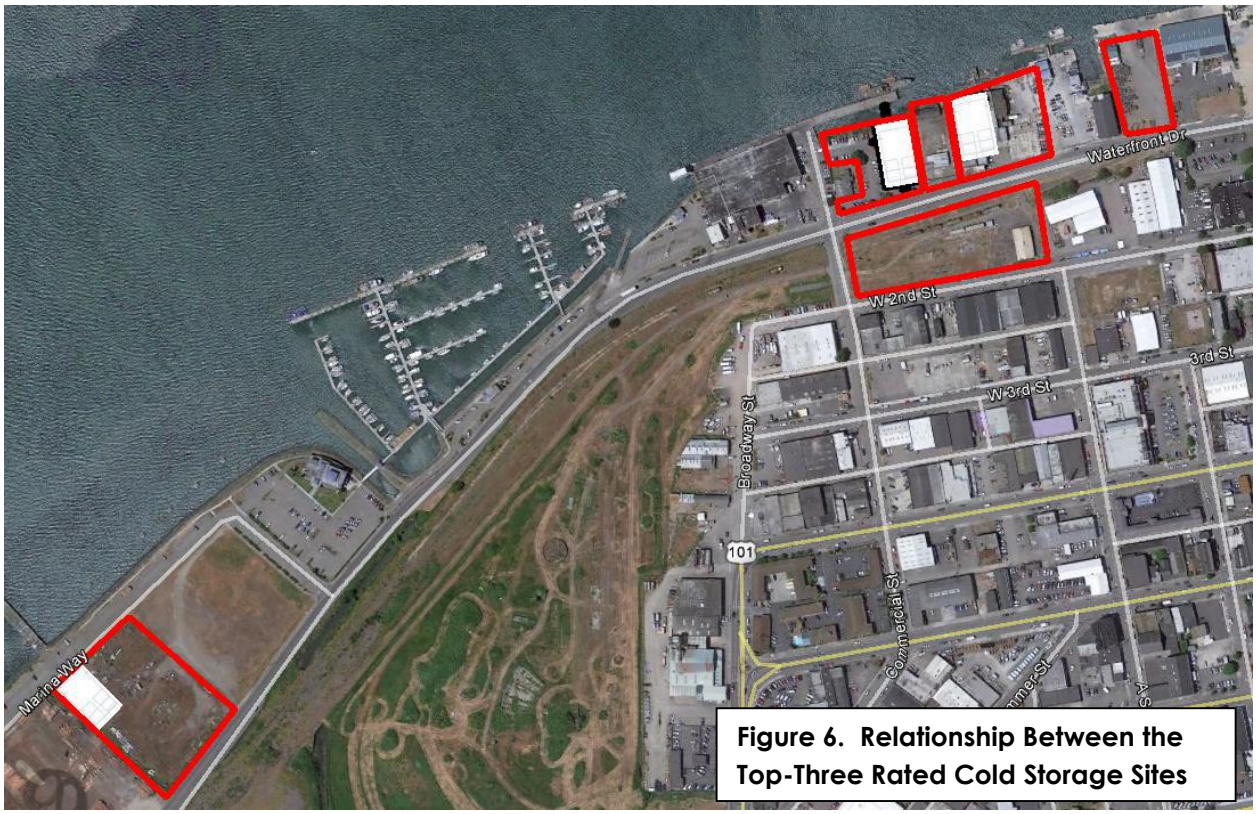


Figure 6. Relationship Between the Top-Three Rated Cold Storage Sites

Financial Analysis

Introduction

A financial model can be used to forecast the financial feasibility or profitability of a potential development project. The financial model for the cold storage/freezer, ice facility in the City of Eureka (City) uses basic financial modeling methodology and key assumptions, which were informed by the Consultant Team's extensive research and close communication and collaboration with the City and local industry stakeholders. The key assumptions, outlined below, were also informed by the Consultant Team's experience in similar projects and in real estate development finance.

Time Frames

The development period is the time necessary to design the facility, prepare construction drawings, obtain development permits, obtain financing, and construct the facility. A development period of two years is used.

The operation period is the length of time selected to show forecasted cash flows from the facility over multiple years so an average annual cash flow can be calculated based on typical operations. The operation period begins when the development period ends. An operation period of nine years is used.

Costs

The development costs include the cost of land acquisition, soft costs (architectural and engineering costs, financing costs, legal and accounting costs, permit fees, etc.), and hard costs (labor and material costs for construction). The model assumes total development costs of $4.0 million (the mid-range of the construction cost estimate), with a grant of $2.5 million, resulting in a net capital cost of $1.5 million.

Annual labor expenses are assumed to be $200,000 at the start of the operation of the facility. This approximates one office employee and two plant workers.

Building and equipment maintenance expenses may vary considerably depending on equipment specifications, seasonal usage patterns, and other factors. Based on information identified at other cold storage facilities and reflective of expected annual variation in demand for products and services, building and equipment maintenance expenses are assumed to be 20% of effective gross income and to increase by 3% annually.

The model assumes that a loan will be needed to construct the facility. The loan amount is estimated based on a 70% Loan to Value ratio (LTV), which translates to a $1,050,000 loan (net capital cost of $1.5 million). The model also assumes a 30-year loan term and industry standards in construction loan interest rates of 4.5%, take out loan rate of 4.5%, and financing fee of 2%.

The property tax rate is assumed at 1% of the assessed property value. Property tax is assumed to increase 2% annually, and begin in year one during the development period.

Revenues

Demand for cold storage of fish product is expected to vary throughout the season. Based on the Consultant Team's research, site analysis and preliminary demand assessment, the model assumes a facility with a maximum capacity of 800 tons of cold storage, resulting in excess capacity in some months, and excess demand in others. Seasonal monthly demand for cold storage in tons of product is converted to annual revenue estimates, assuming one pallet is equivalent to one ton and generates $25 per month. Ice (cube/block, flake, and dry) is assumed to generate $80 per ton per month. Storage of block/cube ice is factored into demand assumptions for cold storage. While demand in peak months is likely to far exceed the assumed cold storage capacity, the Adjustment Factor is still applied to gross potential income, presenting a more conservative estimate of actual revenues.

Table 4 shows the annual revenues estimated for each service assumed. The total revenues are approximately $2.1 million annually from cold storage, blast freezing, cube ice, block ice, flake ice and dry ice, processing area rental/leases and access fees. Revenues are assumed to increase by 3% per year. Estimated revenues are calculated in the Financial Spreadsheet (electronic deliverable) using annual tonnages and unit revenue gathered from competitive facilities on the West Coast.

Table 4. Revenues Generated by the Cold Storage Facility Presented in the Basis of Design

Products/Services	Annual Demand	Unit Revenue	Unit	Total Annual Revenue
CF Cold Storage (pallets)	5,400.0	$ 25.00	/mo./pallet	$ 135,000
CF Blast Freezer (pallets)	5,400.0	$ 25.00	/mo./pallet	$ 135,000
Meat/Other (pallets)	-	$ 25.00	/mo./pallet	-
Cube/Block Ice (tons)	2,400.0	$ 80.00	/ton	$ 192,000
Flake Ice (tons)	18,600.0	$ 80.00	/ton	$ 1,488,000
Dry Ice (tons)	18.0	$ 80.00	/ton	$ 1,440
Processing Area (avg. s.f./mo.)	4,458.3	$ 1.50	/s.f./mo.	$ 80,250
Access Fess* (members)	10.0	$ 200.00	/member	$ 24,000
			TOTAL	**$ 2,055,690**

To account for the highly cyclical peak-trough nature of the commercial fishing industry, a randomly generated "Adjustment Factor" is applied to reduce projected annual gross potential income. The Adjustment Factor is between 12.5% and 45.9% across the nine-year operation period. The years with the lowest Adjustment Factors represent the "good" years for products and services at the facility, and the years with the highest Adjustment Factors represent the "bad" years for products and services at the facility. For example, the model shows $488,535 in positive net cash flow during a year with a 12.5% Adjustment Factor (year 7) and <$314,166> negative net cash flow during a year with a 45.9% Adjustment Factor (year 8).

While commercial fishermen in Eureka target a wide variety of species and hence, are less reliant on the performance of any one fishery, historic Dungeness crab landings in the State of California between 1915 and 2012 provide a depiction of the volatility of the industry (Figure 7).

Dungeness crab is consistently one of the top three species landed in Eureka, top species at over $6 million in earnings at the dock in 2014 and top species at almost $17.5 million in 2013.

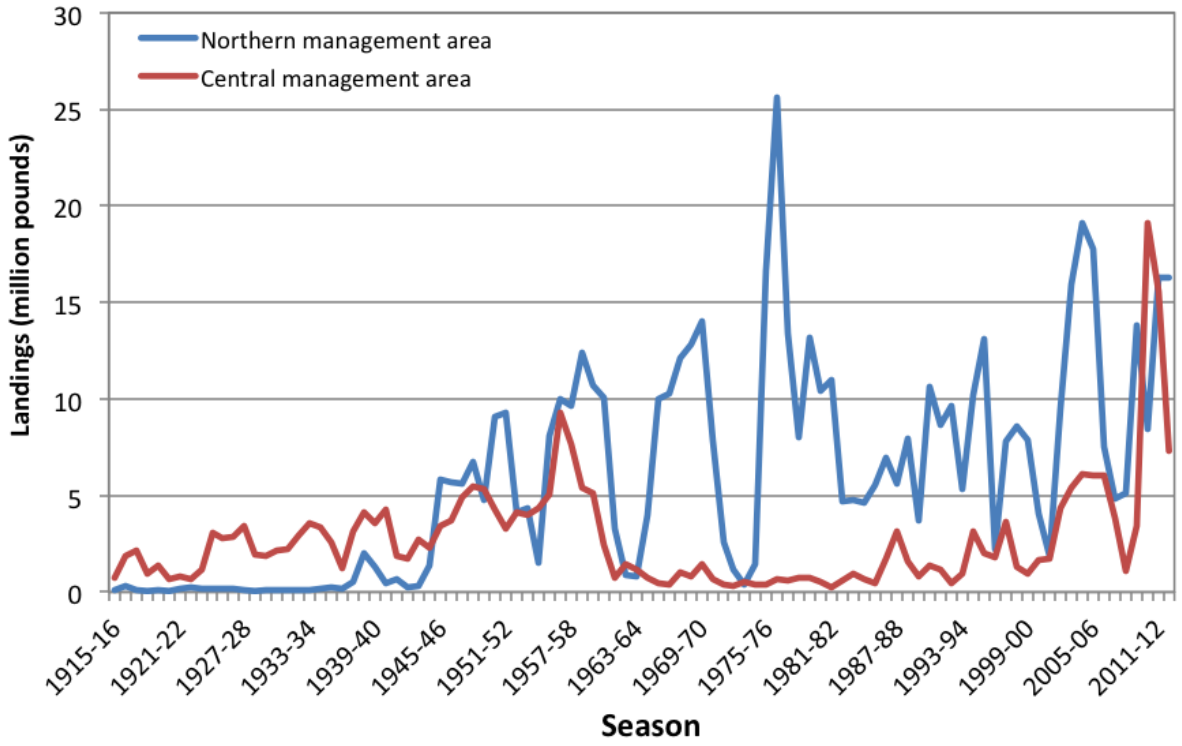


Figure 7. Dungeness crab commercial landings by season (1915/16 – 2012/13) and management region.

Sensitivity Analysis

Sensitive analysis tests the robustness of a model in the presence of uncertainty. To conduct a sensitivity analysis, a model's assumptions are changed to understand how different inputs could affect the results. Due to the uncertainty of development costs, a sensitivity analysis for development costs is included in the model (Pro-Forma tab). This analysis forecasts average annual net cash flow for eight scenarios where grants or other outside funding ranges from $500,000 to $4.0 million in $500,000 increments. These scenarios correspond to net capital investments ranging from $3.5 million to $0. This analysis shows average annual net cash flow ranging from negative $2,961 with $500,000 in outside funding to $147,448 for a project completely funded by grants or other funding sources. As previously noted, the model assumes a $2.5 million grant will fund the facility, which is forecasted to result in average annual net cash flow of $82,987.

Conclusion

Based on the aforementioned assumptions, which are generally conservative and incorporate the volatility of commercial fishing markets to reflect realistic conditions, the financial analysis demonstrates a viable project with a modest internal rate of return (IRR) of 6.6% when the assumed $4.0 million development cost is offset by a $2.5 million grant or other outside funding sources. Considering variable scenarios of grants and other outside funding, including a worst case scenario of $3.5 million in capital investment required of the City, the facility would produce average annual net cash flow over operating years 2 to 10 ranging from negative $2,961to $147,448. With increasing grants and outside funding, the average annual net cash flow during operating years could increase substantially, improving payback on capital and positive returns for investors. While developers typically seek an IRR of 10% or higher depending on the level of risk associated with the project, the net cash flow and IRRs presented in the sensitivity analysis could be used as a basis for establishing ground lease payments for a potential developer-operator.

Management and Ownership Options

Conceptually, multiple management and ownership models are feasible for facilities like Eureka's proposed cold storage facility. They can, for example, be publicly owned and publicly run, privately owned and privately run, or publicly owned and privately managed. They can take the form of a for-profit company, a not for profit organization or a cooperative. We provide a detailed discussion of the three following management entities alternatives in Appendix D.

- Cooperative – A group of owners operate democratically to oversee operations and management.
- Private Sector Business/Corporation – A board of directors and a management team oversee ongoing operations and management with special tax provisions.
- Non-Profit Corporation – A board of directors and a management team oversee ongoing operations and management without profit to qualify for special tax provisions.

Appendix D includes brief case studies of several other port cities and how they approach management of their ice/storage facilities. This section presents two business models that best fit the facility proposed for Eureka.

Recommended Management/Ownership Option

Two operational models are recommended for operating the facility as most favorable for the fishing industry as a whole. The recommendations are based on multiple interviews and the existing structure of the local commercial fishing industry, which has a large number of small, independent operators with their own boats as well as a small number of very large companies that have their own fleet and/or buy from the independent operators.

For the purposes of this section, both options include the following elements and assumptions, presented in the Basis of Design and Siting Study:

- It will be located on the Eureka Waterfront.
- It will have freezer capacity for up to 800 tons of product in totes or on pallets and could be expanded as demand grows. It will also have processing areas for lease or rent. It will also be able to quick freeze product and will vend block, cube, dry and flake ice.
- The design and construction of the facility/equipment will be covered by a grant, so the debt load will be small to none.
- The City will not operate the facility. The facility will be either publicly-owned and privately operated or privately-owned and privately-operated. If publically-owned, the facility would be leased to a business entity at current, local market rates. The leasing entity would be a for-profit company or a cooperative venture.
- Maintenance costs will have to be factored into the business model in a way that make ice costs and usage fees affordable enough to create demand.

Option A: An independent, for-profit company operates the facility for public use (Preferred Option)

The company that leases and operates the facility will not necessarily be a fish or seafood processing company. They may only sell ice and rent/lease processing and storage space. This business plan does not consider the economics of running a fish/seafood processing business.

Features of an independent cold storage business:

- The operator would be responsible for lease payments to the City for use of the facility and for operations and maintenance costs.
- The products and services would be available to the public and other private companies at the current, local market rates.
- The operator is not in competition with other customers of the facility. There is no built-in incentives to deny services to any member of Eureka's fishing fleet or associated regional users as a whole.

It is noteworthy that this general business model was recommended by the CEO of Bellingham Cold Storage, a very large operation in Washington State, as best befitting the situation in Eureka. This is also consistent with periods in the history of the industry in the region at Eureka Ice and Cold Storage.

If an operator can be attracted to the facility as designed, this is the preferred option.

Option B: A cooperative or association rents/leases it from the City and operates it

The company that runs the facility would be a fish/seafood processing co-op. They include a number of independent companies that are competing for fish but cooperating with processing and storage facilities.

Features of a seafood co-op include:

- The co-op would be responsible for lease payments to the City for use of the facility and for operations and maintenance costs.
- They may rent/lease space out to other companies.
- There is "coopetition" between the association members but they also collaborate for mutual benefit of the industry.

Interviews and research indicate that this is also a favorable model. It probably only works, however, if an existing experienced seafood co-op, such as the Seafood Producers Co-op, can be attracted to manage the facility.

Although many possible models exist, these two fit the local industry and City's needs best. Of these two options, the for-profit, public cold storage and ice house facility is the preferred option, with a seafood cooperative representing a strong second option.

Conclusions

The City of Eureka has a long history of prioritizing its working waterfront by implementing economic development projects aimed at job creation and providing a competitive advantage for local fishing/seafood businesses. This is illustrated by the City's investment of over

$60 million dollars over the last 20 years (Table 5) for the planning and construction of catalytic projects, rehabilitation, restoration and acquisition of key properties as well as consistent maintenance and large-scale dredging. Coordinated joint efforts by the City of Eureka and Humboldt Fishermen's Marketing Association (HFMA) have dramatically benefited the face of Eureka's working waterfront.

Table 5. Eureka Waterfront Projects

Date	Project	Amount in $ Millions	Funding Source
1976	Municipal Harbor Improvements (includes the EDA Plant, dock etc)	$3.52	Municipal Harbor Improvements - 1973 Revenue Bonds through the Economic Development Administration (EDA) Grant - $1.76 million Loan - $1.76 million
1991	EDA Fish Plant Rehabilitation and Upgrade	$0.9	Community Development Block Grant - $0.5 million Private Investment - $0.4 million
1994	Bonnie Gool Guest Dock	$0.35	Humboldt Bay Tideland Trust Fund
1995	Purchase dilapidated and vacant waterfront Property	$0.95	Eureka Redevelopment Agency
1998	EDA Fish Plant Equipment Purchase	$0.71	Community Development Block Grant - $0.5 million Private Investment - $0.21 million
1998	Fishermen's Work Area	$0.5	Federal Earmark Grant through Congressman Frank Riggs
2000	Small Boat Basin (Eureka Public Marina and Wharfinger Building)	$10.4	Eureka Redevelopment Agency - $3 million Economic Development Administration (Grant) - $3.9 million California Department of Boat and Waterways (Loan) - $3.5 mil
2002	EDA Fish Plant Waste Water Pre-Treatment Facility	$1.6	Community Development Block Grant (Business Loan) - $0.2 m Leasehold Improvement, City Water/Water Fund -$0.2 million Private Investment - $1.2 million
2002	Waterfront Plaza and Boardwalk	$8.0	Eureka Redevelopment Agency - $4.5 million Eureka Water/Sewer Fund (Loan) -$1.5 million Private Donation - $2 million
2005	Humboldt Bay Dredging – bar and entrance channel, North Bay and Samoa	$17.3	Eureka Redevelopment Agency - $1 million Humboldt Bay Harbor District - $6.4 million Army Corps of Engineers - $9.9 million
2007	HSU Boating and Safety Center	$4.5	CA Department of Boating & Waterways (Grant) -$4.25 million Eureka Redevelopment Agency - $0.25 million
2007	Harbor Maintenance Dredging	$1.9	Eureka Redevelopment Agency - $1.6 million City of Eureka - $0.3 million
2010	Commercial Street Fueling Facility – repair and upgrade	$0.36	Eureka Redevelopment Agency
2010	Flake Ice Facility	$0.9	Headwaters Community Investment Fund - $0.5 million Eureka Redevelopment Agency - $0.4 million
2011	"C" Street and Market Plaza	$2.8	California Infrastructure Bank - $2 million Eureka Redevelopment Agency - $0.8 million
2011	Fisherman's Terminal Building	$3.2	Economic Development Administration - $2.4 million (EDA) Eureka Redevelopment Administration - $0.8 million

Like other commercial fishing ports in California in the 1990s and early 2000s, Eureka was hit hard by increasing regulation, rising costs (diesel fuel more than tripled between 1999 and 2007), competition from inexpensive foreign imports and shifts in consumer preferences. Despite these obstacles, Eureka has fought successfully to transition from a larger volume, lower value model, to a smaller scale, higher value, and more diverse fleet profile. To an even greater extent, the

higher value model relies on quality, consistency and the ability to coordinate processing and distribution around the world. As such, the need for cold and freezer storage, blast freezing and ice has not diminished, but remained or grown in importance.

The local commercial fishing industry is still a vital and robust element of the City's economic base. Construction of a cold storage and ice house facility designed to serve the needs of the local, commercial fishing industry would augment their ongoing economic development efforts and be greatly beneficial for the industry.

The project will economically benefit the local and regional fishing industries and potentially other sectors of the Specialty Foods Industry Cluster by allowing them to add value to their products and time their shipment to the most favorable markets. Should the cold storage facility be developed, the City should actively recruit customers from the local and regional fishing/seafood industries as well as other potential users.

The construction and operation of the facility will create some temporary and some permanent jobs but more importantly it will allow the industry more options for a Project will create a few jobs that will to with the intent of expanding the local fishing/seafood industries.

The Project should include the following characteristics:

- Located on the Eureka Waterfront,
- Publically-owned and privately operated by an independent, for-profit cold storage business or by a seafood processors co-op,
- The facility should be designed so that its operations can be expanded upon during the high demand season and partially shut down during off-peak season.
- The site should be large enough so that the facility can be easily expanded in response to increased demand.

To advance this Project to the next phase, the following tasks should be completed:

- The City should commit to being the Project proponent.
- Advance the conceptual design to the point where the capacities and costs are better understood and use it to approach funders and investors.
- Select a site and determine the infrastructure improvements required to host the facility,
- Arrange meetings with funders (such as the federal Economic Development Administration, Headwaters, Humboldt Area Foundation, and State Coastal Conservancy) to discuss their funding priorities and project selection criteria.
- Prepare proposals for funding the Project.

APPENDIX A

SURVEY RESULTS SUMMARY

CITY OF EUREKA

COLD STORAGE FEASIBILITY STUDY
WRITTEN SURVEY RESPONSE SUMMARY

August 2015

greenway
Bridging Inspiration and Reality

LWC

City of Eureka

Cold Storage Feasibility Study
Written Survey Response Summary

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Cover Photo: Captain Ken Bates, Eureka CA.

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INTRODUCTION

In August of 2014, the City of Eureka City Council accepted a $25,000 grant from the EDA and approved $25,000 in matching funds for a study to assess the feasibility of an ice and cold storage facility; one of six infrastructure projects of regional significance as identified in the Prosperity 2012 process. The City issued a Request for Proposal in January of 2015 and kicked the project off in February.

At the direction of the City and an Advisory Committee of diverse stakeholders, a strong emphasis was placed on engaging local and regional stakeholders to gain the most accurate and comprehensive perspective of the need for a cold storage and related services in Eureka. As such, the project approach integrated a strong outreach campaign which included a written survey, personal interviews, site visits and promotion in the local press.

This section describes the outreach approach and summarizes the responses that were gathered through the written survey effort. The Written Survey Summary describes: Methodology, Key Findings, and Summary of Responses. A more complete summary of all input gathered in the outreach process, including personal interviews, site visits and written survey results, is included in the comprehensive report; the final deliverable for the project.

The City's wants to support the fishing industry, specialty food, meat, dairy, cheese, all who could potentially use cold storage," – Steve Salzman, owner, Greenway Partners, Times Standard News, March 28, 2015.

Photo: Eureka's Historic Old Town. (Credit: Jan Kronsell)

The design for the outreach effort was drawn from the work of Aurthur Kleinman, a psychiatrist and medical anthropologist, who established the importance of an approach that is informant-centered,

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SURVEY METHODOLOGY

As the intent of the written survey was to gather input from as many local and regional potential cold/freezer storage users as possible, the Consultant Team distributed the survey to the greatest variety and number of potential cold storage users and user groups as possible. Hard copies and a link to the online survey were provided to Committee members on March 27, 2015. Hard copies were also made available in City offices and the survey was posted on the City of Eureka's website on March 28. The Consultant Team sent out over 70 emails that described the project and provided a link to the online survey, along with an attached PDF version of the survey. Emails were directed to groups representing commercial fishermen, farmer's markets, food policy-makers, cattlemen, the wine industry, grocers, brewers, confectioners, caterers, florists, nurseries (plant), small businesses, medical businesses, the County Fair, and chambers of commerce in Eureka, Fortuna, Garberville, and Willow Creek. Articles on the project appeared in the *Times Standard* on March 28 and April 28, 2015 and television coverage included appearances by Rob Holmlund, Community Development Director, on KAEF TV and KIEM TV. Local engineering firm and lead consultant Greenway Partners also attended several local meetings where they promoted and distributed the survey.

A cold storage facility will stimulate job growth, create new businesses, allow new businesses to grow, and existing businesses to expand," Rob Holmlund, the City of Eureka Community Development Director.

The survey was designed to gather the most pertinent information with as little burden to respondents as possible. The survey required approximately three to four minutes to complete and sought feedback on industry type, services sought, current cold storage facility usage, commodities that would be stored, frequency of access, pricing structure, preferred location, and preferred humidity and temperature. The survey closed with an open-ended question on "other" information the respondent wanted to share. Contact information was provided if respondents needed assistance with the survey or wanted to set up a one-on-one interview.

The full survey as it appeared in PDF form is included in this report as Appendix A.

"Delays in offloading albacore tuna at ports in Washington and Oregon are a huge drag on our profitability and have been caused by the recent growth in landings in the whiting and hake fisheries and their demand for cold and freezer storage space. A cold storage facility in Eureka would attract more of the U.S. West Coast's $40 million in albacore landings and give U.S. albacore fishermen a competitive advantage." (Commercial albacore fisherman, Personal communication, telephone, May 3.)

DEFINITION OF TERMS

The survey presented questions on a number of services related to cold storage, as defined below:

- COLD STORAGE – facility with an ambient temperature of approximately 40° F. with 5° to 10° F. of variation.
- FROZEN STORAGE – facility with an ambient temperature below freezing (32° F.) and as low as 0° F.
- BLAST FREEZING – conducted at facilities typically configured as tunnels and separate from cold storage and frozen storage, where racks of "product" can be placed and rapidly chilled by fans circulating air at a temperature of -30° to -40° F.
- PROCESSING AND PACKAGING – conducted at facilities which may be kept at cold storage-range temperatures and which can accommodate movement of forklifts and handcarts, and temporary storage space for sorting and packing tables and boxing and sealing equipment.
- ICE FACILITIES – machinery that produces flaked, dry, cube or block ice and typically requires separate plant and equipment. Facilities can be placed within or outside cold storage or processing facilities, depending on distribution needs and costs.

Confidentiality and the voluntary nature of participation in the survey were key concepts in establishing trust and predictability and in ensuring a strong response rate and truthful and accurate responses. Confidentiality also protects respondents from real or perceived harm or duress. Therefore, it was made clear to potential survey respondents that no personally identifiable information would be released to the City or the public in reports, memos, emails or phone conversations.

The survey is a single and effective tool that the City is using to assess the amount and type of demand for a cold storage facility. As a second step, the Consultant Team will present survey findings for feedback in group meetings, personal interviews and the City and the Committee will have the opportunity to review draft documents and provide further comments. The intent of the second step is to give the community the chance to review and evaluate survey findings, further refine potential users' priorities and to initiate a dialogue on crucial elements of facility design, location, financial feasibility, funding and ownership options.

KEY FINDINGS

The community's long running need for a cold storage facility coupled with the City, Committee, and Consultant Team's effort at promotion and distribution of the survey led to a robust response and insightful input. Key findings from 98 responses to the survey include:

Photo: Eureka Waterfront (Credit: Stephen Colbourne).

BROAD DIVERSITY OF RESPONSES

Responses were received from a wide and comprehensive range of industries: commercial fishing, aquaculture, seafood processing, grocers, dairy, floral, livestock, agriculture, wine, beer, confectioners, hospitality, tourism, apiology, cannabis production and real estate brokers.

WATERFRONT SITE PREFERENCE

Generally, respondents favored a facility on the waterfront over an inland location by a ratio of 39 to five. 18 respondents had no preference, while others wrote in their own responses.

STRONG SUPPORT

Support for cold storage in Eureka is largely derived from the seafood industry, with 52 of 76 respondents indicating the service would benefit their business.

The final write-in question provided the opportunity for respondents to share their thoughts on a cold storage facility. Overall, comments expressed overwhelming support for a cold storage facility, as it would:

- Keep food production local
- Benefit brewers and confectioners
- Facilitate economic expansion of the commercial fishing industry
- Provide opportunities for cannabis processing
- Help reduce costs for farmers
- Increase opportunities for businesses in Eureka and the competitive advantage of existing businesses

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SUMMARY OF RESPONSES

The following summary presents the results for each of the survey's questions. The first paragraphs of the survey introduced the respondent to the intent of the survey (to assess demand) and described its confidentiality and voluntary nature. Question One of the survey sought contact information: name, date, phone number, and email address. The personal contact information is intended to help assure that multiple responses were not submitted from any one individual and to provide the opportunity for follow up and clarification.

Photo: Preparation of Humboldt Bay Oysters. (Credit: Humboltmade.com)

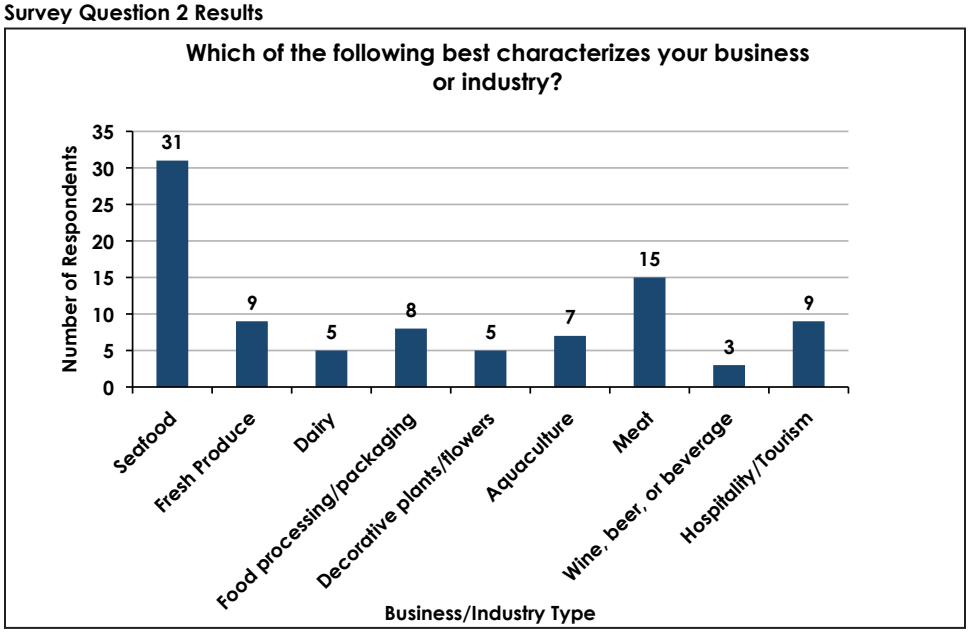
Ninety-eight people responded to the survey. Of the 98 responses, 32 provided contact information and/or identified their industry, then provided no other input but that they support a cold storage facility in Eureka; five of those provided a facility location preference. The results presented below provide a detailed summary of responses to Questions Two through Thirteen of the completed surveys. The summary of question 14 includes input from all 98 survey respondents.

RESPONSES BY INDUSTRY

Question Two of the survey asked respondents '*Which of the following best characterizes your business or industry?*' Nine choices were offered, of which respondents were able to select more than one, and/or provide a write-in answer. Of the 63 respondents to this question, almost half (48%) identified themselves as being in the seafood industry. Fifteen respondents (23%) identified themselves as participants in the meat industry. Nine responded that they were in the hospitality/tourism industry and nine responded that they were in the fresh produce industry (14% each). The remaining twenty-eight respondents indicated that they were engaged in the food processing/packaging, aquaculture, dairy, decorative plants/flowers, or wine/beer/beverage industries.

Thirty seven respondents answered 'Other', self-identifying as serving in various businesses or industries including: real estate, performing arts, organic inspection and food processing, private security, apiculture, nutritional programs, and cannabis production. About one-third of those who answered 'Other' did not answer any further preferential questions in the survey.

Survey Question 2 Results



PERCEIVED BENEFIT TO RESPONDENT'S BUSINESS

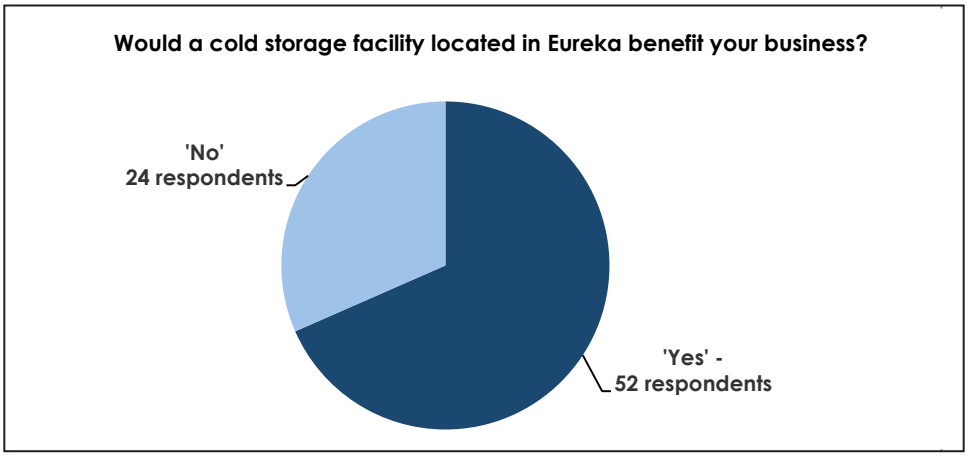
Photo: Herb vendor at Arcata Farmers Market.

Seventy-six people responded to the question *'Would a cold storage facility located in Eureka benefit your business?'* Of this group, 52 answered 'Yes' and 24 answered 'No', or 68% and 32% respectively. The survey stated that those who answered 'No' did not need to continue the survey.

Despite these directions, 11 respondents who answered 'No' continued to fill out part or all of the remaining survey questions and expressed support for the building of a cold storage facility in Eureka. For example, one respondent who answered 'No' went on to comment that cold storage would generally increase business in Eureka, and would increase the need for associated businesses, such as security service.

Only one respondent expressed hesitancy for a cold storage facility, stating, "I am concerned about the biohazards and toxicity that comes with having such a plant located on the North Coast."

Survey Question 3 Results

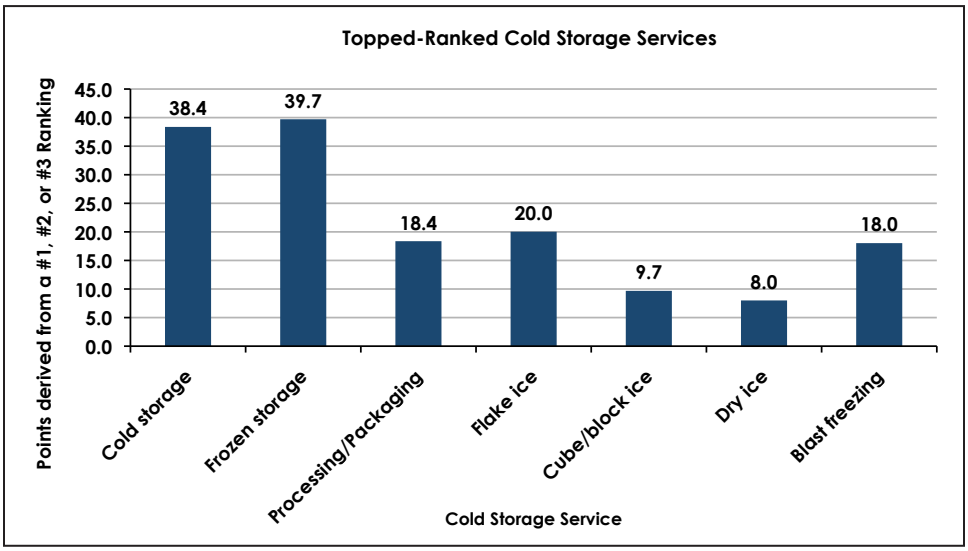


COLD STORAGE/PROCESSING SERVICES

Question Four asked respondents to *'Please rank the following* [cold storage and processing] *services (1 being the most useful, 2 being the second most useful, etc.).'* Seven options were provided and the format of the survey required respondents to rank each of the listed services. This summary assesses responses based on a weighted score of respondents' top three rankings. Fifty-seven respondents answered this question, and results indicate that frozen storage is the service most desired, with a score of nearly 40, followed closely by cold storage with a score of approximately 38. Flake ice, blast freezing, and processing-packaging all follow with similar scores of approximately 20, 18, and 18. Cube/block and dry ice ranked sixth and seventh with scores of 9.7 and 8.

Photo: Pacific squid, sorting and packing before blast freezing, Southern California Seafoods, Watsonville, Ca.

Survey Question 4 Results



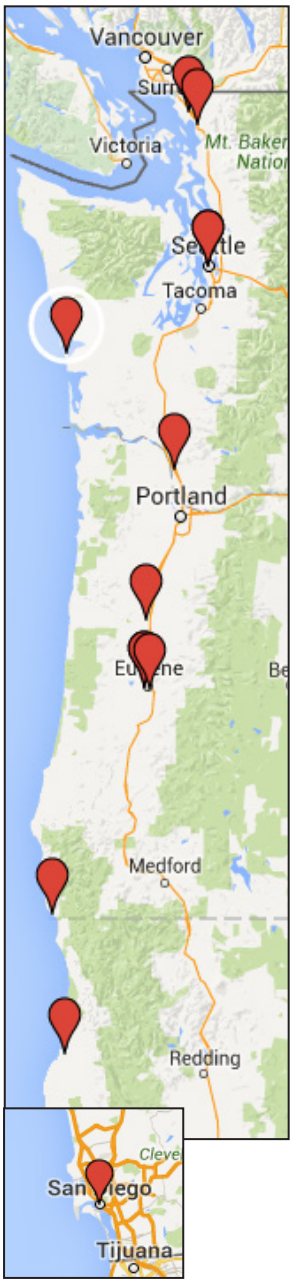
SPACE REQUIRED

Two of the survey questions sought critical input on potential users' space requirements. Question Five asked respondents *'How much space or quantity do you require per month?'* for the services ranked in Question Four. Question Eight asked, more generally, *'How much storage space would you require per month?'* As respondents represent a variety of goods to be stored, responses to storage space needs came in a variety of units: pallets, square feet, cubic feet, amounts of product, etc. Responses included space for hanging livestock carcasses, storing boxed and wrapped carcasses and processed/boxed meat. Responses also highlighted commercial fishermen's need for storing frozen bait during crab season (November through June). Commercial fishermen also expressed need for blast freezing salmon, albacore, squid and herring. Respondents also indicated the need for over 2,500 pounds of dry ice per month.

Responses to question eight (monthly storage) totaled to 5,850 square feet plus 373 pallets (equivalent to almost 6,000 square feet). Responses provided in cubic feet totaled to 1,040 cubic feet. Together these amount to almost 13,000 square feet of floor space per month.

One standard pallet measures 40" by 48".

Photo: Seafood Product stakcked for blast freezing, Monterey Fish Company, Salinas, Ca.



Map: Locations of Cold Storage facilities currently used by survey respondents.

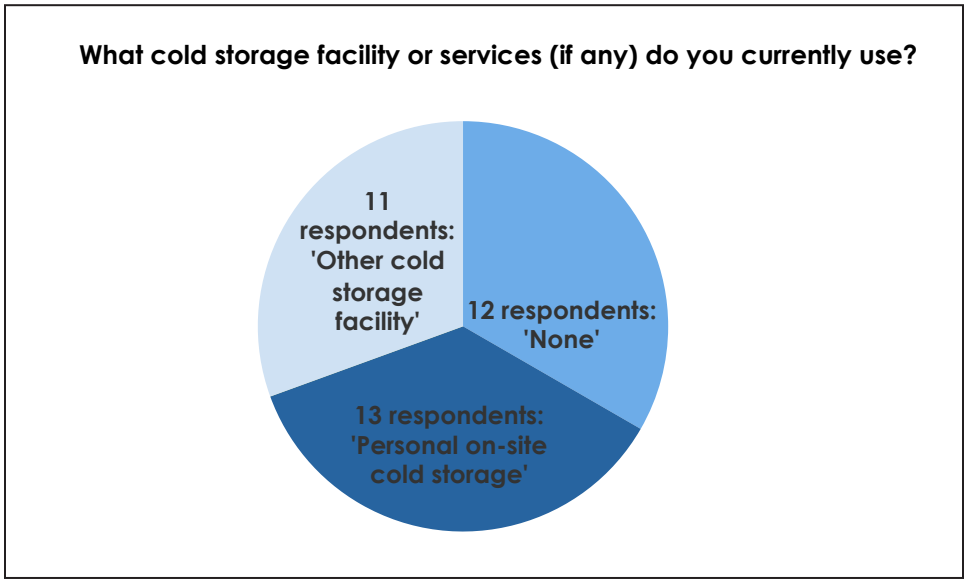
Based on survey responses, decision makers should consider a facility with several thousand square feet of cold storage (up to 13,000 square feet depending on stacking/shelving systems), 5,000-7,000 square feet of freezer storage, and 3,000 to 5,000 square feet of processing packaging space. These square footage estimates do not include space for plant and equipment or office space, loading docks, etc. Respondents indicated that there is a need for between 20 and 25 tons of flake ice per day, some of it seasonal, and 400 tons of cube and block ice per month. Based on the responses, and considering the needs of the herring fishery (60 tons over two months), the facility should accommodate blast freeze tunnel(s), with a capacity of a minimum of 2 tons per day. Dry ice was identified as a need and per the responses, the cost and benefit of accommodating approximately 2,600 pounds per month and should be considered as well.

COMPETITORS (FACILITIES CURRENTLY USED BY RESPONDENTS)

Question Six asked respondents *'What cold storage facility or service (if any) do you currently use?'* and allowed fill-in-the-blank responses. Forty one respondents answered this question, of which 13 indicated that they have their own cold storage facility/equipment on-site, and eleven rent or use a third-party cold storage facility. Twelve do not currently use cold storage. Two respondents answered 'Not Applicable'; and they are not represented in the accompanying graphic representation.

Of the 13 respondents that indicated they use their own cold storage, equipment listed included: chest freezers, refrigerators, 40-foot refrigerated containers, small blast freezers, reefer trucks, walk-in freezers. One respondent wrote in: "There are none available within a reasonable area - so none."

Survey Question 6 Results



The following is a list of facilities listed by survey respondents:

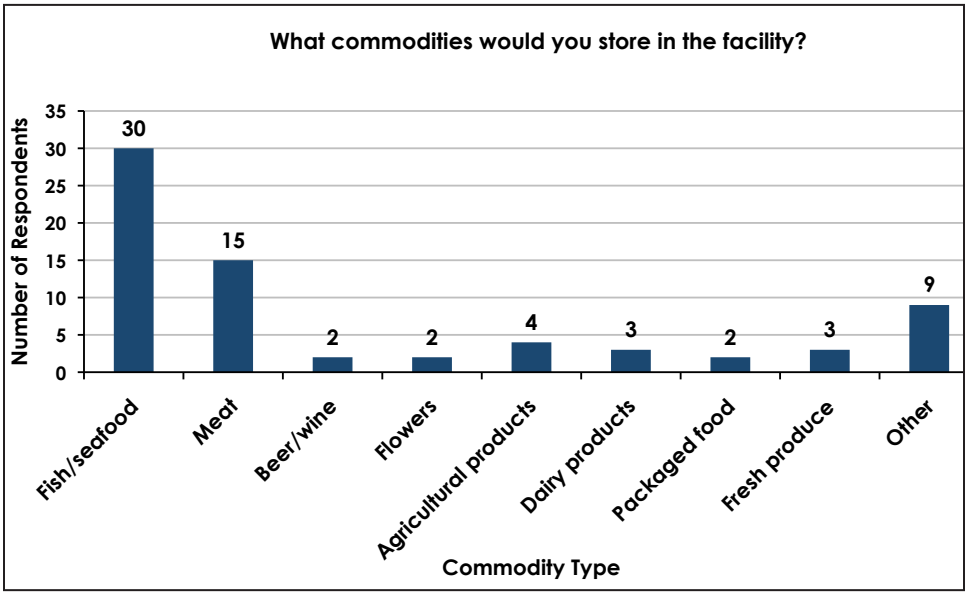
- Bellingham Cold Storage (Bellingham, WA)
- Columbia Colstor Snotemp (Five locations in WA - Location not specified)
- E.G. Ayers Distributing, Inc. (Eureka, CA)
- Goselin Transportation (freezer truck) (Eureka, CA)
- Port of Brookings Cold Storage (Brookings, OR)
- Rainier Cold Storage, Inc. (Seattle, WA)
- Redwood Meat Co. (Eureka, CA)
- Seafreeze of America (Seattle, WA)
- Sno-Temp Cold Storage (Eugene & Albany, OR – Location not specified)
- (Facility not specified) (Crescent City, CA)
- (Facility not specified) (Eugene, OR)
- (Facility not specified) (Ferndale, CA)
- (Facility not specified) (San Diego, CA)
- (Facility not specified) (Westport, OR)

COMMODITIES STORED

Of the 47 respondents to Question Seven, which asked *'What commodities would you store in the facility?'*, 30 declared they would use the facility to store fish or seafood, and 15 respondents would store meat (other than fish or seafood). Other responses included agricultural products, dairy products, packaged foods, fresh produce, flowers, and beer and wine.

Photo: Humboldt County Peppers. (Credit: Ben Ramirez)

Survey Question 7 Results

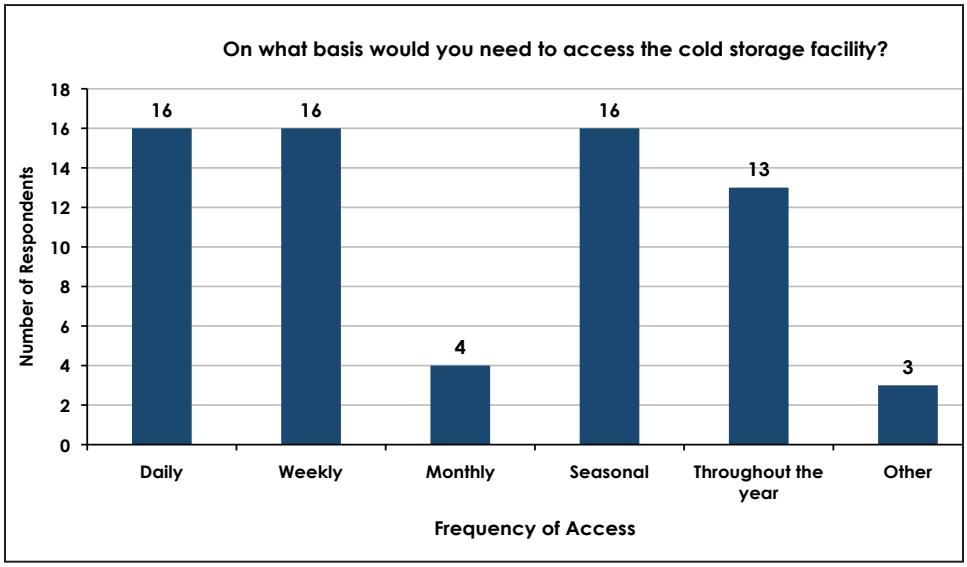


Frequent access in and out of the facility offers an opportunity for revenue, as it is standard for cold storage facilities to charge handling and "in and out" fees.

FREQUENCY OF FACILITY ACCESS

Question Nine of the survey asked, *'On what basis would you need to access the cold storage facility?'* for which respondents were given the option to select more than one answer. Of the forty-seven respondents, 16 answered that they would access the facility daily, 16 weekly, 16 seasonally, and 13 would need to access the facility throughout the year.

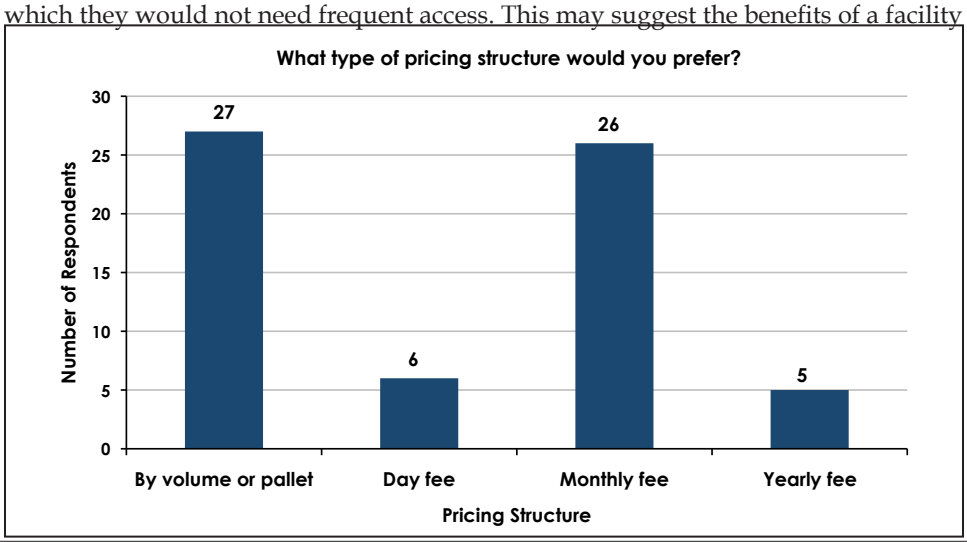
Photo: Groundfish being loaded for transport to processing plant.



Survey Question 9 Results

PRICING STRUCTURE

Question Ten asked respondents *'What type of pricing structure would you prefer?'* and offered four choices: by volume or pallet, day fee, monthly fee, or yearly fee. Forty-eight people answered this question, with the vast majority preferring either a by volume/pallet fee or a monthly fee – at 27 and 26 respondents respectively. Some respondents indicated seasonal needs, other indicated need for excess product to which they would not need frequent access. This may suggest the benefits of a facility



offering multiple pricing structures.

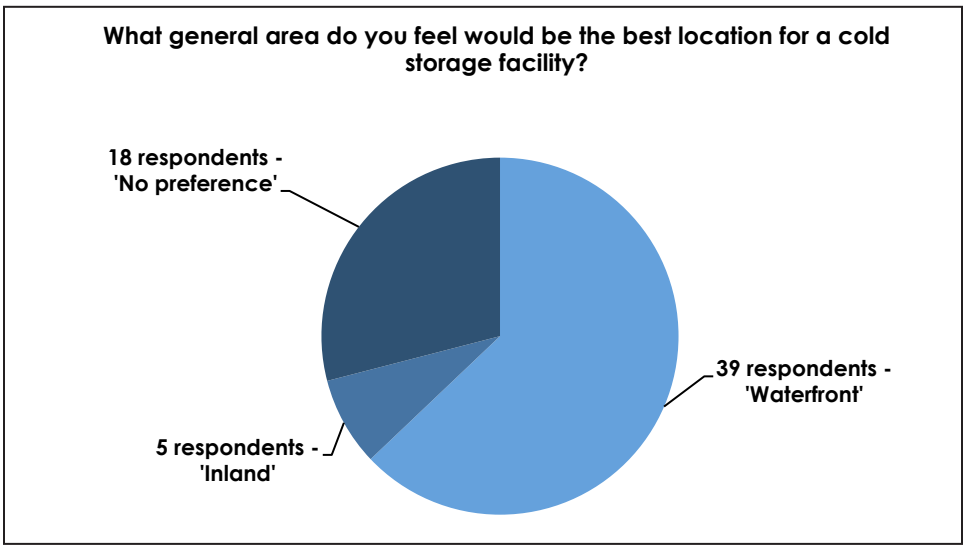
Survey Question 10 Results

Photo: Eureka Waterfront. (Credit: Stephen Colebourne)

FACILITY LOCATION

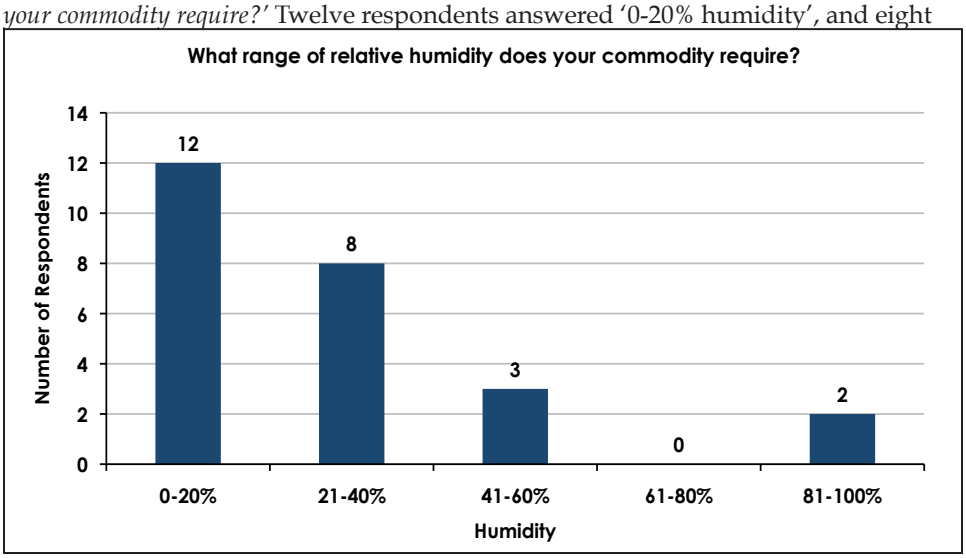
Question Eleven asked respondents *'What general area do you feel would be the best location for a cold storage facility?'* Of the 62 respondents to this question, 39 preferred a waterfront location. Five respondents preferred an inland location and 18 indicated that they did not have a preference. Respondents were also given the opportunity to write in a preferred location and further define their response. Write-in responses included: Fields Landing, at Redwood Acres, "between Arcata and Eureka (near Cash and Carry)", and somewhere with "quick and easy access to Highway 101".

Survey Question 11 Results



HUMIDITY

Twenty-two people responded to the question *'What range of relative humidity does your commodity require?'* Twelve respondents answered '0-20% humidity', and eight



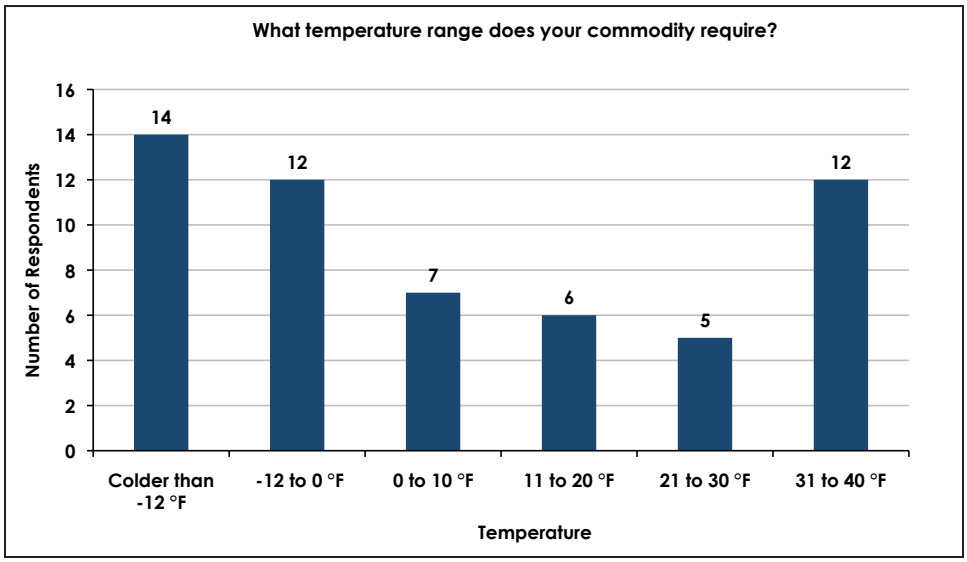
answered '21-40% humidity'. Three answered '41-60% humidity' and two answered '81-100%' humidity'.

Survey Question 12 Results

Photo: Boxes of fresh produce in blast freeze tunnels, Monterey Fish Company, Salinas, Ca.

TEMPERATURE

The survey's final question asked *'What temperature range does your commodity require?'*



Of the 42 who responded to this question, the most frequent answer was 'Colder than -12 degrees Fahrenheit', with 13 respondents choosing that. Twelve respondents chose '-12 to 0° Fahrenheit', and the same number chose '31 to 40 degrees Fahrenheit'.

Survey Question 13 Results

COMMENTS

The final survey question allowed respondents to provide any additional cold storage-related comments. Below if a comprehensive sampling of all provided comments, organized by theme:

Industry-Related Needs for Cold Storage

"Cold storage is needed for economic expansion of the fishing industry (squid, and sea urchins are being fished up here due to some climate changes)."

"I blast freeze salmon at sea in CA and Oregon. My home port is fort Bragg. There are no good cold storages in California close to unloading facilities."

"For the most part Pink shrimp is a frozen product. The only shrimp process in California occurs in Eureka. Cold storage would benefit the shrimp fishery. Groundfish is a year round fishery. Much of this fish is sold fresh, but there are times and species when this product is frozen, such as Sablefish and Thornyheads. Lastly, frozen whole cooked or sections of Dungeness crab is

another very important component to the local fishing fleet."

"Freezing temperature would help destroy nosema spores which are one of the problems with bees these days."

"There is a need for cold freezing and storage for cannabis. Fresh cannabis can be frozen immediately after harvest, and if the correct facility is in place, this 'fresh frozen' product is then used for the production of ultra-premium hashish products."

"I used to store fish at Eureka Ice until it closed. I am also a boardmember of American Albacore Fishing Assoc. who would love to see a cold storage here to turn this port into a albacore receiving port once again. It is very hard to ship out of here because fishermen must have full containers without cold storage. We need infrastructure!"

"Such a facility would be beneficial to breweries in the area as it would allow cold storage of finished beer for eventual shipments to distributors."

"We plan on building cold storage units on our farm but they are very pricey. We could really use flake ice though. Lots of un-salted flake ice."

"I am not sure how cold storage in Eureka would benefit the campus food pantry. However, with information about how cold storage might benefit the services we offer, I might realize we have a greater need. Right now, we feel like we need cold storage on location."

"The herring fishery has not been active for the last ~10 years. However, recent surveys indicate that the stocks are still present and could recover. The quota for Humboldt Bay is 60 tons. The season is Jan - mid-March."

"We froze forty to ninety tons of herring in the winter and fifteen to thirty tons

of sardines in the fall. The closing of Eureka cold storage stopped our business and we believe it would take some time to redevelop markets for this fish. Thank you!"

General Need

"As a real estate broker, I receive occasional requests for cold storage. I feel that it would be an opportunity for Eureka if this facility were readily available."

"I have been in numerous meeting via the Food Policy Network and team meetings for proposal development, and this idea has emerged quite often. I hear from producers and consumers of produce that this is a need, which is why I took the survey."

Benefits to Community

"Cold storage would increase business in Eureka, and that would increase the need for security guard service, which is my business."

"Cold storage in Humboldt County is an essential key to keeping our food production local. It will also benefit food producers who wish to ship their product elsewhere. Keep our current industries viable, and pave the way for more local business opportunities by building this facility!"

"Thanks for taking the time to do this survey. We would be small time users of this facility but think it is very important for the marine business community and the increasing number of local produce growers needing cold storage."

"Rogers Machinery is a proponent of any industry/business that will bolster our local economy."

"We plan on building cold storage units on our farm but they are very pricy. We could really use flake ice though. Lots of un-salted flake ice."

Suggestions for Buildout

"Do not give management to a conflict of interest like the so called Eureka public hoist for those fishing boats that choose to market there own product. Semitruck user and unloading staffing."

"Solicit a cold transport company to make a hub out of the location or maybe two."

"Must have, require to have lower than minus 20. Minus 20 is mandatory to keep sashimi grade fish. Should be lower."

"I am concerned about the biohazards and toxicity that comes with having such a plant located on the North Coast."

"Good truck access is important, Dockside for flake ice for fishing boats."

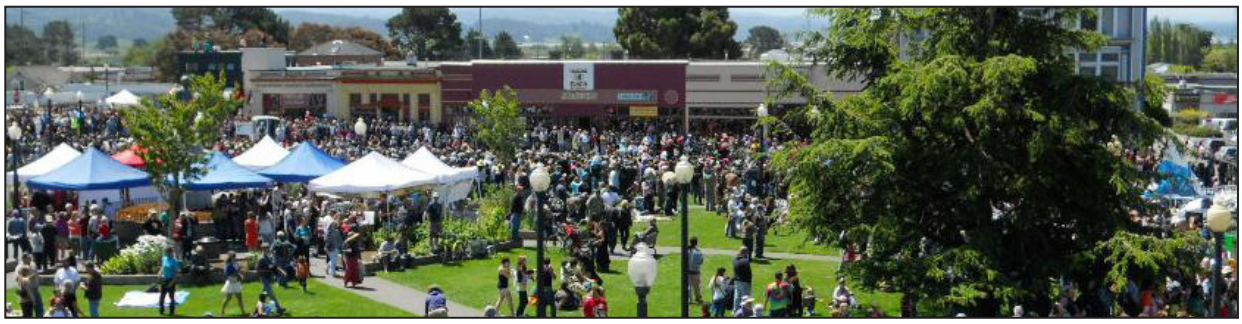


Photo: Arcata Farmer's Market.

LWC

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APPENDIX B

GENERAL BASIS OF DESIGN

FOR A FISH PROCESSING PLANT

BASIS OF DESIGN FOR THE EUREKA COLD STORAGE AND ICE HOUSE FACILITY

Introduction

The City of Eureka has commissioned a study to determine the economic viability of a cold storage facility that will serve the needs of local industries including fishing, dairy, meat, fresh produce, and specialty foods and beverages. The City does not necessarily wish to own or operate the facility. Their intention is to help facilitate a process that will result in a facility being built and operated by a private company or by some kind of public/private partnership. This is an economic development project meant to provide information that a developer or business would need in preparing a business plan around this project.

This Basis of Design Report will serve as a guide in developing an initial conceptual design and construction cost estimates. The cost estimates and the accompanying Demand Assessment (Lisa Wise Consulting, June 2015) will be used in the financial analysis and the development of a pro forma to determine the economic viability of the project.

Design Intent and Basis of Design

The Design Intent is the driver of the Basis of Design. It defines the objectives of the project. The Basis of Design provides the criteria by which the Intent will be satisfied.

The Design Intent for the Eureka Icehouse and Cold Storage Project is to provide cold storage and related services primarily for the local fishing/seafood industries. The facility should have the following characteristics and services that are available for rent or lease by the ton or square foot:

- located on or near the waterfront with easy access by boat and by truck,
- cold/frozen storage space (probably multiple cells with shelves,
- blast or plate and/or brine freezers for rapid freezing of raw product,
- flake ice dispensary for boats that are on the water,
- processing areas for preparing raw products to be frozen,
- shipping docks for trucks and boats.

Preliminary Design Criteria

The preliminary design criteria for the Eureka Icehouse and Cold Storage Facility includes the features listed below. They are based on the results of the Demand Assessment and are subject to change during the final design of the facility.

- A one to three acre site with a dock or a site where a dock can be constructed or accessed,
- The site's surface elevation should be at least 12' (NAVD 88) to account for sea level rise,
- Approximately ½ acre of paved parking for trucks and trailers as well as cars,
- Metal building designed for the marine environment set on 3' tall concrete stem walls,
- The buildings finished floor elevation should be approx. three feet above the site grade,

- Two truck loading docks with two spaces each at site grade (no pit-style loading bays),
- Direct access to a boat dock where raw product is being unloaded,
- 4" to 6" sewer line,
- 1" water service with a 4" fire connection,
- 3 phase electrical power, 480 volts, 1,000 amp service
- High speed internet and communication services,
- Flake ice machine on boat dock capable of producing 40 tons/day and storing 60 tons.
- A rapid freezing system (blast, plate, brine) capable of freezing 15 tons/day,
- Cold and frozen storage rooms/cells with a total capacity of 600 - 800 tons at any one time,
- 4 to 6 separate, heavily insulated, separate rooms held at various different temperatures capable of being turned off seasonally,
- Between 8,000 and 10,000 sf of processing areas that could be set up seasonally for specialty operations such as crab and shrimp cooking, fish filleting, and other preparations,
- Office, employee, equipment room, and ancillary space to accommodate the required operations.

At this point, the facility design will be fairly generic and will allow for expansion and customization by potential customers. It will have the cold storage, freezing capabilities, processing areas and flake ice capacity listed in Table 1 (below). Construction cost estimates will be based on these design elements.

Table 1. Equipment and storage room capacities

Service Category	Required Capacity
Cold Storage (tons of storage capacity)	600 - 800
Blast Freezer (tons of product/day)	15
Flake Ice (tons produced/day)	40
Flake Ice (tons stored)	60
Cube/Block Ice (tons produced/day)	10
Cube/Block Ice (tons stored)	150
Dry Ice (tons shipped/day)	1.0
Dry Ice (tons stored)	10
Processing Area (sf)	8,000 - 10,000

Insert 11x17 floor plan

Health and Safety Regulations/Permit Conditions

The design, construction and operation of the facility must comply with State and federal health and safety standards for fish processing plants. The facility must include space for all activities and operations as well as space for storage and mechanical systems. The facility might include out buildings to provide more space. The various spaces and operations should fit together in an efficient and convenient manner.

HACCP and Good Manufacturing Practices

To be allowed to sell the products throughout California and the rest of the world, food processing companies must develop quality and safety systems that meet or exceed appropriate standards. The concepts of the Hazard Analysis Critical Control Point (HACCP) program were developed in the 1960s by NASA for protecting food supplies used in the space program. The development and adherence to a HACCP program is now mandated for the meat, poultry and seafood industries. The development and adherence to the HACCP program requires certain design and operations criteria.

The US Food and Drug Administration (FDA) has promulgated "Good Manufacturing Practice" regulations (Title 21 of the Code of Federal Regulations, Part 110, Subpart B--Buildings and Facilities, Sec. 110.20 Plant and Grounds) that apply to all food manufacturing operations in the United States, including seafood processing. A portion of those regulations that apply to plant construction and design include:

(b) Plant construction and design. Plant buildings and structures shall be suitable in size, construction, and design to facilitate maintenance and sanitary operations for food-manufacturing purposes. The plant and facilities shall:

(1) Provide sufficient space for such placement of equipment and storage of materials as is necessary for the maintenance of sanitary operations and the production of safe food.

(2) Permit the taking of proper precautions to reduce the potential for contamination of food, food-contact surfaces, or food-packaging materials with microorganisms, chemicals, filth, or other extraneous material. The potential for contamination may be reduced by adequate food safety controls and operating practices or effective design, including the separation of operations in which contamination is likely to occur, by one or more of the following means: location, time, partition, air flow, enclosed systems, or other effective means.

(3) Permit the taking of proper precautions to protect food in outdoor bulk fermentation vessels by any effective means, including: (i) Using protective coverings; (ii) Controlling areas over and around the vessels to eliminate harborages for pests; (iii) Checking on a regular basis for pests and pest infestation; (iv) Skimming the fermentation vessels, as necessary.

(4) Be constructed in such a manner that floors, walls, and ceilings may be adequately cleaned and kept clean and kept in good repair; that drip or condensate from fixtures, ducts and pipes does not contaminate food, food-contact surfaces, or food-packaging materials; and that aisles or working spaces are provided between equipment and walls and are adequately unobstructed and of adequate width to permit employees to perform their duties and to protect against contaminating food or food-contact surfaces with clothing or personal contact.

(5) Provide adequate lighting in hand-washing areas, dressing and locker rooms, and toilet rooms and in all areas where food is examined, processed, or stored and where equipment or utensils are cleaned; and provide safety-type light bulbs, fixtures, skylights, or other glass

suspended over exposed food in any step of preparation or otherwise protect against food contamination in case of glass breakage.

(6) Provide adequate ventilation or control equipment to minimize odors and vapors (including steam and noxious fumes) in areas where they may contaminate food; and locate and operate fans and other air-blowing equipment in a manner that minimizes the potential for contaminating food, food-packaging materials, and food-contact surfaces.

(7) Provide, where necessary, adequate screening or other protection against pests.

Other Regulations, Permits, and Licenses

The project proponent will need to comply with local, State and federal regulations and obtain agency permits, as required.

The following regulations, permits and licenses may apply:

- City of Eureka Business License
- Building Permit
- Certification of Measuring/Weighing Devices from the Division of Measurement Standards

Site Development Considerations

The Siting Study identified a number of properties on the Eureka Waterfront that could satisfy the requirements of the project. The highest rated site was owned by the City of Eureka. It is located at the foot of Commercial Street adjacent to the Pacific Choice cold storage and icehouse (also owned by the City). It is slightly less than one acre in size and would greatly benefit if the adjacent, two acre parcel to the east was added to the project. For the purposes of the cost estimate; it will be assumed that these two parcels will be the site for the project. Adjustments to the estimate can be made if another site is chosen for the project.

Site preparation will include clearing and grubbing, existing building demolition/salvage, cutting or filling, fencing, paving, etc. Ideally, the site will be gently sloping so that loading dock side of the building is approximately 3 feet above the loading ramp. In this way the loading ramps will not be in a pit or below grade and will not require a sump or drain that could become a source of odor. Other improvements may be required based on site investigations.

Equipment Requirements

Flash/Blast/IQF Freezers

As stated above; the equipment that will be included in the cost estimate will be limited to that required for providing flake ice, for receiving seafood from boats, for freezing seafood, for minimal processing and for cold/frozen storage. Specialized equipment that may be useful/required is a function of the raw resources that will be processed and the products that will be produced. At this point, specialized equipment and employees will be the responsibility of the companies that utilize the facility.

The variety of products to be frozen requires selection of the proper freezing system for each product category. The selection is based upon the specific heat of the product, the size and shape, the water content and free water, as well as the entering temperature, and the pounds per hour the customer wants to freeze. The systems range from holding freezers to blast freezers, and to several types of Individual Quick Freezing (IQF) freezers.

Freezing systems for particular operations require specific consultation to be sure that there is a balance between the amount of product to be frozen and the cost of the equipment. Some flexibility should be considered so that the bulk of the products can be frozen with a minimum equipment investment and consideration given to the growth of production capability.

Freezing fish in homogeneous mass or "block freezing," such as in five-pound boxes of shrimp, is a relatively low-cost process. When product is IQF frozen, the process is more labor intensive and requires more costly freezing equipment. Cryogenic freezing systems, which usually employ liquid nitrogen or CO_2 gas, are also very effective, but due to the high cost of the gas, are usually limited to high-dollar product.

Flake Ice

The flake ice machine consists of a freezer mechanism to make the ice and freezer compartment to store and dispense the ice from. The entire system will be located on the dock. It will have the capacity to make 30 tons/day and to store 100 tons.

Processing Equipment and Area Requirements

The following equipment will be required to receive the fish/seafood from the boats, move it into the processing area, process it and store it. Additional specialize equipment that may be required will be provided by the company processing the fish.

- Receiving
  - Totes
  - Forklift
  - Gantry crane
  - Scales
- Processing Area
  - Roll around tables
  - Hot and cold water
  - Disposal facilities (dumpsters, drains, filters, etc.)
  - Pressure washing equipment
- Cold/Frozen Storage
  - Blast freezer
  - Freezer/cold storage
  - Glazing bin
- Flake ice machine
  - Ice machine
  - Holding cell
  - Loading chute/hose

All surfaces in contact with the food must be visible for inspection or the equipment must be readily disassembled for inspection, disassebly and cleaning, or it must be demonstrated that routine cleaning procedures eliminate possibility of contamination from bacteria or insects. All equipment should be self-emptying and self-draining.

Site and Facility Layout Considerations

The building and site must allow space for the various components and activities including:

- Space for off-loading, weighing and storing unprocessed fish,
- Office space
- Lavatory, laundry, and eating room facilities
- Washing, cleaning and processing
- Blast freezing or chilling
- Packaging
- Cold storage
- Dry storage
- Storing packaging and other supplies
- Quality testing
- Mechanical equipment (heating, freezing, hot water, domestic water, etc.)
- Energy systems (electricity, lighting, etc.)
- Wastewater treatment system,
- Solid waste handling, and
- Water treatment system.

A key consideration in meeting health and safety requirements is that raw resources and finished products are kept separate. The incoming resources should move sequentially through the plant, from where they enter the facility through the various processes (packaging, freezing, storing, and shipping) to where they leave the facility. Activities that might introduce contamination should be separated from finished products. Spaces that are hot should be separated from spaces that are cold. Spaces where raw fish are handled need to be physically separated from spaces where final product handling occurs.

The building should be designed so that the different spaces fit together in a way that is efficient and convenient. Factors to consider in designing the facility include:

- "green" design features (MEP systems, envelope)
- sufficient space for all machinery, equipment and storage,
- logical sequencing of processes,
- separation of operations that might contaminate food,
- separation of freezer space from heat-producing machines (e.g., retorts),
- natural and artificial lighting,
- ventilation, and
- protection against pests.

There are a number of basic principles for hygienic design including:

- All surfaces in contact with food must be inert to the food under the conditions of use and must not migrate to or be absorbed by the food.
- All surfaces in contact with food must be smooth and non-porous so that tiny particles of food, bacteria, or insect eggs are not caught in microscopic surface crevices and become difficult to dislodge, thus becoming a potential source of contamination.
- The exterior or non-product contact surfaces should be arranged to prevent harboring of soils, bacteria or pests in and on the equipment itself as well as in its contact with other equipment, floors, walls or hanging supports.

One general problem of food processing involves the extremes of temperature, abundant use of water, condensation and contamination of food from overhead pipes and surfaces. Equipment design must consider this and include proper protection. There are many possible routes of contamination of the final product. It is not always possible to identify the most important routes and all of them must be included in a preventive program.

Proper layout and designs should ensure an uninterrupted and "straight line" process flow, and should meet other requirements:

- all functions should avoid zigzagging and backtracking,
- conditioned (chilled) air and drainage should flow from clean to unclean areas,
- the flow of discarded outer packing material should not cross the flow of either unwrapped ingredients or finished product, and
- there should be sufficient space for plant operations including processing, cleaning and maintenance, and for movement of materials and people.

Building

Much of the final design details will be governed by local building codes and regulations and the special requirements particular to a fish processing plant will have to be incorporated within these constraints. The following criteria apply to the various different building elements and the site.

The main building should have a concrete floor. Tilt-up concrete wall may be most practical and economical as steel will require extensive corrosion protection and wood will rot in this climate and with the expected moisture regime that will be present in the building. The roof will likely be metal and designed to support photovoltaic panels. The building design will rely as much as possible on the sun for heating, lighting and passive ventilation for cooling. Only non-toxic materials will be used in the construction.

Structural

The building will be in Seismic Zone 4 and exposed to high winds as well as potential flooding and tsunamis. Appropriate structural engineering design will be required in accordance with the most recent version of the California Building Code.

Foundation

The building's foundation will include driven pilings, concrete grade beams and a concrete slab.

Wet Processing Floors

Floors should be hard-wearing, non-porous, washable, well drained, non-slip and resistant to possible attack from brine, weak ammonia, fish oils and offal. Concrete is attacked by fish oils and also by the continued action of strong brine; it is also attacked by acids but not by ammonia. The rate of attack depends on the density of the concrete and on the amount of wear that removes the attacked material to expose fresh material; thus, when concrete is used as a floor finish, it must be of high quality. If the surface is subject to very heavy wear - by iron-wheeled bogies for example - then concrete is not very suitable. Clay tiles or pavers make the most hard-wearing floors for fish-working spaces. Avoid severe damage to floor surfaces by reducing necessary dragging of equipment and dropping of boxes; trunks and trolleys with synthetic rubber-tired wheels instead of steel ones.

Loading bays that are subject to extra heavy traffic may require the use of special metal tiles with an infilling of concrete; the anchor plate type is suitable. As far as possible, loading bays that are continually open should be completely screened from the working area of the factory.

The hard, smooth finishes that are most easily cleaned and best withstand hard wear are usually slippery. A certain amount of ribbing in the floor surface may be necessary, but the best safeguard is regular washing and scrubbing of the floor. If ribbed tiles are used, the grooves should run down the drain slope. Sudden changes from one floor surface to another that has a different degree of slipperiness should be avoided.

Fish working floors are continually being wetted, hence adequate drainage is essential. A slope of 1% to 2% is sufficient, and the slope should be so arranged that the regular traffic of workers and vehicles is across it, not up and down; there is then less danger of accidents. Slopes greater than 2.5% should not be used in areas of foot or vehicle traffic.

Take care to avoid any area of floor surface on which stagnant pools of liquid can lie; surface corrosion can be greatly accelerated under these conditions. All junctions between floor and walls should be covered and made watertight, thus eliminating corners that cannot easily be cleaned. Where possible, the floor material should be carried up the wall for a short distance.

All floors should be vermin and insect-proof; joints around pipes and fitments that pass through the floor should be filled with impervious material, such as hard cement or pitch mastic. If a floor other than the ground floor of a building has to be used for wet fish processing, such a suspended floor needs a waterproof membrane or underlay between the structural floor and the finish of tiles or concrete. Expert advice should be sought to ensure that such a floor is laid in a proper manner to protect the structure below.

Wet Processing Walls

Walls should be smooth and waterproof. Brickwork or block work of dense concrete blocks are preferable for the main walls since they provide a good base for a smooth washable finish; exposed steelwork must be protected against corrosion and may also need a coating that prevents condensation. Steel reinforcement should be covered with at least 40 mm of concrete.

One satisfactory wall finish is obtained with ceramic tiles. These are expensive, and if tiling to the full height of the wall is out of the question, then fit tiles to a height of at least 3 feet and have a cement rendered finish above. The top edge of the tiles should be finished with a rounded tile, or the tiling made flush with the wall surface above.

The walls should be kept free of unnecessary projections; pipe work should be sunk flush with the wall surface or neatly boxed in. Jutting corners susceptible to damage from passing traffic should be protected by a steel plate, especially where the wall is finished with tiles. Corners between walls should be rounded off.

Whatever the decorative finish, a cement-based rendering on the brickwork or concrete block wall is desirable to give a smooth, easily cleaned surface that can be hosed down. Cement paints and chlorinated rubber paints stand up well to wet conditions; wherever higher resistance to water and brine is needed, epoxy, urethane and neoprene paints should be considered and the manufacturers recommendations complied with.

Wet Processing Ceilings

Ideally, the ceiling should be a continuous, smooth, unbroken surface that can be easily cleaned, for example, the underside of a concrete slab. If, however, there is a roof space containing beams,

trusses, service piping or machinery, then a suspended ceiling is desirable unless the building is very high. Ceiling boards should be unaffected by moisture; asbestos-based boards are unsuitable.

Condensation may be troublesome in cold weather because of the high humidity within the building; insulation should be provided above the suspended ceiling and the roof space should be well ventilated to the open air. Some forced warm-air ventilation may be needed in extreme cases.

Insulated ceilings can be finished with high gloss paint in a light color. Where the roof beams or trusses are exposed, that is where no suspended ceiling is fitted, paints for the steelwork should be chosen carefully to avoid the risk of flakes falling into the factory. The clear internal height must suit the factory production and storage, and its adequacy for all future requirements should be considered.

The plant must be accommodated with sufficient clearance for its installation, removal and maintenance, while mobile equipment, such as fork trucks, may call for special headroom for efficient working. Any tendency for a given type of production machinery to increase in height should also be considered when deciding on the clear height for the framework of a factory building.

Doors and Windows

Doors and window frames should be of non-porous, non-absorbent materials; wood is not very suitable. Doors should be made without inset panels or ledges; a flush surface is much more easily kept clean. Doors should be self-closing and the bottoms protected by kicking plates.

Window frames of a suitable aluminum alloy need no painting, but regular washing is needed to keep the metal bright and to prevent pitting corrosion. Steel windows must be heavily galvanized and kept well painted, both to protect the metal against corrosion and to reduce the risk of paint flaking. Wooden doors and window frames should be kept well painted.

Office and Employee Facilities

The office and employee facilities will be heated, cooled, and ventilated independently of the processing plant. The preference would be to have radiant-heated, concrete floors so that they could be washed down daily. The office will have multiple, large windows to provide visual contact with the scale, the loading dock, the employee break room, and the wet processing room.

Lighting

Maximum use should be made of natural daylight by providing adequate windows and skylights. Good diffused general lighting to augment or replace daylight is best achieved with high-efficiency fluorescent lighting. General lighting should be augmented, where necessary, by individual lights at weighing and inspection points. Light shades and fittings should be of simple design and easily cleaned.

All lighting, electrical fixtures, and outlets in the wet processing rooms must be waterproof and specifically designed for a wet environment.

Ventilation

The atmosphere in fish plants is humid; good ventilation will reduce the nuisance of condensation, remove bacteria-loaded moist air, dust and smells. Good temperature control can provide comfortable working conditions without allowing air temperature to rise too high and so rapidly spoil the product. Windows and skylights can be used for ventilation, but judicious use of exhaust fans or special roof vents is preferable.

Ventilation ducts should be fitted within walls or ceilings, or held well clear on bearers to allow for easy cleaning. The inlets should be insect-proof and away from dusty places. All metal fitments that are likely to rust should be well protected by paint. Screens should be removable for cleaning. A mechanical air conditioning system can be installed to control temperature and humidity.

Floor Drains

Floor drainage channels will be included in the raw fish processing room. The drain will discharge through a screened basket into a holding tank on the way to the fish processing wastewater treatment plant (separate from the human sewage system). The floor drain should have easily removable gratings and should be wide enough to permit brushing and hosing out.

Power supply

Provision should be made not only for present but for likely future requirements of electricity when wiring the building. Electricity and telephone services will be supplied by the local utility company. The facility will require (at a minimum) 480-volt, three-phase, 800-amp service. Electricity will also be generated on-site using a grid-tied photovoltaic array. Through a net-metering agreement with the utility company, the solar generated electricity will offset that which must be purchased from the utility company. All electrical equipment, motors, and lighting systems will be high-efficiency and designed to use the least amount of energy possible.

Water supply

A generous supply of water must be available at numerous points throughout the premises, both for use during processing and for cleaning. Storage tanks (if used) should be kept covered. The domestic water and process water and the fire fighting water supplies will likely be from the same source—either a well or a developed spring—unless the facility is sited in a location where "city" water is available. The system will probably include a storage tank (or tanks) and pressure pumps although it could be a gravity system. The required domestic/process water flow rate will be approximately 30 gallons/minute. The water should be regularly tested to determine and document the quality to ensure that it is suitable for the processing requirements. A water treatment system may be required.

The required fire-fighting water flow rate will be approximately 1,500 gallons/minute for two hours.

Hot water needs will be met with a solar thermal system (roof panels) and heat recovery systems that will capture waste heat from the smoke house and retort. Electricity or natural gas or propane will be used as a backup for the hot water system.

Factory yards

The whole yard should have an even, impervious surface and be properly drained. If returnable fish boxes are stored and washed there, the walls adjacent to that part of the yard should be cement rendered to a height of at least 5 feet. Adequate clean, dry storage should be available for box storage, preferably under cover; new boxes and other packaging materials should be stored inside the building.

All offal bins, which should have close-fitting, deep-lidded lids and should preferably be stored in close out-buildings, should not be left exposed in the open yard. If they must be stored in the open, they should be kept in a cool, shady place, either on a smooth concrete plinth, or supported at least one foot clear off the ground on a metal stand so that the paving beneath can be cleaned. The whole stance should be protected by screening walls, and be properly drained.

The toilets in the bathrooms will be connected to the City's sewer system. The higher strength wastewater generated by processing fish will be collected along with the heads and guts, fins, slime and crab shells, in a tank and be pre-processed (filtered) before being discharged into the sewer system.

Wastewater

The wastewater discharged from the plant is estimated to be in the range of 20,000 to 30,000 gallons per day. The waste characteristics are approximately as follows:

- 212 - 11000 mg/L TSS
- 12,000 mg/L COD (settled)

The wastewater will be discharged into the City's sewage collection system and will be subject to a pretreatment agreement with the City. The system should be able to flow by gravity and will probably include an oil/water separator and some kind of filtration.

Solid Wastes

Fish wastes generated by the plant will all be biodegradable and high in nutrients. They could be turned into fish emulsion, or composted or disposed. For the purposes of this financial analysis, it will be assumed that they are disposed. The other commercial and lunch room wastes will be collected and disposed by the franchise hauler.

APPENDIX C

SITING STUDY

ATTACHMENT C – SITING STUDY

Siting Study

The purpose of the Siting Study was to identify a number of potential sites for the cold storage facility and to evaluate their suitability for the project. This was not a site "selection" process. It will be up to the project proponent to make a final selection and negotiate with the owner(s) for its sale or lease.

Selecting an appropriate site for any manufacturing and processing facility is a complex task, and especially so for a cold storage facility. The decision should be based on a number of physical, environmental, economic, and political considerations as well as a reasonable estimate of the potential impacts, constraints and opportunities. A properly sited facility will be easier to develop, it will function better, and it will receive fewer complaints from its neighbors.

Based on the results of the Demand Assessment; the fishing industry would be the primary user group of the proposed facility. They need a dock to unload fish, a flake ice machine next to the water, space inside a building to process fish, a blast or IQF freezers, and cold/frozen storage space. The next biggest user group would be the meat industry. Their needs are similar. In general, these two industries cannot be co-located due to health and safety requirements and permit conditions. Many other potential user groups, such as fresh produce, flowers, marijuana, dairy, and confectionary would also be incompatible due to odors associated with the fish. Another potential user (possibly facility operator) would be one that manufactures and distributes block, cube and dry ice. This business would require specialized processing equipment and probably need separate freezer space but could be co-located on the same property.

The siting study focused on serving the needs of the fishing and seafood industries and so, focused on sites the Eureka Waterfront, the Samoa Peninsula and Fields Lands/King Salmon areas. A separate facility could be located inland and may be able to support a slaughterhouse, cold/frozen storage, processing areas, cutting, wrapping, and commercial kitchen facilities. It should be the subject of a separate technical study.

The search for potential sites identified twenty-seven potential sites (Figures 1 – 23). Some of the "sites" included more than one parcel. The "sites" are outlined in blue and the City-owned parcels are outlined in red. The various criteria used in the evaluation are listed in the Siting Matrix (Table 1).

Google Earth and other aerial photographs were used in evaluating the sites. Geographic Information Systems (GIS) software was used in delineating the boundaries of the sites and for gathering other information such as: zoning, property boundaries, acreage, ownership, utilities, elevation, distance to Highway 101, distance to the fueling dock, and projected year of tidal inundation due to sea level rise. Each site was visited on foot and viewed from a boat. The

history and future plans for each site were discussed with a number of people including the City of Eureka's Development Services Director and staff, the Cold Storage Technical Advisory Committee (TAC), commercial real estate agents, The Humboldt Bay Fishermen's Marketing Association, the Humboldt Bay Harbor Commission Executive Director, and some of the site owners.

Each of the sites were given an overall rating number based on the evaluation criteria and perceived hurdles to its development. The ratings are on a scale of 1 – 10 with 1 being the best suited and 10 being the least desirable. The top three sites are listed below. They are all suitable but each have pros and cons that need to be considered during the next phase of the project.

1. Dock B: The property is owned by the City. It is located about 0.5 miles by street or water to the other fishing docks and the fueling dock. Most of the actual dock has burned down and the portion remaining would have to be at least partially rebuilt. The terrestrial portion of the site has ample space for expansion and good access to Highway 101. In the 1980s, engineered fill was placed, compacted and graded. The site is well-suited and ready for development. The TAC considered Dock B to be the top-rated site due to the ownership status, the room to expand and the other potential benefits that could be realized by repair of the dock. It is also above the anticipated sea level rise for the at least the next 50 years.

   Pros:
   a. Owned by City
   b. Plenty of room for development and expansion
   c. Ready for development
   d. Other potential uses for upgraded dock

   Cons:
   a. Dock will need significant repairs/upgrade
   b. Dredging required to reopen dock
   c. 0.5 miles from other fishing infrastructure, forklifts on Waterfront
   d. Other potentially conflicting uses for upgraded dock

2. Foot of Commercial Street: This is also a City-owned property. It is paved, ready for development and properly zoned. It has an existing, functional dock and currently serves as the public fueling dock for the fishing industry and other boats. The site is located in close proximity to other fishing docks and processing plants on Waterfront Drive. It is only 1.1 acres and there is a small parcel and an existing business (the Bar Fly, formerly Vista Del Mar) in the parking lot. The site is small and lack room for potential expansion but there is an adjacent parcel, to the east (approximately 0.3 acres, privately held), that could accommodate future expansion if the owner was willing to sell. Additionally, 3.4 acres exist across Waterfront Drive (the east end of the Balloon Track) that could be leased for truck parking and storage, or administrative offices. The flake

ice machine would be located on the dock. The site has good access from other fishing docks along Waterfront Drive.

Pros:

a. Owned by City
b. Ready for development
c. Existing dock
d. In the heart of the existing fishing infrastructure

Cons:

a. Small site
b. No room for expansion unless adjoining property owners sell/lease

3. Eureka Ice and Cold Storage: This site is privately-owned and was on the market and listed at $400,000 at the time of this study. It is close to fueling dock. It is approximately 1.3 acres in size and could accommodate some future expansion. It is also adjacent to the privately held 0.3 acre site (to the west) and the adjacent parcel across Waterfront Drive (3.4 acres, Balloon Track) could be leased for parking and storage. The existing building would need significant remodeling work and it may be more economical to demolish it and start fresh. An asbestos report has already been completed and some remediation done. A Phase 1 Environmental Site Assessment should be completed to determine the status of soil contamination at the site. The existing dock is small and damaged and would have to be at least partially rebuilt and/or expanded. This site was rated number three due to the potential acquisition cost, the development costs, the lack of a sound dock and potential presence of environmental contamination.

   Pros:

   a. In the heart of the fishing infrastructure
   b. Adequate size and room for expansion after existing building is removed

   Cons:

   a. Privately owned, City would have to purchase site
   b. Existing building must be demolished or significantly remodeled
   c. Potential for environmental contamination
   d. Dock will need significant repairs/upgrade

The other sites could be more closely evaluated if none of the first three sites are deemed suitable or cannot be acquired. The evaluation matrix showing how the sites were prioritized and aerial photographs showing the locations of the sites are included as Appendix C.

The evaluation matrix and aerial photographs showing all the potential sites follow.

Table 1. Siting Study Matrix

September 10, 2015

Site Name	Rating (1 Best 10 worst)	Current Use	Development Logistics and Conflicts	Combined Acreage	Functional Boat Dock	Miles to Fuel Dock	Distance to Highway 101	Parking/Staging Areas	Zoning	Projected Year of Tidal Inundation	Site Elevation	Power	Sewer	Water
Eureka Waterfront														
Halvosen Park	10	City-owned open space.	The City has plans for this area that are incompatible with a cold storage facility.	10.5	N	1.2	Waterfront to L St., 6 blocks to Highway 101	Y	CW	2100	10' - 12'	Y	Y	Y
Caito Fisheries	10	Occupied by and existing business. Caito Enterprises is a fish buyer and cold storage facility.	The waterfront site is too small to house a bigger facility and the parcels to the south of Waterfront Drive would have to be included for the size to be viable. The adjoining parcels are approximately 10' higher in elevation than the waterfront parcel.	1	Y	0.6	I St., 6 City blocks to Highway 101	N	CW	2100	9.5' - 12'	Y	Y	Y
G&R Metals	10	Privately-owned open space.	The City has plans for this area that are incompatible with a cold storage facility. Recently gone through environmental clean up. Not sure of the regulatory status.	2.3	N	0.6	H St., 6 City blocks to Highway 101	Y	CW	2100	10.5' -14	Y	Y	Y
Foot of D St	10	City-owned open space, existing buildings in poor shape.	The City has other plans for this area that will be incompatible with a cold storage facility. The new boardwalk does not function as a dock for fishing boats. Buildings might be historical but would have to be demolished.	2.4	N	0.3	D St., 6 City blocks to Highway 101	N	CW	2100	14' - 16.5'	Y	Y	Y
Fisherman's Storage	5	Currently used to store fishing gear.	City owned. Adjacent to Fisherman's Terminal and has good dock. It is very small and does not have any room to expand. Development would eliminate storage areas promoised to and currently utilized by fishermen. There is a vacant lot on the south side of Waterfront Drive that could potentially be used for the cold storage and the flake ice machine could be built out on the dock.	1.0	Y	0.2	Waterfront to D St., 6 City blocks to 101	N	MC	2100	9.5' - 12'	Y	Y	Y
Coast Seafood	10	Owned by Pacific Choice, services their oyster operations.	This site is being fully utilized by Coast Seafoods and not for sale. There is a vacant lot on the south side of Waterfront Drive that could potentially be used for the cold storage and the flake ice machine could be located out on the dock.	1.0	Y	0.1	Waterfront to Commercial St., 5 blocks to 101	N	MC	2030	8.5' - 9.9'	Y	Y	Y
Adjacent Parcel	10	Undeveloped open space, Brownfield. Part of the Ballon Track	This parcel could be used to supplement the acreage for a number fo waterfront parcels that are a little small. They include the Foot of Commercail, the Fisherman's Storage and Eureka Ice and Cold Storage.	3.4	N	NA	Commercial St., 5 City blocks to 101	Y	ML, P	2030	11' - 13'	Y	Y	Y
Foot of Commercial	2	City-owned parking lot surrounds the Bar Fly restaurant.	This parcel is owned by the City. It is a parking lot adjacent to a good dock. The site is small but there is a vacant lot on the south side of Waterfront Drive that could potentially be used for the cold storage. The flake ice machine could be located out on the dock. The site appears to have underground fuel tanks (assumed to be associated with the fueling dock).	1.1	Y	0.0	Commercial St., 5 City blocks to Highway 101	Y	MC	2100	10' - 11.5'	Y	Y	Y

Table 1. Siting Study Matrix

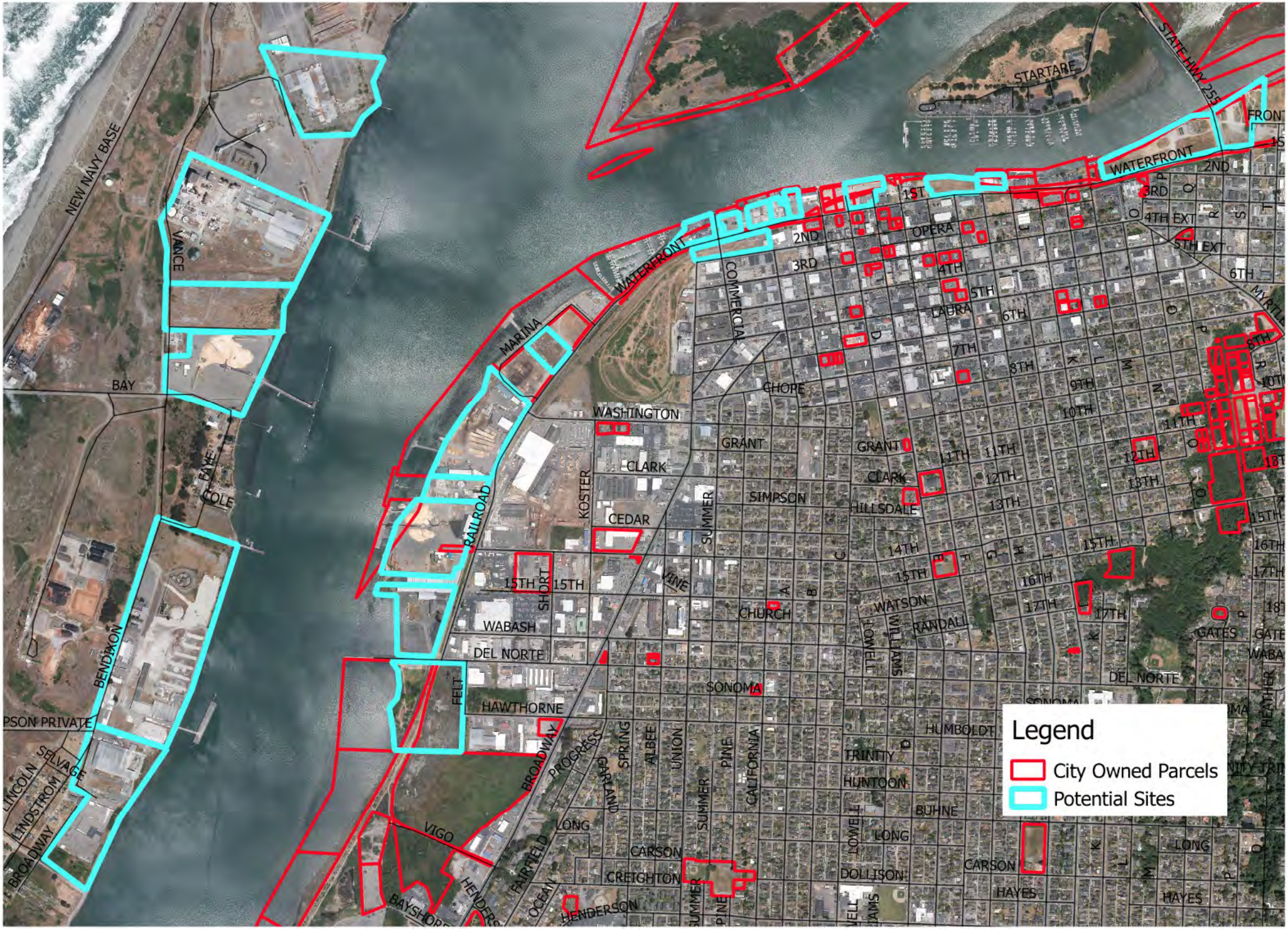
September 10, 2015

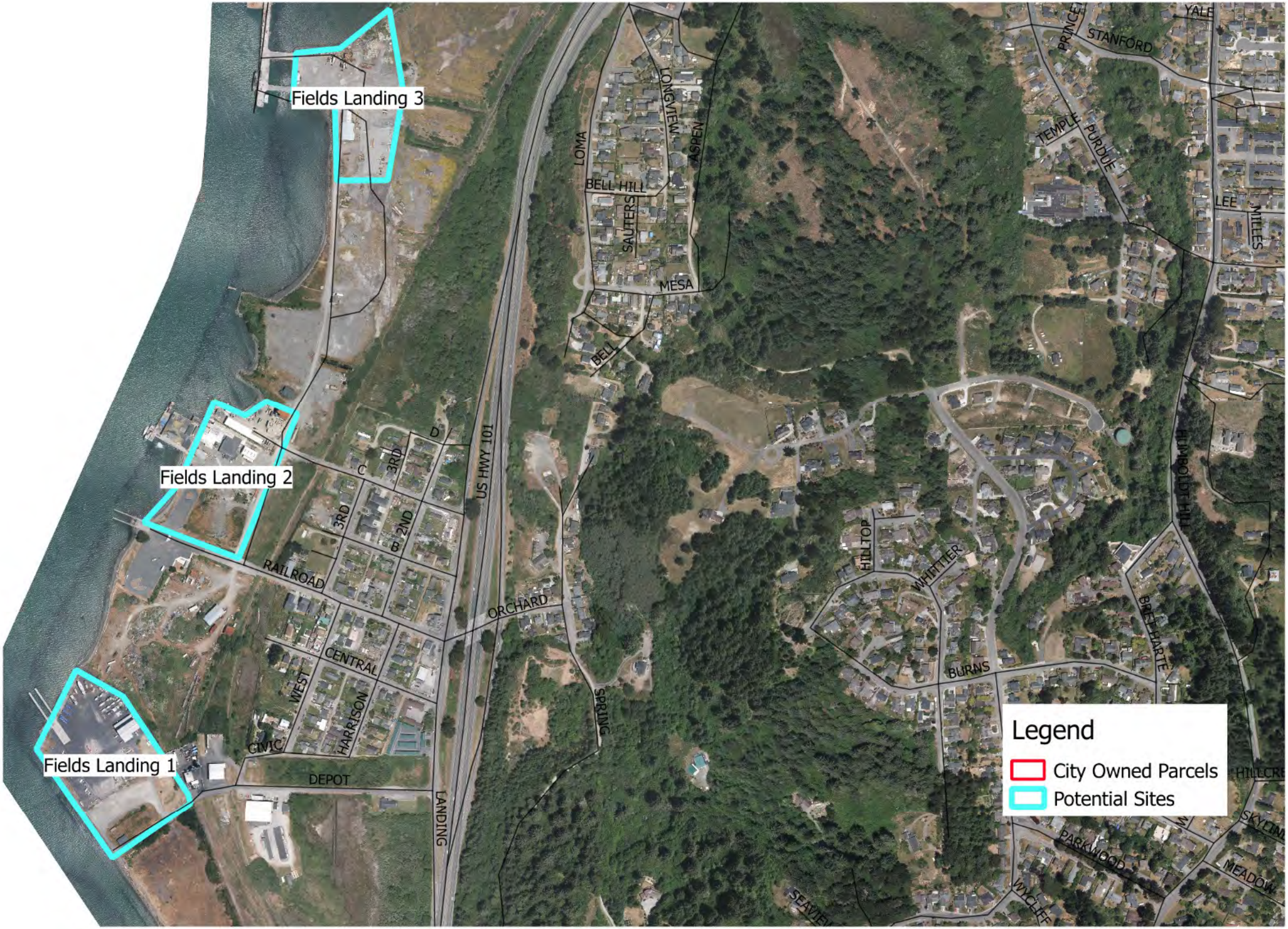
Site Name	Rating (1 Best 10 worst)	Current Use	Development Logistics and Conflicts	Combined Acreage	Functional Boat Dock	Miles to Fuel Dock	Distance to Highway 101	Parking/Staging Areas	Zoning	Projected Year of Tidal Inundation	Site Elevation	Power	Sewer	Water
Eureka Ice and Cold Storage	**3**	Unsued warehouse. Readi Ice was storing and shipping block and cube ice from recently.	Original site of the Eureka Ice and Cold Storage. Located in the central point of the current fishing industry activity. The foundation appears to be sound but the existing building would need extensive remodeling or demolition. I may be more economical to demoligh it and start fresh. This site is/was for sale. It does have dock which would need to be significantly repaired ro rebuilt. There is a vacant lot on the south side of Waterfront Drive that could potentially be used for the cold storage and the flake ice machine could be located out on the dock. The is a potential for the presence of environmental contamininats and a Phase 2 Site Assessment is receommended. An asbestos survey was completed a number of years ago and the status of the remediation work is unknown. This site was rated number three due to the aquisition and development costs.	1.4	N	0.0	Waterfront to Commercial St., 5 City blocks to Highway 101	N	MC	2030	8.6'-11.2'	Y	Y	Y
Pacific Choice	**10**	Pacific Choice, flake ice machine and frozen storage.	This is a City-owned parcel that is leased to Pacific Choice. They have cold storage and a flake ice machine (30 tons/day with 35 tons of storage?) out on the dock. Pacific Choice is already fully utilizing this site for fish processing and cold storage.	2.5	Y	0.0	Commercial St., 5 City blocks to Highway 101	Y	MC	2030	8.5' - 11.0'	Y	Y	Y
Dock B	**1**	City-owned open space and parking lot for Dock B	The site is level with engineered fill well above tidal inundation. Dock B burned down in the 1980's but could be rebuilt. Good access, plenty of parking space. Accessible to other fish unloading docks via forklift on Waterfront Drive.	2.9	N	0.6	Washington St., 0.35 miles to Highway 101	Y	MC	2100	12' - 12.5'	Y	Y	Y
Schneider Dock	**7**	Schneider Dock, site is actively used for log export	Has good access and a great dock and a boat launch ramp. Currently utilized for existing business. Might be able to fit a cold storage facility on the site but there could be traffic conflicts with competing uses.	15.5	Y	1.0	Waterfront to Washington St., 0.35 miles to 101	Y	MC	2100	9.9' - 14.5'	Y	Y	Y
Conoco Phillips	**7**	Industrial space, storage. Looks like aggregate storage.	Has good access to 101 and a dock that would need to be upgraded to handle fish unloading. The site looks fully utilized for existing business.	4.0	N	1.1	Waterfront to Washington St., 0.35 miles to 101	Y	MC	2030	8.4' - 12.4'	Y	Y	Y
Sierra Pacific	**7**	Sierra Pacific dock, chip export	The site is fully utilized for chip export. It has good access and a great dock with multiple entry points. Currently utilized for existing business. Might be able to fit a cold storage facility on the site but there could be traffic conflicts with competing uses.	16.3	Y	1.2	Waterfront to Washington St., 0.35 miles to 101	Y	MC	2100	9.5' - 12.5'	Y	Y	Y
Del Norte Flea Mart	**5**	Open space, warehouse and outdoor storage space.	Large buildings that appear to be intact. Lots of parking space. Used to have a dock, some pilings still in place. Good access to 101. Adjacent to the pulic fishing dock.	10.4	N	1.4	Wabash, 0.35 miles to 101	Y	MC	2100	10.1' - 11.8'	Y	Y	Y
Palco Marsh	**10**	Natural resource area, recreation	Wetlands and natural resources. Permitting would be dificult.	17.6	N	2.2	Wabash, 0.35 miles to 101	Y	MC, NR	2030	5.9' - 6.3'	Y	Y	Y

Table 1. Siting Study Matrix

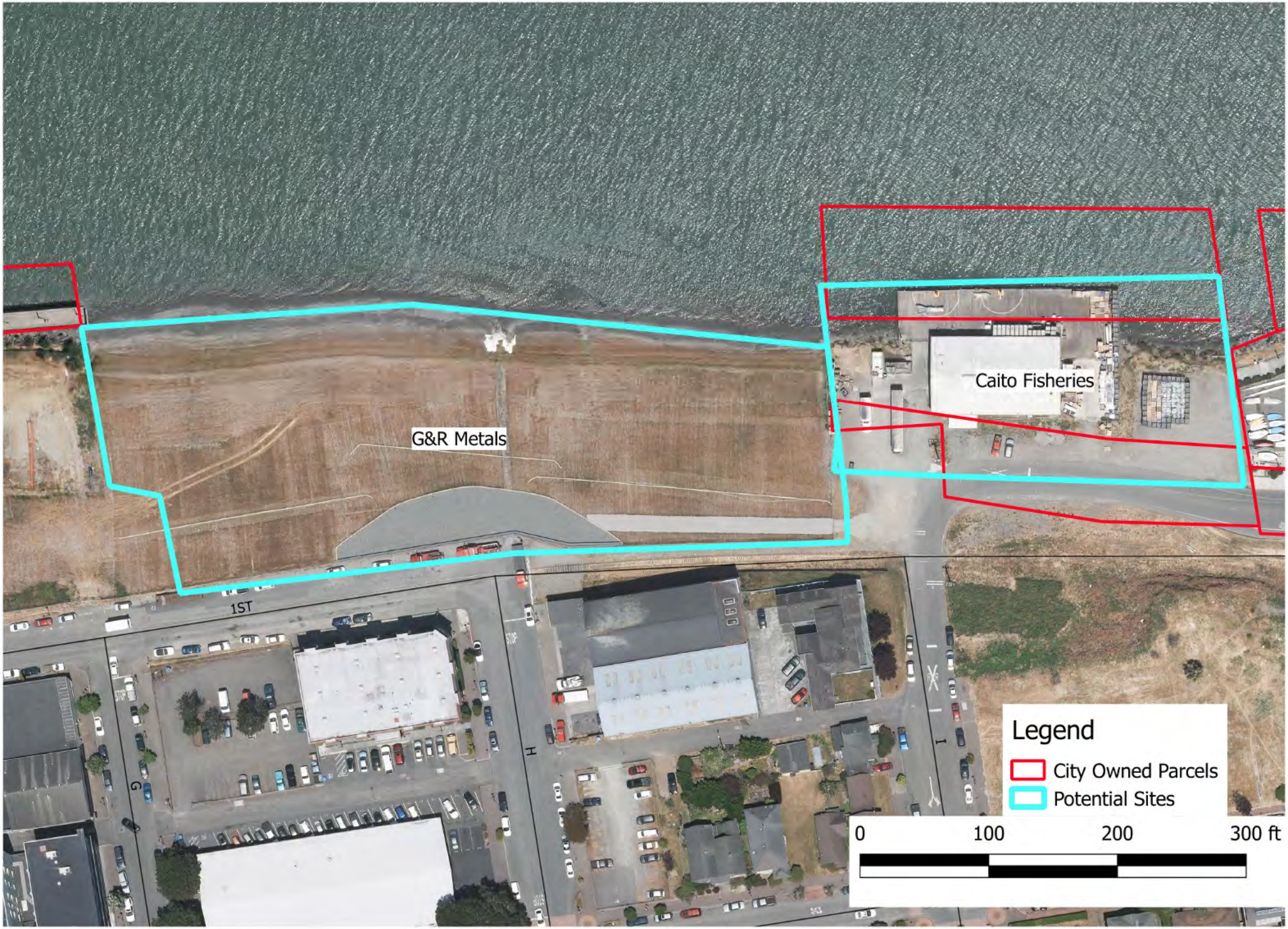
September 10, 2015

Site Name	Rating (1 Best 10 worst)	Current Use	Development Logistics and Conflicts	Combined Acreage	Functional Boat Dock	Miles to Fuel Dock	Distance to Highway 101	Parking/Staging Areas	Zoning	Projected Year of Tidal Inundation	Site Elevation	Power	Sewer	Water
Samoa Peninsula														
Redwood Dock	5	Owned by Harbor commission, some use by fishermen(hag fishery) and mericulture	Owned by Harbor Commission. Some of the dock is useable. It has a jib crane and some boat activity there already. Harbor commission is actively recruiting tennants and is planning to extend power out to the dock. Onsite sewage treatment system needs to be significantly upgraded. Access is through mill site. Mostly paved.	17.5	Y	1.5	255, Navy Base Peninsula, Mill (2.75 miles to Highway 101)	Y	Heavy Industrial	2050	9.5' - 10.5'	?	?	?
Samoa Properties	7	Brownfield, unused/abandoned industrial space and buildings.	Lots of above ground tanks still onsite. May have had a dock at one time but would have to be completely rebuilt. Dilapidated mill buildings would probably have to be demolished. Mostly paved.	21.3	N	0.8	255, Navy Base Rd., Mill Site (4.0 miles to 101)	Y	Heavy Industrial	2100	14.9' - 17.9'	?	?	?
LP Mill Site	6	Brownfield, industrial space and buildings.	Has a woodchip loading dock that would need to be upgaded to handle fish boats and unloading. Mostly paved. The building and dock are being used by oyster interests.	43	N	0.8	255, Navy Base Rd., Mill (4.2 miles to 101)	Y	Heavy Industrial	2100	10' - 25'	?	?	?
Schneider Samoa	8	Brownfield, unused/abandoned industrial space.	No buildings or dock. Looks like open ground (sand and veg, no pavement). Poor access.	16.3	N	1.0	255, Navy Base Rd., Mill Site (4.3 miles to 101)	Y	Heavy Industrial	2100	11.4' -21.2'	?	?	?
North Coast Exports	7	Fully utilized for chip storage and export.	Mostly paved. Good access off Navy Base Road. Has a woodchip loading dock would need to be upgraded to handle fishing fleet. Development would displace existing business.	18.3	N	0.9	255, Navy Base Rd., Mill Site (4.4 miles to 101)	Y	Heavy Industrial, Public	N/A	17' - 25'	?	?	?
Simpson Pulp Mill	5	Brownfield, industrial space and buildings.	Has a functional dock. Mostly paved. The building and open space are being used by soil bagging firm (Fox Farm). Development could create conflicts with existing business.	51.8	Y	1.9	255, Navy Base Rd., Bay St., Mill (5.6 miles to 101)	Y	Heavy Industrial	2100	14.5' - 22'	?	?	?
Sequoia Investments X	8	Actively used old industrial site. Looks like storage of pallets of soil.	Functional building and paved parking lots. No dock. Good access from Navy Base Rd. Potential conflict with existing business.	23.8	N	2.2	255, Navy Base Rd., Mill Site (5.7 miles to 101)		Heavy Industrial	2050	8.4' - 11.5'	?	?	?
Fields Landing														
Fields Landing 1	10	Boat launch ramp, boat and trailer storage.	Mostly paved. Good access to 101. No interest from fishermen about facility in King Salmon.	8.1	?	6.5	Depot Rd. to 101 (0.4 miles to Highway 101)	Y	Heavy Industrial	2015	8' - 14'	?	?	?
Fields Landing 2	10	Boat launch ramp.	Partially paved. Large dock with warehouse out over the water. Dock and building look dilapidated and in need of major upgrade. Good access to 101. No interest from fishermen for facility in King Salmon.	7	?	6.6	Railroad to 101 (0.3 miles) to Highway 101	Y	Light Industrial, Commercial	2015	11' -20'	?	?	?
Fields Landing 3	10	Old industrial site. Looks like storage and machinery and materials.	Building that looks like it has a new roof. Dock looks dilapidated and in need of major upgrade. No interest from fishermen for facility in King Salmon.	6.3	?	6.7	C St. to 101 0.5 miles to Highway 101)	Y	Industrial, MGOV	2030	9' -18'	?	?	?


Legend
City Owned Parcels
Potential Sites
NEW NAVY BASE
VANCE
BAY
FAYE
COLE
BENDIXON
PSON PRIVATE
LINCOLN
SELVAGE
LINDSTROM
BROADWAY
VIGO
BAYSHORE
HENDERSON
FAIRFIELD
OCEAN
FELT
HAWTHORNE
DEL NORTE
WABASH
15TH
SHORT
RAILROAD
KOSTER
CEDAR
CLARK
WASHINGTON
MARINA
WATERFRONT
COMMERCIAL
GRANT
SIMPSON
CHOPE
CHURCH
VINE
SUMMER
SONOMA
PROGRESS
BARLAND
SPRING
ALBEE
UNION
PINE
CALIFORNIA
LONG
CARSON
CREIGHTON
HENDERSON
LOWELL
WILLIAMS
TOWELL
WATSON
RANDALL
HILLSDALE
LAURA
OPERA
1ST
2ND
3RD
4TH
5TH
6TH
7TH
8TH
9TH
10TH
11TH
12TH
13TH
14TH
16TH
17TH
HUMBOLDT
TRINITY
HUNTOON
BUHNE
DOLLISON
HAYES
GATES
HEATHER
MYRTLE
STARTARE
STATE HWY 255
4TH EXT
5TH EXT


Fields Landing 3
Fields Landing 2
Fields Landing 1
Legend
City Owned Parcels
Potential Sites
US HWY 101
RAILROAD
ORCHARD
DEPOT
LANDING
CIVIC
WEST
CENTRAL
HARRISON
3RD
2ND
B
C
D
LOMA
BELL HILL
SAUTERS
LONGVIEW
ASPEN
MESA
BELL
SPRING
HILLTOP
WHITTIER
BURNS
BRET HARTE
HUMBOLDT HILL
PRINCETON
STANFORD
YALE
TEMPLE
PURDUE
LEE
MILLES
PARKWOOD
WYCLIFF
MEADOW
SEAVIEW

STATE HWY 255
East of 255
FRONT
S
Halvorsen Park
WATERFRONT
2ND
R
P
Q
Legend
City Owned Parcels
Potential Sites
100 0 100 200 300 ft


G&R Metals
Caito Fisheries
1ST
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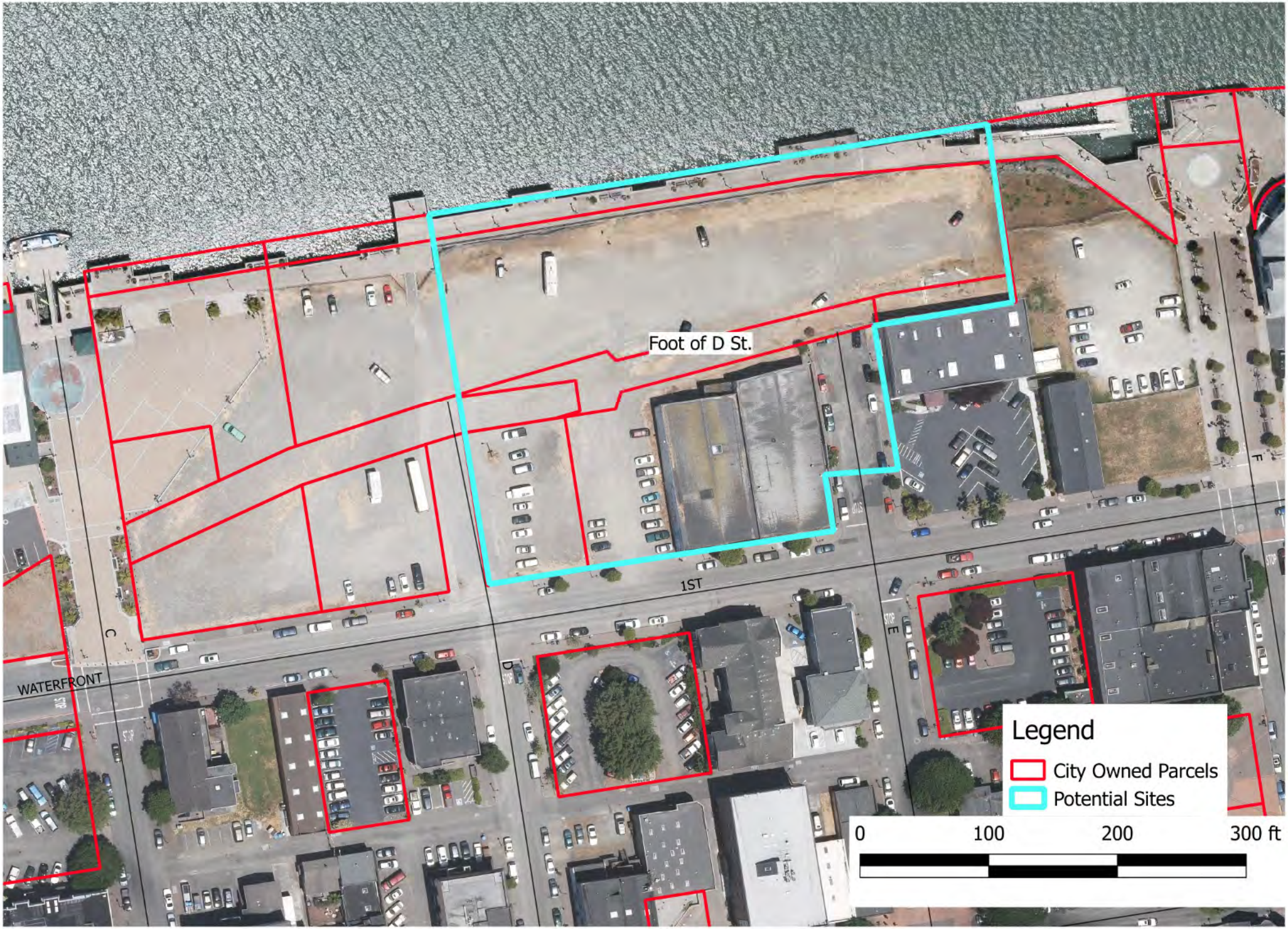
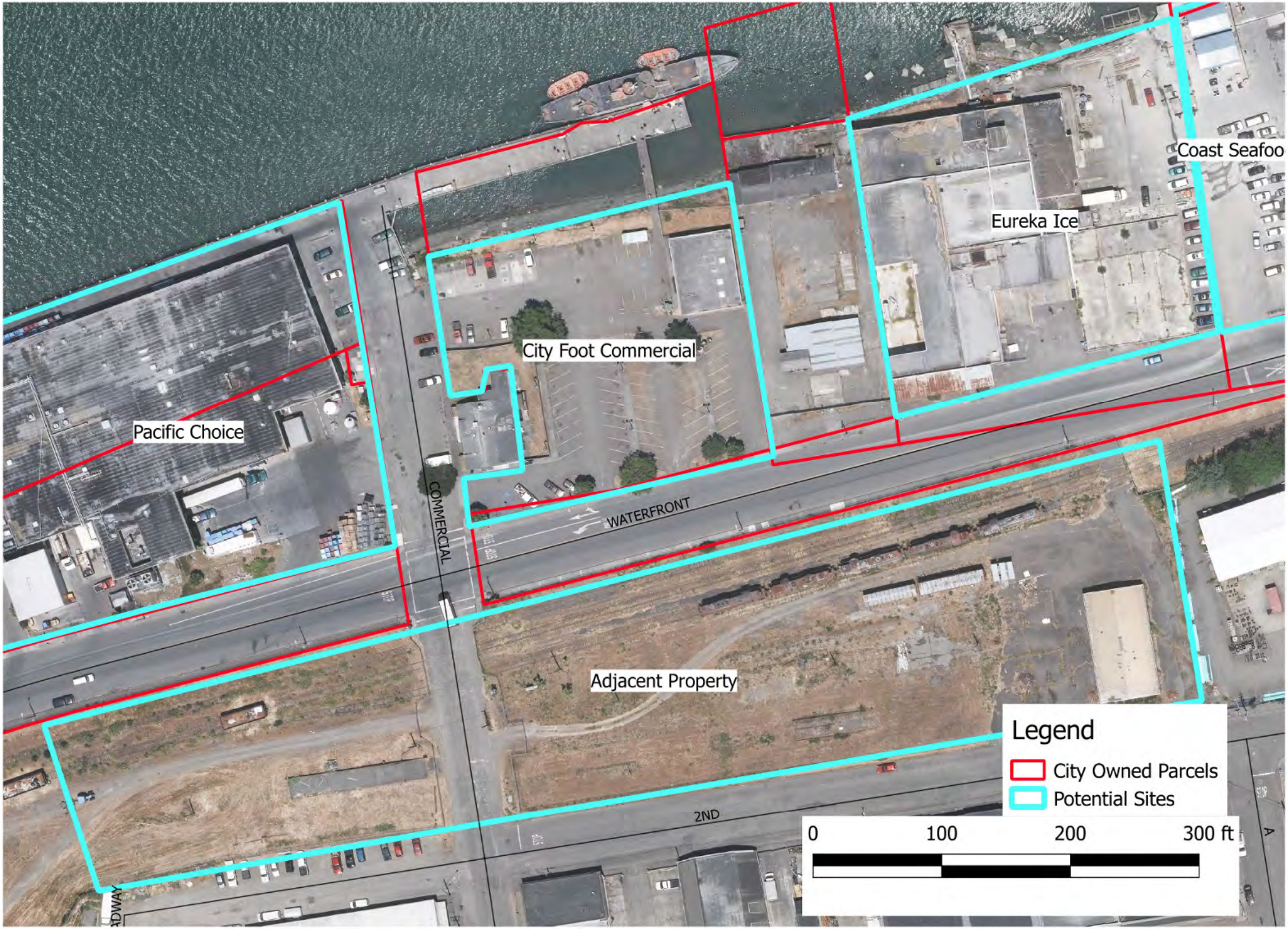
I
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

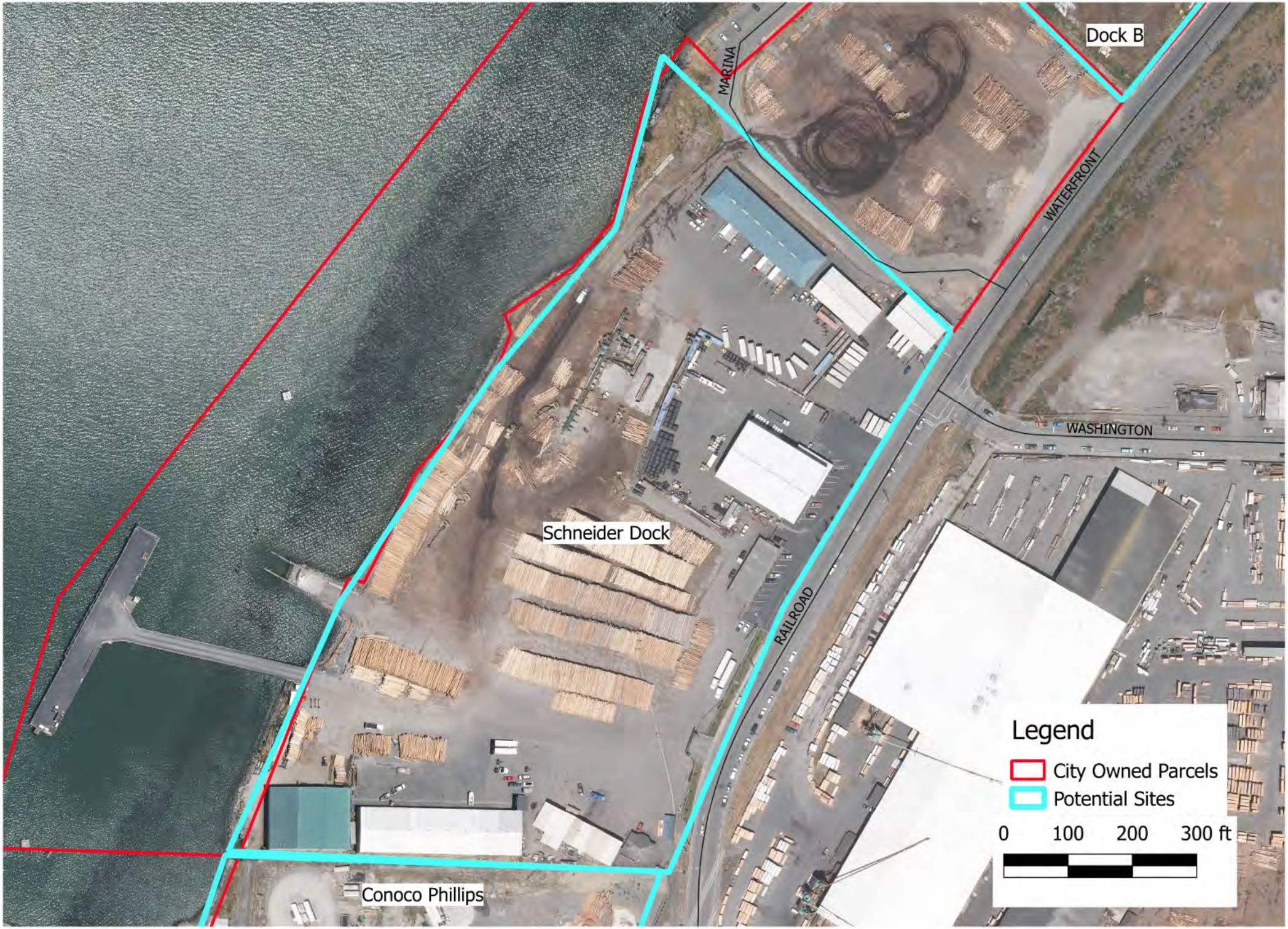

Foot of D St.
1ST
WATERFRONT
C
D
E
F
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

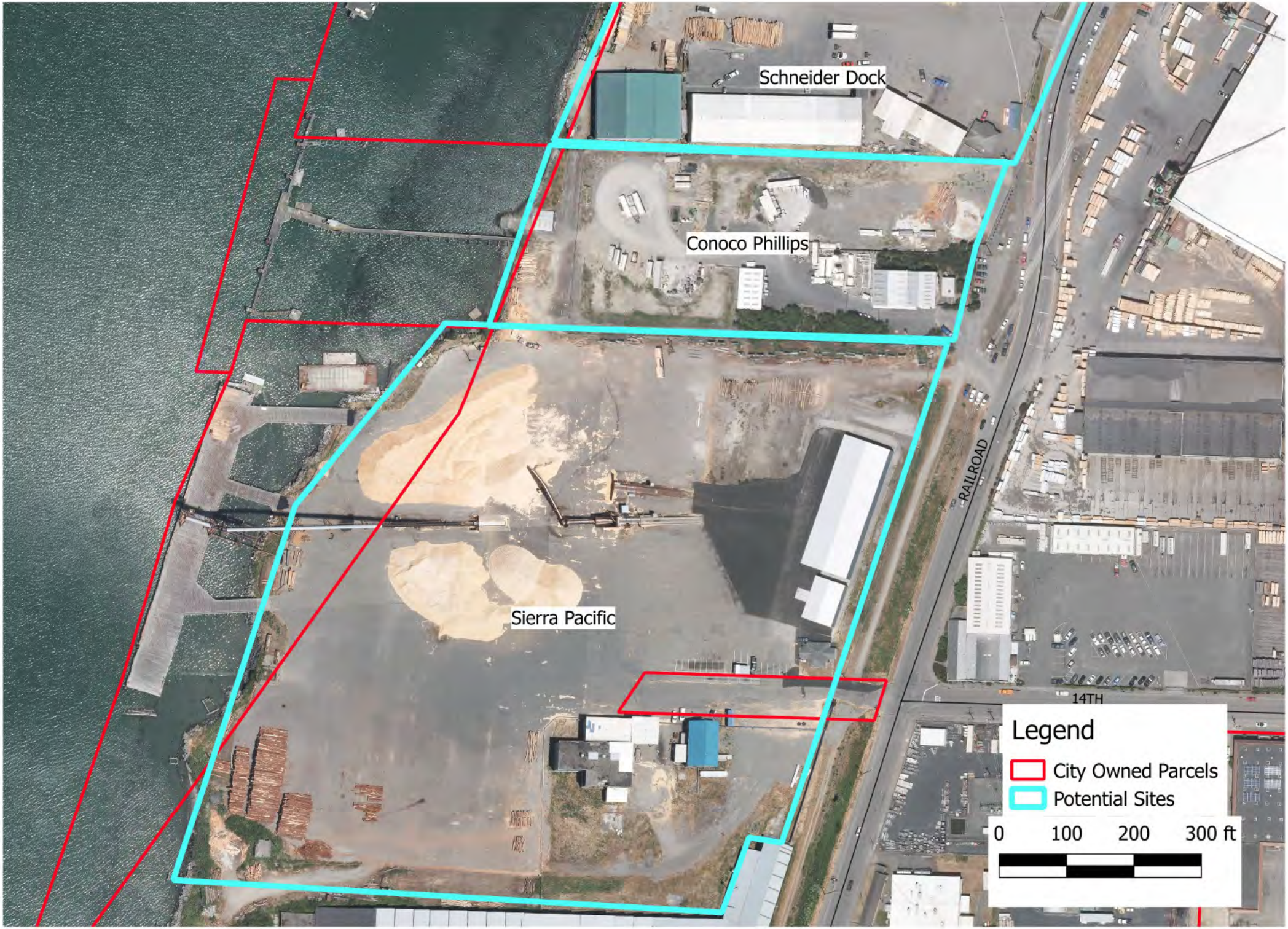
Fisherman's Storage
Coast Seafoods
Eureka Ice
WATERFRONT
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft


Coast Seafoo
Eureka Ice
City Foot Commercial
Pacific Choice
COMMERCIAL
WATERFRONT
Adjacent Property
2ND
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

Pacific Choice
City Foot Commerc
WATERFRONT
COMMERCIAL
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

MARINA
WATERFRONT
Dock B
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft


Dock B
MARINA
WATERFRONT
WASHINGTON
Schneider Dock
RAILROAD
Conoco Phillips
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft


Schneider Dock
Conoco Phillips
Sierra Pacific
RAILROAD
14TH
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

Sierra Pacific
Del Norte Flea Mart
RAILROAD
WABASH
DEL NORTE
Palco Marsh
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

Del Norte Flea Mart
RAILRO
DEL NORTE
FELT
HAWTHORNE
Palco Marsh
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

SAMOA
RIDEOUT
FENWICK
BAY VIEW
VANCE
CADMAN
PACIFIC
CUTTEN
Redwood Dock
Legend
City Owned Parcels
Potential Sites
0 100 200 300 ft

NEW NAVY BASE
Samoa Properties
VANCE
LP Mill Site
Schneider Samoa
North Coast Export
BAY
FAYE
Pacific Cho
WATERFRONT
MARINA
Dock B
Schneider Dock
WASHINGTON
BROADWAY
Legend
City Owned Parcels
Potential Sites

Conoco Phillips
Sierra Pacific
14TH
15T
RAILROAD
Del Norte Flea Mart
WABASH
DEL NORTE
Palco Marsh
HAWTHOR
Simpson Pulp Mill
VANCE
FAYE
COLE
BENDIXON
VARD
SIMPSON PRIVATE
SIMPSON PRIVATE
MAGNUSON
SELVAGE
GASS
Sequoia Investments
LINCOLN
RICKS
PARK
LINDSTROM
BROADWAY
DUPREY
Legend
City Owned Parcels
Potential Sites

Fields Landing 1
CENTRAL
WEST
HARRISON
CIVIC
DEPOT
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

Fields Landing 2
RAILROAD
WEST
3RD
3RD
2ND
B
C
D
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

Fields Landing 3
US HWY 101
LOMA
BELL HIL
Legend
City Owned Parcels
Potential Sites
0
100
200
300 ft

APPENDIX D

OWNERSHIP AND MANAGEMENT OPTIONS

OWNERSHIP AND MANAGEMENT OPTIONS FOR THE EUREKA COLD STORAGE AND ICE HOUSE FACILITY

Introduction

In this appendix, we first provide brief case studies for four West Coast port facilities, their approaches and some issues and lessons learned.

Then we address the generic options for ownership and management of a facility such as the one proposed.

Brief case Studies

Bellingham Cold Storage

This complex is probably the largest cold storage facility on the West Coast. It is privately constructed, privately owned and privately managed. The operational model is a Public Refrigerated Warehouse.

Doug Thomas, CEO, says that a key feature of this model is that they don't own any of the product inside their facilities, and therefore do not compete with their customers. He thinks this non-competitive need would go double for a publicly-owned/constructed facility.

Mr. Thomas recommends the Public Refrigerated Warehouse model as a good one for the proposed Eureka facility as we described it to him. He encourages us to allow for expansion of the facility in any way that we can. His company began after World War II as a warehouse something bigger than 20,000 square feet. It now is 1.5 million square feet, with numerous co-packers, all kinds of food, etc. He also sees small boroughs in Alaska who didn't think about expansion when planning and siting their equipment, designing laterally expandable loading docks, etc., who are now trying to expand and facing real difficulties.

Mr. Thomas believes that our cost per square foot will be high relative to the industry at the scale we are considering. He is of the opinion that larger public refrigeration operators, such as US Cold Storage (who operate facilities in Redding and Sacramento, for example), would probably not be interested in the scale we're finding to be consistent with demand. They would likely look for 60,000 to 100,000 square feet on the low side.

Morro Bay:

The facility is owned by the City but under the lease is managed and maintained by the lease holder of the dock, Santa Monica Seafood. The $1 million plant was planned and constructed with grants from the Central Coast Joint Cable Fisheries Liaison Committee (~$750K) and the California Coastal Conservancy ($250K). Santa Monica is an offloader/buyer/processor. Per a discussion with the dock manager at Santa Monica, the maintenance of the machine is costly, a relatively new facility (2007), maintenance runs at about $30K-$40K per year if not more. The ice facility charges $0.05/pound or $100 per ton (delivered into the hold of the vessel via a delivery chute).

Maintenance is a key issue. As noted above, the harbor manager indicated maintenance costs of $30,000 to $40,000 per month. While he says that some of this can be impacted by trade-offs associated with choices in construction materials (e.g., using galvanized metal instead of more expensive stainless steel), much simply has to do with the innate wear and tear of a working building right on the waterfront.

If the Morro Bay ice facility was viewed as solely commercial enterprises, they would have to charge significantly more (At $100, it is one of the highest prices on the Central Coast, if not the California Coast).

Port of San Luis:

The current facility is owned by the port/harbor district and operated by the owner of the fish market. It consists of two 1-ton ice machines, which replaced a much larger facility that closed. (The port also owned that facility, which had toggled between being publicly operated and privately operated over the years. This facility had a capacity to produce 22,000-25,000 pounds of ice per day, with a 30 ton capacity for storage, and consumed about $17,500 per year in electricity. They found that they were using far less ice than this capacity.) The 1-ton machines were purchased at approximately $25,000 each using district reserve funds.

At San Luis, when the current Harbor Manager came on board, he reports that the entire bottom floor of the former ice/storage facility had become one enormous block of ice, which they had to chip out with pneumatic hammers.

The San Luis Harbor Manager sees public ownership as key, both for feasibility and to ensure that the intended users as a whole benefit. He counsels asking this question: Knowing that the City of Eureka strongly supports the fishing industry, is providing ice/storage an essential service? If so, that leads him to think the City or another public agency should provide it. If not, he would lean toward purely private market solutions.

He sees a tight contract is essential for the operator. In their case that includes specifying the operator performing the maintenance, and the rights/access that other ice users have to the facility. He encourages that, going forward, we make sure that subject matter experts are involved in key decisions like equipment specifications. One of their ice machines ended up having wetter-than-ideal ice because they didn't do this.

Santa Barbara:

The plant is owned and managed by the City and there is a maintenance contract with TRJ (industrial refrigeration systems contractors). TRJ Refrigeration built both plants. The City of Santa Barbara has made a strong commitment to and investment in the fishing fleet and they operate at a loss when it comes to providing the fishermen with ice.

The ice machine was initially purchased for $450K in 1994 and the City has spent about that much in maintenance costs since then, with $100K spent in the last 12 months. The machine can produce up to 10 tons per day and can store up to 12 tons. Ice is priced at $80/ton. As with

Morro Bay, If the Santa Barbara ice plant was viewed as solely commercial enterprises, they would have to charge significantly more.

Descriptions of General Business Models available to own/manage a cold storage facility

Cooperative (Co-op)

A cooperative is a participant-owned, democratically controlled business where members pay a fee to take advantage of cooperative services and participate in governance through a vote. The geographic area may be focused or aimed at attracting fishermen from geographically disparate ports to maintain a more steady supply, more consistent income, and greater opportunity for profit. Membership fees and earnings are used to support staff for management, sales, and administration of receivables and payables. Fees can also be used for the acquisition of equipment and real estate, if necessary. A cooperative may own assets and act as a buying and sales entity.

Typically, the cooperative purchases seafood at the dock at market value and, in the best case scenario, provides a dividend (patronage fund) for its members from profit generated through value-added services and/or sales. Cooperatives, because of the nature of their membership structure, benefit from the federal tax structure in that the cooperative is not responsible for federal taxes. Co-ops are a known entity in the fishing industry.

Seafood Producers Co-op (SPC) is an example of a particularly successful operation. Headquartered in Bellingham, Washington, the Co-op has more than 500 members. SPC also offers a familiar and reliable buying and pickup service for Co-op members landing in other ports. SPC Alaska-caught salmon, sablefish, and halibut have been recognized by the Marine Stewardship Council (MSC) as sustainable fisheries. Fishermen that travel to Alaska to participate in the salmon fishery rely on the SPC to purchase, pick-up, and distribute their catch.

An organization such as SPC could include fishermen from other ports who come to Eureka. The option of including a wide range of members could be an effective strategy for a Eureka based co-op. Co-ops have a high degree of control and can define and restrict the profile of their memberships. For example, potential members may be required to earn a certain percentage of their income from commercial fishing or a commercial fishing related industry. Again, there may be a role for a cooperative to work concurrently or collaboratively with other management entities or entity in Eureka.

<u>Advantages</u>

- Fishermen-centric (fishermen owned, operated, and benefited)
- Increased economic benefits for members (versus sole operator)
- Increased bargaining power
- Expanded market

- Avoids double taxation (no corporate taxes)
- Diffuses operating risk for fishermen
- High autonomy and independence for fishermen
- High commercial fishing community familiarity
- Democratic structure (resulting in buy-in and perceived fairness)
- Limited liability

Disadvantages

- Cost of membership
- Democratic structure (potentially slow and inefficient)
- Earnings distributed based on level of input

Recommendations

- The consulting team believes that an industry cooperative, leasing the facility from the City, is a strong candidate to run the cold storage facility.
- Established entities exist, and attracting their interest should be a priority.
- See the conclusion of this section for additional thoughts on cooperative structure.

Next Steps/Requirements

- Define goals and objectives, and business plan
- Conduct membership drive
- Acquire capital
- Incorporate and develop articles of incorporation
- Pass bylaws
- Sign marketing agreements
- Elect a board of directors
- Vote to implement the project

Private sector business/corporation

For-profit businesses come in a number of structures, from sole proprietorships to corporate structures. For-profit businesses have the advantage of clarity and urgency due to the profit motive. Other things equal, they tend to be the most nimble organizational form, able to adapt quickly to changing market needs and conditions.

Sole Proprietorship

Proprietorships and partnerships are simpler forms of business structure. One can simply start a sole proprietorship, for example, with relatively little process. Most businesses start this way. A big advantage of a sole proprietorship is the high level of autonomy the owner has to run his business. There are no other owners to divide profits with, which allows a sole proprietor to use company funds in any manner. Sole proprietors have relatively few formalities to adhere to and

very little regulation from federal, state and local government. However, a major disadvantage of a sole proprietorship concerns the lack of liability protection for the business owner. This means a sole proprietor has a personal responsibility to pay every business debt and obligation.

Partnership

A partnership of two or more individuals has the ability to collaborate. Partners can share the responsibility of managing the company and share ideas with other partners. Also, partners are not required to file income taxes as a business entity, meaning each partner reports his share of business profits and losses on his personal income tax return. On the other hand, a partnership offers no personal asset protection for partners of the business. A partner may be even liable for the negligent acts of another partner. If the partnership's business assets do not cover an obligation, a creditor may pursue a partner's personal assets as compensation for the business debt.

LLC

A limited liability company (LLC) is a hybrid business entity that provides members with limited liability protection from company debts and obligations. Also, members of an LLC are able to divide company profits in any manner, regardless of ownership in the company. This flexibility allows an LLC to allocate profits and losses to the greatest tax benefit of the company's members. However, a LLC is costly to form and may not be able to raise capital because it cannot issue stock like a corporation. This means an LLC may have to rely on the personal assets of its members to fund the company's activities. LLC's are less vetted in law than other forms of incorporation, although that is becoming less of a concern over time as the structure is tested and holds up in court.

Corporation

Corporations provide shareholders, directors and officers limited liability protection for company obligations. A shareholder's liability for company debts does not extend beyond his investment in the business. Another advantage of a corporation is the company's ability to raise capital by issuing stocks and bonds. The proceeds of a stock or bond issuance can be used to expand or pay the company's existing obligations. The downside is double taxation. A corporation must file a business tax return with the Internal Revenue Service and pay taxes on company profits at the company's applicable corporate tax rate. Later, when the company distributes dividends to its shareholders, the shareholders must pay taxes on dividends received from the business at their personal income tax rates.

For Eureka's Cold Storage Project, corporations are attractive because they offer limited liability for their officers. A corporation's life is not dependent upon its owners, but rather, a corporation possesses the feature of unlimited life. If an owner dies or wishes to sell their interest, the corporation can continue to exist and do business. The primary goal of a for-profit corporation (i.e. an investor owned firm) is to maximize shareholder value.

There are two types of corporation that are widespread in the U.S.: the "C Corp" and the "S Corp." Most large companies in the U.S. are C Corporations; PepsiCo and Microsoft are C Corps. Although both the C and the S Corp are named for the subchapter of the U.S. tax code, for many people the "S" stands for "small" and the S Corp is a very useful structure for smaller and

focused entities. We will pay additional attention to the S Corp as it is, we believe, the most likely of the business structures for the cold storage facility.

An S Corporation is a specific type of corporation. S Corporations were created by a federal tax provision that benefits small corporations. The tax code allows S Corporations to be taxed in the same way partnerships are, so the corporation itself pays no federal income tax. The stockholders as individuals pay the business related income taxes on their personal tax returns.

As an S Corp., a small business can also take advantage of the limited liability without permitting free trading of shares of stock. Ownership can be limited to the few people directly involved in the business operations. An "industry focused" corporation will be in a good position to interface with elected officials on behalf of the local fishery, create and fund public awareness and advertising programs, and represent the local industry at fishery management and other public meetings. As the likeliest of the private sector business models, we are giving a number of the advantages and disadvantages of the S Corp:

Advantages of the S Corp

- Avoids double taxation (tax obligations are passed on to the owners of the corporation).
- Provides limited liability for shareholders
- Ensures longevity and stability for the organization
- Increased bargaining power
- Expanded market
- Diffuses operating risk for fishermen
- High autonomy and independence for fishermen

Disadvantages of the S Corp

- California S Corporations required to pay a franchise tax of 1.5 percent of net income
- Corporations with over 100 shareholders are not eligible

Recommendation

- The consulting team believes that an S Corporation, leasing the facility from the City, is a strong candidate for the business structure to run the Eureka Cold Storage Facility. See conclusion for additional thoughts on this.

Next Steps/Requirements for an S Corp

- Define goals and objectives of organization, develop business plan
- Incorporate and develop articles of incorporation; organization must be eligible for S Corporation tax status (i.e. an existing corporation or LLC)
- Pass bylaws
- Elect a board of directors
- File appropriate forms with IRS and California Attorney General
- Acquire capital
- Shareholder screening

Non-Profit Corporation

California defines a non-profit corporation as one that will not distribute gains, profits, or dividends to its members during the life of the corporation. The California Secretary of State must officially recognize all California non-profit corporations. Articles of Incorporation must be filed with the Secretary of State's office, indicating that the organization is entitled to receive non-profit corporate status. Non-Profit corporations receive the same limited liability protection as for-profit corporations. This means that directors or trustees, officers, and members are typically not personally responsible for the debts and liabilities of the corporation. Not-for-profit status would put a management entity in a position to receive grant funding that for-profit enterprises are unable to consider. This type of organizational structure also shields the organizations from tax burdens. Nonetheless, a nonprofit requires heightened attention to the precepts set forth by the Secretary of State. For example, they may not support a political candidate and require unanimous vote to change bylaws.

Advantages

- Eligible for grant funding
- May be eligible for tax breaks and credits
- Possibility for tax-exempt status
- Profits re-invested to serve corporation's mission
- Organizational mission is priority over profit
- Provides limited liability for shareholders
- Ensures longevity and stability for the organization
- May also organize as a cooperative
- Nonprofit organizations and cooperatives have found traction in areas such as distribution of organic food from multiple small-scale producers

Disadvantages

- Limited profit potential for shareholders
- No opportunity for shareholder dividends
- Tax exempt non-profit corporations may be required to file annual financial reports to State and Federal government
- Nonprofit organizations are not established in the fishing and support industries as in other areas of food distribution

Recommendation

- The Eureka cold storage project would benefit from the clarity and urgency of a private sector entrepreneur(s). Nonprofit forms of organization become more common in distribution facilities designed to support small-scale
- The project team is not recommending this structure for the project as it is ultimately shaping up.

Next Steps/Requirements

- Define goals and objectives of organization, develop business plan

- Acquire capital
- Incorporate and develop articles of incorporation
- Pass bylaws
- Elect a board of directors
- Determine profit status (for-profit vs. non-profit)
- File appropriate forms Required IRS forms for 501(c)(3) not for profit organizations
- Form 1023, Application for Recognition of Exemption Under Section 501(c)(3) of the Internal Revenue Code
- Form SS-4, Application for Employer Identification Number Required IRS forms for Non-501(c)(3) for-profit organizations
- Form 1024, Application for Recognition of Exemption Under Section 501(a) of the Internal Revenue Code
- Form SS-4, Application for Employer Identification Number
- Form 8718, User Fee for Exempt Organization Determination Letter Request

Notes:

A fourth generic management alternative, public agency management, where in this case the City would take the lead role in overseeing ongoing operations and management as well as ownership, is not explored here due to input by city staff that they do not see the City of Eureka in that role.

Sources for the Ownership and Management content: interviews, previous work by Lisa Wise Consulting, Chron.com (the Houston Chronicle), and knowledge gained at the North Coast Small Business Development Center.