PRINCE WILLIAM SOUND SCIENCE CENTER

Elise Hsieh
Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Suite 220
Anchorage, AK 99508 - 4650

August 17, 2018

Re: Prince William Sound Science & Technology Institute Facilities Replacement

Dear Ms. Hsieh,

The Prince William Sound Science & Technology Institute (dba Prince William Sound Science Center, also referred to as the Science Center or PWSSC) respectfully submits the enclosed proposal for grant funds available through the *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) to support the replacement and consolidation of our facilities. Since our founding in 1989, more than 80 percent of our organization's research, education, and community engagement projects have addressed *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) priorities. The Science Center competed for and has been awarded over $26 million in EVOSTC funding and has raised an additional $22 million for education and research directly related to and complementing the Trustee Council mission. That is an additional 85 cents of program leverage for every dollar EVOSTC invested in Science Center programs. We have supported our efforts from an old icehouse at the end of a City dock. The dock is old, the pilings have reached the end of their service life, the harbor is slated for expansion, and we are about to lose our lease.

We have 3.5 years to move, and the City of Cordova has agreed to sell us 5 acres with adjacent deep water and sufficient uplands to allow development of a consolidated facility. The facility will be an important part of EVOSTC's legacy and will enable us to expand upon our track record of understanding and ameliorating effects on resources injured by the *Exxon Valdez* oil spill. Support by the Trustee Council will benefit ecosystem research focused on unrecovered spill impacted species. The investment will also contribute to the economy of Cordova. By dollar value, Prince William Sound remains economically the hardest hit region in the wake of EVOS. We are driven to continue pursuing our vision of communities that maintain socioeconomic resilience among healthy ecosystems here in Alaska. We look forward to partnering with you to bring this project to reality. Thank you for the opportunity to submit this proposal. If you have any questions, please contact me directly at 907-424-5800, x 225 or khoffman@pwssc.org.

Sincerely,

Katrina Hoffman
President and CEO, PWSSC; Executive Director, Oil Spill Recovery Institute

FROM RESEARCH TO RECOVERY

A RESILIENT FUTURE FOR EVOS RESEARCH, RESTORATION, & RECOVERY IN PRINCE WILLIAM SOUND

PRINCE WILLIAM SOUND SCIENCE & TECHNOLOGY INSTITUTE
(HOME OF THE PRINCE WILLIAM SOUND SCIENCE CENTER
+ OIL SPILL RECOVERY INSTITUTE)
FACILITIES REPLACEMENT PROPOSAL

PRINCE WILLIAM SOUND
SCIENCE
CENTER

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Executive Summary

Prince William Sound (PWS) remains economically and ecologically the hardest-hit region in the wake of the *Exxon Valdez* Oil Spill (EVOS). Lingering oil remains on many beaches, and numerous species have yet to recover from the spill that occurred 29 years ago. Decades of research by the Prince William Sound Science and Technology Institute (dba Prince William Sound Science Center, the Science Center or PWSSC) and others have revealed that true recovery may still be decades away. To continue this work, PWSSC must find a new home. *We are losing our facility lease and must vacate our current location in 3.25 years*. For our institution to continue to generate recovery benefits through long-term research and to retain and attract staff, we must replace our facility. Support by the *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) for this project will benefit ecosystem research as well as economic and educational opportunities in our heavily spill-affected region for the next 50-100 years. Consolidated and expanded facilities are key to PWSSC's strategy to continue serving as a significant contributor to the resilience and recovery of the region.

PWSSC is important to restoration

- PWSSC, the only research institute based in Prince William Sound, measures, interprets, catalogues, and shares what we understand of the transitions experienced by the ecosystems of Prince William Sound as a result of the spill.
- We have 25 currently active research and education projects, including: herring condition monitoring; oceanographic condition monitoring; marine circulation; zooplankton abundance and diversity; movement of fishes; migration and reproduction of hatchery and natural pink salmon; avian influenza; seabird abundance; youth involvement in stewardship activities; and more.
- Since its creation, PWSSC has implemented over 100 scientific research and education projects within the spill-affected area.
- We were a leader and core participant of past integrated research programs funded by the EVOSTC, including the Sound Ecosystem Assessment, the Gulf Ecosystem Monitoring program, Herring Survey, and Herring Synthesis programs.
- We are currently the administrative lead entity for both current EVOSTC integrated research programs: Gulf Watch Alaska and Herring Research and Monitoring. We earned this role through open competition.
- The Science Center conducts over $1.3 million in work annually for the Trustee Council's integrated long-term monitoring programs, funds awarded through national competitions.
- PWSSC has significantly increased understanding of the physical, chemical, and biological structure and function of Prince William Sound and its relationship to the Gulf of Alaska, defining factors affecting injured resources and the status of injured and unrecovered resources in the spill-affected area.

PWSSC has been an efficient partner for the Trustee Council

- More than 82% of PWSSC's funded research dating back to 1992 has taken place in the spill-affected area with most projects focused on EVOSTC priorities.

- Through national competitions, PWSSC has been awarded more than $26 million in EVOSTC restoration funding.
- PWSSC has provided an 85% return on the EVOSTC investment in our work by generating an additional $22.4 million in additional research funding for projects pursued in the spill-affected area.
- In our first 29 years, the Science Center generated more than $90 million for science and education, contributing an estimated $50.5 million dollars to the PWS economy and $106.2 million to the Alaska economy, with the vast majority of our work focused on EVOS-related research.
- The Science Center administers the co-located Prince William Sound Oil Spill Recovery Institute (OSRI), which was formed by Congress via the Oil Pollution Act of 1990 and began actively allocating funding in 1997. In 20 years, OSRI has supported 173 oil spill related projects with $14.5 million in funding.

Need for a new PWSSC facility

- The City of Cordova is planning a harbor expansion; the city-owned dock and building we occupy are scheduled for removal and we have been informed that our lease will not be renewed after December 2021.
- There are no available facilities in Cordova suited to allow the PWSSC to carry out its research programs.

Proposal

- PWSSC is requesting $17.5 million from the EVOSTC toward new facilities focused primarily on understanding and ameliorating effects on resources injured by EVOS.
- To help ensure our future sustainability, the City of Cordova, with broad community support, approved the sale of five waterfront acres at Shelter Cove for PWSSC's new facility.
- We have indications from key foundations of their intention to provide significant gifts once a major portion of the funding is secured. EVOSTC support would be leveraged to reach our final goal.
- In order to achieve major efficiencies, time is of the essence in generating support for this project. The Alaska Department of Transportation (AKDOT) intends to implement a major culvert replacement project at the lagoons adjacent to the property we are acquiring, along with removal and re-paving of asphalt on New England Cannery (Orca) Road in summer 2019. If sufficient funds are raised by spring 2019, we can coordinate installation of sewer assets with the road repaving and culvert replacement project, saving an estimated $700,000 or more in costs.

Summary

PWSSC is prepared to continue as a significant contributor to the resilience and recovery of the region for the next 100 years. Consolidated and expanded facilities are a key part of this strategy. We look forward to partnering with you to bring this vision to reality.

PWSSC Overview – Past & Future

The Science Center is a place-based, non-profit community benefit organization, the only one of its type on Prince William Sound. We are the home of the Oil Spill Recovery Institute, established by Congress via the Oil Pollution Act of 1990. Our founders were commercial fishermen, researchers, resource managers, and educators who recognized the region's dependency on renewable natural resources and who, ahead of their time, sought ways to understand and help maintain system resiliency via a place-based institution. In our first 29 years, the Science Center has generated more than $90 million for science and education, contributing an estimated $50.5 million dollars to the local economies. Over the same period our contribution to the state economy is estimated to be $106.2 million. The Science Center is a year-round employer of 17-20 professional staff. Our annual staffing typically involves employing 40-60 individuals including temporary and seasonal hires, interns, vessel operators, and contractors. A typical annual budget would be $3 million to $5 million. This includes sampling vessels and research vessels both during the fishing season and offseason.

The majority of our work portfolio over 30 years has had a tight nexus to the Trustee Council's multi-pronged mission to address injured species and services while understanding and restoring the ecosystem of Prince William Sound. From 1992-2017 (all audited years in the organization's history), more than 82% of PWSSC's work took place in the EVOS spill-affected area and was focused on EVOSTC-related priorities. In that time, we have competed for and been awarded over $26 million in EVOSTC funding. For every dollar received from the Trustee Council, the Science Center generated an additional 85 cents in projects directly related to the EVOSTC mission—a $22.4 million co-investment. Today, PWSSC has over 25 active concurrent research and education projects, including, but not limited to: herring condition monitoring; oceanographic condition monitoring; marine circulation; zooplankton abundance and diversity; movement of fishes; migration and reproduction of hatchery and natural pink salmon; avian influenza; seabird abundance, youth involvement in stewardship activities, and more. In total, we have implemented over one hundred scientific research and education projects within the spill-affected area.

The Science Center is among Cordova's top-five non-government employers in the winter months, providing diverse opportunities for the Cordova workforce. We share what we learn; education and outreach are a top priority. Our community engagement programs, such as Discovery Room and Tuesday Night Talks, serve hundreds of residents annually and offer opportunities for many organizations and individuals to share their knowledge.

A key element of our organization is our administration of the co-located Prince William Sound Oil Spill Recovery Institute (OSRI), which was formed via the Oil Pollution Act of 1990 and began actively allocating funding in 1997. OSRI's mission is to support research, education, and demonstration projects that improve response to oil spills in Arctic and sub-Arctic marine environments as well as understanding of the ecosystems where such spills may occur. In 20 years, OSRI has supported 173 projects with $14.5 million in funding, including:

- $8.2 million toward better understanding oil spills
- $3.4 million toward improved oil spill response
- $2.9 million toward education and information-sharing

All of this work has been accomplished despite what have been increasingly inadequate and inefficient facilities. PWSSC's current facility is situated on a dock at the entrance to the Cordova harbor. The building, dock, and pilings pre-date the 1964 Good Friday earthquake. It has been a fish processing plant, marine repair shop, and ice house. In 1989, the city leased us the vacant and dilapidated building for $1/year to help us get started. Most of the windows were gone, there was only tin on the outside to hold in the heat, and in places you could watch the tide through holes in the floor. Over time, we have invested over $1 million to stabilize the piles, fix the roof and renovate the interior and exterior. We are also now required to pay annual lease fees while still holding responsibility for all maintenance.

The building we occupy is roughly 3,800 square feet in size; too small to support 17-20 FTEs and an additional 15 to 20 seasonal technicians and contractors. Our laboratory—less than 400 square feet in size—is inadequate to support growth beyond our current eight Principal Investigators; it contains one fume hood and no running seawater. Scientists, research associates, and technicians must share the space where processing of chemical and biological samples occurs. There is not a distinction between wet and dry lab areas, nor space for controlled experimentation. Missing is capacity for genetics, epifluorescent microscopy, fluorometry, gas chromatography, sediment processing, and more. In addition, there is no area to develop or test technology. This significantly limits PWSSC's ability to create or evaluate new oil spill prevention and response technologies, which means we are unable to apply for funds regularly competed by OSRI. In general, our physical assets limit our ability to pursue expanded research programs or collaborations that would require better lab assets and sufficient support spaces.

Our extensive inventory of field equipment, such as oceanographic buoys, chain, anchors, skiffs, sampling nets, and the winches and reels to deploy them are housed in leased buildings and areas throughout the community, some of it 13 miles away at our campground. Our dispersed facilities increase costs and negatively impact the efficiency of scientists and staff. The volume and diversity of our work requires substantial support infrastructure. Our experience over the past 29 years underscores the need to own our facilities. The money spent on renovation of a building we did not own and our rents on warehouses and yard storage supported ongoing programs but gained us no equity and no long-term assurances that we would have the space needed to grow our programs over the long term.

The new location and opportunity to own our own facilities, however, puts us in an ideal position to change much of this. It provides areas to consolidate warehousing and equipment storage adjacent to the main building where the scientists, technicians, educators and support staff will be located. A large area suitable for parking, warehousing and equipment storage is already developed, and topography of the site is development friendly. The location borders a salmon-bearing stream where we already offer education programming on topics like salmon life history and connectivity between marine, estuarine, and upland ecosystems. Adjacent deep water makes it possible to access seawater for a wet lab and a potential heat exchange system to reduce operations and maintenance costs. The site is also adjacent to the pond where the regional aquaculture association rears and releases king and silver salmon for the sport fishery and borders conservation land being acquired by the Copper River Watershed Project (CRWP), a program partner.

Perhaps most important, expanded infrastructure will support our ability to be an interface between researchers, communities, regulators, resource managers, students, and educators near and far to continue implementing world-class EVOS-related research and education.

The only place-based research institute on Prince William Sound, PWSSC is almost entirely funded by soft money. Our intention is to grow our capacity to conduct science and education programs and our capacity to partner. We want to continue as a significant contributor to the resilience and recovery of the region for the next 100 years. Consolidated and expanded facilities are a key part of this strategy.

Connection to 1994 EVOSTC Restoration Goals and Priorities

The Science Center, along with various partners, has established monitoring stations and moorings that provide real time data that has facilitated, among other things, the creation of a circulation model for Prince William Sound. The model can be used to predict where liberated lingering oil may be transported, serving as a critical tool for limiting additional potential impacts from EVOS. Efforts are underway to couple the oceanographic model to biological components, especially plankton and herring larva, to better understand the continued post-spill collapse of herring populations. Primary investigators from the Science Center have led the region's efforts to characterize herring population dynamics in Prince William Sound as well as other factors with the capacity to influence herring recovery, including predation, food source availability, energetics, and disease.

In addition to understanding the dynamics of fish populations that are integral to the region's economic recovery from EVOS, our scientists have conducted research to evaluate the impacts of climate change and melting glaciers on the nearshore waters of the Gulf of Alaska. In collaboration with the United States Geological Survey, our researchers investigated the influence of atmospherically deposited glacial-derived nutrients (from iron-rich dust) on plankton productivity and the Gulf of Alaska food web. A related study looked at effects of nutrients deposited by the Copper River freshwater system into the marine ecosystem. These studies seek to better understand impacts of changing glacier melt patterns on this typically iron-limited system. Through such studies, we may better understand and predict trophic shifts in the watershed and coastal ocean, especially those that may affect resources still recovering from EVOS.

The Science Center is foundational to executing the Trustee Council's policy that "Restoration will take an ecosystem approach to better understand what factors control the populations of injured resources." We are a key partner in both of the long-term research programs towards which the Trustee Council has devoted funding. Seven of the eight Principal Investigators currently on PWSSC's staff help the Trustee Council achieve their rehabilitation goal through comprehensive, interdisciplinary monitoring and research by participating in and providing management and administrative services for Gulf Watch Alaska and the Herring Research and Monitoring Programs. By playing a leadership role in both research programs, the Science Center helps ensure that the studies take the integrated, longitudinal approach required to understand the factors that continue to suppress recovery of species, assets, and services nearly 30 years after the original incident. Our senior scientists regularly contribute to the research

syntheses that are provided to the Trustee Council. We are place-based, and our location in Cordova keeps us visible and connected to a spill-affected community. Our key role administering the two EVOSTC long-term research programs enables meaningful public participation; the Principal Investigator meetings that we host for the programs are open to the public and members of the public regularly attend and comment.

The Science Center has been part of a major shift in the way scientific information is conveyed through regular publication of datasets affiliated with the Trustee Council-funded research programs. By conveying the latest scientific information to the public, we help the public understand the extent to which recovery has occurred, which will help to restore passive uses.

In addition to direct research and our support through our administrative role, we help in broadly conveying the results of the Trustee Council's large research programs to the management agencies responsible for the resources. We help support management agencies that can influence restoration progress. Additionally, by conveying results to the public via our community engagement space and education programs, we raise awareness about the impacts of oil spills and the potential effects of human interactions with natural assets in the spill-affected area. This increased awareness helps prevent the public from inducing further injury within the spill-affected area.

Looking ahead, the adjacency of our new campus to recreational access points along the shoreline in the spill-affected area, and the awareness-building programs we will be able to offer, such as naturalist-led explorations, will be an important aspect of restoring human uses in the spill-affected area.

PWSSC plays an integral role in the quality of life in Prince William Sound by offering an abundance of hands-on science education programs pertaining to the ecosystems of Prince William Sound and the impacts and recovery from EVOS, specifically. Through our *Discovery Room* programs, our science education staff works with all 2nd through 8th graders in Cordova on a monthly basis, teaching curricula about herring populations, oil spill response and recovery, ocean productivity, how Prince William Sound functions, and more. Through *Outreach Discovery* programs, we take these lessons "on the road". Our education department has delivered science, technology, engineering, and math (STEM) education programs in Tatitlek, Valdez, Whittier, Chenega, Seward, Homer, Kodiak, and Seldovia, among other places. The dormitory building on our new campus presents a transformative engagement opportunity, as it will allow us to host student groups from throughout the spill-affected area as well as teachers and extend the ecosystem and oil spill response programming to a much greater cohort of individuals while generating sufficient revenue to cover the operations and maintenance costs of the extremely efficient structure.

Partnerships + Community Contribution

The Science Center has located a perfect site for the development of badly needed facilities, and it offers room for expansion if needed in the future. Although we are losing our lease with the City of Cordova, they do not want to lose our presence in the community. Working together we identified the perfect parcel to develop for science and education. The 5-acre site (ASLS-2001-5) has been approved for sale to the Science Center at price below the assessed value to help further our development efforts. The cost of land acquisition is supported by contributions from Chugach Alaska Corporation, Eyak Corporation, PWSSC's current and past board members, community members, CoBank, and others. Ensuring sufficient office, laboratory, community engagement, education, and storage space allows us to maintain our portfolio and also recruit and attract additional partners interested in studying and advancing spill recovery and restoration in Prince William Sound.

The site the Cordova City Council approved for disposal to PWSSC encompasses and is adjacent to community assets that provide recreation and tourism benefits to Cordova. A portion of the site has been managed by the Cordova Parks and Recreation Department for seasonal tent camping and RV parking. The Copper River Watershed Project (CRWP), another local non-profit with whom the Science Center collaborates, is slated to receive title to over 125 acres of adjacent properties restricted to conservation and recreation use ("Future Conservation Easement Area" in Figure 3). The only access points to the conservation areas cross the property being conveyed to the Science Center. PWSSC has invested $14,500 on a survey of the new site and over $50,000 in Phase 1 Environmental Assessment and geotechnical engineering, as well as staff and volunteer time devoted to planning, fundraising, and more.

Across the street is a ramp into the intertidal zone; from this access point, recreational fishers and non-motorized boaters can enjoy recreation, tourism, and subsistence activities. The Science Center, CRWP, and the City of Cordova have agreed to collaborate on a master plan to ensure that recreational and educational opportunities will be fully realized after construction of new facilities on ASLS-2001-5. The attached site plan (Figure 4) shows conceptual placement of facilities on our new property. The black line defines an existing footpath and the stream location. The final site development plan will include provisions for public access and use developed through the collaborative agreement.

Project Budget & Details

PWSSC's estimated project budget was developed in part by our participation in the Foraker Group's Pre-Development Program, generously funded by the Rasmuson Foundation (we were invited to the program in July 2017). The new facility plans and cost estimates, as generated by an architect, are based on workshops that engaged board members, staff, and key supporters. The estimated project costs were calculated for 2019 with cost escalations (at a 3% annual rate) presented for 2020 and 2021 build years. We anticipate the capital campaign will take two years to complete, and with your support, hope to initiate construction in 2020. Therefore, we present the 2020 project cost estimate as the project value. The site plan model in Figure 4 and functional relationship diagrams that follow should be considered conceptual and are subject to change based on geotechnical information and key design elements.

Land, Site Preparation, and Key Infrastructure

Land purchase:	$50,000
Survey:	$14,550
Level 1 EA and geotechnical engineering:	$58,000
Master planning:	$12,000
Subtotal (1):	**$134,550**

No cost escalation necessary for these items due to their completion timelines.

Heat pump + district heating:	$1,000,000
Sewer access + pump station(s)*:	$1,700,000
Subtotal (2):	**$2,700,000**
Escalation 3% for 2020 build	**$2,781,000**
Escalation 3% for 2021 build	**$2,864,430**

Research, Education, and Administration Building (forecast)
13,900 sq. ft./2 level building

Construction Cost*:	$9,048,523
Design Fee (12%):	$1,085,823
Project Management (3%):	$271,455
Legal Fees:	$5,000
Building Permits:	$16,000
Furniture/Fixtures/Equip. (12%):	$1,085,823
Public Exhibits:	$275,000
Special Inspections:	$19,000
Utility Connections (5 x $300):	$1,500
Subtotal (3):	**$11,808,124**
Escalation 3% for 2020 build	**$12,162,368**
Escalation 3% for 2021 build	**$12,527,239**

Dormitory and Bunkhouse Building (forecast)
6,000 sq. ft./2 level building

Construction Cost*:	$1,500,000
Design Fee (10%):	$150,000
Project Management Fee (3%):	$45,000
Legal Fees:	$5,500
Building Permits:	$7,000
Furniture/Fixtures/Equipment (8%):	$120,000
Special Inspections:	$8,000
Utility Connections (5 x $300):	$1,500
Subtotal (4):	**$1,837,000**
Escalation 3% for 2020 build	**$1,892,110**
Escalation 3% for 2021 build	**$1,948,873**

Warehouse Building (forecast)
6,000 sq. ft. + covered and uncovered yard storage

Construction Cost*:	$1,364,867
Design Fee (8%):	$109,189
Project Management Fee (3%):	$40,946
Legal Fees:	$3,000
Building Permits:	$9,000
Furniture/Fixtures/Equipment (2%):	$27,297
Special Inspections:	$8,000
Utility Connections (5 x $300):	$1,500
Subtotal (5):	**$1,563,799**
Escalation 3% for 2020 build	**$1,610,713**
Escalation 3% for 2021 build	**$1,659,034**
Subtotal (1)+(2)+(3)+(4)+(5):**	**$18,580,741**
Administration of project (3%):	**$557,422**
Total:**	**$19,138,163**

*Construction cost line for each of the three buildings and sewer includes 15% contingency.
**Assumes 2020 build values.

Detail: Administrative / Research / Education Building

The administrative/research/education building is expected to be a two-story 15,300 sq. ft. structure. The education and community engagement spaces will include interactive displays where the general public can visit and learn about the ecosystems of Prince William Sound, the effects of the oil spill, and the recovery status, as well as about injured, recovering, and recovered assets impacted by EVOS. The structure is expected to be a combination of steel and wood with concrete sub floors. The building is expected to be classified by the International Building Code as a "Mixed Use" structure, including the labs. The building will be fully protected with a fire suppression (sprinkler) system and fire/smoke detection. Heat will be provided by seawater heat pump or geothermal heat pump. Once appropriate permits are obtained, seawater access can be obtained via a pipe under the road that extends to the adjacent Eyak Corporation tideland lease; we have discussed this with them, and they are amenable to the arrangement. This is one of the only areas in Orca Inlet in which the water is deep enough to support an intake pipe which could serve the dual purposes of reducing operations and maintenance costs through seawater heat pump installation while also allowing for the option for running seawater in laboratory spaces, significantly increasing the types of restoration-oriented research Principal Investigators can conduct. Ventilation will be provided by variable air volume (VAV) units that will be spaced throughout the structure as needed. The building and spaces within will be high quality commercial construction and furnishings. The project cost for this building is expected to be in the vicinity of $700 to $725.00/sq. ft.

Detail: Warehouse

The warehouse building is expected to be a 6,000 sq. ft. steel warehouse with a slab on grade, plywood interior wall finishes and insulated metal panel siding and roofing. The building will be internally arranged into several secured areas, most of which will be storage, and will also include fabrication and maintenance areas. Outdoor covered storage will allow for the stowing of large, durable research assets such as oceanographic buoys, vessel trailers, rigid bottom inflatable craft, and small, non-motorized watercraft (used primarily in education programs). One of the specialty spaces will be an electronics shop; another will be a wet cleaning/testing area. Our researchers routinely maintain and fabricate equipment, including custom building research assets using tools such as a 3D printer. The support spaces will be separated from the storage space. The building will be insulated and protected with a fire suppression system. The project cost for the warehouse building is expected to be in the vicinity of $260 to $300/sq. ft.

Detail: Housing

A two-level housing building is expected to include an apartment-style bunkhouse for graduate, post-graduate, faculty, and visiting researchers, plus a dormitory for visiting education groups, teacher education programs, and overnight science education camps. Bedrooms are to be shared by 2-4 individuals; the facility will include a commercial kitchen and showers. The building is expected to be approximately 6,000 sq. ft. between two stories. The building will be protected with a fire protection system and fire/smoke alarms. The housing building is expected to have a project cost in the vicinity of $305 - $350/sq. ft.

Project Timeline

2017: Pre-development; planning, fundraising feasibility study
2018: Secure new property; legal; survey; Level 1 environmental assessment; geotechnical evaluation; launch quiet phase of capital campaign
2019: Capital campaign; planning, design, permits
2020: Ongoing capital fundraising; begin construction
2021: Finalize construction and any remaining fundraising; move into new location

Accommodating Costs, Leveraged Funds and Complementary Activities

The Science Center is raising the funds for the cost of land purchase and has committed funds for survey work as well as Phase 1 environmental assessment and geotechnical review. These costs are as follows:

- $50,000 — Land purchase
- $58,000 — Geotechnical review
- $14,500 — Survey

In order to achieve major efficiencies, time is of the essence in generating support for this project. The Alaska Department of Transportation (AKDOT) intends to implement a major culvert replacement project in the lagoons adjacent to the property we are acquiring, along with removal and re-paving of a significant length of asphalt on New England Cannery (Orca) Road

in summer 2019. If sufficient funds are raised by spring 2019, we can coordinate installation of sewer assets with the road repaving and culvert replacement project, *saving potentially up to $1,000,000 in costs* affiliated with the installation of sewer pipe and pump stations necessary to access the nearest sewer tie-in and re-pave approximately 2,500 lineal feet from the ASLS-2001-5 property line to the nearest sewer tie-in.

Past / Current Economic Impact and Benefits

In the region, the inability of the 1989 year-class of Pacific herring to recruit as spawning adults in any significant numbers, the subsequent lack of recovery of the Pacific herring population from EVOS-related effects and the loss of the fisheries associated with it still convey significant, negative economic consequences for communities that were invested in PWS herring fisheries. In 2017, PWSSC contracted an economist, Dr. Sarah Kruse of Resilient Economics LLC, to assess the economic impact of the discontinued Pacific herring fishery. Estimates of total economic impact using a multiplier for Pacific herring harvest and processing range from $823 - $995 million through 2016. *This does not include multiplier effects associated with employment or personal income that resulted from the herring fishery*. Cordova and Prince William Sound were disproportionately affected by the impacts of the herring fishery loss. Analysis of the Commercial Fisheries Entry Commission database reveal that Cordova alone accounted for over 37% of herring fishery-related permit holders while Seward, Valdez, and Homer accounted for 2.7%, 4.5%, and 6.6% of permit holders, respectively. Due to the distribution of PWS herring permits, in which Cordovans were invested by an order of magnitude over all other communities, as well as the estimated ex-vessel revenue lost, a picture emerges that PWS communities suffered disproportionate economic losses, and this does not include PWS personal use or subsistence fisheries for herring.

In a separate 2017 study[1], Dr. Kruse determined that PWSSC has contributed at least $50.5 million dollars to the local economy, while our contribution to the state economy is over $106.2 million, with the vast majority of our work focused on EVOS-related research. Since its inception in 1989, PWSSC had cumulative expenditures (through 2017) of ~$94 million, with an estimated 42.8% being local, and 25.4% of those expenditures occurring at the state level, respectively. In total, almost 70%, or $61.4 million, of the Institute's expenditures during this time frame supported the local or state economy.

PWSSC has generated substantial economic benefits for the local Cordova community and Prince William Sound region since its inception in 1989. However, the economic benefits of both for-profit and non-profit organizations extend beyond their direct effects on the local, regional, or state economy. These additional benefits are called *multiplier effects*. A multiplier of 1.7 means that for each $1.00 increase in spending, there is a corresponding $0.70 increase in demands for goods and services in the local area. The multiplier effect is a way of assessing how change in one industry (e.g. PWSSC's research and education programs) affects all industries in the study area. The secondary effects of spending should not be overlooked. Secondary effects are a combination of both indirect and induced effects. Indirect effects can be considered the changes in sales, income, and jobs in sectors that support PWSSC and staff. Induced effects are

[1] Results from a 2017 study quantifying the economic benefits of PWSSC using U.S. Bureau of Economic Analysis input-output models and industry-specific multipliers.

the increased sales in the region due to household spending of income earned by PWSSC employees. All in all, secondary effects contribute strongly to the economic robustness of the region in which PWSSC is situated.

Future Economic Impact

We expect the expansion of PWSSC to have a significant positive impact on EVOS-related research as well as Prince William Sound's economic and cultural robustness. Today, PWSSC supports 17-20 employees year-round and many more seasonal and contract staff, spread across 14,572 sq. ft. of administrative, research, storage, campground, and other facilities distributed disparately around Cordova. This campus consolidation and expansion project will enable more than 40 year-round employees to be supported on a unified campus of approximately 25,000 sq. ft. of facilities, storage, and yard space — more than doubling our contribution to the regional and state economies while increasing restoration benefits to EVOS-injured resources.

The new facilities will contain bunkhouse and dormitory beds for visiting researchers, scholars, and education program attendees, addressing a critical housing need in Cordova and driving increased visitors to our region. PWSSC's expanded dormitory and bunkhouse facilities will allow the organization to house seasonal employees as well as visiting scientists and students and not impact housing availability in the community of Cordova, which can be limited, especially in summer. New facilities will also provide sufficient space to accommodate the repair, maintenance, fabrication, and storage of equipment such as seasonally deployed instruments, moorings & buoys, onsite vessel repair, and maintenance.

Table 1. Estimated economic output for 2026 and 2017–26 (10 years) based on an assumed annual growth rate in expenditures of 4.5% (this was the average growth rate (using real dollars) for the previous decade (i.e., 2007–16)). Results are presented in real dollars.

2026		$ Millions (Constant Dollars)		
Economy	Final Demand Multiplier	Direct Impact	Indirect/Induced Impact	Total Impact
PWS	1.3085	$ 3.27	$ 1.01	$ 4.27
Alaska	1.7283	$ 5.20	$ 3.79	$ 8.98

2026		
Area	Expenditures	% of Total
PWS	$ 3,266,200	43.2%
Alaska - Outside PWS	$ 1,931,700	25.6%
Outside Alaska	$ 2,361,900	31.2%
Total	$ 7,559,800	—

2017–2026		$ Millions (Constant Dollars)		
Economy	Final Demand Multiplier	Direct Impact	Indirect/Induced Impact	Total Impact
PWS	1.3085	$ 27.05	$ 8.34	$ 35.39
Alaska	1.7283	$ 43.04	$ 31.35	$ 74.39

2017–2026		
Area	Expenditures	% of Total
PWS	$ 27,046,100	43.2%
Alaska - Outside PWS	$ 15,995,500	25.6%
Outside Alaska	$ 19,557,600	31.2%
Total	$ 62,599,200	—

After completion of the new campus in approximately 3 years, PWSSC expects to grow over the following 5-10 years to support closer to 40 FTE on a condensed, unified campus with roughly double the number of square feet as compared to what we currently occupy. For each additional million dollars of output above 2016 levels, an estimated 7.5 jobs will be created in Prince William Sound and 10.9 jobs will be created in total within the State of Alaska – the majority of them focused on EVOS-related research, recovery, and resilience. This would mean that by

2026, if the annual growth rate in expenditures is 4.5% (matching our average growth rate in real dollars from 2007-2016), spending by PWSSC would create approximately 20 and 29 new jobs, at the local and state level, respectively. This would be an incredible injection of economic activity into a region whose economy is still depressed as a result of the spill. This growth can only be achieved if PWSSC expands its physical assets, as we are currently more or less at the limit of how many staff we can accommodate comfortably in the 3,800 square foot city-owned building we occupy in Cordova.

Future Funding Beyond EVOSTC

With any capital project, it is important for an organization to look toward the future in the name of a) supporting long-term capital costs, and b) overall financial health of the organization. This is something we have done at the staff and board level over the past 5 years as we have anticipated this project. While we rely on EVOSTC for a significant portion of our current research and potential new facilities funding, we realize no single funding source can be relied on forever. To this end, PWSSC implemented a board-approved strategic plan in 2016, which includes the following elements on fiscal responsibility:

- Within 5 years, no single funding source shall be more than 40 percent of revenue;
- Within 5 years, the number of unrestricted donors has increased by 50 percent over 2016;
- Increase by 3 the number of major science funders (restricted and unrestricted) to PWSSC, and increase research and community-based partnerships.

With a fresh approach to fundraising, planning, and board membership, we have made great strides toward these goals. Over the last three years we have set records for our annual fundraising event (June) and end-of-year campaigns and have raised funds for the land purchase effort. Our fiscal management over nearly 30 years in operation remains excellent, with clean audits and a positive position. Our income stream remains strong, ranging from national science funding to revenues generated by our administration of other organizations such as OSRI. Corporations, foundations, individuals, and science funding organizations continue to make strong financial commitments to PWSSC. With the ability to pay for our new facility and not carry debt from construction (this will be possible via EVOSTC's leading support, which will be followed by support from foundations and corporations who support our goals and will follow the lead of EVOSTC), we are confident that we will maintain a healthy financial status for decades.

We believe that a new facility will help PWSSC develop new programs, expand and invite partnerships, and enable revenue-generating opportunities to benefit EVOSTC-related priorities in the region. For example, the proposed dormitory building presents a transformative engagement opportunity. It will allow us to host student groups from throughout the spill-affected area as well as teachers, extending ecosystem and oil spill response programming to a much greater cohort of individuals while generating sufficient revenue to cover the operations and maintenance costs of the extremely efficient structure.

The Science Center's capital campaign, with Trustee Council funds as the primary contribution, will also engage foundations, corporations, and private donors to support the remainder of the costs that need to be raised to complete the project. We already have indications from key entities of their intention to provide major gifts, as long as we achieve significant fundraising goals first. Trustee Council support is appropriate for our mission and operations and would enable our future success.

Project Team

- **Katrina Hoffman**, PWSSC President & CEO and Executive Director, Oil Spill Recovery Institute. Katrina guides all aspects of the project.
- **Scott Pegau**, Ph.D., PWSSC Chief Operating Officer & Research Program Manager, Oil Spill Recovery Institute. Scott oversees the finance department and is the Science Lead for PWSSC. He plays a key role in design consultation and ensuring funds are spent as intended.
- **Linnea Ronnegard**, PWSSC Finance Director. Linnea oversees all aspects of PWSSC's finances, capital campaign, capital expenditures, etc.
- **Signe Fritsch**, Development and Communications Manager. Signe has been with PWSSC for 18 years and manages charitable giving, special events and campaigns, and a portfolio of communication outlets.
- **Seth Walker**, Principal Consultant, Curate.org. Seth is a former PWSSC board member, former funding officer at the Russell Family Foundation, and has served as PWSSC's development lead for two years.
- **Andrew Smallwood**, Commercial Fisherman, Cordova, Alaska. Andrew is a PWSSC Board Member and is Chair of the Land & Facilities Committee.
- **Mike Mahoney**, Commercial Fisherman, Cordova, Alaska. Mike is a PWSSC Board Member and member of the Land & Facilities Committee.
- **R.J. Kopchak**, PWSSC Founder Emeritus. R.J. serves on the Land & Facilities Committee.
- **Laura Meadors**, Health, Safety, Environment and Quality Director, Alyeska Pipeline Service Company. Laura is a PWSSC Board Member and serves on the Land & Facilities Committee.
- **Angela Butler**, General Manager, Cordova Operations, Eyak Corporation. Angela is the chair of the PWSSC Board of Directors.
- **Steve Fishback**, AIA. Steve is the architect funded by the Rasmuson Foundation through the Foraker Group's pre-development program to serve as a project manager; he generated construction cost estimates and has provided guidance on technical matters.

Site Information

Figure 1. PWSSC (circa 1989): converted fish processing building.

Figure 2. Refurbished Prince William Sound Science Center (building on pier, left) with *R/V New Wave*.

Figure 3. Property Identified for New PWSSC Campus and Relevant Adjacent Assets

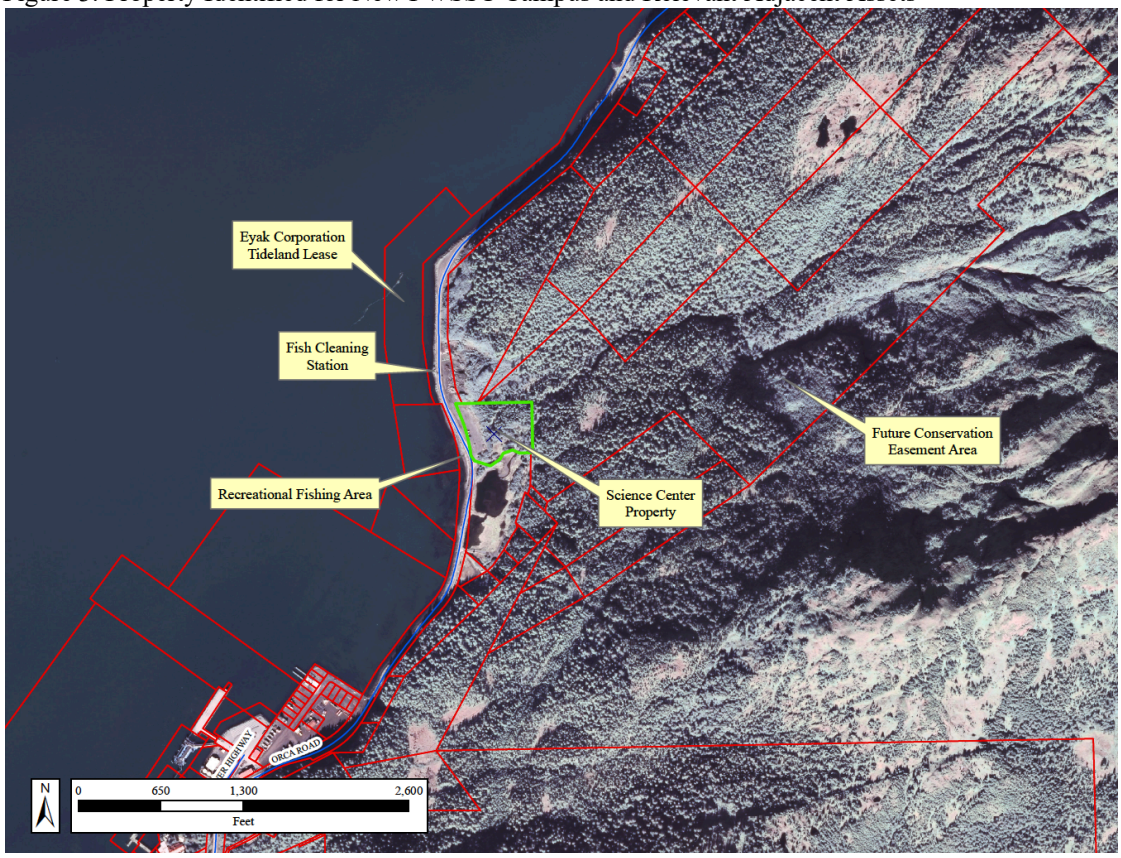
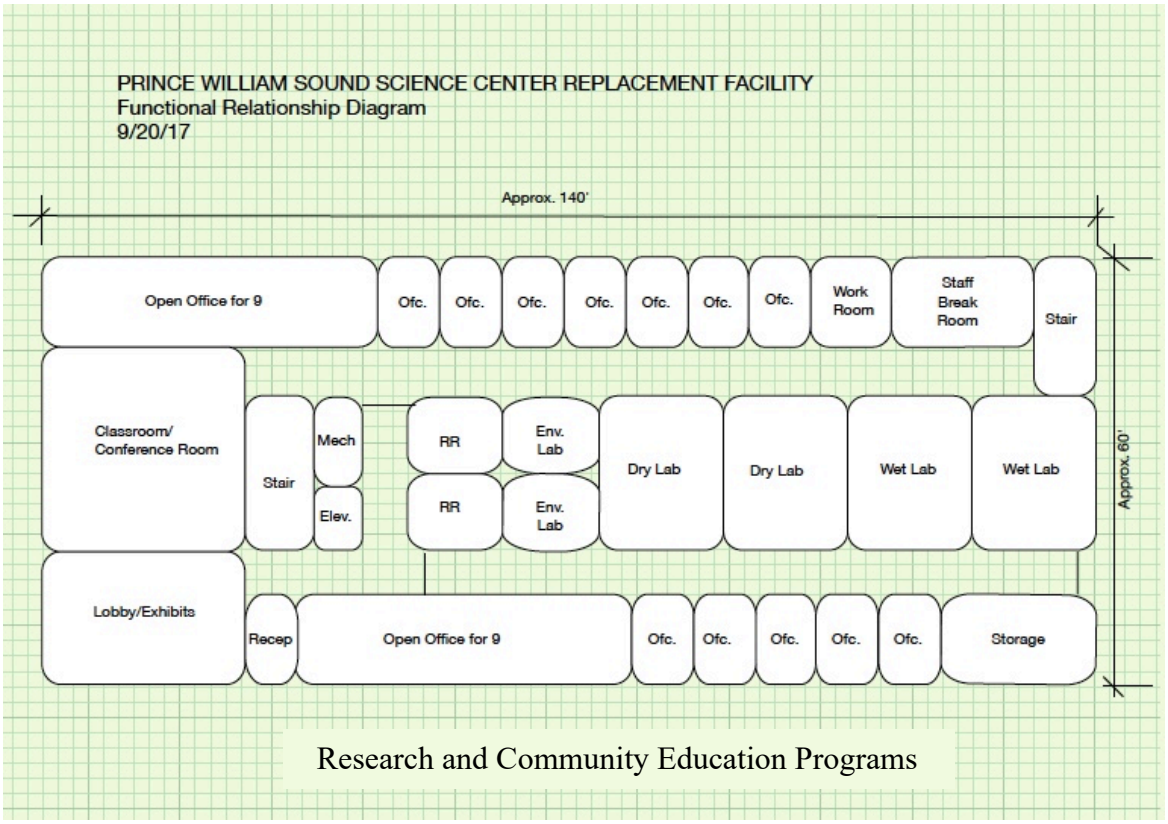
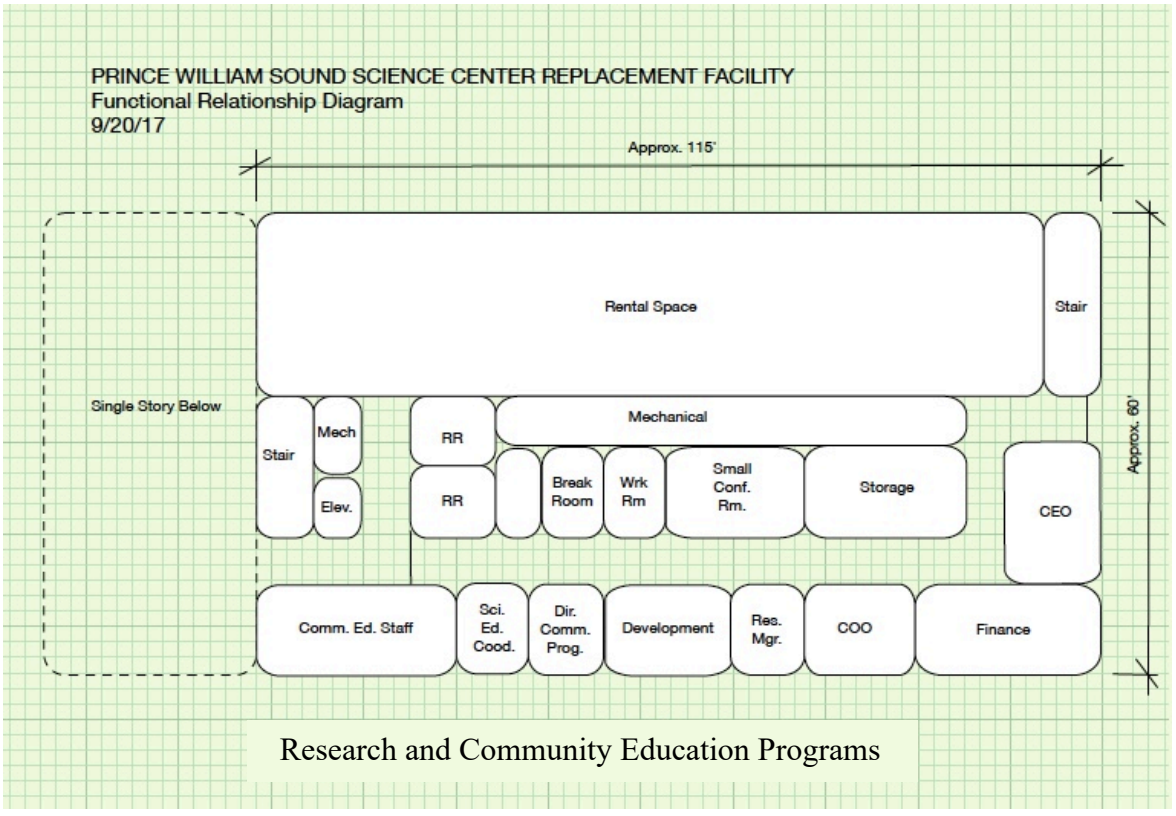
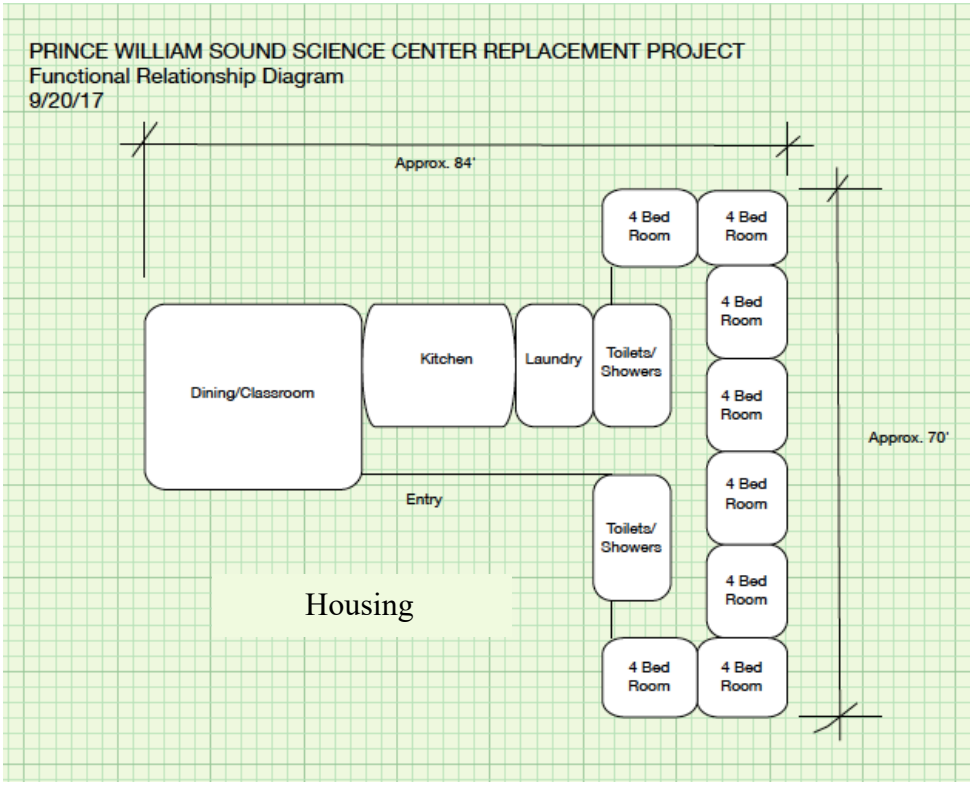
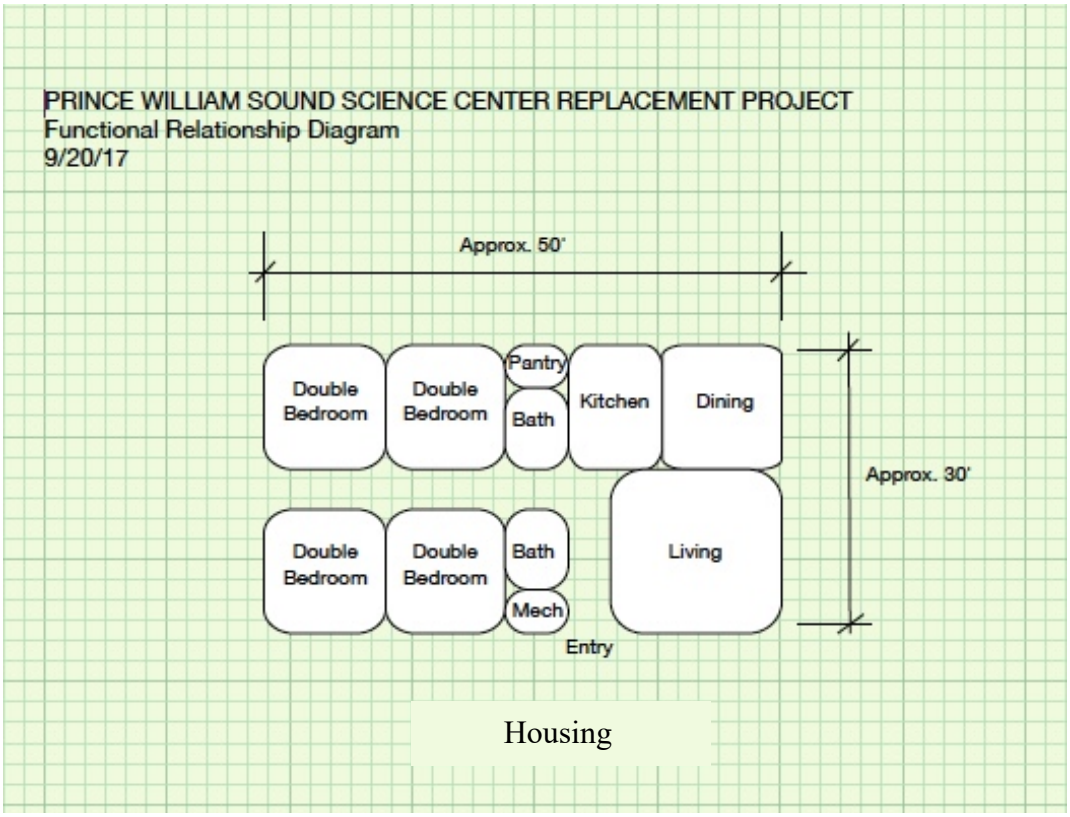


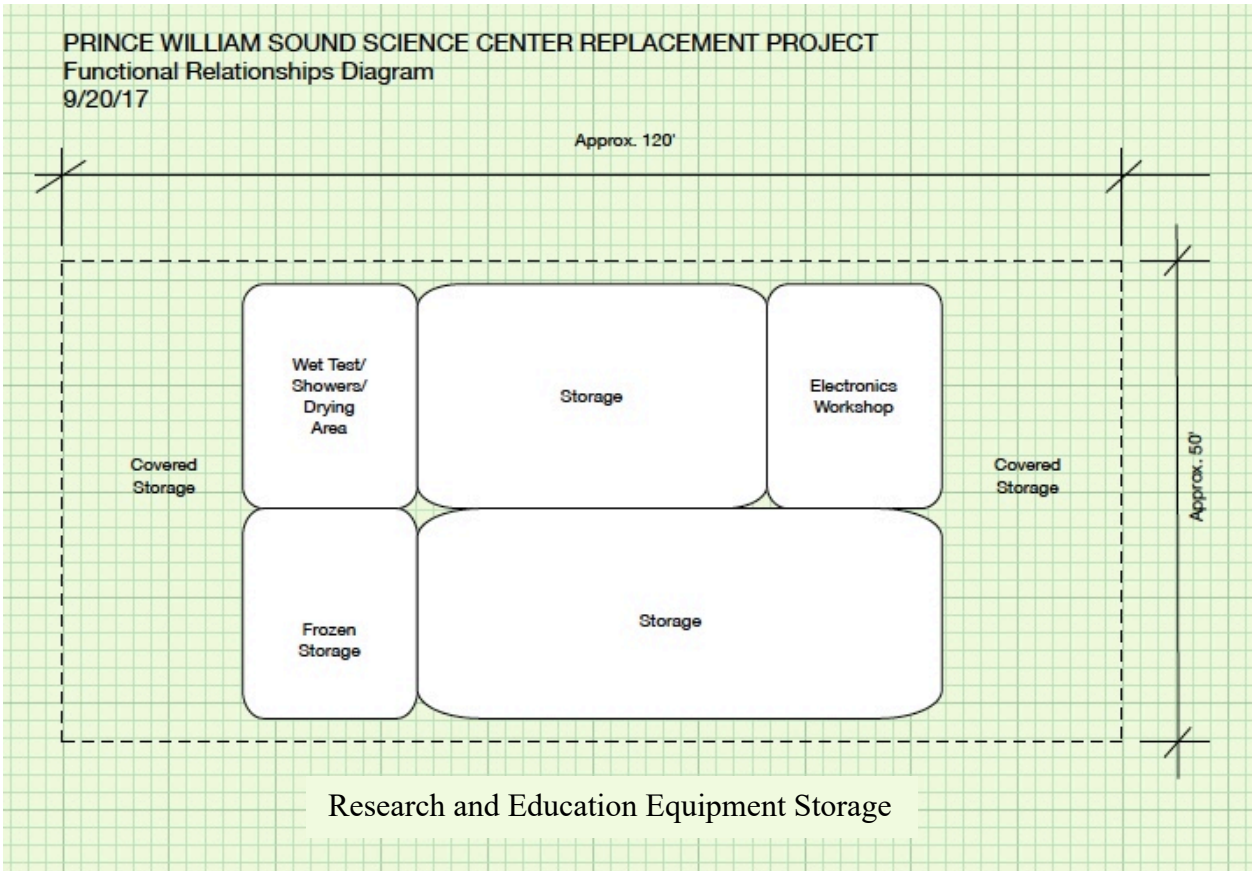
Figure 4. Conceptual model of potential building locations


PRINCE WILLIAM SOUND SCIENCE CENTER REPLACEMENT FACILITY
Functional Relationship Diagram
9/20/17
Approx. 140'
Open Office for 9
Ofc.
Ofc.
Ofc.
Ofc.
Ofc.
Ofc.
Ofc.
Work Room
Staff Break Room
Stair
Classroom/ Conference Room
Stair
Mech
Elev.
RR
RR
Env. Lab
Env. Lab
Dry Lab
Dry Lab
Wet Lab
Wet Lab
Approx. 60'
Lobby/Exhibits
Recep
Open Office for 9
Ofc.
Ofc.
Ofc.
Ofc.
Ofc.
Storage
Research and Community Education Programs


PRINCE WILLIAM SOUND SCIENCE CENTER REPLACEMENT FACILITY
Functional Relationship Diagram
9/20/17
Approx. 115'
Rental Space
Stair
Single Story Below
Stair
Mech
Elev.
RR
RR
Mechanical
Break Room
Wrk Rm
Small Conf. Rm.
Storage
CEO
Approx. 60'
Comm. Ed. Staff
Sci. Ed. Cood.
Dir. Comm. Prog.
Development
Res. Mgr.
COO
Finance
Research and Community Education Programs


PRINCE WILLIAM SOUND SCIENCE CENTER REPLACEMENT PROJECT
Functional Relationship Diagram
9/20/17
Approx. 84'
4 Bed Room
4 Bed Room
4 Bed Room
Dining/Classroom
Kitchen
Laundry
Toilets/ Showers
4 Bed Room
Approx. 70'
4 Bed Room
Entry
Toilets/ Showers
4 Bed Room
4 Bed Room
4 Bed Room
Housing


PRINCE WILLIAM SOUND SCIENCE CENTER REPLACEMENT PROJECT
Functional Relationship Diagram
9/20/17
Approx. 50'
Double Bedroom
Double Bedroom
Pantry
Bath
Kitchen
Dining
Approx. 30'
Double Bedroom
Double Bedroom
Bath
Mech
Living
Entry
Housing



Research and Education Equipment Storage