Property Development Plan

Western Regional Center Sand Point, Seattle, Washington

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P76
1976

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Assistant Administrator for Administration
Administrative Operations Division
Facilities Engineering Staff

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PROPERTY DEVELOPMENT PLAN
Western Regional Center
Sand Point, Seattle,
Washington

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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October 1976

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1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

EXECUTIVE SUMMARY

The National Oceanic and Atmospheric Administration proposes to construct a Western Regional Center on NOAA-owned property adjacent to the Sand Point Naval Support Activity, Seattle, Washington. The Center will replace the present Pacific Marine Center, which must be vacated by 1983; incorporate the National Weather Service Technical Training Center, now in facilities slated for demoliton in the 1980's; and provide consolidated facilities for nine (9) rapidly growing NOAA components now in inadequate and scattered leased facilities in seven (7) locations in the Seattle area. Planned facilities include buildings for operation, research, electronics, education, piers, warehouses and shops, for a total of 513,119 gross square feet of enclosed space and a cost of $62.239 M in 1976 dollars. Assuming construction over a five-year period, and starting with an appropriation of $15.5M in FY 1977, the total budget cost is $83.8M. A comparison of lease cost vs. the cost of construction indicates a break-even point at 17 years, after which NOAA will experience increasing cost avoidances throughout the remaining life of the facility.

While the project may be justified on economic grounds, NOAA feels that its principal justification lies in the consolidation and functional integration of heretofore separated field units. NOAA was created in 1970 to consolidate in one agency similar scientific functions on half a dozen Federal agencies in order to achieve a critical mass of resources and operating authorities. This consolidation was intended to assure more effective accomplishment of national scientific service and research objectives concerning the oceans and the atmosphre. Consolidation such as that planned at Sand Point is thus a crucial element in the achievement of one of the purposes of NOAA's creation. Considering the clear need for space and facilities in Seattle and the opportunity to provide them and achieve collocation simultaneously, NOAA recognizes multiple benefits from the project and urges that construction proceed in FY 1978 as proposed.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA	3. DEPARTMENT	4. INSTALLATION
OCTOBER 1976	78		COMMERCE	SAND POINT, SEATTLE

5. PROPOSED AUTHORIZATION	6. PRIOR AUTHORIZATION	7. CATEGORY CODE NUMBER	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY
$83,842,000	$1,970,000	-	-	WASHINGTON

10. PROPOSED APPROPRIATION	11. BUDGET ACCOUNT NUMBER	12. PROJECT NUMBER	13. PROJECT TITLE	NM	CM	RM
$83,842,000	-	A5B000/FJ1101	WESTERN REGIONAL CENTER			

SECTION A - DESCRIPTION OF PROJECT

14. TYPE OF CONSTRUCTION	
a. PERMANENT	X
b. SEMI-PERMANENT	
c. TEMPORARY	

15. TYPE OF WORK	
a. NEW FACILITY	X
b. ADDITION	
c. ALTERATION	
d. CONVERSION	
e. OTHER (Specify)	
16. REPLACEMENT	
17. TYPE OF DESIGN	
a. STANDARD DESIGN	
b. SPECIAL DESIGN	X
c. DRAWING NO. Facility Study Oct 1976	

18. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY

a. NO. OF BLDGS 11 b. NO. OF STORIES 1-2 c. LENGTH Varies d. WIDTH Varies

e. DESIGN CAPACITY 1842 personnel f. ~~GROSS~~ AREA 513,119 net

g. COOLING 356,114 sq.ft. CAP. 1100 tons COST ($1,500,000)

19. DESCRIPTION OF WORK TO BE DONE

Primary Facilities: Construct 11 new buildings with office, laboratory, shop, storage, classrooms & other special spaces, & associated outdoor workspaces and facilities. Construct 4 main piers for large ships, 3 small piers for small boats, with associated apron.

Supporting Facilities: Includes work attributable directly to individual buildings, & work required for site development, including general site work, main utility systems, access route thru Naval Support Activity. Removal of the abandoned facilities include demolition of 3 hangars, demolition of minor buildings & removal of airfield pavement.

SECTION B - COST ESTIMATES

20. PRIMARY FACILITY	U/M	QUANTITY	UNIT COST	COST ($000)
Western Regional Center, Sand Pt.			$	$ 51,444
a. Construct 11 buildings	s.f.	(548,233)	76.70	(42,013)
b. Construct piers, incl. dredging		( )		( )
c. and apron	l.s.	( )		(9,431)
d.		( )		( )
21. SUPPORTING FACILITIES				$ 32,398
a. Support facilities attributable				( )
b. to buildings & piers	l.s.			(5,081)
c. General site work	l.s.			(7,832)
d. Main Utility Systems	l.s.			(3,315)
e. Shoreline Reserve	l.s.			(887)
f. Lagoon	l.s.			(296)
g. Main Gate Access	l.s.			(531)
h. North Gate Access	l.s.			(433)
i. Demolition of Hangars 1,32,33	l.s.			(817)
j. Design,Management & Relocation	l.s.			(13,206)
22. TOTAL PROJECT COST				$ 83,842

SECTION C - BASIS OF REQUIREMENT

23. QUANTITATIVE DATA (U/M Sq. Ft.)

a. TOTAL REQUIREMENT	513,119	
b. EXISTING SUBSTANDARD	(392,899)	
c. EXISTING ADEQUATE	-0-	
d. FUNDED, NOT IN INVENTORY	120,220	
e. ADEQUATE ASSETS (c + d)	-0-	
	AUTHORIZED	FUNDED
f. UNFUNDED PRIOR AUTHORIZATION		
g. INCLUDED IN FY ____ PROGRAM		
h. DEFICIENCY (a - e - f - g)		

24. RELATED PROJECTS

25. REQUIREMENT FOR PROJECT

Project: Provide for the collocation and consolidation of nine (9) NOAA components presently dispersed at seven (7) sites in the Seattle area. Establish a NOAA-wide training facility, incorporating the National Weather Service Technical Training Center, now located at Kansas City, Mo.

Mission: The proposed facility will provide for present and future integration and coordination of atmospheric and oceanic program activities.

Requirement: This project is urgently needed to provide:

- Replacement of the NOS Pacific Marine Center, which is seriously cramped and must vacate current leased facilities by 1983;
- Facilities for new and growing NOAA activities;
- A NOAA-wide training facility incorporating Kansas City Technical Training Center scheduled for demolition in the 1980's.
- Obtain space in sufficient quantity and quality at one location.

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A5 B000/FJ 1101	WESTERN REGIONAL CENTER

Block 25 (Continued)

Current Situation: The existing site of 116 acres at the Naval Support Activity (NSA), Sand Point, Seattle, Washington has the capacity to meet the facility requirements. Hangars 31 and 32 and the control tower are presently occupied by NOAA organizations. The General Services Administration, as the design and construction agency, has under contract an architect-engineer and construction manager to develop master plan concepts, studies, site, access and operations building drawings. Final EIS was published January 1976 and, to date, has not faced legal challenge. The construction of this facility presents the best economical alternative to increasing complex and dispersed operations.

Impact If Not Provided:

. Short Term: Expansion at presently leased facilities is not possible, further use of leased facilities for future requirements will require additional sites and increase dispersal in the Seattle area. Planned and needed training programs will not be implemented due to unavailability of facilities.

. Long Term: NOAA will be left without any location for ship moorage and associated activities.

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FACILITY STUDY

1. PROJECT PURPOSE

The Sand Point Development Project is planned to meet needs for space and facilities which are, in the aggregate, the most serious NOAA faces anywhere in the Nation. The Western Regional Center will provide for collocation and consolidation of nine NOAA components now presently dispersed at leased sites in the Seattle area. Through this project NOAA will be able to:

. Provide replacement for the Pacific Marine Center, which is seriously cramped and must vacate current leased facilities by 1983;

. . Provide facilities for new and rapidly growing NOAA activities in such areas as: implementation of the Fishery Conservation and Management Act of 1976, Deep Ocean Mining Environmental Assessments, Puget Sound Marine Ecosystem Analysis, and the Outer Continental Shelf Energy Program; obtain adequate facilities for the Pacific Marine Environmental Laboratory currently housed in buildings designed as apartments, an airplane hanger and a control tower;

. Establish a NOAA-wide education facility incorporating the Kansas City Technical Training Center, now operating in property scheduled for demolition in the 1980's; and

. Accomplish consolidation of the majority of NOAA components in the Seattle area to facilitate that integration of oceanic and atmospheric programs envisioned in the formation of NOAA in 1970.

2. CURRENT AND PLANNED WORKLOAD

The organizations to be collocated on this project are shown on the following Organizational Chart. Present organization locations are shown on the Seattle area map. Summary of the current and planned organizational work loads are shown for personnel, budget and space. The 1981 requirements reflect budget estimates and anticipated program personnel. Personnel numbers shown account for anticipated work stations including full-time permanent employees, other than full-time permanent employees and visiting scientists. A more detailed summary of present and future personnel, budget, and space requirements is provided in Appendix A.

The facility will have an 100 percent utilization for planned use. Piers will be 100 percent utilized during time of berthing for four (4) months per year. Educational facility will be scheduled for an average population of 400 students and 59 staff for a 100 percent utilization.

Estimated duration of facility use is indefinite based on present missions which are expected to continue. Follow-on requirements are expected but are undertermined at this time.

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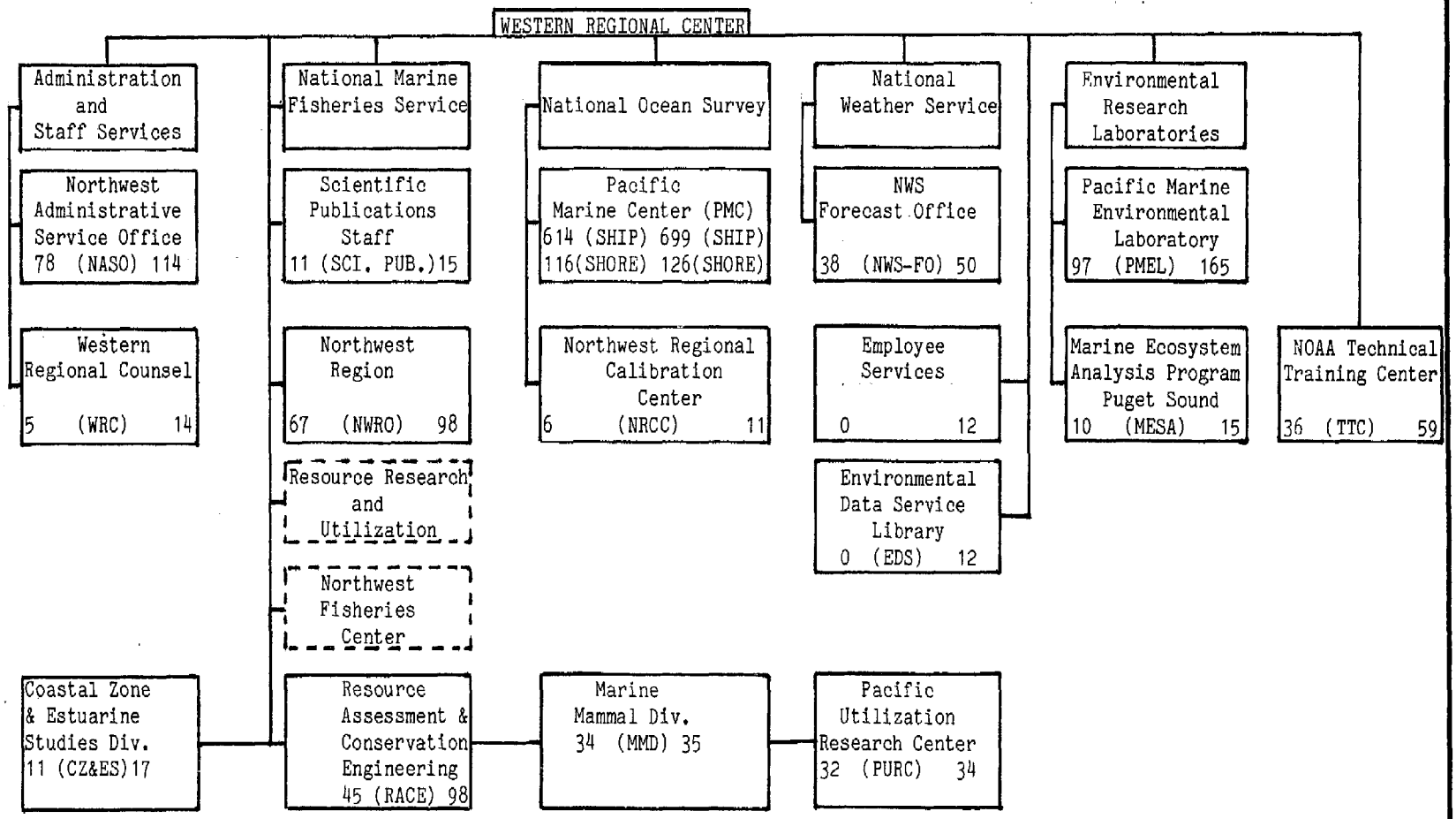

Note: 1. Organizations to be located at Sand Point shown with solid lines.
2. Dotted lines represent organizations to remain in present locations with expanded activities.
3. Numbers indicate FY76 and FY81 positions.

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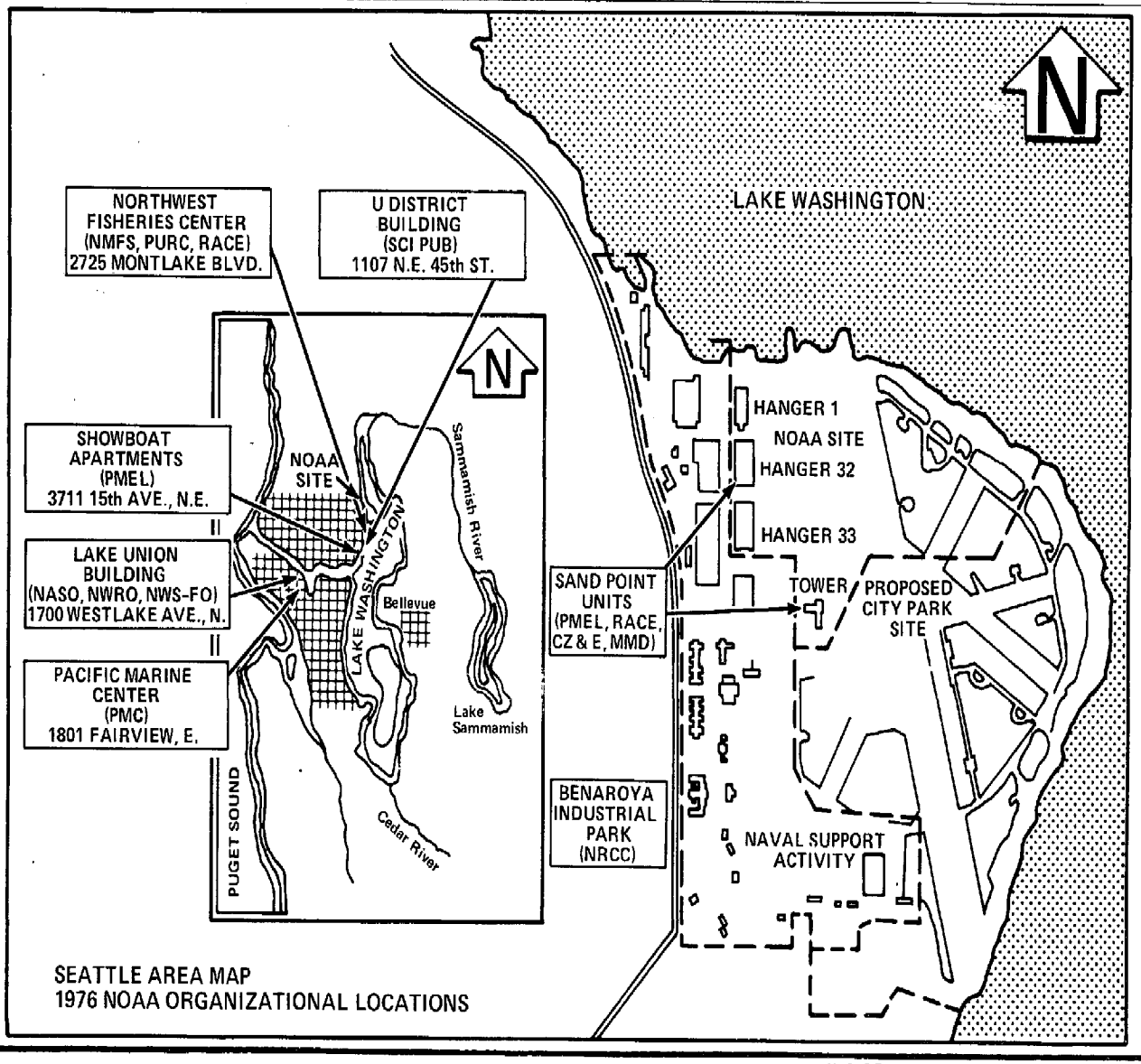
A5B000/FJ1101	WESTERN REGIONAL CENTER

2. (continued)



SEATTLE AREA MAP
1976 NOAA ORGANIZATIONAL LOCATIONS

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2. (Continued)

TOTAL REQUIREMENTS

PLANNED PERSONNEL, BUDGET & SPACE SUMMARY

	PERSONNEL(1) (Nos. of Positions)				BUDGET(1)(2) ($1000)				SPACE(3) (sq. ft.)			
	FY76	FY81	Growth	% Change	FY76	FY81	Growth	% Change	FY76	FY81	Growth(sf)	% Change
EDS LIBRARY	0	3	3	--	0	104.3	104.3	--	0	8960	8960	--
EMPLOYEES SERVICES	0	12	12	--	0	--	--	--	0	11620	11620	--
NMFS-NWRO	67	98	31	+46	5791.0	8013.0	2222.0	+38	14921	16372	1451	+30
NWFC	90	150	60	+67	2901.8	7836.2	4934.4	170	71009	93591	22582	+32
NWS-FO	38	50	12	+31	945.3	1476.2	530.9	56	7605	10580	2975	+39
PMC W/ SHIP	614	699	85	+14	--	--	--	--	0	--	--	--
PMC W/O SHIP	116	126	10	+9	17461.3	22947.4	5485.1	+31	56140	79966	23826	+42
NRCC	6	11	5	+83	150.0	191.5	41.5	+28	5400	6651	1251	+23
PMEL	102	165	63	+62	4000.0	6600.0	2600.0	-65	36100	57693	21593	+60
MESA	5	15	10	+200	1650.0	2070.0	420.0	+25	550	2987	+2437	+443
PURC(4)	32	34	2	+6	793.9	1073.2	279.3	+35	24320	29102	4782	+20
SCI. PUB.(5)	11	15	4	+36	470.3	727.1	256.8	+55	3745	2900	-845	-23
TRAINING	36	59	23	+64	812.0	1279.0	467.0	+58	35000	93850	58850	+168
NASO	78	114	36	+46	1284.5	2367.0	1082.5	+84	11604	54888	43284	+373
GEN. COUNSEL	5	14	9	+180	112.0	249.0	137.0	+122	741	2979	2238	+302
TOTAL W/SHIPS	1200	1565	365	+30	36373.1	54933.9	18561.8	+51	267205	472139	204930	+76
W/O SHIPS	586	866	280	+48								

(1) FY81 Projections determined by latest known requirements with FY76 as base.
(2) Includes inflation calculated at 5% per annum.
(3) Based on Space and Functional Requirements Data (SFRD) dated Aug. 1976, with changes calculated using FY76 as base. Space Shown is net useable.
(4) Effective 10/1/76, PURC is organizationally located within the NWFC.
(5) Effective 10/1/76 Sci. Pub. is organizationally located within the NWRO.

3. DESCRIPTION OF THE PROJECT

a. Type of Construction

This project consists of a construction program of 11 new buildings, 4 main piers, three small boat piers, and site development including dredging, utilities, roads, parking space, and access routes. The facility will be considered permanent, with a useful life of at least 30 years.

b. Replacement This plan includes the demolition of existing structures. This project will utilize hangars 1, and 32, and 33 if determined to be economically feasible. Existing storm drainage will be used to the extent practicable and supplemented as necessary. Other utilities are to be abandonded and other structures including existing pavement are to be removed.

c. Type and Design

The facility will be a special design as standard type drawings are not available. Appendix F presents a summary of facility requirements study for planning and budgeting.

d. Description of Work to be Done

(1) Primary Facility. The primary facility will consist of 11 newly constructed buildings plus piers.

(a) Operations Building

The Operations Building is a two-story building consisting mainly of office space required for administrative and support functions for Seattle area components, ship operations of the National Ocean Survey (NOS) and for administrative and program functions of Sand Point components. The total space provided in this building is 84,780 sq. ft. for 367 personnel replacing existing leased facilities, which are both dispersed and lacking necessary expansion space. Components located here are Northwest Administrative Service Office (NASO), Northwest Regional Office of National Marine Fisheries Service (NMFS), Office of the General Counsel, Office of Scientific Publications of NMFS, and the Pacific Marine Center of NOS. A small amount of laboratory space (3950 sq. ft.) is provided for Pacific Marine Center (PMC) for functions needing collocation with other PMC offices in this building and not related to programs in the laboratory buildings. The Weather Service Forecast Office of the National Weather Service is also located in the Operations Building.

3. d. 1. (a) (Continued)

Special features of the Operations Building include 1630 sq. ft. of sound proof construction; 250 sq. ft. of Radio Frequency Interference (RFI) shielded space; the employee health and dental unit of 1400 sq. ft.; and a consolidated library of 1000 sq. ft. The monitor/control room for the Central Automatic Control system, automatically monitoring and controlling security, fire alarms, utilities, building heating, ventilating and air conditioning (HVAC) systems, and other systems is located in this building. Equipment from existing government inventories to be located in this building includes computer terminals, reproduction and xerographic equipment, and National Weather Service and PMC communications equipment. Special considerations for handicapped visitors and occupants will be provided. Covered walkways connect this building with others in the immediate vicinity.

(b) Research Building

The Research Building is a 2-story structure totalling 115,248 sq. ft. of space distributed as follows: Offices, 44,540 net s.f.; Labs, 35,530 s.f.; Open Areas, 15,380 net s.f.; Allowance for Toilets, Corridors, Custodial Space, Access and Circulation, 10,477 s.f. The building will house functional facilities for major line components engaged in biological, chemical, environmental, oceanographic and atmospheric research, and will include areas dedicated to Pacific Marine Environmental Laboratory and the following Northwest Fisheries Center Units: Pacific Utilization Research Center, Resource Assessment and Conservation Engineering Division and Marine Mammals Division. Each component will operate in its own area, and within each component offices and labs will be grouped separately. These areas will be designed for maximum space flexibility, in order to be economically convertible for changing programs. Office areas and open areas, wherever possible, will be contiguous for additional flexibility.

Existing NOAA-owned laboratory space at 2725 Montlake Boulevard will continue in use by the Northwest Fisheries Center, and will be devoted to units not requiring collocation with functions at Sand Point. Other current lab facilities in leased space and those at the Naval Support Activity, will be released for other use.

Laboratory space will have RFI-free fluourescent lighting; controlled temperature and humidity; exhaust hood system separate from general building ventilation; washable and dust free finishes for floor, walls, and ceilings; double width doors for fork lift access; and utilities such as oil-free compressed air, gas, hot and cold deionized/demineralized water, hot and cold water, and vacuum. Special requirements for various labs include sound proofing, special water supply systems, high ceilings (up to 18ft.), overhead hoists and cranes, effluent holding/treatment facilities, special refrigeration, positive pressure for outward air flow, and special utilities such as fuel oil, special power, steam, dechlorinated water, and controlled-temperature chilled and hot water. A computer area is also provided; with raised floor system, temperature and humidity control, sound proofing, and fire protection system. Special considerations for handicapped visitors and occupants will be provided. Covered walkways connect this building with others in the immediate vicinity.

3. d. (1) (Continued)

(c) Electronics Building

The Electronics Building will be a one-story structure for 69 personel totalling 32,874 sq. ft. Approximately one half of the space will be offices, computer area, and minor storage. The remaining half will be laboratory space. All laboratory space will have temperature-controlled with positive pressure for cleanliness; washable dust-free finishes on walls, floors and ceilings and RFI-free fluorescent lighting. Special requirements for various labs include sound proofing and services such as natural gas, compressed air, refrigerant, special power, deionized and distilled water, and high ceilings. Requirements for the computer area include a raised floor temperature and humidity control, sound proofing and fire protection systems Office areas, wherever possible, will be contiguous for future flexibility.

Components whose space needs will be met in the Electronics Building include Pacific Marine Environmental Laboratory's Base Operations Support Services, Pacific Marine Center's Processing Division, National Weather Service Electronics Shop, Northwest Regional Calibration Center, and Northwest Fisheries Center Resource Assessment and Conservation Engineering Division. Each component will operate in its own area, and within each component, offices and labs will be grouped separately. Covered walkways will connect this building with the other buildings in the immediate vicinity.

(d) Education Building

The Education Building will be a two story structure totalling 99,550 net sq. ft. Included are 12,000 sq. ft. for an auditorium, 12,000 sq. ft. for office and administration, 61,300 sq. ft. for classrooms and laboratories; with the remainder divided among shops, and unheated storage. Special considerations for handicaped staff and students will be provided.

The primary training will be focused upon professional and technical needs, though training will be provided for administrative, managerial, and personnel needs. Professional and technical training will include the disciplines of cartography, hydrology, meteorology, marine biology, biochemistry, electronics, geophysics, and the various marine trades. This building provides for and expands considerably, the training currently being conducted at the Technical Training Center (TTC) located in Kansas City, Mo., in a facility scheduled by GSA for demolition in the 1980's.

3. d. (1) (Continued)

(e) Main and Small Boat Piers

The Main Piers provide berthing space for the 12 vessels expected to be based at the Pacific Marine Center by 1981. Three of these vessels are about 300 feet long, and the remainder vary down to slightly less than 100 feet. These ships are engaged in hydrographic and oceanographic surveys and other surveys and research projects. The piers are 40 ft. wide; 2 are 470 ft. long and the others are 400 and 330 feet each. Construction will be concrete, with deck height of 8 ft. A 150 ft. wide concrete apron along the shore behind the piers provides additional working and staging area. The apron requires a small landfill to raise it up to pier height.

The Small Boat Piers will be provided for use by hydrographic launches and other small craft. Two piers, 10 ft. wide and 130 ft. long are required, plus a small 40 ft. long stub pier near one of the main piers for use by a mobile lift vehicle in removing small boats from the water. Electric power and a connection to the ballast and bilge water handling system of the Main Piers will be provided. Pier construction will be concrete.

Utilities provided to the main piers for ship connections include water (for domestic and fire fighting systems), sanitary sewers, ballast and bilge handling, fuel handling, steam supply and condensate return, electric power, and telephone lines. Descriptions of these services are included with support facilities descriptions. A trench for easy access will be provided at the pier centerline for all utilities except electrical and communications. Pier area lighting intensity will be equivalent to street level illumination with emergency lighting also provided.

The main pier area will be dredged to provide an area with a depth of 30 ft., to minimize lake bottom disturbances from vessel operations. The maximum vessel draft is 18.5 ft. Techniques to minimize the adverse environmental effects of the dredging, such as a plastic water column curtain, non-polluting flocculants, and scheduling dredging between October and December (period of lowest biological activity) will be utilized. The resulting dredge spoil, 275,000 c.y. will be dehydrated behind earth containment berms on site, and later used as required for regrading. Rip rap will be placed on the dredged slope at the shoreline to protect the slope. Material for the rip rap will be obtained by selecting properly sized pieces from the removal of concrete runway and apron.

3. d. (1) Continued

(f) Warehouse

The Warehouse will be a one-story building totalling 99,210 feet. for bulk storage and for the receipt, storage and issue of incoming materials. It will provide the consolidated warehousing requirements of the Sand Point facility, replacing the existing NASO supply depot and consolidating dispersed supply activities.. It will have 33,400 sq. ft. of heated and ventilated space for storage of items requiring heated storage. The remaining 61,650 sq. ft. of storage will be ventilated space only Secure storage will require 900 sq. ft. Cabinets and shelving will be required in 8,000 sq. ft. An office area of 4,160 sq. ft., air-conditioned and heated, will be provided for inventory control, supply, issue, shipping and receiving. The entire building will have sprinklers for fire protection.

(g) Shops

The shops serve the consolidated requirements of the various components for fabrication, assembly and repair of equipment and parts, for small craft and larger ships. Shops include machine, carpentry, painting, sandblasting welding and others. Shop space is required by the Pacific Marine Center, the Pacific Marine Environmental Laboratory and various divisions of the Northwest Fisheries Center. A one-story building totalling 30,609 sq. ft. will be provided with heating and ventilation, exterior roll-up doors. Compressed air, electric power for tools and equipment, and sprinklers for fire protection. An air-conditioned area of 4,160 sq. ft. for support and engineering offices is included. The majority of the initial outfitting of the shops will be done using material and equipment provided from the existing inventory of tools and equipment of the components to be consolidated in the new building.

(h) Enclosed Work Area

The Enclosed Work Area provides 31,700 sq. ft. of weather and wind protected work area, with a 10-foot clear height. Heat and ventilation is provided for 200 sq. ft. of office space and 6,500 sq. ft. for buoy maintenance and fine net repair. The remaining area for large net repair is ventilated only. Roll-up doors will be provided. The space will be used by the ocean-atmosphere response studies of the Pacific Marine Environmental Laboratory (OARS) and Resource Assessment and Conservation Engineering Division of the Northwest Fisheries Center. Sprinklers will be provided for fire protection.

3. d. (1) Continued

(i) Covered Storage and Boat Storage

Covered Storage and Boat Storage provides 33,400 sq. ft. of storage space with floor and roof only. The required clear height is 16 feet. Components using Covered Storage and Boat Storage include Northwest Administrative Service Office, Pacific Marine Center, Northwest Regional Office of NMFS, Pacific Marine Environmental Laboratory and Resource Assessment and Conservation Engineering Division of Northwest Fisheries Center. Sprinklers will be provided for fire protection.

(j) Employee Services Building

The Employee Services Building will provide on-site food services for employees and visitors as well as a facility for the Federal Employees Credit Union. Food service planning is based on a 1600 peak facility population with all ships in port and a full compliment of 400 students at the Education Center, and is planned to have the capacity to serve 600 customers in 1 1/2 hours. Credit Union and food service facilities will be operated as concessions with space leased by the government to the concessionaires. The building will be one-story with 3,850 sq. ft. for dining room, 5,770 sq. ft. for food preparation, 1,000 sq. ft. for an employee lounge, and 1000 sq. ft. for the banking/credit union space, for a total of 12,782 sq. ft. The Employee Services Building is connected to other buildings in the immediate vicinity by covered walkways.

(k) Security/Information Station

This building provides the central point for distribution of published data, reports, brochures, and pamphletes for use by the general public. It provides security and gate control at the Main Gate, and an information center for visitors to the facility. Both the National Weather Service and the Pacific Marine Center now schedule visits by organized groups, and guidance to the reception points for these and other programs will be provided to visitors stopping here. Also provided is space for sale and distribution of NOAA publications and charts, marine marketing and fisheries charts, weather and environmental data developed on a routine and special basis by NOAA. The total space provided is 2,400 sq. ft.

3. d. (2) (Continued)

(c) Steam Distribution System

The Steam Distribution System consists of approximately 6,550 feet of high presure steam supply and condensate return main. Piping will be insulated and buried in a concrete envelope.

(d) Chilled Water Distribution System

The chilled water distribution system consists of approximately 3,200 feet of chilled water supply and chilled water return distribution. Piping shall be preinsulated, prefabricated, jacketed and installed below ground.

(e) Sanitary Sewer System

The total peak sanitary sewage flow will be approximately 530 GPM for the entire NOAA area. The sewer will be discharged into the Metro line sewer on Sand Point Way which has enough extra capacity to collect the peak flow from NOAA. Since the NOAA project site is lower than the Metro main sewer by approximately 35 feet, two pump stations will be required. A holding tank is planned for the main sewage pump station for emergency use. The holding tank has a capacity of 24-hour retention for the average daily flow, 68,000 GPD excluding flow from ships. All domestic sewage flow from the buildings will be collected to the wet well of the main pump station by gravity sewer systems. The bilge and ballast waste water line and domestic sewer from the ships to be separated. As per normal practice, the sewer system will provide for a 50% future increase, including the main pumping station and holding tank.

3. d. (2) Continued

(f) Water Distribution System

One 12" new main is connected to the new NOAA water main system strough the North Gate. One combined fire and domestic system is planned, which consists of several loops to prevent dead-end stagnation, to reduce friction loss and to supply enough fire flow in the event of pipe failure. Average daily domestic water demand is approximately 200 GPM and peak domestic water is approximately 800 GPM. Fire demand is estimated at 2,000 GPM. The distribution pipe line is designed based on the sum of the fire flow and fifty percent (50%) of the average domestic demand. Each pier has a water main for ship service connections, such as domestic water bilge, ballast, and fire protection water supplies. The city water main has enough capacity to supply the peak flow of 2,100 GPM and maintain the required pressure. The distribution system is adequate for a 50% increase in domestic water demand in accordance with usual design practice.

(g) Storm Sewer System

All storm sewers will meet environmental requirements. The storm sewer system of NOAA facilities are separated into three systems.

- Combination of existing servicable storm sewer system and a new storm sewer system to replace unservicable existing sewers which previously served the Naval Support Activity area.

- Storm sewer systems for paved areas, draining into skimming and settling tanks for oil and grease removal and settling of solids.

- Surface drainage and culverts for grassed and landscaped areas draining directly into the lake.

3. d. (2) Continued

(h) Communication Systems

Exterior communication duct bank shall run parallel to electric lines. Telephone cable shall be provided by the telephone comany. Central automatic control is proposed for the entire facility. Central control room shall be located in the Operations Building. Central control room shall control:

- Security, perimeter and internal, including closed circuit T.V.
- Fire alarm system. Base maintenace, communication and emergency announcements.
- Emergency power and lighting controls.
- HVAC and utility monitoring.
- Facility maintenance scheduling, energy and labor cost accounting and analysis.

3.e. UNUSUAL COST FEATURES

(1) Primary Facility

Primary facility cost features include those normal to an operational, research, and ship support complex; such as, temperature and humidity controls, exhaust systems, fire protection and detection systems, communications and alarm systems. Incidental to pier construction are dredging and spoil removal, and complete utility service for ships, including oil-water separator for ballast removal and bilge cleaning. Fallout shelter needs have been considered and no special structures are deemed necessary. Value management, including life-cycle costs, will be part of the design process on each structure, evaluating design criteria to determine lowest overall cost consistent with desired performance. Hangars 1, 32, and 33 are being evaluated for retention and renovation or demolition and replacement based on costs, function and aesthetics. Present project estimate includes budgeting for demolition of these structures and replacement with more eocnomical buildings based on life-cycle costs.

(2) Support Facilities

The site preparation and the construction of new buildings and ship support facilities include a number of unusual cost features due to the need to remove portions of the old Naval Air Station. General site preparation includes removal of portions of the old concrete and asphalt runways, taxi-ways and hardstands; and installation of roads, parking, lighting, landscaping and a complete utility system including a sewage pumping station, utility plant, and fire systems required for site development.

(3) Energy Conservation

Energy consideration in developing the master plan in conjunction with the General Services Administration are:

. Analysis of alternatives in determining the primary fuel for the facility. Fuels considered will be in accordance with Chapter 4 of Criteria for Federal Office Buildings (GSA).

. Life cycle energy costs and a total energy system for the facility will also be considered in development of economic fuel analysis.

. The block load for each building shall be based on the Energy Conservation Guidelines for the New Office Buildings (GSA).

3.e. (3) Continued

. Each building in the primary facility shall have an evaluation of environmental system alternatives and life cycle costs over the operating period, and energy consumption of component equipment at full and partial loads.

. Energy cost study as part of economic feasibility of hangars.

(4) Use and Retention of Existing Facilities

Use of existing storm drainage as much as possible will be incorporated in the final Master Plan. All other underground utilities will be abandoned because of deterioration or inappropriate location. The retention, improvement and incorporation of one or more of the existing Hangars 1, 32, 33 will be considered to meet functional needs, based upon the results of the feasibility study previously cited.

Of the existing Sand Point structures, Hangars 1, 32, and 33 and Building 264, and the Control Tower offer temporary solutions to some of NOAA's immediate space needs. In late 1975, NOAA began to refurbish portions of Hangar 32 for about $499,000. Refurbishing expenditurs plus 1 year's maintenance operations for the hangar are less than a year's comparable lease through GSA. Over succeeding years to 1981, an annual cost avoidance of over $580,000 will occur. However, this is not satisfactory space, and is considered a temporary solution. See Section 10 for photographs of existing facilities.

3. e. (4) Continued

(a) Hangar 32

Hangar 32 was constructed in 1938, including the north and south office areas, utilizing structural steel. The four corner towers were constructed with structural steel floor and wall framing; and concrete floor slabs. The north and south 2-story office areas are approximately 20′ x 260′ and framed with structural steel supporting timber floors and roof decking. Existing ceilings are primarily suspended metal lath and plaster. Existing interior walls are plasterboard. The existing 2-story timber - framed shop facilities in the center of Hangar 32 are approximately 39′ x 238′ and were constructed in 1946. Subsequent additions and renovations took place from 1947 to 1950. Within the structure there is approximately 47,000 square feet of laboratory, shop, and office space. There is also approximately 60,000 square feet of main hangar space which is presently being used as a general storage.

The space in Hangar 32 is presently occupied by approximately 130 employees. The units occupying Hangar 32 consist of portions of the Pacific Marine Environmental Laboratory (PMEL) and portions of the Northwest Fisheries Center. PMEL will occupy approximately 20,000 square feet of office space, and the fisheries groups occupy approximately 27,000 square feet of office space. The greatest demand for use of this space is for laboratories and shops. The 60,000 square feet of open space is poorly lighted and not heated. This space will be utilized as storage space for equipment including netting materials, buoys, winches, etc., which are used in oceanographic, fisheries, environmental, and other research programs.

(b) Hangar 33

Hangar 33 is now being used, and will continued to be used for storage of a considerable amount of NOAA gear and equipment which cannot be stored outdoors but does not require heated or lighted space. Hangar 33 has approximately 37,000 square feet of potential laboratory, shop, and office space. This is about 10,000 square feet less than contained in Hangar 32, as the center section of this hangar does not have a second deck. The open storage area is approximately the same as that in Hangar 32 or 60,000 square feet.

Renovation of this hangar is estimated at about $1 million. The steam lines to this hangar, which were utilized for heating, were disconnected several years ago, and therefore no heat of any kind is possible in this hangar without extensive expenditures. The electrical system within the Hangar has also deteriorated to the point where it is not safe to expect reliable power within the hangar. NOAA has interim plans to use all of the storage space in Hangar 33. Much of this space will be used temporarily to store small boats and launches of the Pacific Marine Center as well as other major equipment items used in vessel support.

3. e. (4) Continued

(c) Hangar 1

Hangar 1 is the oldest of the three hangars and has been determined to be not economical for renovation. This hangar should be demolished at the earliest practical date because the entire hangar is in general disrepair, with extensive roof deterioration. Its use, however, will be considered as part of the above feasibility studies.

(d) Control Tower

The Control Tower is a wood frame structure constructed in 1946. At present, about one-half of the building's 19,000 square feet of space are occupied by PMEL. In April 1976, PMEL requested that the additional space for an additional 40 personnel in the tower building be rehabilitated for its use. This structure will be used for project office and contractor personnel and is scheduled for demolition at project completion.

(e) Status of Existing Facilities

Bldg. No.	Type	Construction Type	Year Const.	Size (sq. ft.)	Present Condition	Possible Use (Short Term)	Possible Use (Long Term)
1	Aircraft Hangar	Structural Steel Roof, Trusses, Columns on Concrete Floor	1928	58,242	Poor	NOAA Storage	Renovation/ Demolition
32	Aircraft Hangar	Structural Steel Roof, Trusses, Columns on Concrete Floor	1939	108,449	Fair	Interim Office Space & Indoor Workspace for PMEL & NWFC Units	Renovation/ Demolition
33	Aircraft Hangar	Structrual Steel Roof, Trusses, Columns on Concrete Floor	1939	102,170	Fair	NOAA Storage & Construction Staging	Renovation/ Demolition
264	Control Tower	Wood Frame	1946	18,976	Poor	Interim Office Space & Project Ofice	Demolition

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3.e. (4) (e) Continued

Bldg. No.	Type	Construction Type	Year Const.	Size (sq. ft.)	Present Condition	Possible Use (Short Term)	Possible Use (Long Term)
102	Engine Test Stand	Reinforced Concrete	1941	7,247	Unsatisfactory for use	Demolition	
122	Inert Storage	Wood Frame on Concrete Floor	1942	11,080	Unsatisfactory for use	Demolition	
247	Maintenance Storage	Wood Frame on Concrete Floor	1944	3,267	Unsatisfactory for use	Demolition	
121	Storage	Wood Frame	1942	810	Unsatisfactory for use	Demolition	
21	Magazine	Reinforced Concrete Bunker	1936	Unknown	Unsatisfactory for use	Demolition	

3. f. Collateral Equipment

(1) The following equipment is integral to the primary facility, chargeable to the project and included in the architectural/structural, mechanical and electrical costs.

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
OPERATIONS BUILDING		
Health & Dental Unit		8,000
Sinks, Hoods & Vents	2	9,000
Library Shelving		7,000
Laboratory Tables/Benches		63,000
Elevator		38,000
RFI Shielded Room		31,000
Automatic Control Unit		39,000
Subtotal		195,000
RESEARCH BUILDING		
Lab. Casework, Counter Tops, Sinks		420,000
Vault	1	23,000
Pedestal Floor Area		13,000
Elevators	1	76,000
Salt Water Storage Tank	1	10,170
Unit Sub Station	1	99,200
Emergency Generator	1	38,750
RFI Fixtures		6,975
Salt Water Supply Pumps	2	8,220
Lake Water Supply Pump	1	1,695
RESEARCH BUILDING (Continued)		
Cold/Freezer Rooms	5	78,200
Hood Exhaust/Scrubber System	1	21,100
Cold Storage Rooms	3	59,100
Subtotal		855,410
ELECTRONICS BUILDING		
Laboratory Case Work, Benches		160,000
Vault	1	7,000
Pedestal Floor Room		9,600
Unit Substation	1	68,200
Subtotal		244,800

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3.f.(1) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
EDUCATION BUILDING		
Library/Classroom, Seating and Shelving		112,000
Laboratory Cabinets, Benches and Sinks		319,000
Auditorium Seating		93,000
Audio Visual Equipment		60,000
Unit Substation		85,300
Subtotal		669,300
MAIN PIERS		
Sewage/Ballast/Bilge Pumps	2	60,000
Regulator Transformer	8	49,600
Transformer	16	62,000
Oil/Water Separater	1	5,650
Subtotal		177,250
WAREHOUSE		
Explosive Storage Shelving		4,000
MMD Shelving		20,000
Subtotal		24,000

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
SHOPS		
Work Benches, Shelving, Cabinets		30,000
Divers Locker	1	20,000
Unit Substation	1	65,100
2-Ton Hoist	2	10,000
Subtotal		125,100
COVERED STORAGE & BOAT STORAGE		
Unit Substation		28,700
Subtotal		28,700
EMPLOYEE SERVICES BUILDING		
Credit Union Equipment & Vault		23,000
Subtotal		23,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3.f.(1) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
UTILITY PLANT		
Transformer	1	54,600
Main Distribution Panel	1	54,000
370 HP Steam Boilers	3	137,800
550 Ton Centrifugal Water Chillers	2	136,560
660 Ton Cooling Towers	2	29,800
Water Circulating Pumps	6	22,350
Fuel Oil Tanks	3	26,070
Subtotal		461,180
SITE WORK & UTILITIES		
Emergency Sanitary Pump Station Diesel Generator	1	38,800
Sanitary Pump Station, Motors, with Control Equipment	1	45,000
Lagoon Circulation Pump	1	5,650
Subtotal		89,450
UNADJUSTED TOTAL		2,893,190
BUDGET TOTAL		4,054,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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5. PROJECT NUMBER	6. PROJECT TITLE
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3. f. (Continued)

(2) The following collateral equipment is chargeable to the construction project but not considered built-in and is the equipment costs.

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
OPERATIONS BUILDING		
Regulated Power Sources		15,000
Dark Room Equipment		2,500
Washer, Hoods & Vents		5,500
Subtotal		23,000
RESEARCH BUILDING		
Graphics Equipment		3,000
Engineering Equipment		10,000
Furniture & Equipment		170,800
Carpentry-Machine		415
Visitor Center Equipment		1,950
Conference Room Equipment		16,300
Computer Terminals		4,500
Video Terminal		8,000
Plotter/Tape Drive		10,000
Water Treatment Facility	1	30,000
20 HP Boiler	1	30,000
Overhead Crane System	1	14,000
Subtotal		298,965

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
ELECTRONICS BUILDING		
Special Lab Air Conditioning	1	7,400
Chemical Fume Hood	1	625
500 Gal Overflow Tank	1	825
Cold Room	1	15,000
Heat Sink	1	825
Chain Hoist	1	825
5 HP Pumps	3	3,000
25 HP Refrigeration Compressor	1	7,500
Misc. Equipment		13,000
Subtotal		48,000
EDUCATION BUILDING		
Files, Chairs & Tables		48,000
Subtotal		48,000
WAREHOUSE		
Supply/Storage Shelving		60,000
Subtotal		60,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3. f. (2) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
SHOPS		
Oil Boom	1	9,000
Boat Travel Lift	1	33,000
14 Ton Crane, 21' - 50' Boom	1	30,000
Forklift Trucks (12,000# and 10,000#)	2	35,000
Lathes, Bandsaws & Drill Presses		32,000
Subtotal		139,000
ENCLOSED WORK AREA		
Net Loft Equipment		5,000
Subtotal		5,000
EMPLOYEE SERVICES BUILDING		
Kitchen Equipment		277,000
Dining Room Equipment		50,000
Subtotal		327,000

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
SECURITY/INFORMATION STATION		
Shelving, Display Racks & Files		10,000
Subtotal		10,000
UTILITY PLANT		
Misc. Equipment		1,600
Subtotal		1,600
UNADJUSTED TOTAL		960,565
BUDGET TOTAL		1,287,000

3. f. (Continued)

(3) The following collateral equipment, required as a result of movement into new facilities, will be purchased by NOAA program elements. This equipment is not chargeable to the Sand Point Project.

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
OPERATIONS BUILDING		
Drafting Tables	2	560
Telecopier	1	11,250
Mini Computers	3	6,250
Equipment Racks		1,250
Books		20,000
Map Cabinets	5	1,300
Mechanical Files (Personnel)		1,500
Computer Terminals	10	25,000
Computer Terminals (Rental)	2	10,000
Electronic Test Equipment		20,000
Untrasonic Cleaning Tank	1	5,000
Drying Oven	1	2,000
Library Furniture & Equipment		45,000
Automatic Typewriters		10,000
Mailroom Equipment		12,200
Reproduction Equipment		4,300
Vehicle & Equipment Rental		22,500
Office Furniture & Equipment		36,000
Subtotal		79,900
RESEARCH BUILDING		
Atomic Absorption System	1	27,000
Vert. Laminar Flow Hood	1	1,500

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
RESEARCH BUILDING (Continued)		
PH Meter	1	1,500
Visible Recording Spectrophotometer	1	20,000
H.P. Liquid Chromatograph	1	25,000
Carbon Analyzer	1	5,000
Automatic GC Sampler	1	10,000
Plotter Recorder	1	3,000
Programmable Calculators		18,000
Trawl Test Tank	1	100,000
Furniture & Equipment		16,000
Cabinets		55,803
Pelagic Laboratory		6,995
Reference Collection		320
Skeleton Preparation Laboratory		715
All-Purpose Laboratory		307
Clinical Pathology Laboratory		1,530
Reproduction Equipment		666
General Files		100
Machine/Carpentry Equipment		1,405
Chart/Drawing Equipment		3,238
Electronic Equipment		9,725
Fish Holding Tanks		30,000
Bio-Chem Laboratory Equipment		164,000
Organic Laboratory Equipment		67,000
Inorganic Laboratory Equipment		5,000
Organic Instruments & Lab Equipment		135,000
Inorganic Instruments & Lab Equipment		53,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3. f. (3) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
RESEARCH BUILDING (Continued)		
Chemistry Instruments & Lab Equipment		295,000
Quality/Protein Laboratory Equipment		5,000
Sample Preparation, Laboratory Equipment		17,000
Food Spoilage/Human Pathology/Microbiology/Fish Pathology Microbiology/ Equipment		17,000
Electron Microscope Equipment		100,000
Fish Preparation/Processing Equipment		283,000
Assembly & Industrial Products Laboratory Equipment		78,000
Conference Room & Office Furniture & Equipment		22,200
Office, Laboratory and Drafting Miscellaneous Equipment		15,200
Hardware for FFT Capability		100,000
Key Punch, Environmental Equipment and Multi-Color Analyzers		110,000
Seminar Projection Equipment		26,000
Shop Tools		26,000
Calculators/Microfiche/Reader/Printer		4,400
Graphics Display Terminal	1	6,000
Multimeters and Oscilloscope		18,000
Counter Power Supply Sets		19,400
Data Storage Cabinets & Analysis Tables		5,500
Computer Terminals	2	12,500
Portable Oscilloscope	1	3,000

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
RESEARCH BUILDING (Continued)		
Data Logger/Tape Radar	1	4,400
Water Bath	1	400
Digital Thermometer	1	2,500
Precision Decade Resistance Boxes		700
Dead Weight Tester	1	400
Hot Splicer	1	700
Extended Processor Memory	1	25,000
Desk Central Processor	1	10,000
Office Furniture & Equipment		35,500
Library Furniture & Equipment		112,000
Books, Journals, Reports		156,000
Refrigerator	1	307
Vacuum Pump	1	100
Circulating Water Bath	1	2,000
Freezer	2	3,000
Subtotal		2,278,011
ELECTRONICS BUILDING		
Digitizing Table	1	80,000
Disc Drive	1	30,000
Electronic Test Equipment		6,000
Office Furniture		8,000
B-8 Stereoplotter	1	60,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3. f. (3) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
ELECTRONICS BUILDING (Continued)		
Hydroacoustics Van and Equipment	2	300,000
Transducer Calibration Tank & Auxiliary Equipment	1	40,000
Hand Tools & Shop Instruments		36,000
Storage Cabinet & Shelving		4,300
Printed Circuit Fabrication Equipment		10,000
Electronic Parts		20,000
Computer Discs & Magnetic Tape		40,000
Subtotal		634,300
EDUCATION BUILDING		
Simulator	1	200,000
Taping Station	1	18,000
Weather Service Preparation Equipment		1,500
Equipment Training Equipment		16,000
Wind Tower	1	5,000
Subtotal		240,500
WAREHOUSE		
Forklifts	1	10,000
Forklifts Charging Equipment		10,000

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
WAREHOUSE (Continued)		
Office Furniture & Equipment		25,000
Spare Parts		42,000
Subtotal		87,000
SHOPS		
Office Furniture & Equipment		25,000
Subtotal		25,000
ENCLOSED WORK AREA		
Office Furniture & Equipment		2,000
Subtotal		2,000
EMPLOYEE SERVICES BUILDING		
Student Furniture	1	5,000
Subtotal		5,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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3. f. (3) (Continued)

EQUIPMENT NAME OR DESCRIPTION	NO. UNITS REQUIRED	TOTAL COST ALL UNITS
SECURITY/ INFORMATION STATION		
Office Furniture, Files & Equipment		5,000
Subtotal		5,000
UNADJUSTED TOTAL		3,515,921
BUDGET TOTAL		5,060,000

4. PROGRAM ESTIMATE AND SCHEDULE

a. Program Estimate

The total budget estimate for the Sand Point program is $83,842,000. Of this total, $70,636,000 is directly related to support facilities,structures and building equipment, $13,206,000 is related to one-time costs for program management and relocation. The percentage breakdown for the major program costs is shown below.

	FY 76 Estimate ($ millions)	$ (millions)	%
Site Work & Dredging	11.423	13.571	16.2
Utilities	2.790	3.315	3.9
Structures & Equipment	38.689	53.750	64.1
Design, supervision and overhead	8.782	12.540	15.0
Relocation	.555	.666	.8
Total Construction	$ 62.239	$83.842	100%

b. Cost Summary

The following summary tables are provided

Program Cost Summaries (total program costs)
Project Phasing Schedule

(1) All costs are estimated in 1976 dollars in order to obtain an unadjusted engineering estimate.

(2) The area cost factor for Seattle, Washington, is 1.026% above the national average and is reflected in the engineering estimate.

(3) The construction contingency is 10.0% of the engineering estimate and is based on Space and Facilities Requirements Data, August 1976 and Facility Study, October 1976.

4.b. (Continued)

(4) Construction estimate (budget estimate) is obtained by multiplying the unadjusted estimate by escalation factor to the midpoint of construction. Award dates are indicated on project phasing schedules.

(5) Escalation factor is 8% per year from Engineering News Record (ENR) Index for building construction.

(6) Supervisory Inspection and Engineering Services, (SIES) is estimated at 6.0% of construction estimate with 5% for design and 1% for engineering services excluded from 6% fee limitation.

(7) Total construction management cost is estimated at 4.1% of construction estimate.

(8) Supervisory Inspection and Overhead (SIOH) for GSA is estimated at 4.4% of construction estimate.

(9) Maintenance and operation estimated at 0.5% increase per month and is from the Office Building Exchange Report (BOMA), 1975 and Building Operating Cost Summary, GSA/PBS, 1974.

(10) The mechanical work and electrical work portions of the construction will be performed by subcontractors and a 25% markup is included in the costs to cover subcontractors' overhead and profit.

(11) The general contractor's overhead and profit for supervision, indirect expense, taxes, insurance, employee benefits, plus a fair profit, is expected to be 25%; which is added to his unit costs in all but mechanical and electrical work. An additional 10% is added to the electrical and mechanical work for general contractor's overhead and profit.

(12) All construction costs were estimated on a unit price basis using the following source data:

(a) Current negotiated construction industry prices.
(b) Building Construction Cost Data 1976 - Robert Snow Means Company.
(c) Process Plant Construction Estimating Standards (Richardson) 1976-77 Edition.
(d) Quotations from selected vendors on proprietary and commercial items.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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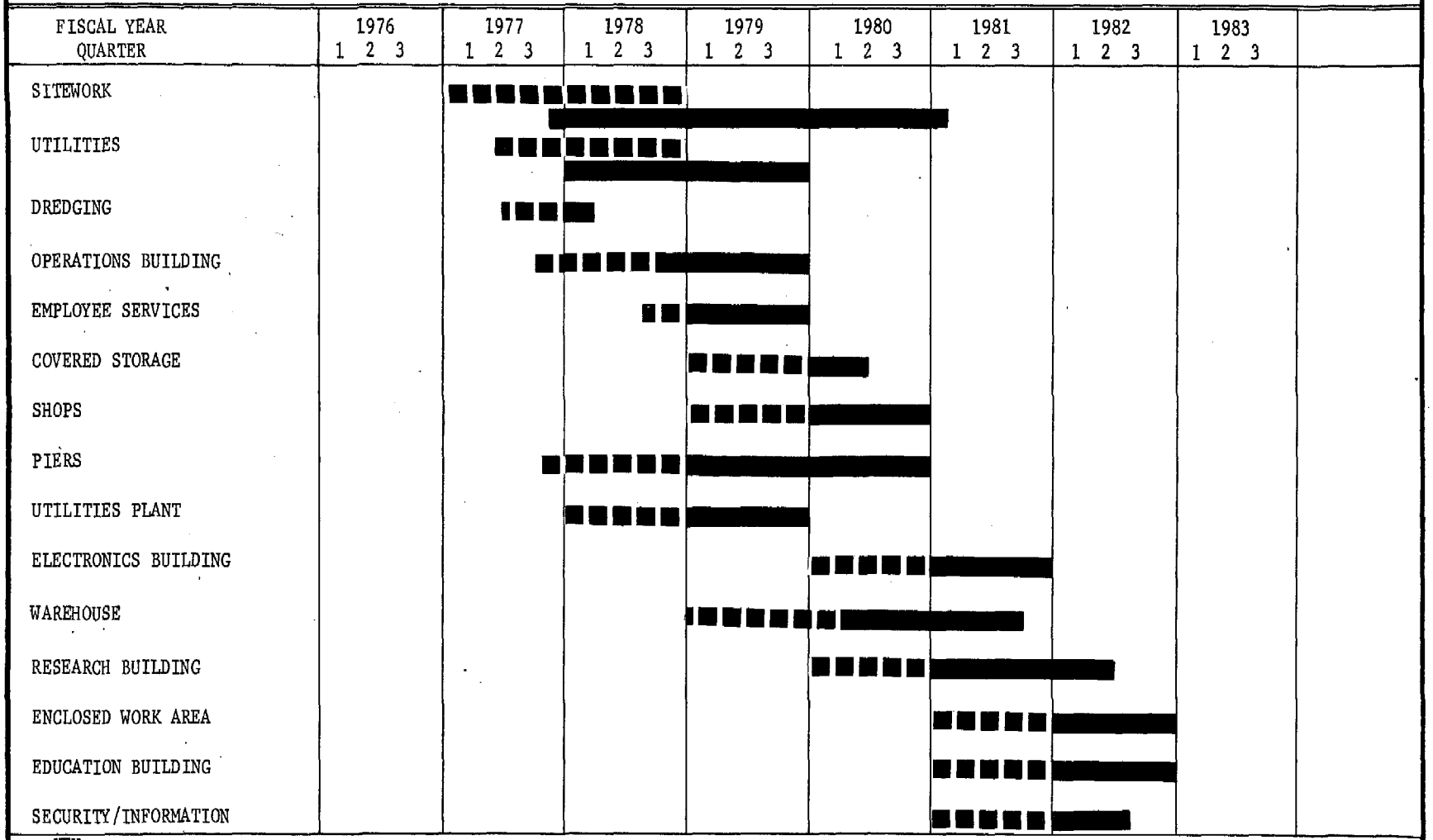
4. (Continued) PROJECT SCHEDULE



1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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4. (Continued)

PROGRAM COST SUMMARY
($1,000,000)

Action Items	FISCAL YEAR 1976	1977	1978	1979	1980	1981	1982	Budget Total
Construction								
Site & Dredging		0.501	5.875	3.850	2.845	0.500		13.571
Utilities			1.657	1.658				3.315
Structures & Equipment			5.856	7.823	12.218	14.335	13.518	53.750
Subtotal		0.501	13.388	13.331	15.063	14.835	13.518	70.636
SIOH/SIES								
Design	0.666	0.291	0.803	0.800	0.904	0.890	0.811	5.165
Construction Management	0.041	0.021	0.549	0.547	0.618	0.608	0.554	2.938
GSA Management	0.138	0.022	0.589	0.587	0.663	0.653	0.595	3.247
NOAA Management	0.155	0.135	0.150	0.165	0.180	0.195	0.210	1.190
Relocation				0.034	0.013	0.039	0.580	0.666
Subtotal (FY76)	1.000	0.469	2.091	2.133	2.378	2.385	2.750	13.206
Total Program Costs	1.000	0.970	15.479	15.464	17.441	17.220	16.268	83.842

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

4. (Continued)

PROGRAM COST SUMMARY
($1,000,000)

Action Items	FISCAL YEAR 1976	1977	1978	1979	1980	1981	1982	Budget Total
Site		0.501	3.100	3.850	2.845	0.500		10.796
Utilities			1.657	1.658				3.315
Dredging			2.775					2.775
Structures with Equipment								
Operations Bldg.			5.856					5.856
Employee Services				1.619				1.619
Covered Storage					0.805			0.805
Shops					2.090			2.090
Piers				3.596	4.800			8.396
Utilities Plant				2.608				2.608
Electronics Building						3.229		3.229
Warehouse					4.523			4.523
Research Building						11.106	1.110	12.216
Enclosed Work Area							1.268	1.268
Education Building							10.805	10.805
Security/Information							0.335	0.335
Subtotal		0.501	13.388	13.331	15.063	14.835	13.518	70.636
Design	0.666	0.291	0.803	0.800	0.904	0.890	0.811	5.165
Construction Management	0.041	0.021	0.549	0.547	0.618	0.608	0.554	2.938
GSA Management	0.138	0.022	0.589	0.587	0.663	0.653	0.595	3.247
NOAA Management	0.155	0.135	0.150	0.165	0.180	0.195	0.210	1.190
Relocation				0.034	0.013	0.039	0.580	0.666
Subtotal (FY76)	1.000	0.469	2.091	2.133	2.378	2.385	2.750	13.206
Total Program Costs	1.000	0.970	15.479	15.464	17.441	17.220	16.268	83.842

5. JUSTIFICATION FOR THE PROJECT

The justification for the project is found in both programmatic and economic considerations. The principal goals of the project are to collocate operations and consolidate NOAA elements now in dispersed locations, and to provide sufficient space for current and future programs presently located in space inadequate in both size and quality. These requirements are, in the aggregate the most serious NOAA faces anywhere in the Nation.

a. Requirement for the Project

NOAA was created to consolidate in one agency similar Federal scientific functions from a half dozen Federal agencies in order to achieve a critical mass of resources and operating authorities. This consolidation was intended to assure more effective accomplishment of national scientific service and research objectives concerning the oceans and the atmosphere. Consolidation and functional integration of heretofore separated field units is thus a crucial element in the achievement of one of the purposes of NOAA's creation. This is particularly important in Seattle where NOAA units are dispersed among seven sites. NOAA's Seattle units comprise its largest collection of activities and personnel outside the Washington, D.C. metropolitan area. The importance of Seattle activities has grown remarkably as a result of new Congressionally mandated programs in recent years. (See Appendix E for Seattle Organization and Activities.)

NOAA's purpose and mission as an agency has been given considerably favorable support by Congress since NOAA's inception in 1970. NOAA's budget has grown from just under $200 million in 1970 to an estimated $650 million in 1977. Several new Federal programs are significantly enlarging NOAA's activities, particularly in the Seattle area: implementation of the Fishery Management Act of 1976; Deep Ocean Mining Environmental Assessment; Puget Sound Marine Ecosystem Analysis; Outer Continental Shelf Environmental Assessment programs; and further implementation of the Marine Mammal Protection Act of 1972. Between 1970 and 1976 the number of NOAA employees increased from less than 1000 to nearly 1,300. Most of this growth has been within the last three years. Given the purpose for which NOAA was created and the substantial growth of NOAA activity in the Seattle area; and given the size and dispersion of the Seattle area operating units, NOAA recognizes a clear need for the facility planned for Sand Point as the best means of consolidating and collocating its diverse activities.

The following table presents a tabulation of the proposed housing plan.

b. Current Situation

NOAA organizations to be relocated at Sand Point are presently located at seven (7) locations in the Seattle area and at Kansas City, Missouri. The following table presents the present agency housing for NOAA. Specific organizational facilities deficiencies are:

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
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5. (Continued)

COMPREHENSIVE HOUSING PLAN
(As of September 1976)

ORGANIZATION	PRESENT HOUSING (OCCUPIABLE SQ. FT.)				PROPOSED HOUSING (OCCUPIABLE SQ. FT.)				
	TOTAL	PERSONNEL	GOV'T OWNED	LEASED	TOTAL	PERSONNEL	RETAINED GOV'T OWNED	RETAINED LEASED	PROPOSED PROJECT
National Marine Fisheries Service	14921	67.	7500	7421	16372.	98.	--	--	16372
Northwest Fisheries Center	86079	90.	86079	--	93591	150.	--	--	93591
National Weather Service - F.O.	7605	38	--	7605	10580	50	--	--	10580
Pacific Marine Center W/Ship	--	614	--	--	--	699	--	--	--
Pacific Marine Center W/O Ship	56140	116	21000	35140	79966	126	--	--	79966
Calibration Center	5400	6	--	5400	6651	11	--	--	6651
Pacific Marine Environmental Labs.	45000	107	38000	7000	60680	180	--	--	60680
Pacific Utilization Research Center	24320	32	24320	--	29102	34	--	--	29102
Scientific Publications	3745	11	--	3745	2900	15	--	--	2900
Training Center	35000	36	35000	--	93850	59	--	--	93850
Northwest Administrative Service Office	12506	78	--	12506	54888	114	--	--	54888
General Counsel	741	5	--	741	2979	14	--	--	2979
Northwest Fisheries Center	53380	N/A	53380	--	53380	N/A	53380	--	--
Environmental Data Serv. Library	--	--	--	--	8960	3	--	--	8960
Employee Services	--	--	--	--	11620	12	--	--	11620
Assigned Space	344837	1200	265279	79558	525519	1565	53380	--	472139

5. b. (Continued)

(1) Pacific Marine Center (PMC)

Presently located at 1801 Fairview East, ship based and shore based support is in cramped space where internal arrangements create serious operating problems. Engineering, operations and electronics shops are in diverse locations throughout the building. Lack of space requires periodic use of rental trailers during peak activity periods. Staging area is insufficient for supplying and equipping vessels during in-port periods. Pier space is inadequate for the number of vessels now assigned to PMC. Parking is insufficient for permanent staff and ship personnel. Present lease expires in 1983 and is not renewable.

(2) National Marine Fisheries Service Northwest Regional Office (NWRO):

Presently located at 1700 Westlake Ave. North, is separated on three different floors without sufficient space for significant expansion required for Extended Jurisdiction Program. No expansion space is available in this location.

(3) Northwest Administrative Services Office (NASO):

Presently located at 1700 Westlake Ave. North, is in crowded space, also without expansion required to handle workload for recent and future programs including expanded training programs.

(4) General Counsel (GC):

Located at 1700 Westlake Ave. North, is in inadequate space and will soon have to move to a new location further increasing Seattle dispersion. Space is required for staff to assist in the Extended Jurisdiction Program and Outer Continental Shelf Program.

(5) Scientific Publications (NWRO):

Is in adequate space but separated from its parent organization effective October 1, 1976 with reorganization of the NMFS. The office is separated from all other NOAA organizations.

5. b. (Continued)

(6) Pacific Marine Environmental Laboratory (PMEL):

Dispersal at three sites causes considerable lost time in personnel travel and transportation and problems in coordination. The laboratory at 3711 15th Ave. Northwest is a former motel totally unsuitable for scientific research and experimentation. Essentially housed in motel rooms, personnel have a difficult time with electrical currrent for experimentation and space arrangement. Hangar 32 and the Tower Building at Sand Point are only temporarily adequate. All locations are removed from the ship base, further compounding coordination and travel problems.

(7) Northwest Fisheries Center (NFC):

Presently has four (4) organizations dispersed in four (4) locations. The Marine Mammals Division is located in converted but inadequate space in Hangar 32 at Sand Point. Coastal Zone and Estuarines Studies Division has shops and engineering activities in Hangar 32 at Sand Point and the remainder at 2725 Montlake Blvd. RACE is to be relocated at Hangar 32 at Sand Point as the result of overcrowding at 2725 Montlake Blvd. Also effected is PURC which will move to Hangar 32 at Sand Point. Organizations not to be relocated at Sand Point and to remain at Montlake are the Marine Fish and Shellfish Division and the Pacific Utilization Research Center. All these organizations have expanded responsibilities for energy and environmental studies as the result of new legislation.

(8) Northwest Regional Calibration Center (NRCC):

Is in adequate space in Bellvue, Washington, but is widely separated from the Pacific Marine Center creating problems for control and management. Transporation of equipment is a major problem between this organization and PMC and PMEL.

(9) NOAA Technical Training Center (TTC):

Is housed in warehouseing space shared with NOAA's Central Logistics and Supply Center (CLSC) and the NWS Quality Control and Instrumentation Repair Branch (QCIRB). At present, adequate space is available for students, but space for staff is becoming crowded and the facility is expected to be outgrown by 1981. There is no space available at this location for other needed NOAA training activities; and therefore, the existing facility cannot support the expanding functions of CLSC and QCIB. Facilities are inadequate for student study and major problems in heating and cooling are due to conversion of warehouse space to an eductional facility. The building is scheduled for demolition by GSA in the 1980's.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

5. (Continued)

COMPREHENSIVE HOUSING PLAN
(As of September 1976)

ANALYSIS OF PROPOSED PROJECT	TOTAL	NET ASSIGN. SQ. FT.	PERSONNEL
Agency Space		451559	1477
Parking		--	--
Service Areas		61560	88
1. EDS Library	8960		
2. Employee Services	11620		
3. Covered Storage	33400		
4. Paint Storage	1900		
5. Food/Prep./Storage	500		
6. Exposive Storage	180		
7. Utilities Building	5000		
		513119	1565

TOTAL ASSIGNED SPACE	
1/ G/O to be retained	53380
2/ G/O to be replaced	145079
3/ G/O to be reassigned	66820
4/ Lease space to be replaced	79558
Agency Expansion	127302
Reserve for future expansion	--
TOTAL OCCUPIABLE SQ. FT.	472139

RETAINED GOVERNMENT OWNED SPACE	
Montlake Complex	53380 sq. ft.

RETAINED LEASE
None

GOVERNMENT OWNED TO BE DISPOSED OF	
Hanger #1	58242
Hanger #32	111609
Hanger #33	102170
Tower	18976
Training Center	35000

1/ NFC
2/ NFC, PMC, PMEL
3/ PURC, NWS, TRAIN, NMFS
4/ NMFS, NWS-FO, PMC, NRCC, PMEL, SCI, PUB., NASO, GEN'L COUNSEL

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

5. (Continued)

PRESENT AGENCY HOUSING
(As of September 1976)

	SPACE (Net S.F.)	PERSONNEL	ANNUAL COST ($)	EXPIRATION DATE	QUALITY RATING (GSA)	CLASS*
A. LEASED SPACE TO PROPOSED PROJECT						
1. 1107 NE 45th Street					87	P
Scientific Publications	3745	11	28019	10-1-79		
2. 1801 Fairview Ave. East					90	P
Pacific Marine Center	35140	727	375000	6-30-83		
3. 1700 Westlake Ave. N.					98	P
Northwest Admin. Serv. Office (NASO)	12506	78	151885	10-1-77		
Northwest Regional Office	7421	57	62410			
Nat'l Weather Service Forecast Office	7605	38	67589			
General Counsel	741	5				
4. 3711 15th Ave. N.E.						P
PMEL & MESA	7000	30	87300	6-19-77	NOAA	
5. Bellvue, Washington					Leased	P
Calibration Center	5400	6	21862	Contractor	NA	
TOTAL LEASED SPACE	79558	952	794065			
B. GOVERNMENT-OWNED SPACE TO BE RETAINED						
2725 Montlake Blvd.						P
Northwest Fisheries Center	40320	79	161900			
Marine Fish & Shellfish Division	13060	78	19100			
Subtotal	53380	157	181000			
C. GOVERNMENT-OWNED SPACE TO BE VACATED						
1. 2725 Montlake Blvd.						P
Pacific Utilization Research Center	24320	32	49900			
2. 4735 E. Marginal Way						P
National Marine Fisheries Center	7500	10	11504		98	

5. (Continued)

PRESENT AGENCY HOUSING (Continued)
(As of September 1976)

	SPACE (Net S.F.)	PERSONNEL	ANNUAL COST ($)	EXPIRATION DATE	QUALITY RATING	CLASS
3. Hanger #32						T
Coastal Zone & Estuarine Division	14230	11	13470			
Marine Mammals Division	18824	34	25258			
Resource Assessment & Conservation Eng.	38025	45	39900			
Pacific Marine Environmental Lab.	29650	37	--			
Pacific Marine Center	21000	3	--			
4. Hanger #33						T
National Marine Fisheries Service	15000					
5. Tower						
Pacific Marine Environmental Lab.	8350	40	--			
6. Kansas City, Mo.						
NWS Training Center	35000	36	175000	4/	90	P
TOTAL GOVERNMENT OWNED SPACE TO BE VACATED	211899	1200	315032			
TOTAL GOVERNMENT OWNED SPACE	265279					
TOTAL SPACE	344837					

Notes

1/ Annual Costs shown for Government-owned buildings represent maintenance and operation costs

2/ Hanger #33 has 97,000 S.F. of total space

3/ Tower has 18976 S.F. of total space

4/ Scheduled for demolition in 1980's

Classifications

P - Permanent Construction - Serve for 25 years or more.
S - Semipermanent Construction - Serve for 5 - 15 years.
T - Temporary Construction - Serve for less than 5 years.
* - Scheduled for demolition after 1980.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

5.

SUMMARY OF REQUIREMENTS

		Collocation Consolidation Required	Present Space Inadequate/ Inappropriate	SPACE REQUIRED BY FY81 (SQ. FT.) OFFICE	LAB.	SHOP	WAREHOUSE	TOTAL
	NEW ACTIVITIES							
NMFS	•Environmental Impact Analysis		X	762	--	--	--	762
NASO	•Visitor/Management Information		X	--	2400	--	--	2400
	ACTIVITIES EXPECTED TO EXPAND							
	•Regional Office Management			2240	--	--	900	3140
	•Fishery Enforcement & Surveillance		X	2004	--	--	--	2004
NMFS-RO	•Increasing use of Resources, Economics and Marketing		X	2922	--	--	--	2922
	•State Federal Fisheries Management			-320	--	--	--	-320
NWFC	•Resource Assessment & Conservation Eng. (RACE)		X	9849	-240	31011	-37280	3340
NWS	•Marine Prediction		X	1685	--	--	--	1685
	•Coastal Mapping	X		438	--	1049	--	1487
	•Hydrographic Surveys	X		4061	--	--	--	4061
PMC	•Ship Operations	X	X	--	--	305	5800	6105
	•General Support	X		1066	--	--	--	1066
	•Regional Projects & Ocean Dumping Research	X	X	87	-400	-500	-600	-1413
	•Effects of Marine Environmental Alterations	X	X	1	426	-500	100	27
PMEL	•Structures and Motion of Oceans Research	X	X	2064	2226	2400	-500	6190
	•Application of Satellite Data	X	X	1730	--	1796	--	3526
	•Office Management	X	X	4855	3395	-400	-500	7350
	•Training	X	X	3850	45450	7650	1900	58850
	•Field Finance Office	X	X	482	--	--	-123	359
	•AOD(2)	X		10327	--	--	23537	33864
NASO	•Personnel	X		4478	--	--	--	4478
	•General Counsel	X	X	2238	--	--	--	2238

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

5. (Continued)

SUMMARY OF REQUIREMENTS

		Collocation Consolidation Required	Present Space Inadequate/ Inappropriate	SPACE REQUIRED BY FY81 (SQ. FT.) OFFICE	LAB.	SHOP	WAREHOUSE	TOTAL
	MINOR EXPANSION EXPECTED							
	•Marine Mammal Conservation	X	X	-200	--	--	--	-200
	•Endangered Species Conservation	X		-100	--	--	--	-100
	•Fisheries Grant to States	X		--	--	--	--	--
	•Anadromous Fisheries Grants	X		--	--	--	--	
NMFS	•Economics & Commercial Fishery Statistics	X		-396	--	--	--	-396
RO	•Marine Recreational Fisheries		X	-100	--	--	--	-100
	•Fisheries Loan Fund Administration		X	421	--	--	--	421
	•Federal Ship Financing	X		--	--	--	--	--
	•Capital Construction Fund	X		--	--	--	--	--
	•Pribilof Island Program	X		449	--	--	-7500	-7051
	•Aquaculture		X	369	--	--	--	369
NWFC	•Coastal Zone & Estuarine Studies		X	1260	--	958	-1300	918
	•Marine Mammal Laboratory		X	-966	2704	316	1200	3254
	•Basic Observations	X		542	--	--	-100	442
	•Basic Communications	X		328	--	--	--	328
NWS	•Maintenance & Repair	X		262	--	--	-745	-483
	•River & Flood Forecast	X		20	--	--	--	20
	•Public Weather	X	X	640	--	-200	--	440
	•Aviation Weather	X	X	523	--	--	--	523
	•Air Pollution & Fire Weather	X		20	--	--	--	20

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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5. PROJECT NUMBER	6. PROJECT TITLE
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5. (Continued)

SUMMARY OF REQUIREMENTS

		Collocation Consolidation Required	Present Space Inadequate/ Inappropriate	SPACE REQUIRED BY FY81 (SQ. FT.) OFFICE	LAB.	SHOP	WAREHOUSE	TOTAL
	MINOR EXPANSION EXPECTED (Continued)							
PMC	•Ship Base Operations	X		3978	1989	5140	--	11107
	•Calibration Center	X	X	970	-1850	1731	400	1251
	•Resource Development & Improvement		X	128	3287	-1500	-60	1855
	•Product Quality & Safety		X	128	2804	--	1500	4432
PURC	•Nutrition and Aquaculture		X	-200	1710	-500	-40	970
	•General Support		X	395	--	--	130	525
Scientific Publications		X		-100	--	--	-745	-845
NASO	•Directorate	X		1158	--	--	--	1158
	TOTAL		242032	64348	63901	48756	-14026	162979

Unusable space at Sandpoint

1. Hanger #1	58241
2. Hanger #33	82000
3. Tower	10626
TOTAL INADEQUATE SPACE	392899

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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5. PROJECT NUMBER		6. PROJECT TITLE		
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5. (Continued)

c. Impact if Project is not Provided

The current facility deficiencies will continue and increase. The current dispersion location problems will be further aggravated. Space needs will not be met. The following table presents a summary, by organization, of new activities, activities expected to expand and activities expecting minor expansion with FY81 space requirements, areas to be improved by consolidation and collocation and those presently in inadequate space.

6. Justification for Scope of Project

The scope of this project is based on current and future needs. The total facility requirement is based on:

1. GSA space standards and preliminary engineering of facility requirements.
2. Analysis of location alternatives.
3. Budget and personnel projections based on planned work load.

7. Common Support Facilities

The cost estimates presented herein provide for the installation and upgrading of utilities and other support services that will be used in direct and exclusive support of the primary facility. These are explained in detail in par. 3. d(2). Cost estimates are provided for utilities for base development; and contain separate cost estimates for utilities attributable to each building. An analysis has not been performed to determined the optimum utilitiy system. The utility and other support requirements will have to be coordinated in the development of the Master Plan. Maximum use will be made of existing utilities from NSA. NOAA will be unable to obtain steam, heat, or chilled water from the Naval Support Activity. Steam and chilled water will be provided by a central utility plant or individual building mechanical systems. All other services will be purchased. Interagency agreements have been effected on security and common services. Common support services will be utilized to the maximim extent possible between NOAA and the NSA.

8. Effect on Other Resources

a. Personnel

The establishment of the Western Regional Center will require twelve (12) additional personnel. As the result of collocation and consolidation of activities, positions presently used for dispersed administrative functions will be reprogrammed for program operations. Cost avoidances associated with these efficiencies are summarized in the Appendix on economic analysis. A personnel saving of fourteen (14) positions will occur from consolidating existing clerical, mail, warehousing and transportation operations. Seven (7) of these positions will be reprogrammed for the operation of the utility plant. The remaining seven (7) positions will be reprogrammed as required for facility management functions such as security and information, upon completion of the center.

b. Operations and Maintenance

Operations and Maintenance costs will become a part of the program expense of the units occupying space at Sand Point.

Action Items	OPERATIONS AND MAINTENANCE FISCAL YEAR (1000's)												
	76	77	78	79	80	81	82	83	84	85	86	87	88
Utilities	73.3	80.6	84.3	91.6	122.8	189.7	349.0	617.4	655.3	693.2	738.7	780.3	833.4
Operations & Maintenance	26.7	29.4	30.7	33.4	30.4	43.2	89.7	151.7	161.1	170.4	181.6	191.8	204.8
Minor Maintenance	11.5	12.6	13.2	14.4	19.4	25.3	52.0	94.1	99.8	105.6	112.5	118.9	126.9
Cleaning	68.5	75.4	78.8	85.6	159.6	207.7	423.2	739.7	785.1	830.4	884.9	934.8	988.4
Roads & Grounds	.3	.3	2.6	5.4	8.1	22.9	39.5	42.4	45.0	47.6	50.7	53.6	57.2
Protection Service	49.6	54.6	57.0	62.0	44.8	74.7	170.2	292.4	310.4	328.3	349.8	369.6	394.7
Painting	--	--	--	--	--	--	--	23.2	24.6	26.0	27.7	29.2	31.2
Total Budget Estimate	229.9	252.9	266.6	292.4	385.1	563.5	1123.6	960.9	2081.3	2201.5	2345.9	2478.2	2646.6

Expenditures are to be for operation of utility systems, roads and grounds, security and commerical power, water and sewerage. Contracts for services will be used to the maximum extent possible to reduce facility support overhead.

8. (Continued)

c. Utilities

The cost of utilities is not included in the project estimate but is included in the operation and maintenance estimate above. Detailed explanation of utility requirements are explained in par 3.d.(2) support facilities. General utility requirements are included as part of the facility study. Energy conservation analysis to be taken in developing the master plan are detailed in par. 3.e.(2). Adequate utilities are available. Major utility requirements are:

Utility Requirements

(1) Electricity		(2) Steam		(3) Chilled Water (Cooling)		(4) Fuel Oil	
Consumption	11,000,000 KWHR/yr	Consumption	40,067,000 lbs./yr	Consumption	150,000 Tons/yr	Type No. 2	
Peak Demand	6,758 KW	Demand	23,500 lbs./hr	Demand	855 Tons/hr	Consumption	286,000 gal/yr
Avg. Demand	5,406 KW						

9. SITING OF PROJECT

The project will be located at NOAA property adjacent the Navval Support Actitivity (NSA), Sand Point, Seattle, Washington.

10. GRAPHIC PRESENTATIONS & SITE PHOTOGRAPHS

The following graphic presentations are attached to this Facility Study.

(a) Site and Utility Plans, showing general location of buildings, roads and utilities.
(b) Floor Plans and Sections for new buildings.
(c) Photographs of existing facilities.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA *(Continued)*	3. DEPARTMENT	4. INSTALLATION
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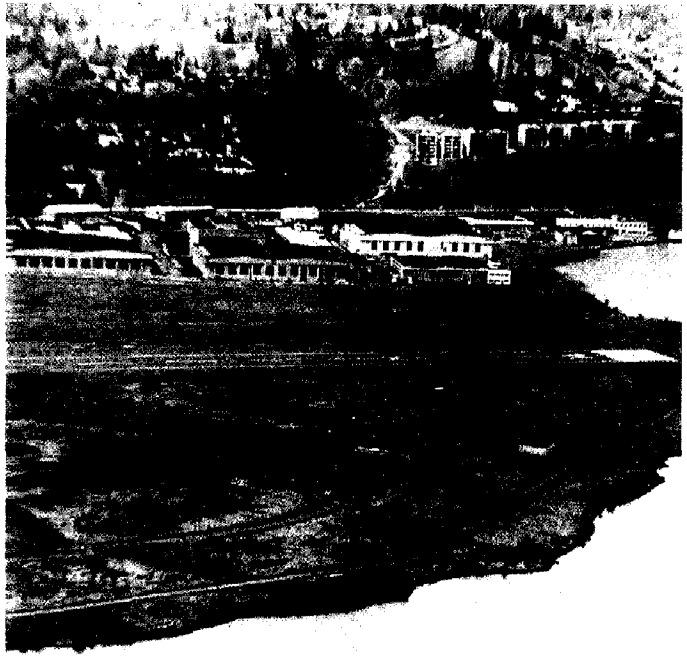
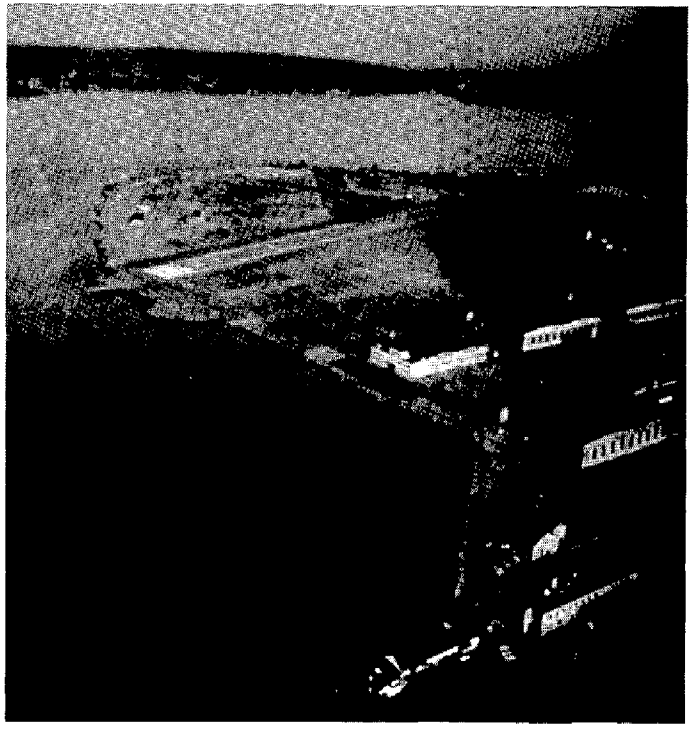
A5B000/FJ1101	WESTERN REGIONAL CENTER

10. SITE PHOTOGRAPHS



SITE View - West (From l. to r. Hanger 32, 31, and 1)



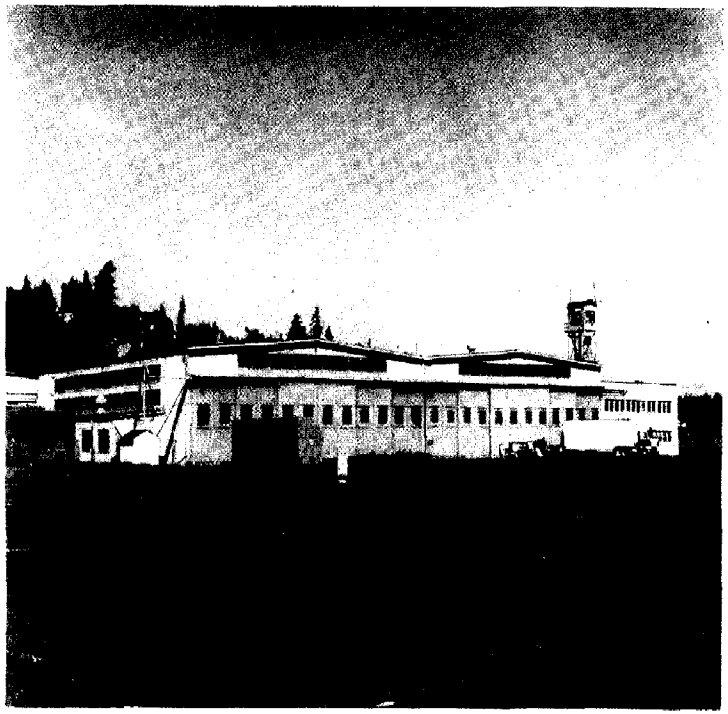
SITE View - Southeast (Lake Washington)

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA *(Continued)*	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

10. (continued)

Hanger 33 - Interior View (open storage)



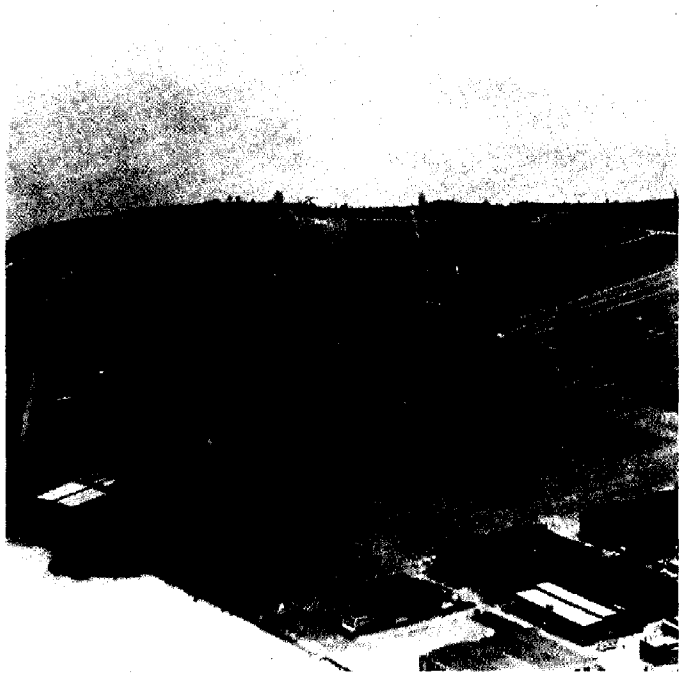
Hanger 32 - Exterior View (front)

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

10. (continued)

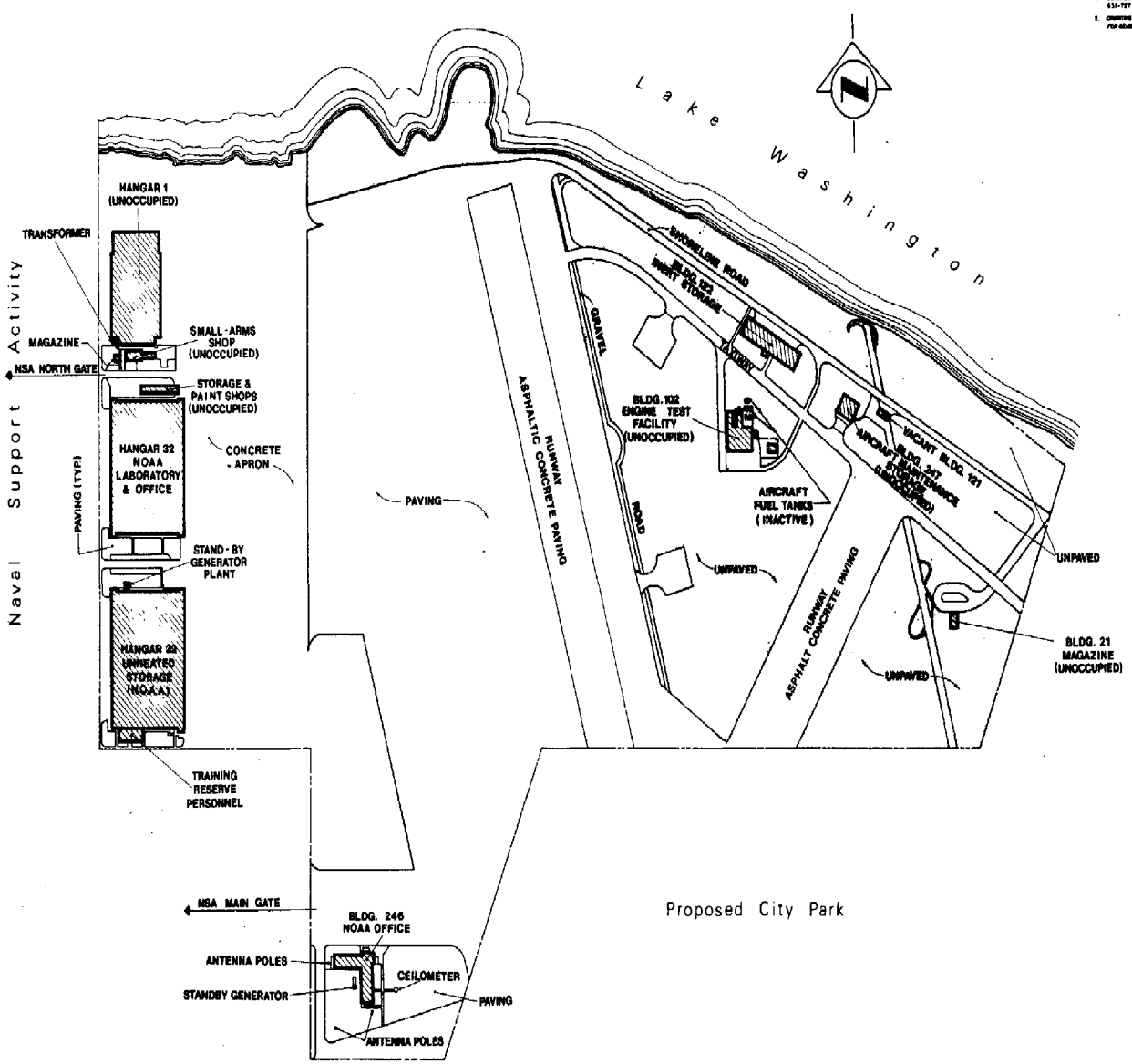
SITE View - North (Pier and NOAA Shore Line)



SITE View - Southeast (NOAA and Proposed Seattle Park area)

NOTES:

1. DATA ON THIS DRAWING IS TAKEN FROM NAVFAC DRAWINGS NO 631-724, 631-725 631-727, 631-728, DATED NOVEMBER 30, 1973.
2. DRAWINGS CHECKED AGAINST AERIAL PHOTO BY REX S. JUDKINS DATED DECEMBER 17, 1979 FOR GENERAL SERVICES ADMINISTRATION.



SCALE: 1" = 100'

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY M. Gallagher
CHECKED BY M. Dowell
PROJ. ENGR. M. Jernigh
FAC. ENGR. 1978 C. Cantler II
PROJ. ENGR. 1978 R.L. Carrithers

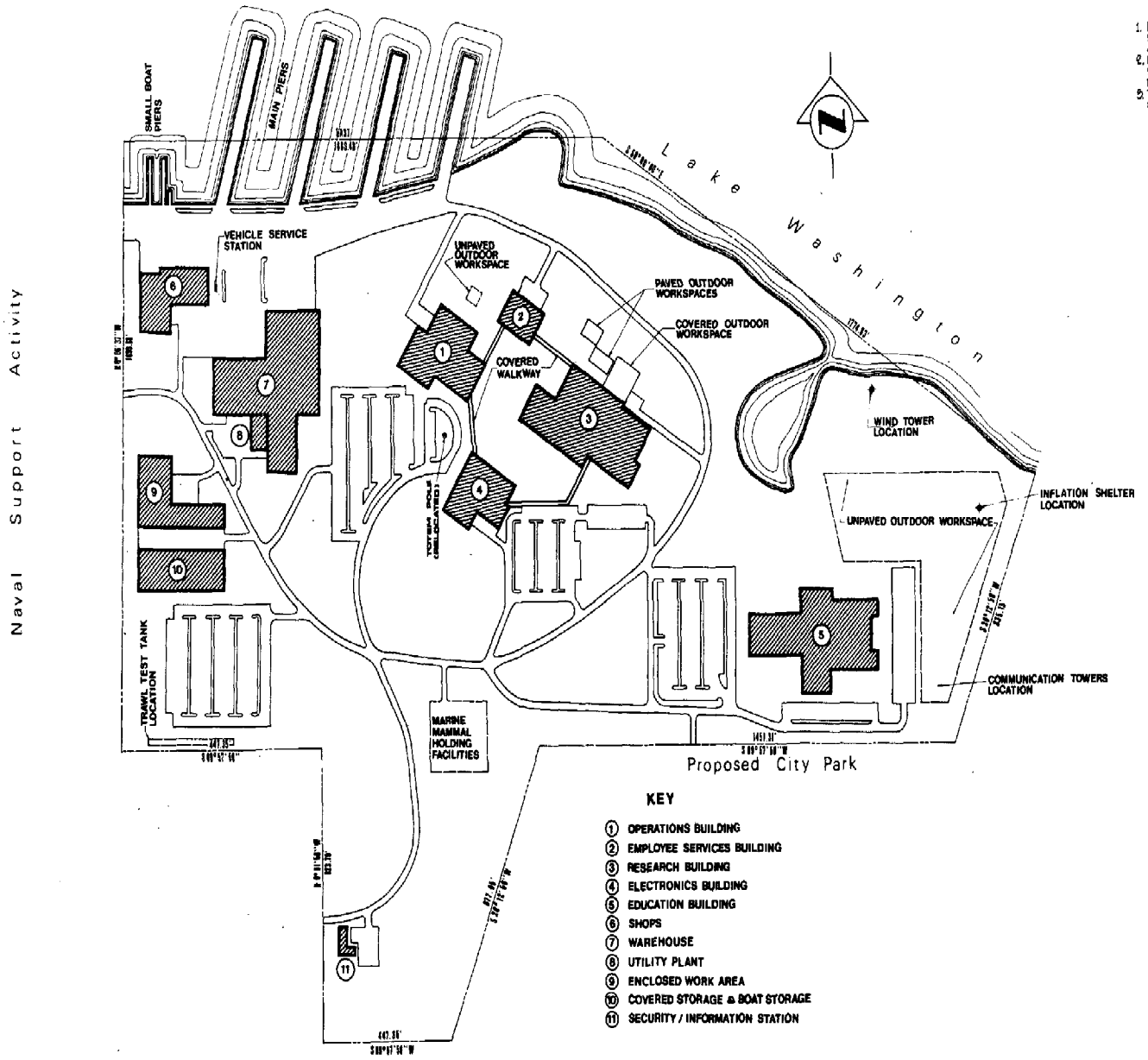
LYON ASSOCIATES, INC.
ENGINEERS ARCHITECTS PLANNERS
7900 WESTPARK DRIVE McLEAN, VIRGINIA 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY EXISTING SITE PLAN

PROJECT NO. 80-0008 / 51101
SCALE As Shown
DWG. S-1
REV. NO.
DATE Oct. 1978



NOTES

1. BUILDING LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS SUBJECT TO DESIGN DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. ROADS, PARKING & WORK AREAS ARE TENTATIVE, SUBJECT TO DESIGN DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
3. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

SCALE: 1" = 100'

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY M. Gallagher
CHECKED BY W. Durall
PROJ. MGR. M. Jordyk
FAC ENGR APPR. G. Gaulkar III
PROJ. MGR. APPR. R.A. Gannaman

LYON ASSOCIATES, INC.
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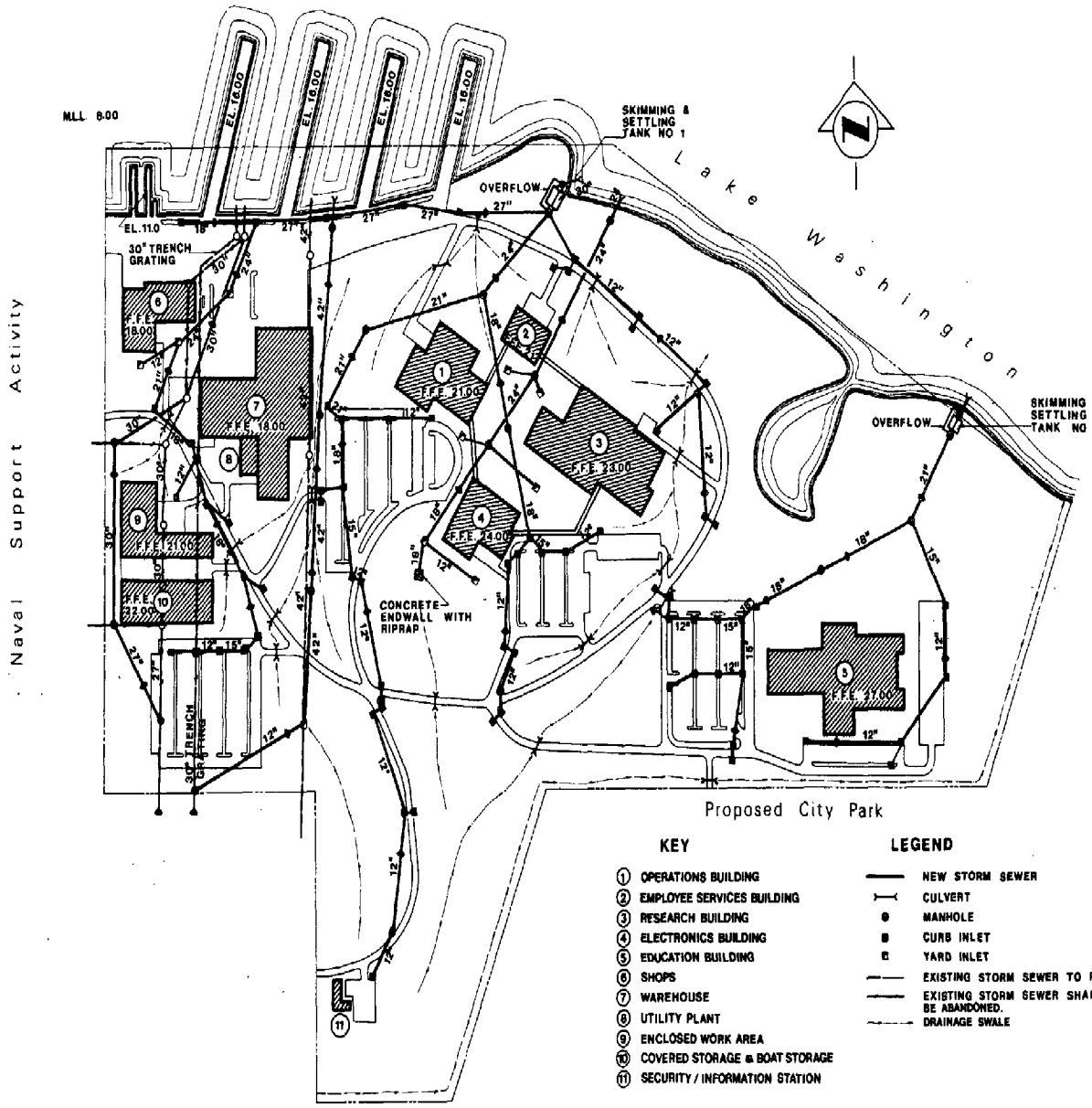
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY
SITE PLAN

PROJECT NO. A50000 FJ1101
SCALE As Shown
DWG. S-2
REV. NO.
DATE Oct. 1976



KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

LEGEND

- NEW STORM SEWER
- CULVERT
- MANHOLE
- CURB INLET
- YARD INLET
- EXISTING STORM SEWER TO REMAIN
- EXISTING STORM SEWER SHALL BE ABANDONED.
- DRAINAGE SWALE

SCALE: 1" = 100'

0 25 50 100 200 300 400

NOTES

STORM SEWER SYSTEM:

1. ELEVATIONS ARE BASED ON MEAN LAKE LEVEL (M.L.L. = 8.00').
2. THE STORM SEWER SYSTEM OF NOAA FACILITIES ARE SEPARATED INTO THREE SYSTEMS AS FOLLOWS:
   a.) 2 NEW LINES BEGIN SOUTH OF COVERED STORAGE & BOAT STORAGE, INTERCEPTING & REPLACING 3 EXISTING STORM DRAINS FROM THE NAVAL SUPPORT ACTIVITY.
   b.) RUNOFF FROM PAVED AREAS IS INTO INLETS & BY PIPE TO SKIMMING & SETTLING TANKS FOR PRE-TREATMENT BEFORE ENTERING LAKE WASHINGTON.
   c.) RUNOFF FROM GRASSED & LANDSCAPED AREAS IS CARRIED BY SWALES & CULVERTS UNDER ROADS DIRECTLY TO LAKE WASHINGTON. IN THE VICINITY OF MAJOR BUILDINGS, THIS RUNOFF IS INTO INLETS & CARRIED BY PIPE TO THE LAKE.
3. THE TOPOGRAPHY OF THE NOAA SITE IS GENERALLY A GENTLE SLOPE. STORM SEWER PIPE SLOPES ARE ASSUMED TO BE APPROXIMATELY 0.5% OR LESS.
4. ALL STORM SEWERS ARE BASED ON A 10-YR. STORM.
5. ALL PAVED AREAS EXCEPT THE EDUCATION BUILDING AREA IS COLLECTED INTO SKIMMING AND SETTLING TANK NO. 1. THE PAVED AREA DRAINAGE FROM THE EDUCATION AREA IS COLLECTED INTO TANK NO. 2.
6. THE SKIMMING AND SETTLING TANKS ARE AS FOLLOWS:
   a.) TANK NO. 1
   EFF. DEPTH = D = 12.0 FT.
   EFF. LENGTH = L = 42.0 FT.
   EFF. WIDTH = W = 21.0 FT.
   2 BASINS, TOTAL EFFECTIVE VOLUME = V = 21,000 CF
   10 MINUTE DETENTION TIME FOR A 10 YEAR DESIGN STORM. OVERFLOW BY-PASS IS PROVIDED.
   b.) TANK NO. 2
   D = 8.0 FT.
   L = 28.0 FT.
   W = 18.0 FT.
   TOTAL EFF. VOLUME = V = 6,700 CF
7. ALL ROADS, PARKING AREAS AND OTHER PAVED WORKING AREAS ARE PROVIDED WITH CURBS AND GUTTERS, AND ARE PAVED ALONG ADJACENT GRASSED AREAS TO SEGREGATE THE PAVED AREA RUNOFF FROM THE NON-PAVED AREA.
8. ROOF DRAINS OF SHOPS, WAREHOUSE, ENCLOSED WORK AREA & COV. STOR. WILL BE CONNECTED TO THE RELOCATED NEW STORM SEWER SERVING NOAA AREA.
9. ROOF DRAINS OF OPERATIONS, EMPLOYEE SERVICES, RESEARCH AND ELECTRONICS BUILDINGS GROUP WILL BE CONNECTED TO THE NON-PAVED AREA STORM SEWER SYSTEM.
10. ROOF DRAINS FROM THE EDUCATION BUILDING WILL BE DRAINED IN THE GRASSED AREA.
11. ROOF DRAINS ARE NOT SHOWN ON THE DRAWINGS.
12. PIPE LINES WILL BE REINFORCED CONCRETE PIPE OR ASBESTOS CEMENT PIPE, OR CONCRETE PIPE.
13. PROVISIONS FOR STORM DRAINAGE OF OFF SITE AREAS THRU THE SITE TO BE CO-ORDINATED WITH THE CITY OF SEATTLE.
14. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

NO.	DATE	REVISION	BY	CK.	APPR

DRAWN BY M. Gallagher
CHECKED BY M. Dowell
PROJ. MGR. M. Gersch
FAC. ENGR. APPR. C. Gaudette III
PROJ. ENG. APPR. R.L. Carrothers

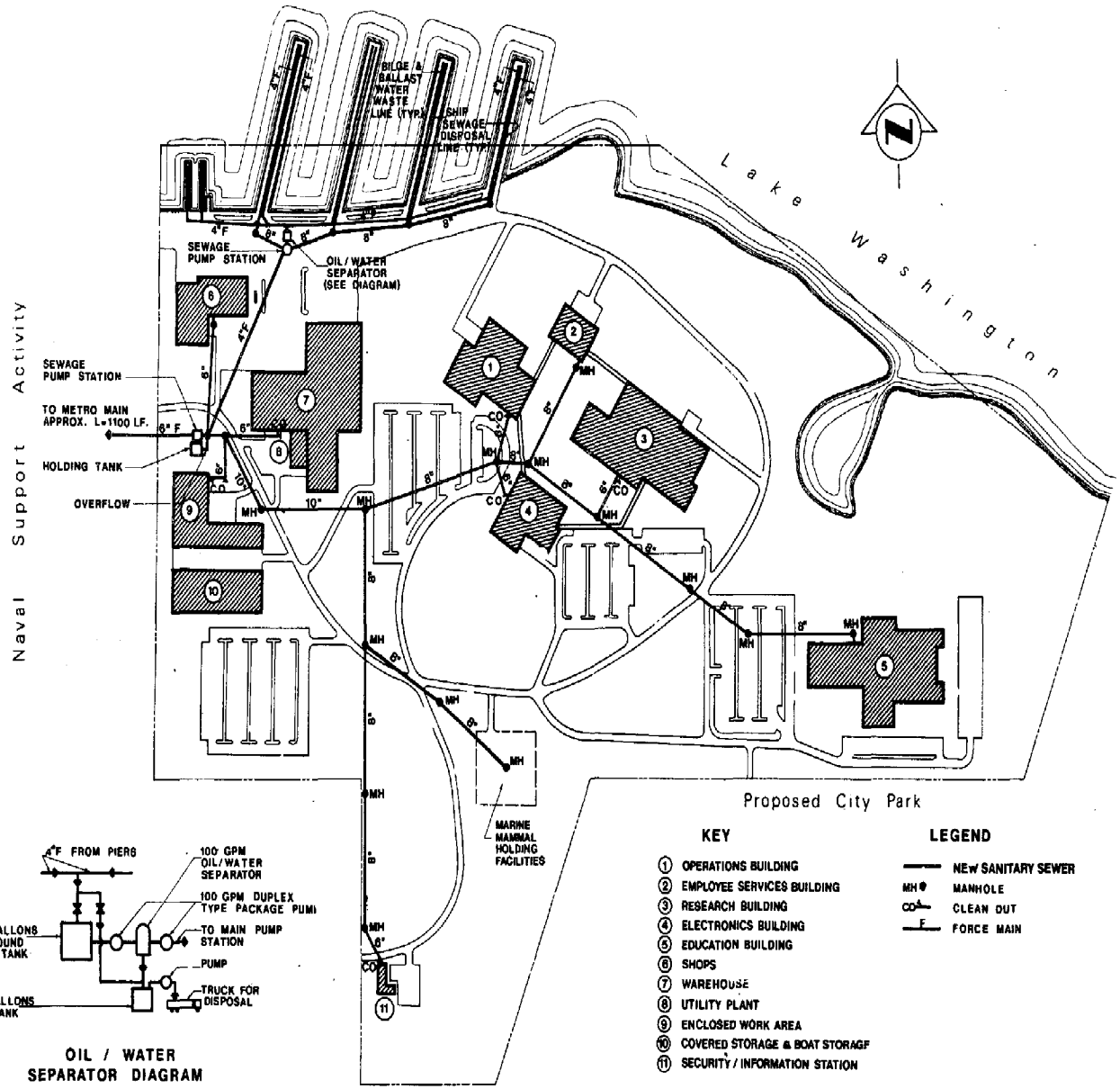
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY STORM DRAINAGE SYSTEM

PROJECT NO. A58000 F31101
SHEET NO. S-3
REV. NO.
SCALE As Shown
DATE Oct. 1978



OIL / WATER SEPARATOR DIAGRAM

KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

LEGEND

- NEW SANITARY SEWER
- MH MANHOLE
- CO CLEAN OUT
- F FORCE MAIN

NOTES

SANITARY SEWER:

1. THE SEWERAGE SYSTEM FOR THE ENTIRE NOAA AREA IS BASED ON A PEAK FLOW OF 530 GPM OF WHICH 430 GPM IS FROM BUILDINGS AND 100 GPM IS FROM THE PIER AREA.
2. SEWAGE FROM ALL BUILDINGS WILL BE COLLECTED BY GRAVITY SEWERS INTO THE WETWELL OF THE MAIN SEWAGE PUMP STATION LOCATED TO THE NORTH OF THE ENCLOSED WORK AREA.
3. THE MAXIMUM DISTANCE BETWEEN MANHOLES IS 400 FEET AND THE MINIMUM PIPE SIZE BETWEEN MANHOLES IS 8 INCHES.
4. THE MAIN PUMP STATION SHALL INCLUDE THE FOLLOWING:
   A 6-INCH FORCE MAIN, APPROX. 1500 LF TO THE METRO MAIN.
   TWO-VARIABLE SPEED PUMPS & MOTORS
   530 GPM AGAINST 85 FT. HEAD PUMP
   25 HP MOTOR
   ONE-25 HP EMERGENCY ENGINE
   ONE-WETWELL
   ONE-EMERGENCY UNDERGROUND HOLDING TANK WITH 24-HR. RETENTION CAPACITY FOR AVERAGE DAILY FLOW-EFFECTIVE VOLUME OF 9000 CF. (EXCLUDES THE FLOW FROM PIER AREA)
5. EACH MAIN PIER HAS A BILGE & BALLAST WASTE LINE AND A DOMESTIC SEWAGE LINE FROM SHIPS. THE BILGE AND BALLAST WATER LINE IS A 4-INCH FORCE MAIN AND THE DOMESTIC SEWAGE LINE IS A COMBINED 4-INCH FORCE MAIN WITH AN 8-INCH GRAVITY SEWER.
6. THE SMALL BOAT PIERS HAVE ONLY BILGE & BALLAST WASTE LINES.
7. BILGE & BALLAST WATER WILL BE TREATED THRU THE OIL-WATER SEPARATOR, THEN IT WILL BE PUMPED INTO THE MAIN PUMP STATION.
8. THE OIL-WATER SEPARATING SYSTEM SHALL INCLUDE THE FOLLOWING:
   ONE-20,000 GAL. CAPACITY HOLDING TANK.
   ONE-100 GPM OIL-WATER SEPARATOR.
   ONE-10,000 GAL. CAPACITY SLUDGE TANK.
   A 4-INCH FORCE MAIN, APPROX. 600 LF TO THE MAIN PUMP STATION.
9. ALL FORCE MAINS WILL BE CAST IRON PIPE OR DUCTILE CAST IRON PIPE WITH CEMENT MORTAR LINING (AWWA C151) AND GRAVITY SEWERS ARE CONCRETE PIPE OR ASBESTOS CEMENT PIPE, OR VITRIFIED CLAY PIPE.
10. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

SCALE: 1" = 100'

0 50 100 150 200 300 400

NO.	DATE	REVISION	BY	CK	APPR

DRAWN BY M. Colligan
CHECKED BY M. Oswell
PROJ. MGR. M. Jarvis
FIG. ENGR. APPR. C. Coulter III
PROJ. MGR. APPR. R.L. Carnahan

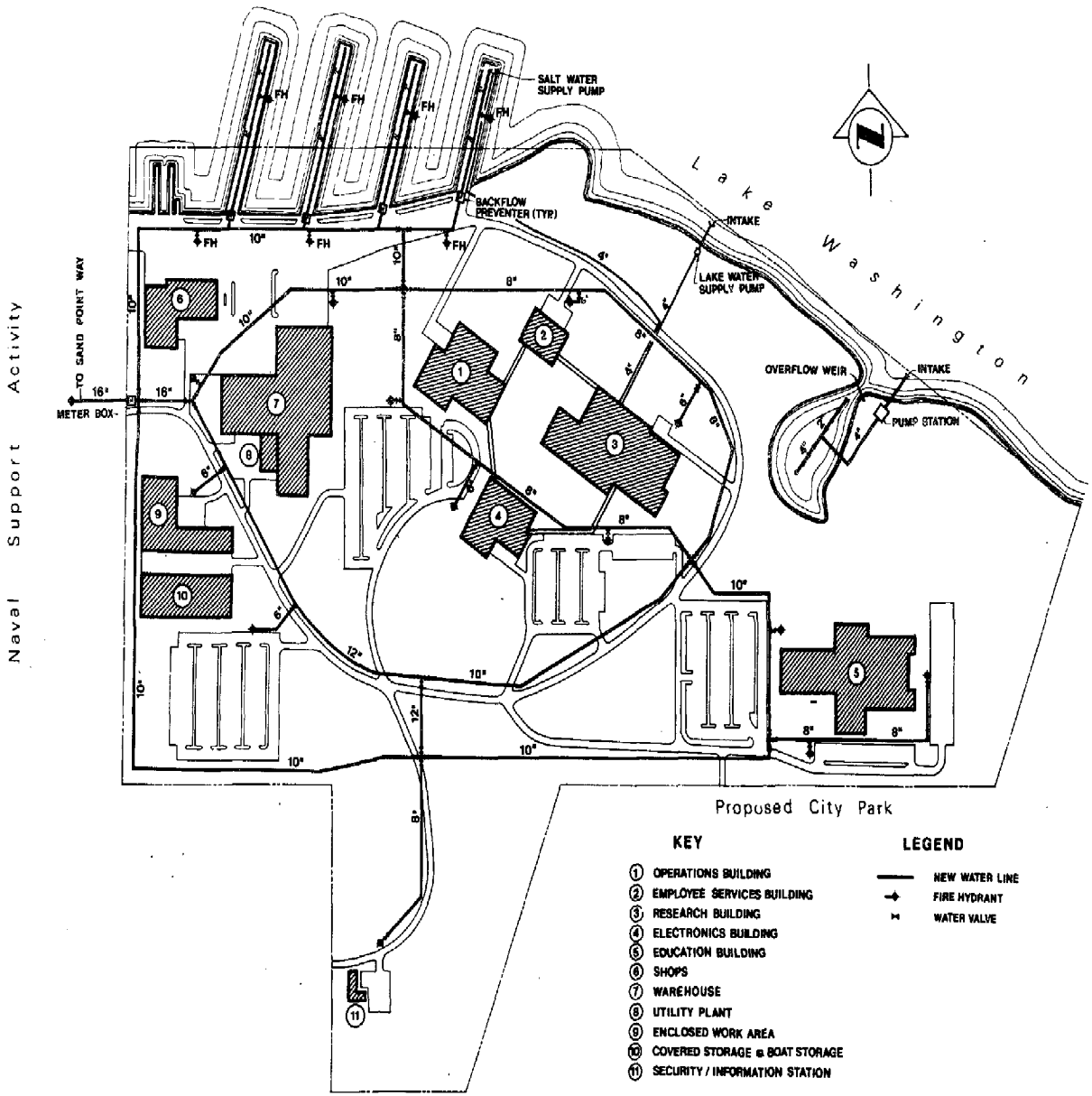
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

SHEET TITLE: FACILITY STUDY SANITARY SEWER SYSTEM

PROJECT NO. A58000 FJ1101
DWG. S-4
REV. NO.
SCALE As Shown
DATE Oct. 1976



NOTES

WATER DISTRIBUTION SYSTEM:

1. THE WATER DISTRIBUTION SYSTEM IS A COMBINED FIRE & DOMESTIC WATER SUPPLY SYSTEM, CONSISTING OF SEVERAL LOOPS, WITH PIPE SIZED 8 INCHES THRU 12 INCHES.
2. ONE 10-INCH MAIN IS TAPPED INTO THE CITY MAINS ON SAND POINT WAY.
3. A WATER METER IS PROVIDED FOR THE MAIN AT THE NORTH GATE. METERS ARE HERSEY DETECTOR METER, MODEL FM-CT, FM-MCT OR EQUAL, INSTALLED IN A CONCRETE BOX AND HAVING A BY-PASS LINE.
4. THE SYSTEM IS BASED ON A USE OF 2,000 GPM FOR FIRE PROTECTION PLUS 800 GPM FOR PEAK DOMESTIC WATER, COOLING WATER AND STEAM MAKE-UP WATER.
5. THE DOMESTIC WATER SERVICE LINES TO ALL BUILDINGS AS WELL AS THE SPRINKLER WATER SUPPLY LINES TO SHOPS, THE WAREHOUSE, ENCLOSED WORK AREA AND COVERED STORAGE, ARE NOT SHOWN ON THE DRAWING.
6. EACH PIER HAS AN 8-INCH WATER MAIN WITH A BACKFLOW PREVENTER FOR SHIP SERVICE CONNECTIONS.
7. THE MINIMUM COVER FOR WATER LINES IS 4'-0". CONCRETE THRUST BLOCKS OR ANCHOR BLOCKS SHALL BE PROVIDED AT ALL HORIZONTAL OR VERTICAL BENDS.
8. WATER LINES SHALL BE SEPARATED FROM SEWER LINES BY AT LEAST 10 FEET HORIZONTALLY.
9. FIRE HYDRANTS SHALL BE SPACED AT A MINIMUM OF 400 FEET. HYDRANTS WILL BE PLACED NOT MORE THAN 7 FEET FROM ROAD CURBS. HYDRANTS ON THE PAVED AREA WILL BE PROTECTED BY GUARD POSTS.
10. THE WATER MAIN TO BE DUCTILE CAST IRON PIPE (ANSI A 21.51), CEMENT MORTAR LINED OR ASBESTOS CEMENT PRESSURE PIPE (ASTM C 296).
11. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

LEGEND

- NEW WATER LINE
- FIRE HYDRANT
- WATER VALVE

SCALE: 1" = 100'

NO.	DATE	REVISION	BY	CK	APPR

DRAWN BY M. Gallager
CHECKED BY W. Powell
PROJ. MGR. M. Jarrah
FAC. CHIEF APPR. C. Coulter III
PROJ. DIR. APPR. A.L. Carnahan

LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

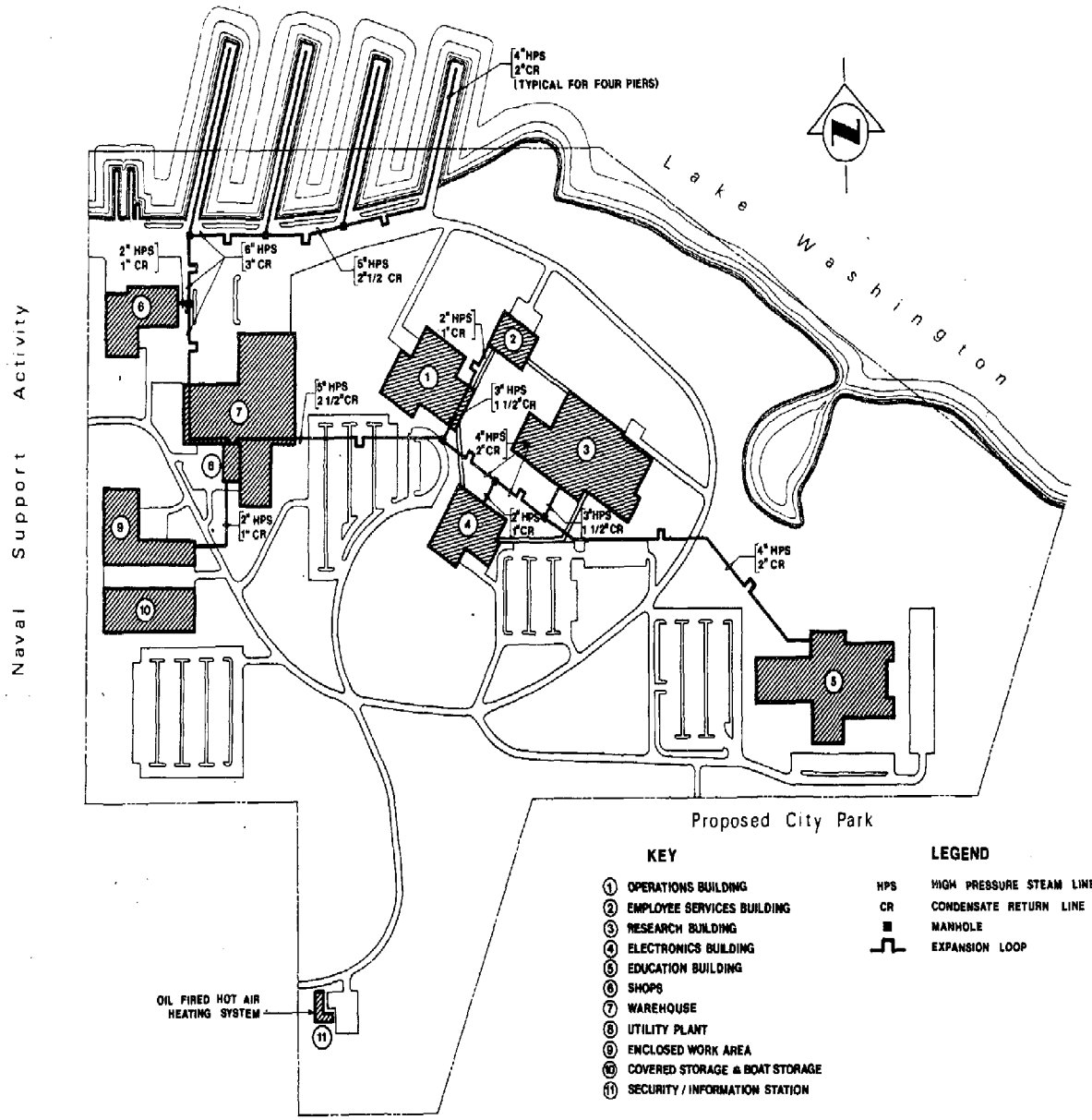
SHEET TITLE: FACILITY STUDY WATER DISTRIBUTION SYSTEM

PROJECT NO. A5A000 / N1181

SHEET NO. S-5

SCALE: As Shown

DATE: Oct. 1978



NOTES

STEAM DISTRIBUTION SYSTEM:

1. STEAM DISTRIBUTION SYSTEM PIPING WILL BE INSULATED AND WRAPPED STANDARD WEIGHT BLACK STEEL ENCLOSED IN A CONCRETE ENVELOPE.
2. ALL PIERS & BUILDINGS REQUIRING HEATING WILL BE SERVED FROM THE STEAM DISTRIBUTION SYSTEM WITH THE EXCEPTION OF THE SECURITY/INFORMATION STATION WHICH WILL HAVE A SELF CONTAINED OIL FIRED HOT AIR SYSTEM.
3. SIZING OF PIPING MAINS REFLECTED ON THIS DRAWING INCLUDES A 25% ALLOWANCE FOR FUTURE GROWTH OF THE FACILITY.
4. ALL CONCRETE STEAM ENVELOPES SHALL BE LOCATED A MINIMUM OF THREE FEET BELOW FINISHED GRADE.
5. ENVELOPES SHALL DRAIN TO MANHOLE SUMP PITS & BE EVACUATED BY STEAM OPERATED SIPHON EJECTORS TO STORM DRAINAGE SYSTEM.
6. FINAL HEATING SYSTEM WILL BE DETERMINED AFTER ENERGY CONSERVATION STUDIES, UNDERTAKEN AS PART OF THE ARCHITECT/ENGINEER CONCEPT STUDIES.
7. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

LEGEND

HPS	HIGH PRESSURE STEAM LINE
CR	CONDENSATE RETURN LINE
■	MANHOLE
⎍	EXPANSION LOOP

SCALE: 1" = 100'

0 100 200 300 400

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY M. Gallagher
CHECKED BY W. Duvall
PROJ. MGR. M. Jarvis
FAC. ENGR APPR. C. Gaskins III
PROJ. ENGR APPR. R.L. Carnahan

LYON ASSOCIATES, INC.
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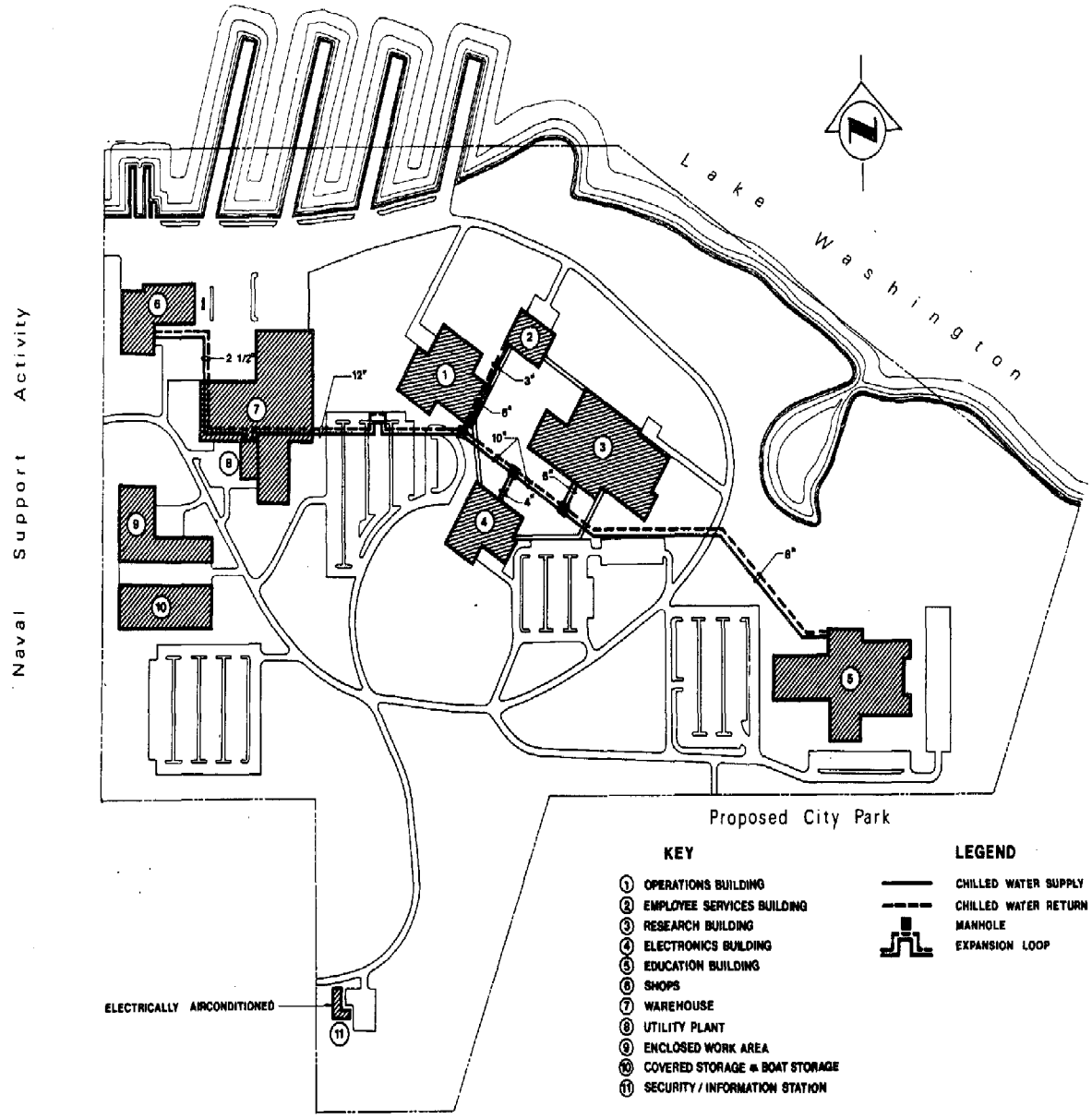
7900 WESTPARK DRIVE · McLEAN VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY
STEAM DISTRIBUTION SYSTEM

PROJECT NO. A5800A F-11101
SCALE As Shown
SHEET S-6
REV. NO.
DATE Oct. 1978



NOTES

CHILLED WATER DISTRIBUTION:

1. CHILLED WATER DISTRIBUTION SYSTEM PIPING SHALL BE PREINSULATED, PREFABRICATED, JACKETED AND INSTALLED A MINIMUM OF FIVE FEET BELOW FINISHED GRADE.
2. SIZING OF PIPING MAINS REFLECTED ON THIS DWG. INCLUDES A 25% ALLOWANCE FOR FUTURE GROWTH OF THE FACILITY.
3. IN AREAS WHERE CHILLED WATER AND STEAM ENVELOPES RUN PARALLEL A 15 FOOT SEPARATION DISTANCE SHALL BE MAINTAINED.
4. ALL BUILDINGS REQUIRING COOLING WILL BE SERVED FROM THE CHILLED WATER DISTRIBUTION SYSTEM WITH THE EXCEPTION OF THE SECURITY/INFORMATION STATION WHICH WILL HAVE A SELF-CONTAINED ELECTRICALLY OPERATED SPLIT-SYSTEM.
5. FINAL COOLING SYSTEM WILL BE DETERMINED AFTER ENERGY CONSERVATION STUDIES, UNDERTAKEN AS PART OF THE ARCHITECT/ENGINEER CONCEPT STUDIES.
6. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

SCALE: 1" = 100'

NO.	DATE	REVISION	BY	CK	APPR.

DRAWN BY M. Collier
CHECKED BY M. Orwat
PROJ. MGR. M. Krogh
1st. CHIEF APPR. C. Coulter II
PROJ. MGR. APPR. N.L. Carnahan

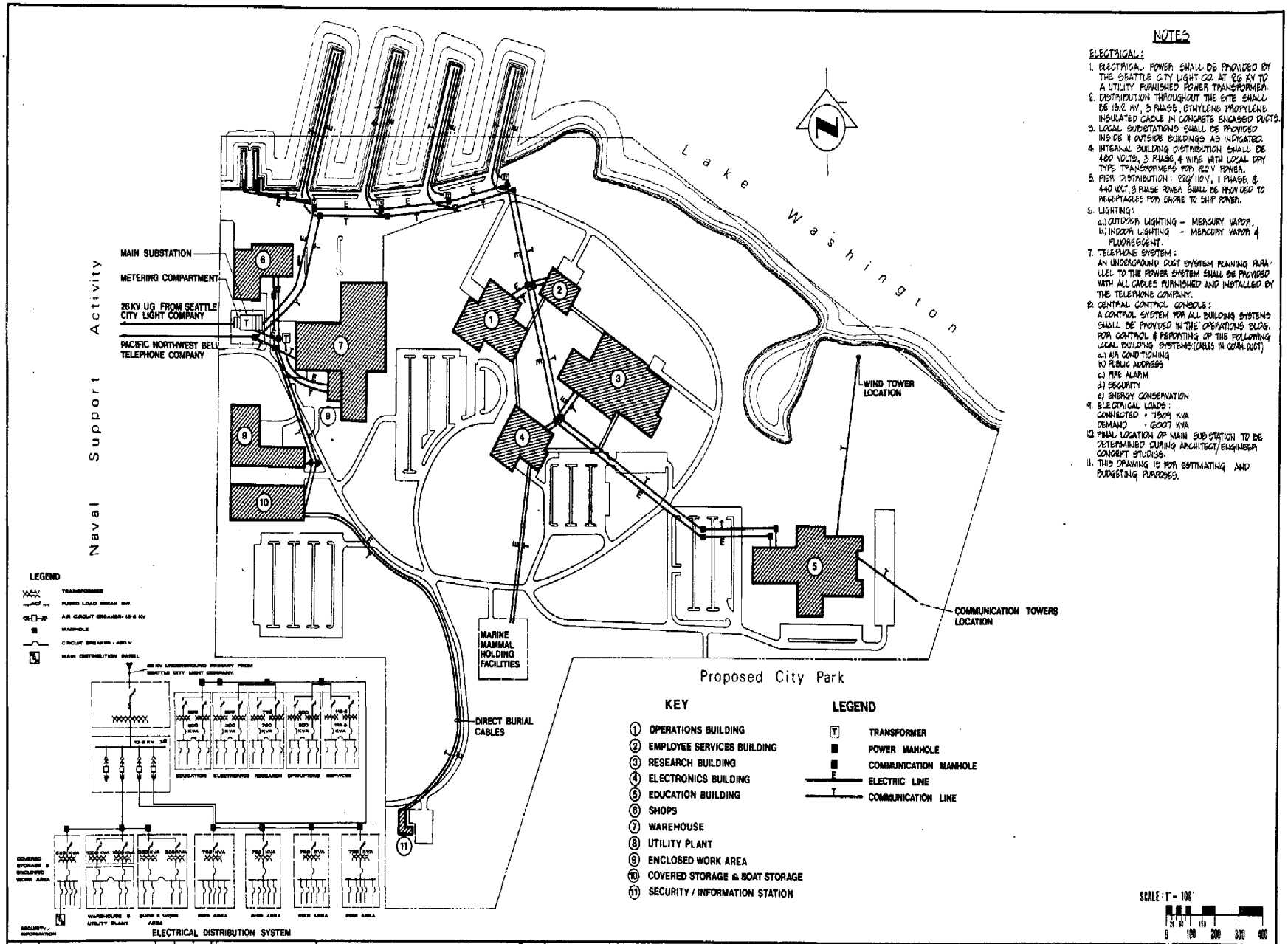
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY
CHILLED WATER
DISTRIBTION SYSTEM

PROJECT NO. 1-31101
DWG. S-7
REV. NO.
SCALE As Shown
DATE Oct. 1978



NOTES

ELECTRICAL:

1. ELECTRICAL POWER SHALL BE PROVIDED BY THE SEATTLE CITY LIGHT CO. AT 26 KV TO A UTILITY FURNISHED POWER TRANSFORMER.
2. DISTRIBUTION THROUGHOUT THE SITE SHALL BE 15.2 KV, 3 PHASE, ETHYLENE PROPYLENE INSULATED CABLE IN CONCRETE ENCASED DUCTS.
3. LOCAL SUBSTATIONS SHALL BE PROVIDED INSIDE & OUTSIDE BUILDINGS AS INDICATED.
4. INTERNAL BUILDING DISTRIBUTION SHALL BE 480 VOLTS, 3 PHASE, 4 WIRE WITH LOCAL DRY TYPE TRANSFORMERS FOR 120 V POWER.
5. PIER DISTRIBUTION: 220/110 V, 1 PHASE, & 440 VOLT, 3 PHASE POWER SHALL BE PROVIDED TO RECEPTACLES FOR SHORE TO SHIP POWER.
6. LIGHTING:
   a.) OUTDOOR LIGHTING - MERCURY VAPOR.
   b.) INDOOR LIGHTING - MERCURY VAPOR & FLUORESCENT.
7. TELEPHONE SYSTEM:
   AN UNDERGROUND DUCT SYSTEM RUNNING PARALLEL TO THE POWER SYSTEM SHALL BE PROVIDED WITH ALL CABLES FURNISHED AND INSTALLED BY THE TELEPHONE COMPANY.
8. CENTRAL CONTROL CONSOLE:
   A CONTROL SYSTEM FOR ALL BUILDING SYSTEMS SHALL BE PROVIDED IN THE OPERATIONS BLDG. FOR CONTROL & REPORTING OF THE FOLLOWING LOCAL BUILDING SYSTEMS: (CABLES IN COMM. DUCT)
   a.) AIR CONDITIONING
   b.) PUBLIC ADDRESS
   c.) FIRE ALARM
   d.) SECURITY
   e.) ENERGY CONSERVATION
9. ELECTRICAL LOADS:
   CONNECTED - 7809 KVA
   DEMAND - 6007 KVA
10. FINAL LOCATION OF MAIN SUBSTATION TO BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
11. THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.

No.	DATE	REVISION	BY	CK.	APPR

DRAWN BY M. Gelger
CHECKED BY M. Pratt
PROJ. MGR. M. Joseph
FAC. ENGR. APPR. C. Cuckler III
PROG. MGR. APPR. S.L. Carnahan

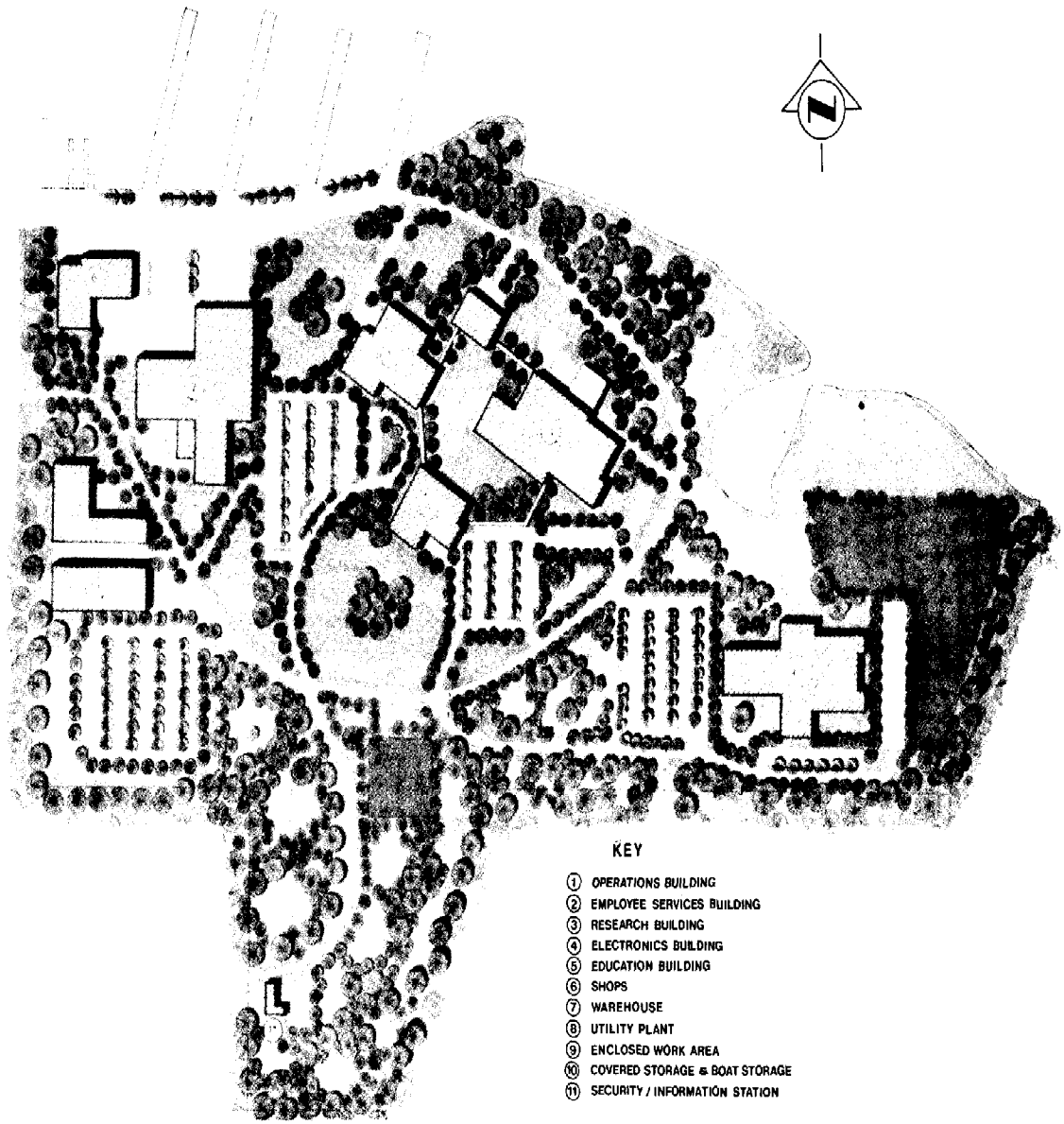
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY
ELECTRICAL DISTRIBUTION
AND COMMUNICATIONS

PROJECT NO. 8680.00
7J1101
SCALE As Shown
DWG. S-3
SET NO.
DATE Oct. 1976



KEY

1. OPERATIONS BUILDING
2. EMPLOYEE SERVICES BUILDING
3. RESEARCH BUILDING
4. ELECTRONICS BUILDING
5. EDUCATION BUILDING
6. SHOPS
7. WAREHOUSE
8. UTILITY PLANT
9. ENCLOSED WORK AREA
10. COVERED STORAGE & BOAT STORAGE
11. SECURITY / INFORMATION STATION

SCALE: 1" = 100'

0 100 200 300 400

NO.	DATE	REVISION	BY	CK	APPR

DRAWN BY Y. Beh
CHECKED BY E. Marquis
PROJ. MGR. M. Jarogh
FAC. ENGR. APPR. G. Gaither III
PROC. MGR. APPR. A.L. Carnahan

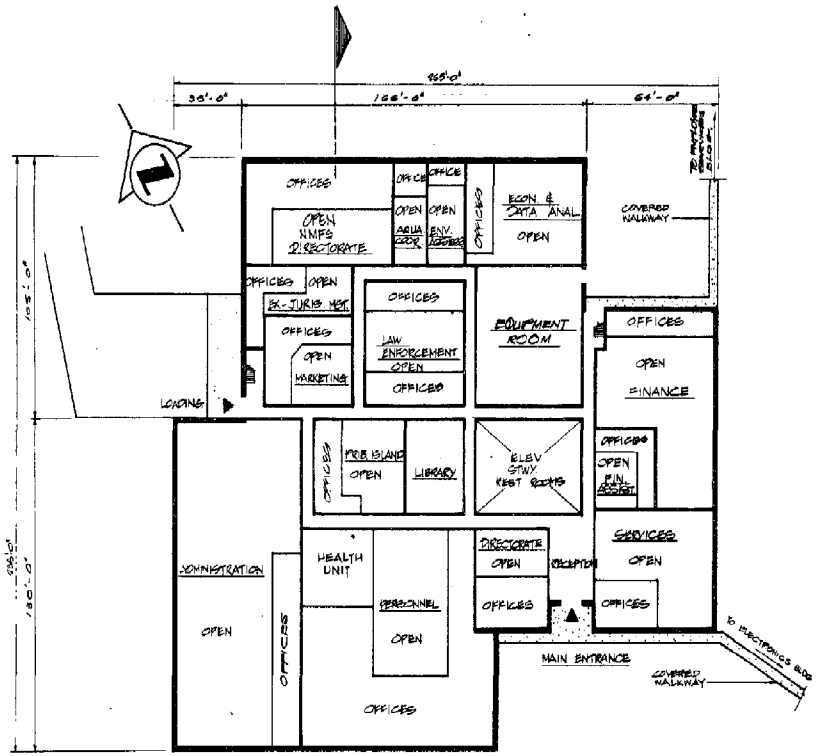
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

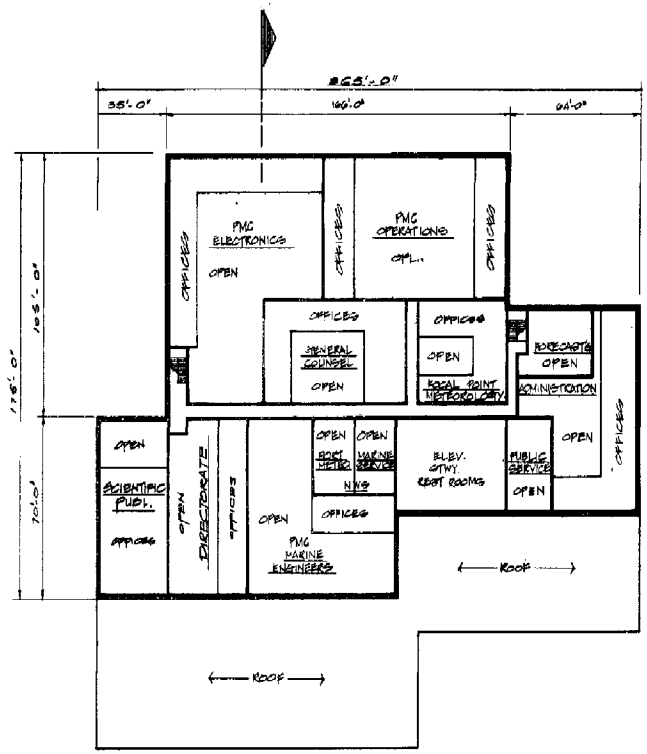
SHEET TITLE
FACILITY STUDY
LANDSCAPE PLAN

PROJECT NO. A58000 / FJ1101
DWG. S-9
REV. NO.
SCALE As Shown
DATE Oct. 1976



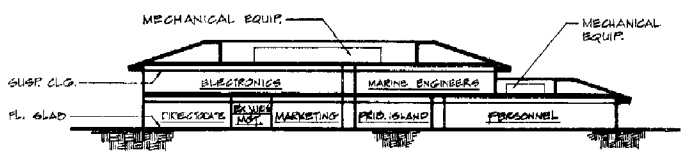
FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECTION

SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDING INTERNAL CIRCULATION)	= 77 073 GSF
MECH. / MAJOR CIRCULATION SPACE	= 7 107 GSF
GROSS AREA	= 84 180 GSF

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

SCALE: 1/16" = 1'-0"

0 20 40 60

NO	DATE	REVISION	BY	CK	APPR

DRAWN BY: D. Lee
CHECKED BY: E. Nemyah
PROJ. MGR: W. Jernigh
ENG. CHIEF APPR: C. Cantrell III
PROG. MGR. APPR: R. L. Campbell

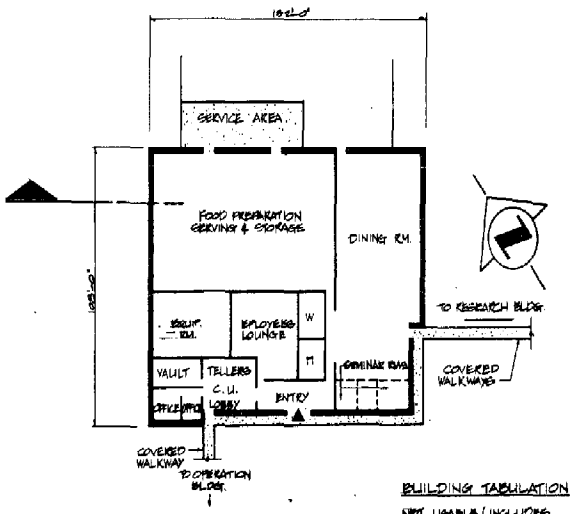
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE: FACILITY STUDY
OPERATIONS BUILDING

PROJECT NO: 1A8000/F1.100
DWG: B-1
REV NO.
SCALE: As Shown
DATE: Oct. 1976



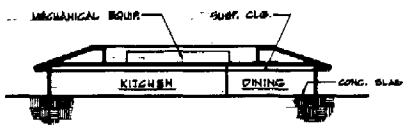
FLOOR PLAN
SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 11620 S.F.
MECH./MAJOR CIRCULATION SPACE	= 1,162 S.F.
GROSS AREA	= 12,782 S.F.

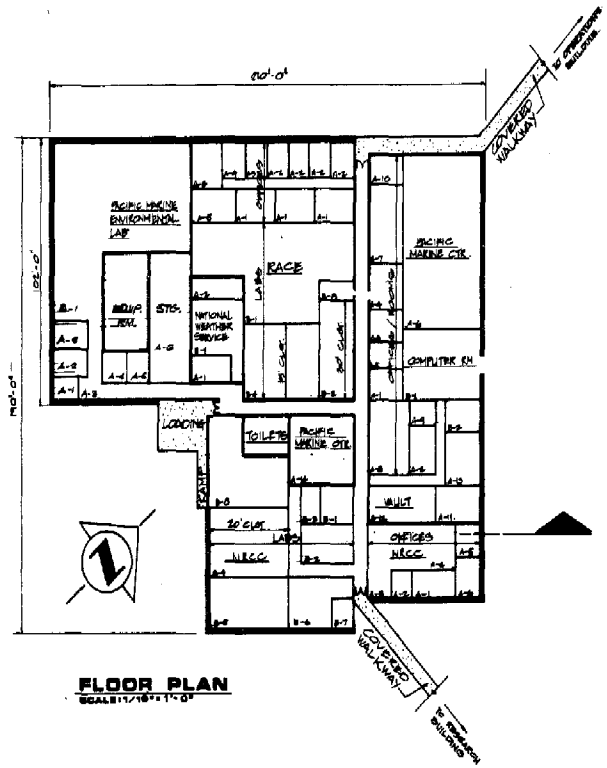
NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

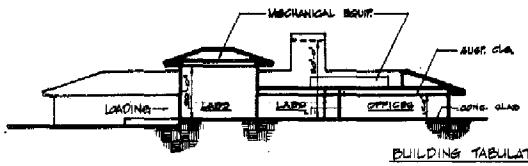


SECTION
SCALE: 1/16" = 1'-0"

EMPLOYEE SERVICES BUILDING



FLOOR PLAN
SCALE: 1/16" = 1'-0"



SECTION
SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 29,885 S.F.
MECH./MAJOR CIRCULATION SPACE	= 2,989 S.F.
GROSS AREA	= 32,874 S.F.

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

ELECTRONICS BUILDING

SCALE: 1/16" = 1'-0"

0 20 40 80

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY D. Lian
CHECKED BY R. Merryfield
PROJ. ARCH. K. Merryfield
LAN. ENGR. APPR. C. Gardner Jr.
PROJ. ENGR. APPR. R.L. Carrington

LYON ASSOCIATES, INC.
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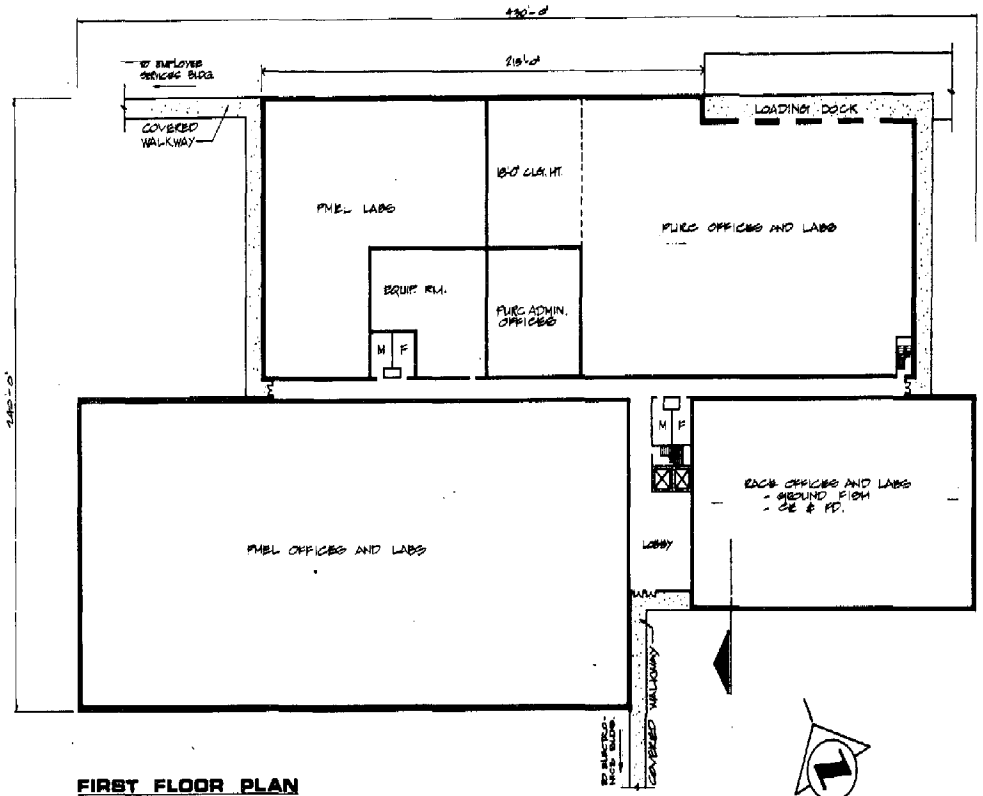
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

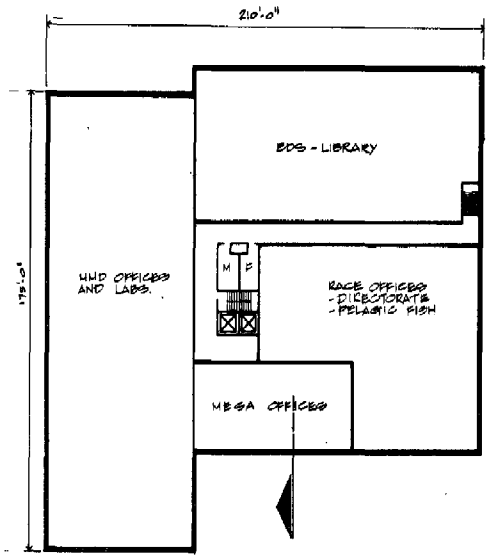
SHEET TITLE
FACILITY STUDY
EMPLOYEE SERVICES BLDG.
AND
ELECTRONICS BLDG.

PROJECT NO. 8-2
SHEET NO. 8-2
REV. NO.
SCALE As Shown
DATE Mar. 1978



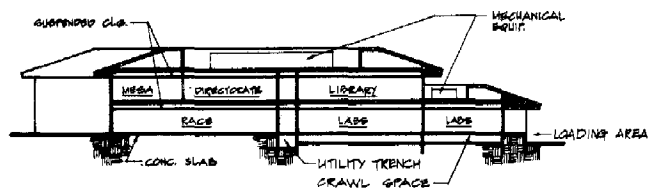
FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECTION

SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 104,771 S.F.
MECH./MAJOR CIRCULATION SPACE	= 10,477 S.F.
GROSS AREA	= 115,248 S.F.

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

SCALE: 1/16" = 1'-0"

0 20 40 60

NO.	DATE	REVISIONS	BY	CK.	APPR.

DRAWN BY: D.Lee
CHECKED BY: R. Marquis
PROJ. ENGR: H. Gough
FAC. ENGR. APPR: C. Cantler III
PROJ. ENGR. APPR: R.L. Carnahan

LYON ASSOCIATES, INC.
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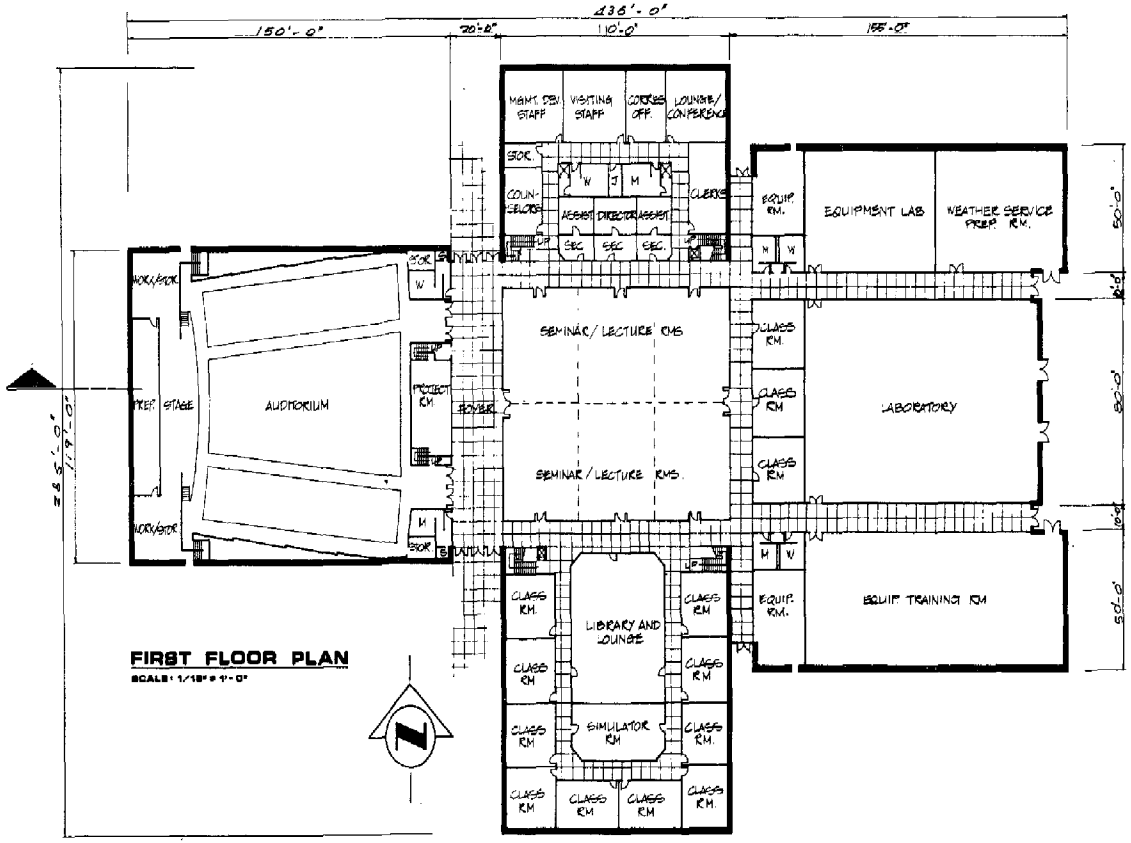
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

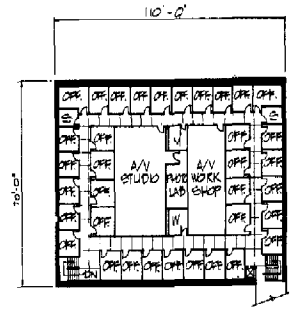
SHEET TITLE: FACILITY STUDY RESEARCH BUILDING

PROJECT NO.: [illegible]
DWG. NO.: B-2
REV. NO.:
SCALE: As Shown
DATE: Oct. 1979



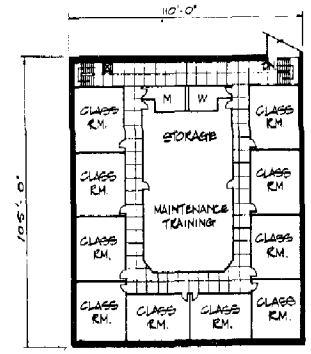
FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"



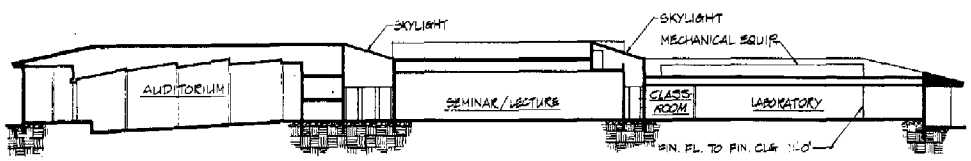
SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



SECTION

SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 90,850 G.S.F.
MECH./ MAJOR CIRCULATION SPACE	= 8,700 G.S.F.
GROSS AREA	= 99,880 G.S.F.

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

SCALE: 1/16" = 1'-0"

0 5 10 15 20 40 60

NO.	DATE	REVISION	BY	CK	APPD

DRAWN BY R. Lee
CHECKED BY G. Wangler
PROJ. MGR. M. Wangler
FAC. ENGR. APPD. C. Gaviria III
PROJ. MGR. APPD. R.L. Carlstrom

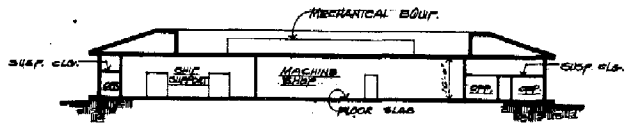
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

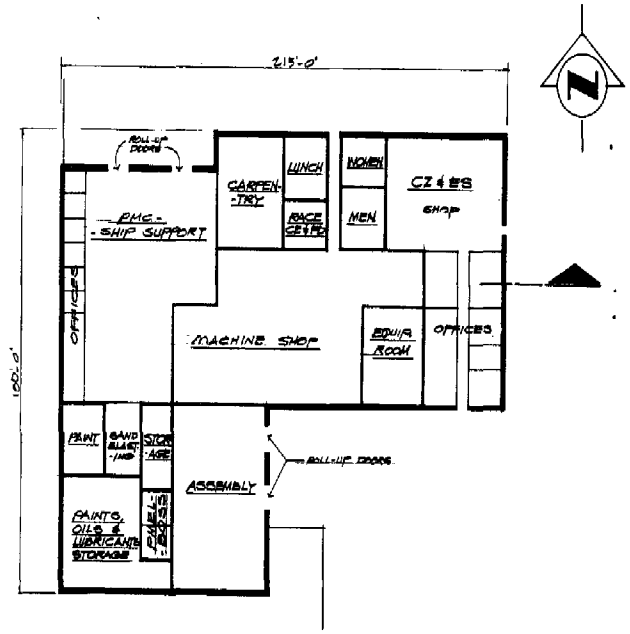
SHEET TITLE
FACILITY STUDY
EDUCATION BUILDING

PROJECT NO. 76-0010/5/1101
SHEET NO. B-4
SCALE As Shown
DATE Oct. 1976



SECTION

SCALE: 1/16" = 1'-0"



FLOOR PLAN

SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 26,630 S.F.*
TECH. / MAJOR CIRCULATION SPACE	= 4,079 S.F.
GROSS AREA	= 30,609 S.F.*

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING BUDGETING PURPOSES.

INCLUDES 1900 S.F. PAINTS OILS & LUBRICANTS STORAGE.

SCALE: 1/16" = 1'-0"

0 8 16 32 48 64

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY: D. Lee
CHECKED BY: S. Marigold
PROJ. MGR. M. Arnold
FAC. ENGR. APPR. C. Coulter II
PROJ. MGR. APPR. R.L. Carrington

LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

SHEET TITLE: FACILITY STUDY SHOPS

PROJECT NO. 1530/0/1700
SHEET NO. B-5
SCALE: As Shown
REV. NO.
DATE: Oct. 1976

UTILITY PLANT TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 5,000 G.F.
MECH./MAJOR CIRCULATION SPACE	= 0 G.F.
GROSS AREA	= 5,000 G.F.

NOTES:

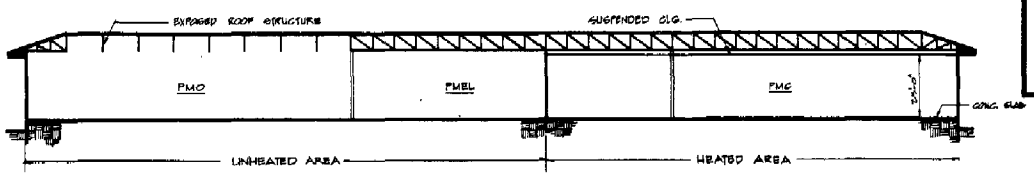
1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

WAREHOUSE TABULATION

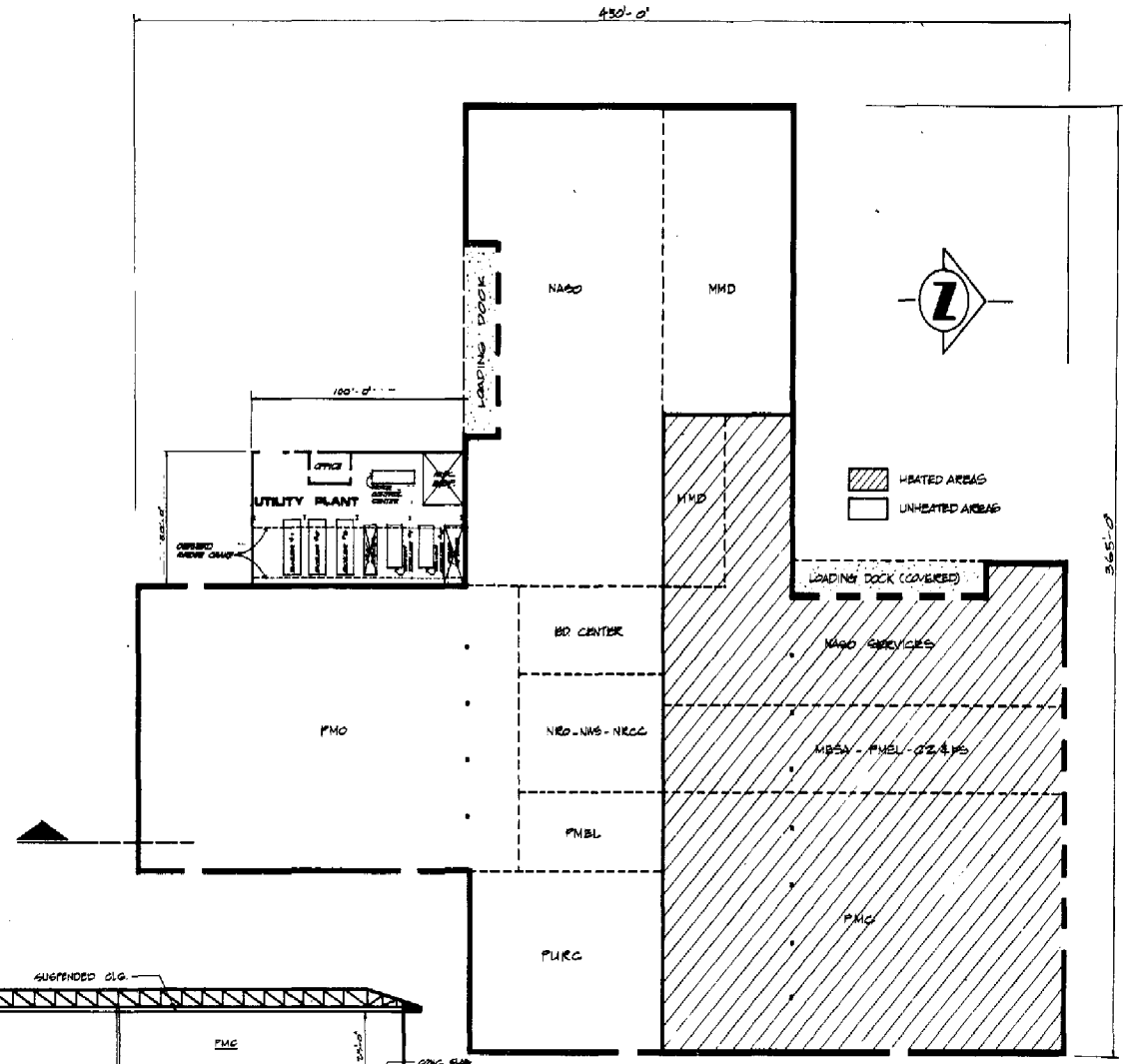
NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 99,210 G.F.
MECH./MAJOR CIRCULATION SPACE	= 0 G.F.
GROSS AREA	= 99,210 G.F.

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT/ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.



SECTION
SCALE: 1/16" = 1'-0"



FLOOR PLAN
SCALE: 1/16" = 1'-0"

SCALE: 1/16" = 1'-0"

NO	DATE	REVISION	BY	CK	APPR

DRAWN BY D. Lee
CHECKED BY E. Marzoli
PROJ. MGR. M. Marcuk
FAC. ENGR. APPR. C. Cantler III
PUBL. HEA. APPR. R.L. Carnahan

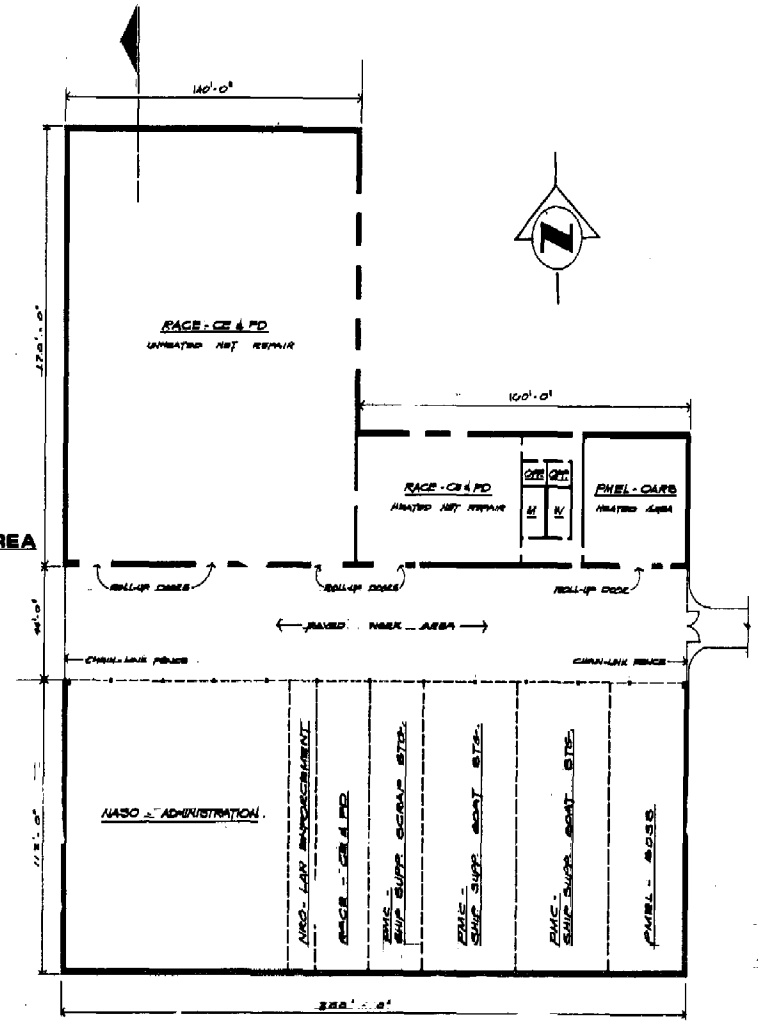
LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE: WESTERN REGIONAL CENTER SAND POINT SEATTLE, WASHINGTON

SHEET TITLE: FACILITY STUDY WAREHOUSE AND UTILITY PLANT

PROJECT NO. 4620000/4620001
SCALE: As Shown
DWG. B-6
REV. NO.
DATE: Oct. 1978



ENCLOSED WORK AREA FLOOR PLAN

SCALE: 1/16" = 1'-0"

COVERED STORAGE AND BOAT STORAGE FLOOR PLAN

SCALE: 1/16" = 1'-0"

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 31,700 G.F.
MECH. / MAJOR CIRCULATION SPACE	= 0 G.F.
GROSS AREA	= 31,700 G.F.

NOTES:

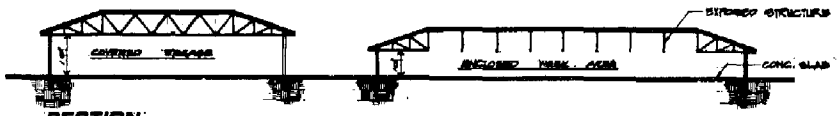
1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT / ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.

BUILDING TABULATION

NET USABLE (INCLUDES INTERNAL CIRCULATION)	= 33,400 G.F.
MECH. / MAJOR CIRCULATION SPACE	= 0 G.F.
GROSS AREA	= 33,400 G.F.

NOTES:

1. FINAL FUNCTIONAL ARRANGEMENT OF SPACES SHALL BE DETERMINED DURING ARCHITECT / ENGINEER CONCEPT STUDIES.
2. THIS DRAWING IS FOR ESTIMATING & BUDGETING PURPOSES.



SECTION

SCALE: 1/16" = 1'-0"

SCALE: 1/16" = 1'-0"

0 8 16 32 48 64

NO.	DATE		BY	CK.	APPR.

DRAWN BY: D. Lee
CHECKED BY: S. Morgan
PROJ. MGR.: M. Joseph
LAI CHIEF APPR.: C. Cooke Jr.
PROJ. MGR. APPR.: S.L. Cornelius

LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

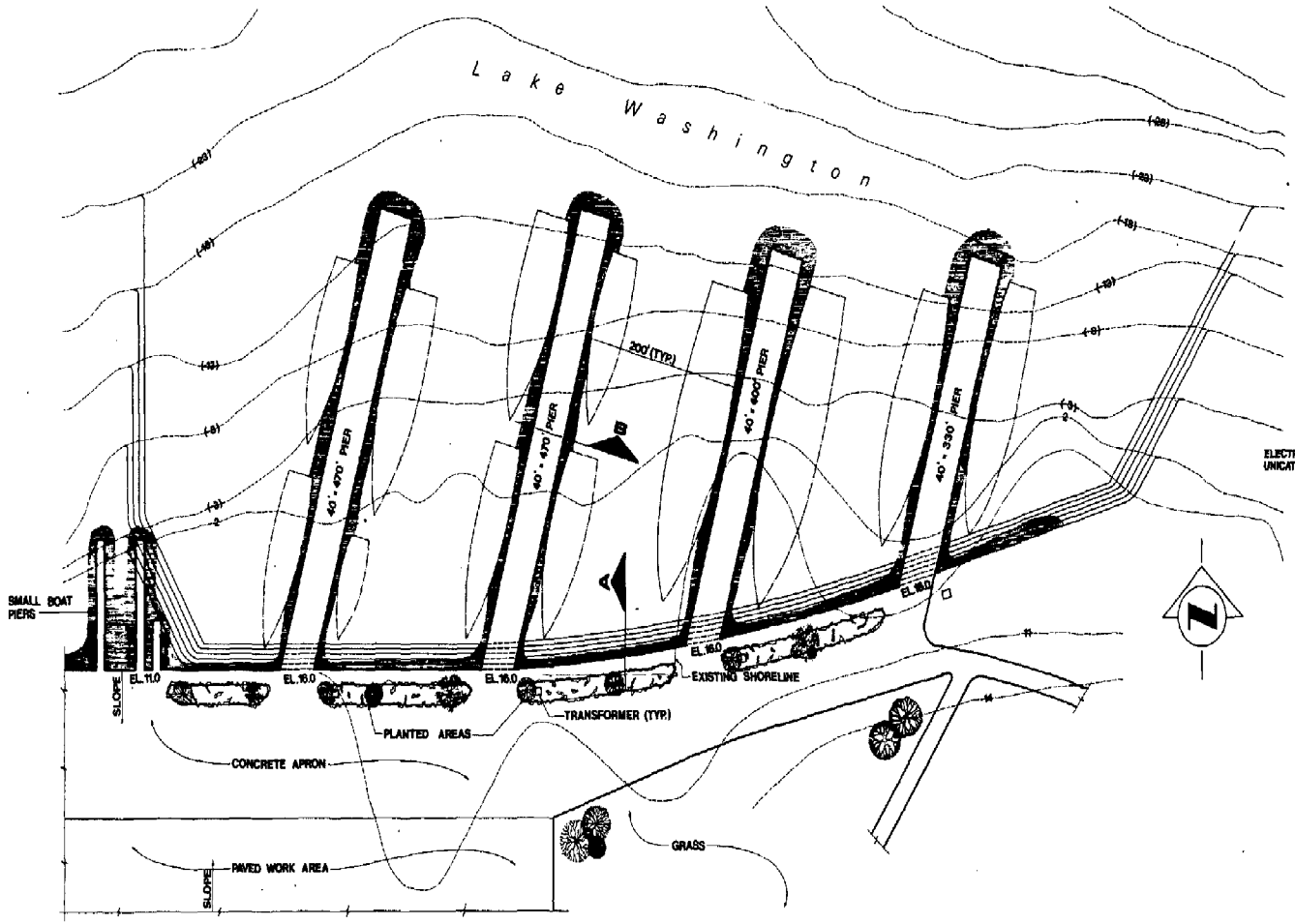
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

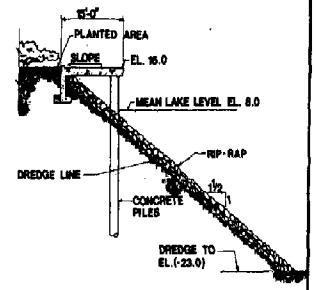
PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE **FACILITY STUDY**
ENCLOSED WORK AREA
COVERED STORAGE AND BOAT STORAGE

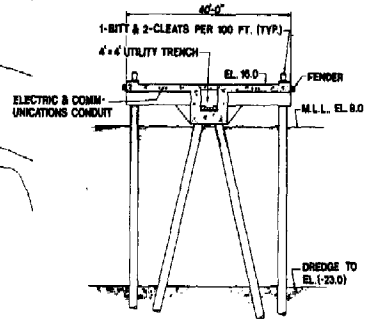
PROJECT NO.
SHEET NO. D-7
REV. NO.
DATE

THIS DRAWING IS FOR ESTIMATING AND BUDGETING PURPOSES.





SECTION A-A



SECTION B-B

SCALE: 1" = 40'

0 20 40 80 120 160

NO.	DATE	REVISION	BY	CK.	APPR.

DRAWN BY G. Harris
CHECKED BY W. Bond
PROJ. ARCH. M. Joseph
FAC. ENGR. APPR. C. Coulter II
PROC. ARCH. APPR. E.L. Gerstelder

LYON ASSOCIATES, INC.
ENGINEERS · ARCHITECTS · PLANNERS
7900 WESTPARK DRIVE · McLEAN, VIRGINIA · 22101

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROJECT TITLE
WESTERN REGIONAL CENTER
SAND POINT
SEATTLE, WASHINGTON

SHEET TITLE
FACILITY STUDY
PIER AREA

PROJECT NO. N5A010 / F31101
DWG. B-6
REV. No.
SCALE As Shown
DATE Oct 1978

11. ECONOMIC ANALYSIS

The justification for this project is both programmatic and economic. The primary purpose of this project is to provide adequate facilities which will provide the capacity to satisfy current and future NOAA requirements. The economic analysis presented in this paragraph is confined to a breakdown of investment costs and a discussion, in terms of unit costs, of the economic benefits attributable to this project.

a. Equipment Estimate

The estimated total investment for collateral equipment chargeable to this project is $5,341,000 (included both in the building estimate and as separate equipment). The estimated total investment of other equipment is $5,060,000. This investment is treated as collateral equipment not chargeable to the project and is purchased from program operating funds (See paragraph 3.f (1), (2), (3) for detailed breakdown).

b. Construction Estimate

The total budget estimate for construction is $70,636,000. This includes $56,525,000 for buildings and piers and $14,111,000 for support facilities. The cost for buildings and piers includes $5,081,000 for costs attributable to support facilities. Costs for support facilities are required for base development, basic site work and other measures for support of the primary facilities. These costs are also presented in block 21 of the Construction Project Data Form.

Of the total construction budget cost estimate $70,636,000, the percentage breakdown for the major project components is shown below.

	$ (millions)	%
Site Work and Utilities	19.192	27.2
Piers & Dredging	9.431	13.4
Architectural/Structural	27.735	39.2
Mechanical	7.210	10.2
Electrical	4.730	6.7
Equipment	1.356	1.9
Paved Work Areas	0.336	.5
Misc. Structures	0.646	.9
Total Construction	$70.636	100%

11. b. (Continued)

As per OMB Circular A-11, Sec. 13.5, of the total construction budget cost estimate, the following amounts for major project components are shown below.

	Budget Estimate ($1000's)
Water Pollution Constrol and Treatment Systems	991
OSHA	1,672
Environmental measures	1,543
Total	4,206

No cost is included for fallout protection. The facility is not sited on a flood plain.

The following tables contain construction cost estimates by (a) buildings and piers, (b) costs attributable to support facilities for buildings and piers, and (c) supporting facilities for base development.

c. Economic Benefits

The proposed Western Regional Center will provide NOAA an expanded base for execution of currently assigned programs and allow expansion for future requirements. Cost avoidance associated with component collocation and activity consolidation is $285,287 annually. Lease vs. construction alternatives have been performed as per OMB Circular A-104. Based on the cost of the facility and current government policy, the construction option is the appropriate comparable alternative to lease. Lease purchase was not considered appropriate, based on reasons stated in Appendix B - Economic Analysis. An analyses of lease vs. construction indicates a payback period within seventeen (17) years for construction when compared to leasing.

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

11. b. (Continued)

CONSTRUCTION COST ESTIMATES
($1,000s)

ACTION ITEMS	COSTS FOR CONSTRUCTION OF BUILDINGS AND PIERS											
	Operations Building	Employee Services Building	Research Building	Electronics Building	Education Building	Shops	Ware-House	Utility Plant	Enclosed Work Area	Covered Storage & Boat Storage	Security/ Informa-tion Sta.	Total Budget Cost
Site Work & Utilities	315	92	329	156	942	95	101	24	106	60	82	2,302
Architectural/ Structural	3,462	639	5,100	1,338	4,564	896	2,480	212	540	408	88	19,727
Mechanical	527	97	1,256	355	672	147	298	1,636	74	33	19	5,114
Electrical	456	151	870	338	689	212	233	212	73	101	20	3,355
Equipment	23	327	299	48	48	139	60	2	5	0	10	961
Paved Work Area	5	5	31	4	--	61	75	26	16	15	--	238
Misc.			425(1)			17(2)		16(3)				458
Unadjusted Subtotal(FY76)	4,788	1,311	8,310	2,239	6,915	1,567	3,263	2,112	814	617	219	32,155
Budget estimate/ Subtotal	5,856	1,619	12,216	3,229	10,805	2,090	4,523	2,608	1,268	805	335	45,354

Notes:
(1) Special Lake Water & Salt Water Supply for Aquaculture, Marine Mammal Holding Facilities, & Covered Workspace
(2) Vehicle Fueling Station
(3) Explosive Storage

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

11. b. (Continued)

CONSTRUCTION COST ESTIMATES
(1000s)

ACTION ITEMS — COST FOR CONSTRUCTION OF BUILDINGS AND PIERS

	Dredging	Main Piers	Small Boat Piers	Total Budget
Dredging	2,500	--	--	2,500
Piers		3,684	127	3,811
Apron, quay wall, rip rap revetment		1,222	95	1,317
Pier utilities: sanitary sewer		26	--	26
Bilge-ballast water handling		138	7	145
Water		65	--	65
Steam		569	--	569
Electricial		355	11	366
Communications		9	--	9
Lighting		25	2	27
Fuel handling system		38	--	38
Parking lot: paving		131	--	131
storm sewers, treated		13		13
lighting		17	--	17
Unadjusted Total (FY76)	2,500	6,292	242	9,034
Budget Estimate Subtotal	2,775	8,085	311	11,171
TOTAL CONSTRUCTION COSTS				56,525

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

11. b. (Continued)

CONSTRUCTION COST FOR SUPPORTING FACILITIES
(1,000s)

ACTION ITEMS	COSTS FOR SUPPORT FACILITIES								
	General Site Work	Main Utilities Systems	Shore-line Reserve	Lagoon	Main Gate Access	North Gate Access	Hangars 1, 32 & 33 Demolition	Total Budget Total	
Demoliton - buildings	77		--	--	--	23	549	649	
- paving	1,672	--	--	--	119	88	126	2,005	
Grading, including seeding	3,783	--	619	220	2	2		4,626	
Roads	232				168	162		562	
Sidewalks	15		7		5	3		30	
Planting (trees, bushes & mulching)	639		107		5	4		755	
Fencing	55				24	19		98	
Storm sewers - treated		209						209	
- untreated		183						183	
Sanitary sewers		123						123	
Main sanitary pumping station		117						117	
Water distribution		389		25	97	48		414	145
Steam distribution		381						381	
Chilled water distribution		203						203	
Electrical distribution		174						174	
Main substation		77						77	
Communications		102						102	
Exterior lighting		38			19	9			66
Control/monitor system		794							794
Unadjusted total(FY76)	6,473	2,790	733	245	439	358	675	11,713	
Budget total	7,832	3,315	887	296	531	433	817	14,111	

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

11. b. (Continued)

CONSTRUCTION COST ESTIMATES
($1,000s)

ACTION ITEM	COST ATTRIBUTABLE TO SUPPORT FACILITIES FOR BUILDINGS											
	Operations Building	Employee Services Building	Research Building	Electronics Building	Education Building	Shops	Ware-House	Utility Plant	Enclosed Work Area	Covered Storage & Boat Storage	Security/ Informa-tion Sta.	Total Budget Cost
Grading	3	1	45	24	50	23	44	1	30	25	9	255
Roads	65	4	16	8	10	-	3	4	2	3	1	116
Parking Lots	108	-	61	35	194	-	-	-	-	-	9	407
Sidewalk	6	1	2	1	8	1	1	1	2	2	1	26
Covered Walk	-	10	42	13	-	-	-	-	-	-	-	65
Planting	69	16	74	34	122	15	35	5	9	16	15	410
Fencing	-	-	-	-	-	-	-	-	1	4	-	5
Storm Sewers, Treated	9	2	13	-	95	2	-	-	2	-	2	125
Storm Sewers, Untreated	2	2	2	6	3	1	1	1	1	1	1	21
Sanitray Sewers	2	5	9	3	16	5	2	1	3	-	19	65
Water Distribution	1	3	1	1	16	2	2	3	2	2	8	41
Steam Distribution	9	32	17	12	205	7	-	-	50	-	-	332
Chilled Water Dist.	9	11	8	8	111	24	-	-	-	-	-	171
Electrical Dist.	4	2	23	3	34	3	-	4	-	3	9	85
Communications	3	1	3	2	32	2	-	2	2	2	6	55
Exterior Lighting	25	2	13	6	46	10	13	2	2	2	2	123
Unadjusted Subtotal	315	92	329	156	942	95	101	24	106	60	82	2302
Budget Estimate Subtotal	385	114	484	225	1468	127	140	30	165	78	125	3341

12. Environmental Impact

The environmental evaluation of this project has been made and is summarized below.

Adverse impacts are largely of a short-term nature and follow from site preparation, dredging and construction activities. Most of these impacts can be mitigated significantly. Most longer term impacts are substantively beneficial. Along with Sand Point, NOAA considered sites at Manchester, Lake Union, the Duwamish River, Piers 90-91 and at Fort Worden. Additional consideration was given to split siting of NOAA facilities. Sand Point proved to be attractive from the standpoint of adverse impact avoidance as well as of the highest utility for NOAA and the best site in terms of utility cost.

a. Short-Term Impacts

(1) Natural Conditions

(a) Water quality. Dredging and pier construction will create temporary, localized water turbidity.

(b) Soil. Dredged material will be deposited, dried and utilized on the site a part of site prparation. Most of the pavement will be either taken up and re-used as a part of landscaping, or covered over with soil. A two-acre lagoon is contemplated on the eastern portion of the site, adding about 1,100 feet of shoreline; 1,300 feet of shoreline would be involved in the pier complex.

(c) Vegetation and wildlife. Most of the present vegetation inward from the shoreline would be covered or disturbed during construction. Land birds and ground animals would be largely displaced during construction. Waterfowl are not likely to be significantly affected.

(d) Aquatic biota. During dredging, revetment construction, pier construction and lagoon excavation, severe water turbidity is likely which will blight the immediate area biologically for two to three months. The dredging would remove or bury existing benthic organisms in and immediately adjacent to the dredge area. Mobile aquatic life would probably avoid the area until the water cleared.

(e) Sonic quality. Construction noise will be above ambient levels but will not exceed 75-80dB.

(f) Public utility resources. Some solid waste material which cannot be disposed of on-site will be disposed of at existing commercial disposal sites.

(2) Social Conditions.

No significant change.

12. a. (Continued)

(3) Economic Conditions

Approximately $65 million of new funds will be invested in the Seattle area over the period of construction.

(4) Visual Conditions

Construction activities are generally considered to be visually unappealing.

(5) Land Use Conditions

Almost total transformation of the NOAA site is contemplated. In adjacent areas no changes are likely as a result of this project.

(6) Transportation Conditions

Unusual traffic during construction may require short-term special traffic routing.

(7) Historical and Archeological Resources

No such resources are known to exist on the site.

b. Long-Term Impacts

(1) Natural Conditions

(a) Air quality. No existing standards would be violated.

(b) Water quality. New facility effluent and surface water controls will be developed. A full range of vessel effluent controls are planned. No adverse effects on water quality are likely under these conditions.

(c) Soil. Site development and landscaping will sharply increase the natural productivity of the site. Extensive new vegetation will be introduced. About 567,000 square feet of the lake bottom will be affected in the removal of about 260,000 cubic yards of bottom material. A riprap revetment will be installed along 1,300 feet of shoreline in the pier area.

12. b. (Continued)

(1) Natural Conditions Continued

(d) Vegetation and wildlife. A net increase of about 40 acres of vegetation will be achieved in the construction process. Local varieties of trees, shrubs and grasses will be introduced. A substantial portion of the present on-land wildlife of the site will be displaced or eliminated. Waterfowl are not likely to be affected.

(e) Aquatic biota. Recently completed aquatic biota studies indicate a probable net decrease in the biomass of the pier area due to the loss of the shallow area in creating vessel moorage. The benthic community can be expected to regenerate slowly and would not be significantly affected by NOAA pier area operations. Some fishes will probably increase in population in the pier area. The biological productivity of the lake will be relatively unaffected by these changes.

(f) Sonic quality. No significant long-term adverse impact is likely. Maintenance of present ambient noise ranges might be attributable to the NOAA Center in operation.

(2) Social Conditions

Significant addition to existing recreational and educational resources will be achieved. No adverse impacts are likely.

(3) Economic Conditions

In addition to productivity and efficiency gains for NOAA, there will be additional stimulus to marine and oceanographic research in the region at institutions such as Battelle Northwest and the University of Washington. An additional 500 new jobs in the next 25 years would be brought to the Seattle area. No adverse effects are likely.

(4) Visual Conditions

The sharply increased visual appeal of the site will enhance considerably the attractiveness of the surrounding neighborhoods.

12. b. (Continued)

(5) Land Use Conditions

There will be net reduction of about 40 acres of existing pavement. Many of the topographic features of the site before the construction of the aviation facility will be reestablished. Public access to the site will be reestablished. The pier complex could be considered adverse from an environmental standpoint, however, the proposed lagoon provides substantial compensation.

(6) Transportation Conditions

To insure that project-generated vehicular traffic will have no adverse effect on the functioning of the street system, the project entrances will be adequately designed and controlled by traffic signals. Passage of NOAA vessels through the Lake Washington Ship Canal will not adversely affect vehicular traffic crossing the draw bridges to a significant degree, so long as the transit of vessels at peak hours is avoided in accordance with NOAA policies.

(7) Historical and Archeological Resources

No such resources are known to exist on the site.

APPENDIX A- BUDGET/PERSONNEL/SPACE REQUIREMENTS

SAND POINT SUMMARY	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY						% Change
		76	77	78	79	80	81		76	77	78	79	80	81	
NMFS NRO	1,2,3	67	78	85	85	98	98	46	7421	10271	10271	13857	13857	15472	108
		5791	6286	6740	7081	7652	8013		0	650	650	900	900	0	0
									7500	7500	7500	7500	7500	900	-88
NWFC	1,2	90	90	137	139	139	150	67	19715	20314	24964	25264	25564	29858	51
									2200	2730	3900	4400	4900	4664	112
		2901.8	3516.9	6582.7	6834.9	7504.6	7836.2		9234	9255	9550	9550	9550	41519	350
									54930	54930	41150	41650	42150	17550	-68
NWS	1,2,3	38	38	38	38	49	50	32	5500	5500	5500	5500	7495	9520	73
		945.3	1009.5	1065.3	1118.6	1405.9	1476.2		900	900	900	900	900	700	-22
									1205	1205	1205	1205	1205	360	-70
PMC (NRCC INCLUDED)	1,2,3	736	759	776	786	804	836	14	15359	15759	15759	15759	15759	25872	35
									4285	4350	4350	4350	4350	4424	118
		17612.3	18802.0	19928.0	21003.0	22185.8	12138.9		6696	8093	8093	8093	8093	14921	123
									35200	34450	34450	34450	34450	41400	18
PMEL	2,3	107	110	130	149	149	180	68	25100	26850	26850	27154	27154	33837	35
									7900	8700	8700	5791	5791	13547	71
		4000.0	4400.0	5200.0	6000.0	6300.0	6600.0		7000	7000	7000	7914	7914	9796	40
									5000	5000	5000	2603	2603	3500	-30
PURC	2,3	32	32	32	32	32	34	6	3200	3200	3200	3200	3200	3651	14
									11650	11650	11650	11650	11650	19451	67
		793.9	833.6	875.3	919.0	965.0	1073.2		2000	2000	2000	2000	2000	0	-
									7470	7470	7470	7470	7470	6000	-20
SCIENTIFIC PUBLICATIONS	3	11	12	12	13	14	15	36	3000	3000	3000	2655	2655	2900	-3
									0	0	0	0	0	0	-
		470.3	470.3	517.3	580.7	650.4	727.1		0	0	0	0	0	0	-
									745	745	745	0	0	0	-
NOAA TRAINING CENTER	1,2,3	36	44	49	54	59	59	64	6300	6300	6300	6300	6300	10150	61
									23250	23250	23250	23250	23250	68700	195
		812.0	871.0	973.0	1750.0	1177.0	1279.0		4350	4350	4350	4350	4350	12000	176
									1100	1100	1100	1100	1100	3000	173

(1) N = New Activity
E = Existing Activity; little expansion expected
X = Expansion underway or expected

(2) Justification Codes:
1. Space unavailable
2. Inadequate or inappropriate present space
3. Management & control relationship enhanced by collocation at Sand Point

(3) Personnel counts/estimates on top; budget below, in $000. Personnel counts include all full and part time categories

(4) Space
O = Office Space
L = Lab Space
S = Shop
W = Warehouse

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

SAND POINT	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only		(4) Space by type; by FY						% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
NASO	1,2,3	83	89	93	108	112	126	52	O	10284	10430	10430	18279	18279	28967	182
									L							
									S							
		1396.5	1659.0	1780.0	2128.0	2367.0	2546.0		W	2963	2963	2963	25538	25538	26500	794
VISITOR/MGMT. INFO.	3	0	0	0	2	2	2	-	O	0	0	0	0	450	2400	-
									L							
									S							
		0	0	0	30	70	70		W							
EDS LIBRARY	1 & 3	0	0	0	0	0	3	-	O	0	0	0	0	0	8960	-
									L							
									S							
		0	0	0	0	0	104.3		W							
EMPLOYEE SERVICES	1	0	0	0	0	0	12	-	O	0	0	0	0	0	11620	-
									L							
		0	0	0	0	0	—		S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
									W							
TOTALS		1200	1252	1352	1404	1456	1565	30	O	95879	101624	106274	117968	120263	183207	91
									L	49285	50680	51850	49441	49920	110786	125
		34723.1	37848.3	43661.6	47415.2	50207.7	52759.6		S	30180	32248	32543	33707	33596	78936	162
									W	116113	115363	101583	121516	122016	99210	-15
									D	291457					472139	62
									L							
									S							
									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

National Marine Fisheries Service, NW Regional Office	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
(X) REGIONAL OFFICE MANAGEMENT 900040	2	13	14	14	14	15	23	77	O	2246	2396	2396	2584	2584	4486	100
									L							-
		274	300	316	331	358	376		S							-
									W						900	-
(X) FISHERY ENFORCEMENT AND SURVEILLANCE 8F5	2 & 1	7	11	13	13	13	16	129	O	611	2011	2011	2011	2011	2615	328
									L							-
		218	318	368	386	400	400		S	0	650	650	900	900	0	0
									W							-
(E) MARINE MAMMAL CONSERVATION 804	3	2	2	2	2	2	0	-	O	200	200	200	200	200	0	-
									L							-
		80	84	88	93	97	102		S							-
									W							-
(E) ENDANGERED SPECIES CONSERVATION 8C5	3	1	1	1	1	1	0	-	O	100	100	100	100	100	0	-
									L							-
		25	26	27	29	30	32		S							-
									W							-
(X) INCREASING USE OF RESOURCES ECONOMICS AND MARKETING 8F7	2 & 1	20	22	22	22	24	33	65	O	1288	1588	1588	3300	3300	4210	227
									L							-
		209	234	244	255	300	305		S							-
									W							-
(X) STATE-FEDERAL FISHERIES MANAGEMENT 8F3 Merged into Fish.Mgt.Div.(ES)	2 & 1	3	7	10	10	10	0	-	O	320	1320	1320	1080	1080	0	-
									L							-
		200	300	375	390	410	430		S							-
									W							-
(E) FISHERIES GRANTS TO STATES 8F4	3	0	Included in 8F3						O							-
									L							-
		413	434	456	479	503	528	-	S							-
									W							-
(E) ANADROMOUS FISHERIES GRANTS 8E3	3	0	Included in 8F3					-	O							-
									L							-
		765	804	844	886	930	977		S							-
									W							-

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

National Marine Fisheries Service, NW Regional Office	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
ECONOMICS & COMMERCIAL FISHERY STATISTICS 8F6	3	E 4	4	4	4	4	0	∞	O	396	396	396	560	560	0	-∞
									L							-
									S							-
		103	109	114	120	126	132		W							-
MARINE RECREATIONAL FISHERIES 8F9	2 & 1	E 1	1	2	2	3	0	∞	O	100	100	100	420	420	0	-∞
									L							-
									S							-
		16	17	35	38	55	58		W							-
FISHERIES LOAN FUND ADMINISTRATION 873	2 & 1	E 4	4	5	5	6	6	50	O	514	514	514	961	961	935	82
									L							-
									S							-
		20	20	20	20	20	20		W							-
FEDERAL SHIP FINANCING 876	3	E 0	Included in		873			-	O							-
									L							-
									S							-
		34	36	55	55	60	60		W							-
CAPITAL CONSTRUCTION FUND 872	3	E 0	Included in		873			-	O							-
									L							-
									S							-
		34	36	36	36	55	58		W							-
PRIBILOF ISLAND PROGRAM 8C6	3	E 10	10	10	10	11	11	10	O	1360	1360	1360	1435	1435	1809	33
									L							-
									S							-∞
		3340	3507	3700	3900	4100	4300		W	7500	7500	7500	7500	7500	0	-
ENVIRONMENTAL IMPACT ANALYSIS 8C3	2 & 1	N 0	0	0	0	6	6	∞	O	0	0	0	626	626	762	-∞
									L							-
									S							-
		0	0	0	0	130	135		W							-
AQUACULTURE	2 & 1	E 2	2	2	2	3	3	50	O	286	286	286	580	580	655	129
									L							-
									S							-
		60	61	62	63	78	80		W							-

APPENDIX A- (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

National Marine Fisheries Service NW Regional Office	(2) Justi-fication	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only		(4) Space by type; by FY						% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
TOTAL		67	78	85	88	98	98	46	O	7421	10271	10271	13857	13857	15472	108
									L							-
									S		650	650	900	900	0	-
		5791	6286	6740	7081	7652	8013		W	7500	7500	7500	7500	7500	900	-88
									O	14921					16372	10
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
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									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

NORTHWEST FISHERIES CENTER	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
E COASTAL ZONE & ESTUARINE STUDIES	2	11	11	11	13	13	17	55	O	1130	1130	1130	1130	1130	2390	112
									L	0	0	0	0	0	0	-
									S	4250	4250	4250	4250	4250	5208	23
		201.9	195.5	206.3	262.1	275.7	290.8		W	8850	8850	8850	8850	8850	7550	-15
X RESOURCE ASSESSMENT & CONSERVATION ENG. (RACE)	2 & 1	45	45	91	91	91	98	117	O	9661	10260	14910	15210	15510	19510	102
									L	1300	1830	3000	3500	4000	1060	-18
									S	4784	4805	5100	5100	5100	35795	648
		1749.0	1872.0	3927.0	4123.4	4329.5	4746.0		W	37280	37280	23500	24000	24500	0	-∞
E MARINE MAMMAL LABORATORY	2	34	34	35	35	35	35	3	O	8924	8924	8924	8924	8924	7958	-11
									L	900	900	900	900	900	3604	300
									S	200	200	200	200	200	516	158
		950.9	1449.4	2449.4	2449.4	2899.4	2799.4		W	8800	8800	8800	8800	8800	10000	14
TOTAL		90	90	137	139	139	150	67	O	19715	20314	24964	25264	25564	29858	51
									L	2200	2730	3900	4400	4900	4664	112
									S	9234	9255	9550	9550	9550	41519	350
		2901.8	3516.9	6582.7	6834.9	7504.6	7836.2		W	54930	54930	41150	41650	42150	17550	-68
									O	86079					93591	9
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									D							
									L							
									S							
									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

National Weather Service	(2) Justi-fication	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY												% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
Basic Observations (E)	3	4	4	4	4	6	6		O	600	600	600	600	900	1142	90
									L							
									S	400	400	400	400	400	400	0
		95.1	101.0	106.8	112.1	156.8	164.6	50	W	100	100	100	100	100	0	-
Basic Communications (E)	3	4	4	4	4	4	4		O	1100	1100	1100	1100	1100	1428	30
									L							-
									S							-
		67.6	71.7	75.6	79.4	83.4	87.6	0	W							-
Maintenance & Repair (E)	3	5	5	5	5	6	6		O	500	500	500	500	605	762	52
									L							-
									S	300	300	300	300	300	300	0
		117.5	126.6	133.6	140.3	159.8	167.8	20	W	1105	1105	1105	1105	1000	360	-67
River & Flood Forecast (E)	3	1	1	1	1	1	1		O	170	170	170	170	170	190	12
									L							-
									S							-
		24.6	25.9	27.3	28.7	30.1	31.6	0	W							-
Public Weather (E)	3	12	12	12	12	13	14		O	1360	1360	1360	1360	1600	2000	47
									L							-
									S	200	200	200	200	200	0	-
		313.1	334.3	352.7	370.3	390.1	409.6	17	W							-
Marine Prediction (X)	1 & 2	4	4	4	4	10	10		O	600	600	600	600	1750	2285	281
									L							-
									S							-
		100.0	107.1	113.0	118.7	290.8	305.3	150	W							-
Aviation Weather (E)	3	7	7	7	7	8	8		O	1000	1000	1000	1000	1200	1523	52
									L							-
									S							-
		194.8	207.4	218.8	229.7	253.5	266.2	14	W							-
Air Pollution & Fire Weather (E)	3	1	1	1	1	1	1		O	170	170	170	170	170	190	12
									L							-
									S							-
		32.6	35.5	37.5	39.4	41.4	43.5	0	W							-

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

National Weather Service	(2) Justi-fication	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only		(4) Space by type; by FY						% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
TOTAL		38	38	38	38	49	50	32	O	5500	5500	5500	5500	7495	9520	73
									L							
									S	900	900	900	900	900	700	-22
		945.3	1009.5	1065.3	1118.6	1405.9	1476.2		W	1205	1205	1205	1205	1100	360	-70
									O	7605					10580	+39
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
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									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

Pacific Marine Center	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
X Coastal Mapping	1 & 3	11	16	18	21	15	12		O	765	765	765	765	765	1203	57
									L	-	-	-	-	-	-	-
									S	0	750	750	750	750	1049	-
		345.2	399.1	453.8	525.7	374.0	323.1	9	W	-	-	-	-	-	-	-
X Hydrographic Surveys	1 & 3	24	30	31	31	31	31		O	4839	4839	4839	4839	4839	8900	84
									L	-	-	-	-	-	-	-
									S	-	-	-	-	-	-	-
		434.7	563.6	609.4	638.6	670.1	702.3	29	W	-	-	-	-	-	-	-
X Ship Base Operations	1 & 3	62	62	62	62	62	62		O	6845	7245	7245	7245	7245	10823	58
									L	2435	2500	2500	2500	2500	4424	82
									S	3357	4000	4000	4000	4000	8497	153
		4360.2	4536.0	4734.8	4934.2	5142.0	5358.7	0	W	-	-	-	-	-	-	-
E NRCC Calibration Center	2 & 3	6	6	6	6	6	11		O	850	850	850	850	850	1820	114
									L	1850	1850	1850	1850	1850	0	-0
									S	2700	2700	2700	2700	2700	4431	64
		150.0	157.5	165.4	173.7	182.4	191.5	83	W	-0-	-0-	-0-	-0-	-0-	400	-
X Ship Operations	1 & 3	614	625	638	645	669	699		O	-	-	-	-	-	-	-
									L	-	-	-	-	-	-	-
			12633.7		14151.4		15929.9		S	639	643	643	643	643	944	48
		11918.0		13410.4		15211.5		14	W	35200	34450	34450	34450	34450	41000	16
X General Support	1 & 3	19	20	21	21	21	21		O	2060	2060	2060	2060	2060	3126	52
									L	-	-	-	-	-	-	-
									S	-	-	-	-	-	-	-
		404.2	512.1	554.2	579.4	605.8	633.4	11	W	-	-	-	-	-	-	-
Total Exclusion of Calibration Center		730	753	770	780	798	825		O	14509	14909	14909	14909	14909	24052	66
									L	2435	2500	2500	2500	2500	4424	82
			18644.5		20829.3		22947.4		S	3996	5393	5393	5393	5393	10490	163
		17462.3		19762.6		22003.4		13	W	35200	34450	34450	34450	34450	41000	16
Total		736	759	776	786	804	836		O	15359	15759	15759	15759	15759	25872	68
									L	4285	4350	4350	4350	4350	4424	3
			18802.0		21003.0		23138.9		S	6696	8093	8093	8093	8093	14921	123
		17612.3		19928.0		22185.8		14	W	35200	34450	34450	34450	34450	41400	18
										61540					86617	141

APPENDIX A- (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

Pacific Marine Environmental Laboratory	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only		(4) Space by type; by FY						% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
Regional Projects and Ocean Dumping (X) Research	2, 3	10	10	11	15	15	15		O	2500	2500	2500	2627	2627	2587	3
									L	400	1000	1000	372	372	0	00
									S	500	500	500	372	372	0	00
712 MESA		900	900	1000	1200	1250	1300	50	W	1000	1000	1000	149	149	400	-60
Effects of Marine (X) Environmental Alterations		69	69	83	89	89	99		O	14850	14850	14850	14865	14865	14851	0
									L	7000	5700	5700	4236	4236	7426	6
									S	500	500	500	372	372	0	00
713	2,3	1550	1700	2450	2650	2790	2930	43	W	3000	3000	3000	2230	2230	3100	-3
Structures & Motion of Oceans Research (X)		10	10	10	15	15	24		O	2500	2500	2500	2973	2973	4564	83
									L	0	1000	1000	743	743	2226	-
									S	100	100	100	372	372	2500	2400
333 OARS	2, 3	900	900	900	1200	1250	1300	140	W	500	500	500	149	149	0	-
Application of (X) Satellite Data		3	5	8	10	10	10		O	3500	4000	4000	4459	4459	5230	49
									L	-	-	-	-	-	-	-
									S	5500	5500	5500	5940	5940	7296	33
B32	2, 3	350	500	550	600	650	710	233	W	-	-	-	-	-	-	-
Office Management (X)		15	16	18	20	20	32		O	1750	3000	3000	2230	2230	6605	277
									L	500	1000	1000	440	440	3895	679
									S	400	400	400	858	858	0	-
	2, 3	300	300	300	350	360	360	113	W	500	500	500	75	75	0	-
Totals		107	110	130	149	149	180		O	25100	26850	26850	27154	27154	33837	35
									L	7900	8700	8700	5791	5791	13547	71
									S	7000	7000	7000	7914	7914	9796	40
		4000	4400	5200	6000	6300	6600	68	W	5000	5000	5000	2603	2603	3500	-30
									O	45000					60680	35
									L							
									S							
									W							
									O							
									L							
									S							
									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

PACIFIC UTILIZATION RESEARCH CENTER	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only		(4) Space by type; by FY						% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
RESOURCE DEVELOPMENT AND IMPROVEMENT (E)	2	12	12	12	12	12	12	0	O	600	600	600	600	600	728	21
									L	6000	6000	6000	6000	6000	9287	55
									S	1500	1500	1500	1500	1500	0	∞
		332.0	348.6	366.0	384.3	403.5	423.7		W	3000	3000	3000	3000	3000	2940	-2
PRODUCT QUALITY AND SAFETY (E - SOME EXPANSION	2	10	10	10	10	10	12	20	O	600	600	600	600	600	728	21
									L	3020	3020	3020	3020	3020	5824	93
									S	0	0	0	0	0	0	0
		212.4	223.0	234.2	245.9	258.2	331.1		W	3000	3000	3000	3000	3000	1500	-50
NUTRITION AND AQUACULTURE (E)	2	3	3	3	3	3	3	0	O	200	200	200	200	200	0	∞
									L	2000	2000	2000	2000	2000	3710	86
									S	500	500	500	500	500	0	∞
		76.1	79.7	83.9	88.1	92.5	97.1		W	1000	1000	1000	1000	1000	960	-4
GENERAL SUPPORT	3	7	7	7	7	7	7	0	O	1800	1800	1800	1800	1800	2195	22
									L	630	630	630	630	630	630	0
									S	0	0	0	0	0	0	0
		173.4	182.1	191.2	200.7	210.8	221.3		W	470	470	470	470	470	600	28
TOTAL		32	32	32	32	32	34	6	O	3200	3200	3200	3200	3200	3651	14
									L	11650	11650	11650	11650	11650	19451	67
									S	2000	2000	2000	2000	2000	0	∞
		793.9	833.6	875.3	919.0	965.0	1073.2		W	7470	7470	7470	7470	7470	6000	-20
									O	24320					29102	20
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									D							
									L							
									S							
									W							

APPENDIX A- (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

TRAINING CENTER	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
NOAA Training Center	1,2.3	36	44	49	54	59	59	64	O	6300	6300	6300	6300	6300	10150	61
									L	23250	23250	23250	23250	23250	68700	195
									S	4350	4350	4350	4350	4350	12000	176
		812.0	871.0	973.0	1750.0	1177.0	1279.0		W	1100	1100	1100	1100	1100	3000	173
									O	35000					93850	168
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
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									S							
									W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
									W							

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

NORTHWEST ADMINISTRATIVE SERVICE OFFICE	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
NASO DIRECTORATE E	2,3	5	5	5	5	5	5	0	O	494	515	515	830	830	1652	234
									L							
		313.4	349.8	402.9	501.7	570.4	602.7		S							
									W							
FIELD FINANCE OFFICE X	3	24	25	25	26	26	30	25	O	3494	3494	3494	3494	3494	3976	14
									L							
		284.0	324.4	335.0	339.2	359.6	381.1		S							
									W	0	0	0	119	119	0	-
ADMINISTRATIVE OPERATIONS DIVISION CONTRACTING/ PROCUREMENT X	1,3	12	14	15	17	17	17	42	O	1111	1236	1236	2360	2360	8988	709
									L							
		158.1	194.5	219.4	265.5	294.1	311.7		S							
									W							
ADMINISTRATIVE OPERATIONS DIVISION FACILITIES MGMT/ OPERATIONS SUPPORT X	1,3	12	13	14	20	23	27	125	O	617	617	617	2552	2552	3067	397
									L							
		158.1	178.3	199.7	314.6	373.9	426.5		S							
									W	2963	2963	2963	25419	25419	26500	794
PERSONNEL DIVISION X	2,3	25	25	25	29	29	33	32	O	3827	3827	3827	6792	6792	8305	117
									L							
		370.9	428.0	453.0	512.0	542.0	575.0		S							
									W							
GENERAL COUNSEL X	1,2,3	5	7	9	11	11	14	180	O	741	741	741	2251	2251	2979	302
									L							
		112.0	184.0	170.0	195.0	227.0	249.0		S							
									W							
VISITOR/MANAGEMENT INFORMATION N	1	0	0	0	0	2	2	-	O	0	0	0	0	450	2400	-
									L							
		-	-	-	-	30	70		S							
									W							
TOTALS EXCLUSIVE OF VISITOR CENTER		83	89	93	108	111	126	52	D	10284	10430	10430	18279	18279	28967	182
									L							
		1396.5	1659.0	1780.0	2128.0	2367.0	2546.0		S							
									W	2963	2963	2963	25538	25538	26500	794
										13247					55467	319

APPENDIX A - (BUDGET/PERSONNEL/SPACE REQUIREMENTS)

SCIENTIFIC PUBLICATIONS EDS LIBRARY EMPLOYEE SERVICES	(2) Justification	(3) Personnel/Budget; FY76-FY81						% Change Personnel Only	(4) Space by type; by FY							% Change
		76	77	78	79	80	81			76	77	78	79	80	81	
SCIENTIFIC PUBLICATIONS	3	11	12	12	13	14	15	36	O	3000	3000	3000	2655	2655	2900	-3
									L							
									S							
		470.3	470.3	517.3	580.7	650.4	727.1		W	745	745	745	0	0	0	-
EDS LIBRARY	1 & 3	0	0	0	0	0	3	-	O	0	0	0	0	0	8960	-
									L							
									S							
		0	0	0	0	0	104.3		W							
EMPLOYEE SERVICES	1	0	0	0	0	0	12	-	O	0	0	0	0	0	11620	-
									L							
									S							
		0	0	0	0	0	-		W							
									O							
									L							
									S							
									W							
									O							
									L							
									S							
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									S							
									W							

APPENDIX B ECONOMIC ANALYSIS

1. SUMMARY

The Payback Illustration included as part of this analysis indicates the advantage of the Federal purchase alternative in meeting NOAA's requirement for facilities at Sand Point. Payback in Fiscal Year 1993, 17 years after commencement of the project and 11 years after its completion, indicates that the construction by NOAA of the required facilities is extremely desirable.

2. INTRODUCTION

a. Applicable Guidelines

This economic analysis has been performed in accordance with Office of Management and Budget Circular No. A-104, dated June 14, 1972.

b. Basis of Analysis

(1) All economic costs incurred as a result of Federal lease or acquisition of land and improvements at Sand Point have been considered in this analysis. Where costs occur in either the lease or purchase alternatives, they have been included. Where equal costs should be assigned to both lease and purchase alternatives, they have been excluded.

(2) All costs shown in the purchase cost calculations and lease cost calculations have been estimated in constant 1976 dollars. No inflation has been built into any of the costs shown.

(3) The acquisition alternatives have been compared on the basis of the expected stable program use period for Sand Point.

(4) The decision to build or lease facilities at Sand Point has been made on the basis of the present values of alternative lease and purchase cost projections.

c. Exceptions to Guidelines

OMB Circular No. A-104 has been rigorously complied with. One of the three required cost projection alternatives, however, has not been examined. The lease-purchase (or purchase-contract) alternative has been

APPENDIX B - (Economic Analysis)

intentionally excluded. Neither NOAA nor GSA have lease-purchase authority at this time. For the purposes of this economic analysis, NOAA intended to examine the lease-purchase alternative despite lacking authority to execute this alternative. NOAA was advised by GSA that arrangements for lease-purchase are far from standard and that this alternative, for a project of the magnitude of Sand Point, could only be examined through actual negotiations with a developer. Since the construction alternative appears to be considerably more attractive than the lease alternative, it is doubtful that a lease-purchase alternative would result in any significant difference in payback period.

3. Assumptions

a. Period of Analysis

NOAA anticipates continuing program use of the Sand Point Facilities for at least 30 years. This analysis assumes a long-term lease, periodically renewed at the last constant dollar payment. It should be noted from the payback illustration, which plots total present value against fiscal year for both the lease and purchase alternatives, that a lesser period, say 20 years, would not affect the conclusion that the lease alternative has a higher present value than the purchase alternative.

b. Discount Rate

In accordance with Section 4.f. of OMB Circular No. A-104, a 7% discount rate has been applied to all cost projections to determine present value.

c. Schedule of Construction and Start of Lease Payments

Construction expenditures and the start of lease payments have been assumed to occur on schedules as close to reality as possible. Construction costs are shown as occuring in the actual year that obligation is anticipated. Lease payments start on a schedule consistent with the actual value, in constant dollars, of work in place.

d. Exclusion of Certain Costs

In accordance with Section 6 of OMB Circular No. A-104, the costs for repair and improvement, operation and

APPENDIX B - Economic Analysis

maintenance, property taxes, and insurance premiums have been excluded from both of the alternative cost projections since they are estimated to be the same for each alternative.

4. Federal Purchase Alternative

a. Computation of Imputed Cost of Property

To determine the imputed costs of NOAA's Sand Point property, the actual land value at the time of transfer was determined by GSA. GSA's estimate was based on the highest and best use value which assumes residential use. The value of the land at the time of transfer was then reduced by the amount of money a developer would have to expend for demolitions and other site improvements in order to sell for use as residential property. The result was GSA's estimate of the fair market value of the property in December 1974. For purposes of this analysis, the 1974 value of the property was inflated at 8% per year to bring the imputed cost of the property into Fiscal Year 1976 dollars, the constant dollars used throughout this analysis. The computation of imputed cost of the property is shown below:

Imputed Cost of Property	$ (Millions)	
Actual Land Value at Time of Transfer	3.70	
Less GSA Estimated Demolition & Site Improvement Costs for Sale for Residential Use	0.95	
GSA Estimated Fair Market Value of Property (rounded)	2.70	
Inflated to BOY FY 76 (8%)		3.15

b. Computation of 1976 Dollar Construction Costs

Although 1976 dollar costs of construction are used throughout the Project Development Plan as the basis for estimating, the conversion of current dollar costs of construction to constant 1976 dollar cost of construction

APPENDIX B - Economic Analysis

is shown below. Since a specific escalation factor of 8% was used in constructing the current year funding requirements shown in the Property Development Plan, it is more appropriate to de-escalate by 8% than to use the deflation method shown in Attachment A to OMB Circular No. A-104.

Fiscal Year	Current $ Cost	De-Escalation to FY 76	1976 Constant $ Cost
1976	1.000	1.00000	1.000
1977	0.970	0.92593	0.900
1978	15.479	0.85734	13.271
1979	15.464	0.79383	12.276
1980	17.441	0.73503	12.820
1981	17.220	0.68058	11.720
1982	16.268	0.63017	10.252
Total	83.842		62.239*

c. Computation of Residual Value

The computation of residual value of the site and improvements is shown below. It should be noted that, for consistency, the 30-year period of analysis commences in Fiscal Year 1977. Since construction will not be completed until Fiscal Year 1982, decay and obsolescence will be greater, and the residual value of construction will be less than the amount indicated by the guidelines. The actual computation follows:

* Period of Analysis is 30 years

* From Attachment B, OMB Circular A-104:

  - Building Decay-Obsolescence Factor for 30 years is 0.59787

  - Site Appreciation Factor is 1.5638

* This is constant dollar reduction to 1976. Figure in Par. 4a. is Construction Estimate.

APPENDIX B - Economic Analysis

1976 Dollar Cost of Construction Including Design & Management Costs	=	$62.24M
	X	.59787
Residual Value of Construction	=	$37.21M
1976 Dollar Value of Site	=	$ 3.15M
Residual Value of Site	=	$ 4.926M
Total Residual Value	=	$42.14M

d. Discussion of Present Value

After applying the 7% discount factor to the constant dollar construction costs and adding the imputed property cost, the total present value of the construction alternative increases rapidly to the end of construction, but afterward remains at the same level for the useful life of the project. At the end of the period of analysis, the present value is reduced by the present value of the residual value of the site and improvements. As discussed above, repair and improvement costs, repair and maintenance costs, property taxes, and insurance premiums have not been included in the purchase cost calculations since they are identical when considering the lease cost alternative. As shown in the table of Present Value Purchase Cost Calculations, the total present value for the Federal purchase alternative, calculated at 7%, after 30 years, is $45.96M.

5. LEASE ALTERNATIVE

a. Computation of Developer's Capital Recovery Annual Payments

In order to establish a reasonable stream of lease payments, NOAA contacted developers in the Seattle area to obtain information regarding the method used by developers to compute required annual lease payments. The method described in the paragraph below reflects the findings of NOAA's economic analysis for this issue. A developer will compute the annual payments in the following manner:

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

APPENDIX B Economic Analysis

(1) To the current long-term interest rate, the rate a developer must pay for his financing, add two percentage points for the developer's overhead and profit. Divide this sum by 100 and multiply by the total amount of capital required for the project, yielding the annual payment for capital recovery. To the annual payment for capital recovery, add the annual amounts for taxes, maintenance and operations, insurance, etc.

(2) For the purposes of this analysis, repair and improvements costs, operation and maintenance costs, property taxes, and insurance premiums, associated with the lease alternative, have been exclused since they are identical in the Federal purchase alternative. Therefore, the only cost reflected in the present value lease-cost calculations is the capital recovery payment to the developer. Standard practice indictes that the capital recovery payment, computed by the above method, would be renegotiated between the developer and GSA after five years; therefore, the 1976 dollar value of the payments have been considered to be constant dollars. Any other approach would require inflation of the amounts indicated in five year increments, with subsequent deflation as indicated in Circular No. A-104.

(3) The computation of the Developer's Capital Recovery Annual Payments is shown below. For the Fiscal Year 1976 through 1982, the annual payments have been computed as a percentage of the annual payment after completion of construction, based on the amount of work in place at the start of the indicated fiscal year. This is a reasonable approach since developers view buildings and improvements as individual cost centers which are developed incrementaly. As the cost centers are completed, the developers will obtain incremental funding for the next phase of the contruction project.

Computation of Developer's Capital Recovery Annual Payments

Current Long-Term Interest Rate	9.5%
Developer's Overhead & Profit	2.0
Total	11.5%
Total Capital for Project in 1976 Dollars:	
Construction	62.24M
Property	3.15
Total Capital	65.39M
Annual capital Recovery Payments	7.52M

$\frac{11.5}{100} \times (65.39) = 7.52M$

APPENDIX B Economic Analysis

Col.(1) Fiscal Year	Col.(2) Work in Place Start FY	Col.(3) Annual Payment
1976	3.15	0.36
1977	4.15	0.48
1978	5.05	0.58
1979	18.32	2.11
1980	30.60	3.52
1981	43.42	4.99
1982	55.14	6.34
1983	65.39	7.52
2012	65.39	7.52

*Computed as follows: $\frac{7.52 \text{ (Col.(2))}}{65.39}$

b. Discussions of Present Value

The stream of payments associated with the lease of facilites at Sand Point for NOAA builds incrementally through construction to a constant value annual payment of 7.52M. The total present value of this stream of payments commences at zero, builds to the end point of construction, and continues to build through the useful life of the facility. In fact, the total present value of the stream of lease payments continued to increase beyond the period of this analysis. The sum of the present value of capital recovery payments, i.e., lease payments, after 30 years, figured at 7%, is $70.98 million.

Appendix B Economic Analysis

PRESENT VALUE LEASE COST CALCUALTIONS

(WESTERN REGIONAL CENTER, SAND POINT, SEATTLE, WA.)

($ millions)

FY	Year No.	Constant $ Capital Recovery Payments	7% Discount Factor	Present Value Capital Payments
1976	0	0.36	1.000	0.36
77	1	0.48	.935	0.45
78	2	0.58	.873	0.51
79	3	2.11	.816	1.72
1980	4	3.52	.763	2.69
81	5	4.99	.713	3.56
82	6	6.34	.666	4.22
83	7	7.52	.623	4.68
84	8		.582	4.38
85	9		.544	4.09
86	10		.508	3.82
87	11		.475	3.57
88	12		.444	3.34
89	13		.415	3.12
1990	14		.388	2.92
91	15		.362	2.72
92	16		.339	2.55
93	17		.317	2.38
94	18		.296	2.23
95	19		.277	2.08
96	20		.258	1.94
97	21		.242	1.82
98	22		.226	1.70
99	23		.211	1.59
2000	24		.197	1.48
01	25		.184	1.38
02	26		.172	1.29
03	27		.161	1.21
04	28		.150	1.13
05	29		.141	1.06
2006	30	7.52	.131	0.99
			TOTAL	70.98

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

APPENDIX B - (Economic Analysis)

PRESENT VALUE PURCHASE COST CALCULATIONS
(in millions)
WESTERN REGIONAL CENTER, SAND POINT, SEATTLE, WA.

		CONSTANT DOLLARS			PRESENT VALUE				
Fiscal Year	Year No.	Imputed Property Cost	Constr. Costs	Residual Value @ End 30 Years	7% Discount Factor	Imputed Property Cost	Constr. Costs	Residual Value @ End 30 Years	Total Present Value
1976	0	3.15	1.00		1.000	3.15	1.00		4.15
77	1		0.90		.935		0.84		0.84
78	2		13.27		.873		11.58		11.58
79	3		12.28		.816		10.02		10.02
80	4		12.82		.763		9.78		9.78
81	5		11.72		.713		8.36		8.36
1982	6		10.25		.666		6.83		6.83
n									
n+1									
n+2									
n+...									
2006	30			(42.14)	.131			(5.52)	(5.52)
					TOTAL PRESENT VALUE	3.15	48.41	5.52	46.04

APPENDIX B - (Economic Analysis)

PRESENT VALUE COST SUMMARIES FOR ALTERNATIVE METHODS OF ACQUISITION
(in millions)
WESTERN REGIONAL CENTER, SAND POINT, SEATTLE, WA.

Item	30 years; 7%
PURCHASE:*	
Site	3.15
Improvements	48.41
Subtotal	51.56
Less residual value	5.52
Total ...	46.04
LEASE:*	
Capital recovery payments to developer	70.98
LEASE - PURCHASE (or PURCHASE - CONTRACT)**	

*Operation and maintenance costs are borne by the Government and are assumed to be identical for all three acquisition methods. Therefore, they are omitted in this comparison. Imputed insurance premiums are estimated to be negligible relative to other costs and therefore omitted.

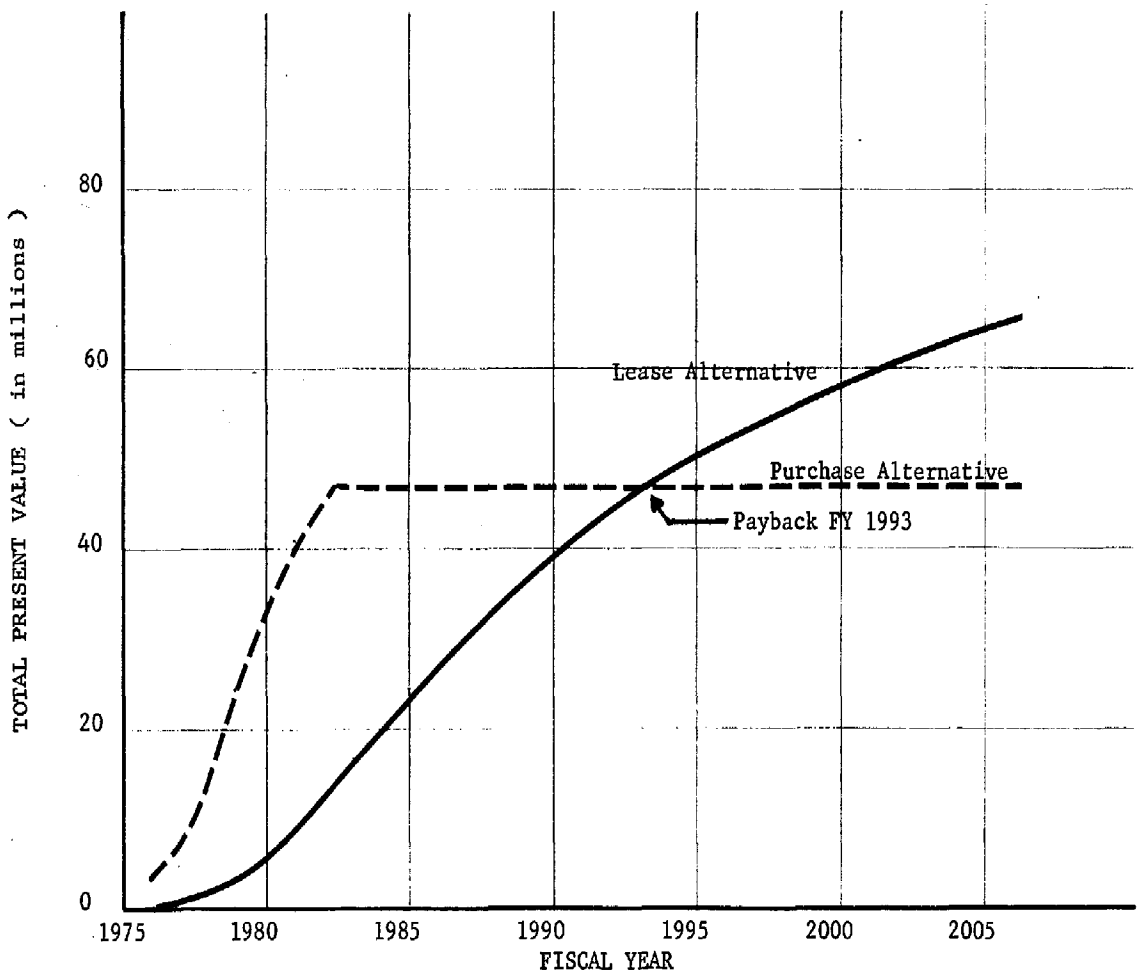
**Omitted (See par:2.C)

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5 B000/FJ 1101	WESTERN REGIONAL CENTER

Appendix B-(Economic Analysis)

PRESENT VALUE PAYBACK PERIOD FOR LEASE VS. CONSTRUCTION
NOAA WESTERN REGIONAL CENTER, SAND POINT, SEATTLE, WASH.



APPENDIX C - TRAINING LOCATION ANALYSIS

1. Justification

As the only major element of the Sand Point facility not already located in Seattle, the Education Building deserves particular justification. NOAA has a large and growing need for specialized training directly related to its mission. This training ranges from highly technical electronics maintenance of NOAA specialized equipment to Equal Employment training related to NOAA Affirmative Action Plans. Such a broad program of training requires a facility in close proximity to a wide range of NOAA operations and near a university with oceanic and atmospheric science departments. No such facility exists in NOAA today, but its need is apparent to NOAA management and Sand Point is believed to be the ideal location. The Kansas City Technical Training Center can provide a nucleus, but the Western Regional Center hass the potential to be more inclusive.

The size and location of the Education Building was determined on the basis of: (a) current and future requirements, (b) examination of alternatives avialable consistent with NOAA's mission and management philosophy and (c) programmatic considerations. Even though the major considerations have been programmatic, there also exists a clear economic basis for location of the NOAA Training Center at Sand Point. For example, if the Kansas City Technical Training Center, is not moved to Seattle, four (4) to six (6) instructors will have to be hired for Sand Point technical training and considerable duplicate equipment will have to be purchased. The cost of such duplication has been estimated at $400K (projecting a need for five instructors, GS-11, $100K for equipment and duplicate space, training facilities, library materials, and other similar resources.

Travel costs involved in transporting students to and from a Seattle training site have been studied extensively. Superficially, it appears that it would be more expensive to transport students to a location on the west coast. Seattle is the largest concentration of employees outside the Washington, D.C. area. NOAA has extensive operations in the Pacific and Alaska and has employees scattered throughout the contiguous United States. Other concentrations can be found in Boulder, Colorado, and Miami, Florida. More NOAA employees are trained in Seattle than Kansas City. Considering the distribution of the trainees, it is NOAA's conclusion that the aggregate cost of transportation is little effected by the location of the training site.

The prime economic consideration regarding location of NOAA training is to find a site contiguous with many operating elements so that the trainees will be able to study in a working environment close to actural operating problems of the NOAA ships and laboratories. Sand Point offers such an enviroment. There is actual known location in the United States which meets this requirement.

Appendix C (Training Location Analysis)

2. Location Analysis

a. Current and Future Requirements: The following presents an analysis of site alternatives based on future requirements and other evaluation criteria. A student population projection is shown in the following table, based upon NOAA training data extrapolated through 1982.

TRAINING REQUIREMENTS
(Nos. of Personnel)

Location	Escalation Factor 1/	FISCAL YEAR 75	76	77	78	79	80	81	82
Wash. D.C. Area	4%	5152	5338	5500	5720	5950	6180	6430	6690
Kansas City	14%	725	935	1011	1133	1290	1470	1680	1900
Seattle	17%	1301	1576	1850	2170	2530	2960	3470	4060
TOTAL NOAA 2/	12%	8075	9140	10200	11400	12700	1420	15900	17800

1/ Escalation factor based on historical data.

2/ Other NOAA includes the aggregate of all other training requests.

b. Analysis of Alternatives:

Possible alternatives to expanding training requirements are:

(1) Expand existing Kansas City Facility.

(2) Relocate and remain in Kansas City.

(3) Relocate to some other facility.

Appendix C (Training Location Analysis)

The existing faciliy in Kansas City is inadequate and increasingly uneconomic to maintain, GSA has scheduled it for demolition in the 1980 time frame. This eliminates alternative 1 and 2 as long term considerations. The clear need for an educational facility shown in the table on requirements indicates that some other facility be procurred. NOAA has considered primarily from programmatic reasons that such a facility could best be located in one of the following locations:

a. Washington D.C. Area

b. Seattle

c. Kansas City

These locations were evaluated by assigning ratings based on six (6) equally weighted location factors:

1. Ratio to location to total future requirements. Scored as: $\frac{\text{FY 82 Requirements at Location x 10}}{\text{FY 82 Total NOAA Requirements}}$

Kansas City $= \frac{19000}{17800} = 1.1$

Washington D.C. $= \frac{66900}{17800} = 3.8$

Seattle $= \frac{40600}{17800} = 2.3$

2. Colocation with major line components (Scale 1 to 10).
3. Access to ships and ship support facilities. (Scale 1 to 10).
4. Ability to provide training for all NOAA fields of activity (Major Programmatic Factor) (Scale 1 to 10).
5. Access to major university with major atmospheric programs (Scale 1 to 10, see matrix).
6. Access to major university with major oceanic programs (Scale 1 to 10, see matrix).
7. Ability to expand to meet needs beyond FY 82 (Scale 1 to 10).

Appendix C - (Training Location Analysis)

ANALYSIS OF ALTERNATIVE LOCATION
(Location Factors)

Location	1	2	3	4	5	6	7	Total
Kansas City	1.1	2	0	3	1	0	2	9.1
Washington, D.C.	3.8	9	3	7	3	4	10	39.8
Seattle	2.3	8	10	10	6	6	10	52.3

Based on the location considerations the Seattle area is six (6) times more favorable than Kansas City and significantly more favorable than second choice, the Washington, D.C. area.

3. Curriculum Considerations

It is planned that the new NOAA Education Center at Sand Point will support the training needs of NOAA in the following areas.

a. Ocean Trades Training

This training is for vessel employees and technicians, including courses for electronic technicians, surveying technicians and yeomen is planned for the Sand Point facility. This training has not been accomplished effectively and must be done. It will utilize many of the same sort of resources now available in Kansas City, but will also utilize NOAA vessels while in port at Sand Point. This is not possible with existing training facilities.

b. Electronic Support Program:

Two categories of training required. First, there is need for generalized electronic training for all technicians. First year requirements envision a 4-week course based on the current "Fundamentals of Linear Circuits and Digital Logic" course. This course would be expanded to include the required prerequisites needed by NOAA technicians in order to satisfactorily absorb the course material. Presentation of this 4-week course eight times a year with a student load of 8 to 12 attendees (4 to 6 from each coast). This would require the equivalent of one instructor full time to present the course. Only general purpose classrooms and equipment would be required for this category of training.

Appendix C - (Training Location Analysis)

Second, there is a need for specialist training on specific pieces of electronic equipment. These courses would last 2 weeks each and cover such equipment types for:

Communications
Navigation
Acoustics
Data Acquisition and Processing
Scientific Instrumentation (oceanographic survey, etc.)

. Under present conditions, equipment in use would have to be made available for such training. As an adjunct to these maintenance courses, operator-oriented courses of 1-week duration on these same systems are also required. (It now appears that many NOAA equipment maintenance problems may be user problems stemming from lack of knowledge of how to use the system and its operational limitations.) The equivalent of one instructor full time would also satisfy the man-hour requirements for these courses. In practice, different instuctors would have to be utilized as no one person could teach such a broad range of subjects.

It is planned that the preceeding courses will be given at least twice a year so that Electronics Technicians be scheduled into the courses during rotating work periods ashore. In addition, one of these two courses should be given in December or January of each year so that the Wage Marine Electronic Technicians could be scheduled to attend during the winter in-port period.

c. Marine Engineering Support:

NOAA anticipates four 1-week courses in ship stability and damage control, with eight to 10 attendees per course. These would require standard classroom space with no need for facility-provided training aids.

The Electronics Engineering Division of the National Ocean Survey has indicated a need for the following courses:

Electronics	-general theory
Radar	-general theory
Gyrocompass	-general theory
Communications	-for FCC License
Digital Logic	-general theory
Sound Propagation in Sea Water	-general theory
Transducer theory	-general theory

Appendix C - (Training Location Analysis)

The Pacific Marine Center requires facilities for generalized use with audio-visual systems. Training is needed in dismantling and rebuilding small diesel engines, outboard motors, and other launch equipment. NOAA Commissioned Officer and Wage Marine training course will occur generally during the winter in-port season (December thru February). Training will be held once each year, expected class size will vary from 6 to 30 students. General Schedule training courses will take place throughout the year.

d. Cartography and Survey:

Courses are required to demonstrate leveling procedures and a base line to operate electronic distance measuring equipment, a test loop will be established near the Education Building to provide NOAA officers training in combined geodetic operations.

The Cartography Course will present the theory of cartography with brief exposure to each phase such as photogrammetry, geodesy, gravity and basic compilation techniques. This is presently done by on the job training and is not the best approach.

4. Facility Requirement

Functional Space Requirements were developed in cooperation with GSA using GSA standards for facilities of this function, based on the student population analysis. Utilizing current experience at both Seattle and the Kansas City Technical Training Centr, the Education Building has been planned for a permanent staff of 59 and a total peak student population of 400, which represents 10% of the expected annual student population, including projected Seattle and Kansas City student population consolidation, plus an additional 5% for new programs.

NOAA's mission will also be served by use of the Education Center facilities to present national or international seminars or meetings to which prominent scientists are invited. The facility will accommodate meetings and conferences of 30 to 150 persons. This portion of the facility may also be made available to other public and private organizations for their use.

Approximately 1,000 square feet of space in the Education Building is designed to accommodate the information service center for that building. The recommended space will accommodate the materials and equipment necessary to provide service to the Education Building staff and trainees. The Education Building will be staffed by a combination of professional and technician personnel from present personnel.

A comprehensive library of NOAA products located at the NOAA Education Building is provided for use by the academic community.

APPENDIX D - Site Alternatives Analysis

1. NOAA New Facilities Policy

Since the creation of NOAA as a component within the Department of Commerce, it has been NOAA policy that geographically separated NOAA activities should be collocated wherever feasible. A high priority application of the policy is in Seattle where the second largest group of NOAA components in the nation is located. Presently, in Seattle, NOAA activities are situated at seven separate locations, of which six are leased; of which, none has the potential to allow the expansion expected in the coming years.

In 1971, when the decision was made to collocate NOAA facilities in Seattle, two considerations were given priority. First, it would be greatly beneficial to accomplishing NOAA operational objectives if all personnel could be accommodated in a single facility in a strongly favorable research atmosphere. Second, there would be considerable operating cost avoidance accruing at a consolidated facility. It was expected that in collocating facilities there would be cost avoidance in the following activities:

- Reduction of agency travel and vehicle use
- Reduction in records, files, and library duplications
- Reduction of local mailing costs
- Reduction of typing and clerical service requirements
- Reduction in duplication of specialized technical equipment
- Reduction in personnel time devoted to work coordination and task communication among various locations
- Reduction of lease and rent expenditures
- Prevention of further fragmentation and attendant costs

Appendix D - (Site Alternatives Analysis)

2. ALTERNATIVES FOR NOAA AND THE SAND POINT SITE

a. Site Alternatives for NOAA

(1) Project Site Alternatives

During 1970 and 1971, NOAA officials conducted several reconnaissance visits to potential sites in the Puget Sound region. With assistance from local government officials, representatives of the State's congressional delegation, and regional Federal agency officials, the following prospective sites were identified: Sand Point, Manchester, Lake Union, Duwamish, Piers 90 and 91, and Fort Worden. The Fort Worden site was subsequently rejected because of its extreme distance from the Seattle metropolitan area and the emerging certainty of substantial development there by the State Parks and Recreation Commission. In October 1972, NOAA formally applied for a portion of Sand Point, indicating a strong preference for the site over the remaining four choices.

In the rural Manchester site, adverse impacts would be high (See Table 2). The natural environment conditions, the social service and utility infra-structure, and housing stocks in that area are far from the capacity to accommodate easily the NOAA Center. Moreover, the likely development of a major portion of the Manchester site as a state park is of significant public value at a lesser overall environmental cost. In contrast, at the Sand Point, Lake Union, Duwamish and Piers 90 and 91 sites, adverse impacts would be relatively slight since the already urbanized context in which they are situated would accommodate the NOAA Center without extensive changes. Higher adverse impacts of a NOAA Center development and operation in the city appear in the peculiarly urban variables of economics, land use, and transportation conditions. An exception would be the short term adverse impact of pier construction which would be least at the Lake Union and Piers 90 and 91 sites where high amounts of dredging would not be required.

The NOAA Center would be a long term economic boon in terms of private income to the relatively undeveloped Manchester area, but it would displace some economically desirable activity at the urban sites. A NOAA Center at Piers 90 and 91 would prevent, in part, the utilization of the existing pier resource by deep draft marine commercial vessels. The Duwamish estuary is committed to commerce as well, though the specific site studied is federally owned, and is in use as a storge and vehicle garage facility. At Lake Union, a NOAA Center would affect commercial ship yard activities and a concrete products facility. Commercial significance of the Sand Point site is a potential but only for recreation-based businesses such as marinas, airports, and racetracks.

Appendix D - (Site Alternatives Analysis)

Land use conditions at the urban sites reflect Seattle's historical orientation of commerce toward water navigation resources. In general, Lake Union, the Duwamish estuary, and Piers 90 and 91 are all land to water and water to-land commercial transfer points. Sand Point and Lake Washington, in general, are further from Puget Sound, and have a low level of commercial land use despite the encouragement to commerce, of the ship canal. Thus, a NOAA Center at Lake Union, Duwamish, and Piers 90 and 91 would be in conflict with the existing and future commercial land uses near the sites.

The NOAA Center requires convenient access for employees, official visitors and vendors. Transportation conditions in terms of vehicle access to the center and the environmental consequences of this traffic become important. Among urban sites, Lake Union poses the most difficult traffic situation. Lake Union is banded with arterials, yet connections to freeways, to the University and to residential areas are cumbersome. Piers 90 and 91 are not convenient to freeways and residential areas, yet traffic congestion as a result of a NOAA development would probably not be especially noticeable. Similarly, the Duwamish area would probably absorb NOAA development traffic without noticeable adverse effect. Among the four urban sites, the NOAA Center would probably involve the most traffic change at the Lake Union site with the Sand Point, Piers 90-91 and Duwamish areas causing relatively modest change.

As represented in following table, adverse environmental consequences of the development of the NOAA Center at each of the sites is of two scales; a relatively high degree of adverse impact at Manchester, and much lower at the four urban sites. Moreover, the adverse consequences of NOAA development among the urban sites are not markedly differentiated; a comparison of the impacts does not establish clearly one site as more compelling than another, from an environmental perspective. Thus, since the four urban sites are generally equal in terms of probably adverse impacts from a NOAA development, a more useful evaluation of the sites emerges from an examination of the effectiveness of each site in terms of NOAA's requirements.

(2) Site Evaluations

As a test of the objectivity of selection of the Sand Point site and to update site information, NOAA commissioned a comparative site study. The following table lists the site evaluation criteria and the effectiveness assessments developed in the site study. Each site was rated on a scale of one to ten for each criterion as shown in the upper right-hand corner.

Appendix D - (Site Alternatives Analysis)

The following table, expresses the paired comparisons in matrix format. The horizontal sum of of the numbers asssigned to each criterion represent the aggregate importance or utility of the criterion. To improve the ease of interpretation of the results, the amounts have been proportionately reduced so their sum is 100, instead of 910. The last column in contains the utility value for each criterion. The utility value becomes, in effect, a multiplier in the overall effectiveness of a particular site rating. For example, NOAA values Site Environmental Amenity (10.220) and Environmental Resource Utilization (9.431) relatively high, while Vessel Accessibility (2.967) and Utilities Availability (3.187) are valued relatively low.

Relative development costs for each site were calculated (see Table 5). Estimates were based on a study conducted for NOAA in 1972 by the firm of Naramore, Bain, Brady and Johanson.

Total utility values were obtained by multiplying the utility values by the effectiveness value matrix. Finally the total utility values were divided by the relative site development costs to obtain the utility-to-cost ratios. A computer was used to perform all computations. The results are shown in Table 6.

The results show that the Sand Point site has the highest utility, and it is the most efficient in terms of utility to cost. As a test of the sensivity of the results, the consultant conducted two additional tests. In the first test, all effectiveness values were held constant while the utility values were modified to reflect a much more conservative estimate of the relative importance of each criterion (high weights were reduced; low weights were increased). In the second test, utility values were held constant and four key evaluation criteria were altered. Neither of these tests significantly changed the Total Utility or Utility-to-Cost Ratio ranking of the sites. In the Comparative Site Study, Sand Point proved to be superior to any other site alternative. The study concluded; "(1) In terms of total site utility, the Sand Point location exhibits the highest value-(21% above the second highest); (2) In terms of utility-to-cost ratio, Sand Point represented the best alternative; (3) Sensitivity tests indicate that small variations in utility and effectiveness values do not substantially affect the site ranking results."

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
October 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

TABLE 3. Site Alternatives and Effectiveness Assessments

EFFECTIVENESS CRITERIA	SAND POINT	MANCHESTER	LAKE UNION	DUWAMISH	PIERS 90-91
1. Proximity to Univ. of Wash. (Travel times from U.W.)	9 10 minutes	4 120 minutes	9 10 minutes	7 30 minutes	7 30 minutes
2. Site Features (Physical attributes of the site)	8 PRO Flat; no fill; easy drainage; land stability CON Remove runways; poor bearing soil; piling required; high degree of landscaping required; dredging required	9 PRO No demolition; good bearing soil; excellent landscaping potential CON Hilly topography; cut & fill needed; long piers required; scattered buildings required; shoreline dredging	6 PRO Flat surface; fair existing piers CON Narrow land shape; bisected site; tall buildings needed; pile foundations; pier space inadequate; landscaping problem	5 PRO Flat surface; minimal dredging CON Pavement removed; piling required; poor drainage; soil stability problem; landscaping problem	6 PRO Existing piers; flat surface; no foundation problems; no dredging CON Building demolition; extensive pier & pile repairs; asphalt removal; landscaping problem
3. Moorage Space (3,000 linear feet of vessel moorage required)	9 PRO Space adequate; wind protection adequate; easy access from buildings to piers CON High demand shoreline	9 PRO Some wind protection CON Limited space for moorage; poor access from buildings to piers	6 PRO Wind protection good CON Limited space; poor access from buildings to pier	7 PRO Wind protection good CON Limited space; poor access from buildings to piers	7 PRO Adequate space CON Piers too high; no wind protection; poor access from buildings to piers
4. Water Type (Fresh water is the most cost effective)	10 Fresh water	7 Salt water	10 Fresh water	8 Brackish water	7 Salt water
5. Spatial Characteristics (On-shore building space and topography)	10 Easy expansion; ample space	8 Some difficulty in expansion; scattered building sites	5 Split parcels; insufficient space	9 Poor expansion potential	8 Poor shape for development; difficult expansion problems
6. Overall Environmental Amenity (Visual and sonic attributes of the site and vicinity)	9 Scenic views; desirable residential context	10 Rural atmosphere; attractive scenery	6 Freeway nearby; partial residential context; industrial atmosphere	5 Railroad and freeway adjacent; heavily industrialized atmosphere	5 Railroad nearby; some scenic views; industrial atmosphere
7. Personnel Amenity (Resources available to employees making NOAA an attractive employer)	9 Housing and services readily available	7 Outdoor recreation opportunities available; distant from commercial & cultural facilities; rural atmosphere	10 Easy access to largest variety of houses & services	8 Housing & commercial choices somewhat limited	9 Housing & services readily available
8. Housing (Housing choices for employees)	10 Little change from present employee circumstances	5 An expensive move required for nearly all employees	10 Little change from present employee circumstances	8 Some north end & east side employees would probably relocate	10 Little change from present employee circumstances
9. Transportation (Public transportation & private vehicle access availability)	9 Bus service, public service & facility services reasonably available	5 Public transportation service difficult; facility services difficult	9 Same as Sand Point	8 Railways, freeways, Duwamish river & distance from center of city are handicaps	9 Same as Sand Point
10. Utilities Availability (Water, sewage, storm drainage and electrical energy resources)	8 Previous Navy use established utility system resources which could be used if some adjustments are made	5 All utilities would have to be brought to the site	7 Adjustments & extensive upgrading required	7 Same as Lake Union	7 Same as Lake Union
11. Facilities Services (Fire protection, library, technical services, ship provisioning & ship repair & maintenance services)	10 Necessary services easily available	6 Services largely remote or absent from the vicinity of site	10 Same as Sand Point	8 Out of the usual pattern of needed services delivery	9 Somewhat out of the pattern of needed services delivery
12. Vessel Accessibility (Time & ease of vessel movement from Puget Sound)	5 Transit involves locks, four bridges & some contact with other waterway traffic	10 Minimum time; no obstruction	7 Transit involves locks, two bridges & contact with other waterway traffic	8 One bridge & other waterway traffic involved	10 Minimum: time; no obstructions
13. Site Availability (Land cost & ease of land consolidation)	10 City favors NOAA use of the site; congressional legislation mandates NOAA use	7 State plans major park development on the site in the next biennium; small portion used by State & Federal agencies	5 Except for present NOAA ship base, site is fully utilized by Navy Reserve, commercial activities & City of Seattle. Users would have to be relocated & land purchased.	8 Most of the site near river is used by Federal agencies (including NOAA). Some private land purchase might be required.	7 Piers & backup space used by Port of Seattle. Port is negotiating acquisition of available portions.
14. Environmental Resource Utilization (Least adverse primary or secondary environmental impact & State & local policies & priorities regarding environmental quality.)	9 NOAA use would upgrade present circumstances & become a valued community & park feature. Minimum adverse effects.	6 Proposed park probably of more environmental value than NOAA use which is of an urban character. High adverse impact on surrounding community.	9 NOAA development would upgrade the facility; minimum adverse effect	9 Same as Lake Union	6 This site is best suited as a deepwater port; NOAA use would force such requirements to be met elsewhere, thereby encouraging development of port facilities in river estuaries. High adverse impact.

Appendix D - (Site Alternatives Analysis)

(3) Split Site Alternatives

Consideration was given to the possibility of consolidating NOAA facilities on two sites, such as building new shore facilities at Sand Point and establishing ship berthing facilities at other locations on Lake Union, Salmon Bay (near Ballard) or in the Duwamish. From the standpoint of vessel moorage and operation alone, a Salmon bay site would be the most attractive, followed by Lake Union, Duwamish, and Sand Point. This finding follows from the fact that the closer the vessel base to Elliott Bay, the more attractive the site.

Separate moorage facilities would offer no particular environmental advantage from the standpoint of consequences of construction activity. Also of importance to NOAA, separating vessel moorage from shore-based facilities at Sand Point seriously erodes the operational effectiveness of the NOAA facility consolidation effort. Nearly half of NOAA's personnel are vessel-based or vessel related in work assignments. Close proximity of shore-based and ship-based employees is essential to the effectiveness of a consolidated NOAA Center.

In addition, consideration was given to splitting vessel moorage between Sand Point and other fresh water sites on Lake Union, Salmon Bay and Duwamish. This approach yielded no more attractive alternative, in terms of vessel operation utility, than separating all vessel moorage from shore-based facilities at Sand Point.

The study concluded that vessel moorage at a Salmon Bay site or a Lake Union site would have a higher utility than at Sand Point when considered only in terms of vessel moorage and vessel operation criteria. The Sand Point site offers a more attractive utility to cost ratio than any other site.

(4) No-Project Alternative

Were the Sand Point site unavailable, NOAA would abandon the facility consolidation project and attempt to continue on a leased facility strategy. This alternative would restrict NOAA activities to limited additional leased space choices for accommodating anticipated growth. Additional new space to augment present facilities would expand the serious operational handicaps resulting from dispersed, inappropriate, and inadequate facilities.

Appendix D - (Site Alternatives Analysis)

3. ALTERNATIVE USES OF THE SITE

No Action

The no-action alternative could occur if NOAA were to abandon plans for the development, or if federal funds for the planned development were withheld. The site would then remain unused and in its present condition as a part of the former Naval air facility. In the normal course of federal property management, the NOAA site would be declared excess and disposal to another user would take place. It is probably not in the public interest for such valuable urban public property to remain removed from appropriate public or private uses; moreover, there is no natural environmental value which would compel preserving the existing condition of the site.

Appendix D - (Site Alternatives Analysis)

Comparison of Adverse Environmental Impacts Among Site Alternatives for the NOAA Center

ENVIRONMENTAL PARAMETERS	SAND POINT	MANCHESTER	LAKE UNION	DUWAMISH	PIERS 90 & 91
Natural Conditions					
Air Quality	L	H	L	L	L
Climate	NO.....CHANGE.....AT ANY.....SITE.....				
Water Quality	NO.....CHANGE.....AT ANY.....SITE.....				
Soil	NO.....CHANGE.....AT ANY.....SITE.....				
Vegetation and Wildlife	L	H	L	L	L
Aquatic Biota	M	M	L	L-M	L
Sonic Quality	L	H	L	L	L
Public Utility Resources	L	H	L	L	L
Social Conditions					
Residential Density and Population	L	H	L	L	L
Social Service Resources	L	H	L	L	L
Economic Conditions	L	H	L-M	M	H
Visual Conditions	L	H	M	L	L
Land Use Conditions	L	H	M	L-M	M
Transportation Conditions	L	H	M	L	L
Historical and Archeological Resources	NO.....CHANGE.....AT ANY.....SITE.....				

L = Lowest amount of adverse change; M = Moderate; H = High

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Appendix D - (Site Alternatives Analysis)

Comparative Site Development Costs

TYPE OF COST	SAND POINT	MANCHESTER	LAKE UNION	DUWAMISH	PIERS 90-91
Site Development	$ 6,942,000	$ 7,922,999	$ 3,500,000	$ 6,409,000	$ 5,872,000
Utilities	898,000	1,286,000	1,078,000	1,078,000	1,168,000
Buildings	11,432,000	12,581,000	12,500,000	12,581,000	12,000,000
Internal Roads		390,000			
Renovation	180,000		200,000		200,000
Contractor OH & P	3,891,000	4,435,000	3,455,000	4,013,000	3,848,000
Contingency	583,000	665,000	518,000	602,000	577,000
Land Acquisition		250,000	2,600,000		
Phase II	2,992,000	2,992,000	3,590,000	2,992,000	2,992,000
Total Costs					
1972 Prices	$26,924,000	$30,521,000	$24,841,000	$27,675,000	$26,657,000
1976 Prices	$37,693,000	$42,729,000	$34,777,000	$38,745,000	$37,319,000

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
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EFFECTIVENESS CRITERIA*	1. Institutional Proximity	2. Site Features	3. Moorage Space	4. Water Type	5. Spatial Characteristics	6. Environmental Amenity	7. Personnel Amenity	8. Housing	9. Transportation	10. Utilities Availability	11. Facility Services	12. Vessel Accessibility	13. Site Availability	14. Environmental Resource Utilization	SUM	UTILITY VALUES
1. Institutional Proximity		6/4	7/3	5/5	5/5	5/5	2/8	3/7	2/8	1/9	3/7	1/9	4/6	5/5	81	8.901
2. Site Features	4/6		5/5	6/4	7/3	6/4	5/5	3/7	2/8	1/9	3/7	2/8	4/6	7/3	75	8.242
3. Moorage Space	3/7	5/5		3/7	4/6	5/5	3/7	4/6	3/7	2/8	4/6	1/9	3/7	5/5	85	9.341
4. Water Type	5/5	4/6	7/3		8/2	4/6	2/8	1/9	5/5	3/7	2/8	0/10	3/7	5/5	81	8.901
5. Spatial Characteristics	5/5	3/7	6/4	2/8		5/5	3/7	2/8	3/7	0/10	4/6	0/10	4/6	5/5	88	9.670
6. Environmental Amenity	5/5	4/6	5/5	5/4	5/5		1/9	2/8	2/8	0/10	1/9	0/10	3/7	3/7	93	10.220
7. Personnel Amenity	8/2	5/5	7/3	8/2	7/3	9/1		6/4	4/6	3/7	7/3	3/7	5/5	8/2	50	5.495
8. Housing	7/3	7/3	6/4	9/1	8/2	8/2	4/6		5/5	4/6	7/3	6/4	7/3	9/1	43	4.725
9. Transportation	8/2	8/2	7/3	5/5	7/3	8/2	6/4	5/5		4/6	7/3	4/6	8/2	8/2	45	4.945
10. Utilities Availability	9/1	9/1	8/2	7/3	10/0	10/0	7/3	6/4	6/4		8/2	4/6	8/2	9/1	29	3.187
11. Facility Services	7/3	7/3	6/4	8/2	6/4	9/1	3/7	3/7	3/7	2/8		3/7	7/3	6/4	60	6.593
12. Vessel Accessibility	9/1	8/2	9/1	10/0	10/0	10/0	7/3	4/6	6/4	6/4	7/3		8/2	9/1	27	2.967
13. Site Availability	6/4	6/4	7/3	7/3	6/4	7/3	5/5	3/7	2/8	2/8	3/7	2/8		6/4	68	7.472
14. Environmental Resource Utilization	5/5	3/7	5/5	5/5	5/5	7/3	2/8	1/9	2/8	1/9	4/6	1/9	4/6		85	9.341
														Totals	910	100.00

*See Table 3 for definitions of Effectiveness Criteria

Appendix D - (Site Alternatives Analysis)

Site Utility and Utility-to-Cost Ratio

SITE	TOTAL UTILITY VALUE	UTILITY-TO-COST RATIO
Sand Point	234.49	6.22
Manchester	184.72	4.32
Lake Union	196.71	5.66
Duwamish	192.33	4.96
Piers 90 and 91	191.73	5.14

Appendix D - (Site Alternatives Analysis)

Separate Moorage Site Utility and Utility to Cost Ratio

Vessel Moorage Alternative	TOTAL UTILITY VALUE		UTILITY TO COST RATIO
Sand Point	603.3		100.55
Lake Union	705.5	7	70.55
Salmon Bay	743.4	6	67.58
Duwamish	614.8	7	76.85
Sand Point and Lake Union	601.1	6	66.79
Sand Point and Salmon Bay	572.8	5	57.28
Sand Point and Duwamish	465.4	5	51.71

Appendix E SEATTLE ORGANIZATIONS AND OPERATIONS

A. Background

With this consolidation and new dimension of activity as an agency, NOAA's components became the nation's major resource to: (1) explore, map or chart the global oceans, their geological formations and geophysical forces, and their mineral and living resources; (2) extend our understanding of critical processes in the atmosphere, the oceans, and in space; (3) warn of impending environmental hazards, such as hurricanes, floods, tsunamis, and tornadoes; (4) monitor, predict and document the gradual and continual changes in climate, marine life distributions, tides and other processes on earth and in space; and (5) restore, maintain, enhance, conserve, and utilize - in a rational manner - the fishery resources of importance to the United States.

Recent national legislation also commits NOAA components to a long-term program of marine environmental assessments, as well as to environmental monitoring of the recovery of the oceans mineral and food resources.

B. NOAA Research and Scientific Service Activities in the Seattle Area

1. Northwest Administrative Service Office:

- Provides procurement and contractual services for the Seattle area components.
- Maintains equipment and property.
- Provides personnel management, employee development, counseling and recruitment services.
- Gives financial management counseling to related agencies, processes financial data; and updates organizational costs in report printouts.
- Provides offices and assistance to the NOAA Office of the General Counsel so that the local field office can provide legal services for the component units.

2. National Weather Service, Weather Service Forecast Office:

- Provides Washington State weather forecasts and information, including severe weather warnings, special forecasts for forest fire control, crop frost protection and river forecasting.
- Maintains and services electronic weather instruments in the Northwest Region.
- Provides marine forecasts to assist commercial and recreational activity.
- Provides Puget Sound area air pollution potential forecasts.
- Gives forecasts to 11 Washington State air terminals for nine air routes across the State, and maintains service offices Seattle-Tocoma International Airport and the FAA Air Route Traffic Control Center at Auburn.

Appendix E - (Seattle Organizations and Operations)

3. Northwest Regional Office, National Marine Fisheries Service:

- Maintains the Columbia Fisheries Program Office at Portland, Oregon which (1) plans, administers and evaluates the construction and maintenance of hatcheries, fish screens and fishways; (2) helps restore and enhance runs of fish affected by dam construction; (3) studies the economic feasibility of fish production; (4) maintains and protects fish habitats affected by projects requiring Federal permits, water development projects and comprehensive basin planning; and (5) on a National level, formulates functional designs and reviews plans for fish passage and fish protection facilities.
- Conducts marketing programs to improve marketing practices, distribute educational material, supports and manages programs publishing commercial fisheries statistical information; and provides current regional fish marketing information.
- Provides a fishing vessel mortgage insurance program.
- Assists vessel owners in controversies with foreign countries under the Fisherman's Protective Act of 1967 and protect water and marine resources from foreign encroachment and enforces provisions of international fishery agreements.
- Administers a voluntary fish inspection program to improve quality and sanitary conditions in plants, grade fish products and approve fish package labels.

4. Northwest Fisheries Center, National Marine Fisheries Service:

- Administers parts of the Marine Mammal Protection Act of 1972 as it concerns whales, seals, sea-lions and porpoises.
- Administers the Pribilof Islands Management Program which provides for the utilization and conservation of the North Paciic fur seal resource, according to the terms of the Interim Convention for the Conservation of North Pacific Fur Seals. Makes recommendations for the protection of aquatic resources.
- Analyzes effects of serious environmental damage caused by discharges of harmful effluents, thermal changes and dredging operations.
- Provides information on condition of selected, multi-nationally exploited fisheries resources.
- Helps negotiate and monitor international fishery agreements for the Pacific Ocean.
- Develops and evaluates systems for protection of fish from hazardous conditions.

5. Coastal Zone and Estuarine Studies Division,
Northwest Fisheries Center, National Marine Fisheries Service:

- Develops aquaculture technology to facilitate the management of salmon fishery resources of the coastal zone.
- Determines the effects of dams and other development in the Columbia Basin, on fishery resources; and develops systems for the protection of fish from these hazardous conditions.

Appendix E - (Seattle Organizations and Operations)

6. Marine Mammal Laboratory Division,
Northwest Fisheries Center, National Marine Fisheries Service:

- Administers the Pribilof Islands program to research the North Pacific fur seal.
- Conducts research on the North Pacific whale population.
- Conducts research on marine mammals to insure that they will always be in adequate number to fulfill their ecological role and satisfy recreational, aesthetic and economic needs.

7. Marine Fish and Shellfish Division,
Northwest Fisheries Center, National Marine Fisheries Service:

- Conducts research and provides information on the biology, ecology and utilization of marine resources.
- Provides the technical information base necessary for management policy or negotiation, resource management policy or negotiation, resource management, capital investments, rehabilitation of domestic fishing and policy on the effects of man on marine resources.
- Assists the native population on the Pribilof Islands in developing self-government; and a self-supporting community.

8. Office of Scientific Publications,
National Marine Fisheries Service:

- Collects and maintains manuscripts originating at various National Marine Fisheries Service installations throughout the country.
- Edits, publishes and distributes scientific periodicals and other research reports and documents concerning marine life.

9. Pacific Utilization Research Center
National Marine Fisheries Service:

- Develops new fish product concepts and products from under-utilized fish species and develops new mechanical methods for preparation of minced fish flesh.
- Investigates traditional resources for the improvement of fish products.
- Develops nutritionally adequate low-cost fish foods through research in aquaculture.
- Manages studies of the fundamental requirements of herbivores and carnivores raised in artifical marine environments.

Appendix E. 9. (Seattle Organizations and Operations)

- Conducts biochemical and processing research on protein isolates and chemically modified or derived proteins for use as ingredients in manufactured foods.
- Investigates nonfood plant and animal resources for biologically active compounds.
- Supports and inspects fish product safety programs.

10. Pacific Marine Environmental Laboratory,
Environmental Research Laboratory:

- Conducts basic and applied research to better understand the marine environmental processes at work in the Pacific Northwest.
- Plans and conducts research on the environment in the estuarine system.
- Investigates the environmental impact of deep ocean mining.
- Studies tsunami (submarine earthquakes).
- Studies and investigages the interactions of the oceans and atmosphere.
- Provides a better understanding of the research and analyses.

11. Marine Ecosystems Analysis,
Environmental Research Laboratory:

- Researches and evaluates the effects of waste water discharges and the impact of oil spillage in Puget Sound.

12. Pacific Marine Center,
National Ocean Survey:

- Develops and recommends ocean surveys, and directs these programs.
- Develops and recommends geodetic surveys and directs these programs.
- Coordinates and evaluates ocean chart corrections and emergency navigational dangers.
- Directs and evaluates tidal monitoring operations.
- Researches and disseminates charts for shipping lanes, harbors, bottom configurations; and other marine information.
- Prepares raw data material on the Northwest Region for air traffic control and pilot charts.

Appendix E 12 (Seattle Organizations and Operations)

- Provides technical guidance for operation and maintenance of oceanographic systems.
- Maintains all NOAA shipboard electronic equipment.
- Provides technical support for NOAA vessel operations.
- Provides, organizes and directs NOAA vessel repairs and modifications.

13. Other NOAA activities in the Northwest:

- National Sea Grant Program provided $1.4 million in FY 1975 to the University of Washington for marine education, advisory services, and a wide variety of research projects including seafood technology and fisheries management, assessment, and development
- Coastal Zone Management Program helps support the development of a comprehensive coastal zone program for Washington State, pursuant to the Coastal Zone Management Act of 1972. A grant to the State of Washington of $500,000 for FY 1976 was provided.

C. New Activities

Over the past several years there have been legislative and other actions that could significantly affect NOAA's activities in the Seattle area.

The most recent is the Fisheries Conservation and Management act of 1976 (dated April 13, 1976; P. L. 94-265), which gives NOAA responsibility for coordinating the management of fish stocks and enforcing regulations within a 200-mile zone off the coast of the United States. To implement this act, NOAA sumbitted a budget amendment to the Office of Management and Budget (OMB) on April 28, 1976, seeking an additional $2.4 million for the transition quarter and $20 million and 270 positions for FY 1977. A NOAA approximation of current estimates of impact in the Seattle area indicates that about an additional $3 million and 34 positions will be required in FY 1977.

Other recent actions impacting the Seattle area include environmental assessments under the deep ocean mining experiment, which hopes to reduce U.S. dependence on foreign mineral sources. There are extensive deposits of manganese, copper, nickel, and cobalt nodules in the north Pacific, but before mining can begin, the National Environmental Policy Act requires the preparation of an Environmental Impact Statement. This cannot be prepared until NOAA develops sufficient data on the physical, chemical, biological, and geological baseline conditions in the area of major commercial mining interest.

Appendix E. C. (Seattle Organizations and Operations)

The Pudget Sound MESA (Marine Ecosystems Analysis) study involves the potential impact from increasing oil tanker traffic as the Alaskan oil reserves are developed plus the increased potential for pollution from normal growth. NOAA's role is to define the current circumstances in terms of baseline descriptions and to continue to monitor conditions within the sound.

The Outer Continental Shelf Environmental Assessment Program is the umbrella under which NOAA's efforts support the development of new energy sources. Effort is currently directed at Bureau of Land Management leasing activities in the Gulf of Alaska -- NOAA components are involved in only about 30 percent of the total effort. NOAA is performing studies on the physical oceanography of the Alaska region, examining certain aspects of the biological environment, analyzing specific components of the marine environment for pollutants, and developing oil spill trajectory models.

NOAA's responsibilities under the Marine Mammals Protection act of 1972 are the basis for expanded marine mammal activities. These are aimed primarily at assessing the status of the stocks and obtaining life history information on such species as the bowhead, killer, and humpback whales, commercially harvested species of large whales, and California sea lions.

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A5B000/FJ1101	WESTERN REGIONAL CENTER

APPENDIX F-FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	SPACE REQUIREMENTS										REMARKS
	Partitioned Office	Open Office	Special/ Lab	Special/ Storage	Special/ Other	Special/ Other	Circulation	Net Useable	Building Support (1)	Gross Total	(1) Bldg. support includes allowance for electrical & mechanical space, major circulation, etc.
	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	Sq. Ft.	
Operations Building	24,710	40,155	3,950				8,258	77,073	7,707	84,780	
Employee Svcs Bldg.	1,000 Banking	1,000 Lounge			3,850 Dining Rm	5,770 Food Prep		11,620	1,162	12,782	
Research Building	44,540	15,380	35,530				9,321	104,771	10,477	115,248	
Electronics Bldg.	13,350		14,090				2,445	29,885	2,989	32,874	
Education Bldg.	9,100				(2) 61,300	(3) 12,000	8,450	90,850	8,700	99,550	(2) Classroom & Lab. (3) Auditorium
Shops	4,320			(4) 1,900	19,900 Shops		410	26,530	4,079	30,609	(4) Paints, Oils & Lubricants Storage
Warehouse	4,160			33,400 (5) 61,650 (6)				99,210	-	99,210	(5) Heated Storage (6) Unheated Storage
Utility Plant					5,000			5,000	-	5,000	
Enclosed Work Area	200				6,500 Heated	25,000 Unheated		31,700	-	31,700	
Covered Storage and Boat Storage				33,400				33,400	-	33,400	
Security/Information Station	150				1,650 (7)	600 Toilets		2,400	-	2,400	(7) Information & Publications
Main Piers					66,800			66,800	-	66,800	
Small Boat Piers					3,000			3,000	-	3,000	
Other Facilities				(8) 180	(9) 500			680		680	(8) Explosives Stg. (9) Food Prep. & Storage
TOTAL	101,530	56,535	53,750	130,530			28,884	513,119 (10) 69,800 (11)	35,114	548,233 (10) 69,800 (11)	(10) Buildings (11) Piers

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FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	PERSONNEL			ARCHITECTURAL/STRUCTURAL						
	Staff	Ship	Students	Raised Floors	Vaults	Soundproof Const.				REMARKS
				Sq. Ft.	Sq. Ft.	Sq. Ft.				
Operations Building	367					1,630				500 Sq. Ft. Dental Unit 900 Sq. Ft. Health Unit
Employee Services Bldg.	12				250					
Research Building	318			1,300	1,250 Tape/Film	6,650				
Electronics Bldg.	69			1,000	400	3,420				
Education Bldg.	59		400							
Shops	31									16' Clear Height
Warehouse	6									25' Clear Height
Utility Plant										20' Clear Height
Enclosed Work Area	2									10' Clear Height
Covered Storage & Boat Storage										16' Clear Height
Security/Info. Sta.	2									
Main Piers		576								
Small Boat Piers										
Other Facilities										
TOTAL	866	576	400	2,300	1,900	11,700				

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FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	Site Work										
	Dredging	Grading	Roads	Paved Work Area	Parking	Parking	Sidewalk	Covered Walkway	Planting Area	Fencing	Remarks
	c.y.	s.y.	s.y.	s.y.	s.y.	spaces	s.y.	sq. ft.	s.y.	l.f.	
Operations Bldg.		3,000	4,364	500	10,158	219	1,050		3,800		
Employee Services Bldg.		1,500	281	500	-		56	1,200	900		
Research Bldg.		12,000	1,192	2,110	5,436	127	480	5,200	4,100	2,800	
Electronics Bldg.		3,000	562	400	3,117	48	200	1,650	1,900		
Education Bldg.		10,000	733	-	18,086	313	1,030		6,750		
Shops		1,500	-	5,591	-		135		800		
Warehouse		3,000	269	6,844	-		165		1,950		
Utility Plant		500	342	2,409	-		180		300		
Enclosed Work Area		3,000	196	1,466	-		350		500	40	
Covered Storage & Boat Storage		3,000	244	1,333	-		270		900	380	
Security/Information Sta.		500	98	-	1,106	26	110		800		
Main Piers	275,000	-	293	13,100	12,278	240	-		-		
Small Boat Piers		-	-	1,870	-	-	-		-		
Other Facilities											
Total	260,000	41,000(1)	8,574	36,123	50,181	973	4,026	8,050	22,700	3,220	(1)Exclud.Grading for Paved & Bldg. Areas

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FACILITIES CHARACTERISTICS SUMMARY - BASE DEVELOPMENT

	SITE WORK									
	Demolition									
	Bldg.	Paving	Grading	Roads	Sidewalks	Planting Area	Fencing			Remarks
	C.Y.	S.Y.	S.Y.	S.Y.	S.Y.	S.Y.	L.F.			
General Site Work	31,750	380,500	319,500	13,688	2,740	62,800	6,800			
Shoreline Reserve			48,400		1,500	10,500				
Lagoon			9,680							
Main Gate Access		6,000	1,000	4,500	950	300	2,200			
North Gate Access	2 Bldgs.	4,450	1,000	4,450	500	200	1,600			
Hangars 1, 32 & 32 Demolition	319,300	28,500								
Other Outside Facilities										
Total	351,050	419,450	(1) 379,580	22,638	5,690	73,800	10,600			(1) Excludes paved areas & bldg. areas

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
OCTOBER 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	MECHANICAL									
	Heating	Cooling	Ventila-tion	Steam Dist.	Chilled Water Dist	Fire Protection				Remarks
	MBH	Tons	CFM	L.F.(1)	L.F.(1)	Sq. Ft.				(1) Length is of distributio system. The system is 2 pipes, supply & return.
Operations Bldg.	909	170	17,000	170	150	3,950				
Employee Services Bldg.	825	50	6,400	180	130	40				
Research Bldg.	2,200	280	48,000	90	80	2,800				
Electronics Bldg.	841	90	22,700	70	90	1,000				
Education Bldg.	2,261	230	67,250	1,080	1,000	18,000				
Shops	465	20	3,260	40	300	30,609				
Warehouse	860	15	850	--	--	99,210				
Utility Plant	200	--	8,000	--	--	--				
Enclosed Work Area	132	--	4,000	280	--	31,700				
Covered Storage & Boat Storage	--	--	--	--	--	33,400				
Security/Information Sta.	140	3	480	--	--	--				
Main Piers	16,700	--	--	2,670	--	--				
Small Boat Piers	--	--	--	1,970	1,450	--				
Other Facilities	--	--	--	--	--	--				
Total	25,533	858	177,560	6,550	3,200	220,709				

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
OCTOBER 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	ELECTRICAL									
	Power Demand	Emergency Power	Battery Charging	Special Lighting	Exterior Lighting	Elec.Distribution	Comm. Dist.			Remarks
	KVA	KW	KW	Sq. Ft.	Sq. Ft.	L.F.	L.F.			
Operations Bldg.	390	8.00	10.0	250(1)	120,000	125	125			(1) RFI Fixtures
Employee Services Bldg.	74	3.00	-	-	7,500	75	75			
Research Bldg.	679	50.00	5.0	9,200(2)	60,000	100	100			(2)High Ceiling & RFI Fixt.
Electronics Bldg.	397	13.00	15.0	6,600(2)	30,000	100	100			
Education Bldg.	586	15.00	-		217,250	1,000	1,000			
Shops	262	3.00	-		45,000	100	100			
Warehouse	127	16.00	20.0		60,000	(3)	100			(3)Fed from Utility Plant
Utility Plant	1,056	8.00	10.0		10,000	250	250			
Enclosed Work Area	33	3.00	-		7,500	(4)	100			(4)Fed from Covered Storage
Covered Storage & Boat Storage	36	3.00	-		7,500	100	100			
Security/Information Sta.	12	0.50	-		10,000	1,700(5)	1,700(5)			(5) Direct Burial Cables
Main Piers	2,145	5.00	-		222,625	1,800(6)	1,800(6)			(6)Conduits Cast in Pier Dec
Small Boat Piers	105	1.00	-		18,750	600(7)				(7) Underground Conduit
Other Facilities	105(9)	50.00(8)	5.0		-	2,000				(8) San.Sewer Pump Station (9) Includes Gen.Site Ltg.
Total	6,007	178.50	65.0	16,050	816,000	7,000	4,400			

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
OCTOBER 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

FACILITIES CHARACTERISTICS SUMMARY - BUILDINGS & PIERS

	UTILITIES									
	Storm Sewer Treated	Storm Sewer Untreated	Sanitary Sewer		Water		(1) Pumping	Liquid(1) Storage	Solid Waste	Remarks
	L.F.	L.F.	L.F.	G.P.M.	L.F.	G.P.M.	G.P.M.	Gal.	C.Y./ /Yr.	(1) Excluding bldg. HVAC and other minor requirements
Operations Bldg.	500	140	130	97	100	143			5,505	
Employee Services Bldg.	90	140	325	75	100	75			2,500	
Research Bldg.	775	100	130	90	100	125	1-30(2) 100&50(3)	15,000(3) 250	4,770	(2) Aquaculture Lake Water Supply System
Electronics Bldg.	-	440	100	19	100	27		500	1,035	(3) Acquaculture Salt Water Supply System
Education Bldg.	3,175	200	1,000	120	100	180			4,885	
Shops	140	50	320	9	100	38		2-2,000(4)	465	(4) Vehicle Fueling Station
Warehouse	-	50	150	5	100	5			90	
Utility Plant	-	50	100	5	120	97	6@25HP	3-25,000 Fuel Oil	-	
Enclosed Work Area	120	50	160	5	100	5			30	
Covered Storage & Boat Storage	-	50	-	0	100	-			-	
Security/Information Sta.	140	50	1,230	5	60	5		500 Fuel Oil	30	
Main Piers	-	-	5,520(5)	100(5)	1,870	100	2-100(5) 50(6)	30,000(5) 10,000(6)	2,880	(5) Domestic Sewage & bilge & ballast water system
Small Boat Piers	-	-	600(5)		300				-	(6) Fuel Handling System
Other Facilities								68,000(7)		(7) Emergency Holding Tank Main San. Sewer Pump. Sta.
Total	4,940	1,320	9,765	530(8)	3,250	800(8)			22,190	(8) Peak Flow

1. DATE	2. FISCAL YEAR	CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
OCTOBER 1976	78		COMMERCE	SAND POINT, SEATTLE, WASHINGTON

5. PROJECT NUMBER	6. PROJECT TITLE
A5B000/FJ1101	WESTERN REGIONAL CENTER

FACILITIES CHARACTERISTICS SUMMARY - BASE DEVELOPMENT

	UTILITIES										
	Storm Sewer Treated	Storm Sewer Untreated	Sanitary Sewer	Water	Pumping	Steam	Chilled Water	Electrical	Communications	Exterior Lighting	Remarks
	L.F.	L.F.	L.F.	L.F.	GPM	L.F.	L.F.	L.F.	L.F.	Sq. Ft.	
General Site Work	7,190	4,610	1,485	12,510	530(1)	1,970	1,450	2,600	2,600	110,000	(1) Sanitary Sewer, Main Pumping Sta.
Shoreline											
Lagoon				700	250						
Main Gate Access		700(2)	300(2)	500(2)		1,000(2)			700(2)	85,000	(2) Relocation
North Gate Access		(3)				(3)		(3)	(3)	40,000	(3) Various Relocations
Hangars 1, 32 & 33 Demolition											
Other outside Facilities			1,100(4)	1,080(4)							(4) Off-site connections to Sand Pt. Way mains.
Total	7,190	5,310	2,885	14,790		2,970	1,450	2,600	3,300	235,000	

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