MUNICIPALITY OF ANCHORAGE

COASTAL MANAGEMENT PROGRAM

CONCEPT APPROVED

Municipality of Anchorage
George M. Sullivan, Mayor

FINAL REPORT SEPTEMBER, 1979

Physical Planning Division
Planning Department
Municipality of Anchorage
Pouch 6-650
Anchorage, Alaska 99502

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The preparation of this report was financed in part through a coastal zone management program grant from the U.S. Department of Commerce under the provisions of Section 305 of the Coastal Zone Management Act of 1972, as amended, and the Division of Community Planning, Department of Community and Regional Affairs of the State of Alaska.

ANCHORAGE COASTAL MANAGEMENT PROGRAM
FINAL REPORT

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MUNICIPALITY OF ANCHORAGE

ASSEMBLY MEMORANDUM

NO. AM 652-79

Meeting Date: July 24, 1979

From: Mayor

Subject: Coastal Management Plan

In accordance with AS 46.40 Sec 30, the Municipality of Anchorage has developed a Coastal Management Plan in accordance with the requirements of the Alaska Coastal Management Program.

The Anchorage Coastal Management Plan utilizes a concept of land use suitability and subdivides the coastal landscape into different functional units called coastal resource policy units. Each of the coastal resources units was then analyzed to determine the various environmental impacts that could result from various land uses and activities. As part of this process, all major existing federal, state and local regulations were researched that applied to each coastal resource policy unit and where existing laws were sufficient to meet and mitigate any development problems, no new regulations were proposed. However, where deficiencies were noted, recommendations are made in order to comply with the requirements of the Alaska Coastal Management Act. The land use suitability analysis and the legal review were jointly used to develop recommended policies for each coastal resource policy unit.

The Anchorage Coastal Management Plan is thus a conceptual document containing specific recommendations to be carried out upon receiving approval by the Municipality and the State of Alaska. The Plan is not self executing but will require that ordinances be amended, new ordinances be developed, that federal and state activities be monitored for compliance, and that management plans be prepared. The plan will be adopted as part of the Anchorage Comprehensive Land Use Plan pending state review and approval expected in January 1980.

The Hearing Draft of the Anchorage Coastal Management Plan has been generally well received by both federal and state agencies as well as the public.

Recommended by:

Michael J. Meehan
Director of Planning

Respectfully submitted:

Submitted by: Chairman of the Assembly
at the request of the Mayor
Prepared by: Planning Department
For Reading: July 24, 1979

MUNICIPALITY OF ANCHORAGE

ANCHORAGE MUNICIPAL ASSEMBLY RESOLUTION NO. AR 79-153

A RESOLUTION RECOMMENDING CONCEPTUAL APPROVAL OF THE ANCHORAGE COASTAL MANAGEMENT PLAN — FINAL REPORT, HEARING DRAFT.

BE IT RESOLVED by the Anchorage Municipal Assembly:

WHEREAS, AS 46.40.030 states that coastal resource districts shall develop and adopt district coastal management programs in accordance with the provisions of the Alaska Coastal Management Act and the Alaska Coastal Management Program, Standards and Guidelines, and

WHEREAS, a comprehensive Coastal Management Plan was developed for the Municipality of Anchorage according to AS 46.40 6AAC Chapters 80 and 85, and

WHEREAS, a comprehensive Coastal Management Plan was developed which recognizes: 1) The coastal area of the Municipality of Anchorage as a distinct and valuable natural resource of concern to the people of Anchorage; 2) The demands upon the resources of coastal area are significant and will increase in the future; 3) The protection of the natural, cultural and scenic resources and the fostering of wise development of the coastal area, and

WHEREAS, the Anchorage Coastal Management Plan avoids the creation of new regulatory structures wherever possible, relying instead upon existing federal, state and local authorities ;to implement the provisions of the Act, and

WHEREAS, the Anchorage Coastal Management Plan sets forth twelve specific recommendations to be carried out upon approval and ;adoption of the plan. Such recommendations for implementing the plan range from monitoring the issuance of permits, amending existing ordinances, preparing and adopting new ordinances where necessary to meet the requirement of the Act, developing management plans that address the standards and guidelines set forth in 6AAC 85.010-.110 and AS 46.40.030, and including nominations for areas meriting special attention, and incorporating the Anchorage plan as an element of the comprehensive plan.

NOW, THEREFORE, BE IT RESOLVED by the Anchorage Municipal Assembly that the Anchorage Coastal Management Plan and Resource Policy Maps, including the amendments described in the addendum, be conceptually approved and forwarded to the Alaska Coastal Policy Council and Office of the Coastal Management for adoption by the State of Alaska. Upon acceptance by the State of Alaska, the Municipality intends to adopt the Anchorage Coastal Management Plan by ordinance.

PASSED AND APPROVED by the Anchorage Municipal Asembly this 28th day of August, 1979.

Attested by:
Anchorage Municipal Clerk

Presiding Officer
Anchorage Municipal Assembly

AMENDMENTS

The following amendments to the Municipality of Anchorage District Coastal Management Program were adopted by the Alaska Coastal Policy Council on January 16, 1980.

1. Class I Waters: Adopt the policy as listed on page 2 of Volume II.
2. Selected Coastal & Upland Marshes and Wetlands: Adopt the policy as listed on page 75 of Volume I.
3. Tidal Flats: Adopt the policy as listed on page 75 of Volume I.
4. Salt Water Marches: Adopt the policy as listed on page 75 of Volume I.
5. Coastal Habitats: Adopt the policy as listed on page 10 of Volume II.
6. Hazardous Lands: Adopt the policy as listed on page 14 of Volume II.
7. Historical/Archaeological/Natural Areas: Adopt the policy as listed on page 76 of Volume I.
8. Coastal Food Zone: Adopt the policy as listed on page 76 of Volume I.
9. Class I Waters: Adopt the policy as listed on page 20 of Volume II.
10. Class III Waters: Adopt the policy as listed on page 77 of Volume I.
11. Scenic Corridors, Areas and Vistas: Adopt the policy as listed on page 77 of Volume I.
12. Park & Recreation Areas: Adopt the policy as listed on page 26 of Volume II.
13. Marginal Lands: Adopt the policy as listed on page 78 of Volume I.
14. River Floodplains: Adopt the policy as listed on page 78 of Volume I.
15. Open Space: Adopt the policy as listed on page 78 of Volume I.
16. Forestry and Game Management Areas: Adopt the policy as listed on page 78 of Volume I.
17. Class IV Waters: Adopt the policy as listed on page 78 and 79 of Volume I.
18. Urban Residential: Adopt the policy as listed on page 79 of Volume I.
19. Urban Development: Adopt the policy as listed on page 79 of Volume I.
20. Urban Waterfront: Adopt the policy as listed on page 80 of Volume I.
21. Rural: Adopt the policy as listed on page 80 of Volume I.

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ANCHORAGE COASTAL RESOURCE DISTRICT MANAGEMENT PLAN
INTRODUCTION

The coastal areas of Alaska have been described as unique, valuable, diverse, productive, and importantly, *finite*. The sum of the economic and natural resource values found at the coast makes this area a most important piece of geography.

It is not surprising that the demands on coastal resources have begun to surpass the ability to serve all needs. Competition for space — for water-dependent industry and transportation, energy facilities, housing, food and fiber production, and public recreation — is outstripping opportunities to accommodate, in an orderly manner, all that is sought. In response to these pressures, a number of states began, in the 1960's, to develop comprehensive coastal management plans. Congress entered the picture in 1972 through enactment of the Coastal Zone Management Act, stimulated, in part, by the findings of the Stratton Commission Report which concluded that: ". . . effective coastal management to date has been thwarted by a variety of governmental jurisdictions involved."

Congress fashioned the Coastal Zone Management Act to create a partnership among the governmental units developing coastal resource management programs. The basic thrust of the act is to recognize the national, regional, state, and local interests in coastal resources through a precedent inter-governmental network and to establish balanced resource management plans which recognize the need for economic development while at the same time preserving, protecting, and where possible, restoring valuable coastal resources. Implicit in this mission is the creation of conflict resolution mechanisms to make the hard resource allocation choices.

The Alaska Coastal Management Act of 1977 declared that Alaska's coast is a distinct and valuable resource of vital and enduring interest to all people; but how is this concern for the future translated to a particular piece of coastal property, a bluff top lot, an urban water front, or a coastal wetland system? Anchorage's coastal management program attempts to answer these issues and put forth implementation techniques and methods to meet the issues and needs.

The Alaska Coastal Management Act of 1977 provides for trying to resolve the many controversies over how to use or not use the land and waters of Alaska's coast through the development and use of District Coastal Management Programs. The district management concept is a unique, pioneering effort to bring local plans and regulations, and plans of all public agencies, into conformity with statewide policies, standards and guidelines relating to coastal resource management.

Local governments have traditionally been responsible for land use decisions within their boundaries. Coastal management programs will influence the way in which these decisions are made in the future. Under any coastal management program, states will have a more direct role. The role of local governments will vary with the structure of each program and will depend in part on the interest and willingness of local governments to participate.

The Alaska Coastal Management Act of 1977 created the Alaska Coastal Policy Council to help put all of the local plans together into a statewide Coastal Management Program. The Council's responsibilities include making sure that coastal boroughs, municipalities, and cities look at all the opportunities for development and possible problems in their areas, and making sure that all the state and federal agencies respect the local plans once these plans are completed and approved. Under this law the State of Alaska has mandated specific controls (guidelines and standards) over the coastal zone and also established a state review of district plans and, therefore, land use plans and ordinances having an effect on the coastal area. This was done because it was felt that returning full control to local governments without any state review or appeal authority would generally result in uneven implementation.

A state's coastal zone management program must provide for any one or a combination of three approaches for the control of land and water uses within the coastal zone. That is, states may establish: (1) criteria and standards for local implementation, subject to administrative review and enforce-

ment of compliance; (2) direct state land and water use planning and regulation; (3) state administrative review for consistency with the management program of all development plans, projects, or land and water regulation.

The Alaska Coastal Management program follows option #1, local implementation with State guidelines. According to this type of management, Alaska established criteria and standards for local implementation, with review by the State for conformity of local plans with such criteria and standards, and enforcement of compliance if the local government should prove unable to enforce those plans. Once the local plans are accepted by the State, the primary responsibility for managing coastal areas would reside with the local governments.

In compliance with the Alaska Coastal Management Act, the Municipality of Anchorage has developed a district program for coastal resource management presented in the following pages of this document. The district program specifically addresses the issues, goals and objectives of coastal management as well as complying with the requirements of the Alaska Coastal Management Program.

Anchorage's development of coastal management under Section 305 planning grant funds has afforded the Municipality some particularly noteworthy opportunities for increasing the awareness and effectiveness of coastal resource planning and management. The first is a new incentive to inventory, analyze and evaluate natural resources within both an urban and rural environment and to prepare management plans for dealing with them and incorporating this information into the land use planning process. The result is the opportunity to view land use planning in a new perspective. Traditionally, planning at the local government level has directed its efforts toward land use planning/ that is, the allocation of specific types of land uses to different parcels of land within its jurisdiction. However, local planning has not traditionally planned for natural resource management. The emphasis of the coastal management program, which is geared in part to economic development, is, however, aimed primarily at the management and protection of natural resources found within the coastal area. This is important because it appears that the state program was based on the concept that, while there is a tendency for local governments to place higher regard on direct economic benefits than on regional or state environmental values, it still would be politically appropriate for local governments to have the primary responsibility for initiating and administering regulatory programs in the coastal area. The Alaska initiative appears to have been designed to broaden the planning base and generally is oriented toward protection and management of important environmental resources while recognizing the need for development.

The second opportunity stems from the Act's Federal Consistency Requirement. This provision offers the Municipality a management tool it never could have developed internally. This requirement will permit better planning coordination as well as the forging of consistent federal, state and local government relations. With both the State of Alaska and the Federal government owning large amounts of land in the Anchorage coastal area, the need for cooperative and coordinated management of Anchorage's coastal resources will be needed as growth in the Municipality continues.

The third opportunity resulting from passage of the Alaska Coastal Management Act is the ability of local governments or coastal resource districts to look beyond their immediate political boundaries. Local governments can now begin to look at regional-type planning issues. For example, water quality and air quality, two major impacts that result from increased urbanization, are issues that must be addressed at the regional level as well as the local level.

Of particular importance to Anchorage is complete coordination, cooperation and integration of its coastal management plan with those of the Matanuska-Susitna and Kenai Boroughs. The coastal zone is a system, a delicately balanced, dynamic, biophysical system. Inappropriate decisions or actions made by any of the two adjoining boroughs could result in significant environmental impacts. Anchorage could not successfully implement a coastal management plan unless that plan is complementary with those coastal plans of Kenai and Mat-Su Boroughs.

Chapter 1 discusses the needs, goals, and objectives of the Anchorage area in relationship to coastal management planning. Chapter 1 provides a general description and overview of the geography of the Upper Cook Inlet environment and relates the environmental parameters to the economic productivity, livability, and natural resource base of the Anchorage area.

Chapter 2 provides an overview of the requirements of the Alaska Coastal Management Act. Contained within the chapter are the specific requirements as outlined in the Alaska Coastal Management program document as well as a general articulation of State policy. A discussion is presented which outlines the Municipal network necessary for implementing and managing a coastal resource management program as well as a statement identifying the management authority of the local government to implement a coastal management plan and the state local government coordination activities required to implement a plan.

Chapter 3 is somewhat more technical and presents the planning methodology and process utilized to prepare Anchorage's district plan and regulations. It is the draft coastal resource management plan from which policies were derived. The chapter outlines the planning process used to determine direct and significant impacts on coastal waters, identify coast-

al management boundaries, identify areas meriting special attention, identify proper and improper uses and other elements of the ACMP program document.

Chapter 4 provides an overview of the resource inventory and analysis conducted by the Municipality. The Municipality of Anchorage was divided into three planning units: Turnagain Arm, Anchorage Bowl, and Eagle River.

Many of the specific requirements of the Alaska Coastal Management Act are or can be satisfied by the Municipality in the natural course of its planning and management practices. However, others are more technical and require special attention. Chapter 5 molds the information contained in previous chapters into a framework upon which the coastal management plan is based. Chapter 5 attempts to divide the Municipality into one of three broad environmental classifications. These environmental classifications are composites of many sub-areas, or resource policy units as they are called in the coastal management program. For each of these environmental designation and resource policy units, goals and policies are stated.

The Alaska Coastal Management Act specifically addresses thirteen uses and activities in the coastal area. For each of the uses and activities identified by the state, districts must address appropriate goals, objectives, and policies for permitting or not permitting these activities within the coastal area.

Chapter 6 delineates the proposed coastal management boundary for the Municipality of Anchorage. The chapter covers initial planning boundaries set by the State and sets forth the criteria which must be met in order to delineate a management boundary different from that of the initial planning boundary.

Chapter 7 deals with another specific element of the Alaska Coastal Management Act: Areas Meriting Special Attention. For each of the planning units within the Municipality, specific geographic areas meeting the criteria as specified in the Alaska Coastal Management Program document have been identified and delineated as part of the program requirement.

Chapter 8 presents the plan for implementing the Anchorage Coastal Management Program.

APPENDICES

A. Existing Federal, State, and local land and water use controls relevant to the Municipality of Anchorage Coastal Zone.

B. Record of public participation efforts, including Federal and State agency input and review.

C. Memorandum of Understanding between the Municipality of Anchorage and the Division of Policy Development and Planning implementing the OMB Circular A-95 and Section 307 of the Coastal Zone Management Act of 1972 (as amended).

CHAPTER I

AN OVERVIEW OF COASTAL RESOURCES AND ISSUES IN THE UPPER COOK INLET ENVIRONMENT

INTRODUCTION

The Cook Inlet area of south central Alaska is currently undergoing the most intense and rapid development in the State of Alaska. The Municipality of Anchorage, the state's largest and most populated city, is located at the head of Cook Inlet on a roughly triangular piece of land between the Knik and Turnagain Arms of Cook Inlet. Anchorage is the center of transportation, commerce, recreation and industry. With a current population of 202,101[1] and a projected population of 507,000[2] in twenty-five years, the use of Cook Inlet as a water transportation route to the Municipality will increase as the area development continues. Associated with this future development will be increased estuarine pollution. Of particular concern to many governmental agencies and residents is a need to control and alleviate the environmental disturbances that are and will be associated with this rapid coastal zone development.

PHYSICAL SETTING

The following discussion of the physical environment and coastal resources of Cook Inlet is of far more than academic interest. An understanding of the physical, biological and oceanographic processes are important to both systematic environmental protection and resource development as well as coastal zone management in the entire Cook Inlet area.

Strictly by coincidence, the majority of the turbid water in Cook Inlet originates from Knik and Turnagain Arms, adjacent to Anchorage, Alaska's population and industrial center. Offshore oil activities are also largely confined to the upper inlet. Cook Inlet supports a major salmon fishery. Significant fisheries for king and tanner crab, shrimp and herring are found in the sediment-free sea waters of lower Cook Inlet. An understanding of circulation patterns will permit prediction of the behavior of any oil spills and an analysis of potential threats to the shorelines of Anchorage and its fishery resources.

The salmon fishery presents a good example of the need for this understanding and shows the relationship of the fauna to the environment. The fish routinely enter the inlet on their spawning run and proceed with the tide, dropping to the bottom to rest when the tide sets against them. Apparently, also, they tend to mass for a time near the boundary between the clear and turbid waters before they make their final run to the spawning streams. The non-andromous fisheries of the lower inlet — including commercial operations for herring, shrimp, and crab, and sports fishing for halibut — are, of course, limited by the extent of relatively sediment free normal sea water (Evans, et al., 1972).

Essentially all non-solid sewage and industrial waste from the city is discharged into the inlet. Circulation determines the localized impact of contaminants in the water — the dispersion of wastes or the distribution and behavior of oils from a platform or valve along a shoreline. The circulation patterns present in Cook Inlet determine the distribution and dispersal of any major pollutant. The effect of strong tidal currents on the unconsolidated bottom sediments of upper Cook Inlet are of important consideration in the engineering, design and construction of oil pipelines, platform and terminals — such as is proposed for the south side of Ship Creek in Anchorage.

Suspended sediment is currently the most detrimental and serious pollutant found in upper Cook Inlet. An understanding of how this sediment is transported and circulated is important because as Anchorage continues to grow and uses of coastal resources increase in coastal locations, impacts on coastal waters will increase. It is estimated that newly developing areas can produce as much as 20,000 - 30,000 times more sediment than natural undisturbed areas. High sediment loads are also troublesome in that siltation of ports, marinas and other water dependent industries is of enormous economic impact.

Upper Cook Inlet is subject to severe ice problems in winter. Most ice in the upper inlet is floe ice which can increase in thickness as much as one inch per day and form cakes as thick as four feet. This situation is further complicated by large piles of ice, called stamukki, formed on tidal flats from beach ice broken free, deposited higher on these stamukki and as the tides recede, the overhanging portions break off leaving stacks of layered ice. During extreme high tides these can go adrift and previous observations have found some to be greater than 40 feet thick. These can and do cause difficulties with shipping, but also scour the inlet floor and shoreline causing various impacts.

Cognizance of the physical parameters will then assist in identifying the issues that must be dealt with in developing a coastal resource plan for Anchorage. The intent here is to lay some basic

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[1] Municipality of Anchorage, Planning Dept. estimate as of July 1978

[2] Ibid

foundation from which to initiate a discussion of coastal zone management and implementation strategies, and to establish a basis from which to identify goals and objectives of a coastal management plan.

COOK INLET PHYSICAL DESCRIPTION

Cook Inlet is oriented in a northeast-southwest direction and is approximately 180 miles long. The inlet is a large, cold water tidal estuary of the Gulf of Alaska, bounded on the west, north and east by the Alaska, Talkeetna and Chugach Mountains (Figure 1). The Inlet is divided geographically into a northern and southern region by the East and West Forelands. Upper Cook Inlet is characterized by extensive tidal marshes, lowlands, high turbidity, variable salinity, high suspended sediment loads, high velocity currents and some of the highest tides in the world with average diurnal ranges from 13.7 feet at the entrance to 33 feet in Anchorage. Cook Inlet terminates in the Knik and Turnagain Arms, which border the Municipality of Anchorage on the west and south. Knik and Turnagain Arms are 45 and 43 nautical miles long, respectively. The Chugach Mountains border Anchorage on the east.

The Municipality of Anchorage covers an area of approximately 1950 square miles, but only about 15 percent of that is suitable for human habitation.

The Susitna River, Matanuska, Knik, Eagle, Twentymile, Placer, Glacier and numerous smaller rivers and creeks contribute to a high proportion of the fresh water of the Inlet and have a mean combined annual flow of 43,600 cubic feet per second. The majority of these rivers and streams are heavily laden with glacial silt and as a result contribute a heavy sediment load to the Inlet.

GEOLOGY

The Cook Inlet basin (Figure 2), according to *Cook Inlet Environment, A Background Study of Available Knowledge*, August 1972, is a topogrpahic, structural and sedimentary basin containing approximately 60,000 - 70,000 cumulative feet of marine and non-marine sedimentary and volcanic rocks ranging in age from Late Polcozoic to recent. The Inlet is described as a narrow elongate troughlike depression covering approximately 15,000 square miles and being roughly 200 miles long and 70 miles wide. Seventy percent (70%) of the basin is covered by the waters of Cook Inlet. The geologic history of the basin is complex and recent geologic history has consisted primarily of erosion and modification of mountainous areas during glacial and interglacial cycles with partial filling of the lowland areas and valleys with quaternary glacial drift and associated deposits.

Structurally, the basin is an elongate/ a deep moderately asymmetrical basin. The Cook Inlet area, regionally, is near the axis of the Alaska orocline (Figure 3), the tectonic feature so clearly expressed by the topography. The axis of the orocline repreents the juncture of two great tectonic systems. In its simplest form then, the basin is a graben, bounded by major fault zones on the north, west and east. Associated with this are five active volcanoes along the western side of Cook Inlet. Seismic activity has been active at various times along these fault zones.

ESTUARIES

Cook Inlet by definition is an estuary: "A semi-enclosed coastal body of water which has a free connection with the open sea and within which sea wter is mesuably diluted with fresh water derived from land drainage." According to the U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Cook Inlet is considered a positive, tidal estuary formed by tectonic processes and is characterized by more runoff and precipitation than evaporation resulting in dilution of sea water by fresh water. Cook Inlet is dominated by tidal action with strong tidal currents and mixing.

ESTUARY AND COASTLINE CHARACTERISTICS

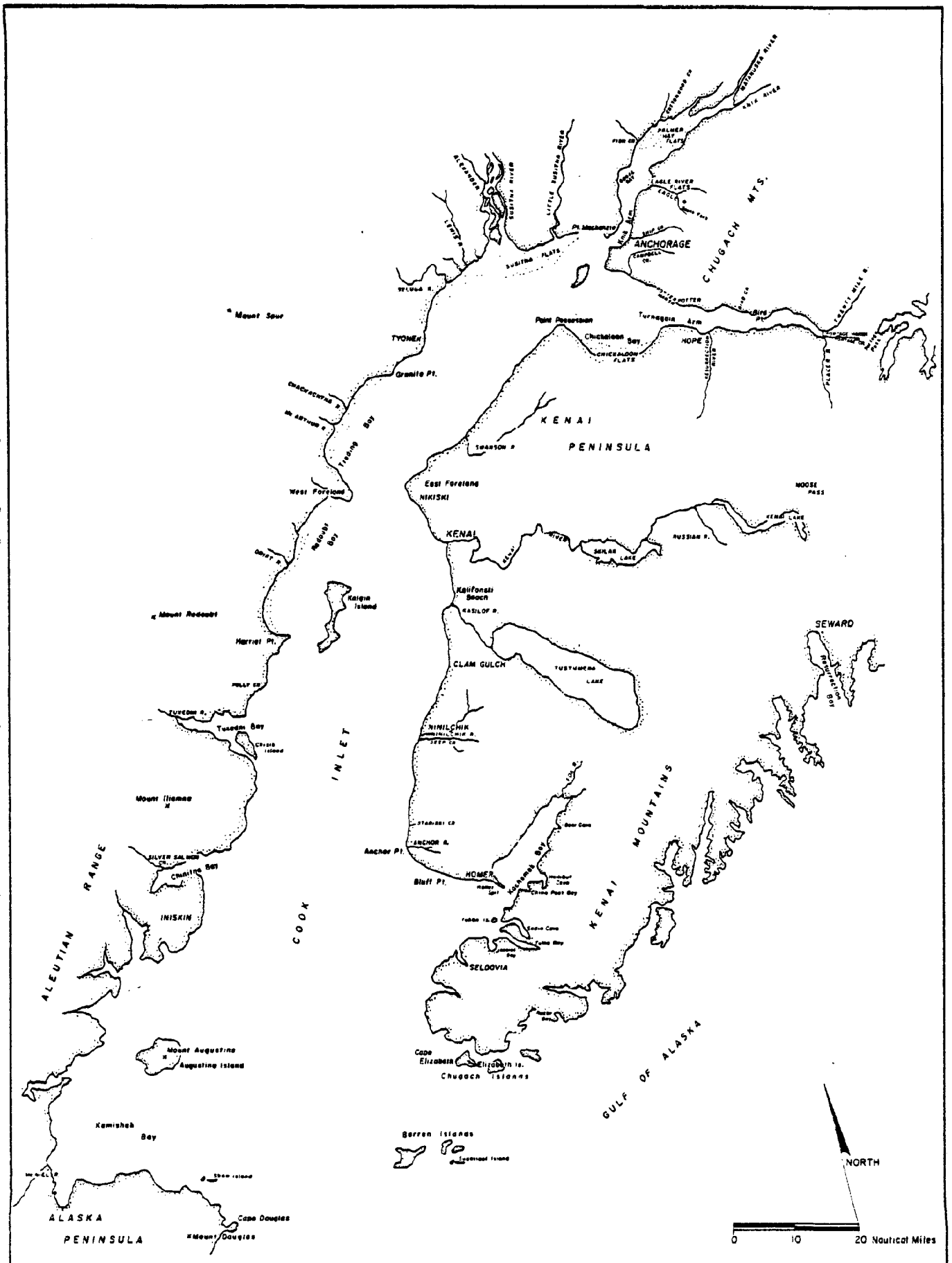
The Cook Inlet coastal configuration is characterized by sea cliffs extending from Kachemak Bay to Turnagain Arm. Pocket beaches occur along the coast. The head of Turnagain Arm is characterized by extensive tidal flats and marsh wetlands, particularly near the outlets of Twenty Mile, Glacier and Placer rivers. At low tide the Turnagain Arm is mostly exposed tidal flats with only a few main channels draining the waters flowing into the Arm. The mountains adjacent to the Turnagain Arm slope abruptly into the water body. Turnagain Arm is noted for its extreme tidal range (30 ft.) and frequent tidal bores. As a result of an abundant supply of sediments and high tidal energy, extensive areas of intertidal silt and sandbars have developed. Many areas along the Arm experienced major subsidence as a result of the 1964 earthquake.

At Potter Marsh, the topography changes abruptly and enters the Anchorage coastal plain characterized by a shoreline of sea cliffs with elevations ranging from 25 to 100 feet in height, and pocket beaches where streams enter the Turnagain and Knik Arm. Extensive tidal flats and wetlands surround the majority of the Anchorage coastal lowland.

Extending up the Knik Arm the coastline is generally characterized by sea cliffs of low elevation but as one approaches the head of the Knik Arm, a vast wetland, similar to that of Turnagain Arm, is located. The inlet is bordered by more than 100 square miles of tidal marsh, most of which is located in upper Cook Inlet.

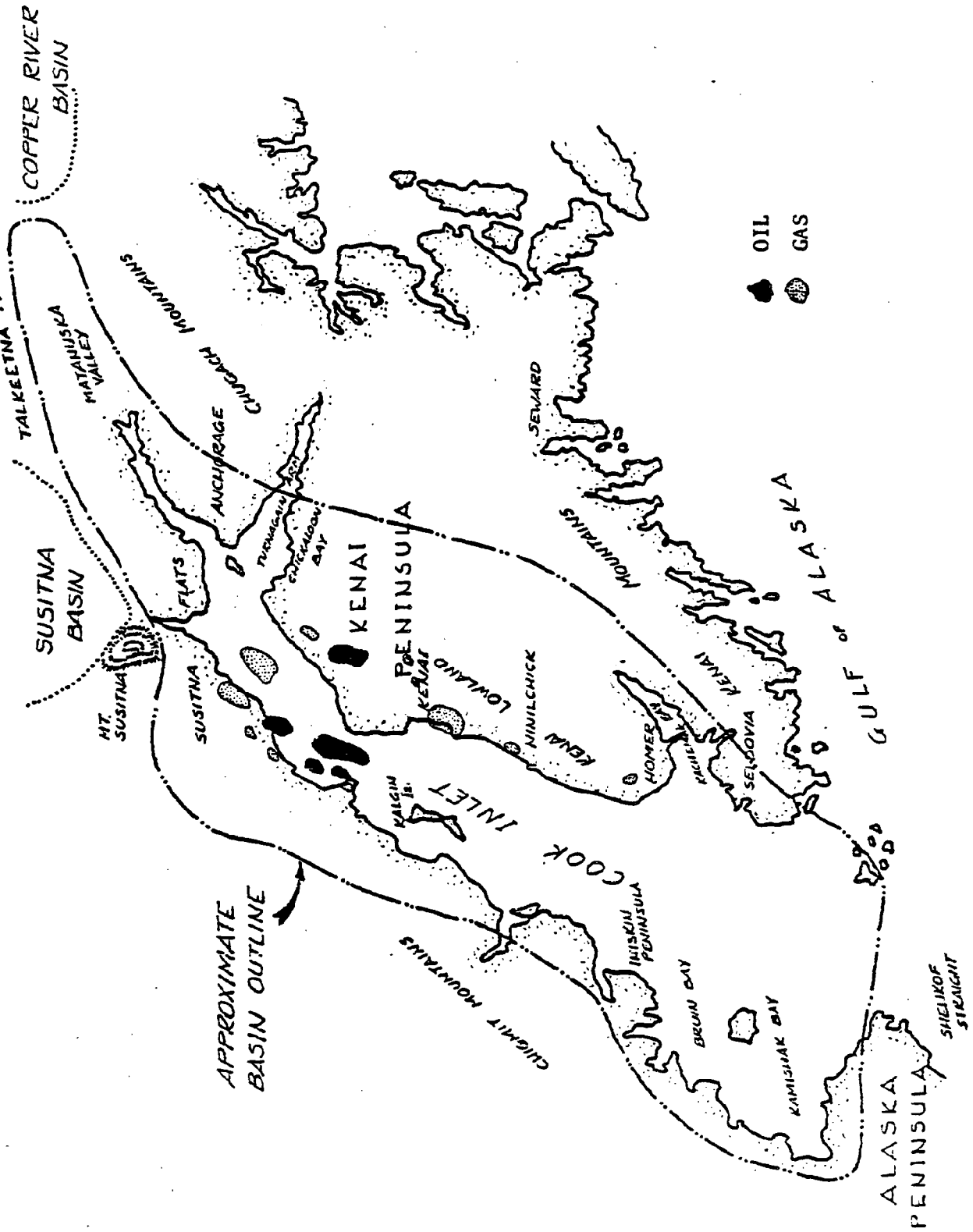
BATHYMETRY

Cook Inet, north of the forelands, is generally less than 20 fathoms in depth. Turnagain and Knik Arms are the shallowest areas with much of the bottom exposed as tidal flat at low tide. The depth of Cook Inlet gradually deepens to approximately 80 fathoms at the mouth of the Inlet.



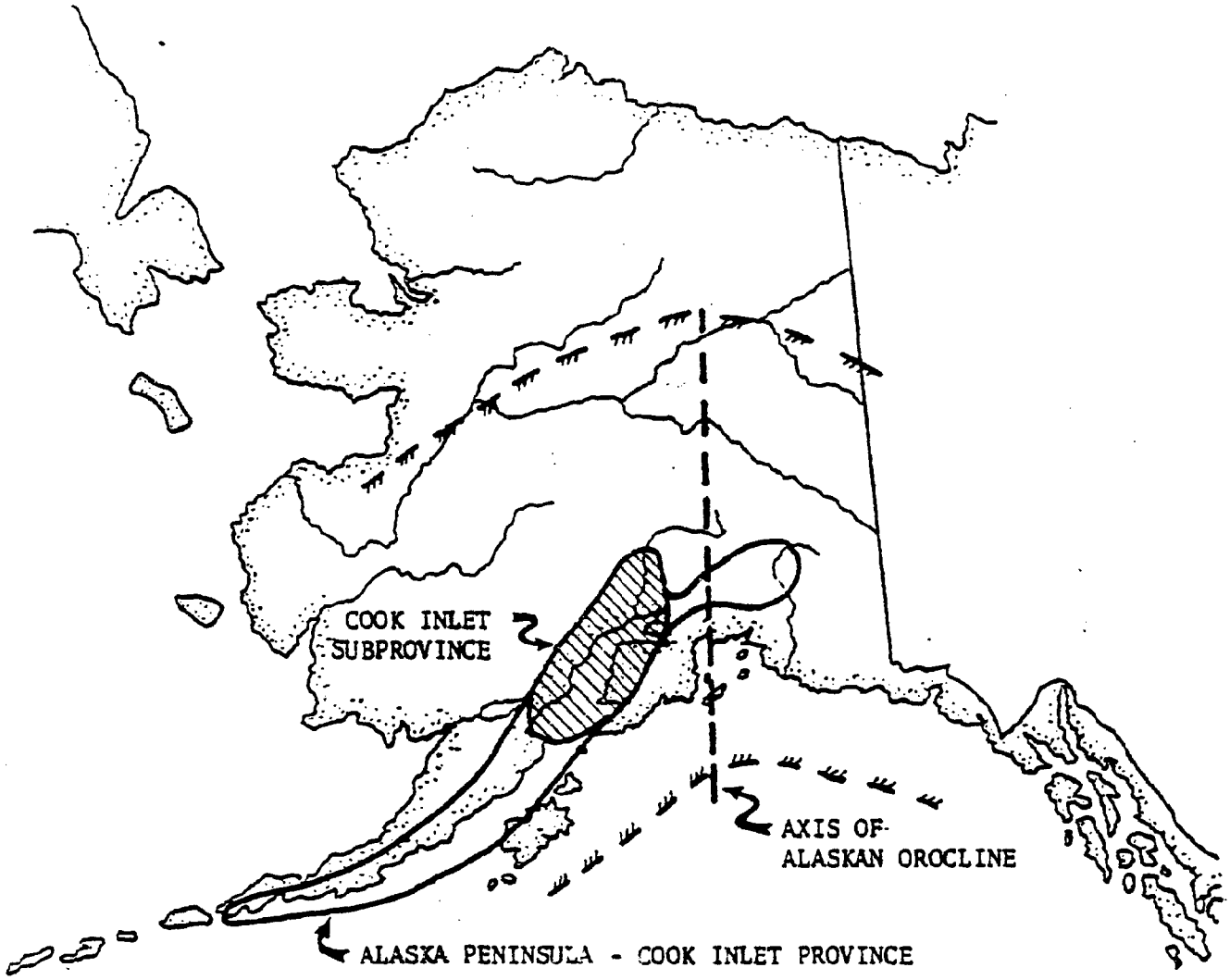
REGIONAL MAP OF COOK INLET

Figure 1



MAP OF COOK INLET BASIN, ALASKA, SHOWING BORDERING STRUCTURAL FEATURES AND LOCATION OF PRODUCING OIL AND GAS FIELDS

Figure 2



MAP OF ALASKA SHOWING ALASKA PENINSULA – COOK INLET PROVINCE

Figure 3

SURFACE CIRCULATION

The circulation pattern of the Inlet is strongly influenced by bathymetry, morphometry and fresh water drainage. Because of the large tidal fluctuations in the shallow, narrow embayments of Turnagain and Knik Arms, water in the upper Inlet is well mixed. Surface runoff is highest during summer and results in a net outward movement of water from the upper Inlet. During the winter, with reduced runoff, there is virtually no net outflow.

COASTAL ZONE GEOLOGIC RISK PHENOMENA

The Alaska seismic zone, extending from Fairbanks to the Gulf of Alaska, is part of the near-continuous seismically and volcanically active belt that circumscribes the entire Pacific Ocean basin. It has been estimated that approximately seven percent of the earthquake energy released world-wide originates in the Alaska seismic zone. Between 1899 and 1965, nine Alaska earthquakes have equaled or exceeded a magnitude of 8 on the Richter scale, and more than 60 have equaled or exceeded magnitude 7 (Hansen et. al., 1960) (Figures 4, 5, 6).

Cook Inlet is included in seismic risk zone 3, and as Anchorage's population increases the potential loss of life due to earthquakes and related catastrophes similarly rises.

Damage to Anchorage as a result of earthquake activity can be caused by a variety of factors including: direct seismic vibration, ground breakage, mud or sand emission from breaks, ground lurching, landslides, fires, seawaves, and land level changes. Past experience has shown that areas of poor soil stability including offshore and waterfront areas exposed to potential tsunamic runup are the most vulnerable.

During the 1964 earthquake an area from between 70,000 to 110,000 square miles was tectonically uplifted or depressed. Much of the Anchorage area was in an area of general subsidence (Plafker, 1969). Damage was caused by direct seismic vibration, by landslides and by ground cracks. Landslides were attributed to the failure of Bootlegger Cove Clay, a glacial estuarine-marine deposit underlying large areas of the Anchorage bowl. Bootlegger Cove Clay under vibratory stress of the earthquake failed along zones of low shear strength. Evidence of such landslide activity is most notable along the shoreline at Turnagain Heights, L Street and the 4th Avenue Buttress areas. The widespread damage in Anchorage during the 1964 earthquake reflects the fact that in many instances residential and commercial structures were built on relatively unstable sedimentary rocks that amplify seismic motions. This geologic factor greatly increases the seismic hazard. Seismic risk in Anchorage coastal zone can be reduced if (1) the risk area can be identified and rated according to its potential severity, (2) if the design of structures takes into consideration such potential seismic forces and risks, (3) ordinances, uniform building codes and other land use regulations are developed to deal specifically with these risk zones.

The Municipality has, under contract, conducted a geophysical hazards asessment study that identifies various hazards and delineates each. Results of the study are incorporated in the coastal map set.

TSUNAMIS

Tsunamis also pose a potential hazard to coastal lands of Anchorage; however, the probability locally is less compared to other coastal areas more exposed. Because of Anchorage's protected location in upper Cook Inlet, waves generated outside of the Inlet would have difficulty entering. The factors of shallow waters in Knik and Turnagain Arms, plus the turbulent nature of their tides and currents, would reduce a tsunami wave and impact.

While tsunami risk is minimal, there does exist a risk in the Anchorage area. Earthquakes with epicenters in the Inlet or volcanic events across the Inlet could produce a significant wave that could cause significant damage to vessels and low-lying coastal structures and facilities (Figure 7).

Potential tsunami damage can be minimized by (1) planning for safe economic development and land use, (2) preparing effective land use regulations dealing with the hazard, (3) identifying areas subject to such hazards and mapping the inland extent of potential danger.

VOLCANOES

The western side of Cook Inlet is the location of five volcanoes: Mt. Spurr, Mt. Redoubt, Mt. Iliamna, Mt. Augustine and Mt. Douglas (Figure 8). With the exception of Mt. Douglas, all of the Cook Inlet volcanoes have erupted in historic time; and there have been four eruptions in the past 20 years (Spurr, 1953; Redoubt, 1966; Augustine, 1963-1976) (Table 2).

Mt. Augustine is active and considered potentially eruptive, and thus is presently poses the greatest volcanic hazard to Anchorage, particularly to fisheries, airlines, and coastal situated facilities. It is capable of producing a "krakatoan" eruption capable of producing large magnitude explosions, very destructive seawaves, ash fall out, and explosive ash clouds producing turbulent columns up to 40,000 feet.

FLOODS

Historically, floods have not been a major problem in the Anchorage area. However, small scale flooding does occur in many of Anchorage's streams. For example, recently many structures have been built on flood plains (Chester and Campbell Creek) and are subject to flood damage. Floods result from above average runoff, from rain or snowmelt, or from ice blockage of drainage during the winter months.

The Municipality currently has a flood plain ordinance in effect and it is the simplest method of preventing undue flood damage. However, addi-

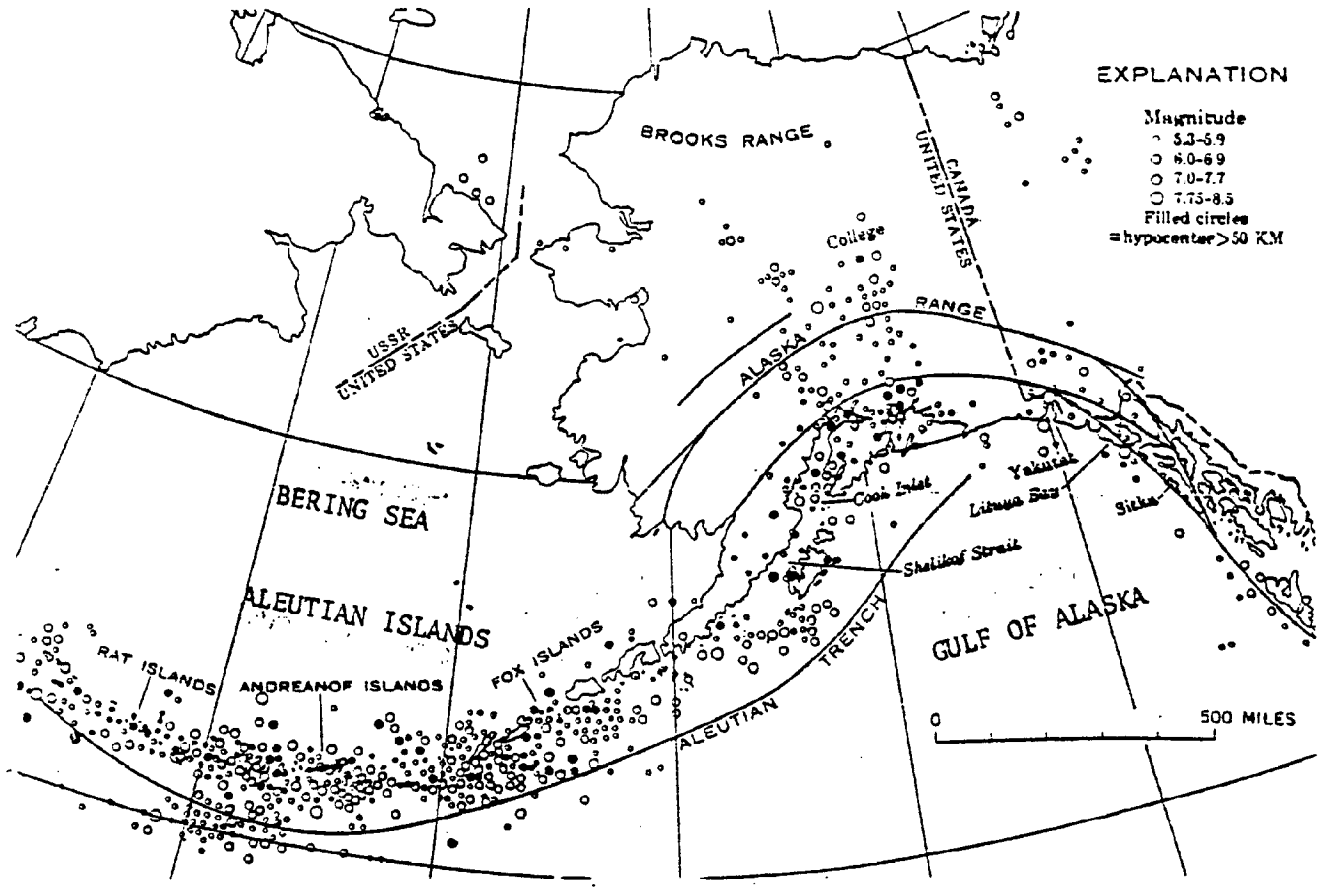
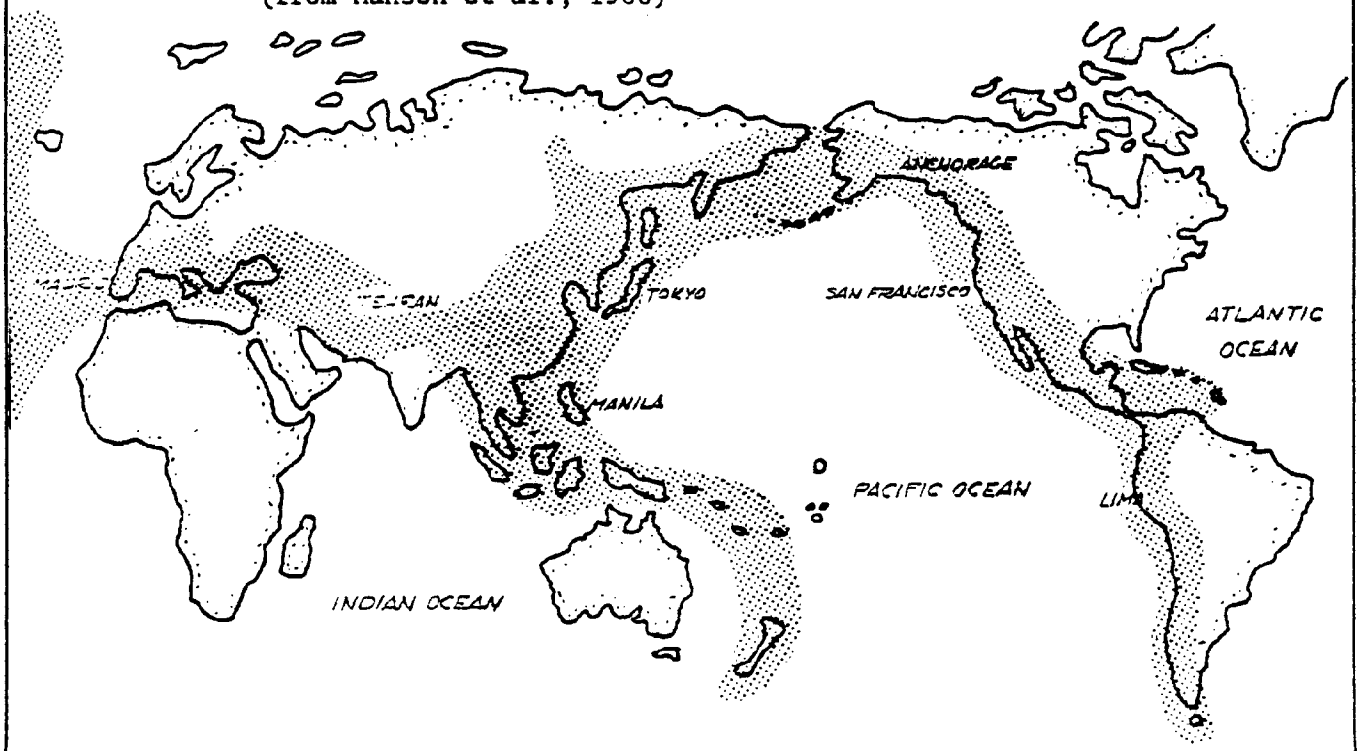
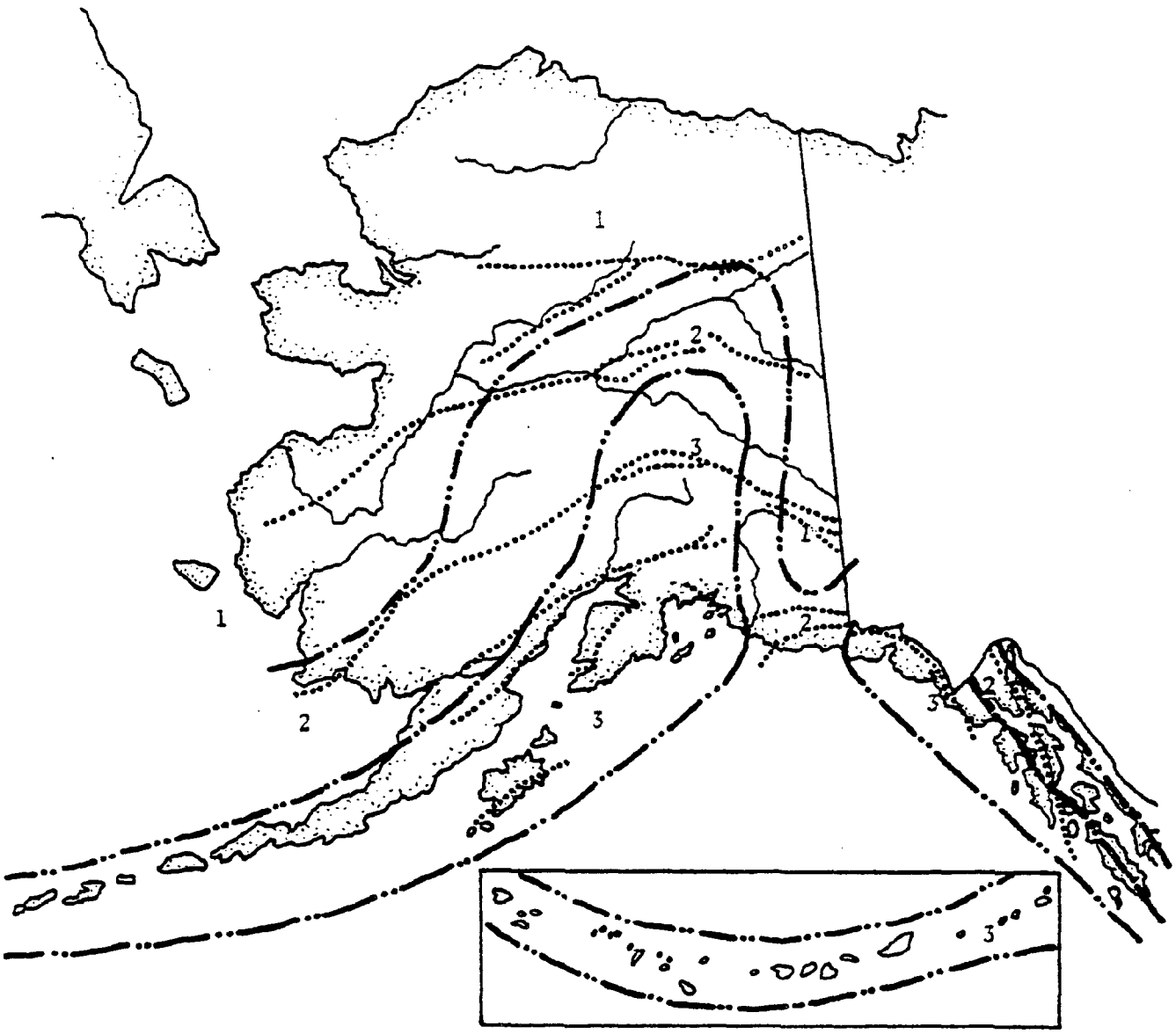


Fig. IV-1 EPICENTERS OF MAJOR ALASKAN EARTHQUAKES, 1898-1961
(from Hanson et al., 1966)



EARTHQUAKE BELTS OF THE WORLD. THESE BELTS COINCIDE WITH THE EARTH'S OROGENIC ZONES AND CONTAIN MOST OF THE EARTH'S ACTIVE VOLCANOES

Figure 4



Major Faults

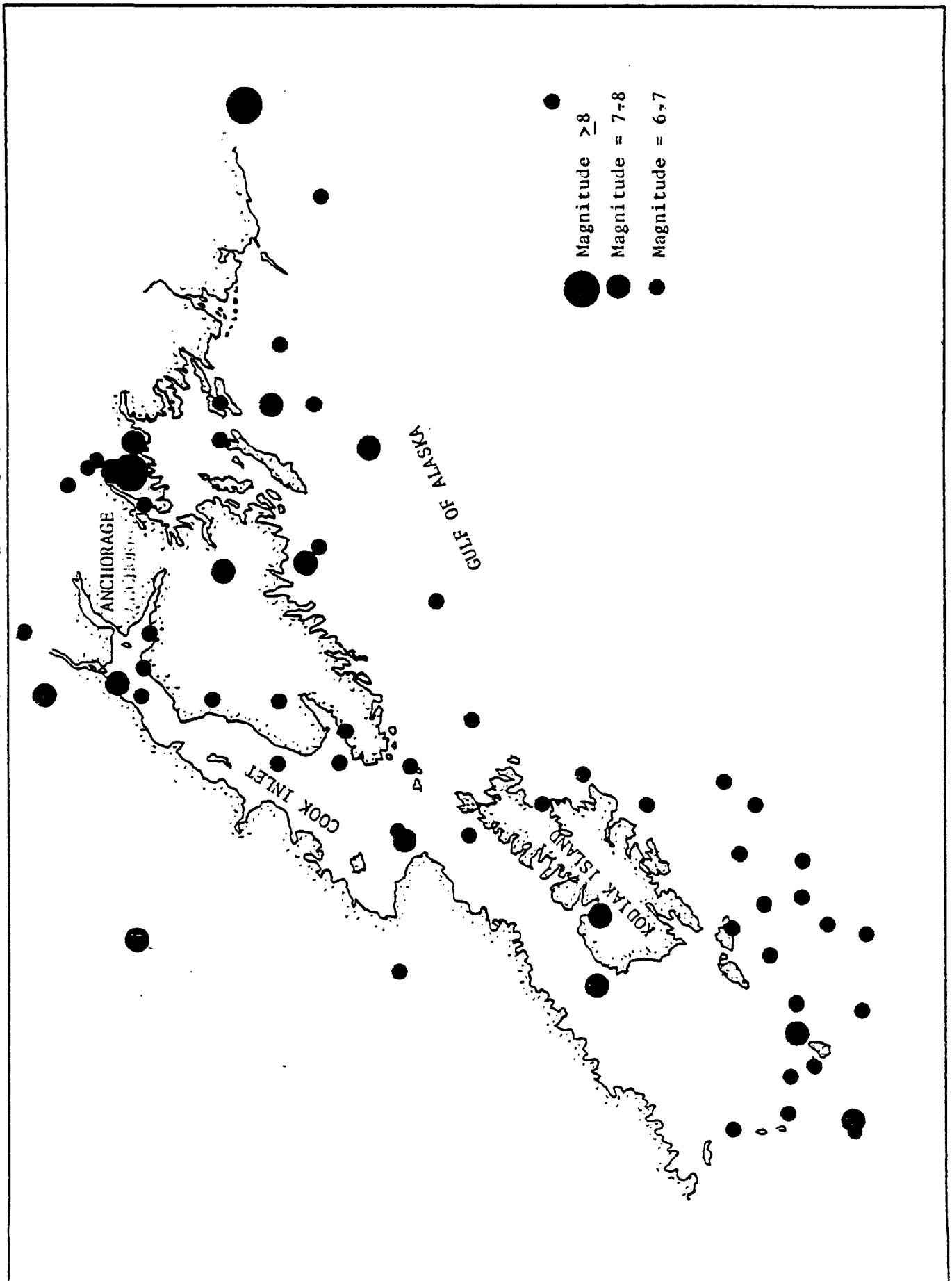
Seismic Zones

1--Minor structural damage (3.0-4.5)
2--Moderate structural damage (4.5-6.0)
3--Major structural damage (6.0-8.8)

Source: Compiled in 1971 by the Federal Field Committee for Development Planning in Alaska from authoritative sources.

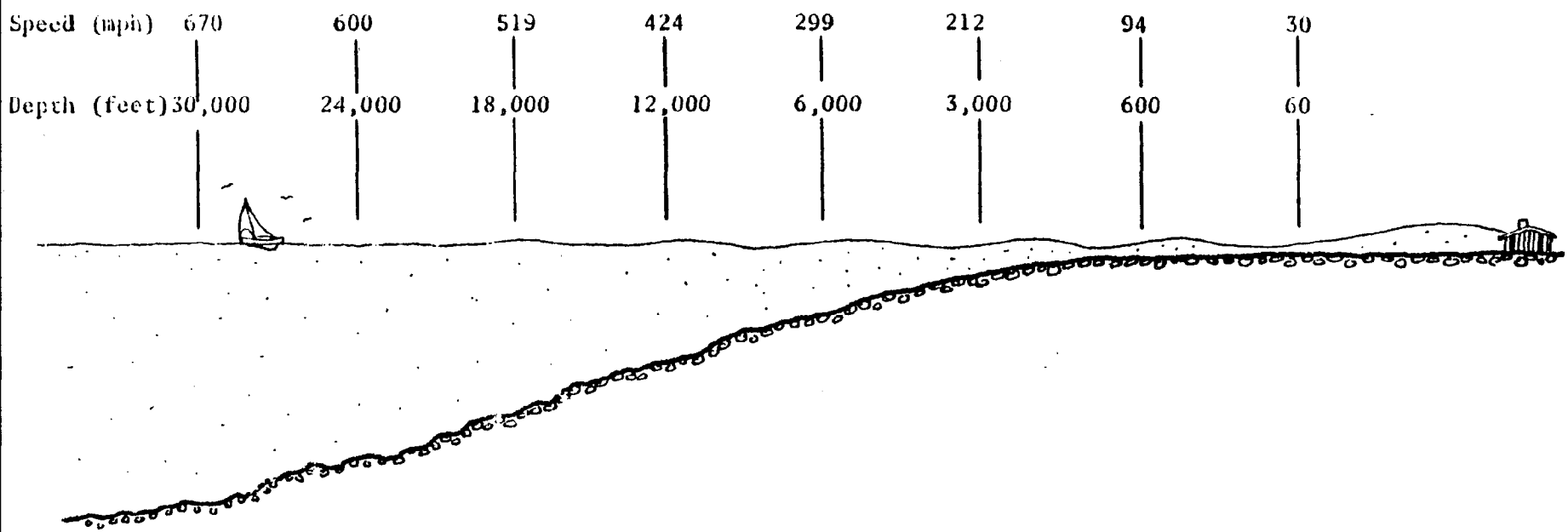
FAULTS & SEISMIC AREAS IN ALASKA

Figure 5



EARTHQUAKES WITH MAGNITUDE ≥ 6.0 IN THE COOK INLET - PRINCE WILLIAM SOUND AREA, 1899-1964

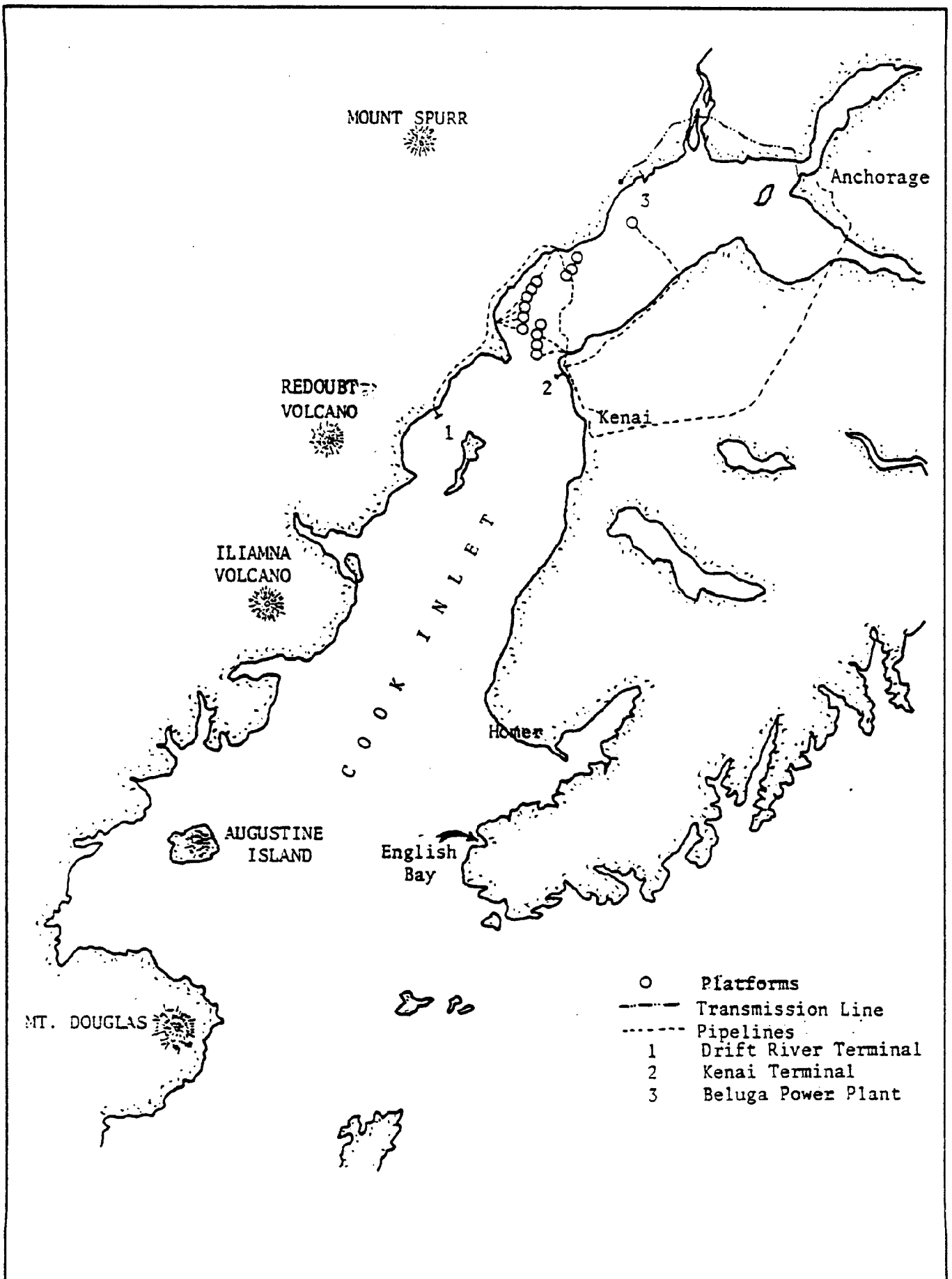
Figure 6



Tsunami speed is determined solely by water depth, and this fixed relationship makes it possible to forecast tsunami arrival-times for distant locations. The tsunami illustrated here, although somewhat exaggerated in the vertical dimension, is characteristic.

TSUNAMI SPEED VERSUS WATER DEPTH (from *Tsunami*, Department of Commerce)

Figure 7



VOLCANOES OF THE COOK INLET REGION

Figure 8

TABLE I-1

Datum Plan	Kenai (Lower Cook Inlet)	Anchorage (Upper Cook Inlet)
Highest Tide	26.00	35.80
Mean Higher High Water	20.70	29.60
Mean High Water	19.90	28.90
Mean (half) Tide Level	11.05	15.55
Mean Low Water	2.20	2.20
Mean Lower Low Water	0.00	0.00
Lowest Tide	-6.00	-4.90
Mean Range	17.70	26.70
Diurnal Range	20.70	29.60
Extreme Range	32.00	40.70

TABLE I-2

ERUPTIVE HISTORY OF COOK INLET VOLCANOES

Four volcanoes have erupted in the Cook Inlet Area in historic time. These volcanoes and their recorded eruptive activity are listed below:

Augustine	Redoubt	Iliamna	Spurr
1812; active	1778; active	1741; grew quiet	1953; ash eruption (fall out on Anchorage)
1883: violent eruption with ash and mudflows	1819; smoke	1768; smoke	1954: ash eruption
1885; steaming shore to summit	1902; active	1778; resumed action	
1935: lava eruption	1933; smoke	1779; active	
1963; Nov. 7th	1966-1968; recurrent explosions and turbulent clouds to elevations over 40,000 feet	1786; smoke	
1964; July 5th, and August 19th		1867; ash eruption	
1976; Aug. - fall out on Anchorage		1876; smoke	
		1933; smoke	
		1947; smoke	
		1952-53; smoke	
Present State:			
Lava dome moving upward, and continually degassing; recurrent microearthquake activity	Small lava dome extruded at head of fissure vent in 1967-68. Dome is degassing; microearthquake activity level presently unknown	Continuing fumarolic activity near summit	Continuing fumarolic activity near summit

tional consideration needs to be given to such factors as vegetation removal and revegetation practices in flood plains as an additional means of containing floods and reducing sedimentation and erosion.

Coastal flooding can be a serious hazard. Highly erodable soils along the coastline, ice scouring, and high velocity currents create problems. Storm driven waves pose a threat to low lying coastal facilities, although the protected location of Anchorage does have a tendency to ease the problem most of the time.

WATER QUALITY

Base data regarding the water quality of the numerous streams and drainage basins in Anchorage is limited. Outside of the immediate metropolitan area almost no data exists, however, the 208 Water Quality Program will correct this situation in the near future.

Some basic statements can be made, however, about streams and drainage basins in the Anchorage area that are undergoing increased residential, commercial and industrial use. The increase in pollutants loading (as base data indicates in Chester Creek) would suggest runoff is entering the various streams carrying with it pollutants from the residential area's streets and yards as well as grease, oils, and heavy metals. Stream channel and bank modification, as well as construction in the various drainage basins, have reduced the natural vegetation which would tend to reduce the contaminant loading. Turbidity tends to increase with increased flows downstream as well as the BOD and COB.

Numerous rivers and streams have been identified by the Alaska Department of Fish and Game as andromous fish streams but degradation of the fishery habitat has decreased or eliminated the fish population in some streams. This is associated with an increase in urbanization and development.

The 208 Water Quality Plan will be used as one of the major implementation tools for Anchorage's Coastal Zone Management Program, and as data becomes available for each drainage basin, specific mitigation measures can be initiated.

In addition to streams and rivers, the numerous lakes in the Anchorage areas must be given equal consideration. For example, Sand Lake water levels decreased by five feet from 1963 to 1970. All drainage designs must take into account the hydraulic interdependence of Sand, Sundi, and Jewel Lakes, the bogs and the upland wetlands which could lead to lower lake levels and high pollutant levels if proper management and planning are not undertaken.

BIOLOGICAL RESOURCES OF UPPER COOK INLET

The five North American species of Pacific salmon (chinook, sockeye, pink, coho, and chum) are found in Cook Inlet. However, the waters of the Knik and Turnagain Arms serve primarily as a migration route for salmon migrating to freshwater spawning streams during the period May through September. Limited set net fishing is conducted in the upper Inlet, however.

The greatest potential for impact to fishery resources in Cook Inlet is development activity. The fishery resources are important not only because of significant commercial and sport fishing purposes, but secondary economic and social benefits associated with tourism and sport fishing. Fishery resources are sensitive to numerous factors related to human activities, and effective planning in the coastal zone is required to ensure maintenance of these important renewable resources. The intertidal areas at the mouths of streams need special management to ensure that damage caused by siltation, or disturbance of the stream bed, or toxic pollutants does not occur. Other fish species, such as smelt, are also common in the streams of upper Cook Inlet, particularly the Twenty-mile and Knik Rivers, beginning about May 15.

Numerous bird species are found in the upper Cook Inlet region, particularly in the coastal wetlands and marshes.

Ducks and migrating birds are common to several coastal wetlands in the Anchorage area, particularly in the Palmer Hay Flats (geese, swans, and ducks), and in Potter, Eagle River and Portage marsh lands.

These wetland areas, used as stopover resting areas and as nesting areas, are subject to severe damage from human activity. Pollution from urban runoff and encroachment of urban development pose serious threats either by elimination of important habitat, food and cover or by fouling of the habitat.

Marine mammals are occasionally found in the waters surrounding Anchorage but are most common in the lower Inlet; however, increased water pollution in the upper Inlet could cause an impact. No data is available to determine what types of pollutants or levels of pollutants would cause an impact.

Beluga whales were sighted in Knik Arm, adjacent to the mouth of Fish Creek, in August of 1978.

SOCIAL, CULTURAL AND ECONOMIC RESOURCES

POPULATION

Both the location and physical character of the Anchorage area have a great deal to do with population growth — both past and present. Anchorage is located at the head of navigation for oceangoing vessels and is the terminus of four major land transportation routes (Anchorage-Fairbanks Highways, Seward, Glenn and the Alaska Railroad) as well as the hub of the state's air transportation network. Anchorage thus serves as a natural center for commerce and government, and is the major population center of Alaska.

The Municipality of Anchorage contains approximately 1950 square miles of land, but only 15 percent may be considered suitable for urban development and habitation. When one considers that the Chugach Mountains, Chugach State Park and Chugach National Forest prevent growth to the east and that Cook Inlet effectively blocks continuous development to the north, west and south (in addition to the two military bases immediately adjacent to metropolitan Anchorage), it becomes readily apparent that population growth is restricted and that densities throughout the Municipality are bound to rise.

Only small portions of the valleys along Turnagain Arm are suitable for development by reason of rugged, mountainous topography, large public reserves, localized subsidence and wide floodplains. The Eagle River area population concentration is restricted basically to the Glenn Highway corridor and to relatively small areas of Eagle River valley because of the above-stated limitations.

The population distribution in the Municipality is not uniform, rather, it can be described as a clustered type pattern. The majority of the Municipality's population resides in the Anchorage bowl; however, as densities rise, future growth will be and currently is being directed toward the Eagle River area and south Anchorage with infilling occurring in the Anchorage bowl

Total population growth in any given locale is influenced by an exceedingly wide variety of phenomena, some taking place within an area while others occur outside the area. In the case of Anchorage, most of the major influences have come from outside the immediate area. The site of the original settlement was chosen in 1915, when the Alaska Railroad set up a townsite near the mouth of Ship Creek. The first census recognizing the area was taken in 1929 when 2,736 persons were counted in what is now the Municipality of Anchorage.

In 1939, the last census prior to World War II, the Anchorage area's population totaled 4,229. The greatest population growth rate ever recorded in the area occurred during the next two decades as a result of the national defense effort associated with World War II, the Korean and Cold Wars. Large numbers of military personnel were assigned to local installations, while construction projects attracted large numbers of civilians due to the availability of high-paying construction employment. Population growth has been inconsistent through the period, reflecting to a large extent the impact of government decisions based on matters of national security. Population in the Anchorage area increased from 4,229 in 1939 to 32,060 in 1950, a growth of 658.1 percent. By 1960, the population more than doubled, increasing 158.1 percent to a total of 82,736.

Since 1960, Anchorage's population growth rate has slowed, military strength has stabilized and the government construction aspect of the economy declined in relative importance. The civilian sector of the economy increased in importance during this period. Despite a short earthquake-related decline, followed by an economic upswing connected with restoration, the Anchorage area continued to grow, increasing 37 percent since 1960 to a total population of 113,522 in 1968. By 1970 the initial effect of the well-publicized oil discoveries on the North Slope were being evidenced by rising population figures for Anchorage. The area's population increased by 11.3 percent to 126,333 during the 18-month period between the 1968 Special Census and the 1970 Decennial Census. The Trans-Alaska Oil Pipeline brought a significant increase in population to Anchorage. Between 1970 and 1974 the population increased by 36,166 to a total of 162,499. In 1975 this increased to 177,817. By July 1, the population had increased to 202,101 or nearly 50 percent of the state's population. This figure will increased to a projected level of 507,000 in twenty years.

RESOURCE OWNERSHIP AND USE

Along the Turnagain Arm the Alaska Railroad parallels the coastline. The Seward Highway parallels the railroad on the landward side along the majority of this area. Both the highway and railroad pass through the Chugach State Park and Chugach National Forest. Private land holdings along the Turnagain Arm are small and generally restricted to the valleys.

Upon entering the Anchorage lowland the State of Alaska owns and manages the Potter Marsh Refuge, a coastal marsh adjacent to the bluff line in south Anchorage. This ownership extends into the tidal flats. Ownership along the bluff top is primarily private and is in residential use. From about Point Campbell to Point Woronzof coastal ownership is held by the military and state, with lands leased to the FAA for airport use. Earthquake Park is held in Municipal ownership as a park. Adjacent to the park is again private ownership but at Fish Creek the Alaska Railroad again parallels the shoreline and continues on into Ship Creek and the ARR terminal. The Port of Anchorage is located just north of the railroad. East and north of the port, Elmendorf AFB and Ft. Richardson jointly own a vast stretch of shoreline up to approximately Beach Lake which is a regional park site in Municipal ownership. The majority of the remaining coastline is held in private ownership by Eklutna Inc., an Alaska native village corporation.

Of primary concern in planning for public access to the shoreline will be the cooperation of the Alaska Railroad which controls most of Anchorage's shoreline, and thus the importance of the federal consistency provisions of the Coastal Zone Management Act. This situation could lead to inherent conflicts between the aspirations and desires of the upland owner, the community at large and the railroads interest.

Competing uses along the shoreline are increasing, but available land is limited. Careful planning now will ensure a coastline of balanced use in the future.

The Coastal Zone Management Act is perhaps the most comprehensive tool for control of coastal uses. By requiring designation of permitted and non-permitted uses and mandating a solid environmental planning program, the Municipality accepts responsibility in conjunction with the State for coastal quality.

USES IN THE ANCHORAGE COASTAL AREA

To provide a benchmark from which to develop future plans for the preservation, conservation, and utilization of the Anchorage coastal area, it is necessary to be knowledgeable of existing conditions and uses. Inasmuch as there is a close relationship between land use and water quality, it is necessary to include consideration of current uses in the coastal area so that the Anchorage Coastal Management Program can adequately address those uses which may cause adverse impacts. Increased development in the Municipality and its various drainage basins will be accompanied by a lowering of water quality and result in direct and significant impacts on coastal waters given a situation with no controls. The severity of impact is almost totally related to the intensity of development. That is, commercial, industrial, and multi-family land uses have a much greater impact on water quality than single-family or low density single-family land use. The greatest problem facing the Anchorage Coastal Management Program is the accommodation of a significant increase in population in the Municipality while at the same time maintaining a high environmental quality. Uses in the Anchorage coastal area can be classified into ten major uses: 1) military 2) transportation, including highway, rail, and airports 3) residential 4) port facilities, including warehousing and commercial activities 5) recreation 6) gravel extraction 7) sewage treatment 8) wildlife management, such as is provided in the Potter Marsh Game Refuge 9) national forest and 10) state park.

The Municipality of Anchorage owns only a very small portion of the coastal area. The largest land holders are the Military and Alaska Railroad, the State, the U.S. Forest Service, and Eklutna Native Corporation. Major commercial and industrial activities are primarily confined to the Port of Anchorage and adjacent Ship Creek industrial area. In addition to the Port and Alaska Railroad properties located in Ship Creek, the majority of uses that could cause direct and significant impacts on coastal wters are located in upland situations. It is those water dependent and water related industries in upland uses that have the most potential for causing direct and significant impacts primarily on water quality, air quality, and land quality.

Water quality problems can result from both point and non-point sources of pollution. The definition of a point source is fairly self-explanatory: it is a waste discharge entering a water course at a single point, usually a pipe. Outfalls from sewage treatment plan are the most common example. A non-point source of pollution is refuse, entering a wter course at many points, either from the land surface directly or through the ground water regime. It is for this reason that the coastal management program must be closely coordinated with the Municipality's 208 Water Quality Management Plan. The Municipality of Anchorage has been given the primary responsibility to complete the planning and development of the various controls required to meet both the water quality standards, the air quality standards, and the requirements of the Alaska Coastal Management Act. As a result, local Municipalities become the implementing agency for the policies and objectives adopted at the Federal and State level.

The Anchorage Coastal Management Plan will be a major element of the Anchorage Comprehensive Plan which sets forth goals, objectives, and policies regarding the future development of the Anchorage area. Although the comprehensive plan has been adopted as an ordinance, it does not represent final regulatory authority over the use of land. Rather, this authority is vested with the Planning and Zoning Commission and the Assembly and effectuated through the Zoning Ordinance and Subdivision Regulations. Likewise, the regulations of the Anchorage Coastal Management Plan will vest authority with the Planning and Zoning Commission and the Assembly for implementation of this plan.

The emphasis of the coastal management plan is primarily centered around the special patterns and segregations of land uses and the suitability and capability of an area to accommodate a given land use. The plan provides goals and objectives for environmental quality, including vegetation, air, water, local aesthetics, and those uses and activities which could result in direct significant impact on coastal waters. This present document represents only the first phase of an ongoing planning process. The coastal management plan as presented in this document outliens a conceptual framework and planning methodology which identified a process required for environmental planning to meet the requirements of the Alaska Coastal Management Program. Based on the methodology, goals, objectives, and policies were developed for specific geographic areas within the coastal management area. The ongoing activities that will be necessary to fully implement the coastal management plan include preparation of programs and precise plans to deal with specific areas of the Municipality requiring special attention, and the preparation of ordinances to deal with sensitive environmental areas where certain uses and activities may have adverse impacts on coastal waters. Figure 1 is a diagram illustrating the continuous comprehensive planning process.

Man shapes his communities and structures his habitat through the use of land. Land use activities determine the nature and vitality of his environment. The entire spectrum of our human society depends on development practices which alter the natural state. Land is thus the base upon which must exist a man-made environment as well as the natural environment which supports life. Our man-made environment, however, is often incompatible with nature. As man's use of the land increases in scope and intensity, the threat to the natural environment is greatly increased. The future success or failure to reduce this threat will determine the ultimate quality of life in the Municipality of Anchorage coastal area.

The most important consideration for our future and environmental quality lies in the broad concept of how man makes use of the land. Our supply is not limitless, but finite; its proper use and management is essential to the well being of all citizens of the Municipality. Anchorage in particular, is blessed with a great variety of natural land and water areas which are both beautiful and productive, but this condition is neither inexhaustible nor indestructible. As man occupies or uses the land, he is in one sense consuming it, for he removes most of the future options for that area. In addition, he often strips it, reshapes it, and pollutes it during his process of utilization. If the indescriminate use of land is left to continue unabated, it will not be long before these characteristics which make Anchorage a livable place, a beautiful, unique, productive, life-supporting and culturally significant area, will be destroyed.

PRESENT CONDITIONS

At the present time suspended sediment is the dominant pollutant in Cook Inlet and thus will increase as previously undisturbed land areas become developed. During the summer months the Knik and Matanuska Rivers discharge up to 150,000 tons of silt per day into the Inlet. The mean suspended sediment concentration in water near Anchorage was measured at 1,280 ppm. However, suspended sediment is not the only pollutant. Other pollutants include Municipal sewage. According to a water quality study of Knik Arm by Tetra Tech, the present outfall pipe at Point Woronzof does not effectively dispose of Anchorage Municipal wastes because it provides only minor dilution at low tide and permits the waste field to become entrained in an eddy during flood tide. The report concluded that larger flows in the future will worsen the situation unless the outfall is moved or extended.

The Asplund Water Pollution Control Facility treats Municipal sewage prior to it being discharged into the Inlet and is most likely the single most important environmental protection measure undertaken in Anchorage.

Other pollutants include oil spills, raw sewage disposal directly into the Inlet from other towns and cities, fish processing waste, etc. Numerous submarine pipelines and cables cross the Inlet and several crude oil gathering facilities are located along the coastline of the Inlet. Of particular importance is freshwater stream and river discharges into the Inlet. The Matanuska, Knik, and Susitna Rivers contribute approximately 70% of the fresh water annual discharge into the Inlet. Additional sediment is produced by man's activities, particularly highway and urban development in the Anchorage bowl area. Future developments in these watersheds will increase throughout the Inlet and therefore the effects on the Inlet environment likely to result from future development must be assessed in order to formulate a rational coastal management plan for the entire Cook Inlet.

Burial of Cook Inlet organisms by silt, subtidal erosion and scouring of the Inlet seafloor by ice and sediment, rapid currents mesuring up to 8 knots, low temperatures, exceptionally high turbidity, and low fluctuating salinity all combine to create an exceptionally severe estuarine environment. The severe environment and the high suspended sediment concentrations cause migrating fish to use upper Cook Inlet only as a means to travel through the area to creeks and rivers to spawn or to cleaner waters in Cook Inlet as feeding juveniles.

Commercial fishing was generally discontinued in most parts of the upper Cook Inlet in the late 1960's due to decreases in andromous fish population. Commercial fishing activities are concentrated in the lower Inlet south of the forelands. This decline has been attributed to the effects of stream channelization, thermal pollution, roadway drainage, water impoundments, among other causes. Andromous fish are generally taken from local creeks and rivers rather than Knik and Turnagain Arms.

Health problems also are present. The chief concern of fecal coliform concentrations is with humans since serious enteric diseases are often transmitted by water. An example would by dysentery and typhoid fever. The fact that some people do contact contaminated waters along Anchorage's shoreline requires serious consideration. With a possible doubling of Anchorage population within the next twenty years the incidence of contact with coliform contaminated coastal waters will certainly increase the probability of the transfer of human disease.

Almost one-half of the state's population lives in the Cook Inlet basin with the majority of that in the metropolitan Anchorage area. Commercial activities associated with the main industries in the basin — petroleum exploration and development, fishing, transportation, recreation, tourism, timber and agriculture — are centered in the Cook Inlet basin. These industries are the major competitors for utilization of the natural resources in the coastal zone. In view of present acute energy requirements, rapid development of these resources and subsequent industrial expansion along the coast was inevitable.

Another issue to be considered is that the Cook Inlet area is highly faulted by both major and minor

faults. This area is located in the trans-Pacific seismic zone and is included in seismic risk zone 3, defined as ares susceptible to earthquakes with magnitudes 6.0 to 8.0 and where major structural damage could occur.

Located within the Inlet basin are numerous active volcanoes, all posing a potential threat and impact to future and present coastal development.

An associated hazard related to seismic and volcanic activity is of course tsunami and tsunami-runup.

Upper Cook Inlet is covered with ice for approximately four months of the year. Great ice blocks form in winter months acting as impediments to ship navigation and as scouring agents along the coast. Ice also poses a threat to water dependent activities such as marinas and port facilities. Every winter, approximately 500,000 tons of ice form under the dock at the Port of Anchorage.

Other geotechnical hazards found within the coastal zone of Cook Inlet include areas subject to liquefaction, landslides, permafrost, avalanche, wind and coastal erosion.

CONCLUSION

Quite clearly then, Anchorage is dependent upon coastal water transportation for a majority of its supplies. There are many competing uses on the coastal area and available land is limited and much of the area is subject to numerous hazards. Rapid population increases will result in increased problems, and increase the pollution levels. As natural resource development activities increase, growth will continue. These factors make Anchorage's coastal zone a factor of immediate concern. The need for effective planning to accommodate, in a balanced manner, the growing demands on coastal areas is needed now.

A general conclusion can be stated as a result of this previous discussion: that maximum rational use and management of coastal resources consistent with the retention of life support systems, beauties and amenities of the coastal zone must fully recognize the constraints and limitations of such a severe estuarine environment.

An understanding of the physical setting as well as man's role in Cook Inlet must be understood because it is the basis for developing a viable coastal management plan. Man's actions do and will continue to cause direct and significant impacts on coastal waters at an accelerated rate unless sound management of our coastal resources is encouraged and carried out. This is the emphasis of the Coastal Zone Management Act.

DECLARATION OF POLICY

"The Congress finds and declares that it is the national policy (a) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations, and (b) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic and aesthetic values as well as to needs for economic development."

The policy established by Congress means that activities within the zone or the use of the zone should be undertaken so as to be compatible with the capabilities and limitations of that area.

The Coastal Zone Management Act of 1972 delegates the major tasks of coastal management to the states. Under this Act Alaska is required to determine the nature of its coastal resources and identify the major problems and issues related to those resources. In Alaska this task has been delegated to the coastal resource districts and the process culminates in a land and water use plan for the coastal zone. The ACMP affects three levels of government. Local governments such as Anchorage are required to prepare district coastal management plans. These plans are subject to council and legislative review. State agencies are required to perform their duties and activities in the coastal zone in conformity with the ACMP, the guidelines and standards, and approved district programs. Federal agencies, through the consistency provisions of the CZM Act of 1972, must act in a manner consistent with the ACMP (ACMP Draft, 1976).

THE NEED FOR COASTAL MANAGEMENT

Rapid growth in South Central Alaska and particularly the Anchorage coastal plain has placed increasing pressures on the complex natural systems that support many human activities and has created conflicts over the allocation of coastal resource. As more conflicts arise, it becomes increasingly apparent that the limited natural resource base is threatened, and choices must be made. In the Anchorage Municipality, for example, at the present time 1/5 of 1% of the state's total coastal zone supports 60% of the total coastal population, or approximately 45% of the entire state population. In less than twenty years, this same area is anticipated to increase in population 100%, from 202,000 people to 507,000 people. If growth actually occurs according to the dynamic rate that has been projected for Anchorage, a strain will be placed on the limited land, air and water resources currently available. Rapid development along the north and south corridors to Eklutna and Portage, along with continued "bowl" development, necessitates that a coastal management program be developed and utilized. As owner-manager of vast coastal public resources and as protector of the public interest, the Municipality must devise and implement a rational process for resolving these conflicts. This process should maintain the delicate balance among the economic, environmental, and social forces that sustain human well being; and it must remain flexible enough to

respond to new information and changing perceptions of human needs.

In 1976, the Anchorage Municipal Assembly adopted the Comprehensive Development Plan, a declaration of goals and objectives to act as a practical guide for community development. One of the purposes of the comprehensive plan is to force attention to major issues facing the Anchorage community and clearly state the policies and actions the community intends to pursue. One such policy which is identified to help insure that resources will be used in the most efficient manner is coastal zone management. Three major objectives are listed specifically:

1. To develop a plan for the orderly regulation and development of the coastal zone within the Municipality, while recognizing that all of Cook Inlet is an integrated unit and part of the entire unit and part of the entire coastal resources of the state.
2. To adopt and implement policies and programs which will protect and enhance the unique natural features of the coastal zone.
3. To cooperate with the State government in formulating policies for the entire coastal zone of the state.

If the Anchorage Municipality is to achieve the goal of optimal utilization of its coastal resources, it must first develop a mechanism whereby decisions regarding those resources are based upon adequate knowledge and information concernig existing conditions, and the range of options available. Such a mechanism must, at a minimum, insure that the best available information is incorporated into the decision-making process and that readily apparent conflicts and options are understood prior to making commitments in the costal zone. It should strive to assure that long-term values are not sacrificed with the benefit of short-term gains, that decisions are based upon well informed judgment with a full awareness of the consequences to be expected. This is the essence of coastal management and the purpose of this program. The upper Cook Inlet is a major contributor to the prosperity and well-being of both the State and the Municipality. The population and economy of the Municipality and the entire upper Cook Inlet have grown rapidly over the last decade, and this growth rate is expected to continue.

Although continued coastal growth and development is both desirable and probable, it is not assured, for the coastal area's ability to supply the resources needed for continued increases in productivity is uncertain. Problems have already risen that, unless checked, will limit economic growth. These problems include increasing exposure of residents to natural hazard areas as urbanization increases, possible shortage of fresh water for industry, the Municipality, and new residential growth. The coastal management program must identify those areas and uses most desirable for future growth and development while also recognizing the constraints, and if possible how they can be overcome.

In recent years the public has become increasingly aware of coastal problems and less willing to live with them. In many of the public meetings held for a variety of planning purposes, residents have expressed their concern about a number of problems that result in conflicts over use of the natural resource base. They have made it clear that they expect solutions, and when the problems are greater than purely neighborhood in scope, many residents look to the Municipality and the State to provide answers for these local and regional problems.

The Municipality of Anchorage is responsible for promoting prudent and environmentally sound development within the Municipality. This responsibility derives from several sources. First, the State of Alaska grants certain planning and zoning powers to home rule municipalities such as Anchorage. Second the Municipality is a major investor in public facilities such as ports, parks, and recreation areas; and third, the Municipality is granted power to regulate the uses of many of the natural resources associated with coastal waters and adjacent shorelands. For these reasons, Municipal processes to weigh and balance policies for these coastal responsibilities have been designed.

The resource focus of the Anchorage coastal management program is coastal waters, adjacent shorelands, the major drainages and coastal lakes within the Municipality. The public has a strong interest in the Anchorage coastal region because its abundant resources support many human demands. The coastal waters and shorelands are themselves a great resource. The large population of the Municipality in conjunction with the tourist industry depends not only on the diversity of fish and wildlife, but on scenic views, open spaces, wetlands, and clean air and water. Public waters support waterborne transportation which furnishes access to ports. The ports open vast markets for goods, thus encouraging high levels of industrial and commercial productivity throughout the Municipality, upper Cook Inlet and the State. All these uses of coastal waters support public well being and private enterprise. The principal issues that should be addressed by any coastal management program are those related to the public and private demands made on coastal resources and to the natural processes that are intimately associated with the wters and adjacent shorelands. Some governmental authority is exercised over activities both on the uplands and in coastal waters. Many public concerns, like many private activities, are in no way dependent on a proximity to coastal waters. Residential development and industrial siting, for example, are of concern to this program only when they compete directly for the product of coastal waters, threaten the continued availability of the resources contained in these coastal areas, or create hazards to coastal

residents. Likewise, road construction, park planning, and law enforcement are not always of concern to coastal management either. That is, they are of concern only when they impinge on coastal waters and their adjacent uplands. During public meetings held in Girdwood, the bowl area and Eagle River and with the Community Councils, residents repeatedly express concern about a number of coastal issues. Two issues mentioned frequently were: (1) The entire issue of coastal hazards (liquifaction, subsidence, the Turnagain slide area) and (2) the importance of maintaining habitats in wetlands area (and the allocation of fresh water in the drainages, which ultimately flow into Cook Inlet). Questions were raised about the value of wetlands, and what the boundaries of the coastal area should be for management purposes. Institutional problems were also discussed. They included inefficiencies in the flow of information to citizens, and in other public programs and policies. Although these institutional problems are not unique just to the coastal area, they affect coastal resources and were seen by residents to be in urgent need of solution.

These coastal and institutional problems are not being dealt with now to the public's satisfaction by either government or the private market system. Recurring problems can be classified as falling into three main categories: Those associated with the economic activities derived from coastal waters and their adjacent shorelands, those arising from conflicts to the natural resource base of the coastal area, and those affecting the quality of life — the livability of the coastal region. These problem categories comprise the basis for concern about the coastal area within the Municipality.

ECONOMIC PRODUCTIVITY

Historically, the vast and highly productive natural resources of the upper Cook Inlet have made it a major contributor to the prosperity and well being of the State as well as to the Municipality. Three factors have been important to Anchorage's growth. These are:

1. Location on the major transport routes into Alaska, both natural and manmade;
2. The growth of government activity in Anchorage and
3. Development of Alaska's natural resources.

All these factors are interrelated. Each factor has been important in varying degrees throughout Anchorage's history, and will continue to be importantly connected to its future growth.

The economic sectors depending directly on coastal waters (waterborne transportation, commercial fishing, petroleum exploration and offshore production, and most of the recreation and tourism in the coastal region) compete with each other for the use of the coastal resources. Port facilities, dredge channels, increased urban runoff into coastal waters, and petroleum activity that may interfere with continued biological productivity in some parts of the coastal waters can have adverse effects on sport and commercial fishing. Likewise, aesthetic considerations that benefit recreation and tourism sometimes conflict with the intense use of coastal waters for ports, waterborne transportation, petroleum activities, and disposal of sewage waste. Other economic sectors, too, make competing demands for fresh water and space either directly or indirectly. Water demands caused by various economic sectors of the Municipality may reduce the inflows of fresh water, sediment, and nutrients to coastal ecosystems. Wetlands in other areas necessary for continued biologic productivity within the Municipality may be damaged by changed fresh water, nutrient, or sediment inflows or by the disposal of dredge materials. However, at the same time, economic growth is vital to the Anchorage economy and thus the Anchorage Economic Development Commission has stated as one of its goals that it is necessary to encourage the development of a regional economy with sufficient growth and stability to improve the standard of living of the region's population, and to guide regional economic development consistent with full consideration of public, private, and environmental coasts and benefits. Anchorage, as the major metropolitan area in Alaska, is heavily influenced by events which occur at both the state and local level. Some of the major issues which may impact the development of Anchorage in both the short- and long-term are:

1. Transportation

   Anchorage International Airport — North/South Runway. Construction work has started on a new 10,500 foot north-south oriented runway located in the coastal zone. The new runway is designed to increase the safety of Anchorage International Airport by providing an alternate way for jets to land during periods of severe crosswinds. The present federally funded project will allow Anchorage to reach its full potential as the air crossroads of the north. The new runway will also provide needed space for the expansion of local aviation enterprises.

2. Private Port Developments

   Two major private port developments on the tidelands on the southside of Ship Creek have recently been proposed by local enterpreneurs. Property has been leased from the Alaska Railroad south of the existing port of Anchorage. The first project, proposed by local industrialists, would cover approximately 60 acres of tidelands below Ship Creek. The other projects, covering 43 acres, would also be located in that area. Both of the projects would require extensive dredging and filling operations prior to construction.

   The first project, with an estimated cost of 50 million dollars, would include a 6.5 acre small boat and moorage basin and additional commercial and recreational marine support facilities. The complex would be served by roads and a

railroad spur. Although the proposal is still under evaluation, the commercial dock facilities are apparently not meant to be in competition with the existing port of Anchorage.

The second project would be a railroad-oriented waterfront complex adjacent to the first project on the south side. The project, proposed by a group of local businessmen, would also include warehousing and office facilities, and possibly a restaurant. Both proposals are presently being reviewed by the U.S. Army Corps of Engineers. These major waterfront developments, if completed, could provide both jobs and an increase in the port capacity of Anchorage.

3. Beluga Coal Reserves

Directly west of Anchorage, on the opposite side of Cook Inlet, lies a major deposit of coal. The Beluga reserves, which comprise the major portion of this massive coal field, are thought to contain over two billion tons of coal, which translates into an energy equivalent 25% greater than the Prudhoe Bay oil reserves. To date this massive coal field has not been mined commercially, but various interests are now studying the resource development potential of the region. One proposal would include a mine, dock, and a townsite designed to accommodate hundreds of workers. Another idea being explored by one local electric utility is to build coal-fired electric generating plants on site at Beluga and transmit the electricity back beneath Cook Inlet to Anchorage.

4. OCS Leasing

The federal government continues to lease trusts on the outer continental shelf of Alaska to oil companies seeking developable petroleum reserves. The latest off-shore leasing schedule indicated options for such areas as the Beaufort Sea, Gulf of Alaska, Kodiak, Bering Sea and Cook Inlet. All of these off-shore operations, but especially the proposed Cook Inlet leases in March of 1981, will have varying degrees of impact on Anchorage. In the exploration stage, administration and logistic support for the exploratory drilling rigs typically either originate or are processed through Anchorage. Once marketable quantities of oils are found, more substantial investments of manpower and materials are likely to be made in Anchorage, resulting in increased population in Anchorage. While the possibility of a major discovery in lower Cook Inlet is possible, the Municipality has limited onshore coastal areas suitable for the siting of oils and gas-related facilities. This is due in part to several factors:

a. A majority of the coastal area of Metropolitan Anchorage is presently developed.

b. The topography of a major portion of the coastal area is too steep to accommodate such facility siting.

c. The major tracts of vacant land in the coastal area are in Federal ownership.

d. The Port of Anchorage has limited area and is completely surrounded by Federally-owned lands.

Thus, the only possibility for locating such facilities would be on either Federally-owned land or on lands patented to Eklutna, Inc. or Cook Inlet Region Inc. The Matanuska-Susitna Borough is actively looking into the feasibility of locating such a facility at Point McKenzie. Fire Island offers a potential location; however, such feasibility has not been determined.

5. Government

Government, while it provides only 27% of total civilian employment, is almost 38% of the economic base. The next most important industry, construction, has less than half the impact of government.

The importance of the non-governmental sector can be seen by examining the Anchorage economy in a functional sense. Anchorage serves as the administration and distribution center for Alaska. Because of this, traditional service industries such as trade, services, transportation, and finance are important basic industries for Anchorage. The second important funcitonal sec tor which includes employment in many industries is tourism. Both of these sectors include employment and transportation, trade, and services. According to estimates made by the state, the primary impact of tourism accounted for 5,000 jobs in the state. By assuming the distribution is proportional to the distribution between Anchorage and the state, Anchorage has about 2,500 tourist related jobs.

The strength of the Anchorage economy can be discussed in terms of three important aspects of the economy.

First, Anchorage is the transportation center for the majority of the Alaska population. The Port of Anchorage serves as the majority entry port for goods for about 80% of the population. The Alaska Railroad, International Airport, and existing highway network serve to link Anchorage with the rest of the State. This transportation network establishes the market area served by Anchorage as the majority of the State.

The second development strength of the economy is the existence of ample capital resources. Both new and traditional sources of capital will guarantee capital resources for development. State revenues from resource development will become an important source of capital for the public infrastructure investments needed to encourage development.

The final strength of the Anchorage economy is its scale and its established system of service.

Additional development will be generated by the size of the economy, most importantly as the local service sector expands. The established system of services guarantees Anchorage will continue to provide services to the whole state and a major proportion of state growth will be reflected in growth in Anchorage.

The growth of natural resource industries within the state could lead to the expansion of the administrative sector of the Anchorage economy. The headquarters of the many petroleum companies operating within the state are already located here. The hard rock mining industry could also follow the same pattern as it develops in the state. This industry will have different impacts over time, with the impact probably being greater during exploration and development than during production. Other natural resource industries, such as fishing and forestry, may also headquarter in Anchorage as larger firms enter these industries.

Anchorage's potential as a processing center for natural resource products depends directly on its relation to existing and planned transportation systems. The location of the port of Anchorage at the end of the two major transportation systems into the Alaska interior makes Anchorage, as the trans-shipment point, a potential point for processing.

The scenic beauty of Alaska is the major asset in the development of the tourist industry in Alaska. According to the State Division of Tourism, the potential is being realized with a rapid increase in the number of tourists in Alaska. Between 1970 and 1975 the number of tourists in Alaska doubled. The main strength of the Anchorage tourist industry is the growth of state tourism. Tourism is environmentally clean and provides employment for low-skilled individuals. The potential lies in the areas of increasing the total number of tourists in the state, increasing the proportion that comes to Anchorage, and increasing the amount tourists spend in Alaska and Anchorage. Tourists spend between 300 and 400 dollars during their stay in Alaska; more tourist attractions would serve to increase the amount of time and money they spend in Anchorage. The main weakness is the lack of development of attractions for tourists in Anchorage.

Thus, economic consideration must be considered within the coastal management plan of the Municipality, but considered in the context that increased economic development will result in increased population which must be accommodated in an environmentally acceptable manner.

LIVABILITY

Livability is defined by the qualities that make an area a good place to live. A livable place offers more than the satisfaction of the basic necessities. The livability of the coastal area is one reason many people choose to live, work, and visit Anchorage.

For a place to be livable, it must offer a balance between continuing economic opportunities and other assets, not all of which are adequately taken into account by the market pace. Probably the most important resource in the coastal area is an adequate fresh water supply of unpolluted surface water and ground water that can be produced without adverse effects. At the present time, the major source of fresh water supply for Anchorage is Ship Creek. The upper reaches of Ship Creek originate in the western slope of the Chugach range east of Anchorage. Ship Creek is approximately 24 miles long and drains a basin of 117 square miles. Because of its excellent quality and its close proximity to the urbanized area, Ship Creek is the primary water supply source for Anchorage and the military bases. Nearly one third of the combined Municipal and military water demand for Anchorage is supplied directly from Ship Creek at the Diversion Dam at Mile 10.5. Water is also withdrawn from Ship Creek for cooling water at three power plants. Prior to 1942, the entire length of Ship Creek was suitable spawning habitat. Andromous species were abundant, and included silver, king and chum salmon. Dolly Varden char were also present although not in great numbers. In 1942 the population of Anchorage was around 3,000. During the next decade, four dams were constructed on Ship Creek to support the water and power demands of a rapidly expanding population. Three of these four dams constituted a total barrier to migrating salmon. Since that time, however, fish ladders have been constructed at three of the four dams to restor migration. A new fish hatchery has been located on Ship Creek in attempts to restore the productivity to Ship Creek. Degradation of the fishery habitat in Ship Creek can also be attributed to other factors associated with urbanization and development. Gravel removal to supply construction activities has degraded spawning habitats severely in localized areas. Channelization of Ship Creek near its mouth, through the Elmendorf Air Force Base Golf Course and near the Fort Richardson power plant, has also degraded and depleted the habitat. Also of concern is pollution from storm water runoff from Fort Richardson, and from commercial and industrial sources in the lower two miles of the stream. As a recreational resource, Ship Creek is no longer the popular sport fishery for local anglers it once was. In 1961 the salmon season was closed and remained closed until 1970 when severe restrictions were placed on a short season. In 1973 there was another complete closure.

As a commercial resource, samples of commercial catches in the Cook Inlet have been taken and counts of Ship Creek salmon compiled. However, sufficient data hsa not been collected to evaluate the overall contribution of the Ship Creek Hatchery as a commercial fishing industry.

In the face of increasing stress due to development in the Anchorage bowl, the future of Ship Creek as a

fishery resource is questionable, as are stresses to the other drainages in the Municipality.

The preceding example was used to illustrate that increased urbanization in the Anchorage area has caused pollution of the surface waters and has produced adverse effects. Fresh water is the limiting natural resource in the coastal region. Other assets to livability include a pleasant climate, clean fresh air, open spaces, and fishing and hunting opportunities. These are not only valued by coastal residents, but also by people who live in interior Alaska. Non-coastal residents also have a stake in the future of coastal waters, not only because coastal waters are publicly owned, but also because these uses benefit the state as a whole as well as their own communities.

Besides natural resources, other components include the availability of jobs, public safety, public facilities, and freedom from unnecessary governmental restrictions on the use of or access to public resources. People demand a mixture of elements for a high quality of life, but they assign different priorities to these elements. When public preferences are translated into a political will, the present dollar value of any one use of coastal water should not by itself determine ultimate resource allocation. Because coastal waters belong to all Alaskans — not just to the highest dollar bidder, and not only to the people who live next to the shorelines of Cook Inlet, decisions made on a local level that might preclude uses of regional benefit should also take into account the demand by the broader public for livability. Retaining all these components requires a balance between development, conservation, and preservation.

Just as the various economic sectors compete for resources, some of the components of livability conflict with one another. For example, jobs often depend on intensive economic activities that conflict with aesthetics or other social values. People value abundant open space, a pleasant climate, and scenic areas. They see value in a diversity of land, water, plant and animal life in natural areas that can sustain a variety of uses. There is value in the resiliency that allows intensive uses in one place without marring the aesthetic or scenic qualities in another. These non-economic benefits are not valued equally however; for example, who is to decide what a scenic view is worth? Questions such as these show why assessing social values is one of the most difficult problems in resource allocation and management. Recreational opportunities are afforded by a combination of natural attractions — fish, wildlife, transportation systems, lakes, fresh flowing streams, in a varied vegetation landscape. Conflicts may arise because different kinds of recreation impose different demands. Some are solitary reflected activities, while others are intensive and sometimes destructive uses of coastal resources. Government has authority over much outdoor recrea ion: it can and must regulate certain uses. It provides access to and sometimes licenses for certain uses. These are part of government's concern for the public interest.

NATURAL RESOURCE BASE

The livability and economic productivity of the coastal area makes it important, but why should there be concern about it? The answer is that the natural resource base which makes possible the livability and the economic activities of the coastal area is being changed by these very activities. The abundant natural resources of the coastal area contribute to both economic development and the attractiveness of the coastal areas as a place to live. The economic activities based on these natural resources affect coastal waters and shorelands in many ways: by diverting fresh water supplies; by encroaching onto wetlands; by producing goods that require shipping lanes and thus dredging and disposal of dredge material; and creating a public demand for roads and waterways and for other public facilities. When the marsh is partially excavated and filled for residential development, marsh productivity is diminished, as is the water recharge function that it serves. The complexity and interdependency of both the human and natural system along the coastal area means that activities using coastal resources may have unseen but important repercussions. To assure a lasting and desirable mix of benefits from coastal resources in the face of growing demands upon them, the workings of coastal resource systems must be better understood.

Not all areas of coastal waters or shoreland are alike. Not all areas of the coastal zone are suited to the same uses or intensity of uses. Although beach and shoreface areas, marshes, tidal flats, and other resources of the coastal area differ from one another, they are interconnected and affect one another.

To understand each of these areas in the context of the coastal system as a whole, the coastal system may be broken into a manageable number of subunits and composite environments. These may be referred to as coastal environments since they group together into functional units various physical, biophysical and cultural features forms which are typically associated in nature. Subunits of these coatal environments are referred to in the Management Plan as resource policy units, whether natural or manmade, and are mappable entities defined by local characteristics of processes, land form, soils, biota, and other factors that naturally support certain levels of human activities.

These coastal resource policy units must be taken into account if public and private decision makers are to harmonize the intensive use and development of coastal resource systems with the continued economic productivity and livability of the Anchorage area. These coastal environments and their subunits — Resource Policy Units — are the basic units upon which the Anchorage Coastal Management Plan is designed.

THE ROLE OF LOCAL GOVERNMENT IN COASTAL MANAGEMENT

Given the rising demand for the economic resources and livability of the coastal area, and given the complex interdependence in and among the human and natural systems of the coast, why are these coastal issues governmental concerns rather than merely private sector matters? The answer is that a large part of the coastal resource base is publicly owned and still more of it is subject to the long-established regulatory and public investment programs.

The Municipality and the State of Alaska conduct many regulatory and investment functions in the coastal area. Regulatory activities such as the air and water quality program, solid waste disposal programs, and fishery regulations have been long established. Some of the regulatory activities, such as fishery regulations, are designed to protect public resources. Other are enacted to protect the public interest against undesirable externalities, or spillover effects. An example of such a pillover problem is air pollution, which cannot be adequately resolved by private enterprise alone because not all the costs and benefits of the decision to dispose of waste and air pollution are borne by the parties making the decision. Significant costs are borne by others in the area whose health and property are damaged by the polluted air. For example, early in 1978 the Alaska Department of Environmental Conservation ruled that a major portion of the Anchorage Metropolitn area was a non-attainment area in terms of the national ambient air quality standards as defined by Section 174 (a) of the Clean Air Act of 1977. The Municipality of Anchorage has been designated as the lead agency in devising a plan for meeting the National Air Quality Standards by the 1982 deadline. In the event of non-compliance with the Clean Air Act, the Municipality stands to lose large amounts of federal funds for categories such as highway construction. Apart from governmental action, the polluter would have no economic incentive to avoid imposing this cost upon others. In addition, the public investment and public facilities in the coastal area such as parks, roadways, ports, are also important. Therefore, the Municipality should organize and conduct its activities in the coastal area effectively, efficiently, and with a view to its continued productivity and livability.

SUMMARY

The coastal area is a focus for concern because the increasing use and demand for coastal resources raises doubts that the economic productivity and livability supported by coastal resources will be maintained. Coastal resources, economic productivity, and livability are interdependent. Economic activities use natural resources, and natural resources provide the raw materials for a livable environment. Economic activities also produce jobs and dollar flows that increase livability and provide tax revenues. Livability, in turn, is determined by the intangible value of resources, both natural and social. These matters fall within the scope of governmental concern because of the Municipality's long established role as a major owner and regulator of coastal resources, and as an investor in public facilities such as parks and port fcilities. The land, air and water resources currently available are limited. Rapid development along the north and south corridor to Eklutna and Portge, along with continued "bowl" development, nécessitates that a coastal management program be developed and utilized. As owner-manager of vast public resources and protector of the public interest, the Municipality must devise and implement a rational process for resolving use conflicts. This process should maintain the delicate balance among the economic, environmental, and social forces that sutain human well-being, and it must remain flexible enough to respond to new information and changing perceptions of human needs.

If the Anchorage Municipality is to achieve the goal of optimal utilization of its coastal resources, it must first develop a mechanism whereby decisions regarding those resources are based upon adequate knowledge and information concerning existing conditions, and the range of options available. Such a mechanism must, at a minimum, ensure that the best available information is incorporated into the decision-making process and that readily apparent conflicts and options are understood prior to making major commitments in the coastal zone. It should strive to assure that long-term values are not sacrificed for the benefit of short-term gains, that decisions are based upon well-informed judgment with a full awareness of the consequences to be expected. This is the essence of coastal management and the purpose of this program.

The upper Cook Inlet is a major contributor to the prosperity and well being of both the State and the Municipality. The population and economy of the Municipality and the entire upper Cook Inlet have grown rapidly over the last decade, and this growth rate is expected to continue, but can it be accommodated in an acceptable manner? Coastal management in Anchorge seeks ways to resolve the conflicts and provide for both future growth and conservation in an acceptable manner.

GOALS AND OBJECTIVES

The trend toward greater urbanization in the Municipality will result in the expansion of our man-made environment. To support this development, additional land will be utilized for buildings, highways, parking areas, community facilities, and numerous other land use activities, thereby altering the natural conditions which now exist. One of the main purposes, then, of the Anchorage Coastal Management Program must be to accommodate future growth and expansion, but accommodate the growth in an environmentally sound manner. To accomplish this task the following goals and objective for the Anchorage Coastal Management Program have been established:

TO SAFEGUARD THE NATURAL AND CULTURAL HERITAGE UNIQUE TO THE MUNICIPALITY OF ANCHORAGE.

1) To identify those areas in need of immediate protection, as well as setting forth a method by which selected areas throughout the Municipality may be objectively evaluated to determine their suitability for inclusion in a program of protection.
2) To suggest development or performance stannards, in a process for applying these standards to afford adequate protection and yet not usurp the right of local determination where appropriate.
3) To establish, in conjunction with identification and implementation, a procedure which will encourage the coordination of environmental area protection with land use policies formulated at the local and State levels.
4) To initiate a program which can be continued and expanded to offer a wide application for environmental protection when necessary while accommodating future growth and development in the Municipality.
5) Coastal area development should provide long range benefit to man and his economic pursuits while assuring compatibility with the environmental and physical goals for coastal areas.
6) To make recommendations which will permit a coordinated approach among state agencies concerned with the environment and the formulation and implementation of coastal management land use policies and plans.

STATE/LOCAL GOVERNMENT INTERACTION

One of the hallmarks of both the Federal Coastal Management Act of 1972 and the Alaska Coastal Management Act was the intent that units of state, regional, and local government would utilize the coastal management program as a vehicle for reasserting their rightful governmental prerogatives and responsibilities. In essence, the act envisioned a state-level planning and management program that, via meaningful coordination, would involve all interested and affected governmental bodies.

The size and diversity of Alaska's coastal area have required specially adapted organizational arrangements.

These specialized needs are reflected in the Alaska Coastal Management Act of 1977 (AS 46.40 and AS 44.19.891-894), which provides for local coastal programs to be developed in conformity with general guidelines and standards. This approach represents a partnership of shared state and local management responsibilities. The Coastal Policy Council is responsible for statewide oversight and coordination, while local units, *coastal resource districts*, are to develop more specific programs for their own areas. These *district coastal management programs* are the building blocks of the Alaska Coastal Management Program (ACMP).

One of ACMP's primary goals is complementing and strengthening local and areawide planning and management capabilities, in coordination with state and federal agency and private sector activities. In so doing, ACMP is intended to furnish coastal area citizens with improved opportunities to constructively influence the land and water management decisions which affect their lives. District coastal management programs are not designed to impose additional impediments to various uses of coastal lands and waters, but rather to more equitably and efficiently apply the diverse array of existing federal, state, and local authorities governing such uses, and to ensure the balanced consideration of a broad range of competing interests. Likewise, district coastal programs are not solely regulatory in nature. They are intended to foster affirmative actions which enhance the human and natural environment of the coast by such means as matching capital improvement programs with coastal management policies and priorities.

The program coordination requirements contained in the Act serve only to reinforce the on-going coordination effort between the Municipality of Anchorage and the State. A Memorandum of Understanding (MOA) between the Municipality and the State of Alaska, Division of Policy Development and Planning, implementing the OMB Circular A-95, sets forth a clearing service be provided for coastal zone matters by collecting, processing and disseminating pertinent information relating thereto. This MOA provides the opportunity to coordinate and assist state and local government activities in the coastal zone.

In recent years a gradual change has been taking place in the concept of the term land, a change incapable of precise definition. The change can be attributed to an awakening of the populous to the fact that land is a finite resource as is water. This changing attitude toward land and water can be described by saying that land should be considered a resource rather than a commodity. Such an attitude correctly indicates the direction of the change, but it can disregard the constitutional right to own land and buy and sell it freely. Land, therefore, must be treated as both a resource and a commodity. The right to move throughout the Municipality and the State and buy and sell land in the process is an essential element in the mobility and flexibility our citizens need to adjust to rapid changes of our times. Conservationist who view land only as a resource are ignoring the social and economic impact that would come with any massive restrictions on the free transfer of ownership. On the other hand, land speculators who view land only as a commodity are ignoring the growing public realization that a finite supply of land can no longer be

dealt with in the free wheeling ways of America's frontier heritage.

The attempt then of the coastal management program has been to identify those geographic areas of the Municipality's coastal area that are best suited for future growth and expansion and economic activity, while recognizing that other areas of the Municipality are less suited for such uses or intensity of uses and must have certain restrictions placed upon them. There are also areas that are in need of protection, enhancement, and preservation. The development of the Anchorage Coastal Management Plan has attempted to recognize the economic, the livability, and the natural resource base in developing its program.

CHAPTER II

REQUIREMENTS OF THE ALASKA COASTAL MANAGEMENT ACT

INTRODUCTION

The previous chapter described the geographical setting of Anchorage as it related to coastal management needs, issues and problems, and outlined the basic goals of the district program. The purpose of the present chapter is to relate Anchorage's program to the specific requirements of the Alaska Coastal Zone Management Act. The chapter is structured to emphasize the relations of the Anchorage program to the key policies and requirements of the Act and Part 6, Alaska Administrative Code, Chapters 80 and 85, Standards and Guidelines relating to coastal zone uses and activities, boundaries, areas meriting special attention, public participation, and implementation procedures.

GENERAL POLICY

The overriding philosophy of the State of Alaska is that the coastal zone of the State is a distinct and valuable natural resource of concern to all the people of the State and that the demands upon the resources of the coastal area are significant and will increase in the future. The findings of the legislature are significant and provided the basic conceptual framework from which Anchorage could develop a planning methodology. The legislature stated that "the protection of the natural and scenic resources and the fostering of wise development of the coastal area are of concern to present and future citizens of the State, and the capacity of the coastal area to withstand the demands upon it is limited." Also of importance is the finding by the legislature that "the degree of planning and resource allocation which has occurred in the coastal area has been motivated by short term considerations, unrelated to sound planning principles." Based upon these findings the legislature concluded that "in order to promote the public health and welfare, there is a critical need to engage in comprehensive land and water use planning in coastal areas and to establish the means by which a planning process and management program . . . may be effectively implemented."

Based upon these findings the legislature developed the following general policy to direct coastal zone management planning.

It is the policy of the State to:

(1) preserve, protect, develop, use, and where necessary, restore or enhance the coastal resources of the State for this and succeeding generations;

(2) encourage coordinated planing and decision making in the coastal area among levels of government and citizens engaging in or affected by activities involving the coastal resources of the State;

(3) develop a management program which sets out policies, objectives, standards and procedures to guide and resolve conflicts among public and private activities involving the use of resources which have a direct and significant impact upon the coastal land and waters of the State;

(4) assure the participation of the public, local governments, and agencies of the State and Federal governments in the development and implementation of a coastal management program;

(5) utilize existing governmental structures and authorities, to the maximum extent feasible, to achieve the policies set out in this section; and

(6) authorize and require State agencies to carry out their planning duties, powers and responsibilities and take actions authorized by law with respect to programs affecting the use of the resources of the coastal area in accordance with the policies set out in this section and the guidelines and standard adopted by the Alaska Coastal Policy Council under AS 46.35.

Sec. 46.35.030. Development of District Coastal Management Programs.

Coastal resource districts shall develop and adopt district coastal management programs in accordance with the provisions of this chapter. The program adopted by a coastal resource district shall be based upon a municipality's existing comprehensive plan or a new comprehensive resource use plan or comprehensive statement of needs, policies, objectives and standards governing the use of resources within the coastal area of the district. The program shall be consistent with the guidelines and standards adopted by the council under Section 40 of this chapter and shall include:

(1) a delineation within the district of the boundaries of the coastal area subject to the district coastal management program;

(2) a sttement, list or definition of the land and water uses and activities subject to the district coastal management program;

(3) a statement of policies to be applied to the land and water uses subject to the district coastal management program;

(4) regulations, as appropriate, to be applied to the land and water uses subject to the district coastal management program;

(5) a description of the uses and activities which will be considered proper and the uses and activities which will be considered improper with respect to the land and water within the coastal area;

(6) a summary or statement of the policies which will be applied and the procedures which will be used to determine whether specific proposals for land or water uses, or activities shall be allowed; and

(7) a designation of, and the policies which will be applied to the use of, areas within the coastal resource district which merit special attention.

The approach to be used by Anchorage in pursuing coastal zone objectives is that both Federal and State interests must be recognized and that there is a local, State and national interest in the use, protection and development of coastal resources. We begin with the assumption that (until proven otherwise) the entire coastal area of Anchorage is an area of concern. It is only the level of concern that changes. The second assumption is that not all areas of the coastal zone are suited for the same uses or intensity of uses.

Some urban planners have observed that local government land use plans appear to represent current growth pressures resulting from economic and political interests rather than land development capabilities and limitations based on variable characteristics of natural land areas. The result has too often been the destruction of scarce environmental resources and the serious disruption of natural processes with evident immediate and future consequences.

Today it must be realized that the characteristics of the physical environment have far reaching effects on urban development and the pattern of land use. There is a need to incorporate information on natural phenomenon and processes into the planning process and to apply the resulting analysis for urban development. Broadly stated, the purpose of the ecological planning method is to understand the character of a place and to utilize such understanding in planning, its use and development. This philosophy or methodology is the basis for Anchorage's Coastal Zone Management Program planning process. The purpose behind this approach is simple. The natural research base, land, wate, biota, and minerals, is finite. Problems result from human demands on this natural system because all land and waters are not equally suited for all uses. The planner and public policy maker must, in their respective spheres, understand the diversity of the land and water and the uses on them in order to encourage sound and balanced development of multifaceted human systems. One of the responsibilities of public planners and policy makers should be the collection and dissemination of information regarding the complexity of natural resources. Heretofore, projects in both the public and private realms have too often been undertaken without an adequate knowledge of constraints imposed by local land and water conditions. The planning process being utilized for the coastal zone management program is based on the general methodology of the land suitability approach. It involves the analysis of the physical environment to reveal natural features and characteristics, the interpretation of these findings, the formulation of rational, explicit criteria, and the identification of "geographic areas of particular concern" and their suitability for various land uses.

This philosophy and planning methodology are consistent with the general requirements of the Alaska Coastal Management Act of 1977.

REQUIREMENTS OF THE REGULATIONS*

All coastal resource districts are required by State law to develop and adopt coastal management programs in accordance with the regulations of the Alaska Coastal Policy Council as outlined in 6 AAC 85.010-110. Ten specific program elements are listed and include:

1. NEEDS, OBJECTIVES, AND GOALS
   Anchorage *must* include a statement of our overall needs, objectives and goals for coastal management.
2. ORGANIZATION
   Anchorage *must* include a description of the district program organization and include budgetary and staff needs and a schedule for reorganization as necessary to implement and carry out a coastal management program.
3. BOUNDARIES
   Anchorage *must* map and delineate the boundaries of the coastal area within the district subject to the district program in accordance with the provision of 6 AAC 85.040.
4. RESOURCE INVENTORY
   Anchorage *must* include a comprehensive resource inventory which describes natural resource, land use and land status in a manner sufficient for program development and implementation.
5. RESOURCE ANALYSIS
   Anchorage *must* include a resource analysis sufficient in detail for program development and implementation as specified in 6 AAC 85.060.
6. SUBJECT USES
   Anchorage *must* include a description of the land and wter uses and activities which are subject to the district program. Uses which must be included, if applicable, are: a) coastal development, b) geophysical hazard areas, c) recreation, d) energy facilities, e) transportation and utilities, f) fish and seafood processing, g) timber harvest processing, h) mining and mineral processing, i) subsistence.

*Amendments to these regulations are currently before the Alaska Legislature for approval. These amendments are contained in the draft Alaska Coastal Development Program and draft Environmental Impact Statement, Office of Coastal Management and Department of Commerce, 1979.

7. PROPER AND IMPROPER USES
Anchorage's district program *must* include a description of the uses and activities, including uses of State concern, that will be considered proper and improper within the coastal area, including land and water use designations.

8. POLICIES
Anchorage's district program *must* include a statement of the policies that will be applied to land and water uses and activities subject to the district program and the process which will be used to determine whether specific proposals for land and water uses and activities will be allowed.

9. IMPLEMENTATION
Anchorage's district program *must* include a description of the methods and authority which will be used to implement the district program.

10. PUBLIC PARTICIPATION
Anchorage's district program must include evidence of effective and significant opportunities for public participation in program development.

In addition to the ten specified program elements, the Alaska Coastal Management Program Document requires districts to specifically address other important aspects. These include:

1. Uses and Activities subject to the Coastal Management Act
2. Areas Meriting Special Attention
3. Federal Consistency/Federal Exclusion/Federal Agency Participation
4. Uses of State Concern
5. Erosion Planning Element
6. Energy Facilities Siting
7. Shoreline Access Planning Element

The Alaska Coastal Management Program Document identified nine major uses or activities that are to be dealt with in the development of district plans. For each of these uses or activites the Alaska Coastal Policy Council has promulgated a standard. These standards have the force and effect of regulations, and both districts and State agencies are bound by them. They are:

USE: COASTAL DEVELOPMENT

Applicable Standard:

6 AAC 80.040. COASTAL DEVELOPMENT.

(a) In planning for and approving development in coastal areas, districts and State agencies shall give, in the following order, priority to:

(1) water-dependent uses and activities;
(2) water-related uses and activities; and
(3) uses and activites which are neither water-dependent nor water-related for which there is no feasible and prudent inland alternative to meet the public needs for the use or activity.

(b) The placement of structures and the discharge of dredged or fill material into coastal water must, at a minimum, comply with Parts 320-323, Title 33, *Code of Federal Regulations* (Vol. 42 of the *Federal Register*, pp. 37133-47 (July 19, 1977).

The district programs will be expected to contain waterfront use limitations, in the form of zoning or another land use control device which responds to this standard.

USE: RECREATION

Applicable Standard

6 AAC 80.060. RECREATION.

Districts shall designate areas for recreational use. Criteria for designation of areas of recreation use are:

(1) The area receives significant use by person engaging in recreational pursuits or is a major tourist destination; or

(2) the area has potential for high quality recreational use because of physical, biological, or cultural features.

This standard obligates the districts to provide for the recreational needs of their areas by stipulating that areas *shall* be designated for recreational use.

USE: HISTORIC, PREHISTORIC AND ARCHAEOLOGICAL RESOURCES.

6 AAC 80.150. HISTORIC, PREHISTORIC, AND ARCHAEOLOGICAL RESOURCES.

Districts and appropriate State agencies shall identify areas of the coast which are important to the study, understanding, or illustration of national, State , or local history or prehistory.

This standard requires attention to historic, prehistoric and archaeological values by the districts and State agencies.

USE: ENERGY FACILITIES

Applicable Standard

6 AAC 80.070. ENERGY FACILITIES.

(a) Sites suitable for the development of major onshore, nearshore, offshore, and outer continental shelf facilities must be identified by the *State in cooperation with districts.*

(b) The siting and approval of major oil and gas facilities must be based on the policies of the State of Alaska concerning the on-shore aspects oil and gas development.

(c) Districts shall consider that the uses authorized by the issuance of State leases for mineral and petroleum resource extraction are uses of State concern. District programs and plans must be consistent with those uses.

USE: TRANSPORTATION AND UTILITIES

Applicable Standard

6 AAC 80.080. TRANSPORTATION AND UTILITIES.

(a) Transportation and utility routes and facilities in the coastal area must be sited, designed, and constructed so as to be compatible with local community goals and desires as expressed in district programs and local comprehensive plans.

(b) Transportation and utility routes and facilities must be sited inland from beaches and shorelines unless the route or facility is water-dependent or no feasible and prudent inland alternative exists to meet the public needs for the route or facility.

This standard requires compatibility with properly expressed local desires, and reflects public awareness of the impact that transportation facilities can have on communities. However, transportation is also listed as a use of State concern, and thus local programs may not exclude such uses arbitrarily or unreasonably.

The second paragraph of the standard declares that transportation and utility routes and facilities are not automatically high priority uses of the coast and should be kept away from the water's edge in other than extreme circumstances.

USE: FISH AND SEAFOOD PROCESSING

Applicable Standard:

6 AAC 80.090. FISH AND SEAFOOD PROCESSING

Districts shall indentify and may designate areas of the coast suitable for the location or development of facilities related to commercial fishing and seafood processing.

USE: TIMBER HARVESTING AND PROCESSING

Applicable Standard:

(a) Commercial timber harvest activities in the coastal area must be conducted so as to meet the following standards:

(1) the location of facilities and the layout of logging systems must be managed so as to minimize potential for adverse enviornmen tal impacts;

(2) unrestricted fish movement in coastal water must be assured.

(b) Commercial timber transport, storage, and pro cessing in the coastal area must be conducted so as to meet the following standards:

(1) onshore storage of logs must be encouraged where compatible with the objectives of the Alaska Coastal Management Program;

(2) sites for in-water dumping and storage of logs must be selected and these activities conducted so as to minimize adverse effects on the marine ecosystem, minimize conflicts with recreational kuses and activities, be safe from storms, and not constitute a hazard to navigation;

(3) roads for log transport and harvest area access must be planned, designed, and constructed so as to minimize mass wasting, erosion, sedimentation, and interference with drainage, and must be adequately maintained until they are returned to their pre-road natural drainage pattern (put to bed); and

(4) stream crossings, including bridges and culverts, must be kept to a minimum number, designed to withstand seasonal high water and flooding, and must provide for unrestricted passage of fish.

USE: MINING AND MINERAL PROCESSING

Applicable Standard:

6 AAC 80.110. MINING AND MINERAL PROCESSING.

(a) Mining and mineral processing in the coastal area must be permitted, designed, and conducted so as to be compatible with the standards contained in this chapter, adjacent uses and activities, regional programs, Statewide and national needs, district programs, and local comprehensive plans.

(b) Sand and gravel may be extracted from coastal waters: intertidal areas, barrier islands, and spits, when there is no feasible and prudent alternative to coastal extraction which will meet the public needs for the sand or gravel.

The standard calls for compatibility with various plans, says that the other standards of ACMP apply to mining activities, and established a low priority for sand and gravel extraction from certain areas of the coast. The present standard is adequate to protect mining as an acceptable use in the coastal area, with some limitations, and to control the adverse impacts that mining and mineral processing can have.

USE: SUBSISTENCE

Applicable Standard:

6AAC 80.120. SUBSISTENCE.

(a) Districts and State agencies shall recognize and assure opportunities for subsistence usage of coastal areas and resources.

(b) Districts shall identify areas in which subsistence is the dominant use of coastal resources.

(c) Districts may, after consultation with appropriate State agencies, Native corporations, and other persons or groups, designate areas identified under (b) of this section as subsistence zones in which subsistence uses and activities have priority over all non-subsistence uses and activities.

(d) Before a potentially conflicting use or activity may be authorized within areas designated under (c) of this section, a study of the possible

adverse impacts of the proposed potentially conflicting use or activity upon subsistence usage must be conducted and appropriate safeguards to assure subsistence usage must be provided.

(e) Districts sharing migratory fish and game resources must submit compatible plans for habitat management.

The standard is restricted to declaring that subsistence should generally be recognized and protected and that districts especially are obliged to identify areas of importance to subsistence, and then have the option of designating and managing such areas for the benefit of subsistence usage.

What the standard accomplishes is not necessarily the protection of subsistence *usage*, although that is called for, but rather enables the districts to identify and protect subsistence *resources*, so that, in turn, subsistence usage may be protected.

In addition, the council has promulgated two standards which apply to all uses and activities listed above.

GEOPHYSICAL HAZARDS

6 AAC 80.050. GEOPHYSICAL HAZARDS AREAS.

(a) Districts and State agencies shall identify known geophysical hazard areas and areas of high development potential in which there is a substantial possibility that geophysical hazards may occur.

(b) Development in areas identified under (a) of this section may not be approved by the appropriate State or local authority until siting, design, and construction measures for minimizing property damage and protecting against loss of life have been provided.

The standard requires study by the State and local governments to identify hazard areas, but limits the mandatory scope of such studies to areas where development is likely or where there is a suspected hazard.

In development of district programs then, a geohazard inventory of study will be needed, and then policies and regulations development which will account for the identified hazards. The local government must then assure that its regulations are followed in dealing with use proposals in the hazard areas. It will be impossible for a local government to thoroughly assess each hazard area and devise detailed standards to protect any conceivable use of the hazard area. Thus, the developer should be obligated to conduct the surveys and studies needed to determine exactly what siting, design and construction measures are needed.

AIR, LAND, AND WATER QUALITY

16 AAC 80.140. AIR, LAND AND WATER QUALITY.

Notwithstanding any other provision of this chapter, the statutes pertaining to and the regulations and procedures of the Alaska Department of Environmental Conservation with respect to the protection of air, land, and water quality are incorporated into the Alaska Coastal Management Program and, as administered by the agency, constitute the components of the coastal management program with respect to those purposes. (Eff. Reg.) Authority: AS 44.19.893 AS 46.40.040.

In addition to setting standards for major uses and activities in the coast, the Alaska Coastal Policy Council has identified and promulgated standards for eight major habitats. These standards are designed to protect and preserve these habitats, regardless of the use or activity which takes place within them. Therefore, in addition to satisfying an applicable use standard, a use or activity in a specified habitat must meet the relevant habitat standard. Habitats include:

(a) 1) offshore areas;
2) estuaries;
3) wetlands and tideflats;
4) rocky islands and seacliffs;
5) barrier islands and lagoons;
6) exposed high energy coasts;
7) rivers, streams, and lakes; and
8) important upland habitat.

The key standard applicable to all of these habitats is:

(b) The habitats contained in (a) of this section must be managed so as to maintain or enhance the biological, physical and chemical characteristics of the habitat which contribute to its capacity to support living resources.

Additional standards that apply to each habitat identified in (a) of this section are:

1. Offshore areas must be managed as a fisheries conservation zone so as to maintain or enhance the State's sport, commercial and subsistence fishery.
2. Estuaries must be managed so as to assure adequate water flow, natural circulation patterns, nutrients, and oxygen levels, and avoid the discharge of toxic wastes, silts, and destruction of productive habitat.
3. Wetlands and tideflats must be managed so as to assure adequate water flow, nutrients, and oxygen levels and avoid adverse effects on natural drainage patterns, the destruction of important habitat, and the discharge of toxic substances.
4. Rocky islands and seacliffs must be managed so as to avoid the harassment of wildlife, destruction of important habitat, and the introduction of competing or destructive species and predators.
5. Barrier islands and lagoons must be managed so as to maintain adequate flows of sediments, detritus, and water, avoid the alteration of redirection of wave energy which would lead to the

filling in of lagoons or the erosion of barrier islands, and discourage activities which would decrease the use of barrier islands by coastal species, including polar bears and nesting birds.

6. High energy coasts must be managed by assuring the adequate mix and transport of sediments and nutrients and avoiding redirection of transport processes and wave energy. Rivers, streams, and lakes must be managed to protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow.

IMPORTANT UPLAND HABITAT

This category is intended to include all upland areas within the coastal zone which are important for wildlife habitat.

No special standard has been promulgated.

In recognition of the fact that complete nondegradation is an impossible standard to meet, and that in certain instances tradeoffs between natural values and other human values will have to be made, the Council adopted the following:

(d) Uses and activities in the coastal area which will not conform to the standards contained in (b) and (c) of this section may be allowed by the district or appropriate State agency if the following are established:

(1) There is a significant public need for the proposed use or activity;

(2) There is no feasible and prudent alternative to meet the public needs for the proposed use or activity which would conform to the standards contained in (b) and (c) of this section; and

(3) all feasible and prudent steps to maximize conformance with the standards contained in (b) and (c) of this section will be taken.

Other required program elements are briefly described below:

Areas Meriting Special Attention — Article 4, 6 AAC 80.16

A. Means — a delineated geographic area within the coastal area which is:

(a) sensitive to change or alteration and warrants special management, attention, or,

(b) which because of its value to the general public, should be identified for current or future planning, protection, or acquisition.

B. These areas include:

(a) areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance;

(b) areas of high natural productivity or essential habitat for living resources;

(c) areas of substantial recreational value or opportunity;

(d) areas where development of facilities is dependent upon the utilization of, or access to, coastal waters;

(e) areas of unique geologic or topographic significance which are susceptible to industrial or commercial development;

(f) areas of significant hazard due to storms, slides, floods erosion or settlement;

(g) areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, aquifer recharge areas, beaches and offshore deposits;

(h) potential estuarine or marine sanctuaries;

(i) areas important for subsistence hunting, fishing, and food gathering; and

(j) areas with special scientific values or opportunities.

District management programs must include management schemes for areas which merit special attention and must preserve, protect, enhance, or restore the value or values for which the areas are designated.

Federal Consistency/Exclusion/and Participation

Federal agencies are obligated to participate in coastal management by Federal law and thus will be involved in local program development and implementation. The ACMP guidelines and standards, likewise, require that coastal resource districts provide opportunities for Federal involvement in the development and approval of the district programs.

The Coastal Zone Management Act requires exclusion of certain Federal lands from the state's and district's designated coastal management area. It defines these as lands the use of which is by law subject solely to the discretion of the Federal government, or lands which are held in trust by the Federal government. Excluded lands, while they may be surrounded by lands and water that lie within the state's coastal boundary, are outside the scope of its management program, except when the use of these lands affects the coastal area.

Federal lands in the Anchorge Coastal Area, including both owned and leased areas, are indicated on the land ownership map for Eagle River and Anchorage and Turnagain Arm. These maps have been compiled from the most current information available from each of the Federal agencies concerned. While most Federal lands are excluded from the coastal management program, those areas in which the Federal government holds a less than possessory interest, such as easements, are not excluded.

Facilities, activities, or programs on Federal lands, whether excluded or non-excluded, must be consistent to the maximum extent practicable with approved district programs. Thus, ongoing Federal-district-State coordination will be necessary.

Federal agency participation is particularly important in the Municipality of Anchorage. The Alaska Native Claims Settlement Act transfers some 115,000 plus acres to Eklutna Inc. and transfers land to Cook Inlet Regional Native Corporation. The presence of two large military installations in Anchorage and the Alaska Railroad (a Federally owned railroad) occupy large amounts of land in the coastal zone. Chugach National Forest occupies a large portion of the Mu nicipality and located within this Federal boundary are some of the better coastal wetland areas.

The Alaska Railroad has easements along a majority of the coastal zone and thus the need for Federal participation, coordination and cooperation in coastal planning.

Federal agency participation in the planning process is important because the CZMA provides that once a State program is approved (and district programs are part of the State program), Federal agencies must conform to it to the maximum extent practicable in all of their activities, including the issuance of Federal permits and licenses.

The CZMA is clear in its intent that Federal activities in the coastal zone be consistent with State efforts. Section 307(c) (a) states:

> "Each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State management programs."

However, Section 304(a) states in part:

> "Excluded from the coastal zone are lands the use of which by law is subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents."

In order to clarify the degree of control that states may exercise over activities on Federal lands, the U.S. Justice Department rendered a legal opinion on August 10, 1976, which in summary states:

> . . . the exclusionary clause excludes all lands owned by the United States from the definition of the coastal zone."

The identification of Federally-owned lands within the Municipality's coastal waters or within the planning boundary along the coast has been concluded.

Coastal management planning staff are currently conducting meetings with the various Federal agencies involved in the Anchorage area in attempts to incorporate Federal comments into the planning process at an early date.

USES OF STATE CONCERN

Anchorage, as a coastal resource district, is obligated in the ACMP Guidelines to consider and provide for uses of State concern, and thus will be accountable to the State and national interest.

Uses of State concern are defined as:

"Uses of State concern" means those land and water uses which would significantly affect the long-term public interest; these uses, subject to council definition of their extent, include:

(A) uses of national interest, including the resourses for the *siting of ports and major facilities which contribute to meeting national energy needs*, construction and maintenance of navigational facilities and systems, resource development of Federal land, and national defense and related security facilities that are dependent upon coastal locations;

(B) uses of more than local concern, including those land and water uses which confer significant enviornmental, social, cultural or economic benefits or burdens beyond a single coastal resource district;

(C) the siting of major energy facilities or large-scale industrial or commercial development activities which are dependent on a coastal location and which, because of their magnitude or the magnitude of their effect on the economy of the State or the surrounding areas, are reasonably likely to present issues of more than local significance;

(D) facilities serving statewide or interregional transportation and communication needs; and

(E) uses in areas established as State parks or recreational areas under AS 41.20 or as State game refuges, game sanctuaries or critical habitat areas under AS 16.20.

EROSION PLANNING ELEMENT

Erosion mitigation is part of 6 ACC 80.050 — Geophysical Hazard Areas which states that:

(a) Districts and State agencies shall identify known geophysical hazard areas and areas of high development potential in which there is a substantial possibility that geophysical hazards may occur.

(b) Development in areas identified under (a) of this section may not be approved by the appropriate State or local authority until siting, design, and construction measures for minimizing property damage and protecting against loss of life have been provided.

Thus development and implementation of an erosion planning element will occur through district and State efforts to identify hazards and the regulation of development such that loss of life is prevented and property damage is minimized.

ENERGY FACILITY SITING PLANNING ELEMENT

FEDERAL REQUIREMENTS

The Coastal Zone Management Act of 1972, as amended in 1976, requires that states develop "a planning process for energy facilities likely to be located in, or which may significantly affect, the coastal zone, including, but not limited to, a process for anticipating and managing the impacts from such facilities" (Section 305(b) (8)). To require coastal states to pay special attention to energy facility siting and to address the following procedural elements:

"(1) an identification of energy failities which are likely to locate in, or which may significantly affect, the coastal zone;

(2) a procedure for assessing the suitablility of site for such facilities;

(3) articulation of State policies and the techniques for the management of energy facilities and/or their impacts;

(4) a mechanism for coordination and/or cooperative working arrangements, as appropriate, between the State coastal planning or management agency and other relevant State, Federal and local agencies involved in energy facility planning and/or siting, including conformity of siting program where they exist with the Coastal Zone Management Program; and

(5) an identification of legal and other techniques that can be used to meet management needs."

STATE REQUIREMENTS

The other half of the objective to manage onshore and nearshore activities associated with energy development is built into the Alaska Coastal Management Act of 1977 where the legislature directs the Coastal Policy Council to:

"initiate a process for identifying and managing *uses of State concern* within specific areas of the coast. . ." (AS 46.40.040(4)).

By "uses of State concern," the Act identifies those land and water uses which would significantly affect the long-term public interest, i.e.:

"uses of national interest, including the use of resources for the siting of ports and major facilities which contribute to meeting national energy needs, construction and maintenance of navigational facilities and systems, resource development of Federal land, and national defense and related security facilities that are dependent upon coastal locations"; and (AS 46.40.210(6) (A))

"the siting of major energy facilities or large-scale industrial or commercial development activities which are dependent on a coastal location and which, because of their magnitude or the magnitude of their effect on the economy of the State or surrounding areas, are reasonably likely to present issues of more than local significance." (AS 46.40.210(6) (C)).

The uses so defined, the Standards and Guidelines of the Alaska Coastal Management Program require the State, in cooperation with coastal districts, to identify sites suitable for major facilities and to approve actual siting decisions on the basis of State policies concerning the onshore and nearshore aspects of oil and gas development (6 AAC 80.070).

DEFINITION OF MAJOR ENERGY FACILITIES

In the context of the framework established by the State Act and Standards and Guidelines, a major energy facility is defined as a development carried out in, or in close proximity to the coastal zone, which meets one or more of the following criteria:

(a) a facility required to support energy operations on Federal and State lands leased for exploration and production purposes;

(b) a facility utilized to produce, convert, process or store energy resources and marketable products;

(c) a facility utilized for transfering, importing or exporting energy resources and marketable products;

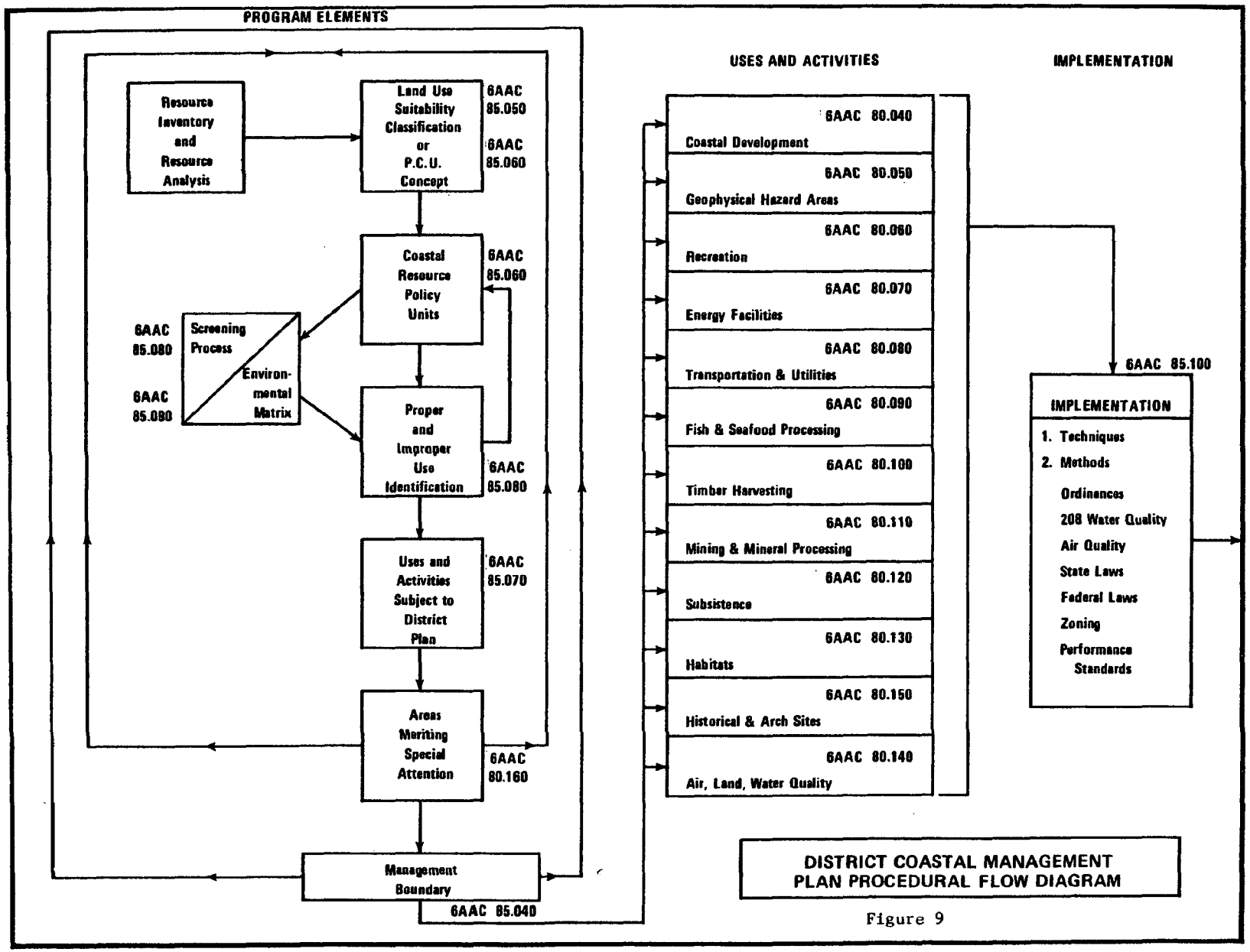
(d) a facility utilized for in-State energy uses of more than local concern; or

(e) a facility used primarily for the manufacture, production, or assembly of equipment, machinery, products or devices which are involved in any activity described in (a) - (d).

ENERGY FACILITIES LIKELY TO AFFECT THE COASTAL ZONE

Major energy facilities determined as likely to locate in, or significantly affect Alaska's coastal zone include:

(a) exploratory drilling vessels
(b) petroleum production platforms
(c) marine service bases and storage depots
(d) pipelines and rights of way
(e) petroleum or coal separation, treatment and storage facilities
(f) LNG plants and terminals
(g) oil terminals and other port development for the transfer of energy products
(h) conrete platform fabrication yards



DISTRICT COASTAL MANAGEMENT PLAN PROCEDURAL FLOW DIAGRAM

Figure 9

(i) petrochemical plants
(j) refineries and associated facilities
(k) hydroelectric projects
(l) other electric generating plants
(m) transmission lines
(n) uranium enrichment or nuclear fuel processing facilities
(0) geothermal facilities
(p) tidal power

SHORELINE ACCESS PLANNING ELEMENT

The Federal Coastal Management Act of 1972, as amended, specifically calls for states to develop a planning and management process to address public access and public use of coastal areas. Federal regulations pursuant to Section 305(b) (7) of the Act cite six elements that are required in order for states to adequately address the access issue in the context of receiving Federal program approval.

The Alaska Coastal Policy Council is charged with developing the Alaska Coastal Zone Program. The council has adopted regulations for managing coastal areas in Title 6 of the Alaska Administrative Code (6 ACC 80.00 and 6 ACC 85.00). Although the regulations contain recreation concerns, there are no specific standards to guarantee public shoreline access. The Alaska Coastal Management Act and coastal regulations do, however, appear to grant authority to State agencies and local districts to plan for public access.

Therefore, Anchorage will, as part of its current and on-going coastal planning process, prepare a shoreline access plan in accordance with the requirements of the ACMP program document.

Figure 9 illustrates the procedural elements of the coastal management planning process and relates each step to the specific State administrative code requiring each step.

CHAPTER III
THE PLANNING METHODOLOGY AND PROCESS

INTRODUCTION

The problems associated with land use conflicts and environmental sensitivities in the coastal zone are issues well documented in most cases and ones with which the public are readily aware. Cognizance of these land use conflicts and environmental issues should not, however, keep us from being acutely aware that coastal zone utilization is one of the most significant planning and resource management issues facing us at this time.

The Municipality recognizes the pertinent issues and conditions that prevail in its coastal area and has developed certain "balanced-use" objectives in preparation of its coastal zone management plan. The plan will:

(1) Be formulated in an objective and impartial manner, utilizing well-defined techniques and criteria.

(2) Attempt to strike a balance between development and preservation interests.

(3) Be as compatible with regional planning efforts as possible.

(4) Provide maximum retention of land and water use options for the future.

(5) Allow for the wisest possible use of the coastal zone.

(6) Protect the long-term interests of the Municipality by maintaining and enhancing the quality of life in the coastal zone.

(7) Utilize existing land use controls wherever and whenever possible.

BALANCED-USE PHILOSOPHY

The Coastal Zone Management Act (CZMA) established a balanced-use philosophy in its requirements to establish a definition of land and water uses which have direct and significant impacts on coastal waters. The CZMA specified that the process through which permissible uses are established includes consideration of *development* and *utilization* as well as *conservation* and *preservation* (PCU) activities. The rules and regulations adopted for the Act state that in the process of determining permissible uses, consideration should be given to: requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, as well as the harvesting of fish, shellfish and other living marine resources. Also required is full consideration of ecological, cultural, historical, aesthetic, archaeological, economic development and national interest aspects of coastal zone use activities.

Anchorage has directed its coastal management planning efforts toward development of a philosophy which directs its coastal management program toward a balanced diversity for scarce resources. An extreme emphasis of either preservation, conservation or development philosophies would be at odds with the mixed existing pattern of shoreline uses. The demand for space in the coastal area will continue to increase as the population of Anchorage continues to increase. These supply-demand relationships will intensify the competition which now must be faced when determining the most appropriate land and water uses in the coastal zone. Rational consideration of long-term objectives should therefore be incorporated into the process of defining permissible uses and the priority of those area. However, there are some important considerations which go beyond a decision between preservation, conservation and development, and also go beyond general coastal use classification. Instead of deciding upon either/or issues, answers must often be phrased in terms of degrees — how much density, which natural features to preserve and which to develop, etc. This can be most effectively handled through existing zoning ordinances, comprehensive land use plans, and through existing state land and water use statutes (air and water quality).

The Anchorage coastal management plan identifies specific geographic areas within the coastal area and applies Federal and State statutes and regulations (existing) to these areas. Local ordinances and land use regulations are then also applied to each specific geographic area. For example, one geographic area has been labeled "hazardous lands." Existing land use regulations do not appear to satisfactorily cover this subject. The Anchorage coastal management plan then makes specific recommendations to "fill the gap"; to recommend that as part of its implementation program research be conducted to identify what other municipalities, counties and states have done in this area and then to prepare a local geotechnical hazards ordinance.

Existing regulations are used wherever possible, in an attempt to reduce the need for more and for new regulations. Only in specific instances where adequate controls do not exist is a recommendation made for new regulations.

It should be noted that specific land and water uses are not spelled out or prioritized: instead, all uses are subject to existing regulations, zoning and ordinances which already limit or restrict the types of uses that can be allowed.

During the resource inventory and analysis phase of the planning program it was found that certain geographic areas of the Municipality possess varied characteristics; that is, certain areas are essentially

suitable for urban and rural development whereas other areas have natural features that are less tolerant of such development, and other areas can be made suitable for development provided certain measures aare taken before development. In essence, the process is one of identifying the subunits of the total landscape based on suitabilities for use. This process of land use suitability analysis makes it possible to prescribe dominant and subordinate land uses for each subunit of the coastal landscape within the Municipality based upon existing or proposed regulation and based on a biophysical cultural delineation of the coastal area. This planning methodology makes possible objective rather than subjective determinations regarding permissible uses within the area subject to the coastal resource management plan. This methodology involves inventorying and mapping data on natural phenomenon, interpreting this data in light of its positive and negative characteristics, and designating land use suitability classes.

This concept is expressed both in a graphic and narrative manner by utilizing the *Preservation, Conservation, Utilization* concept in conjunction with policy charts.

Each of the Preservation, Conservation and Utilization environments is subdivided into numerous coastal resource policy units or geographic segments. Each coastal resource policy unit is the result of the resource inventory and analysis and is a mappable unit. Once these units were mapped, a thorough legal review was made to ascertain which Federal, State or local land and water use controls applied to it. These regulations are listed in a policy chart and each policy chart is accompanied by a map delineating the resource policy unit.

In summary, the philosophy of balanced use should reduce the competition and the total demand on coastal zone resources by attempting to allocate those activities that are not water dependent or related (or significantly enhanced by a coastal zone location) to other areas within the Municipality. Prior existing land uses would not be affected; only those that are proposed or not yet considered. Existing uses will be dealt with by existing land use plans and ordinances and through the use of new ordinances.

PRESERVATION, CONSERVATION, UTILIZATION CONCEPT

In order to more effectively implement goals, objectives and policies of the Anchorage Coastal Management Plan and the Alaska Coastal Management Act, the coastal areas of the Municipality have been categorized into three broad use environment. The purpose of these designations is to differentiate between areas whose geophysical, biological and cultural features imply differing objectives regarding their use and future development.

Some measure of an area's suitability for development is essential to any coastal zone management plan. Such a concept of land designation into three broad use environments is needed in order to plan for the management of coastal areas according to their ecological sensitivities and hence, suitabilities for specified land and water uses. The generic terms used for the three land and water unit suitability categories as applied to the Municipality's methodology are *Preservation, Conservation* and *Utilization* (PCU) Environments.

Each environment represents a particular emphasis in the type of uses and the extent of development which should occur within it. The system is designed to encourage uses in each environment which enhance the character of the environment while at the same time requiring reasonable standards and restrictions on development so that the character of the environment is not destroyed.

The determination as to which designation should be given to any specific coastal area has been based on and is reflective of the existing development pattern, the biophysical capabilities and limitations of the land and the goals and objectives as outlined in the Anchorage Comprehensive Development Plan Ordinance.

Each of the three environments is actually a composite of many subclasses. A concept which is central to the deisgnation of permissible uses is that of "geographic segmentation." This concept involves a division of the coast into different coastal resource policy units, each representing a particular type of environment. These resource policy units are not defined solely on a biophysical basis, but rather, may represent an environment which takes on a special character due to man's activities there. Thus, resource units represent both biophysical and social values as well.

The coastal zone, while a continuous system, is actually a composite of numerous and distinct coastal resource units — each with its own particular character. An effective and equitable coastal management plan must be tied to specific areas within the coastal resource district. Thus the purpose of subdividing the three environments into subunits or coastal resource policy units. Secondly, these policy units are mappable units.

While the coastal resource district should be thought of as being a continuous system, effective land management and planning is based on plans which take into account the natural diversity of the coastal area. The geographic segmentation of the coastal area into units of a similar nature allows planners to prepare plans which address the particular characteristics of a given area. In this way land use controls can be tailored to fit needs of specific sections of the coastal area. The act of segmentation reveals a recognition that the coast is not homogenous. Land uses which exist in harmony in one coastal environment may be entirely inappropriate for another. The process of geographic segmentation is designed to provide planners and decision-makers with the means for examining the coastal area in light of its

natural diversity and to plan for and manage it accordingly.

Identification of resource units within the coastal resource district allows specific policies to be written that apply to each unit, and for this reason the resource units shall be called "coastal resource policy units."

Table III-3 illustrates the grouping of the coastal resource policy units and their linkage with the three environments.

Chapter V describes and defines the coastal resource policy units and defines the three environment designations — P.C.U.

Since the CZMA requires a comprehensive approach to the use and management of all resources in the established area or jurisdiction, it provides a focal point for coordinating a large number of the State's and Municipality's existing laws, statutes, regulations, ordinances, plans and programs that have been or will be implemented by the State and the Municipality. The following pages set forth the planning concept and process utilized in developing the Anchorage plan.

COASTAL ZONE MANAGEMENT PLANNING PHILOSOPHY

Traditionally, urban planners have presented objectives, principles, and standards for the orderly physical development of urban area in the form of Comprehensive Land Use Plans. Such plans have focused on the location and functional requirements of residential, commercial, and industrial areas, of community facilities, and the transportation network. The designations presented in related land use plans are often given legal expression in zoning ordinances.

In the past few years there has been a tremendous increase in public awareness of the complex interaction between man and his physical environment, accompanied by an increased concern about environmental deterioration. The increase in environmental awareness has focused realization that some previous attempts at land use planning have fallen short of attaining a comprehensive perspective, and that they were in some instances oblivious to the topography, geology, soils, climate, and other natural phenomenon of an area's physical environment. Furthermore, natural processes or changes which modify and create the natural landscape have occasionally been ignored or inadequately considered in land use planning. Oftentimes planning has been based on design, economic, engineering, and transportation concepts that have considered natural processes only partially or indirectly. More recently, however, some urban planners have observed that local government land use plans appear to represent current growth pressures resulting from economic and political interests rather than land development capabilities and limitations based on variable characteristics of natural land areas. The result has too often been the destruction of scarce environmental resources and the serious disruption of natural processes with evident immediate and future consequences.

Today it must be realized that the characteristics of the physical environment have far reaching effects on urban development and the pattern of land use. There is a need to incorporate information on natural phenomenon and processes into the planning process and to apply the resulting analysis for urban development. Broadly stated, the purpose of the ecological planning method is to understand the character of a place and to utilize such understanding in planning its use and development. This philosophy or methodology is the basis for Anchorage's Coastal Zone Management Program planning process. The purpose behind this approach is simple. The natural research base: land, water, biota, and mienrals, is finite. Problems result from human demands on thes natural systems, because all land and waters are not equally suited for all uses. The planner and public policy maker must, in their respective spheres, understand the diversity of the land and wter and the uses on them in order to encourage sound and balanced development of multi-faceted human systems. One of the responsibilities of public planners and policy makers should be the collection and dissemination of information regarding the complexity of natural resources. Heretofore, projects in both the public and private realms have too often been undertaken without an adequate knowledge of constraints imposed by local land and water and the uses on them in order to encourage sound and balanced development of is based on the general methodology of the land suitability approach. It involves the analysis of the physical environment to reveal natural features and characteristics, the interpretation of these findings, the formulation of rational, explicit criteria, and finally the identification of areas meriting special attention. Of equal importance in this process is the identification of the cultural features of the landscape: the ownership patterns, the current land uses, and the services available for the different land uses. This endeavor requires first an inventory of the major physical components of land use, which in concert establish the character of any given place.

THE PLANNING METHODOLOGY

The planning process required for Coastal Zone Management is illustrated in Figure 10. These planning steps are broken down as follows:

Step 1 — Designation of Study Areas

The first step in the planning process is the designation of the area of study. The coastal zone management contract under which the Planning Department is oeprating, divided the Municipality of Anchorge into the three study areas or planning units. The first study area is the **Turnagain Arm;** the area extending from Potter Marsh to Portage. The second study or planning unit is the **Eagle River/Chugiak/Peters Creek/Eklutna** area of the Municipality. This area extends from Ft. Richardson to the northern

TABLE III-3

RESOURCE POLICY UNITS

Preservation Environment	Conservation Environment	Utilization Environment
1 Class I Waters	1 Class II Waters	1 Class IV Waters
2 Selected Coastal and Wetlands	2 Class II Waters	2 Urban Residential
3 Tidal Flats	3 Scenic Corridors, Areas and Vistas	3 Urban Development
4 Salt Water Marshes	4 Park and Recreation Areas	4 Urban Waterfront
5 Coastal Habitats	5 Marginal Lands	5 Rural
6 Coastal Bluff/Cliffs	6 River Floodplains	
7 Hazardous Lands	7 Open Space	
8 Historical, Archaeological Sites and Natural Areas	8 Forestry Management Areas	
9 Coastal Flood Zone		

limit of the Municipality at the Knik River bridge. The third planning unit or area of study is the **Anchorage Bowl** or Metropolitan Area.

Step 2 — Data Requirements
The second planning step involves the identification of the types of data required to perform the coastal zone management program. For this study the selected major data categories are: geology, hydrology, physiography, soils, vegetation, wildlife, hazards, and land use. However, as the inventory progressed, other data categories were added to meet the special requirements of the State Coastal Management Act. This sequence is significant because it reflects casual relationships. By understanding the surface geology and hydrolic processes of a place, the soil types can be interpreted. Information on soils in turn determines to some extent the habitat areas of the various wildlife found within the Municipality. A subclass of physiography and one that has been set aside as a separate class for the study is Hazards Identification. For each of the major categories, data is collected, compiled, described, and mapped. This planning process takes into consideration ecological inter-relationships, and also man's desires, needs, wants, and uses for land. Of importance to note at this time are the data gaps that currently exist. Data is frequently fragmentary, incomplete or completely lacking. For example, no soil maps or data are available for a majority of the Turnagain Arm; and aquifer recharge areas have not been adequately studied or mapped. Therefore, coastal management planning must proceed with available data, but allow for future data acquisition and program update and modification.

Step 3 — Land Use/Resource Inventory
The third step in the process is the biophysical and land use inventory. Step three is where actual planning begins with the gathering of detailed data directly or indirectly related to a specific geographic area called the Planning Unit. The data is an information base upon which inter-disciplinary planning is undertaken to identify and resolve land use and resource conflicts. Decisions can then be made, then detailed development or action plans prepared for each activity in the coastal management program. The data is presented as resource maps for each planning unit. A narrative describing the coastal resources of each planning unit will accompany the resource maps.

The inventory function of the planning process should be viewed as an ongoing series of actions related to collecting information and rendering that information useful for problem solving and decision-making, both for specific land use questions encountered on a day-to-day basis and for policy formulation and long range planning. Thus, the inventory function serves as a data base for other planning programs, many of which are interrelated with each other.

The purposes to be served from the inventory function related to coastal zone management are:

a. the preparation and continued updating of a Municipal wide inventory of the land use and natural resources of the Municipality;

b. projections of the nature, quantity, and compatibility of land needed and suitable for recreation, parks, and open space; scientific and educational purposes; protection of areas of critical environmental concern; conservation and preservation of natural resources; forestry; industry and com merce, including the generation and transmission of energy; solid waste management; transportation; housing, urban development, and the economic diversification of the community, taking into consideration future demands for and limitations upon the suitability and capabilities of the land;

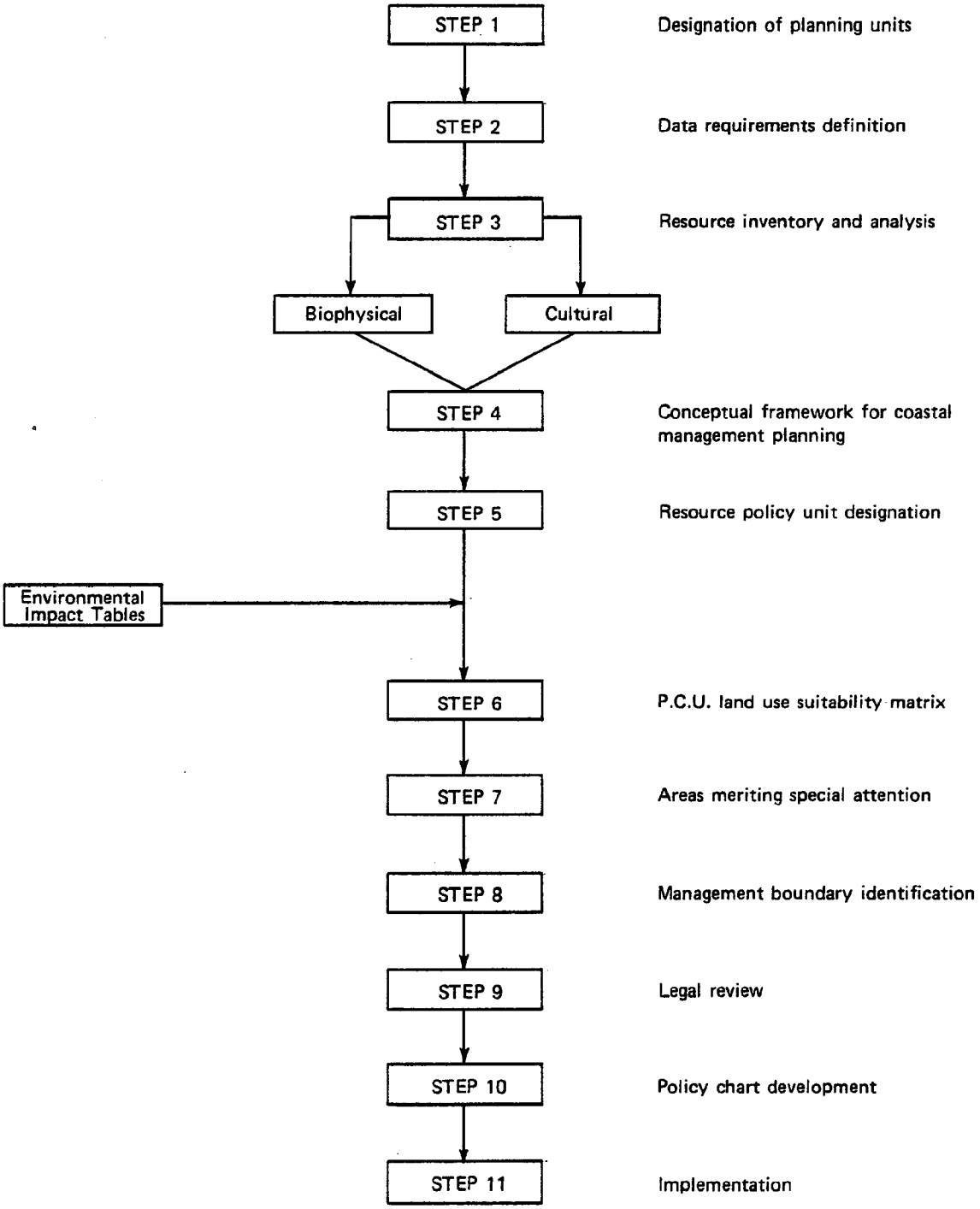
c. the preparation and continuing revision of an inventory of environmental, geological, and phys ical conditions which influence the desirability of various uses of land.

Step 4 — Conceptional Framework
We begin step four with the assumption that the entire coastal zone of Anchorage is an area of concern. It is only the level of concern that changes. The second assumption that can be made is that not all areas of the coastal zone are suited for the same uses or intensity of uses.

Next, a conceptual framework is designed — (P.C.U.) with which we can apply the remainder of the planning steps and one which permits the identification and use of the desired information. As a result of the analysis of the factors considered, it was found that portions of the Municipality's land possess characteristics that are essentially suitable for urban development, whereas other portions have natural features that are less tolerant for such development; thus, the development and use of the P.C.U. concept.

Step 5 — Resource Policy Unit Designation
Conducting the resource inventory and performing an analysis of the baseline data permitted the total landscape to be geographically segmented into specific units. This was done to allow for directing poilcies at specific areas and to permit ease of implementation. This process also permitted the ability to identify those areas of the Municipality in need of special attention, both in terms of management and in terms of adequacy of existing land use regulations. These geographic areas are called coastal resource policy units, and when combined they can be grouped to fit into one of the three P.C.U. environments (table III-3). The designation of resource policy units is a key element in the coastal management plan because specific land and water uses can be weighted against each policy unit to determine which uses could cause direct and significant impacts in any geographic area of the coastal zone. Table III-4 illustrates this concept. The table represents an example of a planning tool that was used to determine probable impacts and

ANCHORAGE COASTAL MANAGEMENT PLANNING PROCESS



needs for new land use regulations that could reduce or mitigate impacts associated with development.

Step 6 — P.C.U. Land Use Suitability Matrix
The concept behind the development and use of the matrix is presented here for purposes of clarification.

Data are of little use until they are interpreted and evaluated. The purpose here is addressing the problem of evaluation: which lands are intrinsically suitable for preservation, for conservation, which are most suitable for commerce and industry, and which for residential land use?

The basic proposition employed is that each area has an intrinsic suitability for certain land uses and finally, that certain areas lend themselves to multiple coexisting land uses. The product or result of step six is the designation of resource capability (policy) units and that these resource policy units can fall into three broad suitability classes called Preservation, Conservation and Utilization (PCU). These policy units represent biological, physical and cultural/social values.

The CZMA requires the managing entity to determine which land and water uses have "direct and significant" impacts on coastal lands and waters and which do not. Those uses which do not have such impacts are exempt from the coastal management program. By viewing potential environmental impacts and weighing land uses against each resource policy unit, a broad measure of an area's suitability can be determined and direct and significant impacts generally identified.

The matrix is rated numerically one, two and three. The number one is used to imply minimal probable impact would result from conducting a specific land use in a specific resource policy unit provided all existing regulations are followed. The number two is used to imply moderate probable impact, but impacts that could generally be overcome by proper design, engineering and construction. Those uses having a value of two can be compared to conditional uses as currently used in the zoning ordinance. The number three is used to designate those land and waters uses that could have the most significant impacts and ones that require careful consideration. This implies that either the uses should not be permitted or that special measures be taken to mitigate the impacts associaed with the use or activity.

Uses that could have direct and significant impacts were determined by developing a set of charts that identify various stresses caused by various land use and examining the induced changes and environmental efforts that could result from various uses. Table III-2, III-3 and III-4 illustrate this concept.

Step 7 — Areas Meriting Special Attention
One of the objectives of the Anchorage Coastal Zone Management Program is to compile and assess problem areas as perceived by various groups. Public Law 92-583 encourages this program to include "an inventory and designation of areas of particular concern." The State CMA refers to these areas as "areas meriting special attention." The guidelines attendant to the law further expound on this inventory and suggest areas that should be considered. The "areas" refer to geographic areas which should reflect consideration of "(1) Areas of unique, scarce, fragile, or vulnerable natural habitat, physical feature, historical significance, cultural value and scenic importance; (2) Areas of high natural productivity or essential habitat for living resources, including fish, wildlife, and the various tropic levels in the food web critical to their well-being; (3) Areas of substantial recreational value or opportunity; (4) Areas specially suited to intensive use for development and where development and facilities are dependent on the utilization of, or access to, coastal waters; (5) Areas of unique geologic or topographic significance to industrial or commercial development; (6) Areas of urban concentration where shoreline utilization and water uses are highly competitive; (7) Areas of significant hazard if developed, due to storms, slides, floods, erosion, settlement, etc.; and (8) Areas needed to protect, maintain or replenish coastal lands or resources, such areas including coastal flood plains, aquifer recharge areas, beaches, off-shore sand deposits, etc.

An important phase in the overall methodology is to solicit public input and incorporate that input into the planning process. The viewpoint of the public seems an effective means to begin this designation of areas meriting special attention. It would be presumptuous for only staff of this program to enumerate "areas meriting special attention" for such broad subjects as stated in both the State and Federal guidelines. Yet, the public workshop and hearing process could become unwieldy if open to the complete forum of local government bodies, special interest groups, and the public at large without some tentative recommendations. All groups should eventually be able to contribute to the determination of these areas, but first an approximation developed by the Anchorage Planning Department will be used to initiate the process. Thus, the designation of various particular concerns is tentative. It is subject to extensive review and modification by all entities at all levels and by the general public. Some areas may be added or others deleted as the process progresses.

The identification and delineation of areas meriting special attention resulted from both the resource inventory and analysis. Viewing the data in an overlay fashion permitted an initial determination of areas in need of special management.

Step 8 — Management Boundary Identification
By viewing in composite the resource policy units, the resource maps, and the areas meriting special attention, a management boundary can be delineated. The P.C.U. matrix was also utilized at this step to identify which uses might cause direct and significant impacts in each resource policy unit. A

PRESERVATION-CONSERVATION-UTILIZATION MATRIX

COASTAL ZONE LAND & WATER USES
SUITABILITY CLASSIFICATION
TABLE III-4

ENVIRONMENTS / COASTAL RESOURCE POLICY UNITS / LAND & WATER USES	PRESERVATION ENVIRONMENT									CONSERVATION ENVIRONMENT								UTILIZATION ENVIRONMENT				
	Class I Waters	Selected Coastal and Wetlands	Tidal Flats	Salt Water Marshes	Coastal Habitats	Coastal Bluff/Cliffs	Hazardous Lands	Historical, Archeological Sites and Natural Areas	Coastal Flood Zone	Class II Waters	Class III Waters	Scenic Corridors, Areas and Vistas	Parks and Recreation Areas	Marginal Lands	River Floodplains	Open Space	Forestry Management Areas	Class IV Waters	Urban Residential	Urban Development	Urban Waterfront	Rural
Navigation & Transportation																						
Roads/Highways	3	3	3	3	3	2	3	3	3	3	2	2	2	2	2	2	2	2	1	1	2	2
Railroads	3	3	3	3	3	2	3	3	3	3	2	2	3	2	2	2	2	2	2	2	2	2
Airports/Airstrips/Float Base	3	3	3	3	3	3	3	3	2	3	2	3	2	2	3	3	2	2	2	2	2	2
Ports	3	3	2	3	3		3	3	2	3	2	3	2	2	2	3	2	2	3		1	3
Spoil Disposal	3	3	3	3	3	3	3	3	2	3	3	3	3	2	3	2	3	2	3	3	3	3
Pipelines	3	3	2	3	3	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Navigation Improvements/Aids	3	3	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2			1	
Urban																						
Low Density Residential	3	3	3	3	3	3	3	3	3	3	2	2	3	2	2	3	3		1	3	3	1
Medium Density Residential	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3		1	3	3	2
High Density Residential	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3		1	2	3	3
Commercial	3	3	3	3	3	3	3	3	3	3	2	2	3	2	2	3	3	2	3	1	1	2
Industrial	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	1	3
Public Lands & Institutions	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	2	1	1	3	3	1
National Defense	2	3	2	2	3	1	3	2	2	2	2	2	2	1	2	3	2	2	2	3	2	2
Mining & Mineral Extraction	3	3	3	3	3	1	3	3	2	3	3	3	3	1	2	3	3	3	3	3	2	3
Fish & Wildlife Habitat	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	3	2
Agriculture	3	3	3	3	3	3	3	3	3	3	2	2	2	1	1	2	2		2			1
Forestry	3	3	3	3	3	3	3	3	3	3	2	3	2	1	1	2	1		2			2
Recreation																						
Active	2	2	1	2	3	1	2	2	1	1	1	2	1	1	1	1	1	1	1	3	3	1
Passive	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	3	3	1
Gas & Electric Utilities	3	3	2	3	3	2	3	2	2	2	2	2	2	2	2	2	2		1	1	2	1
Water Supply & Wastewater Trmt.	2	3	2	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
Solid Waste Treatment Facilities	3	3	3	3	3	3	2	3	2	3	3	3	3	2	3	3	2	3	2	3	2	2
Parks	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	1		1	3	3	1
Cultural/Entertainment Facilities	3	3	3	3	3	2	3	2	3	2	1	2	2	2	3	2	3	2	2	2	3	2
Open Space/Undeveloped	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1

sketch map was made showing all areas where uses were in conflict with the resource base and this sketch map overlayed with the AMSA map. The result of this procedure permitted a tentative management boundary to be defined.

Step 9 — Legal Review
A thorough review was made of all major Federal, State and local laws and regulations applicable to the coastal area. These laws and regulations were then applied to each resource policy unit. The product of this planning step is a policy for each resource policy unit map.

Step 10 — Policy Charts
For each resource policy unit a set of goals and objectives was identified. The values for each policy unit were listed so that policies could be developed to protect the values identified. The legal review undertaken in step 9 was then incorporated into the policy charts. Existing laws and regulations were weighed against the policies for each resource policy unit and recommendations were made for additional land use control if needed.

Step 11 — Implementation
Public work sessions, appearances before public and government groups and work sessions with the Planning and Zoning Commission and the Assembly were conducted prior to the public hearing process.

WATER DEPENDENT/ WATER RELATED USES

The Coastal Management Act states that uses in the immediate coastal area be water-dependent or water-related. These terms are defined as:

(WD) Water-dependent:
A use or activity which can be carried out only on, in, or adjacent to water areas because the use requires access to the water body for water-borne transportation, recreation, energy production, or source of water.

(WR) Water-related:
Uses which are not directly dependent upon access to a water body, but which provide goods or services that are directly associated with water dependent land or waterway use and which if not located adjacent to water would result in a public loss of quality in the goods or services offered. Residential uses, parking lots, spoil and dump sites, roads, factories, restaurants, business, and trailer parks are not considered dependent on or related to water location needs.

Because a majority of the Anchorage coastal area is already committed to several various uses, only small portions remain that can accommodate either water-dependent or water-related uses. Uses which meet the above definitions shall be limited to the urban waterfront resource policy unit.

THE APPROACH TO ESTABLISHING PERMISSIBLE USES

As previously discussed, a concept which is central to the designation of permissible uses is that of "geographic segmentation." This concept involves a division of the coast into different "resource policy units," each representing a particular type of environment. Resource policy units are not defined solely on a biophysical basis, but rather, may represent an environment which takes on a special character due to man's activities there, and thus represent both biophysical and social values as well.

Clearly, one set of permissible uses could not adequately account for the inherent diversity present within the coastal zone of the upper Cook Inlet or even Turnagain Arm. The coastal zone, while a continuous system, is actually a composite of numerous and distinct coastal resource units — each with its own particular character. However, before the subject of "permitted uses" can be discussed, a definition of certain terms is in order.

Coastal Waters
Coastal waters can be defined as those waters adjacent to the shorelines which extend inland no further than the limit of regular tidal influence and contain a measurable quantity or percentage of seawater. Coastal waters comprise various ecological systems. These areas are the tidally influenced streams, estuaries, tidal deltas, bays, tidal flats, and the beach/upper shoreface areas.

Shorelands
Shorelands are those areas in proximity to the shoreline that strongly influence or are strongly influenced by coastal waters. Shorelands are areas that begin with the beach/shoreface interface and extend from that point.

Impact
An impact is the result of a human activity that causes a measurable change in the chemical, physical, or biological characteristics of water, substrate, or biota which are present in coastal waters. Impacts are measured by the degree of disruption of the existing composite resource area ecological system. Social impacts also need to be considered, but the emphasis as per the CZMA is on those land and water *uses* having direct and significant impact on coastal waters.

Direct Impact
An activity produces a direct impact if and only if it is connected to the coastal waters through ecological systems that both strongly influence and are strongly influenced by coastal waters. The influence of one ecosystem on another occurs through the immediate transport of water, sediment, nutrients, biota, or energy. An activity produces a direct impact if

TABLE III – 2 & 3

POSSIBLE ENVIRONMENTAL IMPACTS

STRESS	INDUCED CHANGE	ENVIRONMENTAL EFFECT	COMMENTS
1. Ground Water Withdrawal	1. a. Salt water intrusion b. Subsidence c. Flooding	1. a. Degradation of potable water supply b. Property damage c. Loss of fish nursery areas because of altered water chemistry at depth	
2. Dredging and Spoil Disposal	2. a. Increased water turbidity b. Loss of photosynthetic process c. Loss of marine resource d. Destruction of habitat e. Alteration of physical & Chemical character of estuaries f. Erosion of coastal areas	2. a. Loss of marine resources b. Possible increase in productivity of bay c. Destruction of fish and shellfish nurseries	
3. Devegetation	3. a. Increased runoff/increased flood hazard b. Removal of wildlife habitat c. Increased erosion	3. a. Loss of soil resources b. Loss of wildlife habitat c. Loss of shorelines d. Flood damage	
4. Offshore Construction	4. a. Increase in sedimentation b. Potential introduction of harmful chemicals into air and water	4. a. Damage to wildlife resources b. View obstruction	
5. Shoreline Construction	5. a. Alteration of physical character of estuary b. Alteration of circulation c. Alteration of erosion & deposition patterns d. Habitat impact	5. a. Degradation of coastal lands b. Production of new shallow water habitat c. Alteration of fish and shellfish nurseries	
6. Inland Construction	6. a. Increased runoff other pollutants b. Decrease in soil fertility c. Removal of wildlife habitat	6. a. Loss of estuary productivity by siltation of shellfish beds — changes in photosynthetic process b. Loss of recreational waters c. Flooding d. Loss of wildlife habitat	

7. Solid Waste Disposal	7. a. Surface water pollution b. Ground water pollution c. Air pollution d. Influx of certain wildlife species	7. a. Threat to public health disease — aquifer pollution b. Loss of aquatic habitat c. Loss of wate recreation d. Pollution of downstream water bodies e. Creates attractive muisance for wildlife	
8. Liquid Waste Disposal	8. a. Degradation of surface water	8. a. Threat to public health disease — aquifer pollution b. Loss of aquatic habitat & life c. Loss of water recreation d. Pollution of downstream estuaries	
9. Gaseous Waste Disposal	9. a. Degradation of surface water	9. a. Threat to public health respiratory diseases, etc. b. Loss of agricultural productivity c. Property damage	
10. Excavation	10. a. Potential leaks and spill b. Potential ground and surface water c. Potential for land subsidence d. Alteration or reduction of wildlife	10. a. Loss of marine resources & nursery areas b. Loss of agricultural productivity c. Loss of natural amenity resources d. Loss of habitat	
11. Filling	11. a. Destruction of natural vegetation b. Alteration of ground-water flow and recharge c. Increased surface runoff	11. a. Loss of wildlife habitat b. Loss of natural amenity resources c. Threat to public health aquifer pollution d. Reduced water storage/retention e. Increased flooding potential	
12. Draining	12. a. Potential destruction of vegeta tion b. Increased sediment load in runoff water	12. a. Loss of wildlife habitat b. Loss of water recreation	
13. Increased Vehicular Traffic	13. a. Destruction of vegetation b. Decreased soil stability c. Loss of shore protection d. Increase in noise levels	13. a. Loss of property b. Loss of natural resource c. Loss of biotic community	
14. Subsurface Waste Disposal	14. a. Pollution of groundwater b. Pollution of surface water	14. a. Threat to public health disease — aquifer b. Loss of aquatic habitat & life c. Loss of water recreation d. Pollution of downstream water-bodies	

it occurs in the ecological systems included in coastal waters or shorelands. An activity produces an indirect impact if the activity is connected to the coastal waters only through ecosystems that are not both strongly influencing and strongly influenced by coastal waters.

Significant Impact

A significant impact is a measurable chemical, physical, or biological change which exceeds a system's prescribed level of ecological tolerance. This tolerance "threshold" is scientifically established and takes into account naturally occurring fluctuations and the ability of tje system to withstand stress. An impact may be judged significant by virtue of either its extent, duration, or severity of disruption of the ecological system.

Because of the diversity of environments along Anchorage's coast, it would be almost impossible if not inappropriate to provide a predetermined statement of the types of land and water uses responsible for significant impacts in coastal waters. The types of site-specific data required to compile such impact statements in many cases simply do not exist and funds are not available for such study. The approach that is possible is reflected in the planning methodology. This approach states that direct and significant impacts can be *generally* identified through the use of the Enviornmental Impact Matrix. As previously explained, existing laws and regulations applicable to each resource policy unit were identified. In most cases, these regulations are designed to protect the environment against those uses which would cause direct and significant impacts and where they do not, new ordinances and regulations are recommended, as are changes to the zoning, if needed. So instead of listing specific uses that are or are not permitted, the existing legal structure is used.

Additionally, such programs as the Metropolitan Anchorage Urban Study (MAUS) and the Erosion and Sedimentation Control Report for the 208 water quality study, when completed, will be part of the implementation tools for the Coastal Zone Management Plan. These studies in concert with zoning ordinance (both existing and proposed) will aid in designating permissible uses and in determining direct and significant impacts and how they can be mitigated.

Coastal management is an ongoing planning process and as such, revisions and updates to the program will be made. New ordinances will be prepared and adopted that insure wise use of coastal resources.

CHAPTER IV
THE RESOURCE INVENTORY AND ANALYSIS

INTRODUCTION

Knowledge of existing coastal land and water uses and the general characteristics and interrelationships within coastal environments (natural systems) is the logical first prerequisite in developing a coastal zone management program. To accomplish this, however, requires a resource inventory.

The resources of the Anchorage coastal region are many and varied. They include such natural resources as minerals, rivers, tidal and fresh-water marshes, forests, abundant fish and wildlife, migratory waterfowl, and expanses of open space. They also include cultural resources such as those that constitute the cultural landscape found within the metropolitan Anchorage area, as well as the smaller communities such as Eagle River, Chugiak, Eklutna, and Girdwood. Both natural and cultural resources are interrelated and are a part of one complex system of interactions. For example, the wildlife areas depend, in turn, on bedrock, climate and the geographical situation of the land. Climate is a function of the geographical situation of Anchorage which, in turn, is dependent on the geologic setting, vegetation, and climate (to come full circle). The amount of water found in the various rivers that drain into the Cook Inlet are dependent on river basin size, climate over the whole basin, and bedrock conditions at the various river courses.

Natural systems also affect man. The course of rivers and the locations of natural channels that flow into estuaries such as Cook Inlet have also influenced the location of human settlements. For example, when Congress decided in the early 1900's to link, by railroad, the coastal areas of Alaska with the vast interior, the community of Anchorage was established as a result. A party of surveyors landed at the mouth of Ship Creek to begin work on the Federally-owned railroad, and the resulting construction camp and settlement became known as Ship Creek Landing. Within a year after start of construction the original landing site had grown so much that a new townsite on the bluff south of the creek was selected. This new site was subsequently named Anchorage because ships could anchor at the mouth of Ship Creek. This is but one example of how natural systems affect man. The 1964 earthquake produced significant changes in the coastal zone of Anchorage through land subsidence which in turn greatly affected man and his occupancy of the area.

Not only do natural systems affect man, but human activities in turn affect natural systems. Cities encroach upon the natural landscape and diminish wildlife habitats. Resources are depleted by mineral extraction. Urbanization within the Municipality has resulted in the alteration of habitats due to such factors as the cutting of trees and draining of wetlands, which in turn cause such problems as siltation of freshwater systems and erosion. The result caused by the interaction of natural systems and human activities is oftentimes an upset of local balances.

Human activities, in turn, affect other actual or potential human uses of the land and water. For example a certain type of resource use may preclude others. How lands and waters are ultimately used is largely determined by economic demands and by the vagaries of human preference. Accordingly, certain problems arise. If, for example, a land use planner introduces a specific use on a given land area, he has either knowlingly or unkowingly made a trade-off of competing uses. Therefore,, before designating and implementing a specific permissible use, the land use planner must study the given area to determine all alternative permissible land and water uses that are compatible with the area's resources.

In summary, an understanding of the natural resource base and its complexity is a first step in the prudent use of lands and coastal waters. The natural resource base is finite and problems result from human demands on these natural systems because all land and water are not equally suited for all uses.

The value of resource inventories and the resultant inventory maps is to help determine the total supply and distribution of coastal resources. Inventories and mapping programs help answer questions about the uniqueness or scarcity of coastal resources. By combining map attributes or thematic data in an overlay manner, the resultant information can then be used to describe geographic areas of similar environmental or resource capacity or suitablility. Also, the quantification of scarcity and uniqueness is then used as a criterion for identifying geographic areas which merit special attention.

The formulation and operation of an effective management program for Anchorage's coastal area will depend largely on the development of an extensive data base for the coastal zone as well as developing analytic and assessment techniques for working with this information. The need for a broad range of information that is readily available, accurate, and in a format that is consistent with the types of analysis required is clear from many parts of the CZM Act of 1972.

The need for reliable and sound information in any decision making process is paramount. Yet land resource decisions are being made in Anchorage everyday, having direct or indirect bearing on the nature and conditions of the resources of the Municipality. These decisions are often based on partial, incomplete or only minimal information about the

quality and quantity of resources important to the quality of life in Anchorage. This fact is recognized in both the Federal and State Coastal Management Programs. In the Alaska program the Act states that each district program must include a resource inventory which describes, in a manner sufficient for program development and implementation: habitats, major cultural resources, major land and water uses and activities, major land and resource ownership and management responsibilities, and major historic and prehistoric and archaeological resources. The State Act also requires a resource analysis which describes, in a manner sufficient for program development and implementation: (1) significant anticipated changes in the matters identified under Section 50 of the Alaska Coastal Management Act; (2) an evaluation of the environmental capability and sensitivity of resources and habitats, including cultural resources, for land and water uses and activities; and (3) an assessment of the present and anticipated needs and demands for coastal habitats and resources. The resource analysis in effect calls for a much more detailed resource inventory than is indicated in 6 ACC 85.050.

A traditional and classic method has been used to obtain diverse information on the physical base of the study area. Data has been collected in the following categories:

1. Land Use
2. Surficial Geology (foundation conditions)
3. Physiography
   a)slopes
   b)slope stability
4. Hydrology
5. Soils
6. Vegetation (land cover)
7. Habitats
8. Land Ownership
9. Historical and Archaeological Sites
10. Hazardous Lands (a special sub-classification) and Marginal Lands
11. Scenic Areas

This data inventory reveals the supply of resources, which can later be matched with the demand for them. Thus, staff has placed great importance on reliable information gathered during the inventory stage, because it will have the greatest persuasiveness for public bodies.

After the data is collected, the next step is to interpret its relevance to a broad range of prospective land uses. To do this, cultural and biophysical features were grouped into categories. These categories are the resource policy units which when combined together form the composite preservation, conservation, and utilization environments, Next, the data categories previously mentioned are examined for their positive, negative or neutral effects on each perspective land use. For example, agriculture or recreation, where high precipitation has a positive effect on forestry but a negative effect on recreation. This procedure is continued for all data categories, keeping in mind that the same data may have positive, negative, or neutral factors for different use considerations. In addition to the above, the data categories, once grouped into resource policy units, were examined in light of potential environmental impacts that could result from differing types of land uses. In addition, the following were also considered for their relevance to perspective land use activities: economic minerals, scarce or unique features, water resources, slope and accessibility.

The result of the above steps would be a series of maps locating unique sites, location of water resources, slope and exposure, along with other data, and from this process land use suitability maps were derived. These intrinsic suitability maps indicate the best individual uses for each area within the total study area, thus identifying both a single dominant prospective land use for every area of the total study area, as well as multiple uses suitable for the different environment designations.

Next, compatible and incompatible land uses are separated by constructing a matrix that shows all prospective land uses weighed against each of the resource policy units. Using this matrix, existing and prospective land uses can be measured for their degree of compatibility with all other land uses and measured against the resource policy units in which they reside. It is then possible to group compatible and coexistent land uses for each area of the total study area, thereby identifying the most compatible land uses. The map produced would show those portions of the Municipality having the fewest constraints for urban development, show those areas of the Municipality where development could take place but which would require that certain conditions be met first, and a map which shows those areas where development probably should not take place.

The natural resource/cultural inventory conducted by the Municipality's coastal zone plannig staff is based on the following:

1. Satellite imagery and U-2 high altitude color infrared aerial photography
2. Low altitude black and white and color photography
3. A search of current data sources
4. Various informational and interpretive maps at differing scales
5. Field investigations
6. Special studies

The inventory program will result in map depictions showing geographic relations among various resources. The inventory will include:

1. Political Jurisdictions and Land Ownerships
2. Coastal Floodplains
3. River Floodplains
4. Slope and Slope Stability
5. Natural Hazards
6. Surficial Geology

6. Surficial Geology
7. Soils
8. Vegetation
9. Wildlife/Habitats
10. Current Land Use
11. Historical/Archaeological Sites
12. Aesthetic Resources

The collection of technical information necessary for effective planning is an ongoing process. Numerous State and Federal agencies, researchers, universities, corporations, as well as the Municipality, have collected a wealth of information on resources in the coastal zone; however, data gaps still exist. New data are constantly being added. The inventory depicts the Anchorage coastal zone, its natural resources, and its cultural, socio-economic interactions at one point in time. This picture changes for two reasons. First, the acquisition of new data and consequently new information is a continuing process. Second, the coastal zone is a composite of dynamic systems — complex areas that change from day to day and year to year. Likewise, human demands on (or interactions with) resources change.

Because of financial and time constraints the Anchorage Coastal Zone Management Program has relied largely on existing information for the inventory or resources in the coastal zone; however, new programs have been initiated to fill data gaps and acquire new information. This process will continue into the implementation phase of the Coastal Management Program.

In addition to basic data collection, there has been a collection and review of literature relating to coastal zone management in general as well as acquisition of coastal zone reports conducted by other states. The intent here was to review various state's CZM programs to aid Municipal planners in defining and planning a coastal zone management program appropriate for and adequate to address the Municipality's coastal planning needs. Thus, this program does not purport to present fundamentally different concepts, nor does the program purport to present new technical data. Despite all the existing information regarding coastal processes and resources, there are still glaring data deficiencies. It is part of the purpose of the CZM resource inventory program to present a complete, but generalized, depiction of the current state of knowledge regarding coastal resources. In addition, based on the inventory and data collection efforts, judgements will be made on technical deficiencies in the information base that hamper decision-making regarding the coastal zone.

INVENTORY FORMAT: MAPS

A set of twelve maps graphically depict the location of coastal resources. These maps show political jurisdictions and ownership, coastal and river floodplains, slope and physiography, hazards, natural processes, geology, soils, vegetation and wildlife, current land use and historical/archaeological sites. The maps show areal relations among (and variations in) the twelve map subjects or themes. The cultural/biophysical inventory and analysis permitted the development of a series of maps for the entire coastal zone. The mapping approach adopted utilizes a multi-factor overlay technique which permits various aspects or factors of the cultural/biophysical landscape to be mapped as separate sheets. These map sheets are then overlayed — a process generally referred to as the stacking of thematic data. When maps are overlayed it allows an understanding and examination of spatial interrelationships between various resources, land uses and between the different areas of concern within the coastal zone, and thus provides the underlying rationale for the subsequent determination of areas meriting special attention.

How much information a map can impart is largely a function of map scale; the ratio of the size of the map to the total land area covered. The Planning staff has utilized two map scales.

Large scale maps generally show more detail than those of a small scale. The maps repesented here progress from a small scale to a large scale. A scale of 1:250,000 means one unit of distance on the map equals 250,000 equal units on the ground or one inch on the map equals about 4 miles on the ground. A scale of 1:63,360 means one inch on the map equals one mile on the ground and so on.

To produce the maps, resource information was compiled from a variety of sources and scales and either reduced or enlarged to fit on a base map of 1:63,360 for the Turnagain Arm area or to fit on a base map of 1:25,000 for the Eagle River and Anchorage bowl areas. This scale is not available for the Turnagain Arm area. The base maps were constructed by the U.S. Geological Survey and show natural and cultural features including shorelines, rivers, topography, major highways and railroads and urbanized areas.

A variety of data were then compiled onto the working base; the twelve data topics previously listed. Once the data topics were prepared, overlaying of the various resource/cultural features was possible. Using this technique has advantages. Maps of the same area showing such things as geology, soils, and vegetation assemblages are a graphic aid in understanding the interaction and interdependence among these natural entities. Likewise, resource conflicts can be readily envisioned by viewing maps showing the conflicting features. For example, maps depicting both cultural features and potentially active natural processes may reveal hazardous zones, such as where residential neighborhoods lie in flood-prone areas or in areas subject to other natural hazards.

The overlay technique permits the development of composite natural resource area maps. For example, enviornmental factors converge within certain distinct areas, so that similar sets of natural conditions

exist within a set of discrete boundaries. The common boundaries of these environmental factors then define the general limits of a composite coastal resource unit.

Composite natural areas exist because of the interdependence of environmental factors. For example, marshlands exist because of a delicate equilibrium involving substrate type, bathymetry (or topography), frequency of tidal inundation, freshwater inflow (amount, temporal distribution and chemical quality), and sediment budget. All of these affect floral assemblages (marsh-grasses), which in turn provide a base for the marine food chain. The definition of "composite natural areas" is thus somewhat circular; marshes are defined by component grasses that are one of a number of features "causing" an area to be a marsh.

Marshes represent a composite of natural factors, and they sustain a certain array of conditions; yet they remain distinctly marshlands. They are thus one type of composite natural area.

Composite natural areas are mappable entities, either natural or man-made, defined by local characteristics of one or a combination of physical processes, substrate, landforms, soil, biota, or other sustaining factors that naturally support certain described levels of human activities without imposing hazards on human populations. Composite natural resource areas are one form of resource suitability maps. In this case the terms Preservation, Conservation and Utilization have been used to denote various levels of suitability for use. Composite mapping of the biophysical/cultural features will thus result in a set of Preservation, Conservation and Utilization maps. Overlaying of the PCU maps results in a final composite map.

Preservation Map

The Preservation map shows those portions of the coastal zone identified as having major values to the public at large. For preliminary panning purposes in identifying preservation areas, all jurisdictional ownership boundaries have been ignored. What were examined were the natural systems that operate within the coastal zone, and all designations as Presrvation were based on this approach. Designation as Preservation should not be construed to indicate areas that are off limits to all uses. The major concern relating to areas designated a Preservation is that associated functions or public values be maintained. Areas so designated are considered to be those impossible to replace and any tradeoffs of their values will usually represent a loss of options for future action. In the analysis process, preservtion factors outweighed the conservation or utilization factors of the other biophysical/cultural maps should overlaps occur.

Conservation Map

The Conservation map shows those portions of the coastal zone identified as having significant natural or institutional use limitations tha require special precautions in use and development.

Utilization Map

The Utilization map shows those portions of the coastal zone identified as (1) already developed, or officially committed to a development project, (2) undeveloped and intrinsically suited for development, or (3) undeveloped and having only minor physical limitations which could be easily corrected. All such designations should be capable of moderate to high density development.

Note: Past development in the coastal zone has in some cases occurred in areas that would have been designated as "Preservation" or "Conservation" had they not already been developed.

Composite Map

The composite map presents a generalization of coastal zone landscape conditions into major categories of concern after a factoring out process has been applied. This process involved overlaying the PCU maps and noting where factor overlaps occurred. In cases of overlap, the preservation considerations outweighed conservation or caution development factors. The resulting map utilized a color coding system, with red implying "stop" or "preservation," yellow implying "proceed with caution" or "conservation," and green implying "proceed" or "utilization," utilizing normal social and environmental safeguards.

It should be noted that any given classification on the composite map is not an absolute. For example, the classification of an area as "utilization" does not necessarily imply that all such areas should be developed. It simply implies that if growth is to occur, it would be logical to attempt it in those areas classified as "utilization" because they have the fewest constraints. Similarly, classifications of an area as "preservation" simply indicates preservation values that should be formally considered in decision making regarding use of the land under that classification, and does not necessarily mean that the area should remain forever untouched. It is felt that most current existing land use controls and land use designations (parks, management areas) have sufficient control over the uses permitted on those lands.

PLANNING UNIT

The Anchorage Coastal Management District encompasses the entire Municipal coastal area from Portage in the south to the Knik River bridge in the north. The Anchorage Coastal Management District was divided into three planning units to facilitate better planning efforts. Planning unit designations were based on both political, cultural and environmental characteristics. Unit one is the Turnagain Arm study area, extending from Portage to Potters Marsh. Unit two is the Eagle River study area, extending from Fort Richardson to the Knik River. Unit three is the Anchorage Bowl.

Anchorage Bowl Planning Unit

The Municipality of Anchorage is located in the southcentral portion of Alaska at the head of Cook

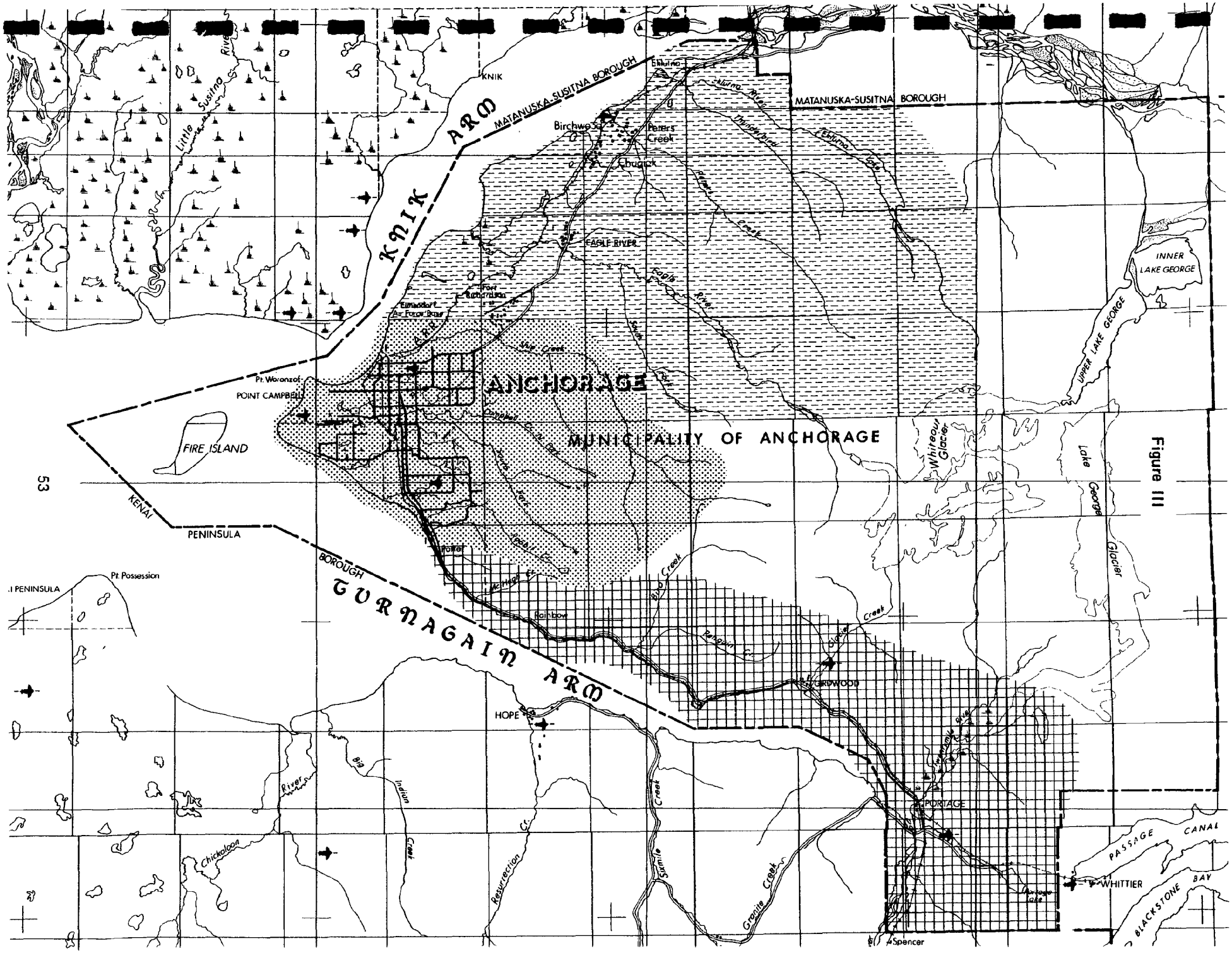

KNIK ARM
MATANUSKA-SUSITNA BOROUGH
KNIK
Little Susitna River
Eklutna
Eklutna River
Thunderbird
Eklutna Lake
Birchwood
Peters Creek
Chugiak
Eagle River
Eagle River
Fort Richardson
Elmendorf Air Force Base
Ship Creek
ANCHORAGE
Pt. Woronzof
POINT CAMPBELL
FIRE ISLAND
MUNICIPALITY OF ANCHORAGE
Whitetail Glacier
Lake George Glacier
INNER LAKE GEORGE
UPPER LAKE GEORGE
KENAI PENINSULA BOROUGH
Portage
Rainbow
Bird Creek
Girdwood
HOPE
GURNAGAIN ARM
Pt. Possession
PENINSULA
Big Indian Creek
Chickaloon River
Resurrection Cr.
Sunrise Creek
Granite Creek
PORTAGE
Spencer
WHITTIER
PASSAGE CANAL
BLACKSTONE BAY

Figure III

Inlet on a roughly triangular piece of land between the two estuarine drainages, Knik and Turnagain Arms (Figure 11). The Municipality covers a land area of approximately 1950 square miles of which only 15 percent is suitable for human habitation. The remaining 85 percent is comprised of the Chugach Mountains, which are too rugged and remote for human habitation. Metropolitan Anchorage, which is home to a population of 200,000, is located at the western side of the Municipality on a lowland coastal plain that slopes gently away from the mountain front toward Cook Inlet. The southeastern part of the area declines in elevation from 500-600 feet at the mountain front through a series of ridges and isolated hills to a broad trough about 80 feet above sea level, that extends north-south through the bowl to Turnagain Arm. The area of the former City of Anchorage and nearby military bases occupy a broad, gently sloping alluvial plain, while the areas to the north and west have extensive hummocky terrains that locally rise to heights of more than 300 feet. The entire lowland is separated from the sea by steep bluffs, and only in the valleys of major streams does the land approach sea level with gentle gradients.

Eagle River Planning Unit

The Chugiak-Eagle River area, located approximately ten miles north and east of the Anchorage metropolitan area, is comprised of several residential communities; namely, Eagle River, Chugiak, Fire Lake, Peters Creek, Birchwood and Eklutna. The area is separated from the rest of the Municipality of Anchorage by the Fort Richardson Military Reservation. Extending along the Glenn Highway for approximately fifteen miles in a northeasterly direction to the Knik River, the Eagle River-Chugiak area is abounded on the east by Chugach State Park and on the northwest by the Knik Arm. The area is a strip about three miles wide and fifteen miles long, encompassing approximately forty-five square miles. Eagle River, the principal community in the southern portion, is located near the intersection of the Eagle River and the Glenn Highway in an area of increasing development within the Eagle River Valley. Birchwood, Peters Creek, Chugiak and Lower Fire Lake are located northeast of Eagle River along the Old Glenn Highway in a more rural atmosphere.

Turnagain Arm Planning Unit

The Turnagain Arm Community represents those portions of population concentration south of the "Anchorage bowl" generally along the Seward Highway and extending to Portage at the southern boundary of the Municipality. The largest and most significant of these, from the standpoint of population and private land ownership, is the Girdwood Valley area. The Girdwood Valley encompasses the drainage basin of Glacier Creek along with its tributaries and includes the new town of Girdwood and Alyeska Ski Resort and Lodge. This valley lies near the head of Turnagain Arm, approximately 45 miles south of Anchorage. For purposes of this discussion, most of the emphasis will be placed on Girdwood Valley, since it represents that area where the majority of existing development is occurring and future development is anticipated.

Indian and Bird Creek Valleys, which include small population settlements, are both glacial stream valleys flowing out of the rugged Chugach Mountains to the north and east. Penguin Creek is a major tributary to the stream flow of Bird Creek. Topography in both areas is very steep, with peaks 4,000 to 5,000 feet in elevation. The steep mountainous terrain drops sharply and abruptly into Turnagain Arm, allowing only minimal land area for roads. Due to the topography and the juncture of these two streams with Turnagain Arm, the area provides a minimum of land suitable for development.

The stream channels and swamp flats of Twenty-Mile River, Portage Creek and Placer River comprise the majority of privately-owned land in the Portage area. The remaining terrain consists of steep mountains and glaciers rising to 4,000 feet within the Chugach National Forest.

The Girdwood Valley area is an old glaciated valley, which has dominant land forms resulting from the carving action of historical glacial ice. This area is presently drained by Glacier Creek and its many tributaries, including California, Crow, Winner and Virgin Creeks. These eventually flow into Turnagain Arm near the "Old Girdwood Townsite."

The Girdwood Valley floor is composed of a mixture of loose material deposited directly at the margin of the glacier or from the melt water streams which altered the surface the deposited water-graded material varying from clay particles to boulders. These fine materials of clay and silt present the greatest difficulty to development, since they make subsurface drainage difficult or impossible. These conditions, along with subsequent surface drainage, have altered the natural vegetation. Muskeg has developed, even on the gently sloping valley sides, to form deep deposits. The west meadows have ridges of coarse, well-drained material at their margin which support good stands of birch and spruce.

Glacier Creek has a braided channel in the lower valley which cuts a wide strip out of the valley floor, producing a broad floodplain. The valley sides are quite steep in many places and have a high frequency of avalanches which limit the winter and early spring use of land at the bottom of the slopes.

THE INVENTORY

Map 1 — Land Ownership and Political Jurisdictions

The Municipality of Anchorage, an area of approximately 1950 square miles, is located in the south-central portion of Alaska at the head of Cook Inlet. Of the 1950 square mniles, only about 15%, or 293 square miles, is suitable for human habitation; the remaining 85% of the land is closed to development because of the existing land ownership pattern and because of rugged terrain unsuitable for develop-

ment. Of that 1950 square miles, 218 square miles are water areas (Turnagain and Knik Arms).

The Municipality of Anchorage has roughly 92 miles of coastline; however, a majority of this is in either Federal, State or Native ownership. Elmendorf Air Force Base occupies 21 square miles and Fort Richardson occupies 96 square miles of land. Chugach State Park occupies 772 square miles and Chugach National Forest covers some 384 square miles within the Municipality. Lake George National Natural Area contains 4800 acres. Another major landholder is the Native village of Eklutna. Although they have not yet received title to all the lands they selected under the provisions of the Alaska Native Claims Settlement Act, they are entitled to three townships, or 108 square miles of land, within the Municipality. Based upon these figures, only 67 square miles of land remain in Municipal ownership, other private ownership, or to State or Federal agencies.

This map details the amount of land under Federal, State, Municipal, Native, and private ownership. Due to several land programs, the land ownership pattern will change significantly during the next few years. The Municipal Land Entitlement Act is making certain State lands available for local government selection. The Alaska Native Claims Settlement Act has resulted in Native selection of large amounts of land within the Municipality; however, the Bureau of Land Management is still in the process of transferring title. This process will most likely be a lengthy one and the exact boundaries of Native owned land will be unclear for some time to come. The Municipality is also acquiring land for greenbelts, and as bond propositions are passed, additional monies will be available to purchase land needed for open space and greenbelt purposes. The land ownership map depicts one time period and will be updated as new information becomes available.

Map 2 — Current Land Use

Current land use maps help show man's present use of the land in relation to natural regimes, in addition to aiding the general public in understanding growth patterns and attendant environmental, economic, or demographic factors. Land use maps permit a study and analysis of the pattern and spatial arrangement of land uses and their functional relationship to each other. A knowledge of the existing arrangement of the Municipality's land use is essential in determining what trends exist and what problems may affect future development activities. The land use map is a benchmark from which subsequent changes can be gauged and is a tool for evaluating kinds of uses amenable to specific kinds of lands. The land use map can be used as a tool for identifying cultural pressure points on the natural system. It identifies areas of intensive use that may impose imbalances or that may activate processes. The land use map also identifies the aerial limits of other uses that do not pressure the carrying capacity of the land. Comparing (combining) the land use map with, for example, a map showing natural processes, areas can be shown where man unknowingly has exposed himself to natural hazards.

The large landowners (the State and Federal governments) have had a restraining effect on the ability of the Municipality to expand. This has also been a factor in the lands surrounding the metropolitan area being preserved for present and future recreation purposes.

The data for the land use inventory has been extracted from several sources. Property and tax maps, in conjunction with current aerial photographs, provide the sources for identifying and mapping land uses. Limited field checks have been made to verify questionable areas.

Land use was also identified from aerial photographs and mapped at a scale of 1 inch to 1000 feet. This map was then reduced to 1:25,000 to match scale with the other resource maps. In the process of reduction, the land uses were generalized. Land use will be updated as required utilizing various tools and methods.

Land use is a general category concerning several socioeconomic conditions within a planning unit.

1. Developed land use. This map shows to what extent an area has been developed. The following structural types are mapped.
   a. single-family
   b. multi-family
   c. commercial
   d. industrial
   e. public lands and institutions
   f. vacant

Maps 3 and 4 — Physiography and Climate

Physiography is the description of the terrain or the "lay of the land." It includes such features as mountains, valleys, watercourses and shorelines. Climate can be defined as a long-term composite picture of day-to-day weather conditions and atmospheric process in an area. Physiography (terrain) and climate interact in the Anchorage coastal region. Factors determing local climate are complicated by the physiography; the surrounding mountains greatly affecting the distribution of precipitation and the prevailing wind speed and direction. The effects of terrain on annual precipitation are well illustrated by the Chugach and Kenai Mountains. These two mountain ranges effectively block the flow of moist air from the Gulf of Alaska and thus most of the precipitation carried by the easterly and southeasterly winds falls on the eastern slopes resulting in a relatively low (14.4 inches) mean annual precipitation. Climate also affects landforms (the terrain) by means of different erosion and weatehring rates that are in turn functions of the amount and temporal distribution of rainfall, degrees of insulation/wind activity, freeze-thaw frequency in winter, etc. The predominant winds in the upper Cook Inlet, because

of its physiography, are those funneled through the basin from the north or south, with forty-two percent (42%) being southerly. Downslope winds (Katabatic winds) occasionally occur and are caused by cold air moving downslope on the Chugach Mountains from highland glaciers through adjacent valleys into the Anchorage bowl and adjacent lowlands. Principal factors affecting Anchorage's climate are, in addition to its local physiography, its latitude and geographic position relative to the extremely large land masses and oceans. The lands within the Municipality are located in a transitional zone between the interior, which is characterized by cold winters, hot summers, low precipitation and moderate winds, and the maritime, which is characterized by cool summers, mild winters, high precipitation and frequent storms with high winds. The Anchorage area is warmer and wetter than the interior, but cooler and drier than direct exposure to the open sea. Upper Cook Inlet provides Anchorage with a modified maritime climate. It is the physiography of Anchorage and its surroundings that are responsible for this moderated weather regime. One of the primary physiographic features of the Anchorage coastal region is 13 river systems. These are: the Knik, Eklutna, Peters Creek, Eagle River, Ship Creek, Chester Creek, Campbell Creek, Indian, Birc, Glacier, Twenty-Mile, Portage and Placer Rivers. In addition there are numerous smaller streams that drain into the Knik and Turnagain Arms.

Another major feature dominating a majority of the rgion is the Chugach Mountain Range. Ths mountain range, occupying approximately three fourths of the eastern side of the Municipality, is steep and rugged with very distinct treelines. Above timberline, bedrock is exposed and rock slides and avalanches are common.

Two maps have been compiled, one indicating slope stability classes and the other showing areas with slopes over 25%, with particular emphasis on coastal bluffs and hills.

Slope is the gradient of the land surface. It is the angle between the inclined ground surface and the horizontal plane. The slope at a given location thus is a measure of the steepest gradient encountered on the ground surface at that point.

The slope map summarizes the slope information provided by the contours on the topographic map by grouping local areas having similar slopes into a single map unit. The slope map was constructed basically from the topographic map by measuring the spacing between the contour linns. Greater accuracy was added by using aerial photographs to locate details of the topography not apparent from the contours. Many slope-map units coincide with the geologic-map units (Schmoll and Dobrovolny, 1972) because many of the geologic deposits have distinctive slope characteristics.

Hillsides are geological features which, in combination with vegetation, soils, and precipitation, affect the natural balance of the hydrologic system. Hillsides move naturally as the result of gradual weathering and erosion. However, development that removes vegetation sharply increases soil erosion and slope instability by increasing the amount of water in the soil. Construction that alters the natural formation of rocks, soils and other components of a slope will make it more susceptible to slides and slumps. Development that removes vegetation or otherwise alters natural drainage patterns will increase runoff and erosion. Steep slopes and soils that are relatively less permeable (e.g., clays) are particularly sensitive to this problem. Radical changes in hillsides due to erosion will in turn have impact on surface water quality, groundwater quality and quantity, and stream flow. Use of improper construction techniques can leave the landscape permanently scarred. The aesthetic damage is compounded where site planning and design ignore the natural contours of the terrain and obliterate the hillside itself. Slopes have positive value to people as they provide distinctive relief to the landscape and interesting settings for human activities.

Climate data is presented in the Environmental Atlas of the Greater Anchorage Area Borough.

Map 5 — Historical-Archaeological Overview

The Municipality's Historical Landmarks Preservation Commission has retained a preservation specialist to complete a survey and inventory of historic and archaeological sites for the Greater Anchorage area. This effort is in progress, yet an overview of the movements associated with local history has been completed. Specific sites have been identified in the inventory which will be published in 1979. There are a number of sites which are located in the area designated as the coastal zone which have been identified at this point in time. The historical movements which are associated with the Municipality are important in identifying what remnants of the past stil exist and their historic significance. Discussed below are these movements or patterns of history.

Prehistory and Native History:

Archaeological investigations in the Anchorage area have not been extensive. Until the last decade aboriginal cultural evidence was generally lacking, but this was because of the absence of field investigations rather than the result of fruitless research. Current studies suggest human occupation in the Anchorage portion of the Cook Inlet region to date from approximately 6,500 years ago.

Prehistoric and historic evidence is primarily supportive of Athapaskan Indian culture in this area. However, research also leads to the possibility of Eskimoid occupation before the Athapaskan people migrated to this vicinity from the interior. Artifacts and evidence of living style (e.g. hearth construction) suggest that the Kenai and upper Cook Inlet area may well have supported Eskimoid culture. It is conceded that the Tanaina were reltive latecomers.

The Tanaina are a subgroup of Athapaskan Indians which inhabit the entire Cook Inlet Region; they are related not only geographically, but also linguistically. It is believed that the Tanaina moved into the region sometime within the last mellenium. Upon the first contact by European or Russian explorers; including Cook, Dixon, Portlock, Glottov and Juvenal, the Tanaina were well established.

Regional variations in culture and linguistics are identifiable among the Tanaina. Eklutna is the major site which is associated with Tanaina occupation in Anchorage. It appears that the Tanaina of that upper Knik Arm area generally had contacts and means of communication with other Tanaina in the Matanuska and Susitna Valleys, rather than to the south. The Tanaina language is derived from Na-dene linguistic stock. The upper Inlet Tanaina, including the people of Eklutna, Knik and Susitna, speak a dialectical variation of the Tanaina language. Interestingly, Tanaina place names suggest historic use of a number of streams and points in the Anchorage bowl (e.g. k'giydulghakt or "where they put up fish," a geographic point north of Eagle Bay). A list of such place names has been compiled for the Anchorage area.

Archaeologic sites are scattered throughout the Municipality. The common denominator associated with most sites is that they are usually near streams or other water related features. This is to be expected as the Tanaina, unlike the other Athapaskans of the interior, were a coastal oriented people. Their subsistence was based on fish and sea mammals primarily; however, the upper Inlet Tanaina were more dependent on land mammals than their southern counterpart. The Tanaina typically lived in semi-subterranean log structures in the winter; these were organized into a village. House pits are remnants of such occupation and can sometimes unfold a story of successive occupation. Examples of such pits are located on Pt. Woronzof.

Russian missionaries initiated contacts with the Tanaina about 1800. The Russian Orthodox Church established firm religious foundations within Cook Inlet, especially on the Kenai, before the American purchase of Alaska in 1867. Traditional social values and structure were enjoined to or broken down by the church doctrines. Today many villages maintain an Orthodox Church; such is the case at Eklutna.

Mining History:

Gold mining in the tributaries of Turnagain Arm and Knik Arm has taken place since 1895. The remains of cabins, hydraulic works and equipment for lode mining are scattered throughout the drainage basins of Crow, Rainbow, Indian and Bird Creeks. Although the miners have never experienced the bonanzas of Nome, Iditarod or the Klondike, many operations were continuous and steady until the Second World War. Gold was first discovered on California Creek in 1895 by F.J. Perry and Christopher Spillu,; nearby Crow Creek was staked in 1896 and James E. Girdwood operated one of the first mines there. Winner Creek, another of the Glacier Creek tributaries, was also the scene of mining operation before the turn of the century. Mining in the Municipality has been of two types: placer mining and lode mining. Placer mining consists of sluicing, panning or hydraulic operations to remove gold flakes or nuggets from the creek bed deposits. The Holmgren-Erickson Mine, also known as the Crow Creek Gold Mining Company, is an excellent example of that type of operation; the well preserved buildings of that operation are still in existence today. Lode deposits in the Crow Creek basin were first discovered by Conrad Hores in 1909. A number of lode mining operations were developed; this entailed tunneling into veins, the transport and refinement or ore. Such lode mining operations included the Monarch (Staser), Bahrenburg, Jewel, and Brenner properties. Two lode mining operations were located on Peters Creek. A silver source (the Mayflower lode) was discovered below Eagle Glacier in 1911; little was done to develop that claim.

The Alaska Railroad:

Anchorage was born in the spirit of the railroad development of Alaska. The U.S. Congress, in creating the Alaska Territorial legislature in 1912, also commissioned a study of potential railroad route which would link the seaboard with the interior and its rich mineral deposits. However, it was not until 1915 that the selection of a route was actually made. President Wilson, by Congressional authorization, selected the Western or Susitna Route. This route joined Seward, an ice free port, with the interior which was so rich in gold, oil, timber and fertile soil. Of particular importance, the railroad could transport coal from the Matanuska area. In short, the carry equipment and supplies from larger ships which lay "at anchor" in the Inlet's deeper waters off Anchorage into existence. Plans for railroad's development proceeded and a site at Ship Creek was visualized as the ideal location from which construction could proceed north to the coal fields as well as south toward Seward. As lighterage could carry equipment and supplie from larger ships which lay "at anchor" in the Inlet.s deeper waters off Ship Creek, the railroad's headquarters were constructed there. Workers flooded to the spot by the hundreds, creating a "tent city" in the short space of a few months after Wilson had authorized the route. By midsummer the Alaska Engineering Commission (i.e., the Federal agency building the railroad) had cleared a townsite, platted lots according to the simplistic grid system of streets, sold those lots at public auction to create the town, and endorsed the people's vote to call the town Anchorage.

The railroad used the existing right-of-way which had been constructed by the privately-financed Alaska Central Railway. That railroad went bankrupt in 1908; its predecessor was the Alaska Northern Railway which emerged in 1910. Track was laid no further than Kern Creek (mile 71 on the railroad) in the southeast portion of the Municipality. The "Government Railroad" (which was officially termed

the Alaska Railroad in 1923) was constructed between 1915 and 1923. Associated with roughly 90 miles of main railroad line that run through the Municipality are a few section houses, the ARR depot at Ship Creek and a number of miscellaneous results of railroad development (e.g. the dock facilities, examples of lighterage and retired cars and engines).

The Development of Anchorage:

In the summer of 1915 a temporary settlement along Ship Creek, known simply as "Tent City," gave way in orderly fashion as a townsite was platted and lots were sold to create Anchorage, the shipping and operational headquarters for the construction of the Alaska Railroad (ARR). The plan was the most simplistic possible — a series of square blocks, separated in T-square precision by a network of grid streets. The plan acknowledged only a few special uses of land: a school reserve, a municipal reserve, a cemetary reserve, a federal reserve and park reserves. In the original townsite commercial establishments, especially along Fourth Avenue, and residential units were rapidly developed. On the specially designated parcels of land, government institutions came into existence. Over time, the townsite became the central business district of Anchorage. Land use still includes a high proportion of commercial use, however, office use has also become extensive while residential use has declined. Today a few representative buildings of the early Anchorage era are still in existence.

Besides the railroad a couple of other major forces helped to foster growth in Anchorage — air transportation and the military. Air travel started in the 1920's here. The late 1930's saw refinement in architecture style as concrete construction was introduced and new public buildings replaced their frame counterparts. In late 1939, in anticipation of possible war, military defense was bolstered in Alaska; Fort Richardson and Elmendorf Field were developed in the early 1940's.

Homesteading, which had played a part in the settling of Alaska, the last frontier, also had a role in Anchorage's development. Place names throughout the expanding city are often derived from such homesteads. Most of the original homesteads have largely been subdivided. A number of scattered cabins within the Anchorage bowl, Eagle River and Peters Creek bear witness to this facet of history.

The Good Friday Earthquake of 1964 is undoubtedly a most prominant event in the history of Anchorage. A good deal of the fabric of the community was lost in that disaster. This included not only individual homes and businesses in the downtown area and Turnagain, but also whole sections of settlement as at Portage.

A list of sites and buildings will be adapted from the historic sites inventory as a portion of the next phase of the CZM study.

Map 6 — Aesthetic Resources

The following excerpts from several legislative acts highlight those sections which point specifically to the protection of aesthetic resources:

1. Coastal Zone Management Act of 1972

   The Act stresses the importance of coastal resources, including aesthetic resources, to the national well-being. Section 302(b) states:

   > The Congress finds that the coastal zone is rich in a variety of natural, commercial, recreational, industrial and *esthetic* resources of imediate and potential value to the present and future well-being of the nation (emphasis added).

   The Act's declaration of policy states in Section 303(a) that it is the national policy "to preserve, protect, develop and, where possible, to restore or enhance the resources of the nation's coastal zone for this and succeeding generations."

   The Act also states in Section 303(b) that it is national policy:

   > to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic and *esthetic* values as well as to needs for economic development (emphasis added).

   Section 306 of the Act makes administrative grants contingent on provisions in the management program "for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological or esthetic values."

   In its November 23, 1973 and August 21, 1974, Guidelines for Management Program Development Grants (15 CFR Parts 920 and 923), OCZM makes more specific reference to aesthetic resource planning. Section 920.12 includes among the criteria for establishing areas of particular concern:

   > Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.

   Section 923.15 cites "historic, cultural, esthetic and conservation values," and "historic sites" (those listed on the National Register of Historic Places) among those concerns in which there is a clear national interest.

2. National Environmental Policy Act of 1969

   Similarly, the National Environmental Policy Act (NEPA) stresses aesthetic considerations in its

guidelines for environmental impact statements (EIS), requiring that:

> The Federal government use all practicable means . . .to . . . assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasant surroundings . . . and to . . . preserve important historic, cultural, and natural aspects of our national heritage . . . NEPA, Sec. 101(b) (2,4)

3. Water Resources Planning Act of 1965

The Principles and Standards for Planning Water and Related Land Resources (Federal Register, Vol. 30, #174, Part III, September 10, 1973, pp. 61-66) of the Water Resources Council states the following reasons for protecting and enhancing special areas within the coastal zone:

> Beaches and Shores: The juxtaposition of attractive beaches, distinctively scenic shorelines and adjacent areas of clean offshore water provides positive public aesthetic values and recreational enjoyment.
>
> Estuaries: Beyond their critical importance in man's harvest of economically useful living marine resources, many estuaries, coves, and bays merit consideration as visually attractive settings that support diverse life forms of aesthetic value and as marine ecosystems of special interest.
>
> Open and Green Space: These are essentially undeveloped, visually attractive natural areas, strategically located where most needed to ameliorate intensifying urbanization patterns.

The Alaska Coastal Management Act makes reference to designating areas for recreational use based on the following criteria: the area has potential for high quality recretion use because of physical, biological, or cultural features.

The first substantive component of the aesthetic resource planning process was an inventory of coastal area aesthetic resources. Table IV-7 identifies the attributes of natural aesthetics resources, those features of the coastal area which possess a distinctive degree of visual unity. Based on these attributes, aerial photographs and field inventories were conducted to identify sites possessing aesthetic characteristics. The results are presented on the Scenic Resources Map.

Map 7 — Water Resources

The Municipality is fortunate in having numerous lakes, streams and creeks within its political boundaries. They serve not only as aesthetic resources but also play important roles. The water resource map delineates all water bodies within the coastal planning area.

Streams and Creekbeds:

Streams and creeks play two important roles within the hydrologic cycle. First, they contribute major drainage systems carrying runoff and sediment from higher elevations to low-lying land and water bodies. Second, they contribute water to aquifers during the wet season and receive groundwater through springs or seepage during the dry periods. Development in these areas, by removing vegetation and introducing impervious surfaces, increases erosion and sedimentation which in turn increase stream turbidity and reduces available oxygen in the water. The increased runoff introduces urban pollutants in the form of petroleum products, fertilizers, road salts, etc. Removal of shading vegetation can increase thermal pollution of the streams. Development also can adversely affect overall hydrologic balance within the watershed. Streambed siltation obstructs natural flows from surface to groundwater; streamflow becomes irregular, with lower base flows and high peak flows, raising the level of flooding.

Aquifers:

Groundwater is carried by aquifers, formations composed of consolidated and unsolidated rock. This underground water supply is fed from seepage from streams and lakes as well as by precipitation which percolates directly to the aquifer. Groundwater is an important source of water for human consumption, and helps regulate surface flow by absorbing water during wet periods and relesing it during dry periods. It also acts as a natural filter since percolation of water through the soil and other formations can remove certain impurities.

Inappropriate or unregulated development on or near aquifers can unfavorably affect this water resource in a number of important ways. By covering recharge areas with relatively impervious surfaces and effectively sealing them to percolation, development decreases recharge of the groundwater supply and increases runoff. Development that pumps water in excess of aquifer recharge rates will cause the groundwter reservoir to fall, not only reducing the available supply but causing land surfaces to sink. Where fresh groundwater is located near saline groundwater, overpumping can also decrease the natural flow from fresh to saline, resulting in saline pollution of the freshwater reservoir. Again, land use activities can allow harmful substances to enter the aquifer, e.g. location of septic tanks or cesspools at or below the water table; subterranean disposal of wastes; agricultural activities involving concentrations of fertilizers or animal wastes; poorly constructed chemical or petroleum storage tanks, etc.

Map 8 — Wetlands

The term wetlands encompasses a variety of ecological areas that are generally classified by their vegetation, water type (fresh, saline), and predominant water depth. However, wetlands are a geomorphic

feature, not necessarily a vegetative feature. Wetlands include fresh or saline meadows, marshes, swamps, bogs, bays and open water. These areas perform a number of vitally important natural functions. They affect water quality by filtering out silt and other pollutants, slowing down runoff, and changing inorganic nutrients into acceptable nutrient material. Wetlands also serve to stabilize water quantity by absorbing excess flows during flood periods and retaining it during droughts. Wetlands are particularly important for the maintenance of fish and wildlife habitat; they provide critical breeding, nesting, and feeding grounds for birds, fish and other aquatic animals, and contribute to the food chains of upland plants and animals. Finally, in addition to supporting general ecosystem health, wetlands also have important value as recreation, education, and aesthetic resources.

Development or alteration of wetlands can create serious water quality and related environmental problems. Upland development can lead to nutrient and sediment inflows that exceed the natural capacity of the wetlands to act as a "filter;" it can no longer efficiently transform nutrients into harmless inorganic matter and remove suspended sediment. The nutrients stimulate eutrophication, and the increased turbidity resulting from the sediment reinforces this depletion of available oxygen in the stream, degrading water quality and creating fish kills. Wetlands may function as recharge areas for groundwater, groundwater discharge areas, or catch basins for overland flow. Development that increases upland runoff or affects groundwater levels can upset the intricate cycling of water between wetlands, groundwater and surface water, impeding the wetlands ability to counteract floods and droughts.

The Municipality will conduct a research program, as part of the implementation phase, to further delineat wetlands, classify wetlands, and understand the hydrodynamics of wetlands as a prelude to developing a wetlands ordinance or performance standards. This effort will be jointly conducted by the CZM program and 208 planning efforts and will most likely involve input from Federal and State agencies.

Map 9 — Flooding

Of the approximately 15 percent of land in the Municipality which is suitable for habitation, a significant amount is subject to inundation from flooding. This natural flooding results from above-average runoff from rain and snowmelt. Natural drainage basins are fairly small, however, but flood stages caused by rain or snowmelt generally rise and fall within a few hours. Ice blockage in streams during winter months also can cause flooding of local areas adjacent to streams. This occurs when streams freeze to the bottom and do not allow for runoff during winter and spring thaws.

The Municipality has 22 distinct watersheds within its boundaries. The majority of these 22 streams or rivers traverse some portion of the habitable area, although only eight — ship, Chester, Fish, Campbell, Peters, Rabbit and Glacier Creeks, and Eagle River — traverse areas that affect significant portions of the Municipal population.

In numerous recorded instances, residential and commercial properties within the floodplains of Chester and Campbell Creeks have been damaged by flood water. Potential flood damage will increase in areas adjacent to the creeks if development continues to encroach upon the streams. Although these streams are not classed as catastrophic flood hazards, they present serious threats to the stability and safety of development already existing in the floodplains.

Urbanization in the Municipality has increased the flood potential considerably. Development has taken place without regard to normal surface drainage. Streams are realigned, relocated, filled, channelized and deepened at various locations along their courses. The results of these alterations of the natural water regimen have caused drainage problems and increased the flood potential. Major flood problems also have been created by inadequate culverts and bridge openings. These undersized stream crossings force flood waters to flow over roads and to back up and flood lands upstream. In some areas, replacement of inadequate culverts with larger culverts, construction of bridges, and realignment of poorly diverted small tributaries will be necessary to prevent or alleviate future flood problems.

Urbanization also increases the flood potential of an area by increasing runoff. When lowlands, swamps and othe areas that absorb moisture are drained, developed and replaced by streets, sidewalks and houses, more water runs off the land surface into the streams. This reuslts in higher and more frequent peak stages in the streams.

Erosion and Sedimentation:

The construction phase of urban development can result in significant alteration of the landscape, the extent of the changes usually depending upon the size of the development. A construction cost commonly incurred is large-scale removal of vegetative cover in order that construction can proceed smoothly and efficiently. The impact, in terms of the hydrograph, is increased runoff from the area resulting both from increased quantity and velocity of flow. Both of these factors lead to significant removal of soil through the erosion process. The actual amount worked away from the site will also depend upon the extent of surface area exposed to the runoff and the characteristics of the soil. The sediment washed from areas undergoing urban development is from five to five hundred times as great as that from undeveloped rural areas. The consequences of erosion are loss of productive topsoil and the deposition of the soil, including its organic constituents, in streams, marshes, lakes, and the various water bodies. The resulting impact on these water bodies

is a smothering of streambed organisms and plants, destruction of their storage capacity for water supply and flood control, and an increase in the rate of eutrophication of lakes, swamps, and other water bodies.

Sedimentation not only interferes with the functioning of the natural ecosystem, but also with the uses which mankind usually expects to make of these water bodies. Sedimentation of streams and rivers with a heavy organic load decreases their aeration capacity and the ability of the water to assimilate future waste loads imposed by discharges from wastewater treatment facilities. Furthermore, deposition of the sediment in reservoirs reduces the capacity of the reservoir for its intended use, whether it be water supply, power generation, or flood storage. In due time these dams will retain only silt and the original problem (water supply, power, and flood control) will still have to be solved. Sedimentation also interferes with the use of water bodies for recreational purposes. The destruction of bottom or bed life and the inflow of organic mater can result in a decrease of oxygen, thereby killing fish. Furthermore, the transport of sediment in streams and lakes reduces the aesthetic appeal of these waters, whether it be due to the dirty water or the resulting muck on the bottom.

Studies of river channels have shown that the natural forces inherent in period flows naturally construct and maintain channels with the capacity to carry a volume smaller than the average flood; this means that on the average such rivers will overflow their banks every 1.5 to 2 years. However short-term is the flooding, in the long-term is an increase in the channel's cross-sectional area through erosion of its banks. This, in turn, means additional deposits of sedimentation downstream.

Surface and Subsurface Pollution:

The constituents of pollutants which are deposited on the surface of urban environments vary widely, ranging from common organic material to highly toxic metals. Some pollutants are intentionally placed on the surface, only to be carried away by the runoff, e.g. road salt, insecticides, herbicides. Others are the unintentional residue of man's activities, such as lead from automobile exhausts and oil dripping from trucks and cars. Such pollutants appear to vary according to the land use and intensity of land use.

For a given frequency of rainfall, increasing urbanization leads to greater removal of these surface pollutants due to the increased quantity and velocity of the resulting runoff. This becomes important when one realizes that the most significant pollution occurs when there is just sufficient runoff to carry the pollutants from their place of deposition to the receiving waters; this runoff provides the least dilution in the streams. For the same frequency of rainfall occurrences, this means that the urbanization process will result more often in greater scouring or washing of the pollutants into the streams.

Leaching refers to the removal of soluble materials by percolating water. If these soluble materials are pollutants, this removal is harmful. Subsurface leachage occurs as an intended action in the draining of a septic tank. However, if a leaching field is blocked or otherwise fails, proper leaching does not occur and subsurface water containing pollutants often works its way to the surface. There it can be picked up by runoff and carried to nearby bodies of water, resulting in degradation of water quality. Leaching often occurs at landfills, as rainfall percolates down through the site where wastes have been disposed. If water percolating through this waste picks up soluble materials or harmful virus and bacteria, and later becomes part of that groundwater which augments streamflow, these pollutants may also be carried into the stream. Proper landfill location and operation will serve to minimize leaching problems.

As part of the water resource inventory the following maps were produced.

1. Coastal and upland marshes and wetlands
2. Coastal and riverine flooding (100 Year)
3. Water bodies and drainages
4. Water recharge areas

These date will be inputed with the Anchorage 208 Water Quality Management Plan and additional studies performed to better manage water quality in the Municipality.

Map 10 — Soils

Soil is solid, surficial earth material that is capable of supporting plant life. As such, soil — along with air and water — is one of the basic sustainers of life. It directly or indirectly supports all terrestrial life, including man.

Soil originates as a result of dynamic interactions among several factors: substrate, climate, toography, and biota. The result is a complex mixture of solid inorganic materials, fluids (solutions of minerals and gases in water), and biologic components (both living organisms and dead organic matter). Soils change continually according to water availability, nutrient cycling rates, kinds and extent of plant cover, human activities, and many other factors. Most soil changes are slow in relation to human experience, perceptible over decades rather than days. However, certain events such as floods, droughts, and fires can markedly change soils conditions in a brief span of time (for example, by accelerating erosion). Regeneration of soil lost because of natural processes or depleted by unwise land use practices is a slow process — so slow that soil is, in effect, a nonrenewable resource. Man can rapidly deplete the soil, or he can mitigate some of the damaging processes (whether naturally-occurring or man-induced). It is clearly in his best interest to practice stewardship regarding this resource. Soil will continue to support mankind only insofar as mankind sustains the soil.

Soils are made up of a series of nearly horizontal layers, or horizons. A soil profile is the sequence of

these horizons from the surface down to the underlying material which has not been altered by weathering or plant roots. Soils that have profiles almost alike make up a soil series. All soils of one series have major horizons that are similar in important characteristics. These include (1) color; (2) texture, or reltive proportions of gravel, sand, silt, and clay; (3) structure, or arrangement of soil particles into aggregates or clusters; (4) consistence; or degree of compaction and plasticity; (5) aeration and drainage conditions; (6) reaction, or degree of acidity or basicity; (7) thickness; and (8) arrangement in the profile. Each soil series is named and described in this report as it occurs in the Anchorage area, but the names are subject to review and possible correlation with soil series mapped elsewhere.

Soil series are further subdivided on the basis of external features that are important to use and management of the soil. The subdivisions are called phases. Areas that have little or no identifiable soil, or little plant cover, or that are frequently inundated by tides, are called miscellaneous land types rather than soils.

The areas shown on the soil map and identified by a symbol are called mapping units. A mapping unit represents an area on the landscape and, in the Anchorage area, consists principally of the dominant soil phase or miscellaneous land type for which the unit is named.

Some mapping units consists of two or more dominant soils which occur in such an intricate complex pattern on the landscape that they cannot be delineated separately on the map. These mapping units are named for the two dominant soils and are called complexes.

Because is it not possible even on a detailed soils map to show very small areas of soil, mapping units usually include patches of other soils. The properties of some included soils can differ substantially from those of the dominant soils and thus may influence the potential use of the mapping unit.

The soil maps produced permit the identification of areas suitable for residential, commercial, recreational, and sanitary landfill. The soils of the coastal area are an important resource and must be considered a non-renewable resource.

Map 11 — Habitats

An animal's living-space is its habitat, and organisms cannot be divorced from their habitats and survive. Humans may espouse a policy to ensure continued natural productivity of a species. Such a policy might entail a regulation of harvest, or limitations of kills in terms of numbers of organisms or allowable seasons for harvest. However, if the habitat of the organism is lost, then the organism cannot survive. Although biota are considered a renewable resource, the habitat necessary for sustaining a given species may be (for all practical purposes) nonrenewable. Thus, there are basic information needs for managing biological resources:

(1) To identify the life-forms that are deemed important to man (these can be the "visible" or direct assets, such as game and fish).

(2) To relate these "important" biologic entities to their habitats.

(3) To understand the interrelationships among these designated life-forms and the total environment, especially regarding the complete food chain and the linkages with inorganic systems and energy sources.

These information needs are being addressed by the Anchorage Coastal Management Plan, drawing upon the expertise of the Alaska Department of Fish and Game.

Within the Municipality are found a variety of fish, birds and other wilflife as well as a diversity of habitats. The maps developed illustrate the habitats of only selected biota and are superimposed on environments of upland, coastal and aquatic areas. The map alone does not reflect environments; this information is derived from other data sources (water resources, vegetation, soils, etc.) and needs to be viewed jointly to understand the environment which creates the habitats.

The Municipality has abundant and varied wildlife habitats. Many streams and lakes provide sport fishing for residents of the community, and some streams support runs of salmon that contribute significantly to the commercial fishery of Cook Inlet. Streams and lakes are also aesthetic and educational resources.

Most sport fishing in the Municipality is seasonal, particularly for salmon and eulachon, which are available only for a short period during their spawning run. Perpetuation of the values accruing from these fish depends upon protection of their habitats from pollution and encroachment of development. Problems are acute, particularly in Campbell, Chester and Ship Creeks. Some lakes in the metropolitan area are already polluted, and more stringent protection of water and streamside quality is required as the community expands. Ten fish species are commonly found in the streams and lakes of the Municipality.

A varied bird population provides recreation through hunting and study, and it is an attractive part of the landscape.

Numerous species of mammals inhabit the Municipality. Some are inconspicuous because of their size or habits, while others are seen commonly and are a significant source of aesthetic recreation and hunting.

Finally, Anchorage is one of few metropolitan areas where animals are large as moose range in a wild state.

Some of the critical habitats for these animals are in the development areas of the city and can be maintained only if their values are recognized and the

required management policies are adopted and carried out. Continued abundance of these animals also depends upon a freedom from the effects of pesticides and other poisons and control of predation by household pets (dogs).

Some serious pressures are being placed on habitats of birds in the Municipal area where bogs and marshes are being drained and filled for development sites. If populations of bog- and marsh-dwelling birds are to be retained, residents of the area must recognize the essential role of these wetlands.

Between 2,000 and 2,500 moose inhabit the Municipality (Bader, 1972). Most of these animals range into the subalpine zone of the Chugach Mountains in spring, summer and early fall. In late fall or winter, however, they depend upon their traditional winter range — the lowlands of the Anchorage bowl. They are a subject of interest to the entire community and a magnificent asset to the community as long as they remain in the highlands or in wooded aeas. The usually tolerant, sometimes nervous, relationship between the growing human population, with its increasingly high-speed highways, and the moose, with its dwindling food supply, is becoming more critical as houses replace birch and willow browse. Management is difficult. Opportunities to improve winter range that are acceptable to all segments of the community are few, and acceptable means of tailoring the moose population to the carrying capacity of its range by hunting in the park and heavily settled areas are difficult to find. The positive values of a nearly unique local moose population must also be contrasted with the negative value of the moose as an unpredictable half-ton highway obstacle. At times, particularly in early spring and for a month following calving, the animals are of uncertain disposition and should be treated with caution. Young calves are often adopted by well-meaning people under the mistaken assumption that they have been abandoned, thereby adding to the problem. These factors should be considered by the public in arriving at a policy as to how large a moose population to maintain in the Municipality. Without such a policy, the Department of Fish and Game can take only stopgap management measures.

Maps 12 and 13 — Hazards and Marginal Lands

Until recently, planning for hazard mitigation and control has not been recognized as an integral part of an areawide comprehensive planning and management process. With the possible exception of the floodplain ordinance, little has been done regarding the mitigation of the full array of hazards present in the Anchorage area. The least utilized measures, i.e., land use controls in natural hazard areas, need to be reassessed in light of the requirements of the Coastal Management Act. These include land acquisition, restricted development policies and assorted regulatory programs. Often overlooked are the important social benefits that can be expected from their implementation. First, a substantial reduction in the population and economic investment at-risk can be attained. Second, a substantial reduction in the expenditures of private and public agencies for evacuation, relief and rehabilitation can also be achieved. Third, dependence upon protective works can be decreased. Restricting development in hazard prone ares can further more general environmental goals for society. Also, where it is possible to accurately delineate hazard zones it is often feasible to locate open space uses. In response to incresing public demand for outdoor recreation and open space in urban environments, governments are placing more emphasis on providing such areas. Overall, the effect of most land use management schemes is to produce less intensive uses of land in the hazard zone and less modification of the natural environment than would otherwise occur.

Recent legislation has tended to recognize the growing importance of the land use management option for hazard reduction and mitigation.

At one time, various units of government may not have had the legal authority to enact regulations guiding land use in hazardous areas, including floodplains/ however, most of these legal impediments no longer exist. But, despite the lessening of legal obstacles, there has been no great rush to adopt regulations controlling the land use in these areas. Opposition to governmental restrictions on land use comes primarily from property owners. Managing hazard zones to minimize the loss of life and property can run counter to the forces which attract people and activities to these areas; economic and aesthetic reasons combine to create intense pressures to develop in floodplains and other hazard zones. Political officials are often reluctant to impose regultory measures since reducing the economic return on a parcel of land or its assessed value can have serious fiscal impacts on a community that relies primarily on the property tax for its revenues. A particularly important problem with land use control as an adjustment measure for reducing or mitigating hazards is the length of time required for the full benefits of the program to acrue. Accurate hazard zone mapping is a critical componenet of the planning process. Mapping should be a necessary part of all local ordinances regulating the use of land in hazardous areas. Without a map delineating the area and the intensities of risk within it, public opposition to land use measures will be particularly strong and a legal attack on the validity of the ordinance would probably succeed in the courts.

Local priorities for hazard mapping should be based on potential adverse impacts, related in turn to their likelihood of occurrence.

Hazard mapping essentially consists of transferring known hazard occurrences to a map, which can be done for all hazards for which accurate occurrence data exists. Even where such historical data are not available, sophisticated statistical techniques are

now employed in some cases, involving correlation of the existing physical properties of an area to the hazard occurrence potential. Federal agencies do most of the mapping of hazardous ares, often at the request of or in cooperation with State and local agencies. HUD, the Army Corps of Engineers and the Soil Conservation Service of the U.S. Department of Agriculture have been mapping flood hazards for several years in virtually all areas of the U.S. The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey have ongoing programs to map areas susceptible to earthquakes, tsunamis, landslides and volcanoes.

The Municipality has undertaken two projects in efforts to identify and delineate hazards. A contract for hazard assessment studies has been awarded to Harding-Lawson Associates, a local geotechnical firm, to identify, delineate, and rank hazards and their possible severity (see appendices). Part of the contract requires the development of model ordinances. The second program just now beginning is the Southcentral Remote Sensing Demonstration Project. The utilization of various remote sensing technology will be applied to hazard studies in the Municipality. The results of both projects wil be incorporated in the coastal management program. The U.S. Geological Survey is presently conducting a project entitled *Earthquake Hazards Mapping, Anchorage-Susitna Lowlands.* This project complements the Harding-Lawson study, and will be used in future land use planning efforts.

Available mapping techniques rely principally on either on-site investigation or remotely sensed imagery. On a national or regional scale, remote imagery techniques are adequate for the accuracy required; on the state or particularly the local level, a combination of both remote and on-site techniques is usually required to obtain the needed accuracy. At the local level technical accuracy is paramount, as local regulations governing land use must be precise. At this level, site-specific verification ("ground truth") is required for dependable maps. With the launching of LANDSAT 2 and 3, satellite imagery and high altitude photography has become an effective tool for certain types of hazard mapping. The most innovative aspect of LANDSAT is the ability of the imagery to provide large area perspectives, especially useful in identifying regional faulting relationships. More detailed imagery from low altitude aerial surveys is used extensively in the U.S. for accurately identifying floodplains, faults, avalanche paths, landslides and other hazards. Generally, aerial photography techniques are most useful for mapping geomorphic and hydrologic hazards, while atmospheric hazards such as tornados are more suited to use of historical data. For still other hazards, such as tornados, both types of data can be used effectively.

Application of hazard mapping to land use management requires sufficient data substantiation for it to be used by a political decision making body to create a defensible hazard zone area. Legal defensibility depends on predictive capability; if the predictive capability of a hazard map is low, the use of the map for regulatory land use questionable. Predictive capability of such maps is based mainly on the probabilities within which variation of occurrence exists. Thus accuracy is relatively high for delineation of floodplains, based on past flood histories and reliable hydrologic data; for the natural hazards where assignment of probabilities of occurrence is less reliable (earthquake, volcano, tsunamis, avalanche, landslide), mapping as a basis for land use management is less defensible. However, hazards within this latter group have a strong potential for being mapped in relation to distinct geologic characteristics of an area. These known characteristics can be used to produce maps accurate for areas with potential for occurrence, even though probabilities cannot be estimated reliably.

ON-GOING AND FUTURE PROGRAM

The Municipality is currently preparing plans for dealing with water quality. These projects are summarized on the following pages.

A need also exists to identify a classification scheme for all coastal and upland wetlands and prepare management plans for them. Some wetlands may be suitable for development while others may have values, functions and suitabilities not tolerant to development. This issue will be addressed as part of the southcentral remote sensing demonstration study.

The remote sensing demonstration program is expected to produce products that will assist in updating the inventory and add new knowledge about areas in which information is lacking. Of particular importance is a program to monitor urban change and a program (remote sensing) to monitor water quality in the Municipality. Land cover/vegetation maps are being produced as part of the remote sensing demonstration project and the resulting products will be incorporated into the coastal management plan and atlas of resources.

ESTUARINE WATER QUALITY IMPACTS

A water quality study of Knik Arm and Upper Cook Inlet is the first major MAUS element to be completed and was conducted by Tetra Tech, Incorporated, consulting engineers. The purpose of the project was to determine the effects of various levels of wastewater effluent discharges from the sewage treatment plant on the water quality of the estuary.

It was demonstrated by field measurement and numerical calculation that the present sewage outfall provides surface dilution of as little as 2:1 during low slack water. Further, during flood tide, the waste field is entrained in an eddy that carries wastes toward the shoreline to the east of Point Woronzof. Examination of water and sediments in shore areas subject to contamination identified the presence of fecal coliform bacteria, confirming the inadequate performance of the existing vertical nozzle outfall that extends about 800 feet out into Cook Inlet.

Current biological impacts from sewage effluents in the Point Woronzof vicinity include possible esthetic effects (i.e., odor) during spring thaw, a slight enhancement of plankton populations, and consumption of coliform bacteria by various members of local food webs. No coliforms would be transferred to humans by edible shell fish since commercial species do not occur in the Point Woronzof region. Occasional body contact with sewage effluent coliforms along the shoreline could occur.

An estuarine model was applied to Cook Inlet to evaluate the water quality impacts of increased discharge rates at various treatment levels. The water quality projections showed that a reasonable standard, in keeping with present and foreseeable uses of the water and with the potential of the marine environment, would not be violated outside the initial mixing zone at any time with primary effluent discharges. Also important is the fact that only minor reductions of waste constituent concentration would occur in the estuary as a result of secondary or advanced waste treatment.

In summary, the study concludes that the present outfall pipe does not effectively dispose of Anchorage Municipal wastes because it provides only minor dilution at low tide and permits the waste field to become entrained in an eddy during flood tide. A biological survey of the area showed that no adverse impacts were observable during summer at the present time. However, fecal coliform measured along the shoreline indicates contamination from the sewage discharge. Larger flows in the future will worsen this situation unless the outfall is moved.

Nonpoint Source Pollutants

Other types of wastewater also affect water quality. They are termed nonpoint source pollutants because their source of origin cannot be pinpointed and include storm runoff and snowmelt. Water quality problems associated with urban drainage are the result of changing the quantity of runoff, as well as the washing off of waste constituents accumulated on the ground.

The major waste constituent in urban storm water is generally sediment, principally sand and silt. Sediment comes from atmospheric dust, disintegration of road surfaces, sanding of icy roads, and erosion of urban land areas. High erosion and sediment production rates are generally associated with unregulated land development activities.

Concentration of organic materials (BOD, COD), nitrogen and phosphorus compounds and coliforms can reach high levels in urban runoff. Significant amounts of heavy metals have been found; zinc and lead are most prevalent, and copper, nickel, mercury, and chromium occur in smaller amounts. Oil, grease, and gasoline residues, which are related to traffic volumes, can cause water quality problems. Significant levels of pesticides and related organic compounds can also occur in urban runoff.

The receiving waters for urban and snowmelt are various creeks and small lakes of substantial recreational value that the Municipality plans to protect and use. The shorelines of several of these creeks have already been designated as greenbelts and parks in the Municipality's Comprehensive Development Plan.

To better define the existence and extent of suspected nonpoint source pollutants, runoff flows were measured and samples were analyzed during 1976 and 1977. Data obtained from five representative urban development drainage areas will be used to calibrate a computer simulation model for definition and analysis of urban runoff.

Runoff from downtown and the commercial districts along Campbell Street showed generally higher concentrations of COD, grease and oil, chloride, suspended solids, turbidity, bacteria, and heavy metals compared to the residential site. This difference is concistent with the higher traffic density expected in commercial areas.

Runoff from the airport showed anomalous in concentrations of many water quality parameters: nitrogen species were extremely high and metaphosphates and BOD very high, while orthophosphates and coliforms were low. These data can be explained by high concentrations of detergents, fuel, or some deicing or defogging chemicals high in nitrogen species. Low orthophosphates and coliforms make a sewage source unlikely.

The single-family area showed high volumes of BOD, nitrogen, and phosphorus compared to the other urban areas. The presence of a source of domestic sewage from ground water infiltration is a possible explanation. Runoff from the multi-family residential area also showed high concentrations of nitrogen forms compared to the commercial areas.

Existing Drainage System and Practices

Drainage facilities are currently in place throughout most of the urbanized portions of the Ship Creek and Chester Creek drainage basins, many of the facilities having been constructed incrementally lacking a comprehensive design. (This is not characteristic of Fort Richardson and Elmendorf AFB, however, where adequate systems exist.) Those systems that have been built were designed without consideration of the character and effects of runoff quality or pollutant levels.

For many of the rapidly developing basins, plans have yet to be prepared; for others, the plans need to be updated to conform to community development goals.

Water quality is also affected by snow removal and disposal operations. During the 1974-75 snow season, for instance, over one million cubic yards of snow were hauled to 34 disposal sites within the Municipality. Some of the sites were situated so that snow was stacked adjacent to streams and lakes. While some of the snowmelt percolates into the ground, a substantial portion, along with its accompanying pollutants, directly enters surface waters.

Runoff from urban construction sites is another source of pollutants. Activities that can cause problems include street and highway construction, home building, commercial and industrial land developments, utility networks, and recreational developments. Generally, eroded soil is the major waste constituent from development activity.

Runoff Quality Management Plans

The Corps of Engineers and the Municipality have split the responsibility for runoff management planning in the Anchorge bowl under the 208 Areawide Wastewater Management study. Both efforts are similar in that they are problem oriented and designed for immediate implementation in certain problem drainage basins. The study results will also be useful for later application to other basins as required.

The Corps' study area includes the most developed and urbanized region, generally where storm drains already exist but where water quality problems are prevalent. The Corps' study is being conducted by Woodward-Clyde Consultants. Six areas of special interest have been identified: Ship Creek drainage basin, Chester Creek drainage basin, Fish Creek drainage basin, Knik Arm drainage basin, Anchorage International Airport study area, and the central business district study area.

Of these, the basin with the most severe runoff pollution problems will be identified. Then an implementable plan for reducing pollutant loads to levels consistent with water quality standards will be developed. The goal is to have the plan adopted by the Municipal Assembly, with initial priority control measures budgeted in the Municipality's Capital Improvement Program for 1979.

Alternative treatment measures that will be evaluated include sedimentation ponds, filtration and various physical-chemical methods. Another approach improving storm runoff quality is to reduce pollutants at the source by limiting (1) the quantity or type of material that can be picked up by runoff or (2) the volume of runoff yielded by a basin. Accordingly, an evaluation is to be made of the benefits of improved sanitation through antilitter programs, street cleaning, road maintenance, and other nonstructural solutions.

Task number one has been completed and a technical memorandum describing the existing drainage system and available environmental data has been produced. A summary of the Task One memorandum is available. Task Number Two, the computer modeling phase of the project, is now well under way. A pollutant washoff computer model has been calibrated to water quality data observed in the three test drainage basins in Anchorage. The primary result of the calibration process is a pollutant buildup matrix that gives pollutant buildup rates in pounds per acre per day for each land use classification in the Campbell Creek basin.

Using the pollutant buildup matrix as basic input to a washoff computer model, future rainfall and snowmelt runoff wasteloading to Campbell Creek will be simulated under assumed suburban development patterns. It will be determined if State of Alaska Stream Water Quality Standards will be met, and whether other problems due to increased waste-loading will occur. In addition, drainage problems will be predicted by the computer model.

After potential water quality problems have been defined and prioritized alternative solutions to the problems will be formulated. The computer models will be used to assess the effect of each solution. The most practical and effective set of solutions will be defined and presented in a final report to the Municipality in early 1979.

Drainage Basin Plans

The general objectives of the 208 study in Campbell Creek are to:

* Develop an acceptable cost-effective plan for managing water pollution sources for a developing basin within the Campbell Creek watershed using detailed procedures; and the total developing area in the Campbell Creek watershed using generalized procedures.
* Establish a stormwater management methodology including a calibrated and verified quantity and quality computer simulation model for developing similar plans in other urbanizing areas within the Anchorage area.
* Have the Campbell Creek watershed plan adopted by the Municipal assembly and the initial priority control measures budgeted in the Municipality Capital Improvement Program for 1979.

The key tasks that will accomplish these goals are:

1. For the entire Campbell Creek watershed, identification of the existing major drainage systems. For a developing basin within Campbell Creek watershed, identification of detailed drainage systems, including pipe, gutter, and ditch networks.
2. Selection and calibration of the computer simulation model. Development of procedures to prepare the generalized and detailed basin plans.
3. Definition of present and future water quality problems in the Campbell Creek basin.
4. Formulation of alternative plans.
5. Evaluation of alternative plans.
6. Selection of recommended plans. Preparation of draft and final reports.
7. Summarization of metholodology and procedures followed in developing plans. Preparation of design manual.
8. Partial implementation of recommended plans.
9. Public involvement program.
10. Project management and coordination.

The Anchorage 208 Water Quality Program will be utilized extensively to assist in implementing the Anchorge Coastal Management Plan with regard to water quality and reducing those land uses that cause direct and significant impacts on coastal waters. The Planning Department coastal management staff strongly endorses adoption and implementation of the 208 plan.

TABLE IV-7

SCENIC VALUE ASSESSMENT CRITERIA

Ecosystem Continuity: the visible manifestations of shore ecology, such as marshes, inlets, and flats seen within a single shorescape viewshed.

Near/Far Contrast: the juxtaposition between foreground or middleground and horizon forms; greatest when the nearer forms are distinct and the horizon forms, beyond water surfaces, are blued by haze and appear two-dimensional.

Uniqueness (Scarcity): an index of value based on rarity; a quality subject to broad interpretation dependent on the experience and expectations of the individual viewer.

Endangerment (Issue-Real): an index of the aesthetic quality of concern for resources facing real or imagined destruction.

Sensitivity to Change: a judgmental indicator of the extent to which a shorescape unit possesses components which would be blocked, overshadowed, replaced, or otherwise damaged by the intrusion of objects or functions of moderate or average magnitude.

True-to-Form Rurality: a landscape possessing forms and materials, both natural and man-made, typical of classic, natural, semi-natural or agricultural areas.

True-to-Form Townscapes: a townscape possessing forms and materials, both man-made and naturalized, typical of architectural styles characteristic of the region's historically established artifacts.

Color (Hue) Ingredients: color of natural elements (earth, vegetation, water, sky); a criterion that varies with seasons and weather.

Pictorial Composition: canvas qualities; varies with viewing orientation and is a determinant of best viewpoints for given vistas.

Vividness: a summary quality which expresses the uniqueness and impressiveness of one or more of an area's other qualities.

Shore Dynamics: the visual impression of tides, currents and weather.

Sail/Island Horizons: visual distinctness of islands and rocks; depends on viewpoint orientation and distance as well as on temporal factors.

Topographic Complexity: an index of the diversity as well as the relative relief of an area's landforms (vertical qualities).

Shoreline Complexity: an index of the irregularity of the coastal interface between land and water (horizontal qualities).

Vegetative Integrity: unity of vegetative species or type forms within a single shorescape viewshed.

Vegetative Diversity: diversity of vegetative species or type forms within a single shorescape viewshed.

Human Dynamics: visible manifestations of human activity associated with the coastal zone (e.g., clamming, fishing, shipping, swimming), which are of human scale and interest.

Absence of Detractions: freedom from incompatibilities introduced by natural forces (e.g., storm-eroded slopes) or by man (the latter by far the more important factor).

Instructive Qualities: characteristics of geological, botanical, or other scientific interest, or which shed light on other qualities of the coastal zone.

CHAPTER V
ANCHORAGE RESOURCE MANAGEMENT COASTAL ENVIRONMENTS

INTRODUCTION

The key element of the program Approval Guidelines is that the various elements of the Coastal Management Act be integrated into a balanced and comprehensive program. The Act further specified that the process through which permissible uses are established include full consideration of development and utilization as well as conservation and preservation activities. The Municipality of Anchorage, in developing its coastal management program, has utilized the preservation, conservation, utilization concept to identify specific environments (geographic areas) along the coastal area, and has applied a land use suitability analysis to each classification or environment for the purpsoe of identifying permissible uses.

In order to more effectively implement goals, objectives and policies of the Municipality's coastal resource district program and the Alaska Coastal Management Act, the coastal areas of the Municipality have been categorized into three separate enviornment designations. The purpose of these designations are to differentiate between areas whose geographical features imply differing objectives regarding their use and future development.

Each environment represents a particular emphasis in the type of uses and the extent of development which should occur within it. The system is designed to encourage uses in each environment which enhance the character of the environment while at the same time requiring reasonable standards and restrictions on development so that the character of the environment is not destroyed.

The determination as to which designation should be given to any specific coastal area has been based on and is reflective of the existing development pattern, the biophysical capabilities and limitations of the land and the goals and objectives as outlined in the Comprehensive Development Plan adopted July 20, 1976.

The generic germ used for tht three land use suitability Environments are: *Preservation Environment, Conservation Environment, Urban Development.*

Each of the three environments is actually a composite of many subclasses. A concept which is central to the designation of permissible uses is that of geographic segmentation. This concept invovles a division of the coast into different resource units, each representing a particular type of environment. These resource units are not defined solely on a biophysical basis, but rather, may represent an environment which takes on a special character due to man's activities there. Thus, resource units represent both biophysical and social values as well.

The coastal zone, while a continuous system, is actually a composite of numerous and distinct coastal resource units--each with its own particular character. An effective and equitable planning framework must be tied to specific areas within the coastal resource district. Thus, the purpose of subdividing the three environments into subunits.

While the coastal resource district should be thought of as being a continuous system, effective land management and planning are based on plans which take into account the natural diversity of the coastal area. The geographic segmentation of the coastal area into units of a similar nature allows planners to make decisions which address the particular characteristics of a given area. In this way, land use controls can be tailored to fit needs of specific sections of the coastal area. Land uses which exist in harmony on one coastal environment may be entirely inappropriate for another. The process of geographic segmentation is designed to provide planners and decision makers with the means for examining the coastal area in light of its natural diversity and to plan for and manage it accordingly.

The PCU approach provides a basic conceptual description of an area's suitability for development, preservation and conservation. Preservation, conservation and utilization may be defined as:

PRESERVATION:
The Preservation Environment consists of areas (resource policy units) characterized by the presence of some unique natural and cultural features considered valuable in their undisturbed or original condition and which are relatively intolerant of intensive human use; those lands and/or water areas of the coastal area identified as having major ecological, hydrological, physiographic, hazardous, historical, archeological, cultural, or socioeconomic importance to the public. Such areas should be essentially free from development or be capable of being restored to their natural condition, and they should be large enough to protect the value of the resource. Preservation areas are being defined as those coastal areas which provide invaluable public benefits, such as flood protection, recreation, scenic, aesthetic, economic value, and the protection of significant fish and wildlife habitats.

The emphasis in the Preservation Environment is on preservation and restoration of natural systems and resources, and on prevention or regulation of uses and activities which would degrade or destroy the natural environment. Any proposed use or activity which would change the existing situation would be desirable only if it further enhances, restores or preserves the natural character of the area so classified.

Areas which provide these public benefits would be considered for the preservation management environment.

The purpose of designating the Preservation Environment is to preserve and restore those natural resource systems existing relatively free of human influence. These systems require severe restrictions of intensities and types of uses permitted so as to maintain the integrity of the Preservation Environment.

CONSERVATION ENVIRONMENT

The Conservation Environment consists of those lands and water areas of the coastal area identified as having certain natural or institutional use limitations which require special precaution prior to their use or development. Conservation areas include those areas designated for long-term uses of renewable resources in the coastal resource district. Conservation areas would include the smaller tracts of lesser ecological sensitivity and biological importance. Lands classified as Conservation would be those requiring special precautions when being developed, or designated for recreation and open spaces.

The purpose of the Conservation Environment classification is to protect areas for environmentally related purposes, such as public and private parks, fishing grounds, flood protection, scenic quality, water management, forestry management and water recharge. While the natural environment is not maintained in a pure state, all activities and uses to be carried out provide minimal adverse impact. The key to this Environmental classification is management, in which the intent is to use certain resource policy unit classifications within the Conservation Environmental classification for development provided the use is designed to maintain the quality of the natural elements of the site. Development in specified resource policy units of the Conservation Environment will be limited to those uses which are non-destructive and, where possible, non-consumptive of the resources indentified as being valuable and requiring protection and management.

UTILIZATION ENVIRONMENT

The Utilization Environment means those lands and water areas of the coastal resource district suitable for development; already developed or officially committed to an acceptable development activity; or undeveloped but suited for development giving full consideration to environmental safeguards, design, engineering, construction and planning practices.

The Utilization Environment means those lands that could be developed with only minor alterations to the environment of the coastal zone, and includes that classification of open water designated for transportation, navigation, utility and industrial use. Because of such factors as physiography, soils, hydrology, geology, or other factors, land in the Utilization Environment would be comparatively suitable for development. Land so classified would have reduced ecological, recreational, and overall public importance. Water dependent and water related uses and activities should be restricted to this environment. The Utilization Environment is particularly suitable to those areas presently subjected to extremely intensive use pressure, as well as areas planned to accommodate urban expansion. Shorelines planned for future urban expansion should present few biophysical or hazardous limitations for urban activities and not have a high priority for designation as an alternative environment.

The purpose of the Utilization Environment classification is to ensure optimum utilization of the coastal resource district within urbanized areas by permitting intensive use and by managing development so that it enhances and maintains the area for a multiplicity of urban uses. The environment is designed to reflect a policy of increasing utilization and efficiency of urban areas, to promote a more intensive level of use for development of areas now underutilized, and to encourage multiple use of the coastal area if the major use is water dependent.

PRESERVATION ENVIRONMENT COASTAL RESOURCE POLICY UNITS

Within the Preservation Environment classification are contained nine coastal resource policy units, each of which merit preservation environment status and which meet the purpose and definition of this designation. Each coastal resource policy unit is defined so that specific designation of permitted uses can be identified and specific policy statements applied.

1. Class I Waters
   These are surface waters that are used or have the potential for use as a potable source of public water supply, or withdrawn for treatment as such.

2. Selected Fresh Water Marshes and Wetlands
   These include upland wetlands formed during the past glacial melting period and smaller lakes, ponds and inland marshes and upland marshes formed by the diking action of glacial marines and silt deposits or highway and railroads which block the natural flow of many smaller streams. These are also areas having a high water table. Such areas are unsuitable for intensive land uses without major alteration. They are usually of substantial ecological importance and serve as natural retention mechanisms for surface waters. Some swamps and marshes may also function as aquifer recharge areas. Development in swamp and marsh areas has a high initial cost and a high continuing cost that is often borne by government. Such problems as periodic

flooding, poor stability of roads and streets, creation health hazards, and subsequent expenditures of tax money for corrected mesures are often encountered in such areas. Development in fresh water swamps and marshes, therefore, is likely to become an unnecessary tax burden. Because of the ecological significance of these areas, their value for water retention purposes and their intrinsic unsuitability for intensive development, they should be managed to ensure against modifications that will significantly impair identified function or values. They are characterized by semi-aquatic vegetation including various species of grasses and sedges.

3. Tidal Creeks and Flats
   This includes the lands between the mean high water line and the mean low water line; the area covered and uncovered by the daily rise and fall of the tide. The physical characteristics are mixed sediment and glacial silt flats, organic material, and very low plants. Such areas are valuable habitat for numerous species of birds. They also provide necessary nutrients to adjacent waters and, through their filtering action, help maintain good water quality. Many important marine species are dependent upon marsh systems, marsh and tidal flat systems for survival, and preservation of these areas is considered crucial to maintenance of our marine fisheries. Their storm buffering function also helps reduce damages to coastal development.

4. Salt Water Marshes
   This category includes a variety of low, salty marshes, sedge marshes, high marshes and intertidal gravel marshes--these are characterized by sedges, beachrye, hair grass and some reed grass. These salt marshes have low soil salinity from tidal flooding due to low salt concentrations in upper Cook Inlet waters. The salt water marshes are considered part of the tidal marsh systems and have major significance. Such areas are valuable habitat for numerous species of birds and terrestrial animals. They also provide necessary nutrients to adjacent waters and, through their filtering action, help maintain good water quality. Many important marine species are dependent upon these salt water marsh systems for survival, and preservation of these areas is considered crucial to maintenance of our marine fisheries. Their storm buffering functions also help reduce damage to coastal development. Included in this category are high marsh areas generally considered as being above the mean high water line.

5. Coastal Habitats
   These are lands and waters imperative to the survival and propagation of varied wildlife and fisheries resources. They include breeding and rearing areas, overwintering areas, and historic migration routes. Land mammals of particular concern include: dall sheep, goat, moose, bear, wolf and small furbearers. Birds of particular concern include: eagles, rare birds of prey, water fowl and upland birds. Fish include principally the migrating salmon during breeding and rearing seasons, but also include those fish species utilized for sport fishing. Coastal wildlife habitat areas include both established wildlife reserves, refuges, and sanctuaries, as well as areas not formally classified but which serve the functions described above.

6. Coastal Cliffs and Bluffs
   These are steep lands from which development should be restricted because of high susceptibility to accelerated soil erosion, slippage or foundation instability, resulting in unnecessary scarring, onsite sewerage disposal problems, and unnecessarily high seismic hazards to structures. Retention of maximum natural ground cover is generally desirable on these slopes to prevent accelerated erosion or coastal slippage. Public policy should attempt to create a coastal construction setback line from the edge of the coastal bluff.

7. Hazardous Lands
   These are lands from which development is to be either excluded or restricted and carefully controlled, and include well identified snow avalanche zones, rock slide areas, areas subject to frequent coastal flooding or seismic seawave (tsunami) and areas subject to glaciation or severe seasonal ice scour, or areas subject to significant seismic hazard, land slide, mud slide, slumping, solifluction, subsidence or other major hazards.

8. Historical, Prehistoric, Archaeological and Natural Areas for scientific and educational research.

   These are areas of outstanding historical and prehistorical and archaeological significance which reflect Alaska's rich and colorful history. These sites provide the informational base upon which our cultural heritage is built and reflect our varied ethnic origins. In many cases these sites provide the only avenue to the understanding of our prehistory and history, and the physical disturbance of these sites by unqualified individuals could result in the irretrievable loss of a segment of our cultural heritage. Natural areas for scientific and educational research are those areas that contain natural features of an unusual or unique character, usually of comparatively small geographic extent.

9. Coastal Flood Zone
   This category encompasses lands between the shoreline and the 100 Year Floodline; that is, the areas subject to flooding by gale driven tides on a statistical probability of at least every 100 years. No development, except water dependent development, should be allowed within this zone.

CONSERVATION ENVIRONMENT COASTAL RESOURCE POLICY UNITS

Within the Conservation Environment classification are contained eight coastal resource policy units, each of which merit conservation environment sta-

tus and which meet the purposes and definition of this designation. Each coastal resource policy unit is defined so that specific designation of permitted uses can be identified and specific policy statements applied.

1. Class II Waters
   These are coastal and inland waters which have the potential or actual or present capability of supporting recreatinal and/or commercial fish propogation and harvesting, also including spawning areas in rivers and including lakes.

2. Class III Waters

   These are coastal and inland waters and waterbodies which have the capability of providing active or passive recreational enjoyment and which provide access routes for anadromous fish species between Class I and Class II waters. The primary requirement for these bodies is that they be maintained at a quality sufficient to allow body contact water sports and propagation of fish and wildlife.

3. Scenic Corridors, Scenic Areas and Vistas
   These are rights of way for highways, railroads, trail or water channels which pass through areas of recognized high aesthetic value which generally require that foreground elements be preserved or enhanced and considered in the design and construction of such mentioned uses. Scenic areas and vistas are those areas generally recognized for their great aesthetic beauty or having an obvious or unusually distinctive physical appearance. Provision should be made for providing scenic pullouts along highways and trails and for providing measures that take these factors into consideration in all planning for the Municipality.

4. Parks and Recreation Areas
   These are areas devoted to outdoor recreational activities of various types, both existing and potential. This may include historical, archeological, prehistoric sites, wildlife refuges, unique environmental areas, or natural areas. It is impossible for the State of Alaska to meet all outdoor recreation needs of residents and tourists. Therefore, local governments and private owners must be relied upon to satisfy a large portion of the needs. As urbanization intensifies, this situation becomes increasingly critical, emphasizing the wisdom of providing development controls that will prevent degradation of recreation areas.

5. Marginal Lands
   These are lands that require moderate to extensive alteration before they are suitable for development. These lands include those areas containing poor drainage, poor foundation conditions, poor soil conditions which subjects the site to severe building restrictions, areas of low permeability in a high water table, and all other conditions which require moderate to extensive alteration prior to development. Specific performance standards need to be applied to these lands to ensure acceptable levels of development. There are varying degrees of marginality, and most of these limitations may be adequately overcome by appropriate technology. Generally speaking, however, intensive development of areas having moderate to severe limitations involves excessive modification of the landscape, large initial expenditure of funds, a high maintenance cost, and presents continuing problems for local government. In addition, intensive development of marginal lands can generally be anticipated to have significant ecological impact unless careful planning proceeds development.

6. River Floodplains
   These are lands lying along drainage corridors (rivers, streams, creeks, and lakes) that are subject to flooding on a regular basis. These areas usually contain mixed alluvial, poorly drained soils and natural vegetation that is adopted to fluctuating water levels. All development within the 100 year floodplain must be restricted and only those developments that can safely be designed to prevent damage and loss should be considered within this resource policy unit.

7. Open Space
   These are lands which occupy a variety of natural environments. In general, Open Space lands are those which occupy areas not suited to development for a variety of reasons, most of them already discussed under hazardous lands, coastal and river floodplains and marginal lands. In addition, Open Space lands may promote a better community design by providing breathing space between and within subdivisions, buffers between residential and commercial, buffers between highways, airports, railroads and residential development and for environmental reasons pertaining to noise abatement and air pollution abatement, and drainage corridors for snow-melt and other runoffs.

8. Forestry Management Areas
   These include those Municipal, State and Federal lands specifically set aside as state or national forest or as part of the state game management area program. This designation also includes Municipal lands set aside for forestry and game management purposes. Such lands in many instances also contain habitat (critical and noncritical) which must be managed to ensure both maintenance of the wildlife species and sustained yield of the forest resource. Use of such lands will require proper management procedures to allow for economic gain while managing the forest and wildlife resources.

UTILIZATION ENVIRONMENT

Within the Utilization Environment classification contained five resource policy units, each of which merit utilization environment status and which meet the purpose and definition of this designation. Each coastal resource policy unit is defined so that specific designations of permitted uses can be identified and specific policy statements applied.

1. Class IV Waters
These are surface waters presently used or capable of use for waterborne commerce, transportation, commercial fishing, for water dependent commercial and industrial purposes and uses, and for utilities and power generation. This classification applies to those waters of the Turnagain and Knik Arm. Cook Inlet, for all its negative attributes, can in no way be considered an unlimited dumping ground for the waste of man. It may be better suited for this purpose than many bays in North America, but it does have a finite capacity for receiving waste without unduly disturbing natural conditions.

2. Urban Residential
The Urban Residential classification is intended to protect areas which are appropriate primarily for residential uses. These are residential areas currently developed as primarily residential neighborhoods and vacant lands suitable for residential development. The purpose of the urban residential resource policy unit is to maintain the existing residential character of the designated area in terms of bulk, scale and general types of activities and developments. Such areas should have elevations, soils, topography drainage, and other physical conditions favorable for development. These are lands needing little or no modification to make them suitable for development. It is not necessarily advocated that all such areas identified as urban development areas be intensively developed. Rather, it is intended to indicate to developers and governmental agencies and decision makers those areas physically suited for development and to stress the importance of guiding future growth into these areas if possible. Controls on distribution, density and design of development within such areas is the responsibility of comprehensive land use plans and special purpose plans.

3. Urban Development
The areas included in the Urban Develoment resource policy units are primarily those which are appropriate for commercial and/or industrial purposes. The purpose of the designation is to provide for efficient utilization of such areas for water dependent commerce and industry consistent with the standards and guidelines of the Alaska Coastal Management Act, and other applicable regulations. Water related commerce and industry shall be given second priority in this designation.

4. Urban Water Front
The purpose of the urban water front classification is similar to the purpose of the urban residential and urban development classifications but also incorporates additional goals and policies based on the particular characteristics required for waterfront uses and activities (such as port development). Additionally, the purpose of this designation is to provide areas for controlled development, encouraging a variety and mixture of compatible uses while also maintaining the natural environment, character, scale and intensity of use as expressed in the Comprehensive Development Plan Ordinance, while at the same time meeting the following goals: (A) maintain a full complement of water dependent uses; (B) preserve and enhance the view shed across Knik Arm; (C) develop a diversity of commercial and residential activities related to the use and enjoyment of the water front, the surface and maintenance of water related activities and providing for public access; and (D) encourage multiple use concepts having a wide range of intensity while preserving view of the water from upland and adjacent properties.

5. Rural
The rural resource policy unit is intended for coastal resource district areas characterized by low density residential uses where most urban services are not available, in areas which provide buffer zones and open space between predominately urban areas. Undeveloped coastal areas not planned for urban expansion or which do not have a high priority for development or for designation in an alternative environment or resource policy unit and recreational uses compatible with other environments and resource policy units are appropriate for the rural resource policy designation. The purpose of designating the rural resource policy unit is to restrict intensive development along undeveloped coastal areas, function as a buffer between urban areas, and maintain open spaces and opportunities for recreational uses within the ecological carrying capacity of the land and water resource. New developments in the rural resource policy unit area should reflect the character of the surrounding area by limiting density, providing permanent open space and by maintaining adequate building setbacks from water to prevent shoreline resources from being destroyed and to permit public access.

POLICIES APPLICABLE TO ENVIRONMENTS

PRESERVATION ENVIRONMENT GENERAL POLICIES

1. Natural areas shall remain free from all development which would adversely affect their natural character.
2. The intensity and type of uses permitted shall be restricted in order to maintain the natural systems and resources in their natural condition.
3. Uses which are consumptive of the physical and biological resources or which may degrade the actual or potential value of the preservation environment shall be prohibited.
4. Uses and activities in locations adjacent to natural areas should be strictly regulated to ensure that the integrity of the preservation environment is not compromised.

CONSERVATION ENVIRONMENT GENERAL POLICIES

1. New developments should be restricted to those which are compatible with the natural and biophysical limitations of the land and water.
2. Commercial and industrial uses other than forestry, agriculture, energy facilities, fisheries and mining shall be discouraged.
3. Diverse recreational activities which are compatible with the conservation environment shall be encouraged.
4. Development which would be of a hazard to public health, safety, or the general welfare or would materially interfere with the natural processes shall not be allowed.
5. Residential development should be regulated to maintain an overall density based on the carrying capacity of the land or should be a high density cluster unit with large amount of open space and buffer around it.
6. Within the flood hazard zone, regulations shall be developed which apply to development within the floodplains, but the primary objective should be to prevent further development in the floodplains of the Municipality.
7. In areas with poorly draining soils or in the marginal lands resource policy unit, development shall not be allowed unless connected to a sewer line.
8. Developments shall be regulated so as to minimize the following: erosion or sedimentation, the adverse, direct or significant impact on land and aquatic habitats and degradation of existing character of the conservation environment.
9. The Municipality of Anchorage shall encourage sustained yield management of natural resources within the conservation environment.
10. Industrial, commercial and residential development shall not encroach on Class II or Class III Waters.

UTILIZATION ENVIRONMENT GENERAL POLICIES

1. Emphasis shall be given to development within already developed areas.
2. Priority shall be given to water dependent and water related uses over other uses. Uses which are neither water related nor water dependent shall be discouraged except for residential.
3. Multiple use of the shoreline shall be encouraged.
4. To enhance future water development and to ensure maximum public use, industrial and commercial facilities shall be designed to permit pedestrian water front activities consistent with public safety and security.
5. Aesthetic consideration shall be actively promoted by means of sign control regulations, architectural design standards, plan unit development standards, landscaping requirements, view shed requirements and other such means.
6. Development shall not significantly degrade the quality of the environment, including water quality, nor create conditions which would accentuate erosion, drainage problems or other adverse impacts on adjacent environments.
7. Redevelopment and renovation of standard areas shall be encouraged in order to accommodate future users and make maximum use of the coastal resource.
8. New development in rural areas shall reflect the character of the surrounding areas by limiting residential density, providing permanent open space and maintaining adequate building setbacks from coastal and inland waters.
9. Recreational access to the coastal areas shall be encouraged. Recreational facilities should be located and designed to minimize conflicts with other uses, activities and user groups not compatible with recreational uses.
10. Industrial and commercial uses in the rural area shall be restricted to those associated and in character with this environment.

RESOURCE POLICY UNIT GOALS AND POLICIES

Uses and activities within the coastal area can have both beneficial and adverse impacts, and an objective assessment should attempt to identify both types, as well as those that are conditional uses — those which can be permitted provided mitigation measures are taken to ensure a use or activity will not cause a direct or significant impact. An effective and meaningful assessment of impacts must take place within an established framework of objectives and policies relating to planning, resource management and development activites. By assessing impacts within a clearly defined objectives/policy structure, the potential for uncertainty and arbitrary actions is reduced.

Rational management of coastal resources and the uses and activities conducted within the coastal area demand that goals and policies relating to those resources and uses be clearly and concisely articulated. Goals, objectives and the resulting policies must also reflect and be related to a framework of permitted and non-permitted uses.

GOALS AND RECOMMENDED POLICIES

PRESERVATION ENVIRONMENT

Class I Waters

Goal:

(1) To preserve and protect sources of potable and potentially potable sources of public water supplies.

Recommended Policies:

1. No contaiminants shall be discharged into Class I waters which would degrade water quality below State or Federal standards.
2. There shall be no dredging in these areas which will degrade water quality below State or Federal standards.
3. Stormwater runoff controls sufficient to prevent water quality degradation shall be imposed on development adjacent to these waters.

Selected Freshwater Marshes, Wetlands and Coastal Marshes
Goals:
(1) To protect the basic natural functions served by coastal marshes, freshwater marshes and wetlands.

(2) To prevent public liabilities associated with development in these areas.

Recommended Policies:
1. Policy shall be to discourage development in coastal marsh systems except in cases shown by assessment of all pertinent factors to be not contrary to the public interest. In coastal marshes designated as critical habitat areas no development shall be permitted.
2. Planning programs shall recognize and consider the natural values of coastal marsh system and provide for their protection and recognition of management alternatives.
3. Coastal marsh systems shall be regulated to ensure maintenance of protected natural functions and values.
4. Public works activities such as transportation projects, utilities, sewers and drainage activities shall avoid or minimize any identified adverse impacts upon coastal marsh systems.
5. Neither the U.S. Army Corps of Engineers nor any State agency shall issue any permit for dredging and/or filling without first contacting the Municipality Planning Department and without first complying with all applicable provisions of the Coastal Management Plan.
6. In freshwater marshes and wetlands, policy shall be to discourage development except in cases shown by assessment of all pertinent factors to be not contrary to the public safety, welfare, and interest.
7. Planning programs shall recognize and consider the natural functions and values of freshwater marshes and wetlands and provide for protection and recognition of managment alternatives.
8. Freshwater marshes and wetlands of major significance shall be regulated to ensure maintenance of protected natural functions and values.
9. All public works activities such as transportation projects, utilities, sewers and drainage activities shall avoid or minimize any identified adverse impacts upon freshwater marshes and wetlands.

Tidal Creeks and Flats (including estuarine beaches)
Goals:
(1) To protect the basic natural functions served by tidal creeks and mud flats.

(2) To protect estuarine beaches for the purpose of public access and recreation.

(3) To prevent public liabilities associated with development in these areas.

Recommended Policies:
1. Policy shall be to discourage development in tidal flats, estuaries, beaches, and tidal creeks except in areas designated suitable for water dependent uses providing all activities shall to the extent possible avoid or minimize any adverse impacts.
2. Policy shall be to encourage the development of management plans designed to protect recreational and environmental values of estuarine beaches.

Salt Water Marshes
Goals:
(1) Same as those Selected for Freshwater Marshes and Wetlands.

Recommended Policies: Same as above.

Coastal Habitats
Goals:
(1) Coastal habitats must be identified and management plans prepared to preserve such areas in a manner that no loss of the values and functions occurs as a result of the activities of man.

(2) To protect the natural environment of critical urban and rural coastal habitats.

(3) To restrict and where necessary prohibit development in these areas except that necessary for administration and management.

(4) To permit recreational uses that are not ecologically disruptive.

Recommendedf Policies:

1. Policy shall be preserve coastal habitat areas in their natural state and preclude any development in areas so identified and to provide buffers around these areas as necessary to maintain the natural qualities necessary to critical habitats.
2. No commercial, industrial, or residential uses shall be permitted.
3. Public use of these areas shall be limited to hiking, sightseeing, nature study and research to the extent compatible with the purpose for which critical habitat areas are established.
4. The Planning Department shall attempt to ensure that development activities adjacent to coastal habitat areas do not detract from the values sought to be preserved.

Coastal Cliffs/Bluffs
Goals:
(1) Protection of coastal bluffs from erosion caused by indiscriminate construction.

(2) To provide public access and viewing opportunities to the public.

(3) To protect the public safety and welfare.

Recommended Policies:
1. No new construction shall be allowed that would threaten the stability of the coastal bluff environment.

2. Policy shall be to maintain vegetation in its natural state to prevent slope degradation.
3. No new construction on or immediately adjacent to slopes identified as having poor stability or subject to sliding, slump and severe erosion shall be permitted.

Hazardous Lands — No Development
Goals:
(1) To assure, through appropriate land use regulation, that development in areas designated as hazardous lands does not occur in order to protect human life and the public safety and welfare.
(2) To conduct geotechnical studies to identify and delineate hazardous lands.

Recommended Policies:
1. Policy shall be to prohibit all new residential developments in areas identified as avalanche run out/deposition zones, rock slide areas and landslide areas.
2. Policy shall be to prohibit all new development in areas identified as "hazardous" and to institute programs to identify and further delineate hazardous areas.
3. Policy shall be to prepare management plans for all hazardous lands and to coordinate such planning with the Alaska Division of Emergency Services.

Historical, Prehistoric, Archaeological and Natural Areas
(1) To preserve, restore, protect and where appropriate allow public access and display of sites important to Alaska history and archaeology.
(2) To preserve and protect unique environmental areas and features not otherwise protected as natural areas.

Recommended Policies:
1. These areas shold be protected where possible through the application of local zoning, tax incentives, purchase, easements, or other appropriate means.
2. Any development in "natural areas" should incorporate special precautions and design criteria to avoid damaging the character of the feature.
3. Because prehistoric and archaeological sites are important assets to both local Municipalities and the State, local and State governments should institute conscientious programs desinged to identify and preserve all significant sites not already protected by Federal or State programs.
4. Prior to any proposed land modification activities, project sponsors/applicants shall contact the appropriate local and state government agencies regarding exact location of sites (which shall be protected) and shall plan all use and activities so as not to destroy, alter, remove, or infringe upon any such sites.
5. Unique or fragile areas should be identified and set aside as special natural areas for the purpose of educational research, study, and for the enjoyment of the public.

Coastal Flood Zone
Goal:
(1) To identify and map the coastal flood zone including the inland extent in lowlands and water courses and to establish management plans for their utilization based upon their natural function, values, coastal habitats and associated values.

Recommended Policies:
1. Policy shall be to prohibit development within the coastal flood zone except those uses which are water-dependent and water-related. Uses which meet the above criteria shall be located in the Urban Environment classification.
2. All rsidential uses shall be prohibited in the coastal flood zone.
3. Water-dependent and water related uses and activities shall be required to prepare an Environmental Assessment (at a minimum) in order to identify potential problems associated with such uses and activities. Mitigation plans must be prepared and accepted by the Municipality for each identified problem or adverse impact prior to issuance of a permit by the Municipality and the U.S. Army Corps of Engineers or by the State of Alaska.
4. No uses, other than passive recreation, sightseeing, hiking and viewing, or other uses and activities that will not alter, endanger or destroy fish and wildlife species or habitat shall be permitted in the coastal flood zone identified by the State Department of Fish and Game as "Critical Coastal Habitat."
5. In all other coastal habitat areas, the Alaska Department of Fish and Game must prepare and submit in writing their response to all proposed uses and activities meeting the criteria in number 1 above.

CONSERVATION ENVIRONMENT

Class II Waters
Goals:
(1) To protect water quality and preserve the natural environment of water courses, including lakes and ponds.
(2) To prevent man-induced erosion and stream alternation due to construction activities.
(3) To ensure wise use of our water resources so as to maintain the quality of these waters at a level which will be suitable for the propagation of fish, wildlife and shellfish resources.
(4) To provide a buffer along and parallel to all streams, rivers, creeks, ponds and lakes from

which development shall be prohibited. The width of the buffer shall not be less than 100 year river floodplain.

Recommended Policiies:

1. Policy shall be to assure that activities in or adjacent to these areas do not cause violation of State and Federal water quality standards. No dredging shall be allowed in Class II Waters identified for shellfish harvesting, salmon spawning and rearing, or sport fishing, except for maintenance dredging on existing navigation channels or other projects specifically exempt from Federal, State and Municipal regulation.
2. Policy shall be to see that any development of subsequent use in or bordering Class II Waters shall avoid pollution of the waters. This includes not only control of runoff and pollutant discharges but turbidity considerations as well.

Class III Waters

Goals:

(1) To ensure wise use of our water resources; to maintain the quality of these waters at a level which will be suitable for recreational purposes.

Recommended Policies:

1. Where waters and water bodies identified as suitable for recreational purposes or currently utilized for such purposes coincide with Class I Waters, the policies application to Class II Waters shall apply.
2. Any development of subsequent use in or bordering Class III Waters shall avoid pollution of the waters and ensure that present water quality is not degraded below applicable water quality standards. This includes not only control of runoff and pollutant discharges but turbidity considerations as well.
3. Traditional public uses of these areas, such as fishing, hunting, boating, and swimming, shall be allowed.
4. Construction of docks and piers for boats and aircraft shall be permitted provided such construction and subsequent use does not cause adverse impacts to the fishery resources and water quality.

Scenic Corridors, Scenic Areas and Vistas

Goals:

(1) To identify and designate the primary scenic corridors within the Municipality.

(2) To incorporate a scenic element into the comprehensive plan.

(3) To identify the primary scenic viewpoints, vistas and preserve such sites for the public enjoyment.

Recommended Policies:

1. Policy shall be to identify, designate and safeguard areas that provide and offer important viewing opportunities and to provide interpretive signs where appropriate.
2. The State Department of Transportation shall incorporate in its highway planning process provisions for allowing pullouts at sites designated by the Municipality for such scenic and viewing purposes.
3. Policy shall be to require, if deemed appropriate by the Municipality, design criteria and performance standards for developments adjacent to scenic corridors in order to maintain a high aesthetic appeal and prevent unsightly and incompatible development.
4. Where appropriate, provide nature trails along the coastal bluff areas for viewing opportunities, nature study, photography, hiking and other passive recreational purposes.

Parks and Recreation Areas

Goals:

(1) To create, maintain, and where needed, expand outdoor recreation opportunities and access and provide park facilities for the benefit of residents and visitors and to conserve State lands for future recreation needs as required.

Recommended Policies:

1. Policy shall be to formulate land uses plans and regulations in or adjacent to parks and recreation areas. These plans and regulations shall, where possible, be designed to foster recreational-oriented development in these areas and allow for future expansion of recreational facilities.

Marginal Lands

Goals:

(1) To assure that development in areas defined as marginal adequately consider the physical limitations involved and not result in direct or indirect consequences harmful to the public health, safety and welfare.

Note: Marginal Lands are those areas that require major alterations before they are suitable for development. There are varying degrees of marginality (poor drainage, poor foundation conditions, susceptibility to flooding, high water table, etc.) and most of the limitations may be adequately overcome by appropriate technology. The purpose in designating marginal lands is to notify developers that special site design and considerations are required and secondly, to let the purchasers and users of the site know that the area is marginal and that special design and construction methods were needed. In addition, development of marginal lands can gener-

ally be anticipated to have significant ecological impact unless careful planning precedes development.

Recommended Policies:

1. Because of the wide range of problems associated with development of marginal lands, caution and careful site planning shall be required before development takes place in these areas.

2. Local comprehensive plans, subdivision regulations, building codes, zoning, etc., shall identify, recognize and address marginal lands to assure that future growth in these areas is not injurious to the public health, safety and welfare.

3. Development in marginal lands shall, where feasible, utilize central sewage collection and treatment facilities and where not feasible, on-site facilities shall be designed so as not to cause conditions that will pollute rivers, lakes, and other water bodies including the ground water supply.

River Floodplains

Goals:

(1) To minimize unnecessary flood losses caused by unwise development in areas subject to flooding (100 year statistical floodplain).

(2) To enhance, restore and preserve the ecological values of floodplains.

Recommended Policies:

1. Development in the 100 year floodplain shall be discouraged in order to avoid the need for later attempts to protect such investments through construction of flood control structures at public expense, except those uses which require water access.

2. Federal, State and Municipal agencies and departments shall conduct their activities in such a manner which manages and prevents erosion, retards runoff, and protects the natural functions and values of the floodplain.

3. Channel improvement projects intended to provide flood protection shall be considered only after they have been reviewed and determined by appropriate Federal, State and Municipal agencies that land treatment and all feasible flood water retarding structure will not provide an adequate level of flood protection.

4. In cases where channel improvements for flood protection have been fully analyzed and justified, such projects shall be carried out with minimum loss and destruction of fish and wildlife habitats and with minimum alteration and destruction to the natural vegetation.

Open Space

Goals:

(1) To preserve, enhance and protect unique environmental features not otherwise protected.

(2) To provide greenbelts and open space between noncompatible land uses.

(3) To conserve and protect the scenic beauty of the coastal area.

Recommended Policies:

1. The identification and assessment of open space values and the formulation of plans for maximizing these values should be a viable part of Municipal planning programs.

2. New developments should be designed to conserve the natural landscape, and design of new developments should include sufficient open space by legal means that will guarantee its remaining open space in perpetuity.

3. To ensure that adequate open space is provided within the framework of an individual subdivision and at the neighborhood, community and regional level.

Forestry and Game Management Areas

Goals:

(1) To provide the Municipality and the private sector with a stock pile of timber resources for future use and to provide areas that will support public hunting.

(2) To attain multiple-use forestry management practices which minimize impacts upon coastal resources and water bodies flowing into coastal waters while meeting forestry needs.

Recommended Policies:

1. Forestry and game management areas shall, where appropriate, be managed in a fashion that will maintain their traditional functions.

2. Buffer strips shall be left between the forest and adjacent water bodies to prevent degradation of water quality.

UTILIZATION ENVIRONMENT

Class IV Waters

Goals:

(1) To prevent further degradation of waters so classified, and, if possible, enhance the quality of these waters.

(2) To assure that all future developments, uses and activities that could have direct and significant impacts on coastal waters are consistent with natural processes and constraints so as to prevent further degradation.

Recommended Policies:

1. Uses and activities in or adjacent to Class IV Waters shall assure that state water quality standards are not violated.

2. Because the general low quality of Class IV Waters (upper Cook Inlet) poses a potential health hazard as well as a hazard to adjacent

water resources, all practical measures shall be taken to prevent further degradation of the waters so classified.

3. Any present or future industrial contaminants (resulting from mining activities, port facilities, waterborne transportation, energy facilities, fish processing facilities, etc.) or other deleterious substances introduced into Class IV Waters shall not be in amounts to render such water unsuitable for fish survival, industrial cooling, and industrial process watering supply purposes.

Urban Residential

Goals:

(1) To assist Municipal decision makers, zoning and platting officials, developers and land owners in determining those areas best suited to residential development and assure that development occurs in a manner that is compatible with the environment.

(2) To maintain the character of those areas presently developed as residential or suited for residential development in terms of bulk, scale and general type of activities.

(3) To meet housing needs in a manner consistent with Municipal environmental and resource management objectives.

Recommended Policies:

1. Effective subdivision regulations and building codes should be enacted and enforced by the Municipality.
2. The Municipality should develop and implement plans and programs for guiding residential development into areas suitable for such development.
3. To the extent possible, regulations should be performance oriented rather than means-oriented to allow flexibility in the techniques used to achieve desired goals of local government.
4. Residential developments should be planned in accordance with the natural characteristics of the land rather than simply laying out a grid pattern that ignores slope, elevation, drainage patterns, natural vegetation and accessibility.
5. Maximum retention of green areas and open space should be encouraged.
6. Runoff from streets, residential construction sites, and yards should be controlled to prevent flooding in adjacent areas, to prevent erosion, soil loss, siltation and/or pollution of water bodies.
7. Only that vegetation removal necessary for the actual construction of the residential unit shall be permitted; no clear cutting of natural vegetation shall be permitted.
8. Residential units and developments shall be set back from the shorelines of all water bodies at least 50 feet. In accordance with Municipal comprehensive plans and future programs, the Municipality shall formulate long-range plans for orderly development in areas identified as "urban residential" and amend or adopt land use controls which assure that location and timing of new development is in accordance with the ability of government to provide and maintain necessary services such as streets, solid waste disposal, water supplies, schools, police and fire protection.

Urban Development

Goals:

(1) To assist Municipal decision-makers, zoning and platting officials, developers and land owners in determining those areas best suited for commercial and/or industrial uses and assure that such development occurs in a manner that is compatible with the environment.

(2) To meet Municipal commercial/industrial needs in a manner consistent with the stated goals of the Municipality and consistent with Municipal environmental and resource management objectives.

(3) To give priority (in the coastal zone) to water-dependent uses and activities over those uses and activities not requiring such a location.

Recommended Policies:

1. All applicable policies relating to use and activities as listed in Part II of this chapter and as identified in the ACMP shall apply.

Urban Waterfront

Goals:

(1) Maintain a full complement of water dependent uses and preserve and enhance the view shed across Knik Arm and Turnagain Arm.

(2) Develop a diversity of commercial, industrial and residential uses related to the use and enjoyment of the waterfront, the service and maintenance of water-related activities and providing for public access to the water.

(3) Encourage multiple use concepts having a wide range of intensity while preserving the quality of the environment and preserving views of the water from upland and adjacent properties.

(4) To assure optimum utilization of the waterfront subject to demands from competing and possible conflicting interest.

(5) To minimize dredge and fill activities within the waterfront and to ensure that necessary dredge and fill activities have the least possible adverse environmental, social and economic impacts.

(6) To assure that docks and piers do not obstruct water flow, hinder navigation or restrict public use of the waterfront.

(7) To facilitate efficient port location, design and operation while minimizing conflict with resource management objectives.

Recommended Policies:

1. In accordance with Municipal comprehensive plans and future programs, the Municipality shall formulate long-range plans for orderly development in areas identified as "urban waterfront" and adopt land use controls which assure that location and timing of new development is in accordance with the ability of government to provide and maintain necessary services such as streets, solid waste disposal, water supplies, schools, police and fire protection.
2. All development in these areas shall utilize adequate environmental safeguards.
3. The Municipality shall adopt effective controls to ensure that urban waterfront development is compatible with the physical environment.
4. Municipal plans shall give priority consideration within these areas to water dependent activities.
5. Any use or activity which would result in direct and significant environmental impacts shall not be permitted until such adverse impacts can be mitigated.

Rural

Note: After a complete resource inventory and analysis have been completed and all other resource policy units delineated then the rural resource policy unit can be identified. It may overlap other resource policy units and environments.

Goals:

(1) To provide areas within the coastal zone for low density residential and non-polluting commercial uses.

(2) To designate such low density areas to meet the needs and demands of the citizens of the Municipality.

Recommended Policies:

1. To allow and provide for low density development that is compatible with the environment and which can meet the goals and policies of such environments.
2. Local plans shall recognize the dual suitabilities of these areas.
3. Local plans shall reflect effective controls to ensure that development in these areas is compatible with the physical environment.
4. The Municipality shall adopt land use controls which assure that location and timing of new rural development is in accordance with the ability of government to provide and maintain necessary services, such as streets, soild waste management, water supplies, schools, police and fire protection.
5. Only that natural vegetation removal necessary for the actual construction on the site shall be removed. The area should be maintained in as natural a state as possible and be maintained for the purposes it was classified as (if the rural environment area overlaps into another environment classification or resource policy unit).

CHAPTER VI

BOUNDARIES OF THE COASTAL ZONE MANAGEMENT PROGRAM

REQUIREMENTS

The Coastal Zone Management Act of 1972 requires states receiving program development grants to identify those boundaries of the coastal zone subject to its management program (Section 305(B)(1)). In addition, the Act identifies the parameters which a state must use in identifying its boundaries by defining the coastal zone as "coastal waters (including the land therein and thereunder), the adjacent shore lands (including the water therein and thereunder), strongly influenced by each other and in proximity to the shorelands of the several coastal states, and including transitional and intertidal areas, salt marshes, wet lands, and beaches. The zone extends inland from the shoreline only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands, the use of which are, by law, subject solely to the discretion of or which are held in trust by the Federal government, its officers or agents."

States may wish, initially, to delineate a planning area which is generally larger than, and encompasses the area ultimately identified as the coastal zone. This is suggested as a possible means of taking advantage of data, programs and institutional boundaries that cover geographic areas larger than the eventual coastal zone designation.

The regulations applying to program administrative grants indicate that a state's management program must show evidence that the state has both developed and applied a procedure for identifying the boundary of its coastal zone. These regulations require that, at a minimum, this procedure, when applied to the landward boundaries, should result in: (1) a determination of the inland boundary required to control, through the management program, shorelands, the uses of which have direct and significant impacts upon coastal waters; (2) an identification of transitional and intertidal areas, salt marshes, wet lands and beaches; and, (3) an identification of all Federally owned lands, or lands which are held in trust by the Federal government, its officers and agents, in the coastal zone and over which a state does not exert any control over use.

These regulations indicate the acceptability of a boundary which is delienated by a strip of land of uniform depths (e.g., 250 feet, 1,000 yards, etc.) or by political boundaries, cultural features, property lines or existing designated planning and environmentally controlled areas, with the conditions that any such boundaries include and be limited approximately to those lands which have any existing, projected or potential uses which would have a direct and significant impact upon coastal waters.

The State of Alaska, Department of Fish and Game, in conjunction with the Office of Coastal Management, has delineated a coastal zone planning boundary for the upper Cook Inlet based on biophysical criteria. Their coastal zone boundaries for upper Cook Inlet are defined as follows:

Zone of Direct Interaction

A. Landward Limit

Landward, the zone of direct interaction, is defined by salt water intrusion into marshes and rivers and areas of active coastal erosion such as the bluffs along Turnagain and Knik Arms. Salt water intrusion occurs up to six miles inland in the Susitna Flats and as far as twenty miles up stream in the Susitna River. Areas of active coastal erosion are best approximated by the 50 foot contour throughout the upper Cook Inlet region.

B. Seaward Limit

Seaward, the zone of direct interaction, is defined by near shore sediment transport and deposition out to the 18 foot depth contour. This is a high energy zone which is actively disturbed by tidal currents, ice scour, breaking waves, sediment dynamics and fresh water dilution.

Zone of Direct Influence

A. Landward Limit

The landward zone of direct influence in upper Cook Inlet is defined where the bulk of anadromous fish spawning and rearing takes place, where moose seek low-land areas for over-wintering and caving, and where coastal wetland habitats attract a large number of nesting birds and small mammals. Direct influence is best defined by the 1,000 foot contour in upper Cook Inlet. This zone extends up the Susitna River to include Devil's Canyon and through Portage Pass where birds such as eagles, gulls, and Black-Legged Kittiwakes, traverse between nesting areas in Prince William Sound and in feeding areas in Turnagain Arm.

B. Seaward Limit

Seaward, the zone of direct influence, includes the marine waters of Cook Inlet extending south to Kalgin Island. Turbulent mixing between marine and fresh water takes place in the vicinity of Kalgin Island. The characteristic marine waters of upper Cook Inlet, which include high turbidity and low salinity, are formed in this region. This is also the average southern extent of heavy winter sea ice.

The process of determining a boundary for the coastal zone is actually a two-tiered process involving first the identification of a planning boundary (which was established by the State as the 1,000 foot contour) and finally the management boundary

itself. The Coastal Zone Management Act rules and regulations also state that, for initial planning purposes, a boundary can be delineated for a planning area which is generally larger than, and encompasses the area ultimately identified as the coastal zone. The State Office of Coastal Management, in its program document, has left the responsibility of identifying the management boundary to the districts. However, the boundary of the coastal zone can not be merely the result of an arbitrary determination but rather must take into consideration the direct relationship that exists between the requirement for determining inland boundaries and the requirement for determining permissible land-water uses in areas of particular concern. By definition the coastal zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. The Coastal zone Management Act, therefore, requires control on all uses that have direct and significant impacts on coastal waters.

In light of the above, the Office of Coastal Zone Management has determined that three types of approaches are acceptable for delineating the inland coastal zone boundary. These are:

1. Biophysical.
   A biophysical boundary can be defined in terms of natural features, be they biological, geological, physical, or a combination. These features can include drainage basins, floodplains, ecosystems, ridges of coastal mountain ranges, etc. The use of a single biophysical feature for boundary delineation may not be adequate to insure that all uses with direct and significant impact on coastal waters are included. Often a combination of features may be most practicable. While this type of boundary would meet the intent of the Act with respect to uses of shorelands which have impacts on coastal waters, difficulties may be encountered in establishing methods for the required effective management control of uses. Delineation based on biophysical features may require expensive and time consuming surveys to locate and designate these boundaries. In addition, periodic update of the boundary location may be necessary, as natural features upon which it is based are often subject to change.

2. Biophysical as a Base for Administrative.
   One method of circumventing some of the difficulties associated with a strictly biophysical boundary is the designation of an inland boundary along a set of existing, easily located lineameants which approximate natural features and include all necessary land areas. Once the appropriate biophysical delimiting features are identified, any number of political boundaries, cultural features, existing designated planning areas, property lines, environmental control areas, and other such administrative or cultural features could be used as boundary lines. Boundaries designated in this manner should include and serve as adequate approximations of the selected biophysical features and should enable more effective state control and local control over the designated coastal area than the biophysical boundaries they approximate. To meet the intent of the Act, the rationale for designation of such administrative boundaries must be clearly specified in light of uses which have impacts on coastal waters, and their control. In designating such administrative boundaries, the Municipality should exercise caution to insure that the delineated area is not so extensive that a fair application of the management program becomes difficult or impracticable.

3. Multiple
   A multiple boundary can serve as an effective mechanism by which districts can meet the intent of the Act while incorporating the provisions of existing state programs and regulations. Multiple boundaries may delineate a combination of specific sections or zones of coastal land on different functional and resource bases such as: areas meriting special attention; permissible uses; geological or biological features; air and water controls; and other functional bases.

   Multiple boundaries could also be designated on a basis of intensity of controls. The strongest and most direct control would normally be exercise in the zone or tier adjacent to the water's edge. Generally, but not always, the degree of control would decrease in each succeeding zones landward. In any case, the control in a particular zone should be appropriate for existing plans or potential uses of the land and water within that zone. Examples of such multiple boundaries based on intensity of controls are: uniform distances measured horizontally from the shoreline; inland coastal political lines; incorporated limits of coastal communities.

4. Management Boundary
   Part 6, AAC 85.040 requires each coastal resource district to include a map of the boundaries of the coastal area within the district subject to the district program.

   Before council approval of a district plan, initial planning boundaries were to be based on biophysical boundaries as published by the Office of Coastal Management and the Alaska Department of Fish and Game. The initial planning boundary for Anchorage was determined by the State to be the 1,000 foot contour level. However, final management boundaries of the coastal area subject to the district program may diverge from the initial planning boundary if the final boundary: (1) extends inland and seaward to the extent necessary to manage uses boundary of its coastal zone. As a result of conducting the resource inventory and analysis, the

and, (2) includes all transitional and intertidal areas, salt marshes, salt water wetlands, islands and beaches.

If the above criteria are met, then final management boundary may be based on political jurisdictions, cultural features, planning areas, watersheds, topographic features, uniform set backs, or the dependency of uses and activities on water access. In addition, the final management boundaries of the Anchorage district must be sufficiently compatible with those of adjoining boroughs to allow consistent administration of the Alaska Coastal Management Program.

The Anchorage Municipal Planning Department has, as of this writing, completed its resources inventory and analysis, identified potential areas meriting special attention, applied a planning process to identify probable direct and significant impacts that could result from various uses in the coastal zone. The ACMP document requires that districts show evidence that they have developed and applied a procedure for identifying the management boundary of its coastal zone. The Planning Department feels they have adequately developed and applied a procedure for identifying its management boundary of its coastal zone. As a result of conducting the resource inventory and analysis, the following paragraph describes the proposed management boundary for Anchorage.

Inland Extent
As measured from the line delineating the inland extent of coastal flooding, as exhibited on the map showing coastal flooding and as derived from the U.S. Army Corps of Engineers Floodplain Data and from the National Flood Insurance Program, Flood Insurance Rate Maps, the inland extent of the coastal resource boundary has been determined to be 1,320 feet as measured from the horizontal along the line delineating the areas of the 100 Year Coastal Flood (also called the Inland Extent of Coastal Flooding). Where such inland boundary partially touches upon either (1) lakes, (2) bogs, (3) marshes, (4) swamps, (5) areas identified as having natural hazards, (6) water recharge value, (7) floodplains, (8) recreational, (9) scenic, (10) biologic or habitat values, then these areas will also be included in their intirety within the management boundary to insure their proper and adequate protection, use and value for the public welfare. In addition, where such inland boundary crosses or passes through any river, stream, or creek, then the management boundary shall extend inland paralleling this water feature up to the 1,000 foot contour level. The width of the management boundary along rivers, streams, and creeks shall be the boundary of the 100 Year Floodplain or 200 feet on either side of that water body as measured from the center line of the drainage. All lands within the riverine portion of the management boundary shall be subject to the provisions of the Alaska Coastal Management Program.

Lands, waters, and land and water uses behind the management boundary shall be managed and regulated through proper ordinance and other land use regulations so that direct and significant impacts on lands and waters within the management boundary shall comply with all provisions, regulations and requirements of the Alaska Coastal Management Act in the Anchorage area.

Seaward Extent
The seaward extent of the Anchorge Coastal Management Program shall extend to the Municipality's political boundary in the Turnagain and Knik Arms.

Management Justification
The seaward extent of the district coastal management boundary coincides with the political boundary of the Municipality of Anchorage as provided and covers the full area to which the Municipality has legal jurisdiction, noting though and recognizing the State's ownership of tidelands and waters.

The landward extent of the district coastal management boundary was determined by a logical, sequential planning process identified in the progress project report, December 1977, Appendices. Utilization of this method made possible the delineation of the management boundary and complies with the criteria which provides for divergence from the initial 1,000 foot planning boundary in that the boundary extends inland to the extent necessary to manage uses and activities that have or are likely to have direct and significant impact on marine coastal waters and include all transitional and intertidal areas, salt marshes, salt water wetlands, islands and beaches. It is the position of the Municipality of Anchorage that the Coastal Zone Management Act of 1977 of the State of Alaska was not intended to be a comprehensive land use management program covering all areas of the Municipality, but a program to manage coastal areas and possible impacts to those land and water areas. The Municipality of Anchorge further feels that its existing ordinances, land use regulations and pending 208 Water Quality and Air Quality Management programs and regulations will provide adequate protection for present and future uses which may cause direct and significant impacts on coastal waters. The management boundary as defined provides adequate buffer areas, is adequate to allow complete integration of existing and proposed land use regulations, allows State and Municipal regulatory programs to focus, specifically, on coastal managment problems, and provides for concentration of Federal and State planning funds in the most vulnerable coastal areas.

ANCHORAGE COASTAL MANAGEMENT BOUNDARY DETERMINATION PROCESS

In essence, boundary determinations are based on a determination and examination of land/water relationships, uses and activities likely to occur that

could result in direct and significant impacts on coastal waters.

As part of the initial planning process, a detailed resource inventory was conducted resulting in a series of resource maps being developed. Data was mapped in all cases up to the 1,000 foot contour level and in some cases farther inland.

The resource analysis employed utilized a geographic segmentation/land use suitability approach. The emphasis of the Anchorage Coastal Management Plan is primarily centered around the special patterns and segregations of land and land uses and the suitability and capability of an area to accommodate a given land use.

Not all areas of coastal waters or shoreland are alike. Not all areas of the coastal zone are suited to the same uses or intensity of uses. Although beach and shoreface areas, marshes, tidal flats, and other resources of the coastal area differ from one another, they are interconnected and affect one another.

To understand each of these areas in the context of the coastal system as a whole, the coastal system may be broken into a manageable number of subunits and composite environments. These may be referred to in the Management Plan as resource policy units, whether natural or manmade, and are mappable entities defined by local characteristics of processes, land forms, soils, biota, and other factors that naturally support certain levels of human activities.

These coastal resource policy uanits must be taken into account if public and private decision makers are to harmonize the intensive use and development of coastal resource systems with the continued economic productivity and liability of the Anchorage area. These coastal environments and their subunits — Resource Policy Units — are the basic units upon which the Anchorage Coastal Management Plan is designed.

A more detailed explanation of this concept is found on pages 56-59 of the Anchorage Plan. The point to be made here is simply that land uses and activities were analyzed for each resource policy unit (up to the 1,000 foot contour level) and a legal review was applied to each resource policy unit as well as an environmental impact analysis to determine the possibility of direct and significant ipacts on coastal waters and the adequacy of existing regulations to prevent such direct and significant impacts. This process was applied to each thematic data set both individually and collectively. As a result of this analysis, it was determined that the initial planning boundary could diverge closer to the shoreline, and that no direct and significant impacts were likely to occur within the area deleted from the initial boundary area. This process which permitted the defining of a narrower management boundary still meets both Federal and State requirements, specifically the six elements referenced in the first paragraph of this section, and while the Alaska Coastal Policy Council has yet to approve the Anchorage Plan, the ACMP provides for divergence if specific criteria are met. The boundary as defined in the Anchorage plan does meet the criteria. Emphasis has been placed on those uses and activities most likely to impact coastal waters, and it is the findings and conclusion of the Planning Department that the resource analysis meets the objective. By definition the Anchorage Plan does include those upland and coastal areas likely to have uses and activities that could cause direct and significant impacts on coastal waters.

As a result of the resource analysis, legal review and environmental impact analysis, it was determined that certain areas within the initial planning boundary could be excluded because the land/sea relationships were considerably less direct and significant than those areas finally identified as being within the final management boundary. In addition, existing regulatory controls were determined to be sufficiently adequate to mitigate and control any possible impacts to coastal waters in these upland, excluded areas.

The Anchorage Coastal Management Plan final management boundary meets the divergence criteria in that it extends inland to the extent necessary to manage uses and activities that have, or are likely to have, direct and significant impact on coastal waters, and does include all transitional and intertidal areas, salt marshes, saltwater wetlands, islands and beaches, and is sufficiently compatible with preliminary boundaries of Kenai and Matanuska-Susitna Boroughs.

It should be noted that the final management boundary does include those geographic areas (resource policy units) that are of major concern to the purposes and objectives of coastal management and the use of which could result in direct and significant impacts to coastal waters.

In addition to a one-quarter mile corridor along the oast, where such inland boundary crosses or touches upon either inland lakes, bogs, marshes, swamps, areas of natural hazards, water recharge value, floodplains, coastal recreation/scenic and biologic values, and water dependent/water related use areas, then these areas shall also be included in their entirety within the management boundry. Rivers, streams, and creeks are included in the management boundary up to the 1,000 foot contour level and at a width of the 100 year floodplain or 200 feet on either side of the water body, whichever is greater.

In the event that some major project was to be constructed inland from the management boundary and it was determined that it would result in activites likely to cause direct and significant impacts then paragraph 2 of the management boundary definition (p. 142) would apply. This paragraph states:

> Lands, waters, and land and water uses behind the management boundry shall be managed and regulated through proper ordinance and other land use regulations so that direct and significant impacts on lands and waters within the management boundary shall comply with all provisions, regulations and requirements of the Alaska Coastal Management Act in the Anchorage area.

This provision provides for State agencies to utilize and adhere to the requirements of the Standards and Guidelines up to the 1,000 foot contour level and to permit review, evaluation and responses to such projects. This provision recognizes, therefore, that there are some possible circumstances where an inland event could possibly have an impact on coastal waters.

In conclusion, the process and methodology utilized in the planning process are felt to be adequate to meet both the requirements of the ACMP as well as the intent, objectives and purposes of coastal management.

The purposes of the Alaska Coastal Management Act definition of coastal management boundaries in Cook Inlet were based strictly on biophysical processes rather than attempting to draw or define boundaries for landuse, political, or legislative purpose.

However, in Anchorage, biophysical, landuse, and political aspects had to be viewed in concert. The concept of geographic segmentation was an attempt to define functional biophysical and land use elements of the landscape. These functional units or resource policy units could then be evaluated individually and/or grouped to form environments —the Preservation, Conservation, Utilization concept, from which policy statements could be developed to protect the functions, processes and values identified for them.

Because much of Anchorage is already urbanized, many of the biophysical processes occurring naturally have already been altered and the remaining values and processes are, for the most part, management or regulated by existing comprehensive plans, ordinances and Municipal regulations. Because of this it was not deemed as appropriate or necessary to include such areas in the coastal management boundary. The methodology used for the Anchorage Coastal Management Plan in effect further subdivides the State's three coastal subzones or boundary tiers, which reflects the respective degree of biological and physical interaction between the land and sea occurring within it. This methodology permitted the identification of such biophysical interaction on a much more refined basis and set forth policy and management plan recommendations to protect them. Thus, it is the position of the Municipality that its plan is an improvement of the State's approach and does accomplish the purposes and intent of coastal management.

CHAPTER VII
AREAS MERITING SPECIAL ATTENTION

INTRODUCTION

Anchorage's Coastal zone Management Program must come to grips with the designation of portions of the coastal area that are of particular concern. The State act refers to such areas as AREAS MERITING SPECIAL ATTENTION, while the Federal CZMA refers to those areas as GEOGRAPHIC AREAS OF PARTICULAR CONCERN. In Alaska, as in other states, much of the coastal area can be managed with only generalized land and water use controls. This in itself is expensive, but the fact that the effort must be spread over the entire coastal area results in an inability to properly recognize and manage certain areas that have unique values or fragile characteristics that make them more in need of special attention. By adding a special area identification and manage element to a State coastal management program (including district programs), the financial and management resources of the program may be focused on such areas and detailed management programs developed.

As required by the ACMA and the ACMP regulations, districts shall designate AMSA's in their programs. The legislature provided a generic definition of AMSA's in the Alaska Coastal Management Act: AREAS WHICH MERIT SPECIAL ATTENTION means a delineated geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public should be identified for current or future planning, protection, or acquisition; these areas, subject to council definition of criteria for their identification, include;

A. Areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance;

B. Areas of high natural productivity or essential habitat for living resources;

C. Areas of substantial recreational value or opportunity;

D. Areas where development of facilities is dependent upon the utilization of, or access to, coastal waters;

E. Areas of unique geologic or topographic significance which are susceptible to industrial or commercial development;

F. Areas of significant hazard due to storms, slides, floods, erosion or settlement; and

G. Areas needed to protect, maintain, or replenish coastal land or resources including coastal flood plains, aquifer recharge areas, beaches and offshore sand deposits.

(AS 46.40.210.(1))

In addition to the above criteria, the Alaska Coastal Policy council has added three more categories of areas to this listing:

1) Areas important for subsistence hunting, fishing, food gathering, and foraging;

2) Areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities; and

3) Potential estuarine or marine sanctuaries.

Section 160 of 6AAC 80.160 states: A. Districts and appropriate State agencies shall recommend to the council areas to be designated as areas which merit special attention. Recommendations must include the following information:

1) the basis or bases for designation under AS46.210(1) or (B) of this section;

2) a map showing the geographical location, surface area and where appropriate, bathymetry of the area

3) a designation of the area which includes dominant physical and biological features;

4) the existing ownership, jurisdiction, and management status of the area, including the existing uses and activities;

5) present and anticipated conflict among uses and activities within or adjacent to the area, if any; and

6) a proposed management scheme, consisting of the following:

   a) a description of the uses and activities which will be considered proper and the uses and activities which will be considered improper with respect to land and water within the area;

   b) a summary or statement of the policies which will be applied in managing the area; and

   c) an identification of the authority which will be used to implement the proposed management scheme.

The Federal Coastal zone Management Act of 1972 (Public Law 92-583) requires an inventory and designation of areas of particular concern within the coastal zone (section 3056.3) and that the management program make provisions for purpose of preserving or restoring them for their conservation, recreational, ecological, or aesthetic values (section 306C.9).

The regulations implementing the act clarify the role of these areas to include: geographic areas of particular concern are likely to encompass not only the more often cited areas of significant natural value or importance, but also, transitional or intensely developed areas where reclamation, restoration, public access and other actions are especially needed; and those areas especially suited for intensive use or development. In addition, immediacy of need should be a major consideration in determining areas of particular concern (920.13).

Both the Federal and State Act categorically identify those features of the landscape that must be considered as areas meriting special attention.

THE PROCESS OF DETERMINING AREAS MERITING SPECIAL ATTENTION

Early in Anchorage's program development a basic assumption was made. It states that for planning purposes the entire coastal zone is an area of concern and only the level of concern changes along the coastal zone.

During the first year of program development, a thorough review was made of previous coastal zone studies of other states to ascertain the extent to which certain geographic areas of concern had been identified. Additionally, recent State legislation, both inacted and proposed, was reviewed to discern statements of public policy regarding areas of particular concern. The biophysical and land use inventory aided in identifying potential candidate areas for designation as AMSA's. From this process emerged many categorical areas recommended for designation as areas meriting special attention.

Potential categorical areas were also developed from discussion among program staff and the various members of the Office of Coastal Management, and from discussions with staff members of other State agencies involved in coastal zone management. Many of the recommendations were expressed in terms of subjects needing detailed research to document the extent of the resource, the problems surrounding its use, and the reasons for its particular concern.

An equally important part of the determination process has involved the use of public workshops before representatives of special interest groups, community organizations and the general public, as well as elected officials. Public participation is a specific requirement of both the Federal Coastal Zone Management Act and the State program. There is also a strong commitment on the part of the Municipality to the principle of citizen participation in the planning process, and that this participation is vital to the success of Anchorage's Coastal Management Program.

Informal meetings have been and are currently being conducted to inform the public about CZM and to solicit their comments and input prior to any formal plan or policy development and implementation.

Public workshops are also being conducted about specific aspects of CZM planning. For example, the Anchorage Planning and Zoning Commission has requested that each separate element of the Coastal Management Program be presented to them in a public workshop format. This request has been made to facilitate a better understanding of the entire Coastal Management Program. From these workshops and meetings will emerge recommendations for:

1) a list of site specific geographic areas meriting special attention;
2) classifications of areas meriting special attention per categorical classification;
3) an identification of permitted and nonpermitted land and water uses within each designated area.
4) a proposed management plan for each AMSA.

These and other recommendations will be examined and described as part of the program development effort. It should be noted that the Federal program regulations provide that areas meriting special attention should reflect areaa which are of State or regional concern as opposed to strictly local concern. Hence, the areas recommended in this document reflect not only areas of local concern but attempt to incorporate one or more of the following basic principles:

1) they are of concern to the State due to impact on State facilities, programs, or plans;
2) action relative to the use or management of the area is required by more than one unit of local government or;
3) the resource or area has recognizable value to broad segments of the general population.

Certain portions of the Municipality's coastal zone are of particular concern primarily because they are limited in number, have some special connection to an important event or time in the State's history or culture, are widely recognized for their singular beauty or attractiveness, or represent a resource of great value for recreational, scenic, physical features, educational or scientific research purposes. In many respects these areas represent a last stand, because once lost there are few if any others of their type, character or condition. In other cases areas may not warrant such dramatic action, but their presence requires a sensitivity to the resource, an awareness of its existence when making coastal zone management decisions. No specific standards are prescribed for areas meriting special atention, but the policies which will be applied to these areas must preserve, protect or restore the value for which the area was designated. A management scheme is required for these areas which identifies permissible uses, policies and management authorities.

Special attention was devoted to nominating potential AMSA's that did not have existing protective

status; thus such areas as Potter Marsh were not included. Other areas meeting the criteria for AMSA's, such as the major drainages in Anchorage, were also not identified as potential nominations for AMSA's because they are classified as greenbelts. This implies a given level of regulation as to permitted land uses and activities. However, should this level of regulation prove to be inadequate the areas could, in the future, be nominated.

The following pages are recommendations made by staff (incorporating all previously mentioned steps) of areas meriting special attention. It should be noted, however, that any individual or public group may identify and request the Alaska Coastal Policy Council to adopt an area meriting special attention. Local districts may only nominate areas meriting special attention. It is the Alaska Coastal Policy Council that will make the final determination as to whether an area qualifies and should be designated as an area meriting attention.

AREAS MERITING SPECIAL ATTENTION #1

1) Name of Area: Seward Highway/Turnagain Arm

2) Value classification
   *Primary: Scenic, Recreation, Transportation

   *Associated: Major Transportation route to Kenai Peninsula connecting with Anchorage, also a rail corridor/Alaska Railroad.

3) Location
   *Region/Subregion: Southcentral, Turnagain Arm

   *Community/Orientation/Distance: Area is within the Municipality of Anchorage.

   *Topographic Quad/1:63,360: Turnagain Arm CZM Map #12.

4) Upland Acres (Hectares): Approximately 1,393.94 acres from Potter station to the Kenai Borough border.

5) Seaward Distance for Protection: Existing width of State Right-of-Way.

6) Existing Ownership: State

7) Existing Management: The area is managed by the State Department of Transportation.

8) Adjoining Ownership/Management: The Alaska Railroad has withdrawals of Land (right-of way) adjacent to the Seward Highway. Other adjacent ownerships include Chugach State Park, private lands, and other Federal lands (Chugach National Forest and BLM in the Portage Area).

9) Area Description
   *Dominant Physical/Biological Features: The Seward Highway serves those portions of population concentration south of the "Anchorage Bowl" generally along the Seward Highway and extending to Portage at the southern boundary of the Municipality. The Seward Highway parallels the Chugach Mts. and the mountainous terrain drops sharply and abruptly into Turnagain Arm. Scenic vistas offered along the highway corridor include: glacial valleys, glaciers, a variety of vegetative types and a change in ecosystems, a variety of wildlife species. Several streams cross the highway which offer fishing opportunities and several species are found within them.

   *Recreation, Scenic, Heritage or Wilderness Significance: The public value of the area was first formally recognized in 1958 when the Secretary of the Interior withdrew certain lands in the Turnagain Arm for "protection of scenic values and public service sites." The Seward Highway offers access to recreation sites, wilderness areas and offers scenic significance worthy of protection.

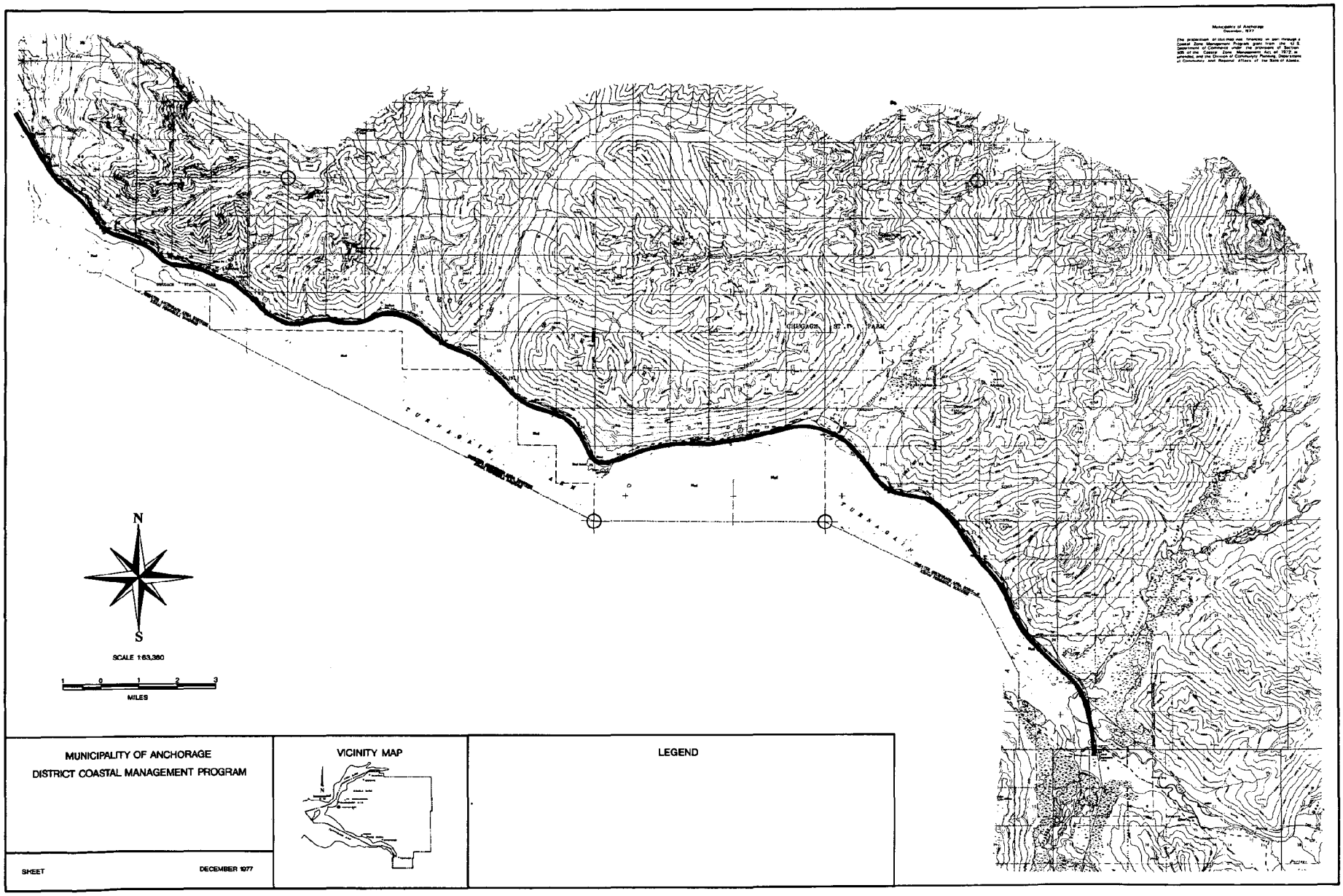
   *Other Significant Resource/Land Use Values: Many historical and archaeological sites are found adjacent to the Seward Highway.

10) Proposed Management: The Seward Highway should be formally designated as a scenic corridor; highway markings erected identifying specific points of interest, pullouts built to accommodate vehicular traffic at scenic vistas. The State of Alaska should officially designate the area as a scenic highway and prepare pamphlets describing the points of interest. Highway improvements should be designed in a manner which would allow for maximum viewing from the roadway. Design and construction of improvements should also be done in a manner which would not unnecessarily detract from the surrounding natural setting. It is recommended that the Municipality prepare a Seward Highway Scenic Corridor Plan.

11) Allowable Uses: All vehicular traffic, recreation activities and picnicking at pullout sites, private development in areas already designated as development areas (Indian, Bird Creek, Rainbow and Girdwood).

12) AMSA Categorical Classification
    1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.

13) Present and Anticipated Conflicts
    The Seward Highway presently has few pullout areas to accommodate those people interested in viewing and photographing many of the spectacular views that exist along the highway. The State Department of Transportation has begun a program to widen the present highway but little attention has been paid to increasing public viewing and interpretive opportunities in a safe manner. Increased width and removal of many of the curvy portions of the highway will create a situation that will accommodate faster traffic. Many large trucks currently use the highway for movement of goods. Thus a need exists to provide adequate pullout areas at scenic points and to provide interpretive signs for the public as well as the visiting tourist. One such example is an area to view bore tides and mountain goats.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AREAS MERITING SPECIAL ATTENTION #2

1) Name of Area: Old Girdwood Townsite South of Seward Highway.

2) Value Classification
   *Primary: Wildlife Habitat, Scenic, Passive Recreation.

   *Associated: Historic Site, Wetlands, other uses compatible with the Turnagain Arm Comprehensive Land Use Plan (in progress).

3) Location:
   *Region/Subregion: South Central, Turnagain Arm.

   *Community/Orientation/Distance: Area is within the Municipality of Anchorage/Old Girdwood Townsite.

   *Topographic Quad/1:63,360: Turnagain Arm CZM Resource Map #13.

4) Upland Acres: Approx. 217.60 Acres--Land area only.

5) Seaward Distance for Protection: To the center of Turnagain Arm.

6) Existing Ownership: The parcels within the Old Girdwood Townsite are in private ownership with a few in State ownership. The lands immediately adjacent to the Townsite are State owned lands.

7) Existing Management: The area is currently managed by the State.

9) Area Description
   *Dominant Physical/Biological Features: The original Girdwood Townsite was built on the shores of Turnagain Arm. Subsidence following the Good Friday Earthquake of March, 1964, inundated the original townsite. Much of the original vegetation was killed by seawater Today, 15 years after the earthquake, the vegetation has changed to that which is salt water tolerant as well as for brakish waters. Much of the original vegetation is dead. The site is flat, boggy and vegetated with grasses. The area has been identified by the State Department of Fish and Game as a resting and habitat area for migratory water fowl and other birds.

   *Recreation, Scenic, Heritage or Wilderness Significance: The site offers scenic views of the entire Turnagain Arm, and offers a site for nature trails, passive recreation activities, picnicking, photography, hiking.

   *Other Significant Resource/Land Use Values: The area is unsuitable for development; however, a few buildigns exist from pre-earthquake days, but have subsided. The area is now a significant wetland area and Glacier Creek enters the Turnagain Arm through this wetland tract.

10) Proposed Management: The site should be designated as a State Game Refuge, administered by the State Department of Fish & Game, and nature trails developed or other appropriate visitor facilities developed. A site development plan is recommended. This plan should be prepared jointly by the Municipality of Anchorage and the Alaska Division of Parks and Department of Fish and Game.

11) Allowable Uses: Scenic, passive recreation, wildlife habitat area, nature study, hiking.

12) AMSA Categorical Classification:

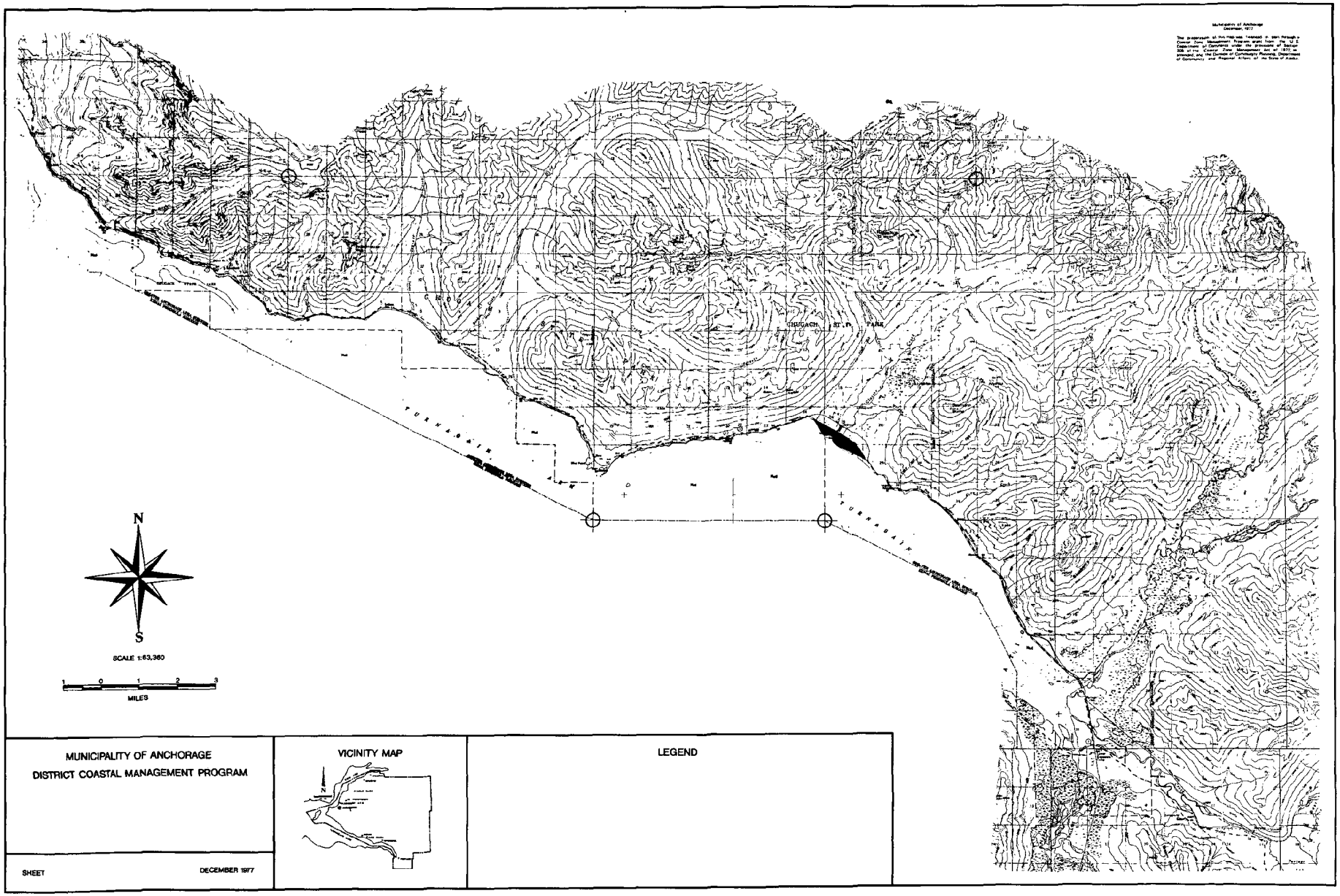
    1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.

    2. Areas of natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being.

    3. Areas of significant hazard if developed, because of storms, slides, floods, erosion, settlement, etc.

13) Present and Anticipated Conflicts

    The site presently contains parcels of privately owned land, the use of which could cause direct and significant impacts to the coastal marsh ecosystem. The site has been identified as having important habitat for migratory waterfowl. The area is used as a resting and feeding area. Future uses not conducive to the needs of migratory waterfowl could result in damage to the marsh and its use for waterfowl. The site is also entirely within the coastal floodplain and subject to future subsidence from seismic events.



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VICINITY MAP

LEGEND

AREAS MERITING SPECIAL ATTENTION #3

1) Name of Area: Bird Creek Regional Park

2) Value Classification

   * Primary: Recreation, scenic, nature study

   * Associated: Uses compatible with Bird Creek Park Master Plan

3) Location:

   * Region/Subregion: South Central, Turnagain Arm

   * Community/Orientation/Distance: Area is within the Municipality of Anchorage/Bird Creek

   * Topographic Quad/1:63,360: Turnagain Arm CZM Resource Map #14.

4) Upland Acres: 2,200 acres

5) Seaward Distance for Protection: Bird Creek drainage should be protected to and where it enters Turnagain Arm.

6) Existing Ownership: Municipality of Anchorage

7) Existing Management: By agreement between the Municipality and the State of Alaska, Department of Natural Resources, Division of Parks, as part of Chugach State Park.

8) Adjoining Ownership/Management: The land to the north, east and west is State land within Chugach State Park. The land to the south is primarily private land of multiple use, both residential and commercial.

9) Area Description

   * Dominant Physical/Biological Features: The majority of the land is located on the valley floor of Bird and Penguin Creeks. The valley is heavily wooded primarily with Sitka spruce and mountain hemlock, birch, poplar and alder. Mountains tower over the park on three sides and are the most dramatic features in addition to the water courses. Bird Creek is a spawning ground for andromous fish. Because of the location of the park adjoining the State Park and the fact that it encompasses such a large healthy valley, the wildlife within the park is a major feature and includes moose, brown and black bear, lynx, wolverine, hare, grouse, dall sheep and birds.

   * Recreation, Scenic, Heritage or Wilderness Significance: The former Greater Anchorage Area Borough Assembly recognized the public value of this area for recreation and scenic use when they adopted the Master Park Plan for Bird Creek Regional Park in 1973. The Master Plan calls for such activities as camping, hiking, horseback riding and snowmobiling. The natural setting also makes the area suitable for such passive activities as photography and observation of wildlife (see attached resolution).

   * Other Significant Resource/Land Use Values: A large tract of land virtually in its natural state suitable for recreational purposes, nature study and scenic purposes.

10) Proposed Management: As a regional park designed to accommodate a wide variety of recreation activities. It is recommended that the master plan be actively implemented to accommodate growing recreational demands of Anchorage residents.

11) Allowable Uses: Recreation activities consistent with the Bird Creek Master Park Plan (see attached resolution).

12) AMSA Categorical Classification:

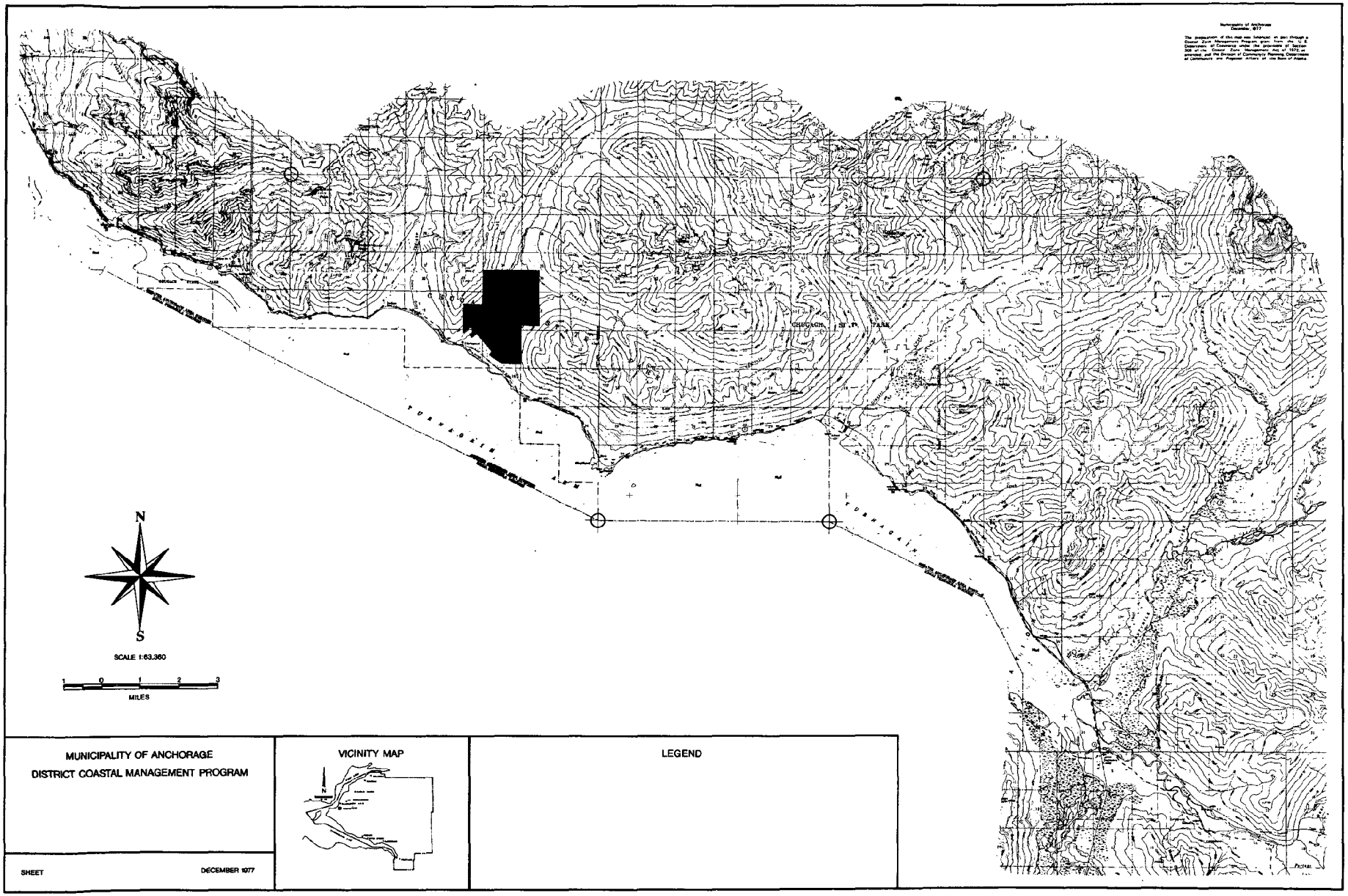
    1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.

    2. Areas of natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being.

    3. Areas of substantial recreational value and/or opportunity.

13) Present and Anticipated Conflicts

    While Bird Creek has been recognized as a regional park, little has been done to identify important educational values and scenitific resources. A park plan which incorporates elements to serve the broadest possible visitor interest should be prepared. Since the park is presently undeveloped, now is the time to identify scenic, recreational, habitat resources, scientific and educational values to ensure a truly comprehensive park plan to serve the large metropolitan area of Anchorage.



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VICINITY MAP

LEGEND

AREAS MERITING SPECIAL ATTENTION #4

1) Name of Area: Fish Creek

2) Value Classification

* Primary: Coastal wetland, scenic, nature study, open space.
* Associated: Wetlands, marsh, habitat, unique physical feature in an urban environment, aesthetic, recreational.

3) Location:

* Region/Subregion: South Central, Anchorage
* Community/Orientation/Distance: Area is within the Metropolitan Anchorage area and drains into Bootlegger Cove on the Knik Arm of upper Cook Inlet.
* Topographic Quad/1:25,000: Anchorage Bowl CZM map #15.

4) Upland Acres:

5) Seaward Distance for Protection: To mean low tide line of Knik Arm at Bootlegger Cove.

6) Existing Ownership: The original city of Anchorage (not the Municipality or Borough) was given patent to the tidelands within the old city limits and thus the tidelands portion of the site are Municipally owned. Other owners include (1) Alaska Railroad (right-of-way), and (2) private ownership by adjacent property owners.

7) Existing Management: Municipality of Anchorage

8) Adjoining Ownership/Management: Upland ownership consists of the Alaska Railroad and private residential owners.

9) Area Description

* Dominant Physical/Biological Features: Fish Creek, particularly near its mouth, represents a unique coastal marsh system in an area surrounded by residential uses.

  Fish Creek winds its way through the Municipality of Anchorage for approximately six miles and drains an area of approximately 5.6 square miles. Much of this drainage area has been developed for residential and other urban uses. As a result, the creek is segmented by vehicular and rail traffic routes. In some areas, vegetation has been removed, creek banks have been modified and the creek has been placed in culverts. Despite these changes, the creek remains a natural linear element traversing its way through the Spenard area of Anchorage. With continued higher density development occurring in areas adjacent to the creek, Fish Creek will become even more valuable as a visual and recreational open space resource.

  The AMSA area is a portion of Fish Creek representing approximately 1.25 miles located between Northern Lights Boulevard, Spenard Road, and Bootlegger Cove. Adjacent land uses are primarily residential with some commercial and light industrial uses occurring near Spenard Road.

10) Proposed Management: The site is in immediate need of restoration. Attached as part of this AMSA nomination is a Restoration Plan proposed for Fish Creek. Approval of this AMSA and subsequent funding under Section 306 funds will permit implementation of this restoration plan.

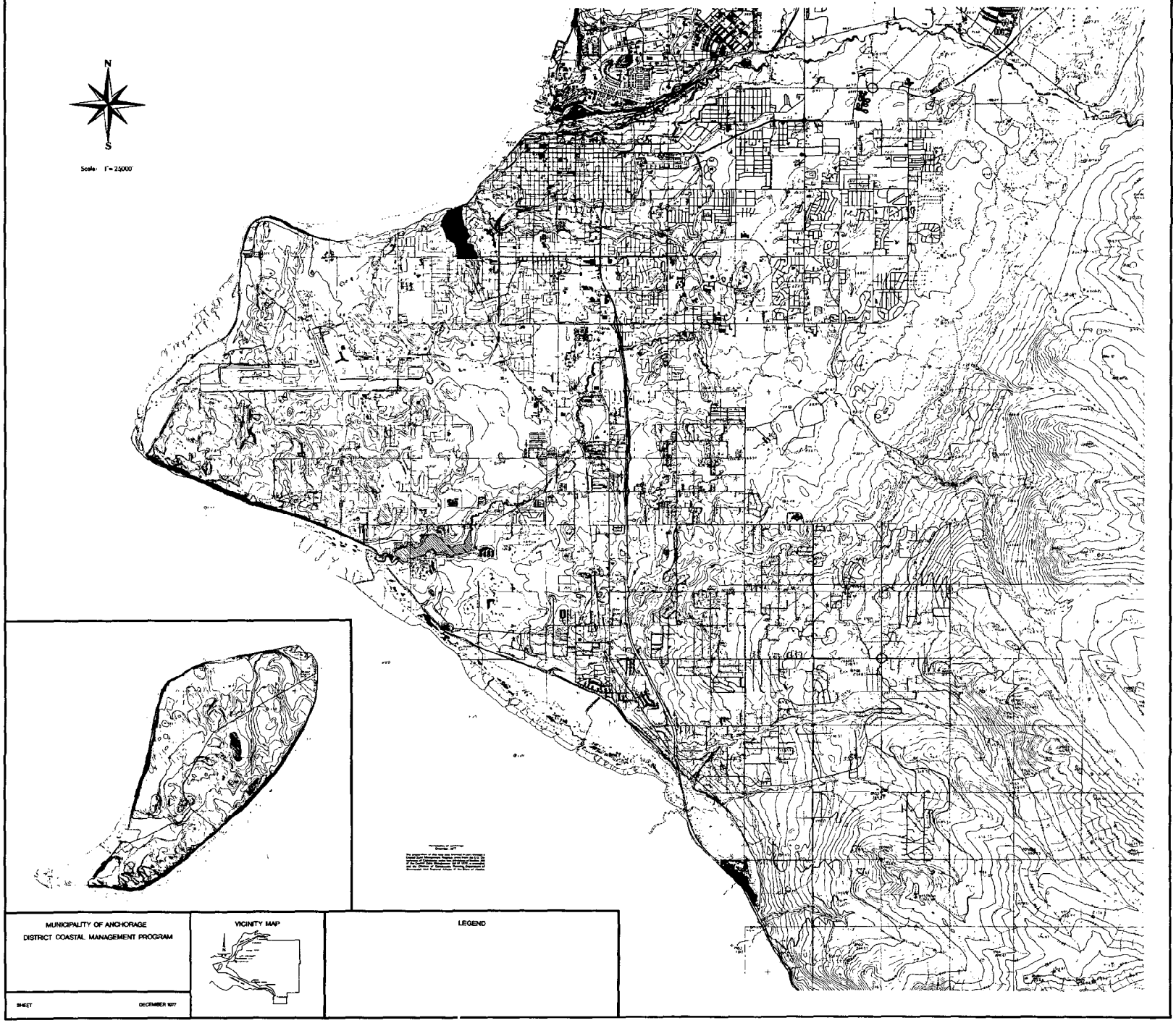
11) Allowable Uses: Scenic, recreational, open space, nature study.

12) AMSA Categorical Classification:

1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, and scenic importance.
2. Areas of natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being.
3. Areas needed to protect, maintain, or replenish coastal land or resources, including coastal land or resources, including coastal flood plains.

13) Present and Anticipated Conflicts

Fish Creek is presently held in private, Municipal and Federal ownership. The site is an excellent example of a coastal wetlands; however, field visits to the site have revealed trash, car tires, and poor drainage due to blockages of Fish Creek. The site should be restored and cleaned up to protect the hydrologic flow of water into the wetland area; to enhance the aesthetic appeal of the area; to protect the natural productivity and essential habitat for living resources. A culvert under the Alaska Railroad ROW has become filled with debris, trash and dirt. The Railroad should provide annual maintenance and cleanup on its property.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LEGEND

AREAS MERITING SPECIAL ATTENTION #5

1) Name of Area: Point Campbell — Point Woronzof Coastal Wetlands

2) Value Classification

   * Primary: Habitat, scenic, recreation

   * Associated: Wetlands, salt water marsh, coastal flood zone

3) Location:

   * Region/Subregion: South Central, Anchorage

   * Community/Orientation/Distance: Area is within the Municipality of Anchorage.

   * Topographic Quad/1:25,000: Anchorage Bowl CZM map #16

4) Upland Acres:

5) Seaward Distance for Protection: To the Municipal political boundary in the Knik Arm of upper Cook Inlet.

6) Existing Ownership: State/State tidelands

7) Existing Management: No present management except that which resides with appropriate state agencies having jurisdiction in tidelands under existing state statute.

8) Adjoining Ownership/Management: Upland ownership is comprised of the Municipality of Anchorage, the State of Alaska which leases land to the FAA, and a military site.

9) Area Description

   * Dominant Physical/Biological Features: Several reports have identified this coastal marsh as an area having diverse coastal marsh vegetation which supports numerous species of wading birds and migratory waterfowl. The site is generally flat, boggy and vegetated with coastal marsh type grasses and is within the coastal flood plain.

   * Recreation, Scenic, Heritage or Wilderness Significance: The site offers scenic views across Cook Inlet and excellent views of Fire Island. The area is highly scenic and offers an opportunity for nature viewing, photography, hiking and picnicking. The site is located close to the metropolitan area yet provides opportunities for viewing wildlife in a natural setting.

   * Other Significant Resource/Land Use Values: The area is unsuitable for development. The area is a significant wetland that could accommodate recreational use to a growing urban area as well as provide nature viewing opportunities.

10) Proposed Management: The site should be designated as a State Game Refuge, administered by the State Department of Fish and Game and included and made part of Potter Game Refuge. Nature trails should be developed and public access provided. A management plan should be prepared jointly by the Municipality of Anchorage and the Alaska Division of Parks and Department of Fish and Game.

11) Allowable Uses: Coastal wildlife habitat area, scenic, passive recreation, nature study, hiking, picnicking.

12) AMSA Categorical Classification:

    1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, and scenic importance.

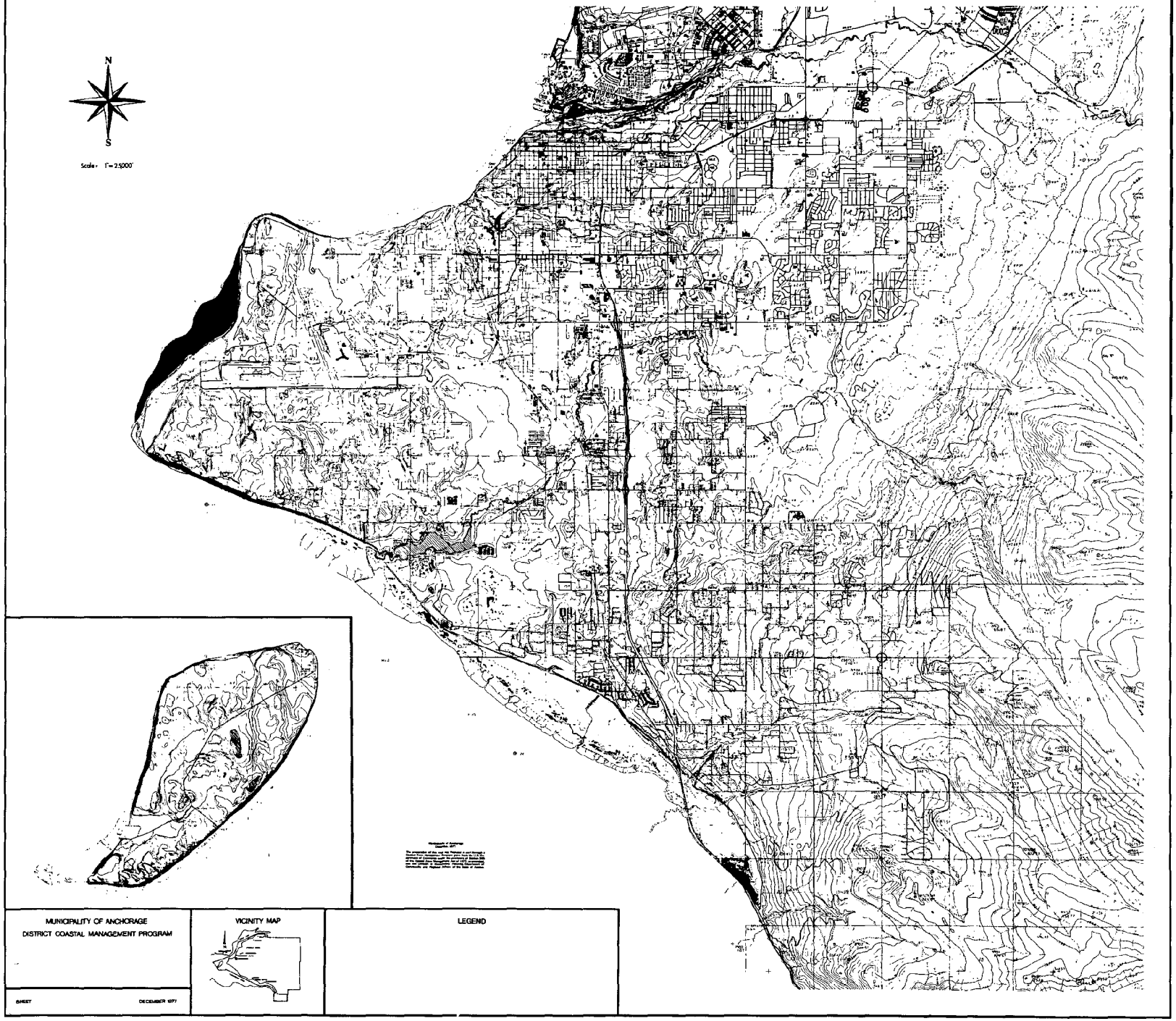
    2. Areas of natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being.

    3. Areas of significant hazard if developed, because of storms, slides, floods, erosion, settlement, etc.

    4. Areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, beaches and offshore sand deposits.

13) Present and Anticipated Conflicts

    No apparent conflicts exist at the site with the possible exception of occasional odors emitted from the sewer treatment facility. The area has been identified by Fish and Game and Tetra-Tec (a private consulting firm) as having a unique vegetative community that attracts a variety of birds and waterfowl. A site management plan will ensure proper management of the site, protect property value above the bluff line and protect a valuable coastal wetland.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VICINITY MAP
LEGEND

AREAS MERITING SPECIAL ATTENTION #6

1) Name of Area: Port of Anchorage Area

2) Value Classification

   * Primary: Water dependent/related uses/Port facilities

   * Associated: support activities and water-related uses

3) Location:

   * Region/Subregion: South Central, Anchorage

   * Community/Orientation/Distance: Area is within the Metropolitan Anchorage area.

   * Topogrpahic Quad/1:25,000: Anchorage Bowl CZM map #17.

4) Upland Acres:

5) Seaward Distance for Protection: To the Municipal political boundary in the Knik Arm of upper Cook Inlet.

6) Existing Ownership: Municipality of Anchorage, Alaska Railroad.

7) Existing Management: Department of Transportation, Port Director, Municipality of Anchorage, and lands within Ship Creek are owned and managed by the Alaska Railroad and leased for industrial purposes.

8) Adjoining Ownership/Management: Upland ownership is U.S. Air Force and private.

9) Area Description

   * Dominant Physical/Biological Features: The port of Anchorage is located at the mouth of Ship Creek on the tidal flats. The general site is the only location within the Municipality that is capable of supporting a port facility and the required support services. The site is within the coastal flood plain, is subject to subsidence, mass wasting and other hazards. Only a small portion of this area remains vacant for future development and expansion.

10) Proposed Management: The present Port is managed by the Municipality of Anchorage. Lands immediately adjacent to the port, but within the AMSA designation are owned and leased to private businesses by the Alaska Railroad. The mixed ownership pattern had resulted in the lack of a comprehensive waterfront development plan. Due to limited space available for expansion it is proposed that an urban waterfront zone be created and a comprehensive port development plan be prepared.

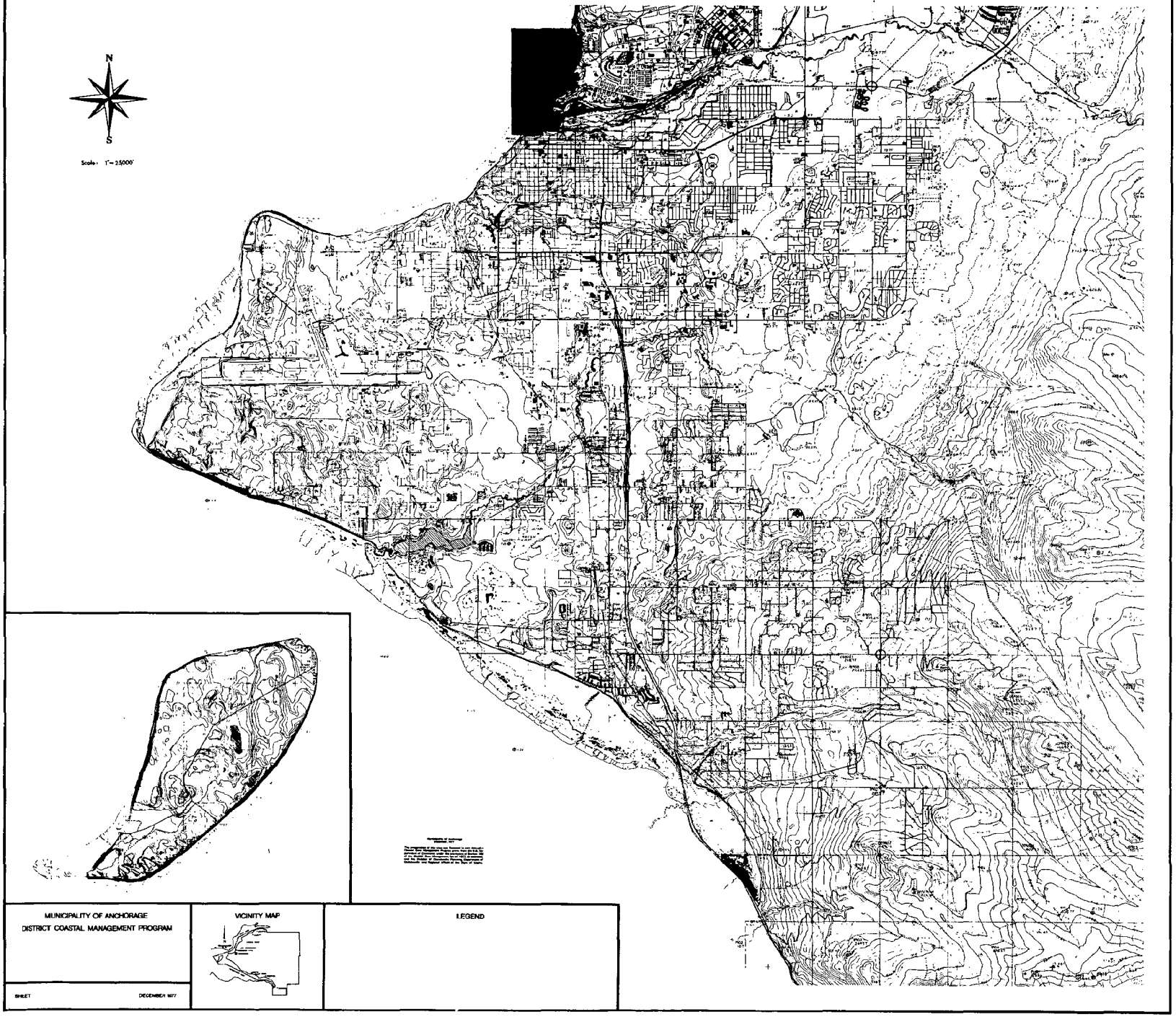
11) Allowable Uses: Water dependent uses

12) AMSA Categorical Classification:

    1. Areas where development of facilities is dependent upon the utilization of, or access to, coastal waters.

13) Present and Anticipated Conflicts

    Geographically the Port of Anchorage is confined to a small area. The entire waterfront area is held in ownership by the Municipality and the Alaska Railroad. Since the Alaska Coastal Management Program requires consideration be given to water related and water dependent use over those uses not meeting the above requirement a comprehensive plan is required to guide future growth and to have the Alaska Railroad meet consistency requirements necessary for such a plan to be implemented. Present use of portions of the waterfront area do not utilize this area to the maximum extent possible and waste valuable waterfront areas.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AREAS MERITING SPECIAL ATTENTION #7

1) Name of Area: Eagle River (drainage)

2) Value Classification

* Primary: Recreation, water supply, flood control, open space

* Associated: Habitat, scenic

3) Location:

* Region/Subregion: South Central, Eagle River

* Community/Orientation/Distance: Eagle River is located north/northeast of the Metropolitan Anchorage area.

* Topographic Quad/1:25,000: Eagle River CZM map #18.

4) Upland Acres:

5) Seaward Ownership: State of Alaska, Eklutna Inc., Fort Richardson Military Reservation.

7) Existing Management: The Municipality of Anchorage regulates land use within the site under the provisions of Title 21/Flood Plain Ordinance. The Alaska Division of Parks manages portions of the drainage within Chugach State Park and some lands adjacent to Eagle River on the south side of the valley.

8) Adjoining Ownership/Management: The majority of the ownership adjacent to Eagle River is in private holdings east of Glenn Highway and west of Glenn Highway ownership is Federal. The State of Alaska and the Municipality of Anchorage have small holdings adjacent to Eagle River.

9) Area Description

* Dominant Physical/Biological Features:

10) Proposed Management: Flood plain studies of Eagle River are incomplete. First priority would be to map the flood plain boundaries and conduct a study to identify which specific portions of the drainage should be held as open space until such time as a determination is made as to the feasibility of utilizing Eagle River as a source of potable water supply for the Municipality. Upon such a finding and need, a comprehensive site development plan would be prepared.

11) Allowable Uses: Water supply, open space, recreational, habitat

12) AMSA Categorical Classification:

1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, and scenic importance.

2. Areas of substantial recreational value or opportunity.

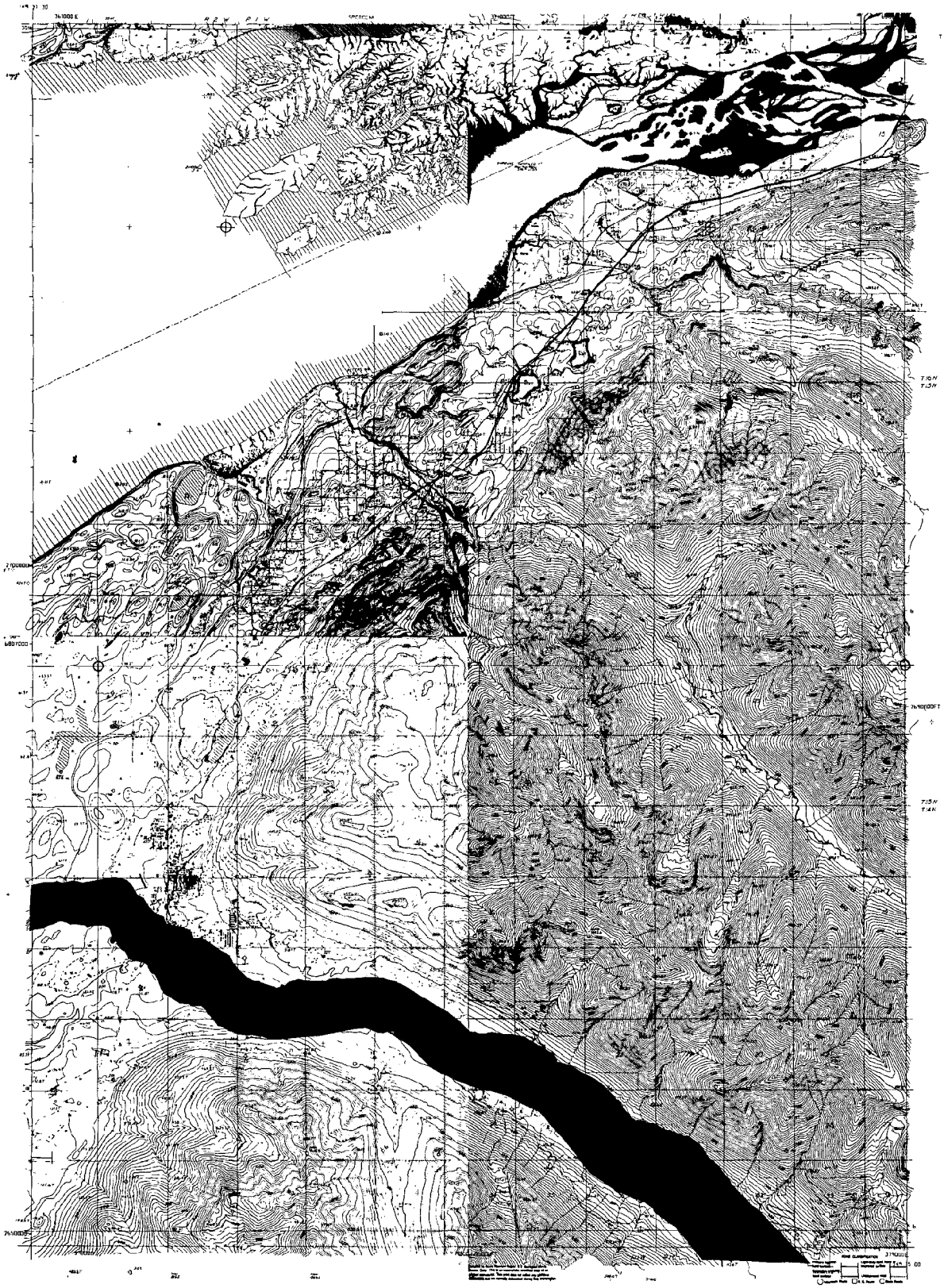
3. Areas of unique geologic or topographic significance which are susceptible to industrial or commercial development.

4. Areas of significant hazard due to storms, slides, floods, erosion or settlement.

13) Present and Anticipated Conflicts

The Eagle River Comprehensive Plan identifies the Eagle River Valley drainage area as marginal in that the area is subject to flooding, contains numerous bogs, marshes and other wetlands. The valley has been selected by Eklutna, Inc. and thus is in private ownership. To preserve all the primary and associated values while at the same time recognizing private property rights, the Municipality in cooperation with Eklutna, Inc. and the State Division of Parks develop a site plan to identify proper uses which also give recognition to the physical constraints. To accomplish this a site management plan should be prepared to prevent present and future anticipated conflicts.

The boundary shown for this AMSA does not necessarily correspond with that of the 100 year flood plain. No flood plain data is presently available. Eklutna, Inc. has requested that the U.S. Army Corps of Engineers initiate such a study. Such efforts would parallel those recommendations made in the Anchorage Coastal Management Plan.



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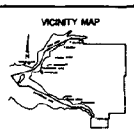

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AREAS MERITING SPECIAL ATTENTION #8

1) Name of Area: Pt. Woronzof Bluffs

2) Value Classification

* Primary: Scientific, Educational
* Associated: Scenic, Open Space

3) Location:

* Region/Subregion: Southcentral, Knik Arm of Cook Inlet
* Community/ Orientation/Distance: Area is within the Municipality of Anchorage
* Topographic Quad/1:25,000: Anchorage Bowl CZM map #19

4) Upland Acres (Hectares):

5) Seaward Distance for Protection: From mean high tide line to top of bluff.

6) Existing Ownership: State of Alaska in part and Municipal Land Selection

7) Existing Management: The area will be subject to use regulations for the new North/South runway at International Airport — approach zone.

8) Adjoining Ownership/Management: The site is located between Earthquake Park and the Pt. Woronzof Municipal sewer treatment plant. The site will be subject to the State of Alaska regulations regarding approach zones for aircraft.

9) Area Description

* Dominant Physical/Biological Features: The site is located on a north-facing bluff on Pt. Woronzof. Slopes are generally in excess of 25 percent and classified as unstable. The site is that portion of the bluff situated between the tidal flat and the access road to the sewer treatment plant. The area was nominated as an AMSA to protect an important stratigraphic exposure and because it contains the only known fossil beds in the Anchorage area. The site also offers excellent views across Knik Arm toward Mt. McKinley and the skyline of Anchorage.

10) Proposed Management: The Hearing Draft of the Anchorage Coastal Management Plan recommends that this area be designated as open space in order to facilitate the development of a coastal bluff bike trail connecting Earthquake Park with other areas along the bluff as designated in the Trails Plan. This would provide access to the site for educational and scientific purposes. It is recommended that the location not be posted as a scientific area in an attempt to avoid excavation by non-professionals; rather the management proposal is to recognize the scientific value of the bluff and limit its use for this primary use.

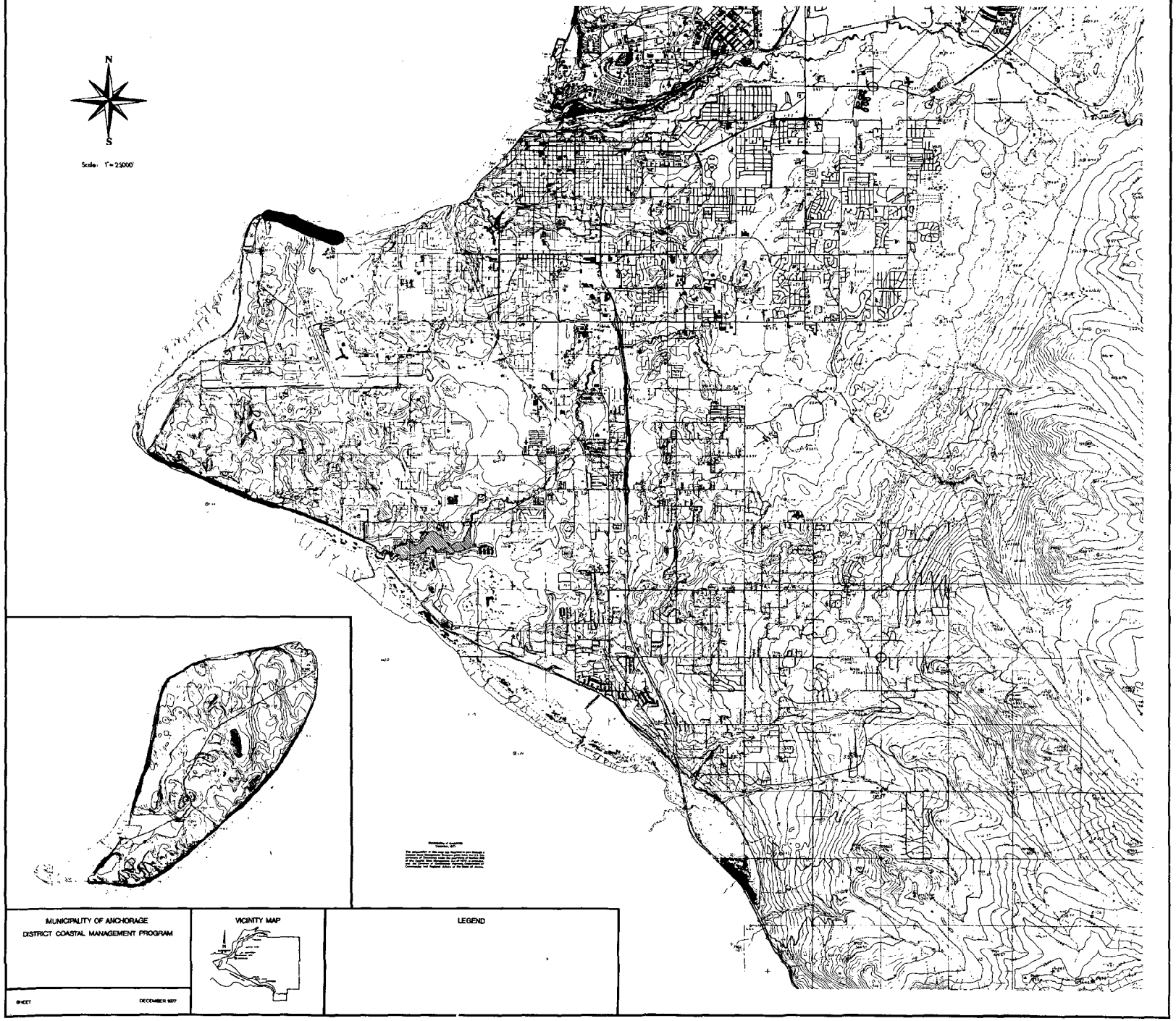
11) Allowable Uses: Educational and scientific study, public access via a bike trail along the top of the bluff, scenic viewing opportunities, and those uses compatible with the designation as open space.

12) AMSA Categorical Classification:

1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance cultural value, and scenic importance.
2. Areas of unique geologic or topographic significance which are susceptible to industrial or commercial development.
3. Areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities.

13) Present and Anticipated Conflicts

The site is located adjacent and to the immediate north end of the new International Airport North-South Runway. Since this area will be within the approach zone for arriving and departing aircraft, access to the site for educational and scientific purposes must be reserved. The Municipality also is planning on a coastal bluff bike trail through this area which would also provide access to the site. To avoid potential conflicts a site management plan is required.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AREAS MERITING SPECIAL ATTENTION #9

1) Name of Area: Pt. Campbell Dunes and Delta

2) Value Classification
   * Primary: Scientific, Educational
   * Associated: Scenic, Recreation (dirt bikes, hang gliding)

3) Location:
   * Region/Subregion: Southcentral, Turnagain Arm
   * Community/Orientation/Distance: The site is within the Municipality of Anchorage located on Pt. Campbell facing Turnagain Arm.
   * Topographic Quad/1:25,000: Anchorage Bowl CZM Map #20

4) Upland Acres (Hectares):

5) Seaward Distance for Protection: From mean high tide

6) Existing Ownership: Municipality of Anchorage

7) Existing Management: The site is the old Borough car dump and is presently used for motocycle racing and hang gliding. The site is located within Kincaid Park.

8) Adjoining Ownership/Management: The site is located at the extreme southern boundary of Kincaid Park, adjacent to Potter Marsh Wildlife Refuge. Lands to the west are in Federal ownership and used for military purposes, lands to the east are in private ownership and contain single family residential homes.

9) Area Description
   * Dominant Physical/Biological Features: The site offers the highest topographic vantage point in the Anchorage lowland.

   (1) One can see the physiographic "setting" of the entire upper Cook Inlet along 360° including Alaska Range, Talkeetna Mts. and Chugach-Kenai Range. This is an excellent place to describe the glacial history of Anchorage, as all four possible source areas of ice can be viewed. Evidence for each of the five glacial periods can be seen as follows:

   (a) Mt. Sustina Glaciation — the glacial profile of Mt. Susitna

   (b) Caribou Hills Glaciation — truncated spurs of the Chugach Mts.

   (c) Eklutna Glaciation — high level moraines on the Chugach Mts.

   (d) Knik Glaciation — the deposits on which most of Anchorage is built, including the lateral moraine along the Chugach Mt. front and all the gravel deposits at Pt. Campbell.

   (2) The gravel deposits at Pt. Campbell are part of a unique feature--a delta which was formed in a proglacial lake. The gravel shows excellent bedding features such as cross bedding, channel filling, collapse features. While gravel extraction was still in progress exposures in this gravel were excellent. Most of them have been covered, but some are still visible along the access road. However, these exposures are very fragile and unless some effort is made to protect them continued motorcycle use will probably contribute to rapid deterioration.

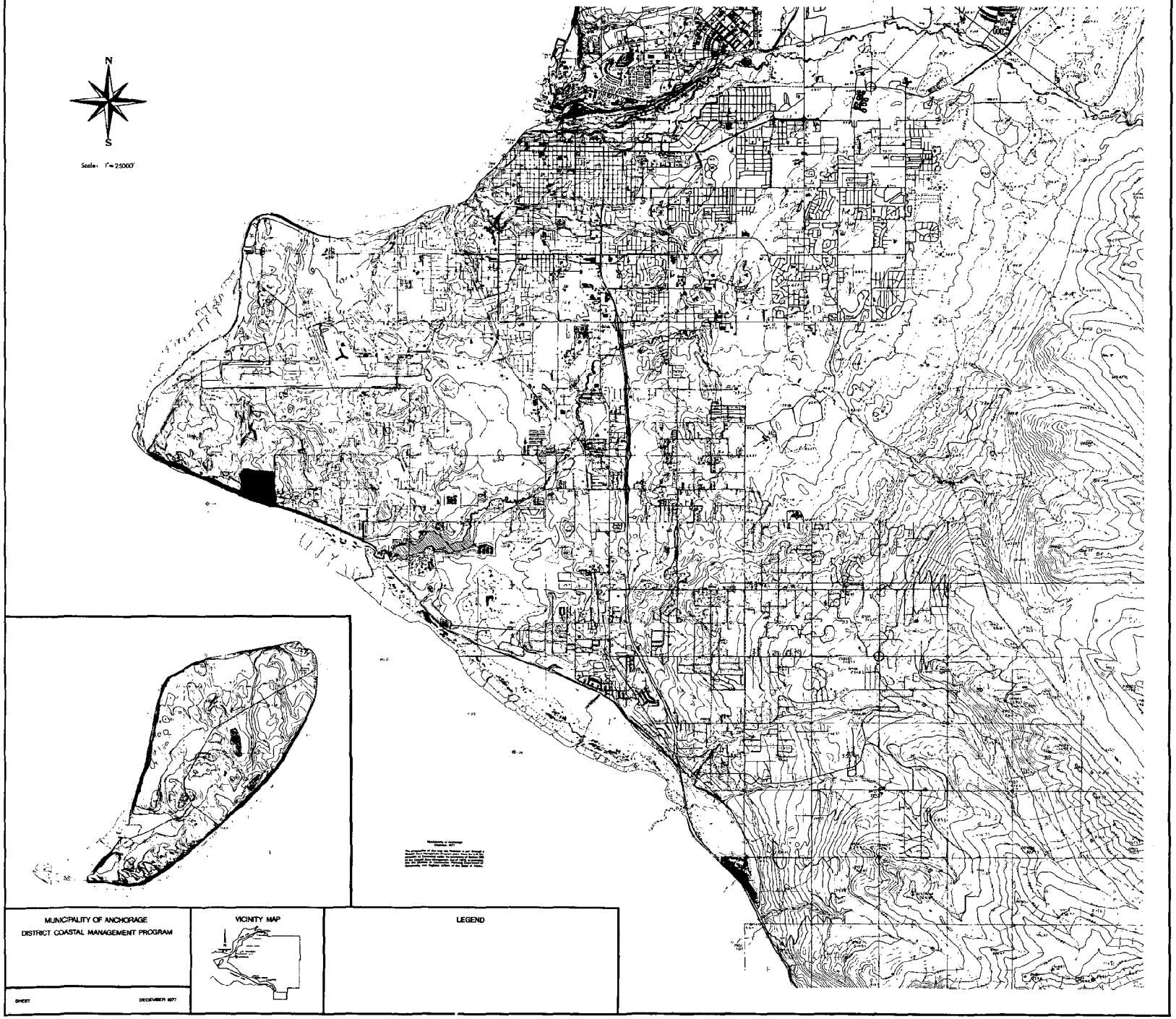
   (3) The original topographic surface just to the north of the gravel pit area shows cliff head sand dunes. It is believed this is the only Anchorage locality where active sand dune migration can be observed. The dune on top has probably been activated by gravel extraction when the protective vegetation cover was disturbed and sand in the pit was exposed to the prevailing wind.

   The dune is spectacular in that it is in the process of burying trees on the leeward or east side. The surface shows beautiful wind ripple marks. The cut edges show classic dune bedding deposits and buried soil horizons. This is an extremely fragile feature and is being damaged greatly by use of dirt bikes in the area.

   (4) The deltaic features are unique. The gravels are part of a large feature which extends east toward Sand Lake Road and north toward Pt. Woronsof. The delta is fascinating because it faces "the wrong direction." The geological history is difficult to reconstruct as the geometry of the beds indicates that the melt water flowed east toward the mountains. One would have expected it to flow west toward Cook Inlet.

   The pebbles in the delta demonstrate rock types of all possible source areas including coal fragments from the Matanuska Valley.

10) Proposed Management: Uses that would be associated with designation of this site as an AMSA are in conflict with the recreational uses occuring at present; however, the Planning Department feels that a management plan could be developed to accommodate all uses. Providing for public access for pedestrians and providing for a bike trail could be accomplished while still maintaining an area for dirt bike use. It is suggested that the hillside (sand dune) immediately adjacent to the dirt bike track be put off limits to motorcycles to (1) provide for educational use, and (2) to preserve the natural vegetation and prevent accelerated erosion of the dune face. Aesthetic and appropriate barriers could be designed and erected to keep motorcycles off the hill and restrict their use to the



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VICINITY MAP

LEGEND

established motorcycle trail area. Approval of this AMSA would result in the preparation of a detailed site plan for the area.

11) Allowable Uses: Recreational uses (dirt bikes, hang gliding), public access, educational and scientific study. Due to heavy public use, shooting should not be allowed in the immediate area.

12) AMSA Categorical Classification:
   1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significant, cultural value, and scenic importance.
   2. Areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities.

13) Present and Anticipated Conflicts
   The site is presently used by dirt bikes for races, by hang gliders, and by hikers. The motorcycles have extended the area in which they ride beyond that of the designated track, which creates a potential hazard to those individuals hiking or utilizing the adjacent sand dunes for other purposes. Since the area has identified educational and scientific values a plan should be prepared which will accommodate use of the area by all uses and interest groups.

AREAS MERITING SPECIAL ATTENTION #10

1) Name of Area: Andesitic Dike at Potter Marsh on the Old Seward Highway

2) Value Classification:
   * Primary: Scientific, Educational
   * Associated: Scenic drive along Old Seward Highway, transportation route adjacent to site.

3) Location:
   * Region/Subregion: Southcentral, Potter Marsh
   * Community/Orientation/Distance: Area is within the Municipality of Anchorage, located on the Old Seward Highway adjacent to Potter Marsh
   * Topographic Quad/1:25,000: Anchorage Bowl CZM Map #21

4) Upland Acres (Hectares):

5) Seaward Distance for Protection: None

6) Existing Ownership: State of Alaska Right-of-Way

7) Existing Management: None

8) Adjoining Ownership/Management: The site is a road cut along the cliff and is part of the right-of-way. Adjacent ownership includes the State of Alaska, for Potter Marsh, and private property on the upland areas surrounding the site.

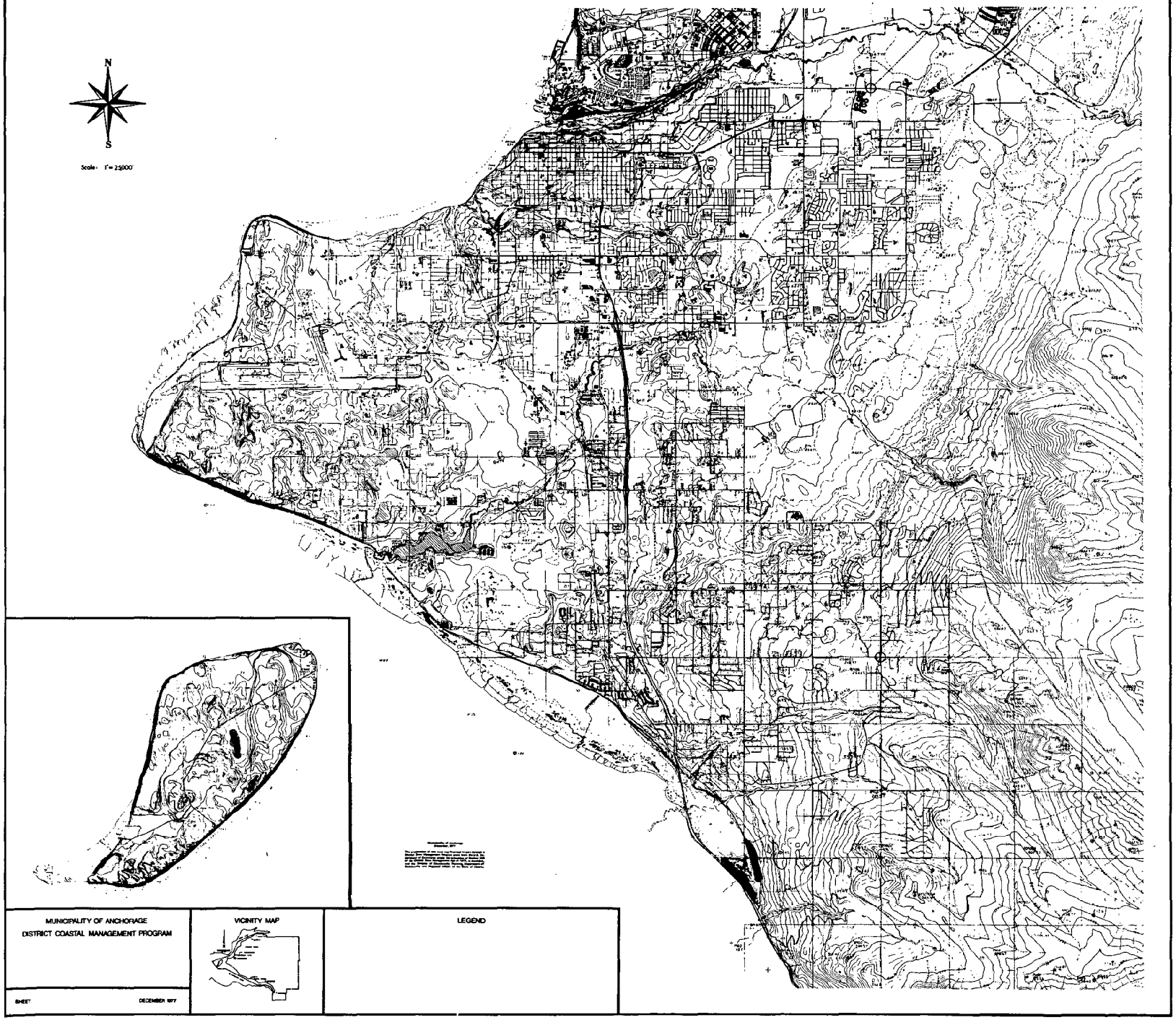
9) Area Description
   * Dominant Physical/Biological Features: This site is the only igneous dike exposed in the Anchorage area. It is a good bedrock exposure showing an andesitic lithology, weathering, and joint patterns. The dike is located in a bedrock exposure just east of Potter Marsh along the Old Seward Highway.

10) Proposed Management: The Municipality would, upon approval of this nomination, prepare a letter of agreement with the State indicating to the Department of Transportation that this site be preserved and not altered during future road work. The site should have an interpretive sign posted identifying the structure and its relationship to the geologic history of Anchorage. This would be in accordance with the concept of scenic design standards for the Seward Highway as proposed in the Anchorage CZM Plan.

11) Allowable Uses: Scientific and educational study, public viewing. Rock climbing in this specific site should be prohibited.

12) AMSA Categorical Classification:
   1. Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.
   2. Areas of unique geologic or topographic significance which are susceptible to industrial or commercial development.
   3. Areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities.

13) Present and Anticipated Conflicts
   No immediate conflict exists at the site; however, future planning for highway maintenance and road widening should give consideration to the site as a significant geologic feature and avoid any damage to it.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MUNICIPALITY OF ANCHORAGE
DISTRICT COASTAL MANAGEMENT PROGRAM
SHEET
DECEMBER 1977
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CHAPTER VIII
IMPLEMENTATION

The challenge in implementing a district coastal management program is how to maximize the use of existing land and water use controls to achieve improved management of the coastal zone while minimizing the need for additional controls.

The Anchorage Coastal Management Program is an ambitious attempt to address the issue of land-use suitability along the coast of Alaska's largest urban center. The focus of the program is on areas -- not on uses or activities. By establishing policies for coastal areas based on area values and limitations, all uses and activities in those areas become subject to the program. All coastal areas are addressed.

Initially, a comprehensive permit system, similar to the system administered in California, was considered as a means of implementing the Anchorge program. Under this system, all major uses and activities in the coastal zone would require a permit from a local authority. Because the operation of this system would have the effect of adding yet another layer of governmental control over uses and activities which, in many cases, are adequately regulated, it was deemed inappropriate for Anchorge's needs.

The plan adopted by the Anchorage Coastal Management Program relies to the extent possible on the use of existing Federal, State, and local land and water use controls to achieve its objectives. It is only where those controls are inadequate to meet Federal and State coastal management requirements, that additional controls have been recommended.

EXISTING FEDERAL AND STATE CONTROLS

Implementation of the Anchorage Coastal Management Program begins with an inventory of existing Federal and State land and water use controls in the coastal zone. The following controls are most relevant to Anchorage:

Federal Controls

National Pollution Discharge Elimination System

Corps of Engineers Permit for the Discharge of Dredged or Fill Material

Corps of Engineers Permit for Work or Structures

Executive Order 11988, Floodplain Management

Executive Order 11990, Protection of Wetlands

Historic Preservation

State Controls

Water Quality Standards

Wastewater Disposal Permit

Water Appropriation Permit

Game Refuges

Anadromous Fish Protection

Tidelands Lease and Permit

Land Classification

Mining and Oil and Gas Regulation

Historic Preservation

Solid Waste Disposal

Certification of Activities under Section 401 of Clean Water Act

Overlaying all of the above listed Federal and State controls are two key requirements of the Federal Coastal Zone Management Act and the Alaska Coastal Management Act. Under the Federal Act, Federal agency actions, including the issuance of permits, must be *consistent* with an approved state coastal management program. Under the Alaska Act, the actions of State agencies, including the exercise of the controls listed above, must *comply* with approved district coastal management programs. By monitoring the exercise of the Federal and State controls listed above for "consistency" or "compliance" with the provisions of its district program, the Municipality of Anchorage can exert considerable control over uses and activities in the coastal zone. A summary of each listed control is contained in Appendix A of this document. Appendix B contains a memorandum of understanding between the Municipality of Anchorage and the State Division of Policy Development and Planning concerning procedures for the review of Federal agency actions for consistency.

EXISTING LOCAL CONTROLS

In addition to Federal and State controls listed above, the Municipality of Anchorage administers a wide array of local controls relevant to coastal management. These controls include the following:

Local Controls

General powers

Comprehensive Plan

Zoning

Flood Plain Regulations

Subdivision Regulations

Watershed Regulations

Tidelands Regulations

Wastewater Disposal Regulations

Selection of State Lands

Land Trust Fund

Planning
- a. Comprehensive Land Use Plans
- b. AMATS
- c. Air Quality and Water Quality Management Plan

Historic Preservation

Improved coastal management can be accomplished through the administration of these local controls in conformity with the provisions of the district coastal management program. The key means of achieving this result in incorporation of the district program into the Municipal Comprehensive Plan. This will require that the coastal management program serve as a "guideline" for future Municipal actions.

Appendix A contains, in addition to State and Federal controls, a summary of local land and water use controls, with the exception of the several Municipal planning programs.

USES AND AREAS IN NEED OF ADDITIONAL CONTROL

After considering the application of existing Federal, State, and local land and water use controls in the context of the requirements of the State Coastal Management Program, several uses and areas stand out as needing additional management controls. These uses and areas are:

1. water quality management
2. priority for water-dependent and water-related uses
3. geologic hazards
4. wetlands protection
5. scenic preservation
6. coastal access
7. waste treatment and water supply
8. areas which merit special attention
9. uses of state concern
10. sand and gravel extraction

A brief discussion of each issue follows:

Water Quality Management

Under Section 208 of the Federal Water Pollution Control Act, the Municipality of Anchorage has undertaken a study of means of managing significant nonpoint sources of water pollution, including urban runoff, erosion from construction sites, runoff and percolation from snow disposal, and failure of on-site wastewater disposal systems. Adoption of a strong water quality management program by the Municipality is essential to meeting coastal management concerns with water quality.

Priority for Water-Dependent and Water-Related Uses

Both Federal and State coastal management requirements include priority to water-dependent and water-related uses and activites in the coastal zone. An area especially suited to this type of management is the Port of Anchorage. Limited in geographical extent, and of vital economic importance, this area is currently zoned for industrial use. More efficient use of this area could be accomplished through amendment of the existing zoning classification to establish priorities for water-dependent and water-related use. This objective could be incorporated as an element of comprehensive port study authorized by the 1979 Alaska Legislature.

Geologic Hazards

Although the Uniform Building Code, as amended by the Municipality, establishes structural standards for earthquake stress, it does not address the suitability of soils for development with respect to geologic hazards. Outstanding legal issues such as Municipal liability for damages, the withholding of Federal disaster relief assistance, and the conditioning of loans on the obtainment of hazards insurance require careful consideration by the Municipality. In addition, management of hazardous areas is mandated by the regulations of the Alaska Coastal Policy Council. In March, 1979, the Municipality released a study entitled *Geotechnical Hazards Assessment Study, Municipality of Anchorage*, concerning seismic hazards (faults, soil liquefaction, landslides, ground shaking, avalanche, icing and glaciation, ground water, permafrost, subsidence, coastal erosion, and wind). This study should be followed by the development of ordinances or other tools for managing development in hazardous areas, to the extent that such management is found necessary or desirable, based on Municipal liability for damages as well as the Municipality's general obligation to protect the health, safety and welfare of its residents. The Assembly may wish to obtain an opinion from the Municipal Attorney prior to undertaking this task.

Wetlands Protection

The two primary existing controls over development in wetlands are: (1) the Army Corps of Engineers Permit for the Discharge of Dredged or Fill Material; and (2) Executive Order 11990, Protection of Wetlands. Both authorities are subject to Municipal review. However, final administrative decisions on whether or not to proceed with a project are left to Federal agencies. Direct local management of wetlands would place much of the final decision-making authority in the hands of Municipal officials. The development and adoption of local wetlands protection measures should be undertaken, preceded by a comprehensive inventory and classification of all coastal wetlands in the Anchorage area, to insure that local concerns and desires are formally brought into certification decisions. Under Section 401 of the Clean Water Act of 1977, any applicant for a Federal license or permit to conduct any activity which may result in any discharge into navigable waters, shall provide the licensing or permitting agency a certification from the state that any such discharge will comply with applicable provisions of the Act. The Department of Environmental Conservation is the agency responsible for certifying activities requiring a Corps of Engineers permit.

Scenic Preservation

One of the most outstanding aesthetic values of the Anchorage area is scenery. This value is largely

unprotected by the existing array of land use controls. Consideration of scenic preservation in Municipal planning programs, as the Municipality expands, will ensure that this value is preserved.

Coastal Access
A common result of inadequate coastal management is insufficient provision for public access to the shore. As with scenic preservation, consideration of this factor in Municipal planning efforts will ensure that this important value is preserved.

Waste Treatment and Water Supply
The Metropolitan Area Urban Study, "MAUS", currently underway, concerns waste disposal in estuarine waters and the supply of potable water. This study should be continued and recommendations for implementation developed and adopted. No solid waste disposal sites are planned for areas identified as being within the coastal management boundary.

Areas Which Merit Special Attention
The Alaska Coastal Management Act requires that districts designate areas of the coast which merit special management attention. Although the entire coastal area could be designated as one large "AMSA", several key areas have been identified as in need of special management. These areas, and proposed management plans for them, are contained in Chapter VII of this document, and form an extremely important aspect of the Anchorage Coastal Management Program.

Uses of State Concern
Uses of State concern are defined in the Alaska Coastal Management Act as follows:

"(6) "uses of state concern" means those land and water uses which would significantly affect the long-term public interest; these uses, subject to council definition of their extent, include:

"(a) uses of national interest, including the use of resources for the siting of ports and major facilities which contribute to meeting national energy needs, construction and maintenance of navigational facilities and systems, resource development of Federal land, and national defense and related security facilities that are dependent upon coastal locations;

"(b) uses of more than local concern, including those land and water uses which confer significant environmental, social, cultural, or economic benefits or burdens beyond a single coastal resource district;

"(c) the siting of major energy facilities, activities pursuant to a state oil and gas lease, or large-scale industrial or commercial development activities which are dependent on a coastal location and which, because of the magnitude of their effect on the economy of the state or the surrounding area, are reasonably likely to present issues of more than local significance;

"(d) facilities serving statewide or interregional transportation and communication needs; and

"(e) uses in areas established as state parks or recreational areas under AS 41.20 or as state game refuges, game sanctuaries or critical habitat areas under AS 16.20."

In reviewing district coastal management programs for approval, the Alaska Coastal Policy council must ensure that the local program does not "arbitrarily or unreasonably restrict or exclude" such uses. In determining whether a restriction or exclusion is arbitrary or unreasonable, the Council must approve the restriction or exclusion if it finds that:

(1) the coastal resource district has consulted with and considered the views of appropriate Federal, state or regional agencies:
(2) the district has based its restriction or exclusion on the availability of reasonable alternative sites; and
(3) the district has based its restriction or exclusion on an analysis showing that the proposed use is incompatible with the proposed site. AS 46.40.070(c)

In its present form, the Anchorage Coastal Management Program does not restrict or exclude uses of state concern. However, as ordinances are developed, or additional Areas Which Merit Special Attention designated as part of the coastal management program, the possibility exists that uses of state concern will be restricted or excluded. In taking these actions, the Municipality should be aware of and comply with the three-part test for reasonableness contained in AS 46.40.070(c).

Sand and Gravel Extraction
The regulations of the Alaska Coastal Policy Council require that "sand and gravel may be extracted from coastal waters, intertidal areas . . . when there is no feasible and prudent alternative to coastal extraction which will meet the public need for the sand or gravel." This activity is currently managed under AMC 21.50.070 as a special exception. This section of the Municipal Code should be amended to reflect the State requirement.

RECOMMENDATIONS

The following constitute the plan for implementing the Anchorage Coastal Management Program. Adoption of these recommendations should enable the Municipality to satisfy State coastal management requirements. In the event that certain requirements are found not to have been satisfied, the Alaska Coastal Policy Council may approve those portions of the program which are sufficient while directing the development of additional or amended elements.

(1) The Anchorage Coastal Management Program should be adopted as part of the Municipal Comprehensive Plan.

(2) The Municipality should undertake the continuing review of Federal agency actions affecting

the coastal zone for consistency with the Anchorage Program, including the following:

(a) NPDES Permits (EPA)

(b) Permits for the discharge of dredged or fill material (Corps of Engineers)

(c) Permits for work or structures (Corps of Engineers)

(d) Federal agency compliance with Municipal land classification

(e) Federal agency compliance with Executive Order 11990, Protection of Wetlands

(f) Federal agency compliance with Executive Order 11988, Floodplain Management

(g) Federal agency compliance with State and local historic preservation designations

(3) The Municipality should undertake the continuing review of State agency actions affecting the coastal zone for consistency with the Anchorage Program, including the following:

(a) Wastewater disposal permits (DEC)

(b) Water classification and reclassification (DEC)

(c) Water appropriation permits (DNR)

(d) Tidelands leasing, permitting, and disposal (DNR)

(e) Classification and disposal of State lands (DNR)

(f) Oil and gas and mineral leasing (DNR)

(g) State agency compliance with Federal and local historic preservation designations

(h) Solid waste disposal (DEC)

(4) The Municipality should designate and adopt management plans for the Areas Which Merit Special Attention contained in Chapter VII.

(5) The Municipality should adopt the recommendations of the 208 Areawide Water Quality Management Plan and continue work on the Metropolitan Area Urban Study.

(6) The Planning Department and the Department of Cultural and Recreational Services should jointly prepare scenic protection and coastal access elements to the Municipal Parks and Trails Plans.

(7) The Municipality should develop ordinances or other tools for managing development in hazardous areas, to the extent that such management is found necessary or desirable, based on Municipal liability for damages as well as the Municipality's general obligation to protect the health, safety and welfare of its residents. "Hazardous areas" means those areas identified in *Geotechnical Hazards Assessment Study, Municipality of Anchorage* (1979).

As part of this effort the Planning Department, in conjunction with the Engineering Division of the Public Works Department and with the assistance of a consultant, will investigate design criteria per hazard category necessary for future development in hazardous areas. Also included in this effort would be an investigation into alternative means of regulating land use in such areas.

(8) The Municipality should conduct an inventory and classification of wetlands within the coastal zone. Classification should include the identification of these wetlands requiring additional management. The Municipality should then develop appropriate management tools, such as ordinances or AMSA designations, necessary to protect such areas. As part of this effort, wetlands must be classified and the hydrodynamics of each wetland researched and understood so that appropriate and effective ordinances can be prepared. The Municipality is investigating the possibility of conducting a joint study with 208 Water Quality Management planning efforts.

(9) All Municipal planning activities should be in conformance with the provisions of the Anchorage Coastal Management Program and the Alaska Coastal Management Program, including the following:

(a) Transportation planning (AMATS)

(b) Parks, trails, and recreational planning

(c) Planning for the disposition of State lands selected under the Municipal Entitlements Act.

(d) Public facilities siting

(e) Solid waste disposal

(10) The Municipality should undertake a study of the impacts of construction-related activities in marginal lands. Information resulting from this study should be made available to homebuyers and developers.

NOTE: This recommendation was inadvertently omitted from Table VIII. It will be undertaken as an implementation activity in FY-81 and funding will be addressed in the FY-81 grant period.

(11) The Municipality should produce an atlas of coastal areas incorporating the resource inventory and analysis information produced during development of the coastal management program.

(12) AMC 21.50.070, Standards for Natural Resource Extraction, should be amended to comply with 6 AAC 80.110, Mining and Mineral Extraction (sand and gravel extraction).

RECOMMENDED IMPLEMENTATION PROCESS AND FUTURE WORK PROGRAM

The following pages present the thirteen staff recommendations that were felt necessary to implement the Alaska Coastal Management Act in Anchorage. The tables (VIII-1 — VIII-12) set forth the specific recommendation, state what actions are necessary to implement the recommendation, assign a level of priority to the recommendation, and then outline the approximate cost to carry out the implementation actions. Level I corresponds to FY 1979-1980; Level II corresponds to FY 1980-1981; and Level III corresponds with FY 1981-1982.

The same procedure has been established to Areas Meriting, Special Attention (AMSA's). Staff has recommended seven AMSA's and each is present in Tables VIII-13 — VIII-19.

The tables for both the recommendations and AMSA's set forth the Municipality's future work program for the next three years. As comments are reviewed at the public hearings as well as in writing, priorities, recommendations, and AMSA's may change, be added to, or revised, thus requiring a rescheduling of activities and costs. Tables 1A and 1B summarize approximate costs for implementing the Anchorage program by level of priority.

The Planning Department has already initiated other actions and programs which incorporate the requirements and various elements of the Alaska Coastal Management Program. These programs include: 1) the Eagle River Comprehensive Land Use Plan, 2) the Turnagain Arm Comprehensive Land Use Plan, 3) the Municipality is currently conducting and preparing to implement 208 Water Quality Management Plan, and 4) the Municipal Planning Department is preparing an Air Quality Management Plan. These programs, in conjunction with the recommendations and AMSA's nominations are, in the Planning Department's view, adequate and sufficient to meet and carry out the requirements of the Alaska Coastal Management Act.

The Municipality has also undertaken a "Geotechnical Hazard Assessment Study" which has resulted in a series of hazard maps for each of the planning units in the Municipality. These maps and the report will be used to prepare a "hazards ordinance."

On-going studies which will contribute to the data base for the coastal management plan include the Southcentral Alaska Remote Sensing Demonstration Project. Products of this project will be used and incorporated into the coastal atlas as it becomes available. In addition to providing baseline information, remote sensing techniques will be used to monitor water quality and urban/rural change.

Copies of any of the above referenced documents are available at the Planning Department, Pouch 6-650, Anchorge, Alaska, 99502.

Organization

The Municipality has in place the organizational structure necessary to carry out the requirements of the coastal management plan. The Planning Department, Physical Planning Division will act as the lead Municipal agency to implement coastal management. Present staff levels are adequate to initially begin implementation; however, this will be evaluated in terms of future needs and requirements. Coordination with other Municipal departments will ensure successful implementation. As various phases of the plan are implemented those Municipal departments that are needed for input will be used. Present plans call for assistance from OMB, Public Works, Parks and Recreation, Sewer and Water Utility and other divisions of the Planning Department.

Budgetary needs for FY80 have been identified in the grant application. If the funding level is approved the Municipality will be well on its way toward successful implementation of its coastal management plan. No organizational changes are anticipated or required at this time.

COMPLIANCE WITH GUIDELINES AND STANDARDS

Requirement	Compliance
6 AAC 80.040, Coastal Development	Recommendation (2); AMSA #6
6 AAC 80.050, Geophysical Hazards	Hazardous Lands Resource Unit; Recommendation (7)
6 AAC 80.060, Recreation	Recreation Area Resource Unit; Recommendation (6); AMSA's #1, #2, #3, #4, #5, #7
6 AAC 80.070, Energy Facilities	AMSA #6
6 AAC 80.080, Transportation	Recommendation (9).
6 AAC 80.090, Fish Processing	AMSA #6.
6 AAC 80.100, Timber Harvest	Not applicable.
6 AAC 80.110, Mining	Recommendation (12).
6 AAC 80.120, Subsistence	Not applicable.
6 AAC 80.130, Habitats	Recommendation (5), (8); AMSA's #2, #3, #4, #5, #7.
6 AAC 80.140, Air, Land, Water Quality	Self-executing.
6 AAC 80.150, Historic Resources	Historic Areas Resource Unit.
6 AAC 80.160, AMSA's	Chapter VII.
6 AAC 85.020, Needs, Objectives, Goals	Chapter I.
6 AAC 85.030, Organization	Page 187.
6 AAC 85.040, Boundaries	Chapter VI.
6 AAC 85.050, Resource Inventory	Chapter IV.
6 AAC 85.060, Resource Analysis	Chapter IV.
6 AAC 85.070, Subject Uses	Chapter VIII.
6 AAC 85.080, Proper and Improper	Chapter VIII.
6 AAC 85.090, Policies	Chapter V.
6 AAC 85.100, Implementation	Chapter VIII.
6 AAC 85.110, Public Participation	Appendix.

RECOMMENDATIONS Table VIII-1	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Anchorage Coastal Management Program, including text and maps, should be incorporated by reference into the Municipal Comprehensive Development Plan. This will give the program formal status and enable it to serve as a guide to future actions of the Municipality.	Planning Department Assembly Approval Legal Dept. codification		Upon approval of: (1) Anchorage Assembly (2) Coastal Policy Council (3) Legislature	Staff time and travel to (1) Coastal Policy Council Meetings (2) Legislature (3) Anchorage Legal Dept. Charge 1A Staff time for Policy Council Approval-2 weeks in Anchorage 1,600.00 2A Staff appearance in Juneau for program discussion and explanation. 3 weeks in Juneau staff time 1,950.00 travel 600.00 per diem 1,050.00 3A Legal Dept. charge back 40 hours @ 70.00 per hour = $2,800.00 Total estimated cost: $8,000.00

RECOMMENDATIONS Table VIII-2	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should undertake the continuing review of federal agency actions affecting the coastal zone for consistency with the Anchorage Coastal Management Program, including issuance of the following federal permits and the following actions: (a) NPDES permits(EPA); (b) dredged and fill material permits (Corps of Engineers) (c) work or structures permits (Corps of Engineers); and (d) federal compliance with Municipal land use classification. (Note: See Appendix B, Memorandum of understanding between the Municipality of Anchorage and the Division of Policy Development.)	Planning Department		Upon approval of Coastal Management Program by the Municipality and State of Alaska	Approximately ¼ man year. Total estimated cost: $10,140.00

RECOMMENDATIONS Table VIII-3	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should undertake the continuing review of State Agency actions affecting the coastal zone for consistency with the Anchorage Coastal Management Program, including issuance of the following state permits and actions: (a) Wastewater disposal permits (DEC); (c) Water classification and reclassification (DEC); (d) Tidelands leasing, permitting, and disposal (DNR); (e) Classification of State lands (DNR); (f) oil and gas and mineral leasing (DNR).	Planning Dept. in conjunction with other Municipal Departments.		Upon approval of Coastal Management Program by the Municipality and the State of Alaska	Approximately ¼ man year. Total estimated cost: $10,140.00 (Cost included in recommendation #2)

RECOMMENDATIONS Table VIII-4	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should designate the areas meriting special attention and adopt appropriate management schemes (as contained in Chapter VII).	Anchorage Municipal Assembly Action		Assembly approval of Anchorage Coastal Management Program	None

RECOMMENDATIONS Table VIII-5	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipal zoning map and zoning regulations should be amended to designate a port district in which priority is given to water-dependent and water-related uses.	Anchorage Municipal Assembly Action		Assembly approval of both the Anchorage Coastal Management Program and the 208 Water Quality Management Plan.	None

RECOMMENDATIONS Table VIII-6	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should adopt the recommendations of the "208" Water Quality Management Program concerning non-point water pollution sources.	Planning Dept. Municipal Assembly Action		On-going Planning Dept. effort	Funded by other State sources

RECOMMENDATIONS Table VIII-7	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The adopted Municipal parks plan and trails plan should be supplemented by incorporating coastal access and scenic area provisions in accordance with coastal management program.	Planning Department Dept. of Cultural & Recreational Services		FY80 consistent with 306 implementation program and funding	6 man months total Staff time and overhead $20,280 Graphics 4,000 Mapping 4,000 Publication costs 4,000 Total Cost $32,280

RECOMMENDATIONS Table VIII-8	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should undertake the development of an ordinance managing development in high seismic risk areas.	Option #1 Planning Dept. Staff	Option #2 Consultant - utilizing the Anchorage Geotechnical Hazard Assessment Study	Upon approval of the Anchorage Coastal Management Plan by the Assembly	Option #1 Staff time and overhead 4 man months $13,520 Legal Review 2,800 $16,320 Option #2 Approx. $10,000 Legal Review 2,800 $12,800

RECOMMENDATIONS Table VIII-9	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
The Municipality should undertake the development of an ordinance managing development in important wetlands.	Option #1 Planning Dept.	Option #2 Consultant	Upon adoption by the Assembly.	Option #1 Staff time & Overhead 4 man-months: $13,520 Legal Dept. Review 2,800 $16,320 Option #2 Consultant-approximately 2 man-months $5,000 Legal Dept. Review 2,800 $7,800

Table VIII-10

RECOMMENDATIONS	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
All Municipal Planning activities concerning the Coastal Zone should be consistent with the Anchorage Coastal Management Program, including: (a) Transportation Planning; (b) Parks, Trails, and Recreation Planning; (c) Planning for the disposition of land selected under the Municipal entitlement act; (d) Economic and developmental planning; and (e) Public Facilities siting studies.	Municipality		On-going	None

RECOMMENDATIONS Table VIII-12	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
Amend special exception standards for natural resource extraction, AMC, 21.50.070, (A) to add a submission requirement that sand or gravel extraction in the coastal zone complies with 6 AAC 80.110; (B) to add a general requirement that sand and gravel extraction in the coastal zone comply with 6 AAC 80.110.	Planning Department Municipal Assembly Planning & Zoning Commission		Upon approval of the Anchorage Coastal Management Plan by the Assembly's Policy Council	

RECOMMENDATIONS Table VIII-11	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY (LEVEL OF PRIORITY)	APPROXIMATE COST TO CONDUCT EACH RECOMMENDATION
	IN-HOUSE (MUNICIPALITY)	CONTRACT EFFORT		
Preparation of a Coastal Management Resource Atlas 3 Volume Atlas 1st Volume Anchorage Bowl 15 map sheets 2nd Volume Eagle River Atlas 15 map sheets 3rd Volume Turnagain Arm Atlas 15 map sheets	Planning Department Administrative Services		1st year 306 activity upon approval of the Anchorage Coastal Management Program	Each volume 775.00 per map including A. Color separation B. Plates C. Printing 1,000 copies 15 plates per volume= $11,625 Graphics/Type setting 4,000 Narrative text printing 4,000 $19,625 Total cost for three volumes $58,875 One volume to be prepared per year. Staff time and overhead 4 months $13,520 per year Total $72,395.00

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Seward Highway Scenic Corridor	Option #1 Municipality	Option #2 Contractor	Level 1 Priority Prepare design standards for scenic pullouts along the Seward Highway as part of a scenic corridor management plan.	Option #1 3 man-months staff time including overhead $10,140,00 Option #2 Consultant Planning/Architect Firm 2 man-month effort @ $65.00 per hour $20,800.00

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Old Girdwood Townsite	Planning Department in cooperation with Alaska Dept. of Fish and Game		Level 2 Priority Prepare memorandum of aggreement between the Municipality and the State Dept. of Fish and Game to have the State manage the site and the Municipality in cooperation with the State prepare a management/use plan for the site.	Approximately 6 man months of staff time Labor & overhead $20,280 Graphics 2,000 Mapping 2,000 Printing 2,000 $26,280

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Bird Creek Regional Park	Planning Dept. in cooperation with other Municipal departments		Level 3 activity Revise and update a Bird Creek Regional Park Plan. Give special attention to a multi-purpose park, identify important scientific and educational sites.	Approximately 6 man-months of staff time. Labor/overhead $20,280 Graphics 3,000 Mapping 2,000 Printing 2,500 $27,780

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Fish Creek Restoration	Planning Dept-Option #1	Consultant-Option #2	Level 1 Activity (1) Prepare Fire Creek Restoration Plan and cost proposal 1A. Implement Restoration Plan	Option #1 Approximately 2 man months 6,760 Labor & Overhead 3,000 Printing, graphics, mapping 9,760 Option #2 Solicite Proposals from local firms to prepare (1) Fire Creek Restoration Plan and Cost Proposal

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Pt. Campbell- Pt. Woronzof Coastal Wetlands	Planning Dept. in conjunction with the State Dept. of Fish and Game		Level 3 Activity Prepare memorandum of understanding between the Municipality and the State Dept. of Fish and Game to include this area as part of Potter Marsh Game Refuge leaving ownership in Municipal hands The Planning Dept. in conjunction with Fish and Game will prepare a management/use plan.	Approximately 6 man months of staff time Labor & overhead $20,280 Graphics 2,000 Mapping 2,000 Printing 2,000 $26,280

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Port of Anchorage Urban Waterfront Zone	Planning Dept. (rezoning)	Consultant	Level 1 Activity (1) Develop a Master Port Development/ Urban Waterfront Plan. (2) Rezone the area to a Port District	Estimate Approximate Cost to be $150,000.00

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Eagle River (drainage) Special Study Zone	Option #1 Planning Dept. in cooperation with other Municipal depts. and Eklutna Inc.	Option #2 Consultant	Level 2 Activity To prepare a study outlining alternative management options Eagle River has been identified as a potential source of potable water, however, the property is in private ownership and contains other resource values (recreational opportunities, habitats and scenic resources are also present) What is the best use of the river and what are the implications of such actions. This study should be undertaken in cooperation with Eklutna and prior to any zoning actions in the immediate area.	Option #1 6 man months plus overhead $20,280 mapping 2,500 graphics 2,500 publications 2,500 $27,780 Option #2 Consultant Approximately $35,000 3 month study

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RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Pt. Campbell Dunes	Planning Department		Level I Develop site management and access plan and interpretive brochure	Estimated Cost $4,745.00

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Pt. Woronzof Bluffs Fossil Beds	Planning Dept.		Level II Develop access and site management plan Develop interpretive facility and brochure	Estimated Cost of site management plan and brochure and interpretive sign $7,500.00

RECOMMENDED AREAS MERITING SPECIAL ATTENTION	REQUIRED ACTIONS NECESSARY FOR IMPLEMENTATION		PHASING OF ACTIVITY LEVEL AND PRIORITY	ESTIMATED COST TO CONDUCT/PREPARE MANAGEMENT PLANS FOR EACH AMSA
	IN-HOUSE (MUNICIPALITY)	CONTRACT		
Potter Marsh Andesitic Dike Geologicic Site	Planning Dept.		Level II Develop site management plan, interpretive sign and brochure	Estimated Cost Brochure, management plan and interpretive sign $7,500.00

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APPENDIX A

INVENTORY OF MAJOR EXISTING FEDERAL, STATE, AND LOCAL LAND AND WATER USE CONTROLS RELEVANT TO THE MUNICIPALITY OF ANCHORAGE COASTAL ZONE

TABLE OF CONTENTS

FEDERAL CONTROLS

STATE CONTROLS

LOCAL CONTROLS

I. Federal Controls

A. NPDES 33 USC 1342, 1344;
40 CFR Subchapter D.

Under the National Pollution Discharge Elimination System (NPDES), the Environmental Protection Agency issues permits for the discharge of pollutants into navigable water. National effluent standards, 40 CFR Subchapter N, must be met and the affected state must certify that its water quality standards will be complied with. Federal regulations require the state to give public notice and receive public comments before certification 40 CFR 124.32. The term "navigable waters" is defined, for the purpose of NPDES, as follows:

(1) All navigable wters of the United States;
(2) Tributaries of navigable waters of the United States;
(3) Interstate waters;
(4) Intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes;
(5) Intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce; and
(6) Intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. 40 CFR 125.1(p).

The term "pollutant," under NPDES, includes "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, celler dirt, and industrial, municipal, and agricultural waste discharged into water."
40 CFR 125.1(y).

B. Corps of Engineers permit for discharge of dredged or fill material. 33 USC 1344; 33 CFR 209.120.

Under the Federal Water Pollution Control Act of 1972, as amended, the Secretary of the Army issues permits for the discharge of dredged or fill material in navigable waters. Permits are issued based on the criteria contained in 33 CFR 209.120.

The term "navigable waters" is extensively defined for these purposes:

(i) The term, "navigable waters," as used herein for purposes of Section 404 of the Federal Water Pollution Control Act, **is administratively defined to mean waters of the United States including the territorial seas with respect to the disposal of dredged material and shall include the following waters:**

(a) Coastal waters that are navigable waters of the United States subject to the ebb and flow of the tide, shoreward to their mean high water mark (mean higher high water mark on the Pacific coast);

(b) All coastal wetlands, mudflats, swamps, and similar areas that are contiguous or adjacent to other navigable waters. "Coastal wetlands" includes marshes and shallows and means those areas periodically inundated by saline or brackish waters and that are normally characterized by the prevalence of salt or brackish water vegetation capable of growth and reproduction;

(c) Rivers, lakes, streams, and artificial water bodies that are navigable waters of the United States up to their headwaters and landward to their ordinary high water mark;

(d) All artificially created channels and canals used for recreational or other navigational purposes that are connected to other navigable waters, landward to their ordinary high water mark;

(e) All tributaries of navigable waters of the United States up to their headwaters and landward to their ordinary high water mark;

(f) Interstate waters landward to their ordinary high water mark and up to their headwaters;

(g) Intrastate lakes, rivers and streams landward to their ordinary high water mark and up to their headwaters that are utilized;
(1) By interstate travelers for water-related recreational purposes;
(2) For the removal of fish that are sold in interstate commerce;
(3) For industrial purposes by industries in interstate commerce; or
(4) In the production of agricultural commodities sold or transported in interstate commerce;

(h) Freshwater wetlands including marshes, shallows, swamps and similar areas that are contiguous or adjacent to other navigable waters and that support freshwater vegetation. "Freshwater wetlands" means those areas that are periodically inundated and that are normally characterized by the prevalence of vegetation that requires saturated soils conditions for growth and reproduction; and

(i) Those other waters which the District Engineer determines necessitate regulation for the protection of water quality as expressed in the guidelines (40 CFR 230). For example, in the case of intermittent rivers, streams, tributaries, and perched wetlands that are not contiguous or adjacent to **navigable waters identified in paragraphs (a) - (h), a decision on jurisdiction shall be made by the District Engineer.**

Applicants for "dredge and fill" permits must certify the proposed activity is in compliance with an approved state coastal zone management program. **The appropriate state agency (in Alaska, the Office of Coastal Management), must then concur in that certification. This provision is found at 33 CFR 209.120(g) (18):**

> Activities in coastal zones and marine sanctuaries. (i) Applications for Department of the Army authorizations for activities in the coastal zones of those States having a coastal zone management program approved by the

Secretary of Commerce will be evaluated with respect to compliance with that program. No permit will be issued until the applicant has certified that his proposed activity complies with the coastal zone management program and the appropriate State agency has concurred with the certification or has waived its right to do so (see paragraph (i)(2)(ii) of this section); however, a permit may be issued if the Secretary of Commerce, on his own initiative or upon appeal by the applicant, finds that the proposed activity is consistent with the objectives of the Coastal Zone Management Act of 1972 or is otherwise necessary in the interest of national security. (ii) If the proposed activity will be located in the coastal zone of a State, the District Engineer shall obtain from the applicant a certification that the activity conforms to the coastal zone management program of the State. Upon receipt of the certification, the District Engineer will forward a copy of the permit application and certification to the State agency responsible for implementing the coastal zone management program and request its concurrence or objection. The District Engineer can issue the public notice of the application jointly with the State agency if arrangements for such joint notices have been approved by the Division Engineer. A copy of the certification will also be sent, along with the public notice of the application to the Director, Office of Coastal Zone Management, NOAA, Department of Commerce, Rockville, Maryland 20852. If the State agency fails to concur or object to the certification within six months of receipt of the request, it will be presumed to waive its right to so act and the certification will be presumed to be valid. Before determining that a waiver has occurred, the District Engineer will check with the State agency to verify that it has failed to act. If the State agency objects to the proposed activity, the District Engineer will so advise the Director, Office of Coastal Zone Management, NOAA, and request advice within thirty days whether or not the Secretary of Commerce will review the objection. If the objection will not be reviewed, the permit will be denied. If, however, the Secretary of Commerce indicates he will review the objection, further action on the application will be held in abeyance pending notification of the results of the review. If the objection is sustained, the permit will be denied. If the objection is overruled by the Secretary's finding, however, the processing will be continued.

C. Corps of Engineers permit for work or structures. 33 USC 401 et. seq.; 33 CFR 209.120.

Under the River and Harbor Act of 1899, as amended, Department of the Army authorizations are required for all structures or work in navigable waters of the United State, with certain exceptions. 33 CFR 209.120(e).

"Navigable waters of the United States" does not have the same broad meaning as "navigable water" in the context of permits for the discharge of dredged or fill material. "Navigable waters of the United States" is defined in 33 CFR 209.260(c) generally to mean:

> "...those waters which are presently, or have been in the past, or may be in the future susceptible for use for purposes of interstate or foreign commerce."

"Work of structures" requiring authorization include dams, dikes, wharves, piers, excavation, and filling in.

The criteria for issuance of the permit and the procedures for state CZM certification contained in 33 CFR 209.120 apply to permits for work or structures in navigable waters of the United States as well as to permits for the discharge of dredged or fill material in navigable waters.

D. Executive Order 11988, Floodplain Management. E.O. 11980, May 24, 1977; 43 CFR 6030 (Feb. 10, 1978).

In recognition of an estimated $3 billion annual flood loss in 1976, the President issued Executive Order 11988 as part of a comprehensive environmental message. The overall objectives of the Order are:

> To avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The order does not prohibit development in floodplains but creates a clear Federal policy against such development in most cases.

The Executive Order contains general requirements for all Federal agencies to follow in conducting activities in floodplains, regardless of who owns the real property. The U.S. Water Resources Council is designated as the coordinating body for ensuring compliance with the Order. To this end, the Council has published Floodplain Management Guidelines at 43 CFR 6030 for use by Federal agencies and periodically reviews the actions of the agencies. Actual implementation of the policies and requirements of the Order are left to individual agency rule-making with Council review.

Virtually all Federal agency actions that take place within floodplains are subject to the Order, including (1) the management, acquisition, or disposal of Federal lands and facilities; (2) financing or assisting in construction and improvement; and (3) conducting activities and programs, including planning, regulating, and licensing.

The first requirement of the Order is that a Federal agency determine if an activity is located within a floodplain. The term "floodplain" is defined as follows:

> Lowland and relatively flat areas adjoining inland and coastal waters . . . including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

No distinction is made between Federally and non-Federally owned land. Agencies are required to use the "best-available" information in making this determination. Minimum standards are established by the Department of Housing and Urban Development's floodplain maps. However, where more detailed information is available it must be used. (In this context, the Anchorage Coastal Management Program coastal flood zone and river floodplain maps should be utilized.)

If the agency determines that the activity is located within a floodplain, it must give public notice at the earliest possible time of its intentions. The Guidelines specifically state that, where possible, notice should be given before irrevocable decisions to proceed have been made. Early public notice may be afforded by any number of methods, including workshops, hearings, newsletters, and advisory groups. However, the Executive Order leaves the exact mechanics of public notice to be determined by the affected agency, through its regulations and procedures. Methods which must be used, when otherwise appropriate, include both the Environmental Impact Statement (EIS) and the Office of Management and Budget Circular A-95. Besides early public notice, agencies must provide for "continuing communication" during the planning stages of an activity, especially during the impact assessment and alternative selection processes. When a final decision to proceed with an activity in a floodplain is made, a notice of findings and an explanation of why the decision was made must be made public. State agencies receiving Federal funds for a project (e.g., D.O.T.P.F.) may be required to satisfy notice requirements.

One important aspect of the Order is the requirement that agencies indicate, when requesting authorizations or appropriations from the Federal Office of Management and Budget, that the proposed activity is in accord with the Executive Order. Because one provision of the Order requires that the Federal agency action conform to applicable State and local floodplain standards, State and local governments, responding through the A-95 process, can challenge funding for Federal projects which do not comply with their own floodplain standards as well as other provisions of the Order. In Anchorage, the Floodplain Regulations, MAC 21.60, and relevant coastal management policies and maps should be measured against the proposed action.

Another important provision of the Order concerns developers and home buyers who finance activities through Federal sources. Federal agencies which guarantee, approve, regulate or insure any financial transaction related to an area located in a floodplain must provide notice to the private parties involved in the transaction that the property is located in a floodplain. The notice must explain the chances of being flooded, and requirements for flood insurance, and a statement that the transaction may be subject to floodplain regulation. Major Federal agencies subject to this notice provision include the Veterans Administration, the Federal Savings and Loan Insurance Corporation, the Federal Housing Administration, the Federal Home Loan Bank Board, the National Credit Union Administration, and the Federal Reserve System.

The U.S. Water Resources Council estimates that 74 Federal agencies are required to issue or revise regulations or procedures to comly with Executive Order 11988. Under the terms of the Order, these revisions or amendments were to have been issued by May, 1978. As of March, 1979, only nine agencies had published regulations or procedures in final form, 24 had published in a preliminary form, and 41 had "shown no evidence of developing implementing procedures." Water Policy Task Force Progress Report No. 3, May 1, 1979. The status of Federal agency compliance with the Order is set out below, with reference to the Federal Register when available. A more recent report should be forthcoming following a May 30, 1979, report of the agencies to the Task Force.

FLOODPLAIN MANAGEMENT TABLE

Department of Agriculture*	*Federal Register*, June 9, 1978 Proposed
Soil Conservation Service	*Federal Register*, June 2, 1978 Proposed
Rural Electrification Administration*	*Federal Register*, Aug. 29, 1978 Proposed
Economics, Statistics and Cooperative Service	
Farmers Home Administration*	*Federal Register*, Sept. 14, 1978 Proposed
Forest Service*	informal draft
Science and Education Administration	
Agricultural Stabilization and Conservation Service*	informal draft
Department of Commerce*	*Federal Register*, Sept. 28, 1978 Proposed
Economic Development Administration*	*Federal Register*, April 5, 1978 Final
National Oceanic and Atmospheric Administration*	
Department of Defense (Construction)*	*Federal Register*, March 6, 1978 Final
Air Force	Design Manual, Dec. 22, 1978 Final
Army	
Corps of Engineers*	*Federal Register*, May 24, 1978 Proposed
Navy	
Department of Energy*	*Federal Register*, March 7, 1979 Final
Federal Energy Regulatory Commission	
Department of Health, Education and Welfare*	
Education Division	
Public Health Service	
Department of Housing and Urban Development*	
Community Development Corp*	
Federal Disaster Assistance Administration*	informal draft
Federal Insurance Administration	
Community Planning and Development*	
Housing Production and Mortgage Credit	
Housing Management	
Department of the Interior*	*Federal Register*, June 9, 1978 Interim
Fish and Wildlife Service*	*Federal Register*, June 2, 1978 Draft
Heritage Conservation and Recreation Service*	*Federal Register*, Oct. 13, 1978 Draft
National Park Service*	*Federal Register*, Sept. 28, 1978 Proposed
Bureau of Land Management*	*Federal Register*, Sept. 28, 1978 Interim
Bureau of Reclamation*	*Federal Register*, Oct. 27, 1978 Draft
Bureau of Indian Affairs	
Office of Surface Mining	
Bureau of Mines	
Geological Survey	
Department of Justice	
Bureau of Prisons	
Land Enforcement Assistance Administration	
Department of Labor	

Department of State	
(Bureau of Oceans and International Environmental and Scientific Affairs*	informal draft
Department of Transportation*	*Federal Register*, April 26, 1979 Final
U.S. Coast Guard	
Federal Aviation Admin	
Federal Highway Admin*	*Federal Register*, Dec. 27, 1978 Proposed
Federal Railroad Admin	
Urban Mass Transit Admin	
Saint Lawrence Seaway Development Corporation	
Department of Treasury*	*Federal Register*, May 24, 1978 Final
Environmental Protection Agency*	*Federal Register*, Jan. 5, 1979 Final
Office of Solid Waste Management	
Office of Water Planning	
Office of Water Supply	
Independent Agencies	
Advisory Council on Historic Preservation	
Action	
Community Services Admin	
Farm Credit Administration	
Federal Communication Commission	
Federal Deposit Insurance Corporation	
Federal Home Loan Bank Board*	
Federal Reserve System	*Federal Register*, Aug. 8, 1978 Proposed
Federal Preparedness Agency*	*Federal Register*, May 24, 1978 Proposed
General Services Admin*	
International Boundary Water Commission*	*Federal Register*, Dec. 29, 1978 Final
National Aeronautics and Space Administration*	*Federal Register*, Jan. 4, 1979 Final
National Credit Union Administration*	
Nuclear Regulatory Commission*	*Federal Register*, Oct. 6, 1978 Proposed
Small Business Administration*	*Federal Register*, Oct. 28, 1978 Interim
Tennessee Valley Authority*	*Federal Register*, June 2, 1978 Draft
U.S. Postal Service*	PS Bulletin, August 14, 1978 Final
Veterans Administration*	*Federal Register*, Aug. 22, 1978 Final
Water Resources Council*	Informal Draft, Dec. 22, 1978

Notes: Executive Order 11988 applies to all proposed actions and Section 2(d) of the Order requires that each agency shall comply with the Order by issuing regulations or procedures. The agencies listed above appear to conduct activities affecting floodplains based on program descriptions in the Federal Government Organization Manual. Agencies dealing with services unlikely to affect floodplains (such as personnel management or mediation) have not been included. Procedures for the 13 cabinet level agencies may cover all of their subunits and obviate the need for separate subunit procedures.

*Status report for November 30, 1978 has been received.

E. Executive Order 11990, Protection of Wetlands. E.O. 11990, May 24, 1977, 42 F.R. 26961.

Executive Order 11990, Protection of Wetlands, was issued in conjunction with the President's comprehensive environmental message of 1977 and simultaneously with Executive Order 11988, Floodplain Management.

The Order mandates Federal agencies to take certain actions "in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands whenever there is a practicable alternative."

Specifically, "each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding, the head of the agency may take into account economic, environmental and other pertinent factors." Early public review of plans or proposals for new construction in wetlands must be allowed, either through the E.I.S. process or where no E.I.S. is required, through new procedures developed for this purpose. Existing agency procedures must be used to the extent possible. Each agency was required to implement public review procedures by October 1, 1977. However, no particular Federal agency is given coordinating authority over the implementation of this Order.

One important distinction from the Floodplain Management Order is that this Order does not apply to "the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property." Only Federally owned or controlled wetlands are therefore in issue.

State agencies receiving Federal funds may be responsible for meeting requirements of the Order.

When leasing, granting easements or rights-of-way on, or otherwise disposing of Federally owned wetlands, a Federal agency is required to reference in the conveyance those uses that are restricted under identified Federal, State and local wetlands regulations and attach appropriate restrictions to the use of the property.

The term "wetlands" is defined in the Order as "those areas that are inundated by surface water or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

F. Historic Preservation. 23 USC 138; 16 USC 431 et. seq.; E.O. 11593, May 13, 1971; 36 CFR Part 800.

Under the 1976 amendments to the Federal-Aid Highway Act of 1968, Pub. L. 90-495, the Secretary of Transportation is prohibited from approving any program or project which requires the use of land from a historic site (or park, recreation area, or wildlife or waterfowl refuge) of national, State, or local significance, as determined by the appropriate Federal, State or local official, unless he finds two things: (1) there are no feasible and prudent alternatives; and (2) all possible planning to minimize harm has been undertaken. 23 U.S.C. 138. A series of major Federal court decisions have interpreted and applied this provision; see especially *Citizens to Preserve Overton Park v. Volpe*, 91 S. Ct. 814, on remand 335 F. Supp. 873. In Anchorage, heritage resources identified by the Historic Landmarks Preservation Commission might qualify as sites of local significance. See *Patterns of the Past -- An Inventory of Anchorage's Heritage Resources*, Municipal Planning Department, 1979. However, absent some formal designation beyond mere inventory, there is a possibility that such sites would not qualify.

The Historic Sites Act, found at 16 USC 461 et. seq., declares it the policy of the United States to "assist State and local governments....to expand and accelerate their historic preservation programs and activities." This Act establishes the National Register of districts, sites, buildings, and culture, and provides for funds to States for surveys and plans for the preservation of such property. The term "historic preservation" is defined to include "the protection, rehabilitation, restoration, and reconstruction" of such property. Once a property is included in the list or determined by the Secretary to be eligible for listing, Federal agencies must formally consider the effect of their actions on such property. The Advisory Council on Historic Preservation, an independent agency in the Executive branch, reviews and comments on Federal agency actions affecting National Register property.

Executive Order 11593, May 13, 1971, entitled "Protection and Enhancement of the Cultural Environment," requires that Federal agencies, in consultation with the Advisory Council, establish procedures regarding the preservation and enhancement of non-Federally owned historic and cultural properties in the execution of their plans and programs.

Procedures for the achievement of their objective, promulgated by the Advisory Council, are found at 36 CFR Part 800.

G. Consistency with the Alaska Coastal Management Program. 16 USC 1456; 15 CFR 930.

Certain activities of federal agencies in the coastal zone, including the issuance of NPDES permits by the Environmental Protection Agency and the issuance of permits for the discharge of dredged or fill material and work or structures in navigable waters by the Army Corps of Engineers, must be "consistent" with approved state coastal management programs.

"Consistency" is a variable concept. In conducting or supporting activities directly affecting the coastal zone, federal agencies shall act "in a manner which is, to the maximum extent praticable, consistent with approved state management programs." 16 USC 1456(c) (1). Applicants for federal permits for activities affecting the coastal zone must certify "that the proposed activity complies with the state's approved program and that such activity will be conducted in a manner consistent with program." 16 USC 1456(c) (3) (A). However, "nothing in this chapter shall be construed to diminish ... Federal ... jurisdiction, responsibility, or rights ...; (or) ... as superseding, modifying, or repealing existing laws applicable to the various Federal agencies." 16 USC 1456(e).

The "approved state program" with which federal activities must be consistent will consist of two basic components: the standards of the Alaska Coastal Policy Council, 6 AAC 80, and approved district coastal management programs.

The procedures for determining federal consistency are outlined in the State of Alaska Coastal Management Program and Draft Environmental Impact Statement, pps. 149-161, State of Alaska Office of Coastal Management and U.S. Department of Commerce, Office of Coastal Zone Management, January, 1979. The proposed procedures for reviewing federal permits are based on the use of the Divison of Policy Development and Planning (DPDP), in the Office of the Governor, as a clearinghouse for distribution of notices and collection of comments. The proposed procedures are of great importance to affected local governments and are as follows:

(1) Applicant submits the license or permit application and consistency certification to the federal agency and to DPDP. The "consistency certification" certifies that proposed license or permit activity will be carried out in a manner consistent with the approved ACMP.

(2) DPDP insures timely public notice of the project or activity pursuant to 15 CFR 930.61. (This division will attempt to establish agreements with relevant federal agencies for the publication of joint public notices.) DPDP, at its discretion, may hold one or more public hearings on the proposed license or permit activity in accordance with 15 CFR 930.62 and AS 44.62, the Administrative Procedures Act.

(3) DPDP circulates the application and certification to affected state agencies and local governments and collects comments.

(4) The staff of DPDP reviews the comments, and recommends concurrence with or objection to the applicant's consistency certification to the director of the division. Any recommendation to object will include reasons and suggested changes which would allow the proposed project or activity to be conducted in a manner consistent with the ACMP.

(5) DPDP responds in writing to the federal agency and the applicant informing them of its findings. In accordance with 15 CFR 930.63(b) and (c), DPDP responds at the earliest practicable time. If no decision has been reached within three months, DPDP reports on progress and the reason for delay. DPDP will make a finding within six months of initial receipt of the federal license or permit application and consistency certification, or the state may be presumed to have concurred with the certification.

(6) In the event of a dispute, DPDP initiates negotiations between disagreeing state and federal agencies and, if necessary, the applicant. Mediation procedures will follow the process detailed in 15 CFR 930, Subpart G.

It should be noted that these procedures call for the staff of DPDP to concur or object to a consistency certification, not an affected local government.

II. State Controls

A. Water Quality Standards AS 46.03.080; 18 AAC 70.

The state of Alaska Water Quality Standards are found at 18 AAC 70. These standards are used by the State in certifying NPDES permits to the Environmental Protection Agency; the standards have been approved by EPA. 40 CFR 120.10.

Ship Creek is classified, under these standards, "B"--suitable for water supply and drinking with treatment. All other fresh waters and all ground waters are presumed to meet the highest water classification, "A", water supply and drinking without treatment, until reclassified. All marine and estuarine waters are classified "C"--bathing, swimming, and recreation. 18 AAC 75.050.

B. Wastewater Disposal. AS 46.03.100; 18 AAC 72.

The wastewater disposal regulations provide the State of Alaska with a means of implementing its water quality standards. The regulations provide:

> "No person may conduct an operation which results in the disposal of wastewater into or upon the waters of the state or surface of the land without obtaining a waste disposal permit from the department (Environmental Conservation) under AS 46.03.100. A permit will be granted upon a finding that the disposal will meet the requirements of this chapter and ch. 70 of this title." 18 AAC 72.010.

Before DEC may issue a permit, it must give public notice and allow for public comments; however, it may waive these requirements where NPDES procedures are followed. AS 46.03.110.

The term "wastewater" in this chapter means "sewage, waterborne industrial waste, laundry liquid effluent, shower or sink water, or other wastes which are waterborne or in a liquid state." 18 AAC 72.100(27).

C. Water Appropriation Permit. AS 46.15.010; 11 AAC 72.

"Wherever occurring in a natural state, the waters are reserved to the people for a common use and are subject to appropriation and beneficial use as provided in this chapter." AS 46.15.030.
A permit to appropriate water, issued by the Department of Natural Resources, is required prior to the diversion, impoundment, or withdrawal of unappropriated waters on state, federal, or private lands. Use of the water must be "beneficial," defined as "a use of water for the benfit of the appropriator, other persons or the public, that is reasonable and consistent with the public interest." AS 46.15.260(3)

In finding that a proposed appropriation is in the public interest, eight factors are considered:

(1) the benefit to the applicant resulting from the proposed appropriation;

(2) the effect of the economic activity resulting from the proposed appropriation;

(3) the effect on fish and game resources and on public recreational opportunities;

(4) the effect on public health;

(5) the effect of loss of alternate uses of water;

(6) harm to other persons resulting from the proposed appropriation;

(7) the intent and ability of the applicant to complete the appropriation; and

(8) the effect upon access to navigable or public waters.

Public notice of applications for permits to appropriate water must be given by publication in a newspaper of general circulation in the area of the proposal and by service upon other appropriators who may be affected. DNR may also serve notice on a political subdivison. Objections may be filed for 15 days after publication; hearings may be held at the discretion of DNR. AS 46.15.070.

Several major exceptions to the requirements of these regulations are contained in 11 AAC 72.200, including:

(1) the use of less than 1000 gallons of water per day for domestic purposes;

(2) the temporary use of water, during a single period not to exceed 120 days, for drilling, construction, and other activities that do not require a permanent or seasonally receiving water use; and

(3) the use of water in a remote location where the use will not impinge on other uses.

D. Game Refuges. AS 16.20; 5 AAC 81.270.

AS 16.20 establishes three types of special areas for the protection and preservation of natural habitat and game population: state game refuges; state game sanctuaries; and fish and game critical habitat areas. Within the Municipality of Anchorage, the Potter Point State Game Refuge has been designated, AS 16.20.030(b), and declared closed to hunting, with certain exceptions. 5 AAC 81.270, 280(h). The Department of Fish and Game has the responsibility for reviewing all uses, leases, or disposal of land in state game refuges for compatibility with the purpose of the designation. AS 16.20.060.

In addition, the Alaska Department of Fish and Game is cooperatively managing the Portage Flats Property Management area with the Bureau of Land Management for recreation and habitat, pursuant to a memorandum of understanding. These lands are under Federal (BLM) ownership.

E. Anadromous Fish Protection. AS 16.05.870; 5 AAC 95.010; AS 16.10.010.

Two provisions of AS 16 regulate uses in and around water used by anadromous fish.

5 AAC 95.010 incorporates by reference a list of waters important to anadromous fish. Persons planning to "use, divert, obstruct, pollute, or change the natural flow or bed of a specified river, lake, or stream, or to use wheeled, tracked, or excavating equipment or log dragging equipment in the bed of a specified river, lake, or stream" must obtain the prior written approval of the Department of Fish and Game. AS 16.05.870 - .880.

Anadromous fish waters designated in the Anchorage area include Ship Creek, Eagle River, Bird Creek, Fire Creek, Campbell Creek, Little Campbell Creek, Indian Creek, Glacier Creek, Twenty-Mile River, Glacier River, Portage Creek and Placer River, as well as other drainage supporting anadromous fish in the Municipality.

AS 16.10.010 states that it is unlawful for a person to "render the waters inaccessible or uninhabitable for salmon for that purpose without first applying for and obtaining a permit or license from the Department of Environmental Conservation."

"The waters" referred to are "waters of the state, either fresh or salt, utilized by salmon in the propogation of the species." AS 16.10.010(1).

No provisions for public notice or comment are provided in connection with either of these controls.

F. Tidelands Lease. AS 38.05.070; 11 AAC 58; 11 AAC 62.

"When not limited by general law, the non-exclusive use of unoccupied and unappropriated state owned tide and submerged lands shall not be denied any citizen of the United States or resident of Alaska." 11 AAC 62.180.

Tidelands "means those lands covered by tidal waters between the elevation of mean high and mean low tides"; submerged lands "means those lands covered by tidal waters between the line of mean low water and seaward to a distance of three geographical miles...." 11 AAC 62.840.

State-owned tide and submerged lands (and "shorelands" covered by navigable nontidal waters) may be leased by the Department of Natural Resources "for a period up to 55 years, if it appears to be in the best interest of the state..." AS 38.05.070. This lease does not cover the extraction of natural resources.

Applicants for leases must submit development plans to DNR. 11 AAC 62.700. If the land is within six miles of the boundaries of a municipality, DNR must notify the municipality at least 30 days prior to acting on a lease application. The municipality may consult with DNR and comment on the proposed actions; public hearings may be held. AS 38.05.305.

Lands to be leased must be classified based on a land use plan. 11 AAC 58.35. Where land use plans "would materially affect organized communities..., the consultation of local offical or unofficial planning groups shall be sought when practicable..." 11 AAC 52.210.

The use of leased land must comply with "the rules and regulations" of an organized zoning authority. 11 AAC 58.700. Before land containing or adjoining navigable or public waterways or bodies of water is leased, the state must "provide for the specific easements or right-of-way, or both, reasonably necessary to insure free access to and along the body of water, unless the department finds that regulating or limiting access is necessary for other beneficial uses or public purposes." AS 38.05.127; 11 AAC 70.

G. Tidelands Permit/Special Land Use Permit. AS 38.05.330; 11 AAC 62; 11 AAC 58.210.

The Department of Natural Resources issues permits for the use of state-owned tide and submerged lands for a period up to five years. Uses for which permits may be issued include "...log storage, oil well drilling sites and production facilities for the purposes of recovering minerals from adjacent lands under valid lease, and other similar uses or improvements, or for the limited personal use of timber or materials." AS 38.05.330. In granting permits, the Department "shall give preference to that use of the land which will be of greatest economic benefit to the state and the development of its resources. However, first preference shall be granted to the upland owner for the use of a tract of tideland, or tideland and contiguous submerged land, which is seaward of the upland property of the upland owner and which is needed by the upland owner for any of the purposes for which the use may be granted." *Id.*

Notice of application for a tideland permit must be furnished to a municipality pursuant to AS 38.05.305 (see F. Tidelands Lease, supra) and abutting upland property owners. No permits may deny upland owners "reasonable access" to tidewaters. 11AAC 62.720.

Permits for the use of state-owned land which is neither tidal nor submerged are called "special land use permits." They are authorized under AS 38.05.330 and 11 AAC 58.210: "The director, without prior approval of the commission, may isue special land use permits on such terms and conditions as he deems in the best interest of Alaska."

If the land at issue contains or adjoins "public or navigable" waterways or bodies of water the State must, in most instances, reserve easements or rights-of-way for public access. AS 38.05.127; 11 AAC 70.

H. Mining and Oil and Gas Regulation.

Although not of direct application to the Municipality of Anchorage at this time, the following state controls over mining and oil and gas related uses and activities should be noted:

> The Department of Natural Resources issues leases, on a competitive basis, for oil and gas purposes on state-owned tide and submerged lands.

I. Land Classification. AS 38.05.300; 11 AAC 52.

AS 38.05.300 provides:

> The director (of the Division of Lands) shall make a preliminary classification for surface use of all lands in areas where he considers it necessary and proper for future development. The classification, together with a land use plan, shall be transmitted to the commissioner (of the Department of Natural Resources) for this approval, modification, or rejection. This section does not...preclude multiple purpose use of land and water area whenever different uses are compatible.

Notice of classification or reclassification must be furnished to a municipality if the land is within six miles of its boundaries. AS 38.05.305. DNR is required to consult with affected communities in the preparation of land use plans. 11 AAC 52.210.

The classifications of state lands are currently undergoing revision. 11 AAC 52.

J. Historic Preservation. AS 41.35; AS 45.98; 11 AAC 16; 11 AAC 17.

The Alaska Historic Preservation Act of 1971, AS 41.35, declares that "it is the policy of the state to preserve and protect the historic, prehistoric and archaeological resources of Alaska from loss, desecration and destruction so that the scientific, historic and cultural heritage embodied in these resources may pass undiminished to future generations." The Act grants the primary administrative authority in this area to the Department of Natural Resources (DNR) and establishes a Historic Sites Advisory Committee in the Department.

On State owned land, including tidelands, title to historic, prehistoric and archaelogical resources is

in the State. However, local groups may keep or obtain artifacts from the State for study or display if the State finds that the artifacts will be properly cared for. The Governor is authorized to declare, by public order, State Monuments or Historic Sites and the Department of Natural Resources is authorized to acquire and, in certain instances condemn historic, prehistoric and archaeological resources.

On privately owned land, the Governor may establish State Monuments or Historic Sites with the written consent of the owner. Privately owned sites or monuments are eligible to receive State support for maintenance, restoration or rehabilitation provided they are kept accessible to the public. Once privately owned land is declared a Monument or Historic Site, restrictions on construction, alterations or improvements attach.

DNR maintains records concerning the location of important historic, prehistoric and archaeological sites. These records are furnished to State agencies. Before any public construction by the State or agency of the State is undertaken, DNR may survey an area to determine if it contains such sites. If it does, and if the Department determines that such sites will be adversely affected by the construction, DNR may require that the construction activities be held in abeyance until it has conducted an investigation, recording and salvage operation. In addition, if, during the course of public construction, sites or remains are discovered by the persons conducting the activity, DNR must be notified and allowed an opportunity to survey the area. It may, following the survey, halt the project to the purpose of investigation, recording and salvage.

DNR's regulations concerning historic preservation are found in two chapters of 11 AAC: 11 AAC 16, Historic, Prehistoric and Archaeological Resources, and 11 AAC 17, Outdoor Recreational, Open Space, and Historic Properties Development Fund Grant Program. Article 1 of 11 AAC 16 contains procedures used by the Division of Parks to administer historic, prehistoric and archaeological resources; Article 2 concerns procedures to be followed for nomination and administration of National Register properties. The Outdoor Recreational, Open, and Historic Properties Development Grant Fund may be used to pay up to one-half of the non-Federal share of projects which are initiated by municipalities to acquire, preserve or protect historic sites, buildings, and monuments.

The Alaska Historic Preservation Act established a Historic Sites Advisory Committee within the Department of Natural Resources. This committee is composed of the Director of the Alaska State Museum, the State liaison officer appointed under the National Historic Preservation Act of 1966, one professional from the fields of history, architecture and archaeology, and two persons representing indigent ethnic groups. The Committee develops criteria for the evaluation of State Monuments and Historic Sites, cooperates with DNR in administering a statewide historic sites survey, approves properties for nomination to the National Register, and advises the Governor concerning State policy. In addition, the Commission consults with local historical district commissions established under AS 29.48.108 -- 29.48.110.

K. State Agency Compliance With The Alaska Coastal Management Program. AS 46.40.100(a); AS 46.40.200.

Two key provisions of the Alaska Coastal Management Act concern the issue of state agency compliance with the Alaska Coastal Management Program.

AS 46.40.100(a) provides:

> Municipalities and state agencies shall administer land and water use regulations or controls in conformity with district coastal management programs approved by the council and legislature and in effect.

AS 46.40.200 provides:

> Upon the adoption of the Alaska coastal management program, state departments, boards and commissions shall review their statutory authority, administrative regulations, and applicable procedures pertaining to land and water uses within the coastal area for the purpose of determining whether there are any deficiencies or inconsistencies which prohibit compliance with the program adopted. State agencies shall, within six months of the effective date of the Alaska coastal management program, take whatever action is necessary to facilitate full compliance with and implementation of the program, including preparation and submission of recommendations to the council for additional or amended legislation.

III. Local Controls

A. General Powers. AS 29; AMC 2.10.

The Municipality of Anchorage is a unified home rule municipality organized under AS 29.68.240 - 440. It has all powers:

(1) not prohibited it by law or charter; and

(2) granted to organized boroughs and first class cities. AS 29.68.440.

Some important powers of the Municipality, for purposes of coastal management, include:

(1) planning, platting, and zoning (AS 29.33.070 - 245);

(2) entering into agreements, including those for cooperative or joint administration of any functions or powers with a local government, with the state, or with the United States (AS 29.48.010(4));

(3) the power to enforce ordinances and to prescribe penalties for violations (AS 20.48.010(8));

(4) the power to acquire, manage, control, use and dispose of real and personal property. (AS 20.48.010(9))

(5) the provision of facilities and services, including sewer and sewage treatment facilities, marine facilities, water resource and flood control facilities, water, recreation facilities, and historic preservation (AS 20.48.030);

(6) the power to regulate, including regulation of building and housing codes, water pollution control, and "other powers and functions affecting the general health, safety, well-being and welfare of its inhabitants" (AS 29.48.035);

(7) extraterritorial jurisdiction over water supply and watershed protection (AS 29.48.037); and

(8) the acquistion or disposition of real property (AS 29.48.260).

Municipal powers are to be construed liberally, AS 29.48.310, and "unless otherwise limited by law, boroughs and cities may exercise all powers and functions necessarily implied in or incident to the object or purpose of all powers and functions conferred in this title." AS 29.48.320.

AMC 2.10 concerns the legislative powers of the Municipality , AMC 2.10.010, and sets out those actions requiring an ordinance, including "adopt or amend zoning or similar land use control measures" and amendment of the Anchorage Municipal Code. AMC 2.10.020.

B. Comprehensive Plan. AS 29.33.085; 21 AMC .05.

AS 29.33.085 states: "the assembly (of a borough) shall adopt a comprehensive plan based on the recommendations of the planning commission." The comprehensive plan is to be "a compilation of policy statements, goals, standards and maps for guiding the physical, social and economic development, both private and public, of the borough." AS 29.33.085. Zoning must be "in accordance with the comprehensive plan," AS 29.33.090(a), and the plan must be reviewed every two years.

The Municipality of Anchorage Comprehensive Plan is found at AMC 21.05. It is declared to be "a public declaration of the policies which will guide the actions of the legislative body," AMC 21.05.025, the provisions of which "are not intended to be self-executing unless so specified by their terms. All provisions which are not self-executing are deemed to be directive and advisory. Directive and advisory provisions are intended to establish a continuity of governmental policy and are to be used as guidelines for future action of the municipal government. The municipality shall, when appropriate, consider advisory provisions and shall take positive action toward meeting directives within a reasonable time." AMC 21.05.085.

A land use classification map illustrates areas best suited for four types of land use categories: residential; commercial; industrial; and public lands and institutions. While "the functional categories neither affect current zoning regulations nor place additional regulations on specific property...future land use decisions such as rezoning, subdivision approval and special exception must conform to the indicated functional categories in the absence of exceptional circumstances." AMC 21.05.095(B). Ultimately, however, "these Comprehensive Plan maps must be precisely defined and implemented through land use regulation ordinances." AMC 21.05.095(D)).

In addition to land use classification, extensive goals and objectives for such uses and activities as transportation, land use, enviornmental, recreation, and economic are stated. AMC 21.05.030 - .080.

The Municipality is currently amending the existing Comprehensive Plan, developed for the Anchorage bowl area, by developing Comprehensive Plans for the Eagle River-Eklutna and Turnagain areas of the Municipality, which incorporate various elements of the coastal management plan. The AMATS and Air Quality Management Plans will also be used as implementation tools for the Anchorage CZM Plan.

C. Zoning. AS 29.33.090; AMC 21.35; 21.40; 21.45; 21.50; 21.55.

The Municipal Comprehensive Plan, in addressing future land use regulations, states that "conventional zoning and subdivision regulations, though subject to modification, will continue to serve as the legal base for land use regulation. These mechanisms are established legal tools, defined by extensive application and litigation." AMC 21.05.100.

The standard for all local zoning is contained in AS 29.33.090. This section, in its entirety, provides as follows:

> Sec. 29.33.090. Zoning. (a) In accordance with the comprehensive plan, the assembly shall regulate and restrict the use of land and

improvements by districts. Regulations shall be uniform for each class or kind of building, structure, land or water area within each district, but the regulations may differ among districts and exceptions may be made in order to provide for the preservation, maintenance and protection of historic sites, buildings and monuments.

(b) zoning regulations adopted under (a) of this section may include, but are not limited to, restriction of

(1) land use;
(2) building location and use;
(3) the height and size of structures;
(4) the number of stories in buildings;
(5) the percentage of lot which may be covered;
(6) the size of open spaces;
(7) population density and distribution;

(c) Zoning regulations are designed to

(1) provide for orderly development;
(2) lessen street congestion;
(3) promote fire safety and public order;
(4) protect the public health and general welfare;
(5) prevent overcrowding;
(6) stimulate systematic development of transportation, water, sewer, school, park and other public facilities

The Municipality of Anchorage has divided itself into 27 use districts. For each district, permitted uses and structures, prohibited uses and structures, and special exceptions are provided. AMC 21.40. These districts are illustrated on the Municipal zoning map. Procedures for obtaining variances and special exceptions are contained in AMC 21.15; another section, AMC 21.50, contains the standards for special exeptions.

The Comprehensive Plan also states, in discussing future land use regulation, that certain refinements to conventional zoning will be considered "to provide greater flexibility." Refinements include:

(1) performance standards
(2) contract zoning;
(3) incentive zoning;
(4) development rights transfer;
(5) timed development zoning;
(6) special district zoning;
(7) impact zoning;
(8) land linkages; and
(9) leasehold development.

D. Floodplain Regulations. AMC 21.60

The Municipal floodplain regulations establish a special type of zoning district not listed in AMC 21.40 — the flood hazard district. This district overlays existing zoning districts; the provisions of the floodplain regulations "are intended to be in addition to all other land use regulations" and to

(1) restrict or prohibit uses and structures which are dangerous to health, safety or property in times of flood or which cause increased flood heights or velocities;

(2) require that uses vulnerable to floods...be provided with flood protection or flood-proofing at the time of initial construction: and

(3) protect individuals from unknowingly purchasing lands which are unsuited for intended purposes because of flood hazard. AMC 21.60.010.

The regulations prohibit the issuance of a building permit within the flood hazard district unless certain requirements are met, AMC 21.60.050(c), and require certain uses, structures, or activities within subdistricts of the flood hazard district to obtain a special flood hazard permit. AMC 21.60.070. Conditions, including flood proofing measures, may be attached to the issuance of the permit. Other enumerated uses are prohibited from the "floodway" and "floodway fringe" subdistricts. AMC 21.060.

E. Subdivision Regulations. AMC 21.75; 21.80; 21.85; 21.87.

The Land Subdivision Regulations of the Municipality of Anchorage "govern all subdivisions or resubdivisions which result in the partitioning, dividing, combining or altering of any lot, parcel or tract or land legally created and filed for record for the purpose, whether immediate or future, of sale, or lease for more than five years." AMC 21.75.020(A).

AMC 21.80 contains the minimum or maximum standards for subdivision. (Other standards are found in the Official Streets and Highways Plan and in the Standard Specifications of the Department of Public Works.)

Standards contained in AMC 21.80 which are of particular importance in coastal management include the following:

21.80.120 Lots-Environmental Design
Lots shall be designed to minimize the effect of development in the environment.

21.80.125 Screening and reserve strips
Planted strips may be required to be placed next to incompatible features such as highways, railroads, commercial or industrial uses to screen the view from or provide a noise or glare buffer for residential proportion.

21.80.130 Public lands--Provisions for
Provisions shall be made for the allocation of lands for schools, parks, playgrounds, trails and open space areas where an officially adopted...plan exists...

21.80.140 Public lands--Special features
Special, natural or man-made features of historical significance in a proposed subdivision which enhance or have unique value to the

community may be set aside in a reserve tract for acquisition or voluntarily dedicated to the public.

21.80.150 Slope standards--Requirements
The subdivider shall demonstrate to the satisfaction of the platting authority that the design is specifically adapted to development and that the design takes into account other development in the vicinity and features unique to the specific parcel of land proposed for subdivision.

21.80.180 Unsuitable sites
In cases where existing lots, tracts or parcels are of a shape, size, or condition which renders subdivision of the property in conflict with the purposes of these standards as set forth in Section 21.75.015, the platting authority may reject a subdivision application in its entirety.

Enforcement of these standards is through platting authority approval of subdivision plats. Proposed subdividers must file detailed applications with the authority, including contour, water location and quality, vegetative cover, and soil information. Public notice and hearing are required prior to action by the platting authority. AMC 21.15.100-125. Abbreviated plat procedures where the subdivision "is of a simple nature" are found at AMC 21.15.125. Public notice of application for abbreviated plat approval is required, but public hearing is not required. AMC 21.15.100.

F. Watershed regulation. AMC 21.40.230; AMC 15.50; AMC 25.40; AMC 15.65.020(D).

The "W" or Watershed district is established as a zoning district "to preserve and protect the potable water reserves available to Anchorage in the Chugach Range east of the metropolitan area." AMC 21.40.230. The section lists permitted uses, prohibited uses, and special exceptions, but requires both permitted uses and special exceptions to comply with the provisions of AMC 15.50, Watershed District Regulations. This section lists certain acts which are prohibited in the Watershed district except upon a permit from the Department of Health and Environmental Protection (DHEP). The conditions for issuance of a permit include:

(1) that the act "not contaminate, interrupt, interfere with or injure the watershed district and water supply;"

(2) that the act is in compliance with all applicable DHEP and State Department of Environmental Conservation regulations; and

(3) that the use is permitted under the applicable zoning section. AMC 15.50.030.

AMC 25.40, Watershed Lands, states that "no person shall enter upon or do any act or commit any omission adversely affecting municipal watershed lands, as designated in this chapter, except as may be authorized under Title 15 of this code." AMC 25.40.010. The lands designated by this section are "all of these lands depicted on a Watershed Area map designated as exhibit "A" and entitled "Watershed Area of the City of Anchorage" or "Watershed District" and attached to and incorporated in Ordinance No. 39-65." AMC 15 defines Watershed Lands as "those lands and waters described in Section 25.40.010 of this code," (the zoning section), and makes no reference to AMC 25.40.

AMC 15.65.020 regulates sewage disposal systems in watershed areas.

G. Tidelands Regulations. AMC 25.50

Except as otherwise provided herein, the municipality, by virtue of AS 38.05.300 et seq., and Tidelands Patent No. 10 issued December 22, 1961, recorded in Vol. 234, pages 62 and 63 of Anchorage Recording Precinct, and any other patents hereafter issued to it, reserves and has succeeded to all right, title and interest of the State of Alaska in tide and submerged lands lying seaward of the city, including lands, improvements, reclaimed lands or natural resources in all lands permanently or periodically covered by tidal waters up to the line of mean high tide and seaward to the Director's Line as defined in said Tidelands Patent No. 10 or on any succeeding patents, provided, however, that those lands and rights therein lawfully vested in others by Acts of congress prior to January 3, 1959, shall not be infringed upon, and provided further, that title to natural resources therein shall be reserved to the State of Alaska until such time as the state may convey such title to the municipality. AMC 25.50.310.

"City" is defined as "the area formerly comprised by the City of Anchorage, Alaska." AMC 25.50.116.

The Municipal Assembly, upon recommendation from the Municipal Port Commission, may sell, grant, lease, or otherwise dispose of municipal tidelands and contiguous submerged lands "as well as any material therefrom." AMC 25.50.322. Public notice is required: protests may be filed within 30 days of notice. **Id.**

Leases or permits for the use of municipal owned tidelands may be granted "when in the best interests of the municipality," AMC 25.50.510, and the Assembly "shall give such preference to the use of the land as will be of greatest economic benefit to the municipality." AMC 21.50.530.

Although the Planning Commission and Port Commission must approve or disapprove an application for tidelands permit, the Assembly "may, with or without a public hearing, grant or reject the requested permit." AMC 25.5.540. Permits may be issued for up to five years, renewable at the action of the Assembly. AMC 25.50.550.

Leases and sale or disposal of Municipally owned tidelands are conducted in accordance with the Municipal Charter, AMC 7.20 (real property leasing), and AMC 7.18 (sale or disposal of real property).

Restrictions on the use of Municipally owned tidelands include protection of waters important to anadromous fish, under AS 16.05.870, hering spawning convenants, AS 16.60.160, the reservation of mineral rights to the Municipality or the State, AMC 25.50.316, federal lands, AMC 25.50.320, and permit preferences for upland owners, AMC 25.50.530.

In addition, waste or injury to these lands is unlawful. AMC 25.50.330.

H. Wastewater Disposal AMC 15.65

This chapter establishes standards for the disposal of wastewater in the Municipality. "Wastewater" is defined as "sewage, waterborne industrial waste, laundry liquid effluent, shower or sink water or other wastes that are waterborne." AMC 15.65.010. Several types of permits are established, administered by the Department of Health and Environmental Protection, including:

(1) wastewater disposal design permits, AMC 15.65.120;

(2) manufacturer's and excavator's permits, AMC 15.65.130; and

(3) wastewater pumping, transportation, and disposal permits; AMC 15.65.140.

Regulated methods of wastewater disposal include connection to sanitary sewer systems, water-carried sewage disposal systems, septic tanks, subsurface disposal fields, seepage pits, cesspools, holding tanks and earth privies.

I. Selection of State Lands. AS 29.18.201, 213.

The Municipal Land Entitlement Act of 1978, ch. 180 SLA 1978, provides for the transfer of land from state to municipal ownership. The Municipality of Anchorage is entitled to 44,893 acres. AS 29.18.201.

Lands which may be transferred must be "vacant, unappropriated, and unreserved;" this means "land patented or tentatively approved to the state from the United States under § 6 (a) or (b) of the Alaska Statehood Act," AS 29.18.213, which

(A) has not been set aside by statute for one or more particular uses or purposes;

(B) has not been approved for patent to a municipality; or

(C) is unclassified, or, if classified under AS 38.05.30, is classified for agriculture, grazing, commercial, industrial, private recreational, residential, utility, or open-to-entry purposes. AS 29.18.213(12).

After July 1, 1978, classification of large tracts within a municipality by the state requires notification of the municipality and allows the municipality to object. AS 29.18.205(d).

Municipal selections are developed through a "joint consideration" process between the municipality and the state. This process is to identify state and municipal interests in the land. State interests include those of greater than local concern, including environmental, resource, transportation, and recreation concerns. Municipal interest include residential, industrial, and commercial concerns and those matters which are the responsibility of local government. In reviewing a municipal selection, "land considered appropriate for municipal selection is land that is suitable and appropriate for an identifiable present or future municipal use or for disposal to private use by the municipality by sale or other means." AS 29.18.205(g).

The state retains mineral and oil and gas rights under the land conveyed.

"When the interests of the state may be protected through conveyance of title that is less than a fee title, the municipality, at its option, may accept the title . . ." AS 29.18.205(9). This provision makes possible the attachment of conditions on use to the conveyance. The State also will retain easements along public waterways.

M. Land Trust Fund. AMC 25.70.

The land trust fund, administered by the Anchorage Land Trust Fund Council, manages land acquired by the Municipality after June, 1975 (including land to be selected from the State) and much of the land acquired by the Municipality before June, 1975. The Council acts as trustee for the Municipality with respect to these lands.

It is the general policy of the Municipality not to sell these lands. Sale may be accomplished only if the Council determines that it would be "consistent with the public interest," and three-fourths of the Council approves. AMC 25.70.040.

The preferred method of managing these lands is by leasing them. "Land trust fund lands shall be leased for purposes consistent with compatible interim uses or planned ultimate uses of such lands, and in conformance with existing zoning." Leases, upon certain conditions, may be made to Municipal departments, other units of government, nonprofit corporations, and private parties. AMC 25.70.070.

AMC 25.70.080 concerns the use of surface or subsurface resources on these lands. Extraction or removal of resources requires a use permit granted by the Assembly upon Land Trust Fund Council recommendation. The use must be consistent with the ultimate planned use of the land, or determined by the Assembly upon recommendation by the Planning Commission. Provisions for detailed plan submittal and bonding are also provided.

"Use of land trust fund lands for interim purposes which do not result in extraction or removal of resources or other irrevocable commitments of land shall generally be compatible with and shall not delay the ultimate planned use or development of

such lands." Permits for such uses may be granted on such terms "...which sufficiently protects the public interest and the public values of such lands." AMC 25.70.080(D).

The Assembly must approve any sale, lease, permit, exchange, or management agreement concerning Municipal trust fund lands. AMC 25.70.110.

N. Historic Preservation. AMC 4.60.030; AS 29.48.108 — 29.48.110; AS 45.98.

The Anchorage Historical Landmarks Preservation Commission was established in 1975 to, inter alia, recommend to the Assembly buildings and areas to be designated historical landmarks, "provided there is ownership approval," and to advise the Mayor, the Assembly, the Planning and Zoning Commission, and other Municipal agencies about historic preservation. Recently, the Commission published a Municipality-wide survey of architectural-history sites (Planning Department, January, 1979).

One matter currently being explored by the Commission is the establishment of a historic district under State law. AS 29.48.108 — 29.48.110 allows local governments to form historical district commissions which, in turn, may establish "historical districts" within the boundaries of the Municipality. Historical districts are "relatively compact areas of historical significance in which two or more structures important in State or national history and in close proximity or historical association are located." Establishment of a historical district makes a Municipality, or a person or business eligible for a low-interest (6½ percent) loan from the Department of Commerce and Economic Development's historical district revolving loan fund for the purpose of restoration, improvement, rehabilitation or maintenance of historic structures within the district. AS 45.98. Historical districts are established in consultation with the State Historic Sites Advisory Committee.

APPENDIX B

MEMORANDUM OF UNDERSTANDING

between the

MUNICIPALITY OF ANCHORAGE

and the

DIVISION OF POLICY DEVELOPMENT AND PLANNING

implementing the

OMB CIRCULAR A-95 (as revised)

and

SECTION 307 of the

COASTAL ZONE MANAGEMENT ACT of 1972 (as amended)

The Municipality of Anchorage (MOA) and the Division of Policy Development and Planning (DPDP), Office of the Governor, State of Alaska wish to establish procedures for coordinating plans and programs at federal, state, areawide, and local levels.

The authority to enter into this Memorandum of Understanding is based upon the Office of Management and Budget (OMB) Circular A-95, Parts I and II (as revised on January 2, 1976) and upon Section 307 of the Coastal Zone Management Act of 1972, as amended (P.L. 92-583 and P.L. 94-370) and the regulations published pursuant to 307 of the Federal Act (15 CFR 930).

The purpose of this agreement is to coordinate the state and Municipality of Anchorage review of proposed federal activities which may affect the plans and programs of both the state and the MOA. The notification and review process described in the OMB Circular A-95 facilitate required federal agency consultation with the Governor, state and areawide clearinghouses, and local elected officials to assure that proposed federal programs, project and uses of federal lands and resources (subject to coverage in paragraph 3, OMB Circular A-95) are, to the maximum extent possible, consistent with local, areawide and state plans. This Memorandum of Understanding outlines the procedures to be used to coordinate the state and MOA review process under the OMB Circular A-95. The process will also provide for the coordinated review of the proposed federal activities subject to the consistency requirements of the Coastal Zone Management Act of 1972, as amended, and which may also affect the MOA.

It is Mutually Assumed That:

(1) Both DPDP and the MOA are interested in the appropriate and timely exchange of information, evaluation, and review of proposed federal activities subject to coverage under the OMB Circular A-95 which may affect the plans, programs, and policies of state, areawide, and local agencies; and,

(2) Both DPDP and the MOA are interested in avoiding duplication of effort in their respective clearinghouse review processes; and,

(3) Both DPDP and the MOA are interested in implementing the Alaska Coastal Management Act (AS 46.40), which provides for the coordinated and rational use of coastal resources.

THE FOLLOWING PROCEDURES WILL BE EMPLOYED:

I. In Relation to OMB Circular A-95:

A. THE MUNICIPALITY OF ANCHORAGE AGREES TO DO THE FOLLOWING:

(1) Assume primary responsibility for coordinating the state, arewide, and local government review of proposed federal activities, subject to OMB Circular A-95 coverage, when such activities are proposed to occur exclusively within the MOA boundaries. The MOA will distribute those plans, policies, and environmental assessments provided by federal agencies on such activities to the appropriate state, areawide, and local governments. The subsequent review will focus on the relationship of the proposals to state, areawide, and local plans and programs and upon potential environmental effects. the MOA, in addition, will provide a copy of proposals which may impact state plans, programs, and policies along with their corresponding distribution lists to DPDP. DPDP will retain the option of circulating such proposals to reviewers not included on MOA's distribution lists.

(2) Request DPDP to comment on federal proposals distributed by the MOA according to the following time frames:

(a) at the earliest practicable time not to exceed 25 days after date on cover letter for a *notification of intent* by an applicant applying for federal assistance.

(b) at the earliest practicable time not to exceed 25 days after date on cover letter for a *completed application that has been preceded by a notification of intent* from an applicant applying for federal assistance. If a completed application is submitted to the MOA during the first 25 days after a notification of intent has been submitted, DPDP will have 25 days plus the number of days remaining in the initial 25-day notification period to complete its review.

(c) at the earliest practicable time not to exceed 50 days after date on cover letter for a *completed application that has not been preceded by a notification of intent* from an applicant applying for federal assistance.

(d) at the earliest practicable time not to exceed 50 days after date on cover letter for a notification of intent accompanying a comprehensive description of a *proposed direct federal activity or development project.*

(3) Serve to facilitate communication, and, if necessary, attempt resolution of differences between the federal agency (and applicant, if appropriate) contemplating a proposed federal activity to occur exclusively within MOA boundaries and the state, areawide, and local agencies that have plans, policies, or projects which may be affected by the proposed activity.

(4) Provide DPDP with the final MOA response to federal proposals when such response contains substantive DPDP comments.

(5) Provide DPDP with the federal agency response to the comments generated by the MOA review when such a review contains substantive DPDP comments.

(6) In the event that DPDP is the primary coordinator of the state, areawide, and local review of federal proposals and requests MOA review of such proposals, the MOA will provide DPDP with information on the consistency and relationship of proposed federal activities to areawide and local plans, policies, and programs, according to the time frames prescribed by DPDP.

(7) In the event that DPDP is the primary coordinator of the state, areawide, and local review of federal proposals and written MOA comments on such proposals will likely arrive after the review deadline, the MOA will trasmit substantive comments to DPDP verbally or request an extension.

(8) Should the MOA be unable to attend a meeting of mutual interest to both the MOA and DPDP as it relates to the review of federal proposals subject to coverage under the OMB Circular A-95, it may request DPDP to represent its concerns on a case-by-case basis.

B. THE DIVISION OF POLICY DEVELOPMENT AND PLANNING AGREES TO DO THE FOLLOWING:

(1) Assume primary responsibility for coordinating the state, areawide, and local government review of proposed federal activities, subject ot OMB Circular A-95 coverage, when such proposed activities may affect the MOA but do not occur exclusively within the boundaries of the MOA. DPDP will distribute those plans, policies, and environmental assessments provided by federal agencies on such activities to the appropriate state, areawide, and local governments. The subsequent review will focus on the relationship of the proposals to state, areawide, and local plans and programs and upon potential environmental effects. DPDP, in addition, will provide a copy of proposals which may affect the MOA along with their corresponding distribution lists to the MOA. The MOA will retain the option of circulating such proposals to reviewers not included on DPDP's distribution lists.

(2) Allow the MOA to comment on federal proposals distributed by DPDP according to the following time frames:

(a) at the earliest practicable time not to exceed 25 days after date on cover letter for a *notification of intent* by an applicant applying for federal assistance.

(b) at the earliest practicable time not to exceed 25 days after date on cover letter for a *completed application that has been preceeded by a notification of intent* from an applicant applying for federal assistance. If a completed application is submitted to the MOA during the first 25 days after a notification of intent has been submitted, DPDP will have 25 days plus the number of days remaining in the initial 25-day notification period to complete its review.

(c) at the earliest practicable time not to exceed 50 days after date on cover letter for a *completed application that has not been preceeded by a notification of intent* from an applicant applying for federal assistance.

(d) at the earliest practicable time not to exceed 50 days after date on cover letter for a notification of intent accompanying a comprehensive description of a *proposed direct federal activity or development project.*

(3) Serve to facilitate communication, and if necessary, attempt resolution of differences between the federal agency (and applicant, if appropriate) contemplating a proposed federal activity and the state, areawide, and local agencies that have plans, policies, or projects which may be affected by the proposed activity.

(4) Provide the MOA with the final DPDP response to federal proposals when such a response contains substantive MOA comments.

(5) Provide the MOA with the federal agency response to the comments generated by the DPDP review when such a review contains substantive MOA comments.

(6) In the event that the MOA is the primary coordinator of the state, areawide, and local review of federal proposals and requests DPDP review of such proposals, DPDP will provide the MOA with information on the consistency and relationship of proposed federal activities to state and areawide plans, policies, and programs, according to time frames prescribed by the MOA.

(7) In the event that the MOA is the primary coordinator of the state, areawide, and

local review of federal proposals and written DPDP comments on such proposals will likely arrive after the review deadline, DPDP will transmit substantive comments to the MOA verbally or request an extension.

(8) Should DPDP be unable to attend a meeting of mutual interest to both DPDP and the MOA as it relates to the review of federal proposals subject to coverage under the OMB Circular A-95, it may request the MOA to represent its concerns on a case-by-case basis.

II. In Relation to the Alaska Coastal Management Program:

A. THE MUNICIPALITY OF ANCHORAGE AGREES TO DO THE FOLLOWING:

(1) Upon receiving from DPDP a statement on the consistency of a proposed federal activity or action with the ACMP to be conducted in the MOA, the MOA will conduct and coordinate the areawide and local government review of the proposed federal activity or action. Such review will focus on the consistency of the proposed activity or action with the MOA's district coastal management plan contained in the ACMP and will be conducted within the time frames prescribed by DPDP. In addition if the MOA finds a proposed activity to be controversial during the course of the MOA's consistency review, the MOA may request DPDP to hold a public hearing in Anchorage.

(2) In the event that the MOA determines a federal proposal is inconsistent with the MOA's district coastal management plan, the MOA will respond to DPDP describing (1) how the proposed activity will be inconsistent with specific elements of the district coastal management program, and (2) alternative measures (if they exist) which, if adopted by the federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the district coastal management program.

B. THE DIVISION OF POLICY DEVELOPMENT AND PLANNING AGREES TO DO THE FOLLOWING:

(1) Provide the MOA with a copy of any federal proposals requiring a consistency finding with the ACMP (Alaska Coastal Management Program) and which occur in the Anchorage, Mat-Su, or Kenai Peninsula boroughs.

(2) Request the MOA to comment on federal proposals distributed by DPDP according to the following time frames:

(a) at the earliest possible time not to exceed 30 days after date on cover letter for *direct federal activities/development projects.*

(b) at the earliest possible time not to exceed 30 days after date on cover letter for *federal license and permit activities.*

(c) at the earliest possible time not to exceed 30 days after date on cover letter for *federal license and permit activities described in detail in Outer Continental Shelf (OCS) plans.*

(d) at the earliest possible time not to exceed 30 days after date on cover letter for review of federally-*assisted projects.*

Time may be shortened or lengthened by mutual agreement.

(3) Consider the MOA comments and recommendations on the relationship of proposed federal activities to the MOA coastal management district plan in DPDP's consistency finding.

(4) Upon realizing that DPDP will likely issue a consistency finding contrary to MOA's recommendation, DPDP will initiate discussions with the MOA in order to resolve any serious disagreements. If necessary, DPDP will request a time extension for review from the federal agency to facilitate such discussion with the MOA.

(5) Provide the MOA with the option of joining in the informal and formal mediation procedures between DPDP and a federal agency in the event that DPDP and a federal agency have serious disagreement concerning the consistency of a proposed federal activity with the ACMP, and the MOA supports DPDP's position.

It is Mutually Agreed That:

(1) Failure to provide comments on proposed federal activities within the appropriate time periods above implies tacit agreement with those proposed activities, unless a time extension is mutually agreed upon or additional information at a later date substantially changes the impact of the proposed activities.

(2) In the course of a joint review, if either DPDP or MOA is of the opinion that the comments generated by a joint review warrant objection or intervention by the lead party in the review and there is not agreement between DPDP and MOA as to the course of action that should be taken, the party requesting official action will have the option of operating as an independent clearinghouse and may pursue the course it deems appropriate.

(3) Time periods may be shortened or extended by mutual agreement.

(4) This agreement will be reviewed annually or as required to determine the adequacy of the review process.

(5) Nothing herein will be construed as obligating the MOA or DPDP to violate existing laws or regulations.

(6) The agreement will become effective on _____ as evidence by the signa tures below. This agreement will remain in effect until revised in writing or until 30 days after notice of termination.

THIS AGREEMENT WAS REVIEWED AND REAFFIRMED BY THE PARTIES SHOWN BELOW:

Division of Policy Development
and Planning
Frances A. Ulmer

Office of the Governor
Division of Policy Development
and Planning
State of Alaska

By: _____

Date: _____

Municipality of Anchorage

Municipality of Anchorage

By: _____

Date: _____

APPENDIX C
DOCUMENTATION

INTRODUCTION

The coastal resources of the Municipality of Anchorage have values and interrelationships that transcend Municipal boundaries, and are of regional, State and in some cases national significance. While the Alaska Coastal Management Act and the Guidelines and Standards promulgated under the Act require preparation and implementation of local coastal management programs by district organizations, the Act and the Guidelines and Standards are clear in their intent that both development and ensuing implementation will be accomplished utilizing and employing the expertise, authorities and responsibilities of the appropriate local, State and Federal governmental agencies.

Given this, the Municipality of Anchorage intends to act as the lead agency in implementation of the policies, recommended actions, AMSA's, and regulations of Anchorage Coastal Management Program. Coordination with State and Federal agencies having jurisdiction or authority with respect to particular coastal resources is inherent in the regulatory system of the district program, and review of applications for proposed developments, uses or activities that may cause direct and significant impact on these resources will be closely coordinated with the appropriate agency or agencies.

State and Federal agencies contemplating development, projects, uses or activities on land or waters within the Anchorage coastal area will similarly be expected to cooperate and coordinate closely with the Municipality so that consistency of goals, objectives, policies, ordinances and regulations of the Anchorage Coastal Management Plan can be assured.

The Municipality, as lead agency responsible for implementation, has authority to regulate land use under Alaska Statute AS 29.33.070 through 29.33.245. The coastal management program will be implemented utilizing the authorities under the above referenced statute.

The program coordination requirements contained in the Act serve only to reinforce the on-going coordination effort between the Municipality of Anchorage and the State. A Memorandum of Understanding (MOA) between the Municipality and the State of Alaska, Division of Policy Development and Planning, implementing the OMB Circular A-95 sets forth a clearing service be provided for coastal zone matters by collecting, processing and disseminating pertinent information relating thereto. This MOA provides the opportunity to coordinate and assist State and local government activities in the coastal zone. The draft of the MOA is contained in Appendix B.

The Planning Department Coastal Management staff has held the following meetings and workshops.

1. January 29, 1979, Planning and Zoning Commission public work session.
2. February 3, 1979, public workshop.
3. Department of Interior agencies through Mr. Paul Gates, Regional Environmental Officer.
4. February 14, 1979, Environmental Law Committee of the Alaska Bar Association.
5. Anchorage Board of Realtors
6. March 12, 1979, Planning and Zoning Commission public work session.
7. March 15, 1979, Planning and Zoning Commission public work session.
8. April 2, 1979, Planning and Zoning Commission public work session
9. April 3, 1979, Planning and Zoning Commission public work session.
10. April 23, 1979, Planning and Zoning Commission public work session.

During the development phase of both the Turnagain Arm Comprehensive Land Use Plan and the Eagle River Comprehensive Land Use Plan the various elements of the Anchorage coastal management program were explained at public meetings and incorporated into the land use plans. Copies of both plans are available at the Planning Department.

On September 28, 1978, a meeting was held with the Kenai Peninsula Borough and the Matanuska-Susitna Borough to discuss common coastal management issues with particular emphasis on management boundaries. Prior to public hearings with the Anchorage Assembly, additional meetings will be held with each borough to finalize discussions on management boundaries.

Samples of the above referenced public participation efforts are contained in the following pages.

Public Workshop on Anchorage
Coastal Management Program

February 3, 1979

Agenda

I. Welcome and Purpose of Meeting
   9:00 - 9:15

II. The Anchorage Coastal Zone - A Slide Presentation
   9:15 - 9:45

III. Elements of the Alaska Coastal Management Act
   9:45 - 10:15

IV. Development of the Anchorage District Plan
   10:15 - 11:30

   1. Steps taken to Meet the Requirements of the Act
   2. The Planning Process
   3. Review of Coastal Resource Maps
   4. Discussion of Identifying the Management Boundary
   5. Identifying Permitted Uses
   6. Areas Meriting Special Attention
   7. Discussion of Various Implemention Methods

V. Lunch Break
   11:30 - 12:45

VI. Answer and Question Session, Public Input
   12:45 - 2:00

MUNICIPALITY ADVERTISING TRANSMITTAL SHEET

Originator Tony Burns Originating Dept. Planning

Budget Account No. W15326 CZM
PO # 30002

Date Originated 1-8-79

Date Required for Publication Both papers 1-20-79 & 1-21-79 & 1-28-79

Subject Matter Public Workshop - Coastal Resource District Program

Proof of Publication Required ✓ Yes _____ No

Received _____ Date
_____ Time

Published _____ Date

Proof of Publication Provided on _____ Date

NOTICE OF OPPORTUNITY TO PARTICIPATE IN THE ANCHORAGE COASTAL RESOURCE DISTRICT PROGRAM

ON SATURDAY, FEBRUARY 3RD, FROM 9:00 A.M. TO 2:00 P.M. AT THE ANCHORAGE HISTORICAL FINE ARTS MUSEUM, 121 W. 7TH AVE., THE COASTAL MANAGEMENT PLANNING STAFF OF THE MUNICIPAL PLANNING DEPARTMENT WILL CONDUCT A PUBLIC WORKSHOP TO: (1) PRESENT THE STATUS OF THE ANCHORAGE COASTAL RESOURCE DISTRICT PROGRAM; (2) SOLICIT PUBLIC COMMENT AND INPUT ON ALL ELEMENTS OF THE PROGRAM; AND (3) PROVIDE AN OPPORTUNITY FOR ALL INTERESTED PARTIES TO PARTICIPATE IN THE PROGRAM AND ITS DEVELOPMENT. ADVANCE COPIES OF THE DRAFT DOCUMENT WILL BE AVAILABLE STARTING JANUARY 29TH AT THE CITY HALL ANNEX, 630 W. 5TH AVENUE, AT THE INFORMATION COUNTER.

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502
(907) 274-2525

GEORGE M. SULLIVAN,
MAYOR

PLANNING DEPARTMENT

September 6. 1978

Mayor Don Gilman
Kenai Peninsula Borough
Box 850
Soldotna, Alaska 99669

Re: Request for Meeting on CZM

Dear Mayor Gilman:

On behalf of Dr. Lidia Selkregg, I would like to request a meeting with you and Mayor Larson, and members of your planning staffs concerning the subject of coastal zone management. The purpose of the meeting will basically be twofold: to acquaint you and your staffs with Anchorage's district CZM program development, and to identify major topics of concern to be dealt with by the Alaska Coastal Policy Council.

As you are aware, the Anchorage Municipal Planning Department has been engaged in developing a district coastal management program for over a year now. We have developed a complete inventory, established a basic framework and methodology, and are now addressing specific components of the program that will deal with management and implementation. Such components are management boundaries, criteria for designating areas meriting special attention, and municipal management network for implementation of the district program. We would like to give Mayor Larson, yourself, and your staffs a presentation of our program development to date. It may benefit you with ideas for your program development, and it may benefit us to get a response from fellow local governments who may see problems or opportunities that are not apparent to us.

The Alaska Coastal Policy Council will again be meeting regularly to address a number of significant issues that will need to be resolved, not least of which will be the effectiveness of regional planning and state agency compliance with local district programs. Other issues to be addressed this fall will include:

* Uses of State Concern
* Availability of state agency plans, studies, and assistance
* 305 approval and its implications for district funding for 1979
* Revisions to the Guidelines and Standards

It may be useful for the local governments of Cook Inlet to obtain a common understanding of problems that we, as individual districts, may have with the issues; and concerns that as a group, we can prepare to deal with at meetings of the Coastal Policy Council.

I would like to suggest Thursday, September 28 as a meeting date. That would be one week before the next scheduled meeting of the Alaska Coastal Policy Council, which is to be held on October 5-6. For optimum convenience to all parties, I would also suggest that we meet in Anchorage, although if that is inconvenient to Mayor Larson's or your schedule, we would be more than willing to meet in Soldotna or Palmer.

Please let me know if you feel such a meeting will be appropriate at this time, and also, if the suggested date and location are okay. I will then finalize the necessary arrangements and inform you of them.

I look forward to hearing from you.

Best regards,

Tom Nelson

Tom Nelson

TN:mw

cc: Mayor Ron Larson, Matanuska-Susitna Borough

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502
(907) 274-2525

GEORGE M. SULLIVAN,
MAYOR

PLANNING DEPARTMENT

September 6, 1978

Mayor Ron Larson
Matanuska-Susitna Borough
P.O. Box B
Palmer, Alaska 99645

Re: Request for Meeting on CZM

Dear Mayor Larson:

On behalf of Dr. Lidia Selkregg, I would like to request a meeting with you and Mayor Gilman, and members of your planning staffs concerning the subject of coastal zone management. The purpose of the meeting will basically be twofold: to acquaint you and your staffs with Anchorage's district CZM program development, and to identify major topics of concern to be dealt with by the Alaska Coastal Policy Council.

As you are aware, the Anchorage Municipal Planning Department has been engaged in developing a district coastal management program for over a year now. We have developed a complete inventory, established a basic framework and methodology, and are now addressing specific components of the program that will deal with management and implementation. Such components are management boundaries, criteria for designating areas meriting special attention, and municipal management network for implementation of the district program. We would like to give Mayor Gilman, yourself, and your staffs a presentation of our program development to date. It may benefit you with ideas for your program development, and it may benefit us to get a response from fellow local governments who may see problems or opportunities that are not apparent to us.

The Alaska Coastal Policy Council will again be meeting regularly to address a number of significant issues that will need to be resolved, not least of which will be the effectiveness of regional planning and state agency compliance with local district programs. Other issues to be addressed this fall will include:

* Uses of State Concern
* Availability of state agency plans, studies, and assistance
* 305 approval and its implications for district funding for 1979
* Revisions to the Guidelines and Standards

It may be useful for the local governments of Cook Inlet to obtain a common understanding of problems that we, as individual districts, may have with the issues; and concerns that as a group, we can prepare to deal with at meetings of the Coastal Policy Council.

I would like to suggest Thursday, September 28 as a meeting date. That would be one week before the next scheduled meeting of the Alaska Coastal Policy Council, which is to be held on October 5-6. For optimum convenience to all parties, I would also suggest that we meet in Anchorage, although if that is inconvenient to Mayor Gilman's or your schedule, we would be more than willing to meet in Soldotna or Palmer.

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Best regards,

Tom Nelson

Tom Nelson

TN:mw

cc: Mayor Don Gilman, Kenai Peninsula Borough

MUNICIPALITY OF ANCHORAGE
PLANNING AND ZONING COMMISSION

A G E N D A

Municipality of Anchorage
Administration Building
3500 East Tudor Road
7:30 P.M.

March 12, 1979

1. Roll Call

2. Unfinished Business - Eagle River Comprehensive Plan: Public Hearing Continued.

   A. Eagle River - Eklutna Comprehensive Plan. The Comprehensive Plan Area covers that portion of the Municipality of Anchorage north of Fort Richardson Military Reservation from the Eagle River Valley (including the South Fork) to the Knik River.

   B. Amendments to R-O zone.

3. New Business

   A. School District Warehouse Site Selection: Discussion and Action

   B. Remote Sensing Plan-of-Study

   C. Coastal Zone Management: Review

   D. State Land Selection Process

4. Site Plan Review - None

5. Reports

   A. Planning Director
   B. Chairman
   C. Committee

6. Minutes

7. Persons to be heard

8. Commissioner's Comments

MUNICIPALITY OF ANCHORAGE
PLANNING AND ZONING COMMISSION

A G E N D A

Municipality of Anchorage
Administration Building
3500 East Tudor Road

March 29, 1979

7:30 P.M.

1. Roll Call

2. Unfinished Business - None

3. New Business

   Water Quality Management Plan. The Water Quality Management Plan contains recommendations for the prevention and control of non-point source water pollutions, and is designed to fulfill the 1982 Federal "fishable, swimmable" goal for major water bodies.

4. Other

   A. Space Facilities Study - Discussion

   B. Coastal Zone Management - Discussion

5. Appearance Request - None

6. Site Plan Review - None

7. Reports

   a. Planning Director
   b. Chairman
   c. Committee

8. Minutes

9. Persons to be heard

10. Commissioner's Comments

MUNICIPALITY OF ANCHORAGE
PLANNING AND ZONING COMMISSION

ADDENDUM TO AGENDA

Municipality of Anchorage
Administration Building
3500 East Tudor Road

April 2, 1979

7:30 P.M.

1. Roll Call

2. Old Business - None

3. New Business

P79-13 Request by Edmund Ryan and Others for a change of zone classification for a portion of Section 31-T15N-R1W; containing approximately 30 acres situated along the west side of Fire Lake, from R-2 (Two-Family Residential District) to R-6 (Suburban Residential District - Large Lot). (Chugiak Community Council)

appr 2-5-79

P78-74-A1 Request by H. S. Scurlock & Associates representing Barry, Christine and Bev Shennum and Gordon Jenkins for a change of zone classification for a portion of Section 8-T12N-R3W; containing approximately 4 acres; situated southwest of Dimond Blvd. and Erin Street (between Hartzell Road and the Seward Highway) from R-2 (Two-Family Residential District) to I-1 (Light-Industrial District). (Abbott Loop Community Council)

Postpone

P79-21 Request by Donald E. Hoff for a change of zone classification for a portion of Section 20-T12N-R3W; containing approximately 11 acres; situated at the southeast corner of O'Malley Road and the Seward Highway frontage road from R-6 (Suburban Residential District-Large Lot) to B-3 (General and Strip Commercial Business District). (Huffman-O'Malley Community Council)

Denied 2-6-79

P79-26 Request by Group Three Design representing Ravensbruch Development for Concept Approval of a Conditional Use to allow a Planned Unit Development in the R-2A (Two-Family Residential District) and R-3 (Multiple-Family Residential District) zone in a portion of Section 14-T13N-R3W; containing approximately 37 acres; situated along the west side of Turpin Street between E. 2nd and E. 6th Avenue. (Northeast Community Council)

Affrd 2-7-79

4. Other

   A. Appearance Request:

      Z-429 Plaza 36 Mobile Home Park - Landscaping Extension Requested
      No show

   B. Coastal Zone Management - Work Session

   C. Site Plan Review - None

   D. Reports

      1. Planning Director
      2. Chairman
      3. Committee

5. Minutes 2-5-79, 2-7-79 approved as [illegible]

6. Persons to be heard

7. Commissioner's Comments