KENAI RIVER

Comprehensive Management Plan

Adopted December 1997
(Published November 1998)

Alaska Department of Natural Resources
Division of Land
Division of Parks & Outdoor Recreation

in conjunction with

Alaska Department of Fish & Game,
Habitat & Restoration Division

Kenai Peninsula Borough

ADOPTION ORDER

KENAI RIVER COMPREHENSIVE MANAGEMENT PLAN

(REVISED, DECEMBER 1997)

The Commissioner of the Department of Natural Resources finds that the Kenai River Comprehensive Management Plan dated December 10, 1997, satisfies the requirements of AS 41.21.500-514 and does hereby adopt it as the policy of the Department of Natural Resources for state land management, permitting, and other departmental programs and activities within the area of the Plan Boundary. This Management Plan supersedes the previous Management Plan dated October, 1986.

John Shively
Commissioner
Department of Natural Resources

12/15/97
Date

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Page Reference to Significant Issues & Topics

Note to user: The following is a list of the main issues and topics that the public associates with the Kenai River Comprehensive Management Plan. It does not identify all of the topics and issues, and the reader is referred to the main text for detailed descriptions.

List of Acronyms

Agency

Local:

KPB	Kenai Peninsula Borough ('Borough' in Plan)

State:

DNR	Alaska Department of Natural Resources
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
ADOT/PF	Alaska Department of Transportation & Public Facilities
DOPOR	Division of Parks and Outdoor Recreation (DNR)

Federal:

US COE	US Army Corps of Engineers
US EPA	US Environmental Protection Agency
USGS	US Geological Survey
USFS	US Forest Service
US FWS	US Fish & Wildlife Service

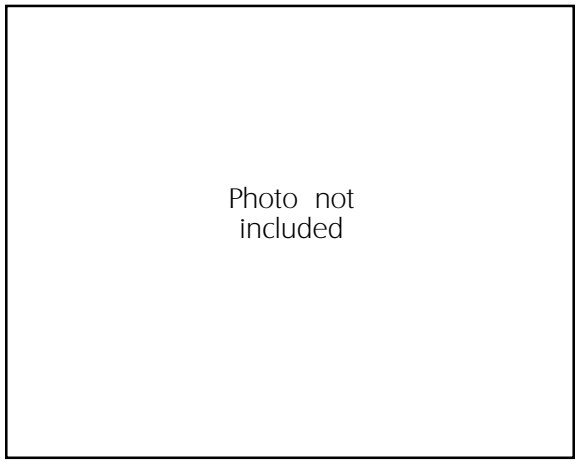
Other:

KRSMA	Kenai River Special Management Area
KRAB	Kenai River Advisor Board ('Advisory Board' in Plan)
KRCMP	Kenai River Comprehensive Management Plan
KAP	Kenai Area Plan

CHAPTER 1

INTRODUCTION AND SCOPE OF PLAN

1.0 Kenai River Comprehensive Management Plan



The Kenai River Comprehensive Management Plan (Management Plan) is the basis for management of state land and waters within the Kenai River Special Management Area (KRSMA) and other state land within the planning boundaries of the Management Plan. The initial Management Plan was developed by the Department of Natural Resources (DNR) in 1986, and has formed the basis for the management actions of DNR since then.

This revision of the Management Plan continues many of the same planning objectives. This revision also functions as a coordinated, multi-agency planning document. It is intended that local, state, and federal agencies will use this plan as a basis for management of land under their jurisdiction. The plan also helps coordinate and integrate uses and resource management of federal lands within the Kenai River drainage including the Kenai National Wildlife Refuge and the Chugach National Forest, consistent with the management directions and policies of those agencies.

The Management Plan does not directly affect private lands, although habitat and environmental recommendations are included that relate to private land. These recommendations are advisory in nature. The cities of Kenai and Soldotna and the Kenai Peninsula Borough will determine if recommendations are appropriate to their jurisdiction, and may enact code and ordinance changes to implement the recommendations.

The overall scope of the Management Plan is purposely broad, to deal with the wide array of factors that may affect the Kenai River and its tributaries. Recommendations are included for the entirety of the watershed and individual reaches of the river. While the geographic scope of this planning process includes the entire watershed, the focus of recommendations is the 'Plan Boundary' area, which includes the Kenai River, its tributaries, and those areas and habitats either having a hydrological connection to the Kenai River or those significant in terms of wildlife or the fishery.

1.1 Reasons for Plan Revision

Since the plan was adopted in 1986, much has changed on the Kenai River. In addition to growing numbers of people using the river and the associated impacts, there is better information about the impacts of this increased use on the river's fish habitat. Recreational use conflicts are increasing as more people use the river's recreational opportunities. There have been significant achievements in protecting the river, and many of the recommendations in the 1986 plan have been implemented. There is a heightened sense of public stewardship of the Kenai. The need to respond to increasing pressures on the habitat and resources or the Kenai River, coupled with the Board of Fish's requirement to prevent additional losses of riverine habitat, caused the Knowles Administration to initiate this revision of the Kenai River Comprehensive Management Plan in 1995.

A detailed description of the major issues that the 1998 Management Plan revision address is contained in the section on 'Planning Issues' of this plan and in the Technical Report. Significant issues which required the revision of the Management Plan are:

Fish and Wildlife New research shows that near-shore riparian habitat with overhanging vegetation, irregular banks, and slow water velocities is very important rearing habitat for juvenile salmon. Increased recreational use and land development have greatly increased the amount of bank trampling and vegetation loss, resulting in a significant loss of this rearing habitat. The Alaska Department of Fish and Game (ADF&G) has recently confirmed that certain river reaches are critical brown bear migration corridors.

Recreation Increasing pressure from bank anglers during the sockeye salmon season has caused increased damage to riparian habitat from bank trampling, increased trespass incidence on private property, and demand for more access. The quality of recreational experience has also declined due to crowding and increased competition for space.

Boat Use Boat use has increased significantly, resulting in competition for fishing holes, conflicts in fishing methods, and between guided and non-guided groups, and fishing and non-fishing groups. There is concern that heavier boats cause larger wakes that impact riparian habitat. A recent study by USGS (1997) indicated that boat use, under certain conditions of passenger loading, location of operation in river, and type of hull design, produced varying levels of stream bank erosion at the testing site used in their analysis. Jet-ski use on Kenai Lake is increasing and is becoming controversial.

Commercial Use The number of commercial operators, primarily fishing guides, is at its highest level ever. There is increasing pressure to limit commercial use, and to develop standards for commercial operators.

Environment Many on-site septic systems are inadequate—most soils in the river corridor appear inadequate for septic tank absorption fields. System maintenance is sporadic. Many areas are underlain by high ground water tables, which also affect the operation of septic systems. There is also concern that discharge from the Soldotna sewage treatment plant is affecting water quality. Runoff from streets (oil, salt, etc.) may also be impairing water quality.

Land Use The growing borough population has increased the demand for river front lots and has put higher development pressures on land in the watershed. Development within the 'central peninsula', including much of the watershed, has increased significantly during the last decade. Development can have adverse impacts on habitat, water quality, and recreation use if proper management practices are not followed. Especially of concern are the riparian habitat, wetland, and floodplain areas.

Enforcement There is growing concern for more enforcement presence along the Kenai River (i.e.. enforcement of wetlands regulations, pollution, septic systems, fishing regulations, littering, etc.). The Kenai Peninsula Borough, as a second class borough, is limited to civil penalties for enforcement.

1.2 Statutory Authority

The requirement for a Kenai River Comprehensive Management Plan derives from Alaska Statute (AS) 41.21.506, establishing the Kenai River Special Management Area, and the authority of the Commissioner of the Department of Natural Resources to develop and revise a Kenai River Comprehensive Management Plan. The Kenai River Special Management Area encompasses specific areas of the surface estate of the state land and waters within and adjacent to the Kenai River. The subsurface estate is not included within KRSMA, although it is closed to mineral entry under AS 38.05.181 - .280, excluding oil and gas leasing under AS 38.05.180.

The purpose of KRSMA, by statute, is:

"To protect and perpetuate the fishery and wildlife resources and habitat in the unit and adjacent area," (AS 41.21.500 (2), and

"To manage recreational uses and development activities in the unit and adjacent area" (AS 41.21.500(3).

The KRSMA enabling legislation states:

> "The river's fishery and wildlife are it's most important resources. The highest priority uses of the river and its adjacent land derive from its fishery and wildlife resources which must be protected and preserved to ensure their renewability and continued usefulness."

The authority to develop and revise the Management Plan is given to the DNR Commissioner, in consultation with the Kenai Peninsula Borough. The Commissioner is also required to appoint an advisory board to participate in the development of the Management Plan. This board is the Kenai River Advisory Board (KRAB).

The purpose of the Management Plan states, in part:

> "the Kenai River Management Plan is to provide effective direction to the management of the fishery and wildlife resources, sensitive habitat areas, recreational, and development activities in the Kenai River Special Management Area and those areas adjacent to it."

AS 41.21.506 gives the authority to the DNR Commissioner to adopt regulations under the Administrative Procedures Act to implement the plan. These regulations must:

> "designate incompatible uses and prohibit or restrict them," and

> "establish a registration, licensing or comparable procedure for professional fishing guides and such additional fishing guide controls as the Commissioner considers necessary."

The DNR Commissioner may adopt regulations that are consistent with and that implement the legislative purposes of KRSMA. These authorities are necessarily general in order to give DNR flexibility to effectively manage KRSMA. The scope of regulations to implement these purposes are also allowed to be broad.

The regulations only apply to land owned by the State, "but does not apply to land not owned by the State that is located within the boundaries of a municipality unless the regulation has been approved by the municipality." Recommendations in the plan that relate to non-state land are advisory. Local unit of government or federal agencies may adopt regulations or ordinances that implement plan recommendations.

1.3 Plan Study Area and Plan Boundary

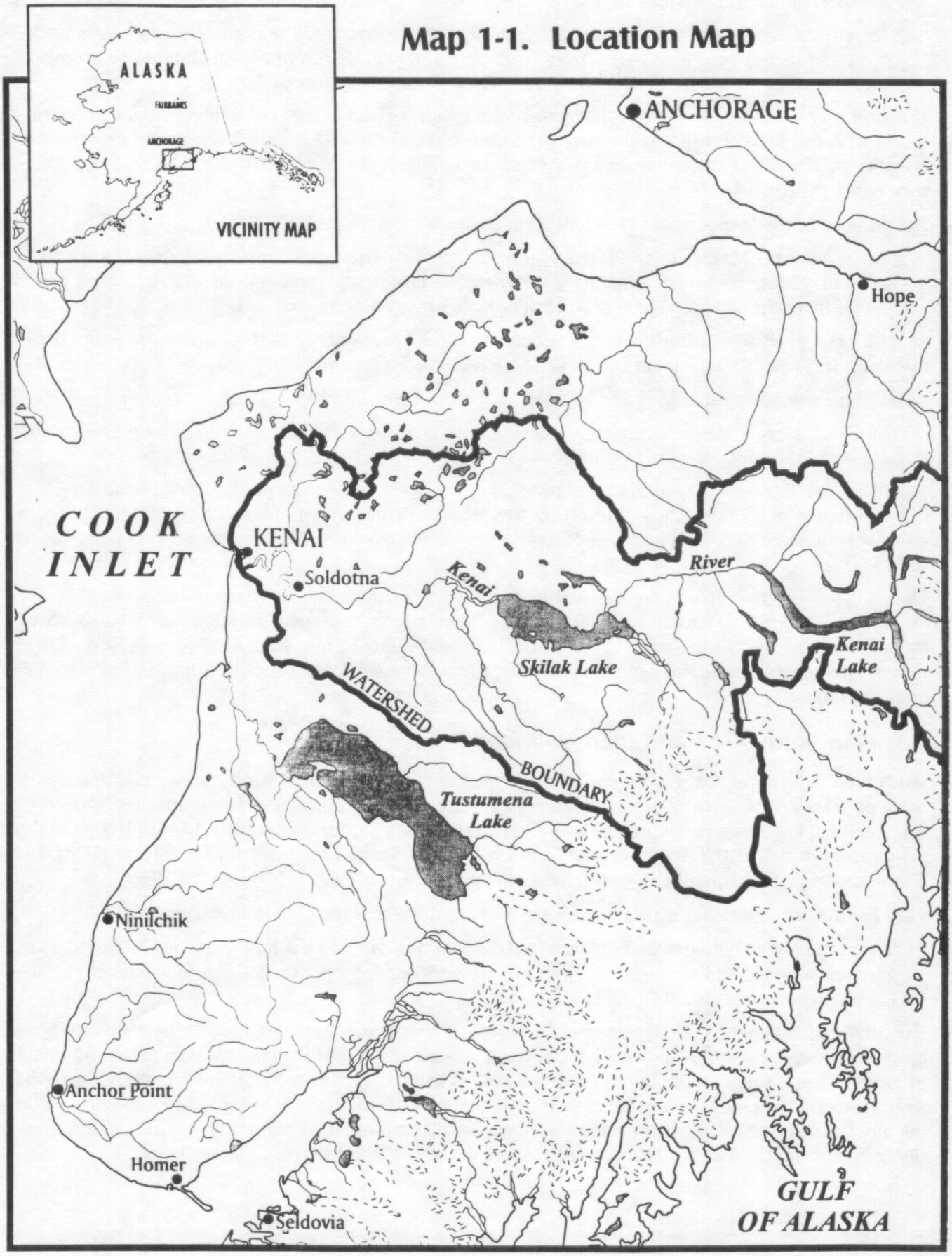
Study Area The Kenai River is a complex and dynamic system, with many interrelated components. A basic premise of the 1986 plan and this revision is that the entire river system must be considered when making long-term recommendations to ensure the river's continued health. The study area of the plan was identified as the river's watershed in 1986. This revision uses the same boundary. Map 1-1 is a location map and Map 1-2 is a generalized map of the watershed.

Plan Boundary Enabling legislation for the KRSMA discusses the plan boundary:

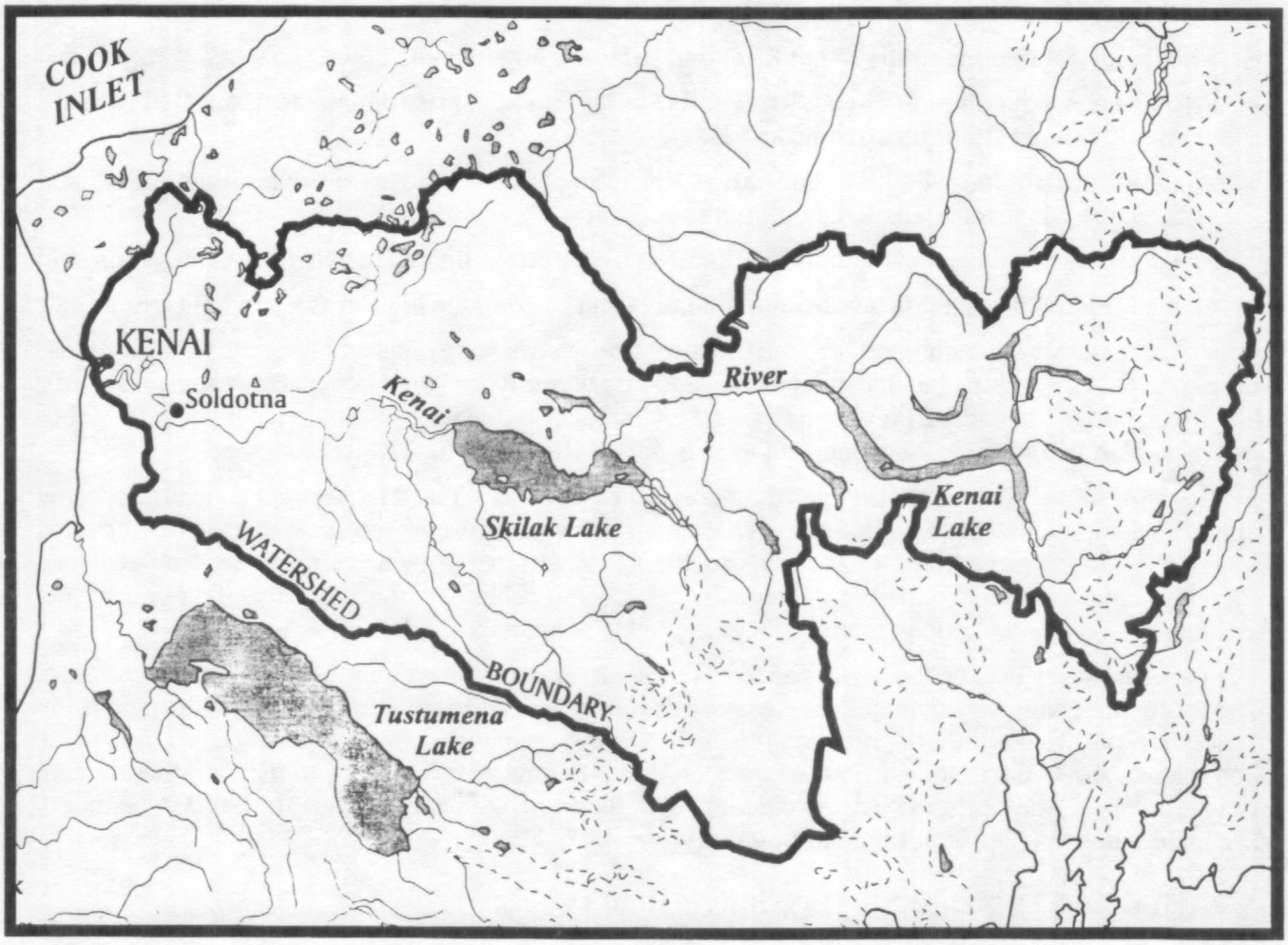
> "the plan may include the land adjacent to [the KRSMA] whether the land is owned by the State or privately owned and may include other land considered appropriate by the commissioner and the Kenai Peninsula Borough" (AS 41.21.506).

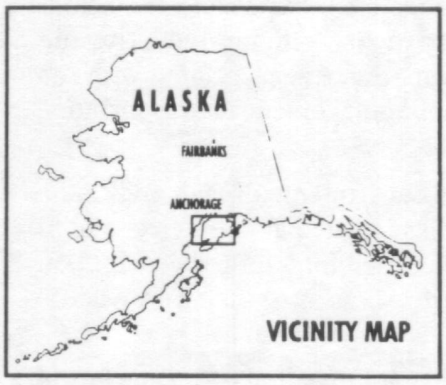
The 1986 Management Plan development recognized that some activities tend to be dispersed geographically throughout the study area. However, it was also evident that many recommendations would be more focused, concentrating on the Kenai River, its tributaries, and wetland areas contiguous to the river. The original plan developed a plan boundary that focused on these areas in order to ensure that the most critical hydrologic components were covered. The watershed boundary was retained, primarily to ensure that recommendations for the more dispersed activities could be included.

Map 1-1. Location Map



Map 1-2. Kenai River Watershed





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The boundary of the 1986 Kenai River Comprehensive Management Plan, retained in this revision, includes the following lands and waters:

- Kenai River Special Management Area, which includes the Kenai River, Skilak Lake, Kenai Lake, and selected state-owned uplands;
- tributary streams and lakes;
- wetlands contiguous to the Kenai River and tributary streams and lakes;
- 100-year floodplain of the Kenai River and tributary streams; riparian areas associated with the Kenai River and tributary streams and lakes;
- important fish and wildlife habitat areas, including islands, the Snow River alluvial flats and bald eagle wintering areas; erosion-prone shorelines;
- selected National Forest Community Grant (NFCG) selections and state general domain lands; and
- an additional 300 feet, measured horizontally from the outside limit of the previous criteria.

Appendix A shows the plan boundary on 1 inch = 1 mile scale maps, based on USGS 1:63,360 quadrangle maps. These maps include most of the land and water types listed above. However, some riparian areas, floodplains, important habitat areas, and erosion-prone shorelines have not yet been identified. The plan boundary will be amended as this information becomes available.

Inclusion of an area(s) within the Plan Boundary does not mean that all plan recommendations will apply. Inclusion indicates only that the area is important and that *some* recommendations are directed towards it. Recommendations relating to specific areas within the Plan boundary may be advisory, therefore having no immediate regulatory effect. The reader should carefully review the narrative describing the recommendations to determine whether it is binding or advisory in its effect.

The Plan Boundary is to be distinguished from the Study Area boundary and the boundaries of KRSMA. The Study Area boundary includes the Kenai River watershed, encompassing the Kenai River, its tributaries, and the areas within the river's watershed. KRSMA boundaries are those established by statute, and include the Kenai River, portions of the Moose and Funny rivers adjacent to their confluence with the Kenai River, and scattered parcels of state land adjacent to the Kenai River. The KRSMA boundary is considerably smaller than the Plan Boundary.

1.4 Enabling Legislation, Legislative History

The 1984 legislation creating the Kenai River Special Management Area was the culmination of mounting concern for the river dating back several years. Many factors were responsible for this concern, including rapid growth in the river's sport fishery, the emergence of the sport fish guiding industry, and settlement of the river's shorelines. The history of the significant events that are associated with the creation of the KRSMA and the subsequent development of the original Management Plan is included in the Technical Report. Important aspects are:

Kenai River Task Force In 1982, Governor Jay Hammond ordered the departments of Fish and Game and Natural Resources to convene a Kenai River Task Force to examine issues involving the river and to make corrective recommendations. The group's major recommendation called for a formal designation stating that the highest and best use of the Kenai River was the utilization of its fish and wildlife resources, and that all other actions should be evaluated relative to this priority use.

Legislative Resolve 26 Acting on the report of the Kenai River Task Force, the 1983 Alaska Legislature passed Legislative Resolve 26, asking Governor Sheffield to research the Kenai River situation, with representation from the departments of Natural Resources, Fish and Game, Public Safety, and Environmental Conservation. A major recommendation of the resulting report called for designation of the Kenai River as a special unit of the state park system, with the Division of Parks and Outdoor Recreation assigned management responsibility.

KRSMA Enabling Legislation This legislation, codified under AS 41.21, established the Kenai River Special Management Area, to be managed by the Department of Natural Resources. The ADF&G authority to regulate fishery and wildlife resources was retained. The purpose and planning requirements of KRSMA are described in subsection 1.2, " Statutory Authority." Other elements include:

- AS 41.21.508 authorizes the State to acquire land adjacent to the special management area by various means. Eminent domain is specifically prohibited. The State may also adjust the boundaries of the area by adding state-owned land and water.
- AS 41.21.510 deals with public involvement. It requires the appointment of an advisory board and discusses its composition. It directs the State to consult with the board, other agencies, interest groups, and the public during plan formulation and implementation.
- AS 41.21.512 authorizes the State to enter into cooperative agreements with other public agencies and private parties.

Kenai River Comprehensive Management Plan In response to increasing pressures on the Kenai River's ecological system by statewide population growth, increased use of the river for both boat and bank fishing, and changes in boat fishing methods and intensity, the enabling legislation required DNR to develop a management plan for the Kenai River. The Kenai River Comprehensive Management Plan was prepared in 1985 and adopted by the DNR Commissioner in 1986 to provide the basis for management of state land and water within KRSMA and an adjacent planning area. Most plan recommendations were implemented over time, either in whole or part.

1991 Guide Limitation Proposal The Division of Parks and Outdoor Recreation developed a proposal to limit the number of guides on the Kenai River in 1991. This was prompted by the rapid growth in the Kenai River fishing guides and by the public's perception of being crowded out of the prime fishing holes by the "aggressive behavior of some motorized fishing guides." Under this proposal the number of guides would be decreased from the then-present number of 310 to a long-term total of 250. Review of this proposal by the Attorney General's Office determined that it violated several clauses of the State Constitution, and the proposal died.

1.5 Relationship to Other Plans

This Management Plan forms the basis for state decision making for areas included within KRSMA. Other DNR land and resource plans are used as the basis for actions on state land in other parts of the watershed. The Management Plan is also intended to function as a coordinated, multi-agency planning document. Local, state, and federal agencies can use the plan recommendations as a basis for management of lands under their jurisdiction. As such, it is intended to help coordinate and integrate the uses and resource management activities of federal lands within the Kenai River drainage, including the Kenai National Wildlife Refuge and the Chugach National Forest, consistent with the management directions and policies of these agencies. The Management Plan is not intended to function, however, as the basis for decisions affecting fish allocations or fishery management by ADF&G and/or Board of Fish. The Management Plan should help ensure consistency of efforts between the various agencies and units of government owning or managing land in the Kenai River corridor.

Kenai River Comprehensive Management Plan The Management Plan will form the basis for decision making by the Division of Parks and Outdoor Recreation (DOPOR) and ADF&G in their management of the Kenai River State Management Area. This means that decisions within KRSMA by these agencies will follow the recommendations of the Management Plan. Certain recommendations in this plan will require enactment through regulations or department orders adopted by the DNR Commissioner. Inclusion of recommendations in the Management Plan will not ensure their use until necessary implementation tools are enacted.

Kenai Area Plan DNR manages state lands through area plans. These plans identify state lands to be retained in state ownership and those to be disposed of, classifies state lands into resource categories,

and forms the basis for other DNR decision making in its management of state resources, including forestry, and mineral management and development. The Management Plan and the Kenai Area Plan will be closely coordinated in their development, with consistent recommendations in each.

Upper Kenai Cooperative Plan The Upper Kenai Management Plan is a cooperative planning effort by federal and state agencies (primarily USFS and US FWS, and DOPOR) to prepare a coordinated management plan for the Upper River. (The Upper River is that section of the Kenai River between and including Skilak Lake and Kenai Lake.) The recommendations of this plan have been incorporated in the Management Plan. State management authority exists to implement the recommended actions, either independently or in coordination with USFS and US FWS.

Chugach National Forest Land and Resource Management Plan and Kenai National Wildlife Refuge Comprehensive Conservation Plan These plans are developed by the USFS and US FWS to manage the lands and resources within the Chugach National Forest and the Kenai River Wildlife Refuge. It is intended that recommendations of the Management Plan be incorporated in these federal planning documents, to the extent allowed by federal statute and regulation.

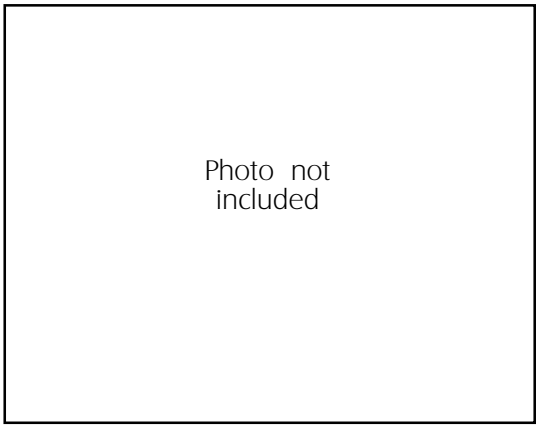
Kenai Peninsula Borough Comprehensive Plan The Borough Comprehensive Plan is used by the Kenai Peninsula Borough (KPB) to manage the resources under its jurisdiction and to provide a consistent guide to Borough decision making on environmental and development issues. It is suggested that the Management Plan be adopted as an element of the Borough's Comprehensive Plan. This will require specific action by the Borough, and it is recommended that the adoption occur at the time of approval of the Management Plan or shortly thereafter, to maintain the continuity of the planning and implementation processes associated with the Management Plan.

Kenai Peninsula Borough Coastal Plan The Borough Coastal Plan is used by KPB to guide decision making in project reviews where a state coastal determination of consistency is required. This review is made according to the 'enforceable policies' of the Coastal Plan. 'Enforceable policy' is that term used in the State Coastal Management Program to refer to specific requirements or standards that are applied in coastal project reviews.

1.6 Plan Development Process

The revision of the 1986 Management Plan involved a series of sequential steps:

Issue Identification In early 1996, the Advisory Board identified certain critical issues affecting the management of the Kenai River. These issues were further refined through pubic meetings and review of research studies associated with environment, habitat, and land use conditions.



Identification and Development of Goals and Objectives Public meetings were held in Anchorage and Soldotna in March and April, 1996. These were intended to identify what the public considered to be desirable future conditions for the Kenai River. Public comments were then revised to goal and objective statements, and were subsequently reviewed and adopted by the Advisory Board. The revised goals and objectives are included in the Management Plan.

Development of Concept Plan The Concept Plan was developed to give the Advisory Board and the public a sense of the range of issues affecting the revision of this plan, and types of recommendations that might be used to resolve identified problems. These initial recommendations were reviewed with the public and the Advisory Board, and were subsequently refined for eventual inclusion in the Management Plan.

Technical Report A Technical Report for the draft Kenai River Comprehensive Management Plan was prepared in mid-1996. It provides more detailed data on background information essential to an under-

standing of the habitat and environmental attributes and recreational use patterns of the Kenai River. It also describes much scientific, hydrologic, and cultural information that form the basis for recommendations included in the Management Plan. The reader should consult the Technical Report for more detailed explanations of environmental, habitat, recreation, and other information pertinent to an understanding of the factors affecting, or likely to affect, the Kenai River.

Development of Draft Kenai River Comprehensive Management Plan Recommendations in the Concept Plan were further developed and refined through public meetings in late 1996. Recommendations derived from that process, Advisory Board review of these recommendations, and discussions with a variety of government agencies formed the basis for the recommendations in the draft (revised) Management Plan. The draft Management Plan was reviewed by the public in March and April of 1997. Agency and public comments were included in two reports: "Public Comments on the Kenai River Comprehensive Management Plan (Revision)" and "Public Review Draft Comments Database." The latter summarized all of the public comments and sorted these by subject and geographic area. These reports and a "Response-Summary" (May, 1997) prepared by DNR provided the basis for the Advisory Board's discussion of agency and public comments. They also formed much of the basis for the final modifications of the draft Management Plan recommended by the Advisory Board.

Preparation and Approval of Final Kenai River Comprehensive Management Plan The Kenai River Advisory Board (Advisory Board) recommended adoption of the Management Plan to the Commissioner in July 1997, following its review and revision of the draft Management Plan. DNR prepared the draft final Management Plan based upon agency, public and Board comments received throughout the planning process and the recommendations of the Advisory Board. The DNR Commissioner adopted the Management Plan in December 1997. It is intended that the Management Plan will in turn be adopted by state and federal agencies through a Memorandum of Understanding (Appendix D) and through resolutions adopted by local government.

1.7 Role of Kenai River Advisory Board and Technical Working Group

Throughout this process, the Advisory Board has functioned as the focus for the plan's revision. The Board is a 17-member body representing various users and resources managers of the Kenai River. It includes representatives from commercial and sport fisheries, Kenai river property owners, commercial guides, agency personnel from state and federal entities responsible for river management, and representation from local government (cities of Soldotna and Kenai, Kenai Peninsula Borough), as well as members-at-large. Under statute, the Advisory Board is responsible for plan preparation and review and for recommending a final plan to the State (DNR Commissioner), local government (KPB), and federal agencies (USFS and US FWS) as the basis for management actions by public agencies.

A Technical Working Group assisted DNR staff and the Advisory Board with plan development, research, and review of initial staff recommendations. Because of its broad agency representation, this group also provided a forum for discussion of issues of common importance. The Technical Working Group consisted of representatives of the State (ADF&G, ADEC, DNR), local government (cities of Kenai and Soldotna, KPB), and federal agencies (US EPA, USFS, US FWS, USGS).

1.8 Mental Health Trust Land

The statute establishing the Mental Health Trust required that trust land be managed according to the requirements of the Mental Health Enabling Act, established by Congress in 1956. This essentially requires that the trust maximize revenues from trust land over the long term, consistent with the statutory trust best interest requirement. The 1997 Supreme Court decision affirming the Superior Court decision to uphold the settlement recognized the unique character of the trust, and that the Trust Authority is required to act in the best interest of its beneficiaries. The State treats the management of trust land differently than general state land, and this management approach similarly applies to the management of mental health trust land in this Plan.

The prescribed action or policies for state lands found within this comprehensive management plan apply to lands that are owned and managed by the Mental Health Trust *until determined that the recommendations and policies of this Plan are found to be inconsistent with the overall trust best interest.* Maps 4-1 and 4-2 include trust land under the category of "Other State" land. Therefore, the maps cannot be relied upon to accurately reflect the application of the plan on Trust Lands, as mistakes may occur because Trust Lands are not depicted. For clarification of land status regarding Trust Lands, please contact the Trust Land Office at 3601 C Street, Suite 880, Anchorage, AK, 99503-5935.

1.9 Plan Organization

The Management Plan includes the following:

Chapter 1. Introduction and Scope of Plan

Chapter 2. Background Information

Chapter 3. Planning Issues

Chapter 4. Study Area Recommendations

Chapter 5. River Segment Recommendations

Chapter 6. Implementation

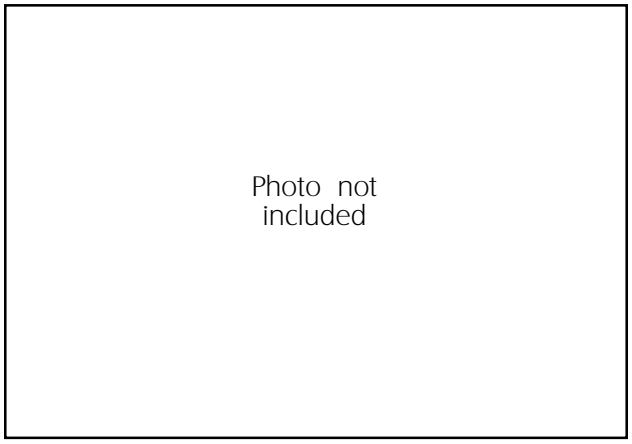
Appendices

Technical Report (separate report)

CHAPTER 2

BACKGROUND INFORMATION

1.0 Introduction



The Kenai River, its tributaries, and the hydraulically connected wetlands are complex ecological and hydrological systems resilient to external pressures to some unknown degree. However, individual impacts together can cause cumulative impacts that will harm the system and jeopardize its continued health. It is important to understand the attributes of this system, the factors that may be affecting its continued integrity, and the degree to which the system has been harmed by external influences.

This chapter provides background information on the most important attributes of this system. Included are descriptions of the seven principal river segments, information on the amount and distribution of fish and wildlife resources, upland and water recreation activities, and the results of the ADF&G '309' Cumulative Impact Study. This study identified critical habitat locations for the rearing period of the Chinook salmon, identified by ADF&G as an indicator species for the Kenai River.

2.0 Natural Conditions

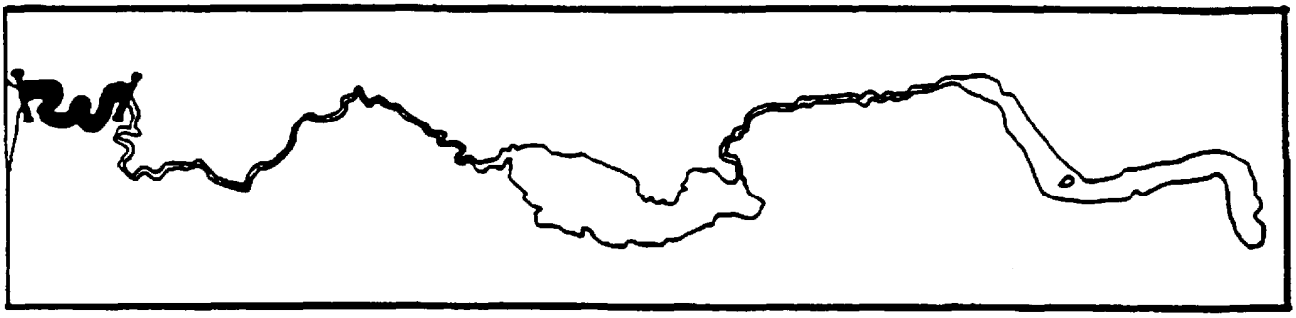
The Kenai River drains more than 2,000 square miles of diverse landscape, including glaciers, icefields, large lakes, high mountains and extensive lowlands. From headwaters in the Kenai Mountains, numerous tributary rivers - including the Snow and Trail rivers - flow into Kenai Lake. From the western end of Kenai Lake at Cooper Landing, the upper Kenai River flows 18 miles before emptying into Skilak Lake. From the lake's outlet, the lower Kenai River flows 50 miles before emptying into Cook Inlet.

The Kenai River is an "underfit" river. This means that the river is flowing at lower levels than the river system is capable of holding. The reduced water levels are due to glacial retreat and changing climatic conditions. Because of the lower flows, portions of the river bed have become "armored" with coarse gravel and rocks that do not migrate in the lower water velocities. These armored sections provide an especially stable, or "entrenched," river bed, and also provide valuable habitat.

2.1. Description of River Reaches within River Segments

For purposes of this plan, the river is divided into three major segments: Lower River, Middle River, Upper River/Kenai Lake. Each segment is divided into reaches. Map 2-1 depicts the segments. The term, "RM", refers to the number of river miles from the mouth of the Kenai River.

LOWER RIVER; REACH 1: COOK INLET TO EAGLE ROCK (RM O - RM 11.4)



This reach of the Kenai River is tidally influenced, with estuarine conditions extending to approximately River Mile (RM) 9. These lower nine miles are meandering, with the channel free to migrate. The erosion potential of this reach is considered moderate. The reach between RM 9 and RM 11.5 is sinuous, and is highly prone to erosion, especially near the mouth of Beaver Creek.

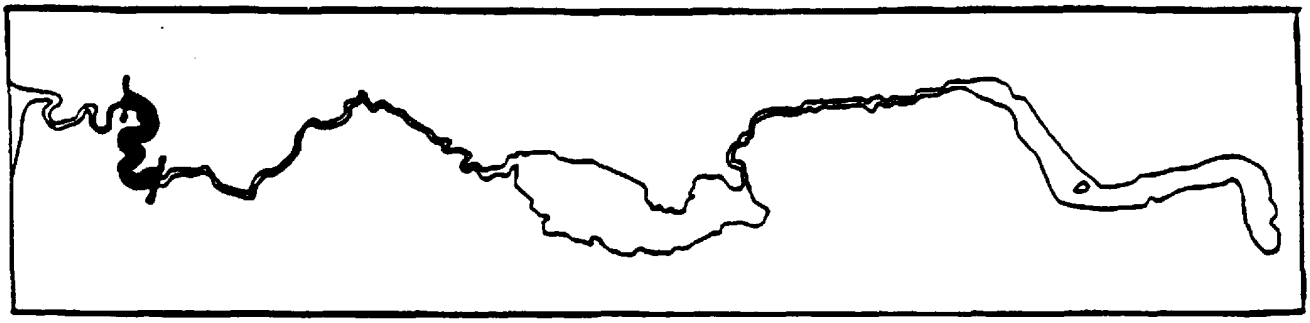
The tidal marshes and associated wetlands adjacent to the river in this reach are extensive and biologically productive. They provide a major migration and resting area for many waterfowl and other waterbirds.

The boundary of KRSMA begins at approximately RM 4.3 of the Kenai River and extends upriver. Included in KRSMA are parcels of riverbank land at RM 5, RM 8, and RM 11. Most of the riverbank in this reach is publicly owned (City of Kenai and State of Alaska).

The upper part of this reach of the River (Cunningham Park to Eagle Rock) has one of the highest concentrations of sport fishermen during the king, red, and silver salmon seasons.

The Bridge Access Road and accompanying Warren Ames Bridge are principal means of access between the City of Kenai and the Sterling Highway, and provide access for bird and wildlife viewing and photography, and by dipnetters and bank fishermen accessing the fishing areas adjacent to the Warren Ames Bridge.

LOWER RIVER; REACH 2: EAGLE ROCK TO SOLDOTNA BRIDGE (RM 11.4 - RM 21)

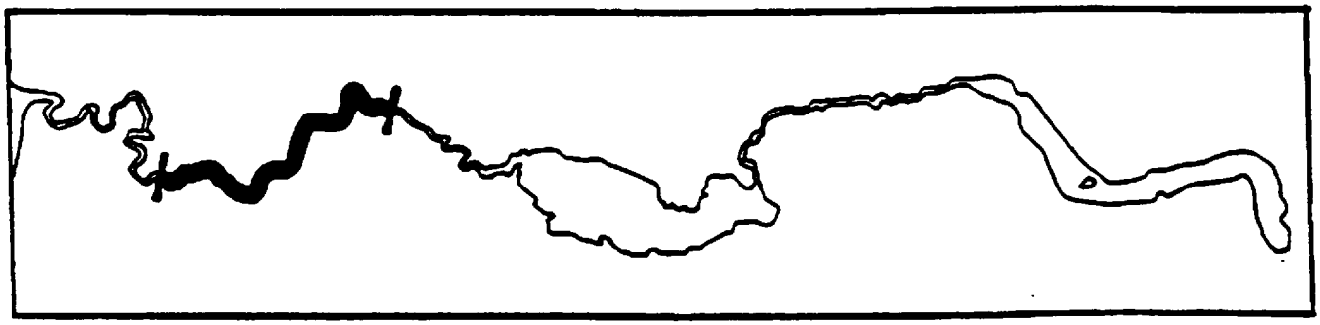


This reach of the Kenai River is tidally influenced to approximately RM 12. The lower portion of this reach is sinuous, slightly underfit, and highly prone to natural erosion; the upper portion of this reach is meandering, entrenched, and underfit. This reach provides valuable spawning and rearing habitat for all species of salmon, especially for a significant portion of the second run of king, sockeye, and pink salmon. It should be noted that naturally eroding banks contribute to the biological template of a river, removing material from one area and depositing it in another, sustaining gravel bars, island maintenance, etc. However, the natural propensity to erode is accelerated by human activities (boat wakes, bank trampling).

A large proportion of land in this reach is privately owned. Land uses along this reach range from intensive private recreation development to private residences to undeveloped units of the Alaska State Park System. Private campgrounds, recreational vehicle campgrounds and second homes are especially numerous between Big Eddy Hole and Poachers Cove. Erosion is actively taking place on a number of riverbanks, and is being accelerated by bank trampling and boat wakes. The Division of Parks and Outdoor Recreation manages some parcels of state land in this reach.

Of all the king, pink, and silver salmon taken in the Kenai River, most are generally caught in this reach. Bank fishing is popular in several locations, and boat fishing is generally heavy throughout the entire section with the exception of an area from about RM 20 to the Soldotna Bridge (RM 21), where boat fishing is closed during the king salmon season.

MIDDLE RIVER; REACH 3: SOLDOTNA BRIDGE TO NAPTOWNE RAPIDS (RM 21- RM 36.5)



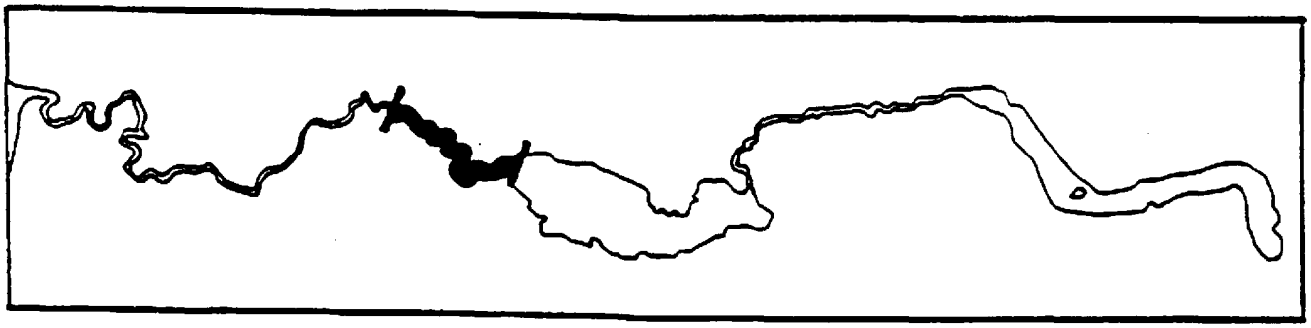
This reach is entrenched within the Soldotna terrace in a highly confined floodplain. The erosion potential for this section of the River has been classified as low.

The lands adjacent to this reach are primarily in private ownership. Presently, the largest landowner is the Salamatof Native Corporation, which owns the shoreline and uplands between RM 25 to 28 south to the Funny River Road (Moose Range Meadows). The corporation has subdivided portions of its holdings. Some of the Native lands along this reach are subject to land exchange negotiations with the US Fish and Wildlife Service, or are being considered for purchase with Exxon/Valdez Oil Spill settlement funds.

From the Soldotna Bridge to approximately RM 22.5, commercial, industrial, and residential uses abut the river, and much of the riverbank here has been cleared of vegetation to the high water mark. On the south bank of this segment, residential development has accelerated. The Alaska Department of Transportation and Public Facilities is evaluating the feasibility of a public bridge to Funny River Road. The construction of the bridge is likely to lead to increased residential and recreational home development on the south side of the Kenai River.

Fishing effort between the Soldotna Bridge and Moose River accounts for about 18% of all fishing effort in the Kenai River drainage. There are many popular bank fishing locations throughout this segment, especially along the 25' public access easement along Salamatof lands. Boat fishing is moderate throughout the entire section. DOPOR operates three facilities (all providing overnight camping, bank fishing, and sanitary facilities) within this river reach.

MIDDLE RIVER; REACH 4: NAPTOWNE RAPIDS TO SKILAK LAKE (RM 36.5 - RM 50)



In the lower portion of this reach (downstream from River Mile 39.4), the channel is entrenched, partly armored, and has undergone rates of bank erosion that are very low to undetectable. From RM 39.4 to RM 45.7 bank erosion rates are more typical of glacial streams - as high as five feet per year. The outlet of Skilak Lake (RM 50.3 to RM 45.7), is highly stable because of the presence of large gravel dunes emplaced by a pre-1950 flood surge.

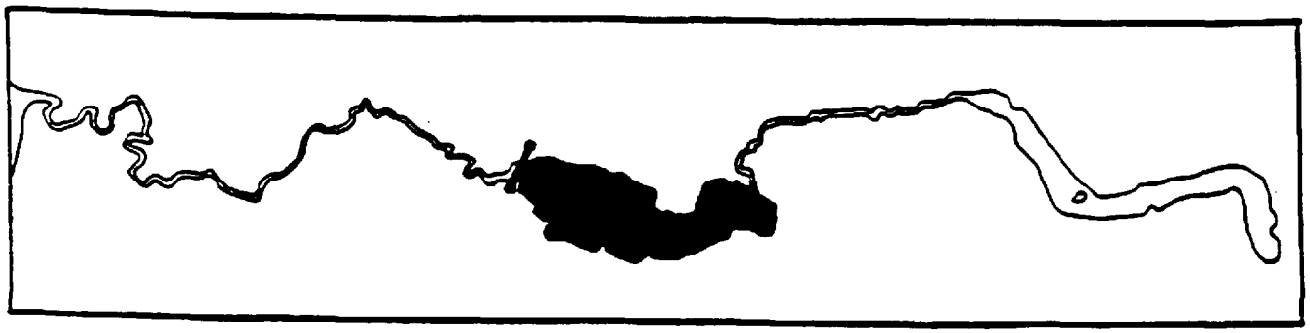
Since Skilak Lake serves as a sediment trap, most of the sediment occurring below the lake is a result of bank erosion and sediment transport from the Killey River drainage, this reach's major tributary. Extensive wetlands are found contiguous to the mainstream Kenai River in this segment, particularly between RM 45 to RM 50. In addition, extensive wetlands are associated with the tributaries and in upland areas adjacent to this stretch.

Most of the land in this reach below RM 45 is privately owned. The river from RM 45 to Skilak Lake is within the Kenai National Wildlife Refuge. The Kenai Native Association selected lands adjacent to the river from approximately RM 45.5 to RM 47.5. These lands must be managed in accordance with refuge laws and regulations. These lands are also subject to land exchange negotiations with the US Fish and Wildlife Service.

This reach of the river and its tributaries contain important habitats for spawning and rearing salmon. Most of the late run Kenai River sockeye salmon spawn above the Moose River in the mainstem and tributaries. The Killey River supports nearly 50% of the early run kings in the Kenai drainage. Other important salmon spawning areas occur from RM 45 to 50 and just below Skilak Lake, where kings, silvers, reds, and rainbow trout spawn.

Several species are targeted by recreational anglers in this reach, including king, coho and sockeye salmon, rainbow trout and Dolly Varden. DOPOR currently manages two parks in this reach: Bing's Landing (developed facilities) and Kenai Keys (undeveloped).

UPPER RIVER; REACH 5: SKILAK LAKE



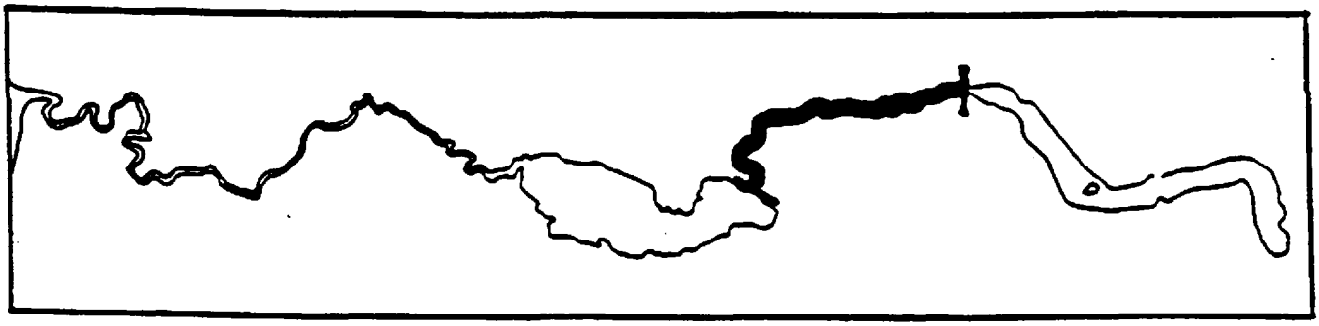
Located at the mid-point of the Kenai River is 25,000-acre Skilak Lake. Most of the water feeding the lake comes from the upper Kenai River and Skilak River. Both rivers are silt laden from glacial runoff. The cold water and limited level of light penetration reduce biological productivity of the lake. How-

ever, high oxygen content and relatively constant water temperatures create an essential part of the cycles of wintering and spawning resident fish populations, and of many waterbirds. Skilak Lake is a major sockeye salmon rearing area.

Skilak Lake and lands surrounding Skilak Lake are managed by the Kenai National Wildlife Refuge. All lands south of the lake are also designated as Wilderness by Congress. There are two small private inholdings on the south shore of Skilak Lake. Caribou Island, in the southcentral portion of the lake, is also privately owned and is currently subdivided into approximately 200 lots.

Skilak Lake supports a moderate amount of boat traffic for fishing, hunting, hiking, and access to private lands. Two campgrounds, Upper and Lower Skilak campgrounds, are located on the north shore and are accessible by automobile. Fishing is the most popular recreational activity on Skilak Lake. The heaviest fishing pressure occurs at the outlet of Skilak Lake and at the junction of the lake with Hidden Creek and the upper Kenai River.

UPPER RIVER; REACH 6: SKILAK LAKE TO KENAI LAKE



The gradient of the Kenai River changes more rapidly in this reach than in any other segment, especially in the Kenai River Canyon. Due to the mountainous topography, the floodplain and wetland areas of the upper Kenai River are not as extensive as in other parts of the watershed. However, because of their limited nature, they are extremely important for moose and other wildlife habitat, for nutrient exchange with the river, and as flood water passages during the floods that occur three to four times per decade. The river segment from Russian River to Skilak Lake is among the most pristine, scenic, and wild portions of the Kenai River.

Other than the private lands at Cooper Landing, most of the land along this segment is public. With the exception of some state and municipal lands at Cooper Landing, the majority of public lands above RM 73.6 are within the Chugach National Forest. The public lands and waters adjacent to KRSMA below RM 73.6 are within the Kenai National Wildlife Refuge.

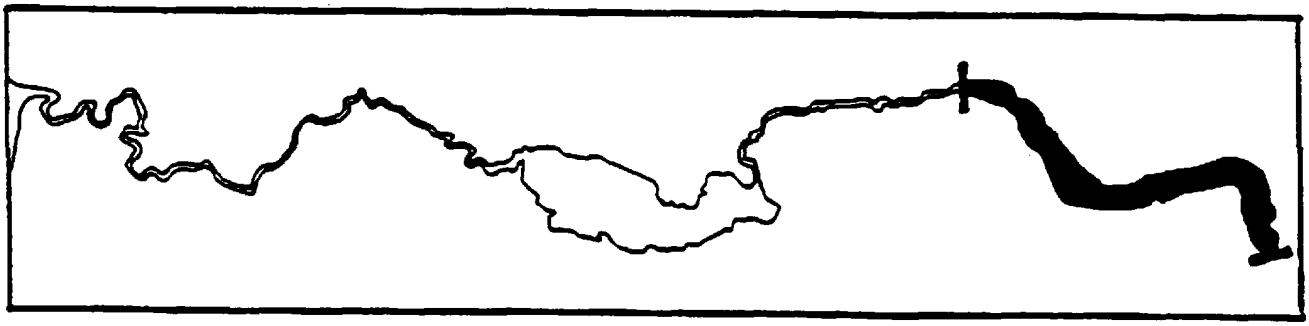
This reach, along with its tributaries, provides important spawning and rearing habitat for king, silver, and sockeye salmon, and resident species (such as rainbow trout and Dolly Varden). King and silver salmon use this reach and the Russian River for spawning and rearing. Early and late runs of sockeye salmon use the mainstem of the Kenai, the Russian River, and other lesser tributaries. The Upper and Lower Russian lakes also provide important spawning and rearing habitat for sockeye salmon. The two lakes and the Upper Russian River have significant concentrations of rainbow trout.

This reach is often ice-free and provides important habitat for wildlife during the winter. Approximately 200 bald eagles overwinter and feed along the river between October and April.

The Russian River, which enters this reach of the River, is the most heavily fished tributary in the Kenai River drainage. The Sterling Highway parallels this stretch of the River for the majority of the reach, allowing easy access for bank fishermen. Popular bank fishing areas occur at several locations in this segment. Boat fishing for this section is increasing, especially for sightseeing.

Access points and campgrounds along the River include Cooper Creek and Russian River campgrounds managed by the USFS; and the Russian River Parking Area, Jim's Landing, Kenai River, and Hidden Creek trails managed by US FWS.

UPPER RIVER; REACH 7: KENAI LAKE



Kenai Lake is a large, glacially-fed lake of approximately 14,500 acres located at the headwaters of the Kenai River. The lake elevation is 436 feet and it is 22 miles in length. The shoreline of Kenai Lake is fairly uniform, with very few inlets or irregularities. Adjacent topography is characterized by steep fjord-like mountains, dropping sharply four to five thousand feet to the lake. Most of the shoreline is undeveloped, with the greatest beach development occurring at the inlets of the Snow River and Quartz Creek, and near the lake outlet into the Kenai River at River Mile (RM) 82.

Most of the land adjacent to Kenai Lake is within Chugach National Forest. There is some state and municipal land at the western portion of the lake, and some state land around the outlet of Trail River. There is some private land at the western end of the lake and along the southern and eastern shore.

Kenai Lake is used by resident species, such as rainbow trout and Dolly Varden and sockeye salmon for one to two years as a rearing area. Sockeye salmon also use Upper Trail Lake for rearing, and all tributaries of Kenai Lake for spawning. King salmon use Quartz Creek for spawning and rearing, and Kenai Lake for rearing. Silver salmon use Quartz Creek, Trail River, and Snow River for spawning and rearing, and Kenai Lake for rearing.

Sport fishing on Kenai Lake takes place both from banks and from boats. The outlets of clear-water tributaries are popular bank fishing areas; boat fishing on Kenai Lake is light.

There are three U.S. Forest Service campgrounds located on Kenai Lake, and three small boat-accessible-only picnic areas at Porcupine Island, Ship Creek, and Meadow Creek.

2.2. Fish and Wildlife

This section describes fish and wildlife habitat, fish resources, and wildlife resources of the Kenai River watershed.

Fish and Wildlife Habitat

Overview Perpetuating Kenai River fish and wildlife resources depends on the maintenance of habitats which directly or indirectly support these species. Habitat requirements for salmon and trout are very complex, changing both with season and life stage. Growth, survival, and reproductive success are limited by the interplay of factors including water velocity and depth, water temperature and chemistry, nutrient and sunlight input, instream vegetation, and overhanging bankside cover.

Four habitat types are important to protecting the fish and wildlife resources of the Kenai River and its tributaries. These types are riparian ecosystems, contiguous wetlands, those habitat types encompassed by the 100-year floodplain, and tidal marshes. These types have been identified as critical to the maintenance of the Kenai River as a dynamic entity; the value of these is based on readily observed natural functions. These functions are described in the following sections.

Riparian Ecosystems Riparian ecosystems include stream bank and flood plain areas, and are defined for this report as the vegetation portion of the streamside habitat. The importance of riparian (stream bank) vegetation to fish and wildlife values cannot be overestimated. Riparian vegetation maintained in a healthy condition should be recognized as a valuable natural resource and a legitimate land use. The following are several of the more important attributes of riparian vegetation:

- River bankside vegetation is important to the well-being of salmon and trout because, along with undercut banks and streamside debris, it provides fish with protective cover. Research has shown that within the Kenai River drainage there is a strong association of king and coho salmon with stream bank areas in summer months.
- Streamside vegetation is a source of debris which is a primary food of aquatic invertebrates, and habitat for terrestrial insects and other invertebrates. In turn, these insects and invertebrates are an important component of the diet of young salmon and resident species such as Dolly Varden and rainbow trout.
- Due to its structural diversity and complexity, riparian vegetation can support greater numbers and diversity of terrestrial wildlife populations than other habitats.
- Riparian vegetation protects the riverbank and adjacent bottomlands from erosion, and damage by ice, log debris, or trampling.
- Riparian vegetation removes pollutants from run-off or groundwater biologically with micro-organisms or plants; physically by filtration, absorption, or deposition; and chemically by oxidation or other reactions.
- Riparian vegetation functions as a buffer mechanism in protecting areas from flood damage by slowing runoff action and adding stability to the soil banks.
- The riparian zone acts as an area for groundwater recharge, which helps recharge streams during periods of low precipitation.
- Riparian areas provide essential feeding and migration corridors for moose and brown bears, and feeding and nesting areas for eagles and waterfowl.

Contiguous Wetlands Wetlands are those areas which are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Typical plant communities in wetlands include species such as black spruce, sedges, grasses, low and tall shrubs, willows, labrador tea, and mosses. Contiguous wetlands are those wetlands which are immediately adjacent to the river, tributaries, and lakes and are hydrologically connected to these waterbodies. These wetlands perform the following general functions:

- Wetlands adjacent and connected to the Kenai River serve, at least seasonally, as rearing areas for young coho salmon.
- In addition to serving as valuable salmon habitat, wetlands naturally regulate water flow and quality by acting as discharge areas for groundwater and natural retention areas for floodwaters.
- Wetlands provide the basis for aquatic food chains by producing enriched detritus.
- Wetlands provide spawning, rearing, nesting, feeding, and resting habitat for aquatic and terrestrial species.
- Wetlands establish drainage characteristics, sedimentation and current patterns, salinity gradients (in estuarine areas), and flushing characteristics of upland and lowland water flows.
- Wetlands shield adjacent areas from storm and flood waters.
- Wetlands act as ground water recharge/discharge and water holding areas when surface and ground water are directly interconnected.

- Wetlands provide natural water filtration processes for water purification (e.g., act as sediment accretion sites that reduce nutrient and sediment loads and increase oxygen content of waters which pass through them).

It should be noted that these functions are not restricted to contiguous wetlands, but apply to slope wetlands that may not be immediately adjacent to the river. The latter may, in fact, play an even greater role in performing these functions than the contiguous wetlands.

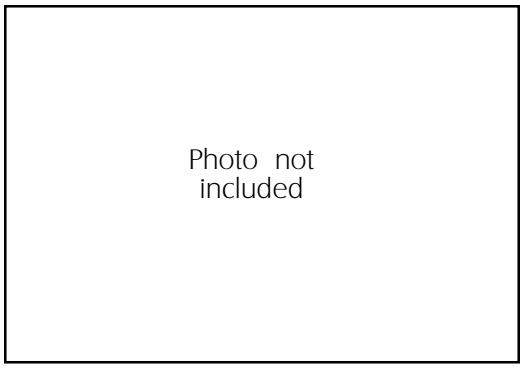
Habitats within the 100-year Floodplain The 100-year floodplain is the area subject to a one percent or greater chance of flooding within any given year. Habitats within the 100-year floodplain may contain riparian ecosystems, contiguous wetlands, and/or upland and forest communities. Undeveloped areas within the 100-year floodplain are critical for at least two reasons:

- Habitats within the 100-year floodplain carry out all the natural functions listed in the preceding two sections, such as recharging groundwater, providing the basis for food chains, filtering pollutants; and
- Habitats within the 100-year floodplain help dissipate flood flows and protect from storm and flood waters.

Unaltered habitats within the 100-year floodplain are not only critical for the life functions of Kenai River fishes, but serve to buffer structures from flood damage. Encroachment on floodplains, such as fill, reduces the flood carrying capacity and increases flood heights in areas beyond the encroachment itself. Therefore, it is important to maintain these areas in natural vegetation to absorb flood waters and buffer adjacent development.

Tidal Marshes Tidal marshes in the Kenai River Delta are particularly valuable. In addition to the general functions listed above, these wetlands display certain characteristics which make them both unique, and especially productive, biologically.

Tidal marshes are classified as either estuarine or freshwater depending upon the presence or absence of ocean-derived salts. The Kenai River Flats contain both estuarine and freshwater tidal wetlands.



The high biological productivity of tidal marshes is a result of the physical and biological processes which characterize these areas. Nutrient-rich estuarine waters periodically bathe these intertidal areas. In addition, dissolved organic nutrients and detrital materials enter these wetlands from inflowing river water. These influences continually fertilize the wetland, resulting in high plant productivity. Plant detritus and invertebrates produced on the Flats are in turn carried back into the river by retreating tide and floodwaters. This high productivity makes this habitat type especially valuable to fish and wildlife resources.

The Kenai Flats tidal marshes are particularly valuable to moose, caribou, waterfowl, and other wildlife resources because in addition to their high plant productivity, these wetlands are among the first suitable habitat to become ice-free in Cook Inlet. Consequently, the Kenai River Flats are a major migration and resting area for many waterfowl and other waterbirds, including red-throated loons, swans, Canada geese, white-fronted geese, snow geese, mallards, pintails, widgeons, other puddle ducks, sandhill cranes, gulls, and arctic terns.

In addition, the Kenai River Flats also serve as important calving and summer range for the Kenai lowland caribou herd.

Snow River Alluvial Flats These alluvial Flats are a complex of several wetland types intermixed with willow/alder riparian vegetation. The high biological productivity of alluvial Flats is a result of both the diversity of the area, and frequent flooding. The Flats thus are characterized by the general functions

listed for contiguous wetlands. In addition, the frequent flooding results in the introduction of nutrients. Just as in the tidal marshes, the fertilizing effect of the nutrient input results in high biological productivity.

Equally important is the complex intermixing of different habitat types (habitat diversity) which characterize alluvial flats. Habitat diversity and edge effect result in high wildlife population level, and numbers of species.

The alluvial Flats immediately adjacent to Kenai Lake provide nesting habitat for mew gulls and Arctic terns. Waterfowl also utilize this area. Waterfowl which have been observed here include mallards, pintails, green-winged teal, American widgeon, shovellers, and common mergansers.

Bald eagles congregate on the mudflats and gravel bars of the Snow River in September through November to pick up salmon carcasses deposited on the shoreline as the water recedes in the fall. The alluvial Flats are also considered an important moose wintering area.

Similar habitat values are found in the Skilak River alluvial Flats.

Fish Resources

Overview The Kenai River supports 34 fish species representing 16 taxonomic families. Thirty species are native to the Kenai River and four are exotic species, which have been introduced. Twelve species are residents of the river, 11 are anadromous and 11 are found in the lower area of the river and associated with the marine or brackish water environment.

Salmon species include Chinook *(Oncorhynchus tshawytscha)*, coho *(O. kisutch)*, sockeye *(O. nerka)*, and pink salmon *(O. gorbuscha)*. These species are the most important to humans in terms of consumptive use. Pink salmon occur predominantly during years ending in even numbers, but small numbers are also present during odd numbered years. Chum salmon *(O. keta)* are present, but are rarely observed in the Kenai River. All five species of Pacific salmon are anadromous. They migrate from the ocean to freshwater streams to spawn. Salmon die after spawning and the carcasses provide nutrients which increase the productivity of the system.

Other salmonids that occur in the Kenai River drainage include rainbow trout *(O. mykiss)*, Dolly Varden *(S. malma)*, lake trout *(Salvelinus namaycush)*, arctic grayling *(Thymallus arcticus)* round whitefish *(Prosopium cylindraceum)* and Bering cisco *(Coregonus laurettae)*. Rainbow trout inhabit all areas of the Kenai River and as far as is known all are resident of the drainage. Anadromous rainbow trout (steelhead) are not known to occur in the Kenai River. Dolly Varden are also found throughout the river. Observations suggest that both resident and anadromous Dolly Varden are present. However, research has not been conducted to confirm this observation. Lake trout reside in Skilak, Kenai, Hidden, and the Trail lakes and are known to seasonably frequent the outlets of these lakes. Arctic grayling were first introduced to Crescent Lake in the 1950's. They have now become established in the upper Kenai River drainage where they are occasionally caught by anglers. Bering cisco *(Coregonus laurettae)* inhabit the lower reaches of the river commonly referred to as the "delta". Other species found in the "delta" area are Pacific herring *(Clupea harengus pallasi)*, longfin smelt *(Spirinchus thaleichthys)*, Pacific cod *(Gadus macrocephalus)*, Pacific tomcod *(Microgadus proximus)*, walleye pollock *(Theragra chalcogramma)*, Pacific sandfish *(Trichodon trichodon)*, slender eelblenny *(Lumpenus fabricii)*, rock greenling *(Hexagrammos lagocephalus)*, Pacific staghorn sculpin *(Leptocottus armatus)*, sturgeon poacher *(Agonus acipenserinus)*, snailfish *(Liparis* spp.), and starry flounder *(Platichthys stellatus)*.

Eulachon *(Thaleichthys pacificus)* and longfin smelt are both anadromous species. Eulachon return to the Kenai River in spring; longfin smelt in the fall.

The Pacific *(Lampetra tridentata)* and arctic lamprey *(L. japonica)* inhabit the main-stem Kenai River and have been observed in the Moose River. The longnose sucker *(Catostomus)* inhabits numerous lakes in the drainage. The coastrange sculpin *(Cottus aleuticus)*, slimy sculpin *(Cottus cognatus)*, threespine stickleback *(Gasterosteus aculeautus)* and ninespine stickleback *(Pungitius)* are widely distributed throughout the drainage.

In addition to arctic grayling, Alaska blackfish *(Dallia pectoralis)*, northern pike *(Esox lucius)* and burbot *(Lota lota)* inhabit the Kenai River drainage. Blackfish were first identified from samples taken

from fresh water ponds in the delta area but in their natural range are more commonly found in lakes. Northern pike were introduced in the Soldotna Creek drainage in the mid-1970s. These fish have used the Kenai River as a migratory corridor and are now known to inhabit the Moose River drainage. Burbot are believed to have been first introduced into Juneau Lake. They entered the Kenai River via Juneau Creek and have been documented as being caught by anglers in Skilak Lake.

Spawning and Rearing Distribution Chinook salmon exhibit two distinct spawning runs in the Kenai River drainage. An early run (May through late June) spawns primarily in tributaries while a late run (late June through August) spawns primarily in the main stem. The entire main stem below Kenai Lake is used by late run chinook salmon for spawning except for the area from about Eagle Rock (RM 11.25) to the mouth. Highest use areas are between RM 10-21 and RM 40-50. The Killey and Funny rivers are the primary tributaries utilized by the early run. Other tributaries used by early run Chinook salmon for spawning include Beaver Creek, Slikok Creek, Moose River, Russian River, Juneau Creek, Quartz Creek, Grant Creek, and Ptarmigan Creek. Rearing Chinook salmon may be found seasonally distributed throughout the entire main stem of the Kenai River. They have also been found in the lower reaches of several tributaries not documented as spawning streams, and in Skilak and Kenai lakes. Juveniles typically rear in the Kenai River and large tributaries for just over one year.

The majority of Chinook juveniles in the main stem Kenai River rear within about six feet of undisturbed riverbanks where natural bank indentations provide cover. The most heavily used sections of the Kenai River by juveniles (RM 10 to 21 and RM 40 to 50) are the same areas used by late-run adults for spawning. These two areas contain a lower gradient, more river meanders, and a greater number of vegetated islands than does, for example, the fairly straight and swifter section from the Soldotna Bridge to Naptowne (RM 21 to 40). In the two meandering sections of the river, adults often spawn near the upstream tips of vegetated islands, where loose, clean gravels accumulate. Because the two sections of the main stem from RM 10 to 21 and RM 40 to 50 are heavily used by both rearing juveniles and adult spawners, they are viewed as key areas for the continued productivity of Chinook salmon in the Kenai River.

Coho salmon also exhibit two distinct spawning runs in the Kenai River. Early run fish arrive in late July while late run coho enter after the first week in September. It is believed, but not yet documented, that early run fish spawn primarily in tributaries; late run fish primarily in the main stem. Main stem spawning has been documented between RM 40-50 and RM 70-82. Tributary spawning is more widespread than with Chinook salmon and generally extends further upstream. Tributary streams used by spawning coho salmon include Beaver Creek, Slikok Creek, Soldotna Creek, Funny River, Moose River, Killey River, Hidden Lake Outlet, Jean Lake Outlet, Russian River, Juneau Creek, Quartz Creek, Grant Creek, Ptarmigan Creek, and Snow River. The distribution of rearing coho salmon is the most widespread of any salmonid species in the Kenai River drainage. The coho rearing strategy of upstream movements within tributaries used by spawners and into tributaries not documented as spawning streams and not used by other salmon species suggests potential rearing throughout the entire drainage where suitable habitat exists, and where there are no barriers to upstream migration. Of particular note is the Moose River, an important overwinter rearing area, which produces an estimated 20% of the total Kenai River smolt. Those fish which rear in the Moose River have been documented as the progeny of fish which spawned in Russian River, Tern Lake tributaries and the outlet of Skilak Lake.

Sockeye salmon spawning is most often associated with streams having lakes within their drainages that are used for juvenile rearing. Spawning has been documented in lake outlets and inlets as well as within the lakes themselves. Skilak, Kenai, and Russian lakes are associated with the largest sockeye spawning runs. Spawning also occurs in Hidden and Jean lakes and streams entering Trail and Tern lakes. A small sub-stock also utilizes the Moose River drainage. Juvenile sockeye typically rear in lakes for up to two years. Skilak Lake is the major rearing lake with over 70% of the river's rearing sockeye found here. Kenai Lake and the lower Kenai River also provide known summer rearing habitat for sockeye salmon. Speculatively, sockeye rearing in the river may result from the dispersal of fry produced directly downstream from Skilak Lake and/or from suspected spawning in the lower River.

Pink salmon exhibit strong spawning runs in the Kenai River drainage during even numbered years. Spawning has been documented throughout most of the main stem below Skilak Lake as well as the

lower reaches of Slikok Creek, Funny River, Killey River, Russian River, and Ptarmigan Creek. Adult pink salmon have also been observed in the Moose River, Quartz Creek, and Trail River drainages. No juvenile rearing occurs in the drainage because pink salmon fry emigrate to saltwater as soon as they emerge from spawning gravel.

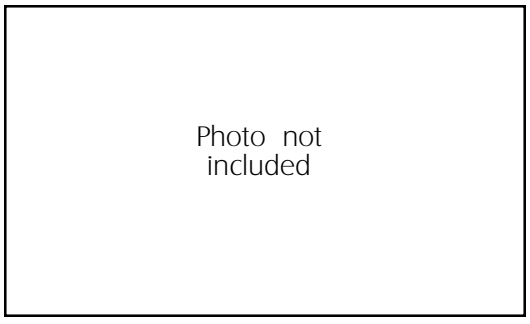
Rainbow trout occur throughout the Kenai River drainage. Reproducing populations occur in the drainages of Beaver Creek, Soldotna Creek, Moose River, Russian River, and streams tributary to Kenai and Trail lakes. The Upper Kenai River supports a major segment of the drainage's population. The Kenai and Russian rivers are believed to be the primary rainbow trout spawning areas in the Kenai River drainage, spawning is also known to occur in the main stem Kenai River between Skilak and Kenai lakes, and at the outlet of Skilak Lake.

Dolly Varden occur throughout the drainage. These char spawn in the fall as opposed to trout which spawn in spring. Current research is being conducted to determine spawning areas. Preliminary results indicate over-wintering in Kenai and Skilak Lakes. However, given the universal distribution of adults in the drainage, it is reasonable to assume that spawning and rearing occurs in both the main stem Kenai River and its tributaries.

Life history knowledge of the remaining species is limited to generalized observation. Pacific and arctic lamprey have been observed in the main stem Kenai River. Pacific lamprey have been observed in spring apparently spawning in the Moose River. Lake trout spawn and rear in Skilak, Kenai, Hidden and Trail lakes. Arctic grayling are known to spawn at the outlet of Crescent Lake and presumably in upper Kenai River tributaries. Eulachon are believed to be main stem spring spawners with longfin smelt entering the river and spawning in the fall. Northern pike are known to spawn in the Soldotna Creek drainage. The longnose sucker spawns in small tributaries and rears in the drainage's lakes, as do the threespine and ninespine stickleback. Round whitefish are found throughout the main stem Kenai and its major lakes with spawning occurring in fall. The coastrange and slimy sculpin presumably spawn and rear in the main stem. The remaining species are associated with the delta area. There is no specific information relative to these species' life history in the Kenai River.

It is very important for readers to understand that in all areas of the Kenai River and its tributaries and all habitat types are critical to the rearing of juvenile salmon (not just Chinook) and other species. These habitat types are linked to form an ecosystem which supports 34 fish species. These species utilize different habitat types depending on the season, the species of fish and the stage of the fish's life cycle. Maintenance of all habitat types is therefore central to the continued health of all fish species inhabiting the Kenai River.

Sport Fishery The Kenai River supports Alaska's largest freshwater sport fishery. The Chinook salmon fishery is world renowned because of the size of the fish harvested and is the largest fresh water sport fishery for this species in Alaska. Annual harvests from 1990-1994 ranged from 8,000-23,000. The coho and sockeye salmon sport fisheries are also the largest fresh water sport fisheries in Alaska for these species. Annual coho salmon harvest from 1990-1994 has ranged from 51,000-87,000. Annual sockeye salmon harvest for this same period in the main-stem Kenai River ranged from 94,000-242,000. The Russian River, a major Kenai River tributary, also supports one of Alaska's largest sockeye salmon fisheries. Harvest here from 1990-1994 has ranged from 57,000-97,000. Sockeye salmon also support a personal use dip net fishery. The fishery occurs in the lower five miles of river. Maximum harvest in the fishery has approximated 100,000 fish. Pink salmon support a relatively minor fishery on even years. Although this species is abundant and easily caught on even years, angler preference for Chinook, coho and sockeye salmon are reflected in the small harvest. Harvest in 1992 and 1994 was 10,000 and 9,000 respectively. The number of pink salmon caught and released is about five times greater than the actual harvest.



Rainbow trout and Dolly Varden are supporting an expanding fishery. In recent years, restrictive regulations and changing angler attitudes have fostered catch-and-release fishing for both species. The focal point of this fishery is in the Upper Kenai River between Skilak and Kenai Lakes. Both species are, however, caught and harvested throughout the Kenai River and its tributaries. Catch of trout in the Kenai River from 1990-1994 ranged from 23,000-62,000. Most trout are released and actual harvest during this same period ranged from 2,000-3,500 fish. The Dolly Varden harvest during this same period ranged from 12,000-14,000; catch ranged from 35,000-79,000.

Kenai River sport fisheries to a lesser degree provide recreational opportunity to harvest arctic grayling and northern pike. A personal use fishery in the spring in the lower Kenai River harvests eulachon.

In 1994, participation in Kenai River sport and personal use fisheries was estimated at 340,000 days fished by approximately 100,000 participants. This is approximately 13% of all participation expended in Alaska's sport fisheries.

Commercial Fishery The Kenai River is also a major producer of sockeye salmon for the Cook Inlet commercial fishery. From 1990 through 1994 sockeye salmon production from the Kenai River ranged from 1.8-8.0 million fish. The corresponding harvest range was 1.1 million-7.0 million fish. Lesser numbers of coho, pink and chinook salmon produced by the Kenai River also contribute to the commercial harvest.

Wildlife Resources

Overview Up to 200 species of birds and mammals, and one species of amphibian may live in the Kenai River basin. However, only those species dependent on the Kenai River corridor and its tributaries for food and/or cover are emphasized in the following discussion.

Bald Eagles Of the 12 species of raptors which seasonally use the Kenai River, the bald eagle is the species most dependent on the habitat resources of the River. The Kenai River supports the second largest concentration of over wintering bald eagles in Alaska, surpassed only by the Chilkat Valley near Haines. At least 29 pairs of bald eagles nest in the Kenai River watershed. Currently, eleven nesting territories occur along the Kenai River itself: five in the Kenai National Wildlife Refuge, one in the Chugach National Forest, four within Chugach National Forest, one on state land and one on private land. The remaining 18 nesting territories occur outside the Kenai River corridor but within its drainage.

Additionally, bald eagles rely heavily on the River and its tributaries for feeding. The numerous salmon and other fish species provide a year-round food source. Shallow, swift flowing areas of the Kenai River (especially between RM 40 and 82) frequently remain ice-free during winter months allowing bald eagles to feed on spawned-out salmon. Bald eagle over-wintering areas are also located at the lower end of the Snow River.

Numbers of bald eagles over-wintering along the Kenai River gradually increase from October, peak in January (numbering 300 to 600 birds), and begin to decline in March. Up to 20 bald eagles per river mile have been observed below Skilak Lake. Tagging and telemetry studies suggest that bald eagles from as far away as Kodiak Island, the west side of Cook Inlet, Seward, and Homer may over-winter along the upper Kenai River. Ravens and magpies are commonly associated with over-wintering bald eagles, scavenging fish left behind by bald eagles.

Essential to the bald eagle life history on the Kenai River are the numerous mature cottonwood and spruce which line the Kenai River. These trees provide nesting habitat and perches from which bald eagles can hunt and roost. Without the aforementioned habitat features, there would be few, if any, bald eagles inhabiting the Kenai River corridor.

There are no laws concerning development near eagle nesting trees. Only the tree itself is protected. Guidelines concerning development at or around eagle nesting trees are have been established by US FWS.

Waterfowl and Shorebirds Approximately 21 species of waterfowl seasonally use the Kenai River for staging, nesting, and/or feeding. Because the Kenai River reach between RM 40 and 82 is frequently ice free in the winter, this area provides valuable wintering habitat for goldeneyes and mergansers. Over 570 goldeneyes (51/river mile) and 150 mergansers (15/river mile) have been counted in the winter along the 10-mile section of the Kenai River below Skilak Lake.

The Kenai River Flats provides habitat which is used heavily by a variety of waterfowl, seabirds, and shorebirds. The Flats are especially important to northward migrating snow geese. Snow geese are protected by international treaty and virtually the entire population of Wrangell Island (Siberia) snow geese pass through the Kenai River Flats each spring, usually between mid-April and May 1. Up to 6,500 snow geese per day rest and feed for a 3- to 10-day period, building fat reserves crucial to their migration to Wrangell Island. Tavener's Canada geese, cackling Canada geese and white-fronted geese bound for the Yukon-Kuskokwim River Delta often remain longer than the snow geese. Black brandt and emperor geese have been observed on the Flats but rarely. Some swans rest and feed on the Flats during the spring migration. The most abundant migratory ducks utilizing the Kenai River Flats include northern pintail, mallard, green-winged teal, northern shoveler, and American widgeon. Other migrating duck species which commonly utilize the Kenai River Flats include bufflehead, common goldeneye, and common and red-breasted merganser. Less commonly observed migrating waterfowl on the Kenai River Flats include gadwall, harlequin duck, canvasback, Barrow's goldeneye, eurasian widgeon and teal, scoters and scaups. Nesting waterfowl include Tavener's Canada geese, mallard, pintail and green-winged teal. Sandhill crane arrive as the geese depart and hundreds have been observed on the Kenai River Flats during the spring and fall migrations. Most of these birds are migratory but some remain to nest on the Flats. Shorebirds nesting on the Kenai River Flats and wetlands upstream of the Flats include semi-palmated plover, greater and lesser yellowlegs, least sandpiper, short-billed dowitcher, red-necked phalarope and spotted sandpiper. Migratory shorebirds include pectoral sandpiper, western sandpiper, Hudsonian godwit, black-bellied plover, whimbrel, dunlin, common snipe and Pacific and American golden plover. Common snipe are most abundant in the fall and thousands of pectoral sandpipers have been observed on the Flats during fall migration. Rare shorebird migrants include sharp-tailed and solitary sandpipers, and surfbirds. Predatory birds dependant upon the ducks and geese include the peregrine falcon and northern harrier. Large colonies of herring and mew gulls are present on the Flats and some glaucous-winged and Bonapart's gulls also nest there. Nesting of parasitic jaegers has been documented. In all, over one hundred species of birds have been documented on the Kenai River Flats.

Trumpeter Swans Trumpeter swans rely on specific areas within the Kenai River Basin. In the past several years, 20 to 70 adult trumpeter swans, perhaps representing the majority of the trumpeter swans nesting on the entire Kenai Peninsula, stage on the lower Moose River prior to territory establishment (March through April), and fall migration (October). Banding and telemetry studies indicate that many Kenai Peninsula nesting trumpeter swans utilize the lower Moose River for feeding. Due to recent management efforts trumpeter swans are once again using the outlet of Skilak Lake throughout the year, especially during spring staging.

Seabirds Seabirds are found throughout the entire Kenai River Basin. However, the greatest amount of use is concentrated along the Kenai River corridor. Small rock islands in Skilak Lake and the outlet of Snow River provide the only known nesting areas for seabirds within the River corridor (except the gull colonies on the Kenai River Flats).An unusual glaucous winged/herring gull hybrid colony and a double-crested cormorant colony both occur on Skilak Lake islands. Surveys indicate at least 470 pairs of gulls and two to six pairs of cormorants nest on the islands. During the late summer and early fall, gulls and cormorants feed on spawned-out salmon along the entire length of the Kenai River. A second gull colony, composed of mew gulls, has been documented on the Snow River Flats, where the Snow River empties into Kenai Lake. Tern Lake supports approximately 15 pairs of arctic terns and a colony of about 20 pairs of mew gulls.

Bears Bears are prevalent throughout the area, with black bear being more common than brown bear. The largest black bear concentrations are north of the River, ranging from Beaver Creek and the Swanson River east to the Kenai Mountains. The heaviest concentrations of brown bear observed coincide with salmon migration up the Kenai River and its tributaries. Brown bear feed on Kenai River salmon (predominantly carcasses) between the Kenai River/Russian River confluence and Skilak Lake, and for approximately ten miles below Skilak Lake. The areas downstream from Skilak Lake is critical habitat for brown bear travel and feeding. Brown bear also utilize salmon in the Russian, Moose, Killey, Snow, and Funny rivers, and in Juneau, Quartz, Trail, and Johnson creeks.

The food habits of black and brown bears are different. Brown bear fish in late summer and early fall, with the primary species taken being sockeye and coho salmon. Black bear feed heavily on berries and forbs, but both species will prey on moose calves.

Moose Moose are the most common ungulates found in the Kenai River drainage. Moose surveys conducted in 1979 and 1982 on the Kenai Peninsula indicated average densities within one mile of the Kenai River of 4.2 and 6.7 moose per square mile respectively. Currently, fewer moose winter in this area.

Preferred moose browse varies by area and season. Willow is the favored winter food. Burned-over areas north and south of the Kenai River offer such habitat. Birch and aspen are also used as a food source and are found along both sides of the Kenai River. Moose will browse in early spring on emergent plants along rivers, bogs, and muskegs. The Moose River Flats, because of their numerous muskegs, bogs, and ponds provide ideal calving areas for moose.

Moose calving areas are scattered throughout the Basin. One high-value calving area has been documented along the Kenai River above Skilak Lake between RM 69 and 74. This area's numerous wetlands, pond, bogs, and sloughs provide cover for successful calving.

Caribou Caribou, which were eliminated on the Kenai Peninsula by about 1913, were reintroduced north of the Kenai River in the mid-1960s. An important calving and summer range for the lowland caribou herd now exists in the Kenai River Flats and extends to wetlands north of the Kenai Airport. Wintering areas exist in the Moose River Flats. The current over-wintering populations in the Moose River Flats vary between 60 and 70 animals. Additional reintroduction efforts were made in 1985/86 on the benchlands between Skilak and Tustumena lakes. These animals sometimes range to the Skilak Lake outlet. An upland caribou herd, estimated to number between 300 and 400 animals, uses only the fringes of the mountains in the northeastern portion of the Kenai River drainage.

Mountain Goat and Dall Sheep Other ungulates using the Kenai River Basin include mountain goats and Dall sheep drainage wide. Dall sheep movements are primarily made during summer months. Movements during the winter months are restricted to wind-swept snow-free areas of higher elevations and cliffs. In the spring, sheep move downslope to feed on early growing vegetation. As the snow retreats, sheep progress upslope following the seasonal progression of vegetation growth. The primary foods of Dall sheep are grasses and forbs of the alpine tundra.

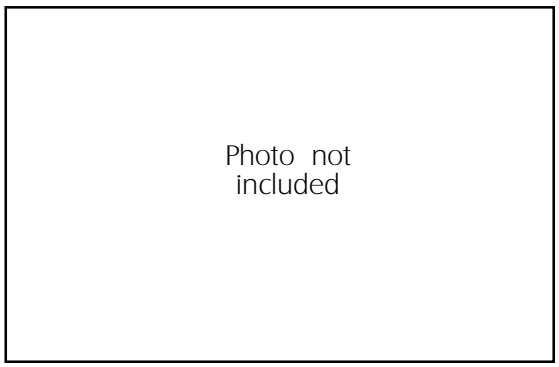
Furbearers Beaver and other aquatic furbearers are distributed throughout the Kenai River drainage, with areas of abundance between RM 64 and 74. Stable water levels and food supplies commonly associated with the numerous side channels combine to form quality furbearer habitat. Otter are more common in the more remote areas of the drainage than on the mainstem Kenai. Muskrat populations are relatively low or absent along the Kenai River because of the scarcity of food and seasonally fluctuating water levels.

Other mammals which use the Kenai River Basin include wolf, wolverine, lynx, coyote, short-tailed weasel, red fox, marten, red squirrel, snowshoe hare, and several species of voles and shrews.

Five to seven wolf packs are known to occur within the Basin. Wolverines, lynx, red fox, and marten are uncommon to rare and are limited to remote regions of the Kenai River drainage.

2.3. Recreation

Recreation use patterns have changed considerably since the original Management Plan was completed in 1986. Fishing is still by far the primary recreational activity along the Kenai River. More people are now participating in this activity, due in part to growing population and the recently increased popularity of sockeye angling. Increased sockeye angling has also resulted in more crowding and habitat damage in previously unimpacted locations. Participation in other recreational activities has also increased in recent years.



Fishing

Chinook (King) salmon fishing occurs during May, June, and July throughout the length of the Kenai River below Skilak Lake, with the primary concentration of activity from Centennial Park to the Warren Ames Bridge. There has been a trend for earlier season fishing in May and for an annually increasing number of boats and fishermen causing congestion and safety problems. There is an increasing number of private guide boats fishing for Chinook salmon above the Soldotna Bridge. The overall trend is for a small annual increase in the number of shore fisherman, with increasingly crowded conditions occurring at prime access points to the Kenai River.

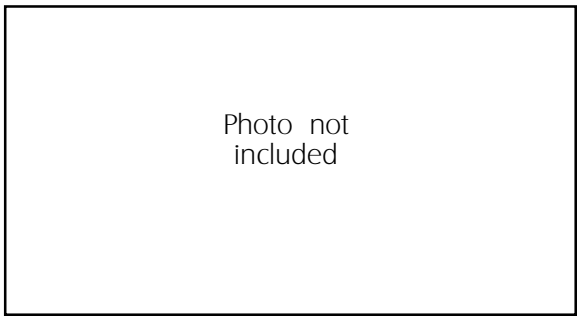
Conflict exists between the guided anglers and non-guided anglers due to competition for prime fishing locations. Conflict also exists between the various methods of fishing. Back trolling and drifting are not always compatible techniques. Drifting requires the boat move with the speed of the current; back trolling requires the boat be held under power in the current and slowly backed downstream at less than the speed of the current. There has been a trend towards increasing use of the back trolling, though drifting still remains the most popular method.

There has been increasing use of the upper river between the outlet of Skilak Lake and the Kenai Keys area by guided and unguided anglers during muddy water periods caused by flooding of the Killey River. Increased use of this area also occurs in early to mid-July as anglers target early run Chinook salmon destined for the Killey River. Conflicts here during peak use periods are identical to the conflicts noted for the lower river.

Sockeye (red) salmon fishing begins in June at the confluence of the Kenai and Russian River. Beginning in mid-July and continuing through early August, sockeye salmon fishing occurs over the entire length of the Kenai River. Anglers concentrated at public sites accessible by road and the number of anglers participating in the fishery have increased dramatically. Conflict occurs between anglers for space at crowded public access points. Damage to vegetated streambanks by sockeye fishermen is becoming a major biological and social issue.

Pink (humpy) salmon fishing occurs in even years only, during July and August. This is primarily a shore based fishery on the entire River below Skilak Lake, with concentrations of activity at all public access areas below the Moose River. The trend is for increasing numbers of anglers to target this fishery since the fish are easily caught.

Fishing for Dolly Varden/arctic char occurs year-round. Fishing for lake trout is primarily in the early spring. Fishing for rainbows occurs from June 15 to April 14. Dolly Varden and rainbow trout angling takes place in the entire Kenai River system with concentrations of activity on the upper River between Kenai and Skilak lakes and at the outlet of Skilak Lake. The trend has been towards increasing pressure on the harvest of trout species and for an increase in trout fishing from boats. This pressure has resulted in the establishment of a catch and release trophy trout program for the Kenai River. Hooligan fishing occurs during the months of April and May in the entire River below the Kenai Keys with most fishing for this species occurring downstream from Beaver Creek.



Bank fishing is a popular activity which occurs at many locations along the Kenai River system primarily during the months of April through September and during the winter through the ice. Prime fishing locations such as the banks of the Kenai River between the confluence of the Russian River and Jim's Landing and at the confluence of the Moose River commonly have several hundred fishermen standing shoulder to shoulder during the peak periods. There is increasing pressure on existing facilities as more and more visitors participate in this activity. Bank fishermen are a major cause of bank erosion due to the heavy foot traffic at prime locations, which destroys the protective vegetation. Bank erosion is also caused by wakes generated from the use of boats.

Other Recreation

The Kenai River sees considerable rafting, kayaking, and canoeing throughout much of the river. The trend is for an increase in use of the river for non-motorized boating activity, especially between Kenai Lake and Skilak Lake. Most conflicts are between motorized and non-motorized users. Sailboating and sail-boarding occur sporadically on Kenai and Skilak lakes. Jet-skiing and water-skiing occur occasionally on Kenai Lake (all other areas are closed). These uses are minor at the present time but jet-skiing use is increasing in popularity. There has been increasing concern over the increased erosion rates associated with power boat use on the Kenai River.

Moderate levels of hunting activity occur during the fall and winter months at several locations along the Kenai River system. Hunting related boat use occurs throughout the Kenai River system in the Fall. The discharge of weapons from boats for big game hunting presents a hazard to all other users on the Kenai River system, except in the areas of Kenai and Skilak lakes. Aircraft operation occurs on a limited but reoccurring basis throughout the year in several portions of the Kenai River system—gravel bars are utilized by wheel planes, and the river and the lakes are used by float planes.

Moderate levels of snow-machining occur on several of the trails adjacent to the Kenai River if winter snow conditions permit. The Russian River and Juneau/Resurrection Pass Trails and the lake ice of both Kenai and Skilak lakes are popular snow-machining areas. Conflicts with cross-country skiers and snowshoers occur in all of these areas and the USFS has tried to minimize this problem by closing the Juneau/Resurrection Pass Trail to snowmachines after February 15 of each year. Conflicts caused by illegal ATV use on the Torpedo Lake Trail at Kenai Keys is also common. When snow cover is insufficient, snow-machining can also cause serious damage to vegetation by direct injury and by causing "freeze-down" due to snow compaction.

Off-road all-terrain vehicle riding occurs at moderate levels at several locations along the Kenai River system. Though prohibited on all State Park and USFWS and most USFS lands, this activity does occur illegally often enough to conflict with other recreational users and cause serious environmental damage through destruction of vegetation and erosion. This activity contributes to erosion of the river banks and potential damage to salmon spawning beds on exposed gravel bars. Operation of vehicles below the ordinary high water line of the Kenai River and its anadromous tributaries is illegal without a permit from DOPOR or ADF&G, but has increased in recent years.

Landscape/wildlife photography and viewing occurs throughout the year at all locations throughout the Kenai River system with the primary concentration of activity from Kenai Lake to the Moose River. There has been a dramatic increase in this activity particularly by persons observing the snow geese and caribou at Kenai Flats and eagles, trumpeter swans and other waterfowl along the upper Kenai River below the outlet of Skilak Lake.

Hiking occurs primarily during the months of May through September at a number of locations along the Kenai River system. There is increased interest in this activity, especially on short improved trails which can be used by people of all ages. There is a shortage of suitable improved trails and facilities.

Both auto and boat camping are common activities at a number of locations along the Kenai River system during the months of May through October. Nearly all public and commercial campgrounds are filled to capacity during the peak summer months of June, July and August. The trend is towards annually increasing pressure on existing facilities as more and more visitors participate in this activity. Conflict occurs when inadequate facilities are utilized beyond capacity, causing resource damage and confrontations between users. There are also conflicts between different types of campers such as tenters and recreational vehicle users.

Other recreational activities occurring along the Kenai River include recreational gold panning, primarily during the summer months at a number of the tributary streams and occasionally in the mainstem Kenai River. This recreational gold panning is often conducted with 4 inch and 6 inch suction dredges and is only seasonally authorized on streams such as Quartz Creek, which are also important spawning and rearing streams. Also, exploratory pits have been permitted to determine the feasibility of commercial mining operations. All of these activities are permitted by law, and there is the possibility that their scale and scope may expand in the future. Although prohibited by borough ordinance, fireworks discharge is common throughout the Kenai River area, and can pose a danger to wildfire.

CHAPTER 3

PLANNING ISSUES

3.0 Why Revise the Plan?

Since the plan was adopted in 1986, much has changed on the Kenai River. In addition to growing numbers of people using the river and the associated impacts, there is better information about the impacts on the river's fish habitat. Recreational use conflicts are increasing as more people use the river's recreational opportunities. It has also become evident that effective management of the Kenai River and its tributaries requires an integrated, coordinated ecosystem approach.

Listed below are the main issues that the Management Plan revision process has addressed. These issues were identified using input from the public, staff, and other agencies. Some issues raised are not listed because they were beyond the scope of this plan.

3.1 Fish and Wildlife Habitat

- We now know more about how different species utilize the river, and what habitat types are most important to them. New research has shown that near shore riparian habitat with overhanging vegetation, irregular banks, and slow water velocities is very important rearing habitat for juvenile salmon. Increased recreational use and land development have greatly increased the amount of bank trampling and vegetation loss, resulting in a significant loss of this rearing habitat.
- Except for the inventory of wetland areas in the National Wetlands Inventory prepared in the mid 1980s, relatively little is known about the role that wetlands play in maintaining the Kenai River ecosystem. There is not sufficient information to determine which wetlands are critical and which are not to the health of the river. However, government agencies are often required to make decisions on fills, roads, and other land uses which effect wetlands without adequate information.
- More is known now about the important role that tributaries, floodplains, and contiguous wetlands play in the rearing of juvenile fish. There is concern about the cumulative impacts from urbanization (land clearing, development of structures, roads, driveways, pollution introduction, etc.) on these habitat areas. There is concern that the US COE permitting process does not adequately address the cumulative impacts of wetlands development.
- Ongoing research is showing the importance of maintaining natural corridors for wildlife migration and feeding, and how recreational use and land development is affecting fragile populations near the river.

3.2. Recreation

- There has been increasing pressure from bank anglers, resulting in increased damage to riparian habitat from bank trampling, increased trespass incidence on private property, and a demand for more access areas. The quality of the recreational experience has also declined due to crowding and increased competition for space.
- Boat use has increased significantly, resulting in competition for fishing holes, conflicts between fishing methods, and between conflicts between guided and non-guided groups, and fishing and non-fishing groups. These problems are increased during the July king runs, and in August and September during coho runs, when boat overcrowding occurs at the principal fishing holes on the lower river. There is also concern that heavier boats are generating larger wakes that may impact riparian habitat. A recent study by the USGS indicated that boat use, under certain conditions of passenger loading, location of operation in river, and type of hull design, create varying levels of stream bank erosion. Jet-ski use on Kenai Lake is increasing and is becoming controversial.

- The number of commercial operators, primarily fishing guides, is at the highest level ever. There is increasing pressure to limit commercial use, and develop standards for commercial operators.
- Even with development of many new recreation facilities, peak demands for day use, access, bank fishing, and camping still cannot be accommodated. While constructing additional facilities would accommodate some of this use, there is concern that this would increase use of the river and increase many current problems.

3.3 Environment

- Development pressures caused by rapid growth have raised concerns about the impacts of development beyond the river corridor. The revised Management Plan should address a broader area, encompassing the entire Kenai River watershed. The Management Plan can directly address management of state lands within the watershed, and make recommendations for multi-agency coordination for management of other lands and resources within the watershed.
- The 1995 flood caused significant bed load movement and channel changes, and showed which bank protection measures were effective. The current re-evaluation of the 100-year floodplain in the Big Eddy area should be incorporated into the Flood Insurance Rate Maps.
- Recent water quality studies have documented water quality problems in the more developed sections of the river (i.e. presence of hydrocarbons, elevated coliform levels, loss of diversity of indicator species of invertebrates).
- Water quality is being impacted by wastewater discharge into the river, especially from storm drains, parking lots, and other industrial and commercial developments.
- Many on-site septic systems may be inadequate. Based upon research by the Natural Resources Conservation Service, most soils in the river corridor appear inadequate for septic tank absorption fields. Some of the septic tanks may be adversely affected by high ground water tables. There is also concern that discharge from the Soldotna sewage treatment plant impacts water quality.
- Smaller fuel storage tanks (fewer than 200 gallons) are not regulated and may pose a threat to water quality. Of particular concern are those tanks within the floodplain. KPB 21.18.050 regulates fuel storage tanks having a liquid volume of 200 gallons or more within the floodplain areas of the Kenai River and its tributaries.
- Along with increasing development, there are increasing demands on the groundwater supply. Adequate groundwater must be reserved to ensure that the river has enough water, especially during low flow periods.
- Impacts to the environment from recreational use are an increasing concern, especially littering, fuel spills from outboard motor use and refueling, inadequate RV dump stations, and inadequate sanitation facilities for anglers and highway travelers.
- There is increasing concern about the amount of hazardous materials being transported within the Kenai River corridor. A serious accident could possibly release toxic substances directly into the Kenai River. [3-1]
- There are many mining claims in the Kenai River drainage, and if a significant portion of these are converted into active mining operations, this could pose a potential threat to the water quality of the Kenai River, especially if the current water quality standards are relaxed.

[3-1] The KPB notes that the registration of hazardous materials occurs under AS 18.70.130 and AS 29.35.500-560. KPB Code at Chapter 10.20 requires reporting and placarding for hazardous materials and explosives. The transportation of hazardous materials and explosives is regulated by the state under AS 28.05.011 and 13 AAC 05.010. In addition, the Borough has an agreement with the Alaska state troopers that requires the troopers to notify the KPB Office of Emergency Management providing relevant information regarding the transportation of hazardous materials.

3.4 Land Use

- Land ownership in the Kenai River Watershed has changed significantly since the original Management Plan was completed. Land has been transferred to the KPB, the Mental Health Trust, and Native corporations. The KPB Land Management Division has been aggressive in classifying municipal entitlement lands, and when appropriate, depositing parcels into the land bank for disposal. Also, Exxon Valdez Oil Spill Settlement funds are being used to purchase important parcels of land along the river. Additional state land is being considered for inclusion into KRSMA.
- Proper land development and use is critical to the health of the Kenai River and its tributaries. Extensive areas of vacant, privately owned land adjoin the lower and middle reaches of the Kenai River, and the potential for development—and therefore impact—is high. Almost 70 percent of the lower 50 miles of the Kenai River, where almost all of the king salmon are produced, is privately owned. Even with the expected EVOS purchases, over 60 percent of this portion of the Kenai River will remain in private ownership.
- The transportation network in the Kenai River watershed is expanding (Kenai Spur, Sterling-Soldotna rebuild, Juneau Creek alignment, Main Street Soldotna, Soldotna Bridge crossing, and Funny River Bridge). This new construction will probably result in significant changes to the way land is used and developed within the river's watershed. See the Alaska Department of Transportation and Public Facilities environment assessments of these projects for additional information.
- The increasing population of the KPB has increased the demand for river front lots and generally put higher development pressures on land in the river watershed. Especially of concern are the riparian habitat, wetland, and floodplain areas. Development within the 'central peninsula,' including much of the Kenai River watershed, has increased significantly during the last decade.
- Some section line easements along the river provide legal public access where increased use may be inappropriate (by encouraging trespass on adjacent lands, increasing habitat damage).
- There is an increasing awareness that management of the Kenai River and its adjacent lands must be coordinated among the various private and public landowners. Such coordination would not only serve to protect the river's resources, but would also increase efficiency in permitting.
- Other resource development activities within the Kenai River watershed, such as logging, oil and gas development, or mining, can have adverse impacts on the habitat, water quality, and recreation use if proper management practices are not followed.
- Large portions of the Kenai River watershed have been infested with the spruce bark beetle. Although timber harvest has been used as a means to manage the effects of beetle infestations, this practice has been viewed as controversial.

3.5 Enforcement, Education, and Funding

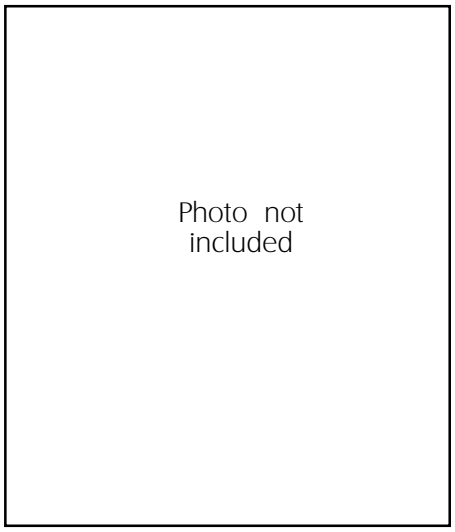
- There is growing concern that there is not enough enforcement presence along the Kenai River (i.e. enforcement of wetlands regulations, pollution, septic systems, fishing regulations, littering). It is probably true that most agencies (local, state, and federal) cannot provide the level of enforcement presence required for effective administration of current regulations and laws within the Plan Boundary.
- The public's awareness of the problems facing the Kenai River has been increasing. This trend should be encouraged through aggressive public education programs and additional research efforts.
- As federal, state, and local budgets grow tighter, government agencies are forced to cut back on educational, permitting, and enforcement programs. A stable funding source, such as user fees, should be developed for implementing such programs.

CHAPTER 4

STUDY AREA RECOMMENDATIONS

4.1 Integrated, Comprehensive Approach to River and Watershed Management

The protection and restoration of the fishery and habitat resources of the Kenai River, coupled with the use of nearly the length of the river for a variety of recreation pursuits, requires a comprehensive, integrated approach to river management. This, in turn, requires consideration of the river's entire watershed. Integration of the management practices of local, state, and federal agencies will be necessary, if there is to be any chance of achieving coordinated, effective river and watershed management.



Agreement on recommendations to accomplish these goals has been difficult because of the varying objectives and management authorities of individuals, agencies, and government units. Agreement has also been difficult because of the sometimes contentious nature of some recommendations. The recommendations in this Plan are the Advisory Board's and DNR's attempt to find the right mix of strategies that are effective, feasible and politically acceptable.

4.2 Scope of Areawide Recommendations

The subsequent recommendations were developed to implement the goals and objectives developed from the public meeting process. They are intended to resolve the main problems of recreation and habitat management that recent studies have identified or are known to the public and government agencies. They have been developed with the involvement of local, state, and federal agencies, but should not be viewed as final until this Plan is adopted by these entities.

Certain caveats about the following discussion on recommendations should be noted. In certain instances, the strategies suggest actions that must be further developed or refined. Some will require additional research; a subsequent, separate planning process; or implementation actions on the part of entities (usually governmental or agency) that only they can undertake. If this occurs, this is noted together with the responsible entity and the nature of the required action(s) on the part of that entity. Finally, recommendations relating to state land not within KRSMA will be implemented through other Department plans, particularly the Kenai Area Plan. Land classification and disposal recommendations will have to be made through the Kenai Area Plan.

4.3 Areawide Goals and Objectives

The goal and objectives [4-1] that are included with the areawide recommendations represent the desired future condition of human activities that may significantly affect the Kenai River, or the desired environmental quality or operating performance of the Kenai River ecosystem, particularly that part within the Plan Boundary. They were initially developed through a review and synthesis of the public comments received at the goal setting meetings held in Anchorage and Soldotna in 1996, and were subsequently reviewed and adopted by the Advisory Board in 1997.

[-1] Goals are intended to describe desired end states. Objectives are meant to be more precise descriptions of that end state or of the means to achieve a goal. Both are to be distinguished from standards and policies. Standards are the thresholds (oftentimes quantitative) used to define objectives or are performance criteria used to measure success in achieving an objective. Policies are those statements (usually qualitative) that guide decision making in the management of some process — in this case, river management. The Management Plan includes the use of all of these components — goals, objectives, standards, and policies.

They are meant to give direction to the planning, development, management activities of the local, state, and federal agencies responsible for the stewardship of the Kenai River. They are also intended to affect the permitting processes of proposed actions of local, state, and federal agencies and responsible for the management of the river; its riverine area; and the adjacent, hydraulically connected upland areas, especially wetland areas critical for habitat or hydrologic reasons. Many of these objectives and goals can only be implemented through the actions of local, state, and federal agencies and governments in their review of permits and projects.

4.4 Relationship to Goals and Objectives

A statement of goals and objectives precedes the recommendations for each subject category. The recommendations are meant to implement one or more of the objectives associated with that category. The reader should consult the goals and objective statements that precede the recommendations, to get a sense of the relationship between the desired end state and the recommendations.

To provide a linkage between the planning issues, goals, and objectives that form the basis for plan revision, the Management Plan includes for each recommendation category the following:

- An overview of significant background information,
- A discussion of the problems surrounding an issue and rationale for the recommendation,
- A description of the recommendation and an indication of the agency(ies) responsible for its implementation.

4.5 Areawide Recommendations

The subsequent recommendations deal with subject areas that are areawide in context. That is, the recommendations are likely to affect several river reaches and often the entire Kenai River system and its associated watershed.

There are also specific management recommendations for specific segments of the Kenai River. The reader is referred to the next chapter (River Segment Recommendations) for an understanding of these recommendations. Both this chapter and Chapter 5 must be reviewed to get an overall sense of how the recommendations included in the Management Plan are to affect the future management of the Kenai River and its watershed.

4.5.1 Recreation

The Kenai River system has seen increasing recreation use from bank anglers, boat users, and other recreational users. This use has resulted in increased damage to riparian habitat, increased trespass incidence on private property, increased conflicts between recreational users, and a demand for more access areas and public facilities. The number of commercial operators, primarily fishing guides, is at the highest level ever. The quality of the recreational experience has been declining due to crowding and increased competition for space.

A critical element of recreation management along the Kenai River is the relationship between recreation use and the impact of that use on fragile habitats. Where the goals of recreation use and limited habitat degradation conflict, the recreation must be managed in ways that limit and reduce that impact to acceptable levels. This issue is especially severe where bank angling activities and its impact to the near shore area by trampling and the subsequent erosion and bank sloughing.

Goals and Objectives

Goal: **To provide a quality recreational experience for users of the Kenai River, consistent with the statutory requirement to protect and perpetuate the fishery and wildlife resources and habitat in the unit and adjacent area, and with the need to minimize habitat and environmental impacts, and ensure public safety.**

Objective: Management of Recreational Use

To manage recreational use by time, activity, and area designations in a manner which best provides for recreational enjoyment while minimizing conflicts among users and the impact of commercial activity on public use and enjoyment.

To establish a maximum level of adverse impacts from competing recreational users, and formulate management measures to reduce or maintain the level of impact to below adopted threshold levels.

Goal: To provide for a balance between commercial use and non-commercial use of the KRSMA and adjacent area.

Objective: Management of Commercial Use

To designate types and levels of commercial activities to be permitted on or adjacent to the river.

To develop a program that manages the impacts of commercial activity.

To develop screening criteria for evaluation and/or approving derbies.

Goal: To maximize enjoyment and access to recreational opportunities while maintaining the diversity of the recreational experience and minimizing environmental impacts from recreational activity.

Objective: Recreational Facilities and Development

To provide for adequate rest room facilities throughout the river corridor and investigate other waste management alternatives.

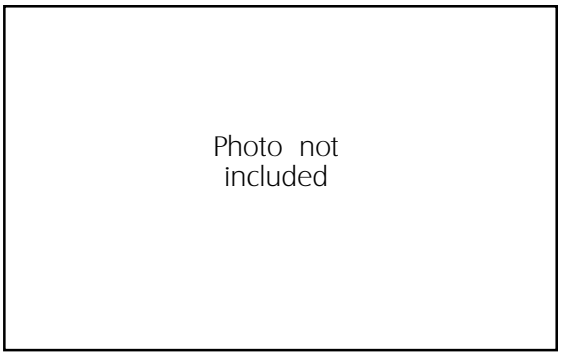
To manage upland recreational activities in such a manner so that resource degradation is limited and that important habitat areas are protected and maintained.

To ensure that there are adequate public lands adjacent to the river for access, fishing, camping, day use, and related activities.

To maintain scenic views of and from the Kenai River and retain areas for wildlife viewing.

4.5.1.1 Water Based Recreation

Water based recreation refers to the recreational activity that takes place on the Kenai River, Skilak Lake, and Kenai Lake. It usually refers to boat activity, typically involving fishing, but also includes other forms of motorized activity conducted on the river or Kenai Lake. Examples of the latter include the use of jet skis, hydroplanes, or aircraft on Kenai Lake, and canoeing and kayaking on Kenai River. This section is to be distinguished from upland recreation issues. The latter is a separate section in this Chapter focusing on upland recreational facilities and uses (campgrounds, sanitary facilities, boat launches, etc.).



The issues surrounding water based recreation were, arguably, the most complex, emotional, and divisive of those dealt with in this revision of the Management Plan. There were often divergent and competing views on what to do about rental boat use, enforcement, the management of sporting fishing guides, vessel overcrowding, and whether certain portions of the Kenai River should be made non-motorized (i.e., used by drift boats only for fishing). The public review process sometimes identified consensus about a particular issue and the means for dealing with the associated problems. At other times there was a widely divergent ideas about how to resolve certain issues. The latter included the management of guides and whether to make certain portions of the river drift only.

The recommendations that follow are the product of the public planning process, review of the results of this process by the Advisory Board, and intensive discussion on the relative merits of particular approaches to river management by the agencies and the Advisory Board. Not everything the public wanted to do could be achieved, and the Advisory Board play a pivotal role in deciding the most appropriate course of action. The recommendations included in the Management Plan have been reviewed and approved by the DNR Commissioner.

4.5.1.1.1 Scenic Operators (Implementing Agencies: DNR-DOPOR, USFS, and US FWS)

Issues pertaining to scenic operators (businesses providing non-fishing, drift only boats in the Upper River) centered on whether time limits should be placed on the use of put in and take out points and the staggering of raft trips.

The subject of scenic operators and of the proper type and intensity of recreation activities was addressed in the Upper River planning process. This analysis occurred throughout 1995 and 1996 by federal (US FWS and USFS) and state agencies (ADF&G and DNR-DOPOR).

Recommendation 4.5.1.1.1: The number of permits authorizing commercial operators to provide drift/float trips in the Upper River should be 'capped' to the current level.

4.5.1.1.2. Rental Boats (Implementing Agency: DNR-DOPOR)

A general public consensus emerged during the Management Plan update that the operation of rental boats is unsatisfactory and constitutes a significant problem. Much of the problem focuses on their use by members of the public that are unaccustomed to using small boats in the rapidly moving waters of the Kenai River and by illegal 'pirate' guides. The term 'illegal' guides refers to those individuals that function as a guide but do not have a permit to practice on the Kenai River issued by State Parks. Typically, an individual rents a boat, engages people to go with him on the river, and then provides services equivalent to those provided by permitted guides. The critical aspect of this activity is the payment for services to the illegal guide by passengers renting the boat.

Recommendation 4.5.1.1.2: DNR-DOPOR should undertake an aggressive enforcement program to mitigate the adverse effects of rental boat operations, including eliminating the practice of illegal guiding.

Components of this program may include but are not necessarily limited to the following:

- Require a competency test in order to rent or operate a rental boat. (This is occurring now on a volunteer basis; this recommendation will require all boat rental operators to provide instruction on the basics of boat operation to inexperienced operators.)
- Make it illegal to use an unpermitted guide and establish penalties for using an unlicensed guide.
- Should future conditions warrant the need to limit rental boat operations, restrictions to hours and/or days could be applied.
- Require a parks permit for all rental boats regardless of where rented; i.e., require boats rented in Anchorage to secure a parks permit.
- Require stronger enforcement of pirate guides in rental boats, which will require the allocation of enforcement resources to reduce the incidence of this problem. In addition, a set of violations and sanctions should be developed for the rental boat industry, similar to that proposed for the sport fishing guide industry. In this evaluation the need for liability insurance should also be assessed. (Note: the former will require the use of additional revenues, generated through new or augmented fees)

- Register all rental boats on the Kenai River. Identify such boats with a distinctive decal that allows easy identification of the rental firm.
- Institute a fee for each rental boat (rather than charging one fee for the rental operator) and increase rental boat fees paid to the State. The latter must be consistent with the recommendation to impose fees on each rental boat; i.e., the amount per boat would be less than the total fee paid to the State but the total fee would be greater than it is currently.

Note: See also recommendations on 'Enforcement' (4.5.7.1)

4.5.1.1.3. Derbies (Implementing Agency: DNR-DOPOR)

Recommendation 4.5.1.1.3. Derbies on the Kenai River should be limited to those which do not occur at the peak of a particular fishery and are not designed to attract large numbers of additional fishers to the river, which do not occur during periods of projected low fish stocks that have been identified by the ADF&G for protection, and which are conducted by a 501(c)(3) non-profit group that returns all of the funds generated to the Kenai River for conservation or education purposes, minus a reasonable deduction for event overhead and administrative costs.

Note: Implementation of these recommendations will require approval of the Department of Revenue (4.5.1.1.3.1) and Board of Fisheries (4.5.1.1.3.2).

Background The type of derbies that should be conducted on the Kenai River emerged as a significant issue during the public review process. Much of the public comment suggested that derbies be eliminated altogether or that they be limited in type and scope to those of a conservation or education theme. The Advisory Board recommended continuing the practice of derbies subject to certain conditions.

4.5.1.1.4. Enforcement (Implementing Agencies: DNR- DOPOR, ADF&G, USFS, US FWS)

Recommendation 4.5.1.1.4: Agencies with enforcement authority (ADEC, ADF&G, US FWS, KPB, and DNR - DOPOR) should undertake an aggressive, coordinated, multi-agency enforcement program focused on the fair and consistent enforcement of ordinances, regulations and laws .

Components of this program should include but are not necessarily limited to the following:

- Assertive, fair enforcement of current laws and regulations.
- Allocation of agency enforcement resources to deal with the 'pirate guide' problem.
- Increased Parks enforcement presence on the river (two additional rangers).
- Assignment of Park Rangers to enforcement duties (requires one technician to perform campground and related non-enforcement duties.)
- Restructuring of the timing of Ranger enforcement presence, to permit Park Ranger presence in the evening hours and each day of the week on each river section.
- Increased allocation of moneys to support a greater enforcement presence, deriving from either specific reallocations of state program receipts or allocation of user fee moneys.
- Increased penalties for violation of guide stipulations.
- Development of a list of suspension/revocation offenses for Kenai River Guide permits and codification of these in regulation.
- Signing/education programs (including use of fishing license or fishing regulation) to explain the consequences in the use of illegal guides to the general public. (This program complements the recently enacted 'John Law').

- Creation of a list of 'legal guides' to be available at probable user locations (chamber of commerce, Kenai River Center, hotels/motels).
- Establishment of a mandatory guide orientation program to precede the fishing season, which would include a component on Parks guide stipulations and consequences for violation.
- DOPOR should develop a coordinated enforcement program with other local law enforcement entities, such as Fish and Wildlife Protection and US FWS. The scope of the enforcement plan should be sufficiently broad to include enforcement of KRSMA regulations, fish and habitat protection statutes, and local ordinances related to the management of activities on and adjacent to the Kenai River. The enforcement program should concentrate on coordinating the schedules and assigned locations of law enforcement personnel to maximize the use of limited numbers of officers. During peak activity periods staff should meet regularly to coordinate information regarding suspected illegal guides or activity, concentrations of illegal fishing activity, etc. The development of an 'enforcement prioritization plan' should proceed the upcoming season. Law enforcement agencies, habitat biologists, and the public should participate in the development of this plan.
- The Kenai River Guide Association should be encouraged to meet established standards of vessel operation and police their own members.
- The existing "Stream Watch" program conducted by the US Forest Service and DOPOR should be expanded to additional areas along the river to educate anglers regarding rules and regulations and report to law enforcement staff on illegal activity observed.

Background The public review process indicated considerable support for an aggressive enforcement program by DNR-DOPOR and the other agencies charged with enforcement authority. The focus of this program should be the continued enforcement of parks and fishery regulations for both the public and the sport fishing guide industry, the elimination of 'pirate' guides, and increased management of the sport fishing guide industry. There was support for additional moneys to be allocated to enforcement, and the use of a user fee and guide fee increases for this purpose. The use of revenues derived from a user fee for the purpose of increased enforcement is recognized in the financial section.

4.5.1.1.5 Motorized/Non-Motorized Activities

This section deals with the principal motorized/non-motorized issues concerning the Kenai River and Kenai Lake. Included among these issues are the questions of whether it is appropriate to 1) expand the area of drift only boat use/fishing; 2) change the current horsepower limit requirement of 35 HP; 3) develop management techniques to control boat operation, to minimize boat induced waves that create erosive forces affecting erosion prone and sensitive habitat areas; and 4) impose prohibitions on other forms of motorized vehicles.

Much of the guidance as to how to proceed on these issues derived from the various public meetings. The results of this process, coupled with the absence of definitive information on the effects of horsepower and boat operating changes on habitat, suggested a conservative management approach.

Drift Areas (Implementing Agencies: DNR-DOPOR, USFS, US FWS)

Recommendation 4.5.1.1.5.1: Expand the drift only area in the Upper River between Fisherman's Bend RM 80.7) and the power line near RM 72.9 (near Sportsman's Landing).

Background The public did not indicate a strong interest in expanding the areas of drift only boat use in their review of water based recreation issues, except for the Upper River. A number of factors accounted for this: the absence of strong public sentiment favoring additional drift only areas, concerns over safety, the probable inability of large segments of the public to use drift boats, uncertain impacts to the commercial guide industry, and the absence of a clear need to proceed with additional drift-only areas. Other than the expansion of the drift only area in the Upper River, additional areas of drift only boat use in the Middle or Lower River are not recommended.

Changes to Horsepower Limits (Implementing Agencies: DNR-DOPOR, ADF&G)

Recommendation 4.5.1.1.5.2: The Advisory Board should assess the results of an updated USGS Boat Wake Erosion Study that evaluates varying levels of motor horsepower use and determine whether changes to the current 35 horsepower limit are appropriate. A variety of factors, including ease of enforcement, ability to minimize boat induced wakes, and convenience to boat user, should be considered when this analysis is evaluated by the Advisory Board.

Background Although the 1996 USGS Boat Wake Erosion Study found that the existing 35 horsepower boat and motor combinations were causing significant bank erosion in some areas of the river, change to the current 35 horsepower limit did not seem appropriate. Public sentiment on this issue varied from reducing horsepower, keeping the present power level, or increasing it — either to 40 HP, 50 HP, or to that level sufficient to get a boat 'on step'. The USGS study did not evaluate the effect of erosion related changes produced by varying horsepower levels and, therefore, impacts to habitat from this factor could not be properly assessed. Without this information, the Advisory Board concluded that increases in motor horsepower would be imprudent at this time.

The 'Planning and Research' section of this Chapter identifies the need for the revision of the USGS study in 1997, to evaluate the ensuring erosion effects of horsepower changes. When this data becomes available, it would then be appropriate to reassess changes to vessel horsepower.

Boat Operating Requirements

Recommendation 4.5.1.1.5.3.1: Institute 'bank protection zones' on the Kenai River that are designed to manage vessel operations , to reduce the effects of boat wakes at locations with sensitive habitat and erosion prone soils. The latter occur between RM 9 and RM 18 in the Lower River and between RM 39 and RM 46 in the Middle River.

Recommendation 4.5.1.1.5.3.2: DNR-DOPOR should develop an interim vessel management program in the areas of the bank protection zones involving, potentially, relative location of boat in river, passenger load, hull configuration, vessel type, or other factors. This program should be coordinated through a working group involving the Kenai River Sport Fishing Guide Association, Kenai River Property Owners Association, and Kenai River Sport Fishing Association , and other groups as appropriate. Because of the limited data from the current USGS Boat Wake Erosion Study on certain factors (i.e., varying horsepower levels and type of vessel), emphasis should be placed on developing techniques to reduce erosion that are realistic and can be justified based on personal or professional experience — that is, identified without the availability of detailed scientific data.

Recommendation 4.5.1.1.5.3.3: The initial 'bank protection zone program' should be further refined or modified when the results of the of the Boat Wake Erosion Study (Planning and Research, Recommendation 4.5.9.8) are available. These refinements should be coordinated with the same working group.

Background There appeared to be a general public concern with vessel operations and their effects upon the river and with the need to manage vessel operations in a comprehensive fashion, to avoid deleterious effects. There also seemed to be a clear consensus that the State needs to manage boat operations in a more rigorous way and that this management should involve other techniques than limits upon horsepower. Techniques to manage boat operation could include changes in boat size, allowable gross weight, hull configuration, horsepower, or some combination of these factors. Active boat management in those areas of the river that are erosion prone or contain sensitive habitats were especially supported by the public.

Operation of Boats and Other Vehicles (Implementing Agencies: DNR-DOPOR, ADF&G)

Recommendation 4.5.1.1.5.5: Motorized operations on Kenai Lake and Kenai River need additional management, to include:

- Establishing a working group composed of affected stakeholders to define management strategies intended to minimize the effects of jet skis, airboats, and hovercraft operation on sensitive habitat, residential, and institutional areas on Kenai Lake. This group would consist of representatives from the Advisory Board, DNR-DOPOR, ADF&G, KPB, USFS, the Cooper Landing and Moose Pass Planning Advisory Commissions, Quartz Creek Property Owners Association, and the Resurrection Bay Snow Riders Association. It is intended that this group examine use of a wide range of management techniques, including but not limited to the prohibition of these types of motorized craft near sensitive areas, day and time restrictions, voluntary enforcement, and the use of signage and a public education program. This group should report its findings to the Kenai River Advisory Board by October, 1997. The Board, in turn, should consider and adopt implementation recommendations. ***(Note: This recommendation has been implemented).***
- Prohibiting boat tie ups to state land, including easements and rights-of-way, in excess of 24 hours except through a permit issued by DOPOR. Issuance is to be discretionary, and the permit may identify time, area, or other restrictions.
- Prohibiting motor vehicles on riverbeds except at launches and locations approved by DOPOR, USFS, or US FWS.
- Prohibiting the unattended anchoring of vessels within Kenai Lake and Skilak Lake in excess of 72 hours, other than adjacent to private property and when authorized by DNR-DOPOR, USFS, and US FWS.
- Managing aircraft operations in the Middle River between Moose River and Naptowne Rapids.
- Managing ultra-light, rotary wing, and fixed wing aircraft operations within the Federal Aviation Administration 2000' aircraft minimum for purposes of safety, habitat, and noise reduction.

Background Public review of the operation of boats and other vehicles on the Kenai River and Kenai Lake suggested the need for additional management requirements. Many of these recommendations focused on inappropriate use of Kenai River riverbeds, motorized uses on Kenai Lake, and the need to develop some additional control over certain types of aircraft operations.

4.5.1.1.6. Sport Fishing Guides (Implementing Agencies: DNR-DOPOR, USFS, US FWS)

Recommendation 4.5.1.1.6.1: The Department shall pursue an enhanced guide management and enforcement program. Aspects of this program should include but are not limited to the following:

- Increase the current state guide fee, with the added revenue to support enforcement and public education programs on the Kenai River.
- Revise the registration deadline to May 1 (or some other early date).
- Institute a mandatory, start of season orientation program. This program would include discussion of guide stipulations, any changes in regulations from the previous season and an explanation of violations and civil penalties.
- Educate guides about the location of erosion prone/sensitive habitat areas, and create a vessel management program that will reduce the effects to these areas. (Note: this program should also apply to the public.)

- Institute an aggressive enforcement program, which includes the techniques identified under the 'enforcement' section. (Revise penalties, increase fines, identify fines in regulations, etc..)
- As part of the enforcement program, undertake an aggressive effort to reduce and eliminate the 'illegal guide' problem.
- Recommend that the guide association voluntarily undertake an education/training program that emphasizes vessel operations, safety, actions to minimize erosion/habitat impacts, and vessel etiquette. This association would also be used to voluntarily police its members.
- Revise State Park guide permit stipulations to emphasize safety, appropriate behavior (absence of stipulation violation), and require the passage of a competency examination, administered by State Parks.
- Revise the permit purchase requirement from one year to three years.
- Limit/preclude the use of section line easements for commercial operations.

Background Although a public consensus on the methods to manage guiding activity on the Kenai River did not emerge during the planning process, there is a general sense that something needs to be done to improve the situation and that the increased management of commercial guides is appropriate. The methods favored by the public to deal with the guide fishing issue fall into three general types: numeric limits, controls over the timing and location of vessel operation, or controls that affect the days/hours of guide activity on the river. The latter affect the presence of guides, but should not directly reduce the number of guides. (Although there may be economic impacts that might have the effect of doing so.)

The Management Plan recommends an incremental approach to the management of sport fishing guides. Involving a phasing of controls, these changes should provide relief from the crowding experienced by the public and minimize adverse impacts to the sport fishing guide industry. The methods that are identified below are recommended for immediate implementation, subject to the development and approval.

These recommendations are to be implemented immediately, with the results of these changes to be evaluated in order to determine their effect on vessel overcrowding. The results of this effort will help determine if additional controls are required and, if so, what type and intensity. It is believed that these changes will have a significant effect upon certain of the problems now associated with the commercial guide industry, as perceived by the public.

However, the draft Management Plan also recognizes the possible need to impose numeric limits upon commercial sporting guides in the future, subject to the results of an overcrowding study. The Advisory Board felt that the use of other types of restrictions affecting the activity of guiding (area, time, and trip restrictions) were not appropriate at this time because of the potentially adverse and uncertain effects upon the guide industry. Although it may be necessary to limit the number of guides in the future (either on a river basis or river segment basis), such limitations cannot now be imposed because of insufficient information on vessel overcrowding and uncertainty over the severity of the impact on the guide industry.

Numeric limits will be considered by the Advisory Board and DNR-DOPOR at the completion of this study. If numeric limits are recommended and if the regulation of guides is essential to proper river management, these limits should be imposed on a phased basis. Numeric limits should be imposed on sport fishing guides before restrictions are considered which may affect the general public.

In order to be in a position to impose numeric limits if the incremental measures proposed in the Management Plan are not sufficiently effective, the following is recommended:

Recommendation 4.5.1.1.6.2: Undertake a study to establish the attributes of the overcrowding and safety issues (and any other significant issues relevant to vessel use) associated with boat use on the Kenai River. The study is intended to suggest an appropriate numeric threshold (or a similar quantitative approach) for sport fishing guides, if appropriate. This analysis should be included within the vessel overcrowding study, to be described in the ' Vessel Overcrowding' section (4.5.1.1.7).

4.5.1.1.7 **Vessel Overcrowding** (Implementing Agency: DNR-DOPOR)

Vessel overcrowding was perceived by the public as a pervasive problem on the Kenai River. Most people believed that there is substantial overcrowding (confirming the 1992 Carrying Capacity Study), but that limits on the number of boats operated by the public are inappropriate at this time.

Nor was there a consensus on the nature of the overcrowding problem. However, most of the public perceived that it is associated with a limited time dimension (June and July), King salmon runs (especially the second run since it often coincides with the sockeye run), and occurs at certain of the more popular fishing sites on the Lower River. They also felt that the overcrowding problem is beginning to extend to similar sites on the Middle Segment.

A number of ways were identified by the public to deal with the problem, some of which are complementary:

- The need to provide adequate public facilities to deal with overcrowding and the recognition that additional facilities can also worsen the overcrowding problem.
- The central importance of vigorous and comprehensive enforcement.
- The need to increase fees to support public education and enforcement programs
- The need to advertise the Kenai River less, and to divert (or provide) moneys for infrastructure development.
- Resolution of the sport fishing 'guide problem' should go a long ways to reducing overcrowding and that other means be tried before limits on vessels (public and guide) are considered. Should vessel limits be required at some time in the future, limits should first be applied to commercial sporting guides before they are applied to the general public.

The Management Plan does not propose any specific recommendations to resolve the overcrowding problem directly (like vessel limits). Rather, it recommends the use of the full range of management techniques that are identified in the Water Recreation section. Taken together, they should help to reduce the overcrowding to some significant degree.

There is a need to get a better understanding of the dimensions of the vessel overcrowding problem and of the probable methods to resolve this issue, should it continue to worsen. The sport fishing guide issue analysis should be incorporated into a comprehensive study of this problem. A comprehensive analysis of vessel overcrowding, including guided and non-guided boats, will allow a better understanding of the problem and possible solutions.

Recommendation 4.5.1.1.7: Prepare a vessel crowding study, to identify the appropriate thresholds for vessel limits, the conditions that would have to exist to implement numeric limits, and the procedures to actually implement such a program. This analysis should be part of an overall assessment of overcrowding conditions on the Kenai River. (See also 'Planning and Research, Recommendation 4.5.9)

4.5.1.2 Upland Recreation Facilities

Upland recreation on the Kenai River is much less significant in terms of use than water based recreation. The overwhelming use of the river and its adjacent areas is related to water recreation, and recreation specific to sport fishing. The prevalence of this use is not surprising given that the Kenai River is easily accessed from the road system; use is derived from the populated areas of the Kenai peninsula and Anchorage; and there is the presence of one of the best sport fishing streams for salmon in the world.

The kinds of public facilities that have been provided are generally adjacent to the river and the two large lakes, and are related to water recreation use. They include campgrounds, boat launches, parking

areas, and road waysides. There is limited use of trail systems. Most of the latter originate from the road system and have destinations at the river or upland lakes. Those with destinations at the river are mostly sport fishing related, while those having upland destinations provide access to lakes within the Chugach National Forest or connect to other forest service trails.

In the context of this plan, the term 'upland recreation' refers to those facilities provided by local, state, or federal agencies that are intended to support the water recreation uses of the river and its connecting lakes. Table 4-1 on pages 44 and 45 lists the public facilities that currently exist, and the types of services available at each facility.

There are relatively few additional public recreation facilities recommended in the Management Plan. Instead, the focus is on upgrading current facilities and making sure that existing recreation sites are able to handle site impacts *and* habitat impacts. Facility upgrading generally involves the installation of walkways to access fishing areas and boardwalks/ladders/platforms to let people fish in areas that do not allow easy or safe in-stream fishing. The latter locations often have swift currents, deep undercut banks, and provide good habitat. The development of public sanitary and solid waste facilities is also of principal importance. The only planned additional campground is a 30 unit facility at Bing's Landing. Another campground may be developed at the 'Kenai Ranch' parcel in the Middle River Segment if the Funny River Bridge is constructed.

This focus on the upgrading of current facilities reflects two complementary management philosophies:

- The belief by public land managers that there are few additional locations suitable for intensive public recreation use. 'Suitable' implies that the site is adequate for expected public use, public access and parking facilities can be provided, and the riverine area can be protected from the expected public use. This will require focusing public use at the relatively few suitable locations and discouraging it in other areas.There are only two areas that meet the aforementioned criteria: the State's Bing's Landing project and, potentially, the Kenai River Ranch parcel).
- The sense by both public land managers and the public that the river is at capacity now in terms of boat use and that additional facilities would only worsen an already serious overcrowding problem.

The implication of these conclusions is that few additional facilities should be constructed. The increasing demand for new facilities has to be balanced against increasing habitat degradation and overuse of the river.

Table 4-1. Public Recreation Facility Inventory

	Facility name		Parking	Campsite	Boat launches	Bank fishing	Foot/ski trails	Sanitary facilities	Drinking water	Day use	Information facilities	Dump site*
LOCAL	1 Cunningham Park		❖		❖	❖		❖	❖	❖		
	2 Centennial CG	**	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖
	3 Swiftwater CG	**	❖	❖	❖	❖		❖	❖	❖		
	4 Soldotna Airport	**	❖			❖	❖			❖		
	5 Soldotna Creek	***	❖			❖	❖	❖	❖	❖	❖	
	6 Kenai Dunes		❖			❖		❖		❖		
	7 Kenai City Dock		❖		❖	❖		❖	❖			
AK DNR	8 Kenai River Flats SRS		❖			❖		❖		❖	❖	
	9 Ciechanski SRS	***	❖					❖		❖	❖	
	10 Pillars Boat Launch		❖		❖			❖	❖		❖	
	11 Big Eddy SRS		❖			❖		❖		❖	❖	
	12 Slikok Creek SRS		❖			❖	❖	❖		❖	❖	
	13 Funny River SRS		❖	❖		❖		❖	❖	❖	❖	
	14 Morgan's Landing SRA	***	❖	❖		❖	❖	❖	❖	❖	❖	
	15 Izaak Walton SRS	**	❖	❖	❖	❖	❖	❖	❖	❖	❖	
	16 Bing's Landing SRS	**	❖	❖	❖	❖	❖	❖	❖	❖	❖	
	17 Sportsman's Lodge		❖		❖			❖	❖		❖	
	18 Cooper Landing	***	❖		❖		❖	❖	❖		❖	

* Dump site at Mile 11 of Skilak Road services all of these facilities.

** Accessible Parking.

*** Accessible facilities

Table 4-1. Public Recreation Facility Inventory

	Facility name	Parking	Campsite	Boat launches	Bank fishing	Foot/ski trails	Sanitary facilities	Drinking water	Day use	Information facilities	Dump site*
USFS	19 Russian River CG ***	❖	❖		❖	❖	❖	❖	❖	❖	❖
	20 Cooper Creek CG		❖		❖		❖	❖			
	21 Quartz Creek CG ***	❖	❖	❖	❖	❖	❖	❖	❖		
	22 Porcupine Site (water access only)		❖				❖				
	23. Ship Creek Site (water access only)		❖				❖				
	24 Meadow Creek (water access only)		❖				❖				
	25 Trail River CG		❖		❖		❖	❖	❖		
	26 Ptarmigan Creek CG		❖		❖	❖	❖	❖	❖		
	27 Primrose CG	❖	❖	❖	❖	❖	❖	❖			
	28 K'beq Footprints Heritage Site	❖				❖			❖	❖	
	29 Beginnings Heritage Site	❖				❖	❖		❖		
USFWS	30 Lower Skilak Lake **	❖	❖	❖	❖		❖	❖	❖	❖	❖
	31 Upper Skilak Lake ***	❖	❖	❖	❖		❖	❖	❖	❖	❖
	32 Jim's Landing **			❖			❖			❖	❖
	33 Skilak Loop Station **				❖		❖	❖			❖
	34 Kenai - Russian River **	❖	❖		❖		❖	❖	❖		❖

* Dump site at Mile 11 of Skilak Road services all of these facilities.

** Accessible Parking.

*** Accessible facilities

4.5.1.2.1 Upland Recreation Facilities (Implementing Agencies: Cities of Soldotna and Kenai, DNR-DOPOR, ADF&G, US FWS, and USFS)

Recommendation 4.5.1.2.1.1: Local, state, and federal agencies should primarily focus on upgrading current recreation facilities to ensure that they are capable of accommodating public impacts to the site and the riverine area.

Tables 4-2A through Table 4-2C on pages 47 and 48 list the proposed facilities of local, state, and federal government. These projects are to be undertaken by a variety of local (Kenai, Soldotna), state (DNR-DOPOR and ADF&G), and federal (USFS and US FWS) agencies. Most entail the installation of sanitary and solid waste facilities; expansion of parking sites; construction of grated walkways, trails, and dock platforms at areas of heavy public fishing use; installation or improvements to boat launches; or the building of road access to areas of heavy public use. The proposed projects are depicted on Maps 4-1 through 4-4. Appendix B provides a more detailed description of the state park unit recommendations to be developed by DNR-DOPOR.

Recommendation 4.5.1.2.1.2 : Upland recreation facilities proposed for development in the future and not contained in Table 4-2A through Table 4-2C should be evaluated against the following criteria:

- The ability of the proposed acquisition or facility to protect significant riverine habitat.
- The public need for the facility in terms of present and/or projected demand.
- The ability to mitigate impacts to riverine habitat if the facility is intended to be intensively used by the public.
- The provision of related facilities that are able to accommodate the associated demands generated by the proposed project, including but not limited to sanitary and solid waste facilities, trails, parking, and public access.
- The ability of the proposed project to contribute to the overall public interest and not substantially benefit a private landowner or a privately owned facility.
- The ability of the proposed project to avoid 'spill over' effects to private land.
- The capability of the proposed project to contribute to an overall plan for the provision of public recreation facilities that may be developed by local government, state agencies, and federal agencies.

Table 4-2a. Recreation Facilities - Lower River

RM	Organization	Project name	Description
Kenai River mouth LB	City of Kenai	South side Beach (Proposed)	Construction of sanitary facilities and access to the Kenai River for dipnetting.
Kenai River mouth RB	City of Kenai	Kenai Dunes (Expansion)	Expansion of parking area and re-definition of access routes to the beach for dipnetting. North side of river mouth.
RM 1.5 RB	City of Kenai	City Dock (Proposed expansion)	Expansion of parking areas and construction of one additional dock
RM 5 RB	City of Kenai	Kenai Flats Viewing Area (Proposed expansion)	Platforms and walkways to view wildlife and waterfowl.
RM 5	State (DNR)	Kenai River Flats (Proposed expansion)	Construction of elevated grate walkways to provide better day use access
RM 6.5 RB	City of Kenai	Cunningham Park (Proposed expansion)	Expansion of parking and fishing access.
RM 12.5 RB	State (DNR/ADF&G)	Pillars Boat Launch (Expansion)	Parking lot, boat ramp, sanitary facilities, elevated grate walkways and floating dock.
RM 15.5 LB	State (DNR)	Ciechanski (Expansion)	Construction of new floating dock and elevated gratewalk.
RM 16.5 RB	State (DNR)	Big Eddy (Expansion)	Construction of new floating dock and elevated gratewalk.
RM 19 LB	State (DNR)	Slikok Creek (Proposed expansion)	Construction of elevated gratewalks, new staircase, and trail upgrade.
RM 20 LB	City of Soldotna	Centennial Park (Expansion)	Walkways and river access stairways.

Note: Additional public toilets will be needed at any boat put-in or take out spots that are developed in the future.

Expansion: Facility is being expanded

Proposed Expansion: Facility expansion is being considered.

Table 4-2b. Recreation Facilities - Middle River

RM	Organization	Project name	Description
RM 25-28 RB and LB	USFWS	Moose Range Meadows (Proposed)	
RM 30.5 LB	DNR/ADF&G	Funny River (Expansion)	Elevated gratewalks, fishing platforms, and access stairs
RM 31 RB	DNR	Morgan's Landing (Expansion)	Fishing platforms and walkways
RM 34 RB	DNR and DOT/PF	Funny River Bridge Crossing (Proposed)	Installation of public toilets, boat ramp and parking.
RM 39.5 RB	DNR	Bing's Landing (Expansion)	Campground, elevated gratewalks, access stairs and boat tie ups.
RM 46 RB and LB	DNR/USFWS	Kenai Keys/ Stephanka (Proposed)	Installation of public toilets.

Table 4-2c. Recreation Facilities - Upper River

RM	Organization	Project name	Description
RM 73 LB	USFWS	South side Russian River (Proposed)	Installation of public toilets
RM 73.5 RB	ADF&G	Sportsman's Landing (Expansion)	Boat launch, parking and public toilets.
Russian River Campground	USFS	Russian River Angler's Trail (Expansion)	Walkways, grate platforms, & cultural trail.
RM 75.5 RB	USFS	Beginnings Heritage Site	Cultural trail, parking, interpretive displays.
RM 77.5	USFS	K'Beq Footprints Heritage Site	Parking, information and cultural trail.
RM 82	State (DNR/ADF&G)	Cooper Landing Boat launch	Boat Ramp, walkways, information, parking and public toilets
Kenai Lake	USFS	Quartz Creek	Re-construction of existing facility.

Note: Additional public toilets will be needed at any boat put-in or take-out spots that are developed in the future.

Proposed: No facility currently.

Expansion: Facility is being expanded

Map 4-1
Lower River Segment

Due to file size, this color map
is a separate pdf document.
To view, return to the
Kenai River Plan web page.

Map 4-2
Middle River Segment

Due to file size, this color map
is a separate pdf document.
To view, return to the
Kenai River Plan web page.

Map 4-3
Upper River Segment

Due to file size, this color map
is a separate pdf document.
To view, return to the
Kenai River Plan web page.

Map 4-4
Kenai Lake

Due to file size, this color map
is a separate pdf document.
To view, return to the
Kenai River Plan web page.

4.5.1.2.2 **Integrated Trail Development** (Implementing Agencies: DNR - DOPOR, US FWS, USFS)

Recommendation 4.5.1.2.2: Integrate trail location and design with campground design at new facilities and with habitat restoration projects at existing facilities. Trails should be considered as an integral part of campgrounds and other high use recreation facilities, functioning to direct the public to areas of appropriate use and away from areas where such use is inadvisable, either because of the presence of sensitive riverine habitats or areas impacted by bank angling which require protection or rehabilitation.

Background Recent studies have concluded that certain types of recreational facilities combined with heavy bank fishing pressure have exacerbated habitat impact. Dispersion of bank fishing from these locations to areas where fishing can safely occur within the river or where boardwalks/ladders/platforms can be provided will be required. It will also be necessary to discourage public use of areas of sensitive habitat that cannot be adequately protected. This may require the use of signing and flagging. It may also be necessary to provide multi-language signs because of the heavy foreign use of the river during peak periods. Boardwalks will also be required where soil conditions cannot support heavy public use over extended periods.

4.5.1.2.3. **Habitat Restoration Projects Part of New Recreation Facilities** (Implementing Agencies: DNR-DOPOR, ADF&G, US FWS, USFS)

Recommendation 4.5.1.2.3: Habitat protection/restoration projects shall accompany all new or upgraded recreation sites. They should be closely integrated with recreational use patterns and trail design.

Background The '309' Cumulative Impact study by ADF&G identified the presence of significant areas of the Kenai River where riverine areas important to salmonid rearing have been degraded. Areas of impact included public lands as well as private properties. Public entities have a responsibility to ensure that their projects do not contribute to further habitat loss or, more positively, that gains in habitat can be made on public lands. The intent of the restoration projects recommended herein are either to regain habitat (restoration) or ensure that additional habitat is not lost (protection).

4.5.2 Habitat

Essential components of this Plan are the recommendations for protecting, restoring, and perpetuating riverine habitat. ADF&G research has underscored the importance of riverine habitat, the fragility of the river ecosystem, and the significant impacts that human activities can have on river systems This research indicated that some river sections providing important riverine habitat have been significantly degraded and will continue to deteriorate until steps are taken to manage human impact.

Goals and Objectives

Goal: **To protect, perpetuate and effectively manage the fishery and wildlife resources, waters, and habitats of the Kenai River ecosystem.**

Objective: Habitat

To maintain the diversity and quality of fish and wildlife habitat with no net loss, and to perpetuate the current stocks of fish and other wildlife species.

To establish and maintain preservation areas for riparian habitat, wetland protection, and wildlife resources.

To establish plans to protect habitat areas before expending moneys for facility development, and ensure that facility development is consistent with the recommendations of such plans.

To require that in-stream structures are designed, constructed, and managed to maintain fish habitat and ensure safe and efficient fish passage.

To evaluate the potential impacts of proposed new facilities and associated activities on fish and wildlife habitat before making a commitment to construct or authorize them.

Objective: Wetlands

To preserve and protect those wetlands providing critical habitat functions and essential hydrologic connections in the Kenai River drainage.

To rehabilitate impacted wetlands whose restoration is feasible.

To update and revise the FEMA study of the Kenai River floodplain, to include the correction of the floodplain boundary based on 1995 flood data and the results of improved hydrologic modeling.

To undertake an assessment of wetlands within the Kenai River watershed, to include the identification of wetland boundaries, types, and functions, and particularly to identify those wetlands that serve as critical habitat areas or provide significant hydrologic connections to the Kenai River or its tributaries.

Objective: Vegetation

To preserve and protect riverbank vegetation essential to habitat functions.

To re-vegetate areas damaged through bank trampling, construction, or other causes, for the purposes of habitat protection and erosion control.

To manage forests to maintain water quantity and fish and wildlife habitat by developing and applying forestry, construction, and facility design "best management practices" throughout the Kenai River ecosystem.

To assess the cumulative impact of wetland permitting decisions and attempt to achieve a 'no net loss' of all wetlands determined under the federal permitting process or the Wetlands Assessment Study to have significant and continuing habitat, hydrologic, and water retention/filtering functions of Kenai River wetlands within the Plan Boundary.

Goal: To protect, maintain, and manage public use in the Kenai River ecosystem while protecting riparian habitat.

Objective: Recreation

To require that the design and construction of public facilities, including recreation facilities, minimize impacts to the water column, fisheries habitat, riparian areas, and the adjacent uplands, and that structures are sited to similarly minimize these impacts.

To provide adequate, controlled public access that prevents habitat degradation.

To establish 'carrying capacities' for the river, campgrounds, bank fishing areas, and day use sites and apply these in recreation management and public facility development.

Recommendations

The following recommendations focus on specific measures related to fisheries and wildlife habitat, but are not the only recommendations in the Management Plan designed to manage the impact of human use. In a general sense, most of the recommendations of this Plan focus on protecting the Kenai River system in some manner. This is especially true of the recommendations related to land use, environment, financial, and public awareness. The recommendations relating directly to habitat should therefore be viewed within the context of the full range of recommendations proposed herein.

4.5.2.1 Public Access (Implementing Agencies: DNR-DOPOR, US FWS, USFS, ADF&G, KPB and cities of Kenai and Soldotna)

Recommendation 4.5.2.1: Public land managers should manage public access in areas where overuse has resulted in or is likely to cause habitat damage. Borough, state, and federal agencies should consider:

- Identifying and prioritizing public access sites subject to heavy use.
- Limiting the number of access points with intensive use.
- Closing and rehabilitating riverine areas damaged by public use.
- Establishing intensive use areas and restricting intensive use to these sites only.
- Actively managing areas that have been newly rehabilitated to ensure the recovery, integrity, and continued health of the restored area.
- Establishing capacity levels for campgrounds, day use areas, and bank fishing areas to ensure that overuse does not occur and habitat damage does not increase.

Problem Statement Consistent methods for managing public access to the river or the rehabilitation of impacted riparian areas do not exist. This has resulted in mixed messages being set to the public over how areas should or should not be used; the extent to which site overuse has occurred, resulting in the eventual loss of important upland and riverine areas; and the inappropriate use of public lands and facilities.

Background Undeveloped public land and some public facilities are overwhelmed by users during the peak fishery periods. This annual impact to the river's riparian vegetation has resulted in severe habitat damage and loss in many areas. Agencies need to manage their lands and public access to their lands more effectively and in a consistent manner.

4.5.2.2. Public Facilities (Implementing Agencies: DNR-DOPOR, ADF&G, US FWS, USFS, KPB, and Municipalities)

Recommendation: Public agency managers shall site and design new facilities to avoid or minimize habitat impacts, both from construction impacts and subsequent public use. The following policies and standards are to be followed in implementing this goal.

- Existing recreational areas that are affected by overuse are to be rehabilitated and protected before new recreation facilities are constructed.
- Establish new recreation use areas only at locations that can support heavy public use and construct these facilities before allowing the public to use the land. New recreational facilities shall be designed to withstand heavy public use. Access to the new areas is to be developed concurrent with the facility and is to be designed to support the design carrying capacity of the recreational site. (Note: certain recreation areas in wilderness areas are expected to receive limited public use. In contrast to most other types of recreational facilities proposed along the Kenai River, these types of facilities should be designed to support much more limited use levels.)
- As a general design standard, only water related, water dependent public facilities are to be located adjacent to near shore areas. Examples of such facilities include sanitary facilities, walkways, boardwalks/ladders/platforms, and boat launches. All other facilities are to be sited some distance away from the site. Although actual site conditions may dictate a different location campgrounds, sanitary facilities, solid waste collection sites, and other high intensity uses should be positioned at least 300' from near shore areas.
- Create development setbacks for all non-water dependent public facilities adjacent to the river, using a general setback standard of 300'.

- Public road construction projects in upland areas should be located away from the Kenai River and should employ standard best management practices to preclude siltation to the river and its adjacent wetlands and tributaries, both during and subsequent to construction. Construction activities should avoid or minimize damage or destruction to riverine areas, wetlands, and tributaries; the placing of structures or fill in the aforementioned areas, and direct runoff into these areas. River crossing structures should be minimized to the fewest number possible. The only recognized additional bridge crossing of the Kenai River in the Management Plan is the proposed Funny River Bridge, should this facility be approved for construction by the State and Federal Highway Administration.
- The Department of Transportation is studying a project to construct a 'by-pass' (Sterling Highway, MP 46-60) around the community of Cooper Landing and the Kenai River corridor. If the bypass route is selected, the current road should be made more enjoyable and safer. Following the completion of the by-pass route, it is recommended that a Trails and Recreation Access for Alaskans (TRAAK) project be initiated, in cooperation with the Kenai Peninsula Borough Trails Commission, to improve the access provided by the existing highway to the Kenai River. The study would identify better access points to the river, improved parking areas, new sanitary facilities, and the improvement of trails and fishing areas along the river, consistent with the recommendations of the Upper Kenai Management Plan.
- Evaluate and analyze new land additions to the KRSMA to determine the habitat and recreational values of the property. Parcels with high fish and wildlife values should be protected. Parcels that are suitable for public recreation are to be developed in a way that controls access and protects near shore riparian areas.
- The Advisory Board should be afforded the opportunity to review and comment on all proposed public facilities of local, state, and federal governments within the area of the Plan Boundary prior to final approval of the facilities by the sponsoring agencies. This review should occur at the early, conceptual stage of project development for those facilities that can be expected to have intense public use or affect the watershed significantly.
- The unintended and cumulative effects of proposed facilities to the Kenai River need to be examined during initial project reviews. This review can also occur during the period where project feasibility is under consideration.

Problem Statement Some of the most popular existing public use areas are located on lands that are extremely fragile or the number of users far exceeds site capacities. This has resulted in impacts to riparian areas and damaged public facilities. Agencies need to do a better job of protecting riparian resources and building new facilities.

Background Many of the existing public recreational facilities were constructed in the 1970's and 1980's before the expansion of the popular sockeye salmon fishery. Many construction practices of that era do not provide adequate protection for the riparian areas and are now considered to be resource damaging. At some sites, the campground and day use parking areas will be full but people are still allowed to park on the roads and walk into the site. This only exacerbates the resource damage and degrades the recreational experience.

4.5.2.3. Permitting of In-Stream Structures (Implementing Agencies: DNR-DOPOR, ADF&G)

Recommendation 4.5.2.3: Permit application for the construction and maintenance of instream structures must of necessity be considered on an individual basis by regulatory agencies consistent with statute, the public interest, and best professional judgment. However, it is the intent of the permitting agencies to follow these general guidelines:

1) New Structures:

New structures must comply with all current design and construction standards. New structures must not impede fish passage, result in an overall reduction of fish habitat, present a hazard to public safety, or diminish recreational opportunities.

2) Routine Maintenance and Minor Reconstruction of Existing Structures:

Permitting agencies will process permits for minor maintenance of existing structures, even if those structures do not strictly comply with current fish habitat standards, as long as a) the original construction of the structure was authorized by an ADF&G or DOPOR permit and the structure, as built, conforms to the conditions of the original permit authorizing construction; and b) the structure does not substantially impede juvenile fish movement, provides productive fish habitat and does not constitute a hazard to public safety and recreation.

3) Reconstruction of Existing Structures:

Reconstruction of existing projects which in the professional judgment of permitting agencies fully meet fish habitat and fish passage criteria and use sound construction techniques will be authorized. The reconstruction of projects which do not meet current criteria may be authorized if these projects do not present a hazard to public safety or diminish recreational opportunities, and incorporate sound construction techniques.

4) Financial Incentives:

Permitting agencies should continue to provide financial incentives to encourage landowners to incorporate habitat protection and improvements to fish passage into existing structures, or to remove these structures where appropriate. If permitting agencies mandate the inclusion of fish habitat or fish passage measures into a previously authorized project, financial assistance should be provided by the State, subject to funding availability and legislative approval to grant funds to private projects.

Note: Appendix D provides additional information on and requirements for the permitting of instream structures.

Problem Statement Many instream structures, specifically bulkheads, jetties and groins create water velocities that exceed 2 feet per second (fps). Juvenile salmon cannot sustain swimming speeds faster that 2 fps and these structures restrict fish passage to other areas of the river. The footprint of these structures also occupies areas that would be used for rearing by juvenile fish during low water periods.

Background Several decades ago many groins, jetties and bulkheads were installed in the Kenai River in an effort to slow bank erosion or to create still water areas for boat mooring or fishing. Recent research has shown that these types of structures accelerate water velocities and restrict the movement of juvenile fish. Currently, ADF&G and DOPOR use their existing permitting authority to preclude the construction of any structure that will accelerate water velocities or disrupt rearing habitat. But the habitat problems associated with existing jetties, groins and bulkheads still exists as these structures age and fail, and it is likely that permits for maintenance will be requested.

4.5.2.4. Habitat Restoration & Protection. (Implementing Agencies: ADF&G, DNR-DOPOR, US FWS, USFS, KPB, cities of Kenai and Soldotna)

Recommendation 4.5.2.4: Public land managers should develop rehabilitation and restoration plans for riparian and wetland areas that are heavily impacted by human use, to be accomplished by:

- **Implementing restoration and protection projects currently in need of protection/ restoration which are identified in Table 4-3A through 4-3C on pages 62-64 and depicted in Maps 4-1 through 4-4 on pages 49-55.**

Table 4-3a. Restoration Projects - Lower River

Agency	Project	Location	Description
KENAI-ADF&G	Dunes Project**	North River mouth beach	Walkways, stairs and parking, fenced closures
KENAI	Cunningham Park	R.M. 6.5 RB	Walkways, stairs, ramp improvements, parking and fenced closures
SOLDOTNA-ADF&G	Centennial Park+**	R.M. 20.0-21.0 LB	Stairs, walkways, trail improvements, restoration docks
	Soldotna Outfall	R.M. 20.8 RB	Walkway, trail, stairs, dock and restoration
STATE-DNR	Pipeline	R.M. 16.8 LB	Fenced closures, revegetation
STATE-DNR	Slikok Creek+**	R.M. 19.0 LB	Walkways, stairs, trails, fenced closures, fishing platforms and revegetation
STATE-DNR	Kenai Flats	R.M. 5.5 LB	Platforms, viewing area, stairs
STATE-DNR	Big Eddy+**	R.M. 16.8 RB	Walkway, dock, stairs, restoration, fenced closures
STATE-DNR	Ciechanski+**	R.M.15.5 LB	Cabled trees, dock, revegetation and fenced closures
STATE-ADF&G	Endicott Sonar Site+**	R.M. 19.5 LB	Walkway, ramp to dock that supports fish wheel
STATE-ADF&G & DNR	Pillars+	R.M. 12.5 LB	Walkways, docks, fenced closures and revegetation
STATE-DNR	Jetties & other structures	Throughout water column	Remove to establish natural flow regime and vegetation

** Project has received some level of funding from EVOS settlement.

+ Project site includes lands closed by ADF&G Emergency Order, DNR Director's Order or Refuge Manager's Closure.

Table 4-3b. Restoration Projects - Middle River

Agency	Project	Location	Description
STATE-ADF&G & DNR	Kenai Keys - + Torpedo Hole	R.M. 44.5-44.5 RB	Fenced closures, stair, floating dock, toilet
STATE-ADF&G & DNR	Funny River+**	Funny River confluence LB	Walkways, revegetation, dock, stairs, platforms and fenced closures
STATE-DOT	Soldotna's Kenai River Bridge Site	R.M. 20.0 LB and RB	Revegetation
STATE-DOT	Kenai River Bridge Crossing (Sterling)	R.M. 34.0 LB and RB	Revegetation
FEDERAL - USFWS	Moose Range + Meadows	R.M. 25.0-28.0 RB and LB	Walkways and stairs
FEDERAL-USFWS	Refuge boundary to Jim's landing	R.M. 73.7-70.0 RB and LB	Revegetation, trails, fenced closures
FEDERAL - USFWS	Skilak Lake Outlet	R.M. 50.0	Definition of camping areas, revegetation
SOLDOTNA-ADF&G	Soldotna Creek Park	R.M. 22.0 RB	Stairs, walkways, trails, revegetation
SOLDOTNA	Swiftwater Park	R.M. 22.5 RB	Stairs, walkways, trails, revegetation
SOLDOTNA-ADF&G	Soldotna ** Visitor Center	R.M. 20.0 LB	Stairs, walkways, trails, revegetation
SOLDOTNA-ADF&G	Airport Rotary ** Park	R.M. 23.5 LB	Walkways, fishing, stairs, platforms, fenced closures and restoration
STATE-DNR	Bing's Landing+**	R.M. 39.5 RB	Walkways, stairs, trail improvements, fenced closures and revegetation
STATE-DNR	Morgan's +** Landing	R.M. 30.0-31.0 RB	Walkways, stairs, trail improvements, fenced closures, fishing platforms and revegetation
STATE-DNR	Funny River+**	R.M. 30.0-31.0 LB	Fenced closures, restoration
STATE-DNR	Izaak Walton+	R.M. 36.5 RB	Fenced closures, revegetation, stairs
STATE-DNR	Jetties & other structures	Throughout water column	Remove to establish natural flow regime and vegetation

**Project has received some level of funding from EVOS settlement.

+Project site includes lands closed by ADF&G Emergency Order, DNR Director's Order or Refuge Manager's Closure.

Table 4-3c. Restoration Projects - Upper River

Agency	Project	Location	Description
STATE-ADF&G	Sportsman's	RM 73.5 LB	Revegetation, jetty downsize, fenced closures
USFS	Russian River ** Angler trail	Russian River Corridor	Walkways, stairs, fishing platforms, revegetation, and fenced closures
USFS	Quartz Creek Campground	Quartz Creek Bridge to Kenai Lake	Revegetation, trails, walkways, and fenced closures
USFS	Cooper Creek Campground	Confluence of Cooper Creek and the Kenai	Fenced closures and revegetation
	Jetties and other structures	Throughout water column	Remove to establish natural flow regime and vegetation

**Project has received some level of funding from EVOS settlement.

+Project site includes lands closed by ADF&G Emergency Order, DNR Director's Order, or Refuge Manager's Closure.

- **Developing a coordinated management strategy for habitat rehabilitation by those local, state and federal agencies whose lands have been significantly impacted by bank trampling. This schedule should be developed biennially, cover a three-year period, and provide a multi-agency schedule for bank rehabilitation that identifies the areas of rehabilitation and type/level of required project(s). DOPOR would be responsible for coordinating the development of this strategy with local, other state, and federal agencies; it would be submitted for Advisory Board review.**

Background There are a large number of riverbank restoration and protection projects, most of which involve the installation of walkways, stairs, fenced closures, revegetation, fishing platforms, and trail access. These facilities are to be constructed by local (Kenai, Soldotna, and Borough), state (DNR, ADOT/PF, and ADF&G) and federal (USFS and US FWS) agencies. Jetties, groins, and similar structures which impede effective fish passage or reduce habitat by significantly encroaching into the water column are identified for removal. The various restoration and protection projects are designed to promote a natural flow regime, protect existing habitat values, and re-vegetate damage sites.

In addition, extensive areas of significant habitat on public lands have been affected by public overuse. This overuse has primarily occurred in the last ten years as a result of the development of the sockeye salmon fishery. Restoration projects are essential to the repair of these areas and to the future protection of these areas from expected, heavy public use. The development of these projects must be coordinated with other recreation projects and with the development of public trail systems. See 'Upland Recreation Facilities' section.

4.5.3 Land Use

The term 'Land Use', refers to the methods that are used to manage upland areas and to the uses and densities of land uses found along the Kenai River. Without proper management of citing and development, land use patterns may contribute to habitat or environmental degradation. Both the immediate riverine area as well as the areas further inland are important to the river's health.

Adjacent upland areas may affect river functioning through the siting and construction of structures and from the activities associated with land uses. Development in these areas may change the quantity of water flow by the diversion and modification of natural drainage ways. Water quality can be affected through the erosion and sedimentation from the use of improper construction techniques, the operation of failed septic systems, and the discharge of untreated storm water. Development may also affect the absolute amount of surface and groundwater entering the river through the elimination of wetland areas and the diversion of drainage ways.

The areas of private land and native holdings together constitute about 70 percent of the river downstream of Skilak Lake. Development is possible within all of this area, potentially affecting extensive riverine areas as well as wetlands important to the river hydrologically.

Since land development and land use can fundamentally affect the river's functioning, management efforts tend to focus on the conversion of land to developed uses. These processes establish in large part the basic pattern of subsequent development. Typically, land use controls are used by local government. The authority to develop and use land use controls rests with the cities of Kenai and Soldotna and the Kenai Peninsula Borough.

Goals and Objectives

Goal: **To formulate policies and specific guidelines for development activities in the Kenai River Special Management Area and adjacent lands.**

Objective: Development Areas

To ensure that development occurring within the area of the Kenai River watershed is undertaken in a managed and coordinated fashion to ensure the continued integrity of the watershed, and under generally similar rules.

To focus people and facilities creating potential impacts to those areas of the Kenai River watershed that are best able to accommodate the impacts of heavy recreational use or rural/urban development.

To ensure that natural areas within the Kenai River watershed, if developed, are done so that neither the fishery or the habitats related to the fishery of the Kenai River are adversely effected.

To manage timber harvest, mining, oil and gas, and other development within the Kenai River watershed so as to avoid significant adverse impacts to the resources of the KRSMA, including but not limited to water, soils, fisheries, wildlife, visual quality, and recreation.

To ensure that development does not impair the functioning of wetlands important to the maintenance of habitat and hydrologic functions.

To identify and protect public areas of cultural and historic significance.

Objective: Development Requirements

To ensure that development within the Kenai River watershed is sited, constructed and managed to reduce the associated off-site impacts to the river ecosystem through the use of siting, project development and design, and land use controls.

To ensure that the costs of habitat restoration and other remediation are borne by those activities creating the impact.

To balance the rights of property owners with the protection and enhancement of the resource values of the Kenai River watershed.

To implement cooperative agreements between agencies with overlapping and/or similar management responsibilities.

NOTE: THE RECOMMENDATIONS THAT FOLLOW ARE, IF PERTAINING TO LOCAL GOVERNMENT, OF AN ADVISORY NATURE AND WILL REQUIRE SPECIFIC LEGISLATIVE OR ADMINISTRATIVE ACTION BY LOCAL GOVERNMENTS IN ORDER TO BE IMPLEMENTED.

Recommendations:

4.5.3.1. KPB 21.18 Kenai River Habitat Protection (Implementing Agency: Borough)

Recommendation 4.5.3.1: 1) Amend KPB 21.18 , Kenai River Habitat Protection (HPO), of the Kenai Peninsula Borough Code of Ordinances to include tributaries within the Kenai River drainage and 2) re-evaluate the effectiveness of this ordinance when the HPO undergoes its next scheduled review by the Borough. In this review the impact of increasing its width to improve habitat protection, and to reflect the difference in private and public lands and between urban and rural areas, should be considered.

Problem statement The application of KPB 21.18 Kenai River Habitat Protection is limited to the Kenai River.

Background KPB 21.18 requires structures be setback 50 feet from Ordinary High Water unless otherwise permitted by the Planning Commission. It precludes placement of fuel storage tanks, logging, prefabricated buildings, filling, construction, excavation, major clearing of vegetation, commercial rec-

reation uses or activities which result in significant erosion, damage to riparian habitat, or increases in ground or water pollution. It should be an important tool in future river management.

4.5.3.2. Borough Comprehensive Plan (Implementing Agency: Borough)

Recommendation :4.5.3.2. In updating the Comprehensive Plan, consideration should be given to including recommendations from the Kenai River Management Plan which are applicable to the Borough.

Problem Statement The Borough's Comprehensive Plan does not include specific references to the Kenai River.

Background The Comprehensive Plan is the document used by the Borough to guide development, environmental, and other decisions related to the physical environment. It is consulted during the review of permits, coastal zone determinations, and other similar actions.

4.5.3.3 Kenai River Center (Implementing Agencies: KPB, ADF&G, DOPOR)

Recommendation 4.5.3.3. Utilize the Kenai River Center as the focus for land use, environmental, and recreation permitting programs pertaining to the river, excluding fish management. To the extent practicable, all future management programs should use the Center as the site where information may be accessed and permits issued. The Center should evolve as that place that contains all relevant information about the resources of the Kenai River and its hydrologic connections, and that serves as the place for local, state, and federal permitting on the Kenai River. The Kenai River Center should also be used to host education and public outreach programs, as appropriate to its mission.

Background The Kenai River Center is an inter-agency (KPB, ADF&G, DNR) office that was created to centralize information concerning the Kenai River watershed, coordinate agency permit functions, and assist the public with permit applications. It is an excellent example of governments cooperating to make the decision making process for permit applications faster and more efficient.

Problem Statement In the past, applicants would travel to Anchorage or call long distance to talk to the agencies that did not have local offices. This system was very frustrating and the need to have a local office was a high priority. The Kenai River Center was designed to provide applications, coordinate permit reviews, and provide Kenai River resource information.

Although the Center is fully functional now, lack of funding in the future could have serious consequences. Without the Center the individual agencies would not have the benefit of increased coordination, and the cooperation between the public and the agencies could be lost.

4.5.3.4. Zoning of Area Adjacent to Kenai River. (Implementing Agency: Borough)

Recommendation 4.5.3.4 Institute zoning of the area adjacent to the Kenai River.

The Advisory Board recommended that the Borough consider adopting a program of areawide rezoning along the Kenai River from Kenai Lake to the eastern boundary of the City of Kenai. Only the area immediately adjacent to the Kenai River would be considered for zoning, corresponding generally to the first one-half mile measured from mean high tide mark (tidal areas) or the ordinary high water mark. Areas of the river within the corporate limits of the cities of Kenai and Soldotna would be excluded from the areawide rezoning. These areas are already zoned.

In general, the area wide zoning should provide for low density residential uses with a minimum lot size of 40,000 square feet to 1.5 acres per dwelling unit. Densities greater than this average might be appropriate at specific sites through the use of cluster design, but the total number of dwellings

should not exceed the number allowed by the underlying zoning on a per acre basis. Commercial uses would be treated as conditional uses and industrial uses as prohibited uses on Borough lands outside the cities of Kenai and Soldotna.

Problem Statement Future development of the vacant areas adjacent to the Kenai River will almost certainly have a major impact on the future health of the Kenai River. The citing and density of development affect runoff patterns, recreation use levels, and riverine areas. Current land use controls do not address the location but do address the density of future land uses through KPB 20.20.190 and KPB 20.14.

Background Current development controls (KPB 21.18 Kenai River Habitat Protection) affect the uplands adjacent to the river. However, these portions of the borough code do not control the type or intensity of land use adjacent to the river. The intensity of land development may cause a significant impact to the river if the siting of certain uses is not carefully controlled.

4.5.3.5. Public Access Guidelines. (Implementing Agencies: KPB, DNR, ADF&G, ADOT/PF)

Recommendation 4.5.3.5.1.: Develop a consistent public policy for the management of public easements and rights of way providing access to the Kenai River. The Borough and State agencies should:

- create an inventory of public easements and rights of way to identify which access points should be developed,
- develop recommendations to identify access points that should be retained and those that should be vacated or physically closed, and
- develop recommendations on which agencies will manage and respond to complaints.

Until this study is completed agencies should not open or permit new public easements and rights of way except as a component part of a public facility project on the Kenai River.

Recommendation 4.5.3.5.2: In general, public access to the Kenai River should/will be directed to areas that can be managed to avoid or minimize and mitigate impacts to habitat and private property, and maximize public safety.

Recommendation 4.5.3.5.3: Improvements to section line easements and rights-of-way, including clearing, paving, other hardening (boardwalks, etc.) should not be permitted unless it can be shown that the access can be managed consistent with recommendations 4.5.3.5.2 The following should be considered before permitting improvements to new access:

- **Adequate parking facilities should be provided.**
- **Adequate sanitary and solid waste facilities should be provided.**
- **Increased access should cause minimal bank degradation.**
- **Public safety concerns, including safe boat ramps and traffic problems, should be addressed.**
- **New public access should have minimal impact to adjacent private property.**

Background The control of public access easements is critical to the effective management of river use and the minimization of riverine impacts. Accesses include trespass roads, public use easements, utility easements, and section line easements. There are at least 100 dedicated public accesses (easements and rights-of-way), most of which are undeveloped but are used to some extent by the public, usually for access to good fishing spots during peak fishing periods. Some access points have some development but because of heavy use during peak periods, problems of overuse are prevalent.

Trampling of vegetation, trespass on private property, and improper parking are often associated with the upland portions of these access points. At the river itself the problem is manifested by bank trampling, bank sloughing, degradation of near shore vegetation, illegal camping, and improper disposal of trash and sanitary waste.

Problem Statement Management of these areas is now difficult. DNR does not have the authority to manage certain of these areas, and agency knowledge of access rights for particular ingress-egress point(s) is limited. Nor have the agencies developed a consistent policy for the management of public access sites. Additional unmanaged public access to the river will only worsen the already bad situation.

4.5.4 Land Management

'Land Management' is a collective phrase referring to the land management policies and practices of the local, state, and federal agencies that own or manage land units adjacent to the Kenai River. These agencies include the cities of Soldotna and Kenai, the Kenai Peninsula Borough, the Alaska Department of Natural Resources, the U.S. Forest Service, and the U.S. Fish and Wildlife Service. State and federal agencies are the principal agencies involved in the management of public lands, reflecting the extensive areas of the Chugach National Forest, National Wildlife Refuge, and, to a lesser extent, KRSMA. In addition to the administration of certain parcels of upland, DOPOR administers the water column to the Mean Ordinary High Water of the Kenai River. DOPOR is therefore responsible for the management of most of the recreational activity that takes place on the river itself, which concentrates in the Lower and Middle Segments.

Because of the size of the land inventory associated with state and federal holdings, what these agencies do (or do not do) has a significant effect on the river. Their actions affect land and water resources, and extends to private structures that use or are physically located within the river. Policies regarding the use or disposal of government lands and the management of the water column will therefore have a significant influence on the river.

Activities on the lands adjacent to the river and within the Kenai National Wildlife Refuge or Chugach National Forest are governed by the plans prepared and adopted by these agencies. The Forest Service is currently updating its Forest Land and Resource Plan, and the management plan for the Refuge is currently under agency review. The Management Plan and the DNR Kenai Area Plan govern how state land and water is to be used.

Although the Management Plan can make recommendations on the use of state land adjoining the Kenai River and its tributaries, these recommendations must be included in the DNR Kenai Area Plan (KAP) to be fully implemented. Area plans are used to make determinations on how state land is to be used, including those parcels of state land recommended for inclusion in KRSMA or for management by the Division of Land consistent with the objectives of KRSMA. Recommendations requiring final disposition in KAP are noted subsequently.

4.5.4.1. Classification of Borough Land as Preservation. (Implementing Agency: KPB)

Recommendation 4.5.4.1: The Borough should, on a case by case basis, consider designating its properties adjacent to the Kenai River and its tributaries as 'recreation' (or some equivalent designation) in its land classification system where the areas provide significant habitat values or are otherwise important to the functioning of the Kenai River. This recommendation applies to those Borough properties that are not intended to be integrated into KRSMA. A protective classification seems appropriate for habitat and erosion sensitive properties along the Kenai River and its principal tributaries, to afford a level of management consistent with the value of these areas.

Background The Borough organizes its properties into a number of classification levels. The 'preservation' classification provides the highest level of protection. 'Recreation' also provides a certain

amount of protection if bank fishing pressure can be successfully accomodated through active management of the effects of fishing use.

Problem Statement Bank fishing along certain portions of the Kenai River has increased over the last ten years. This has coincided with the increasing popularity of red salmon fishing. Without efforts to protect the riverbank from the effects of overuse, perhaps the most significant habitat component to the development of king salmon will be lost. The loss of prime habitat to development pressure can be reduced if parcels of publicly owned parcels with significant environmental value are actively managed.

4.5.4.2. Protection of Areas Acquired by Borough or State. (Implementing Agencies: KPB and State).

Recommendation 4.5.4.2: The Borough and the cities of Kenai and Soldotna should, on a case by case basis, consider retention of properties that have been identified as having high habitat values and classify them in the manner described in Recommendation 4.5.4.1. The State should retain parcels identified in Tables 4-4 and 4-6 for inclusion in KRSMA, except for parcels under the ownership of the Mental Health Trust Authority. Until state parcels are legislatively added to KRSMA, these areas should be administered consistent with the objectives of KRSMA through a special land use designation by the Division of Land. The recommendations for the inclusion of parcels in KRSMA and use of the special land designation are required to be included in the Kenai Area Plan.

Problem Statement Development adjacent to the Kenai River, particularly the large areas of vacant land adjoining the Middle Segment, may adversely affect the functioning of the Kenai River. This can occur through modifications to surface and groundwater flows, disturbance of riverine vegetation, and movement of improperly treated effluent to the Kenai River. Protection of those properties acquired by government, especially those parcels of high habitat value, will help reduce the intensity of that effect.

Background Areas of previously private land, or land leased by the State, are oftentimes acquired by government as a result of administrative foreclosures, escheat, or tax foreclosures. The cities of Kenai and Soldotna, the State, and Borough occasionally acquire properties through these processes. Retaining parcels with specific high habitat value in government ownership rather than disposing of them to the public sector may be appropriate on a case by case basis. The retention of such properties in government ownership is desirable since in many instances this can provide a higher level of protection than can be achieved by disposing of the properties to the private sector or imposing development restrictions on the properties that are conveyed. This is especially important for those properties that have high habitat values.

4.5.4.3. Government Land Acquisition. (Implementing Agencies: ADF&G and DNR)

Recommendation 4.5.4.3: The State should acquire undeveloped private properties with established high habitat or hydraulic values as they become available from private parties. Such acquisition should be pursued on a voluntary basis with private property owners. Acquisition priority shall be given to those parcels where the purchase would protect, preserve or enhance significant habitat resources, or allow for recreational uses which are compatible with and protect these resources.

Properties so acquired should be included in KRSMA unless the funding source used to acquire the parcel requires that it be managed under a different authority. In the event that the inclusion of a parcel within KRSMA is not likely in the immediate future, it is intended that these parcels will be managed by the Division of Land consistent with the intent of the Management Plan under a special land use designation or through an Interagency Land Management Agreement with DOPOR.

To implement this recommendation, the Division of Parks shall annually develop a list of potential acquisition parcels. This list should be reviewed by the Advisory Board, with the accepted list submitted to funding entities for consideration. Parcels should be considered valuable to the State for their habitat and/or recreation values. In developing this list, certain review criteria should be applied. Parcels should include one or more of the following attributes:

- Possess significant habitat or recreation values.
- Include wetland areas contiguous to the river, tributaries to the mainstem, or spring fed sloughs.
- Encompass large, vacant tracts.
- Include at least 600 feet of continuous river frontage.
- Retain significant habitat and recreation values (i.e., not be significantly degraded).
- Complement land management of state owned tracts (particularly parcels adjacent to existing state properties).
- Acquisition values should be established by appraisal which establishes fair market value using standard appraisal standards.
- Be in the overall State's best interest.

The annual acquisition list should also identify whether parcels are to be primarily used for recreational or for habitat purposes. The following standards should be followed:

Parcels identified as *'habitat'* are to be included within KRSMA but are not to be developed for general recreational purposes. State management policies (such as partial bank closures to fishing) for the protection and preservation of these 'habitat' areas may also be applicable. Improvements that rehabilitate or protect a site are appropriate for installation. Facilities to utilize the natural resources of the parcel (boardwalks, fishing platforms, viewing platforms, or similar structures) *may* also be appropriate, if consistent with any restrictions imposed in the title coneyed to the state *and* subsequent to review and concurrence. Properties identified as '*recreation'* are designated for recreation purposes, subject to the protection of riverine and other habitat areas. Development of these sites should follow the standards described in the 'Public Facilities' section.

Problem Statement Development of the vacant areas of the Kenai River, particularly the Middle Segment, may adversely affect the functioning of the Kenai River. This can occur through modifications to surface and groundwater flows, disturbance of riverine vegetation, and movement of improperly treated effluent to the Kenai River. A systematic acquisition program of those parcels of high habitat value will help reduce the level of that threat.

Background Over the past several years the State has acquired parcels along the Kenai River. Some of these parcels were purchased with EVOS moneys. The purpose of these acquisitions has been to acquire properties with high habitat sensitivity in order to preclude potential development and thereby ensure the maintenance of high quality habitat. Acquisition of additional, high habitat parcels along the Kenai Mainstem and its principal tributaries should remain a priority since ownership and proper conservation management will constitute the most effective, long term method of protection. Parcels of significant interest include the Kenai Flats wetlands and parcels owned by native corporations.

4.5.4.4 Management of Proposed EVOS Acquisitions. (Implementing Agencies: ADF&G and DNR-DOPOR)

Recommendation 4.5.4.4: The EVOS acquisitions identified in Table 4-4 should be included within KRSMA, unless this action would be inconsistent with EVOS acquisition restrictions or title restrictions. The management of EVOS parcels should be consistent with the classification recommendations in Table 4-4. A similar management intent as that recommended for private parcels should be followed.

Table 4-4. EVOS Acquisition
Lower River

Unit name	Site	Location	Acres	Status	Recommendation
420	Cone Property (KEN 34)	RM 6.5 RB	100	Purchased	Habitat
423	Kobylarz Property (KEN 10)	RM 14.5 RB	20.46	Purchased	Habitat
433	Mansholt Property (KEN 1049)	RM 14.5 RB	1.6	Purchased	Habitat

Middle River

425	Girves Property (KEN 1006)	RM 20.5 RB	110	Purchased	Habitat
426	Schilling Property (KEN 1038)	RM 21 RB	3.3	Purchased	Recreation & Habitat
427	Patson Property (KEN 1034)	RM 24 LB	76.3	Offer under consideration	Habitat
428	Kenai River Ranch (KEN 148)	RM 32 LB	146	Purchased	Recreation

It is intended that properties identified as *'habitat'* in Table 4-4 are to be included in KRSMA but are not necessarily to be developed for general recreational purposes. State management policies (such as partial bank closures to fishing) for the protection and preservation of these 'habitat' areas may also be applicable. Improvements that rehabilitate or protect a site are appropriate for installation. Facilities to utilize the natural resources of the parcel (boardwalks, fishing platforms, viewing platforms, or similar structures may also be appropriate for installation, if consistent with any restrictions imposed through title and subsequent to review and concurrence. Properties identified as 'recreation' are intended to be used for general recreational purposes, subject to the protection of riverine and other habitats. Development of any of these sites shall follow the standards previously described in the 'public facilities' section. It will be necessary to include these parcels in the Kenai Area Plan.

DNR should, in its submittal of potential future projects to the Trustee Council for funding consideration, include projects related to rehabilitation of the riverbank and adjoining uplands in addition to proposals to acquire private property for habitat protection purposes.

Problem Statement Development of the vacant areas of the Kenai River, particularly the Middle Reach, may adversely affect the functioning of the Kenai River. This can occur through modifications to surface and groundwater flows, disturbance of riverine vegetation, and movement of improperly treated effluent to the Kenai River. A systematic acquisition program of those parcels of high habitat value, such as that pursued under EVOS funding, can help reduce the level of that threat.

Background Over the past several years the State has acquired parcels along the Kenai River. Some of these parcels were purchased with EVOS moneys. The purpose of these acquisitions has been to acquire properties with high habitat sensitivity in order to preclude potential development and thereby ensure the maintenance of high quality habitat.

4.5.4.5. Disposal of Government Land Abutting Kenai River. (Implementing Agencies: State, KPB, US FWS, and USFS)

Recommendation 4.5.4.5.1: State, local, or federal agencies or governments should not dispose of their current holdings of land along the Kenai River to private ownership or create long term leases with private parties, except to accommodate a significant pubic interest or as stated in recommendations 4.5.4.5.2 through 4.5.4.5.4. This policy is intended to augment the Government Land Acquisition program. This recommendation is to be included in KAP.

Recommendation 4.5.4.5.2: When State or Borough land along the Kenai River or its anadromous tributaries must be conveyed out of State or Borough ownership, a buffer should be retained in State or Borough ownership or the land should be subject to a vegetated conservation easement of 200 feet for fish and wildlife purposes. This easement would apply to each side of the stream for tributaries listed in Table 4-5 and to those bodies of water identified in Recommendation 4.5.4.7. This recommendation is to be included in KAP.

Recommendation 4.5.4.5.3: When state or borough land is sold, the land should be subject to a minimum 50' building setback from the Kenai River and tributaries listed in Table 4-5 for all new, non-water dependent structures. The width of the buffer may be increased if there is a demonstrated need for the purposes of ensuring that riparian habitat can be adequately protected. To the extent practicable, vegetation within the setback and riverine areas should not be removed. Recommended to be included in the KAP.

Table 4-5. Selected Kenai River Tributaries

Name	Length in miles
Killey River	37.8
Funny River	30.3
Snow River	26.4
Trail River	23.0
Russian River	21.0
Moose River	19.6
Quartz Creek	16.5
Juneau Creek	14.5
Crescent Creek	13.6
Cooper Creek	13.5
Ptarmigan Creek	10.5
Beaver Creek	10.0
King County Creek	9.8
Skilak River	8.0
Soldotna Creek	7.4
Hidden Creek	7.0
Primrose Creek	7.0
Slikok Creek	6.8
Dave's Creek	6.8
Upper Killey River	6.4
Jean Creek	5.4
Victor Creek	4.5
Ship Creek	4.3
Surprise Creek	4.3
Cottonwood Creek	4.1
Pipe Creek	3.4
Shackleford Creek	2.8
Bean Creek	2.4
Fuller Creek	2.1
Slaughter Creek	
Olson Creek	
Indian Creek	

Recommendation 4.5.4.5.4: Leases or permits should be subject to a building setback of 200' for the Kenai River and the tributaries listed in Table 4- 5 for all non-water depentat will be adequately protected. In certain instances the width of the buffer may be decreased, but only if it can be shown that riparian habitat will be unaffected. To the extent practicable, vegetation within the setback and riverine areas should not be removed. Recommended to be included in the KAP.

Recommendation 4.5.4.5.5: Interagency Land Management Agreements (or similar management agreements issued by DNR) that are not for habitat or recreation purposes should generally be discouraged within 200' of the Kenai River and tributaries listed in Table 4- 5. In all cases the width of the buffer must be sufficient to ensure that riparian habitat can be adequately protected. If this is not practical, vegetated buffers should be retained to reduce impacts such as runoff, noise, and visibility, and to maintain the viability of riverine areas. Recommended to be included in the KAP.

Problem Statement Development of the vacant areas of the Kenai River, particularly the Middle Reach, may adversely affect the functioning of the Kenai River. To the degree that the State and other agencies retain their existing land holdings along the Kenai River, the level of developmental pressure can be proportionally reduced.

Background Many of the lands owned or managed by the local, state, and federal units of government are important to habitat or for recreation. Retaining these parcels in public ownership is, therefore, highly desirable and is an appropriate policy to pursue. In some instances it may be appropriate to transfer ownership from one unit of government to the State, for inclusion in KRSMA. However, there may be instances where, to fulfill statutory requirements or existing legal obligations, it may become necessary to dispose of state land. In these instances, the need to protect the Kenai River and its anadromous tributaries can be best achieved through the imposition of buffers or building setbacks.

4.5.4.6 Incorporate State Land within KRSMA. (Implementing Agency: DNR)

Recommendation 4.5.4.6: That DNR develop and submit to the Legislature amendments to the legal description that established KRSMA, to include the State properties identified in Table 4-6 and depicted on Maps 4-1 through 4-4. Borough properties intended for eventual inclusion in KRSMA are also identified in this Table.

Until these parcels are included within KRSMA, the Division of Land should establish a 'special use area' as provided under 11 AAC 96.010(b) to administer the tracts in state ownership. To the extent allowed under this regulatory authority, these lands will be administered by the Department to ensure consistency with the statutory objectives of the Special Management Area (since these parcels are intended for eventual inclusion within KRSMA). The Division of Land may enter into a management agreement to transfer the responsibilities for day to day administration to DOPOR.

Note: These recommendations are intended for inclusion within the Kenai Area Plan.

Problem Statement State land that is intended for inclusion within KRSMA is now administered by the DNR Division of Land. These lands are not classified and are not now included in an area plan. Except for lands withdrawn from the public domain for park purposes, all state land is be treated as multiple-use land. Applications for uses and facilities that may be inconsistent with the objectives of KRSMA can therefore be considered, and the potential exists for these applications to be approved even though they may not be compatible with or allowed by the guidelines in the Management Plan. Inclusion of these parcels in KRSMA will provide for active management by DOPOR and a greater enforcement presence.

Table 4-6a. KRSMA Additions: State Land Lower River & Middle River

Unit name	Township	Range	Section	Acreage	Notes
70	005N	010W	32	8.1	Lot 2-A ILMA to DOTPF ADL 35836
141B-N	005N	011W	12	20	N1/2SW1/4SE1/4 Wetland area in Kenai River Floodplain
142	005N	011W	1	18.68	ILMA Application to DOPOR ADL 220733 Eagle Rock, N. Bank of Kenai River
411-N	005N	011W	36	4.00	SE1/4; That strip of land between OHW of Kenai River and EPF 21-11, Block 1
412-N	005N	011W	24	6.6	That portion of Lot 11 within LSH 148 ILMA to DOPOR ADL 209638
413-N	005N	011W	25	7.62	Lot 3; Within SE1/4 College Hole

Table 4-6b. KRSMA Additions: State Land Middle River

Parcel name	Township	Range	Section	RM	Acreage	Purpose
KPB -	005N	009W	22	31.5, RB	27.5	Habitat
KPB	005N	009W	32	29.5, LB	141.33	Habitat

Table 4-6c. KRSMA Additions: State Land
Upper River
Cooper Landing/Quartz Creek

Unit name	Township	Range	Section	Acreage	Notes
388	003N 003N 004N 004N	002W 003W 002W 003W	6 1 36 31,32	1,175	Cooper Lake
390	004N	002W		1,030.76	West Shore Kenai Lake
391A through 391E, 391G through 391N 391Q	005N	003W	28,29, 30,34	421	14 small parcels along Kenai River and north shore of Kenai Lake in the Cooper Landing vicinity.
392A through 392G 392H	005N 005N	002W 003W	19,20,29, 30,31 29,30,31, 34,36	160	All state owned shorelands and water, and the 200' riparian corridors on eight tributaries of Kenai River and Kenai Lake near Cooper Landing (Bean, Cooper, Crescent, Daves, Dry, Indian, Quartz, and Shackleford Creeks) ADL 226527.
393	005N	003W	30	260	Juneau Creek and Bean Creek
394A	005N	004W	35,36	220	N. bank of Kenai River
394C	005N	004W	36	200	Wetlands and eagle roosting area south of Sterling Highway
394D	005N	004W	35	80	Wetlands south of Sterling Highway
397	005N	002W	31	3.28	East Quartz Creek Tract A; parcel 1 mile SE of Quartz Creek, near Kenai Lake shore.
408B	005N	002W	10,11, 15,16	480	Quartz and Daves Creek lowlands, mile 38.5 to mile 40 Sterling Hwy.

Table 4-6d. KRSMA Additions: State Land Upper River - Trail River & Trail Lakes (Moose Pass)

Unit name	Township	Range	Section	Acreage	Notes
378	003N	001E	7	15.13	Mouth of Victor Creek
380A	004N	001W	13	4.5	Tract B ASLS 86-6 South End Lower Trail Lake: boat/float plane launch
380D	005N	001W	36	37	Upper Trail Lake, South arm
380E	005N	001W	24,25, 36	83.89	Upper Trail Lake, South arm, east shore
380G	005N 004N 004N	001W 001E 001W	31 6,7,18 1,12,13	600	Lower Trail Lake shore
380J**	004N	001W	13,24,25	200	Trail River and Kenai Lake shore
380K	004N	001W	25	8.14	SW1/4SW1/4 Kenai Lake shore south of USFS work center
382A	005N	001W	24,25	20	Ball diamond; plus lake shore access to the north & south; 5 fragmented parcels
382D	005N	001W	25	3.17	Lake front, Moose Pass townsite
383A	004N	001W	26,27	730.96	Mouth of Schilter Creek and north shore of Kenai Lake
384	005N	001W	22,26,27	160	Upper Trail Lake Wayside areas; fish viewing; hatchery area & Johnson Pass traihead
387	005N	001W	36	1	Lakefront parcel on Upper Trail Lake
405-N	005N 005N	001W 001E	13,22,23,24 5,7,8,18	700	Johnson Pass Trail, NW shore Upper Trail Lake, and Johnson Creek mouth at the head of Trail Lake
407-N	005N	001E	7,18,19,30	20	Slivers of land between ARR & shore of Upper Trail Lake
608	004N 004N 005N 005N	001E 001W 001E 001W	6,7,18 1,12,13 7,18,19,31 13,22,23,24, 25,36		Trail River and Upper and Lower Trail Lakes

** Unit 380J would only be included in KRSMA if it is not conveyed to the borough. If Unit 380J is conveyed to the borough, the State would retain a 200' riparian corridor on either side of Trail River and only the corridor would be included in KRSMA.

Background There are lands owned by the Borough and State that are contiguous to or near the Kenai River. There have been instances of the illegal use of state land by the public that has affected important river and lake shore parcels. Enforcement of state land management requirements is now difficult because of the general lack of staffing within the Division of Land, the absence of a strong enforcement presence, and the lack of citation authority by the Division. These properties should be included in KRSMA, to provide an additional level of protection. Inclusion within KRSMA will extend the management and citation authority of the Parks Division to state land that now lack the protection afforded by citation authority.

4.5.4.7. Incorporate Additional State Waters within KRSMA (Implementing Agency: DNR)

Recommendation 4.5.4.7: Certain additional state waters should be included in the Kenai River Special Management Area: Trail River, Snow River, Lower and Upper Trail Lakes, and the following tributaries to the Kenai River: Bean, Crescent, Cooper, Juneau, Shackleford, Slaughter, Quartz, Dry, Indian, and Dave's Creek. This recommendation is to be included in the KAP.

Background Tributaries to the Kenai River are significant components of the Kenai River watershed and are of primary importance to the Kenai River mainstem. A number of tributaries are now included within KRSMA. It is appropriate to include other tributaries because of their importance, especially since many may be subject to development pressures, including mining activity. The tributaries listed above were intended for inclusion in the KRSMA in the 1986 Plan, but the legal description of the KRSMA boundary under AS 41.21 was never amended to include these parcels.

The principal lakes and rivers support significant runs of salmon and are the main hydrologic features in the upper drainage of the Kenai River. These units, including Trail and Snow rivers and Upper and Lower Trail lakes, are not included within the KRSMA boundary.

Problem Statement Without the inclusion of these additional waters, especially the tributaries to the Upper Kenai River and Kenai Lake, the potential exists for activities to take place in state waters that are incompatible with the level of protection needed to protect the Kenai River mainstem.

4.5.4.8. Mineral Closure of Land and Leasehold Location Order: Lands to be Included in KRSMA (Implementing Agency: DNR)

Recommendation 4.5.4.8: The mineral estate within KRSMA and the proposed additions to KRSMA should be closed to mineral entry subject to the provisions of AS 41.21.502 (c) except for the parcels described in Tables 4-6C and 4-6D and the State waters listed in Recommendation 4.5.4.7. This statute legislatively closes any additions to KRSMA to new mining locations as well as to new geothermal prospecting permits and leases. (Valid existing rights will not be affected.) Until the previous parcels and waters are incorporated by the Legislature into KRSMA, DNR should allow locatable mineral entry under lease (AS 38.05.205). It will necessary to amend the current statutory language of AS 41.21.502 (c) when the Legislature considers these additions; unless amended, all of the parcels would be closed to mineral entry.

For the lands and waters described above, DNR should immediately initiate a leasehold location order under AS 38.05.185 so as to allow mining under lease while minimizing potential use conflicts. The following stipulations should be included in all mining leases and be use in approving plans of operations within the described lands and waters:

- **The Kenai River Advisory Board will have the opportunity to review mining plans of operation.**
- **The plans of operations must be consistent with the most recent version of the ADF&G Best Management Practices for Placer Mining.**

- **No surface entry will be allowed for mining operations or facilities within 200 feet or the ordinary high water mark of any tributary, except that water pipes and pumps will be allowed if necessary to supply water to the mining operation, and underground mining operations may be allowed if they do not cause subsidence or other surface disturbance.**
- **No living accommodations, either temporary or permanent, will be authorized within the area subject to the leasehold location order.**
- **DNR will approve a plan of operations only when it can be demonstrated that the proposed mining operation will result in minimum practicable disturbance to the existing vegetation, and minimum construction and use of access roads and operational structure.**
- **DNR will not approve a plan of operations that adversely affects fish passage, spawning, or rearing; other fish habitat; wildlife resources; recreational use; or the owner's use of adjacent private or municipal parcels. The ADF&G must concur with all such approvals.**
- **DNR will require reclamation to a higher standard than the minimum set by State reclamation law (AS 27.19 and 11 AAC 97), including revegetation by reseeding or replanting with appropriate species. Reclamation shall enhance fish passage and fish habitat and restore damaged riparian habitat.**

Note: These recommendations are intended for inclusion within the Kenai Area Plan.

Problem Statement Under State statute mineral location and entry for purposes of discovery is allowed unless an area has been closed to entry through a mineral closing order or mining lease. During the period prior to the imposition of a mineral closure or mineral lease, parcels identified for inclusion in KRSMA are open to mineral entry, location, and production. Unrestricted mineral location and mining is not considered to be compatible with the statutory objectives of KRSMA. Unless there is a means to regulate the operational aspects of mining activity, the potential therefore exists for valid, pre-existing rights to be established. Without careful controls in the area adjacent to the Kenai River or its tributaries, mining activities could adversely affect habitat and recreational use.

Background KRSMA consists of the land estate; it does not include the mineral estate. The mineral estate underlying the land estate of KRSMA is closed to mineral entry by statute (41.21.502) for all parcel identified in the KRSMA legal description (41.21.500). Thus any additions to KRSMA will automatically close the mineral estate associated with the parcel additions unless explicitly excepted in the enacting legislation. It is unlikely that the proposed additions will be added to KRSMA in the immediate future. These parcels are now open to mineral entry and location, and any mining claims established in the period before parcels are included within KRSMA will be treated as valid, pre-existing rights. The DNR Commissioner is allowed by statute to close areas of less that 640 acres to mineral entry and areas greater than that on an emergency basis. All mineral closures in excess of 640 acres require approval of the legislature.

Mining leases are also authorized by statute. The DNR Commissioner can designate such areas and all proposed mining operations must secure DNR approval of a plan of operations. The latter allow siting and operational aspects to be managed consistent, in this instance, this with the objectives of habitat protection and compatibility with the recreation activities that use the river.

4.5.5 Environment

Environmental degradation often uccurs as part of general land use development. Environmental systems are both impacted at the same location as that associated with development as well as within the larger spatial areas where they operate. An example of the latter is the impact of improperly treated sewage. The impact may occur directly at the site through up welling or there may be transfer of the improperly treated effluent through the groundwater to the Kenai River. The latter is

of particular concern since it is oftentimes difficult to determine the extent and magnitude of system impact once the contaminants enter the environmental system away from the point of origin.

Because this off-site impact is potentially significant and is usually associated with development, state and federal laws have evolved to deal with the land development process. The federal government exercises its authority through the wetlands permitting system of the Clean Water Act, and the State's authorities derive from AS 46.70, which focuses on the development review process undertaken by ADEC. Both regulatory processes have been adapted for use within the Kenai River corridor. The US Corps of Engineers (US COE), which administers the wetlands permitting process, does so through what are termed 'nation wide' and 'individual' permits. ADEC administers its authorities over domestic wastewater disposal through the review of proposed subdivisions and single, large developments. ADEC wastewater authorities focus on the management of on-site wastewater disposal systems but extend to the management of storm water runoff from the area of site development. Augmenting these regulatory systems is the 'water quality certification' that must be secured concurrent with the issuance of any federal permit. The federal Clean Water Act requires that any proposed activity meet federal water quality standards (and state standards if more restrictive that the federal standards) before a permit for wetlands fill can be issued by US COE. This Water Quality Certification is administered by ADEC as part of its review of developments.

Taken together, these regulatory systems are intended to ensure that development activities do not adversely affect critical environmental systems. However, these systems do not achieve their objectives when there is not staff to implement them nor when complex pollution control systems, such as sewage treatment plants, are not properly maintained or exceed their design capacity. It is probable that these environmental control systems need tightening in the Kenai River corridor and that more resources need to be devoted to enforcement.

Goals and Objectives:

Goal: **To ensure that the environmental integrity of the Kenai River watershed is maintained or enhanced, managed on a ecosystem basis, and that developments within riverine areas and their adjacent uplands are constructed, sited, and operated in such a manner that the river's environmental integrity is ensured.**

Objective: Water Quality

To monitor and minimize the amount of non-point source pollution, including untreated storm water derived from commercial and industrial activities, siltation from road construction and timber harvest activities, and hydrocarbon contamination from fuel storage tanks, roads and highways, and shoreline fueling facilities.

To minimize the amount of point source pollution entering the river, particularly from outfalls from industrial plants, storm drains, and municipal sewage treatment plants.

To restrict or preclude, as necessary, high intensity land uses abutting the Kenai River and its tributaries including but not limited to recreational vehicle and mobile home parks, parking lots of large size, and the like.

To develop an on-going water quality monitoring program.

Objective: Water Quantity

To establish in-stream flow reservations for the Kenai River and its tributaries for year round habitat and recreation use, and secure a water right appropriation for these reservations from the State.

To maintain the Kenai River in a free flowing state by restricting and removing where possible man-made obstructions and diversions to natural watershed flows (dams, jetties, etc.).

To ensure continued, adequate hydrologic flow from wetlands, tributary streams, and uplands to the Kenai River and its tributaries.

Objective: Hazardous Materials

To preclude the entrance of hazardous materials to the Kenai River through the aggres sive use of local, state, and federal regulatory programs including subdivision, Coastal Zone, and Habitat Protection District reviews and oil and gas stipulations.

To protect against potential spills from transporting hazardous materials.

To ensure that there is expeditious clean-up of all hazardous material spills.

Recommendations:

Water Quantity

4.5.5.1. In-stream Reservation for the Kenai River (Implementing Agency: DNR)

Recommendation 4.5.5.1: In-stream flow reservations should be established for the entire Kenai River and its tributaries that are consistent with the purposes for which KRSMA was established. This recommendation is to be included in KAP.

Problem Statement Although unlikely, the appropriation of water from the Kenai River for purposes other than stream levels and habitat protection could result in inappropriately high levels of water use. These levels could be in excess of that required for habitat protection.

Background The early 1980 request by the ADF&G for an in-stream reservation of water in the Kenai River (Kenai Lake to Skilak Lake and Sterling to Cook Inlet) to support habitat and recreation has never been fully adjudicated. The ADF&G request did not include the Middle Segment because of inadequate flow data, and without this segment it may not be appropriate to adjudicate the two other reaches. Also, the request was only for habitat purposes. As soon as adequate data is available, the request should be modified to include the Middle Segment, to reserve adequate water for habitat and recreation.

4.5.5.2. Impoundment Structures. (Implementing Agency: DNR)

Recommendation 4.5.5.2: The construction of new dams or diversions on the Kenai River or its fish bearing tributaries, which block fish movements, or reduce essential stream flows for spawning, rearing, or migration, will be prohibited. This recommendation is to be included in KAP.

Problem Statement Additional impoundment structures are not considered appropriate because of their fundamental, usually irreversible affect upon the river's hydrology.

Background There are very few existing impoundment structures along the Kenai River — the exception being the Cooper Landing Hydroelectric Facility.

4.5.5.3 Drainage Facility Analysis. (Implementing Agency: Borough)

Recommendation 4.5.5.3: The KPB subdivision review process should consider the offsite drainage impacts of proposed plats. To accomplish this, it may be necessary to authorize the borough platting authority to a require a drainage analysis of larger, high intensity commercial or high density residential developments proposed next to the Kenai River or its tributaries.

Problem Statement Development activities can have a profound impact upon the flow patterns of natural drainage ways. These patterns are usually complex, and the impacts of development upon the site's hydrology are not usually known at the time of subdivision review. It is particularly critical that developments within the same drainage be effectively integrated to ensure satisfactory surface and subsurface flows.

Background The KPB subdivision review process focuses on the design and arrangement of structures and roads. The impact of storm water outflow is not considered since the Borough Code does not identify storm drainage facilities as a required component of the platting review. Because of the potentially significant impact of high intensity developments to the Kenai River, it is suggested that the Borough consider off-site drainage impacts from these types of projects during the process of subdivision review. This may require the revision of the Borough's subdivision regulations, to allow the Planning Commission to consider drainage systems as part of the plat review and approval process for proposed developments along the Kenai River.

Water Quality

4.5.5.4. On-site Disposal System Review (Septic Tanks). (Implementing Agency: ADEC)

Recommendation 4.5.5.4: The ADEC should continue to perform its on-site disposal reviews of residential two-family and multi-family, commercial, and industrial structures.

Background ADEC has the authority to conduct reviews of individual on-site waste disposal systems and those subdivisions that require the use of on-site disposal systems. This review by the ADEC occurred as recently as 1996. ADEC continues to perform on-site disposal system review of residential two-family and multi-family, commercial, and industrial structures.

Problem Statement ADEC no longer performs on-site subdivision plan review; their policy is to encourage local governments to assume these reviews. ADEC recommends that local government review and incorporate best management practices into their on-site, subdivision, and other development plan reviews. They continue to perform on-site disposal system review of residential two-family and multi-family, commercial, and industrial structures. It is essential that these ADEC functions continue, given the potential impact of improperly treated sewage to the water quality of the Kenai River.

4.5.5.5. ADOT/PF Maintenance Yard and Salted Sand Pile (Implementing Agency: ADOT/PF)

Recommendation 4.5.5.5: The ADOT/PF maintenance yard adjacent to the Kenai River in Soldotna should be relocated and the site subsequently rehabilitated for eventual use as an active recreation area administered by the City of Soldotna (or incorporated into KRSMA if necessary). The salted sand pile adjacent to Soldotna Creek should be phased-out, with the material transferred to the new ADOT/PF maintenance yard near the Borough landfill.

Problem Statement There are two components to this issue: the ADOT/PF maintenance facility adjacent to the Kenai River and the gravel and sand pile near Soldotna Creek. People have objected to these facilities because of their location next to the Kenai River and Soldotna Creek. Many are concerned that runoff or groundwater flow from these facilities affect the Kenai River and Soldotna Creek.

Background Current plans call for the maintenance facility to be moved to a site near the Kenai Borough landfill, with material relocated to the new landfill site. The maintenance yard site would then be rehabilitated and developed into a recreational site capable of withstanding heavy public use. Material at the Soldotna Creek gravel pit should be removed and repositioned at the new landfill site.

4.5.5.6 Standards for Timber Harvest Activity. (Implementing Agencies: DNR - DOF; ADEC, USFS)

Recommendation 4.5.5.6.1: State and National Forests within the watershed of the Kenai River shall be managed for fish, wildlife, recreation, and other values consistent with federal forest and state area plans. State and federal forestry harvest plans and operations shall meet state water quality standards and comply with the State's Forest Practices Act. In addition, harvest plans of the Forest Service shall comply with National Environmental

Policy Act (NEPA) requirements and Best Management Practices identified through the NEPA process. In all instances, those harvest plans and operations shall ensure that to the maximum extent practicable the water quality impacts of timber harvest and associated activities to the Kenai River and its tributaries are either precluded or reduced to levels designated in state water quality standards for the Kenai River or its tributaries. In addition, the visual, access, and recreational impacts, together with other factors that may be significant to the integrity of the Kenai River watershed, should be very carefully considered in the development of harvest and road construction plans by the State Division of Forestry (DOF) and USFS.

Recommendation 4.5.5.6.2: Timber harvest is to be prohibited on state land currently part of or proposed for inclusion in KRSMA in the Management Plan except as may be necessary to carry out the statutory purposes of KRSMA.

Recommendation 4.5.5.6.3: Timber harvest is to be prohibited on state land that is not intended for inclusion within KRSMA within 200 feet of mean ordinary high water on those tributaries listed in Table 4-5 except for forest health management measures and personal fire wood cutting determined by DOF to be necessary. ("Forest health is a condition of forest ecosystems that sustain their complexity while providing for human needs" Sampson, et. al., 1994). Logging may be an appropriate forest health measure to prevent or mitigate impacts from insects, disease, fire, windthrow, or other disturbances where they cause safety problems or reduce the ability of the forest to meet the objectives for the area identified by the state or federal land and resource plans.

Problem Statement Timber harvest operations can have a fundamental affect upon water quality, the maintenance of the habitat on which wildlife and fish populations depend, the ability to carry on desired recreation activities, and the quality of the view shed from prominent locations. Without careful consideration for these factors in the planning of harvest operations and in the subsequent harvest operations themselves, significant, undesired impacts could occur within the Kenai River watershed.

Background DOF and USFS conduct timber harvesting operations in the Kenai River watershed, primarily in the upper reaches of the watershed near Kenai Lake and Moose Pass. There may also be timber harvests in the Moose Pass area and within the Snow River drainage, depending on the results of forest planning processes being conducted by USFS. Both DOF and USFS have extensive planning and public review processes that provide the basis for decision making on timber management operations and the development of mitigation controls. In addition, the Borough has standards (21.18.050(D)) for logging within the floodplain of the Kenai River and its tributaries.

4.5.5.7 Regional Sewage Outfall. (Implementing Agencies: City of Soldotna, ADEC)

Recommendation 4.5.5.7: The City of Soldotna should conduct an engineering study that evaluates the severity of the perceived contamination problem from the city's sewage treatment plant and analyzes treatment and outfall options. In this analysis, viable short term alternatives should also be considered.

Background The City of Soldotna sewage treatment plant disposes of its secondary treated effluent through an outfall that discharges directly into the Kenai River.

Problem Statement Although this discharge is not seen as a problem to the U.S. Environment Protection Agency (US EPA), the federal agency responsible for issuing the city's discharge permit, breakdowns at the sewage treatment plant have caused discharge of both sewage and chlorine. Both may be harmful to the river, and segments of the public perceive this discharge as inappropriate.

Hazardous Materials

4.5.5.8 Fuel Storage Standards and Review (Implementing Agency: Borough)

Recommendation 4.5.5.8: Develop design requirements for the placement and construction of minor fuel storage facilities between 200 and 600 gallons in volume within the Habitat Protection and Floodplain Protection zones. Utilize these standards in the Borough's review of proposed development, required under the floodplain and habitat protection ordinances.

Problem Statement Fuel storage of small volume (less than 500 gallons) are regulated by Borough ordinance. The safety of these facilities could be improved by modifications to the way that these tanks are now installed.

Background The Borough's Habitat Protection Ordinance precludes the placement of such facilities within the Habitat Protection Zone (50' from MOHW). The Floodplain Protection District also contains requirements for the placement and design of fuel storage tanks within the floodplain. Relatively simple and straightforward design requirements can be developed for the placement and construction of these systems adjacent to the Kenai River and its floodplain. DNR, in cooperation with ADEC and the Borough, should jointly develop these requirements. hese should then be used in KPB site plan reviews for fuel storage system placement under the Habitat Protection Ordinance and the Floodplain Protection standards, and in state coastal zone consistency reviews.

Wetlands

4.5.5.9 Wetlands Permitting. (Implementing Agencies: US FWS, US EPA, U.S. COE; DNR and ADEC; local governments)

Recommendation 4.5.5.9: Continue the Kenai River Wetlands Assessment under preparation by ADEC, to determine sensitive, high value wetlands critical to habitat and hydraulic functions and develop a general wetlands management strategy based on the results of this assessment.

Once completed, the Management Plan must be formally amended to include the results of the Wetlands Assessment. It is intended that the wetlands management strategy developed in this analysis be used as the basis for federal wetland permitting decisions within the area of the Plan Boundary. Nationwide permits issued in February, 1997, by the US COE excluded the Plan Boundary area of the Management Plan from their application, requiring individual permits to be obtained for projects involving the dredging and fill of wetlands within the boundaries of the Management Plan.

Problem Statement A detailed knowledge of the wetlands that adjoin and are hydrologically connected to the Kenai River does not now exist. Because of this, many agencies view wetland permitting as not based on a solid scientific foundation. Without adequate knowledge, it is difficult for the agencies responsible for the permitting of wetland development to ensure the protection of the more critical wetland areas.

Background Both individual and nationwide permits are used by U.S. COE as the basis for the permitting of fill within the general Kenai River corridor. There are a variety of the nation-wide permits, covering a wide range of possible development activities. Newly promulgated (1997) five-year nation-wide permits by the US Corps of Engineers exclude the area included in the Plan Boundary of the Management Plan. In these areas individual permits will have to be obtained for dredge and fill activity covered by the federal Clean Water Act. The review and approval process for individual permits can be improved by the pre-identification of significant wetlands and typical best management practices. Because specific standards for wetland development do not exist in this Plan, it is recommended that such standards be developed through a cooperative research process and that the recommendations of this research be incorporated as an amendment to the Management Plan.

No new wetland development restrictions are to be recommended for inclusion in the Management Plan until the Wetland Assessment study has been completed. Should the Wetlands Assessment develop resource or management recommendations germane to other land use activities, these should also be considered for inclusion in the plan amendment. See also Planning and Research (4.5.10). No specific standards will be added to the Management Plan until the assessment study is completed and a public review process involving proposed changes to the wetland section of the Management Plan have been completed.

4.5.6 Financial

The concept of a user fee to support the recommendations in this plan is both appropriate and, based upon the responses received during the public review process, supported by most river users. The critical components of such a fee (or other funding mechanism) is that it be fair and related to the management of the Kenai River. Components of fairness include the use of the moneys collected for (sole) use on the Kenai River and a fee level that is directly related to necessary river management needs. A user fee will only work under conditions of fairness.

Goals and Objectives:

Goal: **To provide a stable source of continuing financial support for the protection, enhancement, and rehabilitation of the Kenai River and its tributaries and contiguous wetlands.**

Objective: Habitat

To develop a stable, continuing funding assistance program able to voluntarily acquire parcels with significant habitat value as they become available for purchase for purposes of protecting and to restore and rehabilitate impacted habitats on private and public lands.

To establish a funding program that provides incentives to private landowners to maintain their properties abutting the Kenai River in a natural or functionally unimpaired condition, and to retain sensitive wetlands.

To allocate funds for habitat restoration to the most degraded areas on a priority basis based upon the significance of the affected habitat and amount of degradation.

Objective: Public Education and Agency Enforcement

To develop a stable, continuing financial program to fund planning and local/state enforcement programs, and support educational programs designed to acquaint the public with the unique values and resources of the Kenai River watershed.

Recommendations:

4.5.6. Institute River Use Fee. (Implementing Agencies: Advisory Board, DNR, and other agencies that might be affected by the user fee).

Recommendation 4.5.6: A user fee should be established by the State to fund necessary improvements on the Kenai River. The attributes of this fee should include the following:

- **Revenues derived from this fee shall be allocated to the Kenai River Management agencies for the purposes defined in statute for use on the Kenai River.**
- **The moneys should be raised from all users of the river.**
- **The amount of this fee should be based on the level of resource use or impacts created by the various user groups, and the need to finance the programs identified below:**
- **Moneys raised from this source should be allocated for the protection and preservation of the Kenai's River fish and wildlife resources and habitats and to manage recreational**

uses and development through public education, enforcement, habitat acquisition and protection/restoration, park facility development, and planning and research.

Problem Statement The effectiveness of habitat acquisition and remediation programs, public education, planning and research, and monitoring and enforcement, all hinge upon the ability to fund programs involving these activities in a adequate, stable, and continuing fashion. Development of a funding source is, arguably, one of the most critical aspects to the protection of the Kenai River and the implementation of the recommendations in the Management Plan. Without a satisfactory and reliable financing mechanism, it is questionable if the needs for effective river management and rehabilitation can be met effectively. The inclusion of additional parcels of state land or waters within the KRSMA will require an additional enforcement presence on the part of the State. Revenues derived from user fees or other funding sources will be required to support this additional management presence.

Background A new user fee related to park use will require statutory change to: 1) revise the listing of allowed fee uses and to allow the fee to be charged to 'normal' users of the park (AS 41.21.026(b), and 2) establish a separate state account that is subject to appropriation by the Legislature but is allocated specifically to a 'Kenai River Protection Fund'. Although different funding alternatives to the recommended approach exist (tourist tax, non-resident tax, sales tax, Red salmon stamp, etc.) they all have certain deficiencies that make their development and legislative passage problematic. A user fee seemed to have fairly widespread support in the public meeting/review process, but only if the moneys raised from such a source are returned to the river. Although the latter cannot be guaranteed since dedicated funds are constitutionally restricted in Alaska, there has to be a reasonable likelihood that moneys raised from a user fee will be allocated to the Kenai River through the annual state budgeting process. Other user fee approaches to the one that is recommended may exist, and may have an equal or even potentially greater chance of passage. Further review/development of this funding approach is required to establish the details of the user fee or some alternative method, if the latter is determined appropriate.

4.5.7 Enforcement/Regulation/Permitting

The ability to develop regulations and regulatory programs that are effective, fairly administered, and effectively enforced, is essential to the ultimate success of government programs that manage the river, its riverine area, and adjacent upland areas. These programs and regulations must be consistent and understandable to the public. Each of these themes emerged as a result of the public review process conducted during the plan revision process.

The general, underlying themes of the enforcement program administered by state and federal agencies having enforcement authority include:

- An enhanced and more aggressive, multi-agency enforcement program,
- Assertive, fair enforcement of current laws and regulations,
- Increased use of public education programs that target enforcement problems,
- Increased, multi-agency enforcement operations that target specific, significant fishery and park use problems,
- Creation of new, additional regulations that identify specific sanctions and penalties,
- Continued enforcement of parks and fishery regulations for both the general public and the guide industry,
- Elimination of the 'pirate' guide problem, and
- Increased management of the sport fishing guide industry.

A detailed discussion of enforcement issues is provided in the section 'water based recreation'. In addition to describing the components of an enforcement program related to sport fishing guides, it includes recommendations that deal with the rental boat industry; use of rental boats by unlicensed,

'pirate' guides; and other aspects of a beefed up state enforcement program. It should be emphasized that the problem of enforcement is larger than just that related to water based recreation and includes the effective enforcement of fishing, habitat protection, safety, and park use regulations.

Goals and Objectives:

Goal: To develop local and state regulations that are fair and equitable to the private and public sectors, are consistently and uniformly administered and enforced, and ensure the continued integrity of the Kenai River watershed ecosystem.

Objective: Regulations and Permitting

To require that the full range of regulatory controls of local, state, and federal government, used to permit development, are applied to protect and maintain the Kenai River ecosystem.

To support the Kenai River Center as a centralized permitting center and to extend its functions to incorporate existing or new regulatory programs as they may be required and instituted by gov ernment or agencies and to provide adequate staff and resources to meet public needs.

To ensure that public land managers are required to abide by at least the same develop ment standards as applicable to private property owners.

To develop consistent and uniform policies, procedures, and regulations that treat the river as a unit and are used by local, state, and federal land managers, to simplify the requirements of river management to the public.

To increase the enforcement of Alaska Department of Environmental Conservation water quality regulations and Alaska Division of Parks guide regulations.

Objective: Enforcement

To provide consistent, understandable enforcement of regulations that protect fish, wildlife, water quality, wetlands, riparian areas, and upland habitats.

To ensure that the enforcement activities of local, state, and federal agencies and government are coordinated, that they are as streamlined as practicable for use by the public, and are developed and implemented consistent with the recommendations of the Kenai River Management Plan.

To ensure that adopted environmental and land use regulations, either implemented through this plan or by the cooperating agencies associated with its preparation, are effectively and fairly implemented and enforced by law enforcement officers and courts.

Enforcement Recommendations

4.5.7.1. Enforcement (Implementing Agencies: All Agencies)

Recommendation 4.5.7.1: All applicable regulatory authorities should be actively applied to maintain, protect, and enhance the integrity of the Kenai River ecosystem. All permits and project approvals should be designed to avoid the net loss of fisheries habitat, achieved either by design standards to avoid loss or if appropriate, mitigation to replace loss. Agencies should actively enforce the conditions and stipulations identified in issued permits. Agencies with regulatory authority or programs that should apply this standard in permitting and project approvals include:

- Kenai Peninsula Borough

  Chapter 14: Road and Trail Rights-of-Way
  Chapter 17: Borough Lands

Chapter 20: Subdivisions
Chapter 21: Zoning

- Coastal Zone Management Program
- ADF&G Title 16 Fish Habitat Protection and Fish Passage regulations
- Federal Wetland Certifications
- ADNR KRSMA Regulations
- ADEC Air, Water Quality, and Waste Water Certifications, Plan Reviews, and Permitting
  USFS and US FWS Regulations
- City Zoning and Conditional Use Permits
- Alaska Coastal Management Program

Problem Statement Many state, federal and local agencies have regulatory jurisdiction in the Kenai River watershed. Although the program mandates of the major permitting agencies require the protection of fish and wildlife and wildlife habitat, these same mandates often require the consideration of other factors in permit decision making. This results in sometimes inconsistent or conflicting resource decisions. Varying mandates also make it difficult for agencies to develop a comprehensive program or "vision" for the Kenai River ecosystem. **To create consistency in river management, it is essential that the agencies cooperate through their permitting and development programs to implement complementary resource decisions.** Without agency cooperation and integrated management, the continued integrity of the river is at risk.

Background Recent research has underscored the critical interactions between contiguous wetlands, near shore riparian areas, and the river's fish and wildlife populations. As communities continue to develop along the Kenai River, the river may become isolated from many of the natural systems that keep it healthy and productive. The regulatory systems of local, state, and federal agencies affect the development process and thereby have a fundamental ability to create conditions that support effective river management. Although there is an absence of a single, cohesive regulatory program addressing the river, the existing governmental regulatory systems focus on development and environmental considerations, and they can be coordinated. A coordinated, multi-agency enforcement strategy has the capability to produce results that are complementary to each other, that targets enforcement resources on priority issues, and is effective in protecting the fishery and riverine habitats.

Permitting Recommendations

4.5.7.2. Permitting (Implementing Agencies: All Agencies)

A related component focuses on the coordination of the activities of the various government agencies engaged in the permitting of commercial operations along the Kenai River, including the reciprocal enforcement of agency regulations. To improve and clarify the way that permits are now handled, the following recommendations are included:

4.5.7.2.1 'Other Commercial Activities' (Implementing Agencies: ADEC and DNR-DOPOR)

Recommendation 4.5.7.2.1: Permits will not be issued by the Division of Parks for businesses that wish to sell food, coffee, fishing tackle, fish derby tickets and other wares on the Kenai River. ADEC may also participate in this permitting process, as necessary.

Problem Statement The Kenai River is seen by many as a very lucrative business location and the Division of Parks receives many inquiries regarding how to obtain permits to sell coffee, food, fishing tackle, etc. on the waters of the Kenai River Special Management Area. Current regulations do not prohibit permitting such uses.

Background The Division of Parks has traditionally denied these types of requests because the services are available in the local area. Unrestricted numbers of commercial operators selling goods on the Kenai River would contribute to the crowding an other troubles that are experienced on the river. ADEC is responsible for issuing permits and approvals for selling food and drink and for inspections and investigations.

4.5.7.2.2 Commercial (Recreation) Operations Review Process (Implementing Agencies: US FWS, USFS, and DNR-DOPOR)

Recommendation 4.5.7.2.2: Merge the USFS, US FWS, and DNR-DOPOR application deadline for commercial operators to April 1.

Problem Statement Many commercial operators provide services in more than one reach of the Kenai River and consequently need permits from DOPOR, USFS, and US FWS. The agencies have different permit deadlines, different permit requirements, and their jurisdictions overlap in many areas. The USFS and US FWS have an April 1 deadline for applications but DOPOR has no set deadline.

Background USFS accepts applications after April 1 deadline but states "that applications received after the deadline may take up to six months to process." DOPOR should do the same.

4.5.7.2.3 End of Season Report Form (Implementing Agencies: USFS, DOPOR, US FWS)

Recommendation 4.5.7.2.3: Combine the end of season commercial recreation operators use reports into one form, consolidating information required for the USFS, US FWS, and DOPOR.

Problem Statement Commercial operators who provide services in the more than one reach of the Kenai River must provide end of season reports to three different agencies on three different forms. Because of the overlapping jurisdictions, it is often hard to determine how many clients to report to what agency.

Background Currently USFS, US FWS, and DOPOR all require end of season reports.

4.5.7.2.4. Efficient Permit Application Process (Implementing Agencies: KPB, ADF&G, DOPOR, ADEC, and US COE)

Recommendation 4.5.7.2.4.: The Kenai River Center should continue to consider options for consolidating permits in those activities that are authorized on the Kenai River and to explore other efficiencies whenever possible.

Problem Statement Project permitting under the various state and federal programs is a complicated and oftentimes time consuming process for the public. The State is attempting to develop a consolidated permit application, but this product is not expected within the next several years. The Kenai River Center should continue to explore and implement other options for making the project permitting process easier and quicker for the general public.

Background The Kenai River Center has recently developed and implemented a consolidated permit application packet, which includes the permits issued by ADF&G, KPB, and DOPOR. This has resulted in increased efficiencies in project review and has made the review process easier for the public.

4.5.7.2.5 Revised Permit Approval Requirements (Implementing Agencies: All Permitting Agencies)

Recommendation 4.5.7.2.5: The revised policies and standards in Appendix C should be followed in permit review by local, state, and federal agencies responsible for permit approval and issuance within the Plan Boundary of the Management Plan. The mitigation measures identified in the Table are to be applied as minimum permit stipulations.

Problem Statement KPB, ADF&G, USFS, US FWS, and DOPOR all have different mandates and regulations by which they review and issue permits for activities that effect the Kenai River. To ensure consistency in permitting operations and the continued health of the Kenai River, similar standards for permitting decisions should be applied, to the extent consistent with agency mission and statutory authorities.

Background The 1986 Management Plan contained a permitting matrix; its purpose was to identify the conditions that would apply to permit issuance and the approval standards for a wide variety of projects within the Plan Boundary area of the Management Plan. It was intended that prior identification of approval conditions and standards would result in greater predictability and consistency in agency permit decisions. Appendix C has been revised to include new requirements and to delete requirements that are no longer appropriate or have been succeeded by newer standards. Because of the length of the two tables, they have been included as an Appendix (C).

4.5.8 Public Education

All users of the Kenai of the Kenai River should be aware of the fragility of the resources supported by the river habitat and the impact that human actions can have on this unique, irreplaceable resource. Much has been done in the past, especially during the last ten years, to improve this awareness and to describe how people can use the river in less harmful ways. These efforts should continue and will probably have to be augmented as the complexity of river management increases. It is essential that public awareness be further improved and that it focus on what people can voluntarily do to retain the Kenai River as a public treasure for all generations. People, quite understandably, react more positively to educational efforts than to regulatory controls, although the latter are also appropriate at times. Should a user fee be instituted, funding for public awareness and education programs should be set as a priority.

Goals and Objectives:

Goal: **To promote public awareness and appreciation of the resource values of the Kenai River ecosystem.**

Objective: Public Awareness

To increase public awareness of the Kenai River ecosystem and create a general public understanding about how to use and protect the river and its resources.

Objective: Public Education

To develop a public education program that educates the public about the fragility of the Kenai River, the effects of continued unmanaged use, and the proper ways to fish, boat, and minimize user conflicts.

To provide written information on best management practices, critical habitats, and regulations to landowners, visitors, and commercial operators.

To develop and provide brochures that will direct people to the areas open for bank fishing and educate them about the appropriate way to fish or recreate, to take care of sanitary waste disposal, and to follow the rules for river bank use if bank fishing.

To develop an educational program for the public that targets water quality issues and pollution.

Recommendations:

4.5.8 Public Awareness and Education Program. (Implementing Agencies: KRAB, KPB, ADF&G, USFS, US FWS and DOPOR)

Recommendation 4.5.8.1: Establish a Kenai River Task Force composed of representatives of government and private (for-profit and not-for-profit) organizations whose purpose would be to improve the coordination of volunteer programs and activities. This group would make

recommendations on the best way to ensure future communication and coordination among the organizations and agencies that deliver the educational programs and approaches. It could also oversee the development of a public education/awareness plan, if delegated the responsibility by the Advisory Board. (See Recommendation 4.5.8.3).

Recommendation 4.5.8.2: Non-profit and government agencies should continue a vigorous public awareness and education program that creates an understanding as to how to use and protect the Kenai River and its resources. This program should strive at effort and event coordination. (This program may include the use of signs, multimedia presentations, school programs, stream watch programs, and other methods, as appropriate.)

Recommendation 4.5.8.3: Under the auspices of the Advisory Board, a public education and awareness plan should be prepared. The purpose of this plan would be to identify required education needs, inventory current education/awareness programs, and recommend a coordinated public education/awareness program. A Kenai River Task Force (See Recommendation 4.5.8.1) could be delegated the responsibility for the development of this plan.

Problem Statement In order for government initiated habitat protection and maintenance programs to work, the public must have a basic knowledge of why these programs are important and must be generally supportive of their implementation. Lacking this knowledge and support, it is questionable if effective river management can be attained.

Background Public education has been demonstrated to be a cost efficient and effective tool for protecting and increasing public awareness about the Kenai River. The public has reacted favorably to information on how public uses are affecting river habitats and agency sponsored measures developed to protect the riverine area. There are, however, a very large number of government and private, both for-profit and non-for-profit, entities engaged in various types of public education and awareness programs. The enthusiasm and commitment of these groups, especially public volunteer groups, needs to be continued. However, these resources need to be harnessed more effectively so that duplication of effort is avoided and the best results possible are obtained with the resources that are available.

This effectiveness could be increased by developing a type of 'volunteer coordinating committee' representing the principal government and private groups involved in public education and volunteer improvement projects (clean ups, derbies, etc.). This group should meet periodically. The purpose of these occasional meetings would be to identify activities, eliminate redundant or less effective programs, and coordinate the activities of the various groups.

It would also be useful to develop a 'public education and awareness' plan to provide the basis for the coordination of the various public activities. Such a plan would identify public education needs; identify alternative approaches and required resources to meet these demands; and recommend changes to current programs, if appropriate.

As a practical matter, it is unlikely that the Advisory Board can actually craft such a program. A more effective approach might be to provide funding for a group like The Nature Conservancy to develop such a program or to delegate this responsibility to a public task force, as described. An essential aspect of such a public education plan would be the coordination of the various agency and governmental programs that have been or may be involved in public education.

4.5.9. Planning and Research

Extensive research and some amount of planning have occurred over the last 10-15 years on various aspects of the Kenai River important to its management: habitats and the fishery, the impact of development, hydrology, and the like. Because the factors affecting the river vary in amount, intensity, and location, it will necessary to continue research and planning programs on the Kenai River

and its associated lakes and tributaries. This effort should focus on the analysis of the impacts of development on the fishery and its habitat, and on the identification of current and projected problems of recreation use. To the extent practicable, these analyses should be inclusive in scope. They should include as much of the watershed of the Kenai River as necessary for the effective assessment of the problem or issue under consideration. If a funding source to support river management is created, both planning and research activities are appropriate for consideration.

Goals and Objectives:

Goal: **To use a planning process that recognizes the interdependence of environmental functions and human activities within the Kenai watershed; to develop plans consistent with this interdependence through use of an ecosystem and watershed approach, and to continue to collect and analyze basic data on fish and wildlife habitats, water quality and quantity, the effects of human activities, and related environmental factors that can help serve as the basis for river management and planning.**

Objective: Planning

To develop plans that recognize the interdependence of activities and their impacts within the Kenai River watershed. Where practicable, these plans should be developed on a watershed basis.

To develop a plan for monitoring and protecting the water quality within the Kenai River watershed that establishes baseline conditions and standards for management.

To develop a plan that addresses public access using section line easements, roadways, and walkways. This plan would establish which accesses should remain open, and which to vacate.

Objective: Research

To continue riverwide biological and hydrological assessments that identify: the width of riparian buffers necessary to maintain water quality and riverine habitats, the effects of man-made structures and restoration projects; the impacts of boat wake effects and their relation to erosion and sedimentation; juvenile salmonid migration and resident and anadromous habitat requirements, carcass nutrient_values, macro vertebrate predation; the potential effects of the hip boot fishery; and other emerging issues related to river management data essential to effective fishery management.

To update and revise the FEMA study of the Kenai River floodplain, to include the correction of the floodplain boundary based on 1995 flood data and the results of improved hydrologic modeling.

To undertake an assessment of wetlands within the Kenai River watershed in order to include the identification of wetland boundaries, types, and functions, and particularly to identify those wetlands that serve as critical habitat areas or provide significant hydro logic connections to the Kenai River or its tributaries.

Recommendations:

4.5.9 Undertake studies of the fishery, habitat, water quality and quantity, and recreation aspects of the Kenai River; public access requirements to the Kenai River; and of upland/ wetlands hydrologically connected to the Kenai River. Specific study requirements are listed below. (Implementing Agencies: local - Borough; state - DNR, ADF&G, ADEC; federal - US GS)

Recommendation 4.5.9.1: Prepare a Water Quality Study. (Implementing Agencies: DNR, ADF&G, and ADEC)

Background A study to identify the extent and location of point source and non-point source pollution along the Kenai River mainstem should be pursued. This analysis would aid in determining the severity of the contamination associated with the City of Soldotna sewage treatment plant as well as that associated with the use of on-site waste disposal systems. The significance of untreated storm water discharges to the mainstem should also be evaluated as should the effectiveness of a 50' buffer in reducing the effect of non-point source runoff. (See also Data Collection, Recommendation 4.5.10.3)

Recommendation 4.5.9.2: Prepare a Public Access Study. (Implementing Agencies: DNR, ADF&G, ADOT/PF; US FWS, and Borough)

Background The State (DNR, ADF&G, and ADOT/PF) and the Borough should jointly conduct an inventory and evaluation of public access issues related to section line easements, roadways, and walkways. This analysis would determine which accesses to close, continue, or vacate. These decisions should be based upon the need to protect the river's habitat and fisheries, and provide safe and adequate angler access. Management and agency responsibilities for implementation should be specified in the study.

Recommendation 4.5.9.3: Prepare River Assessment Studies. (Implementing Agency: ADF&G)

Background Funding to ADF&G should be provided to analyze the following: riverine habitats, the effects of man-made structures and restoration projects; the impacts of boat wake effects and their relation to erosion and habitat impacts; juvenile salmonoid migration, carcass nutrient values, macro vertebrate predation; and the potential effects of the hip boot fishery and other data essential to effective fish and wildlife management. Other important research needs include a detailed study of habitat requirements of key fish species specific to the Kenai River, the role that the estuarine areas play in the life cycle of the various species, and a "future conditions study" which projects the future condition of the Kenai River taking into account population growth, land ownership, likely riparian development, and various zoning and regulatory scenarios.

Recommendation 4.5.9.4: Revise FEMA Floodplain Insurance Study. (Implementing Agencies: U.S. COE and Borough)

Background This analysis should be updated and revised, to include the correction of the floodplain boundary based on the 1995 flood data and the results of (improved) hydrologic modeling.

Recommendation 4.5.9.5: Prepare a Wetlands Assessment Study. (Implementing Agencies: state — ADEC, DNR, and ADF&G; local — Municipalities and Borough; federal — US FWS, USFS, US COE)

Background The current assessment of wetlands within the Kenai River watershed should be continued as a cooperative effort between those agencies and governments responsible for wetland resource management in the Kenai River corridor. A revised analysis would include the identification of wetland boundaries, types, and functions — particularly to identify those wetlands that serve as critical habitat areas or providing significant hydrologic connections to the Kenai River or its tributaries. This analysis will identify 'reference wetlands' that can be used as the basis for the evaluation of wetland development proposals. These results should also be incorporated as management strategies in the Management Plan and subsequently serve as the basis for the wetland regulatory program administered by the U.S. COE and the water quality certification program administered by ADEC, to the extent consistent with the Corps' regulatory authorities.

Recommendation 4.5.9.6: Update the '1992 Carrying Capacity Study' (Implementing Agency: DNR-DOPOR)

Background This study, conducted in 1992, assessed the perceptions of river users on various types and levels of recreational use on the Kenai River. This analysis would evaluate any changes in the impacts experienced during the 1992 study. It should generate on-site survey data documenting the actual impacts experienced by guided and non-guided anglers engaged in bank and boat fishing on the Kenai River, and their tolerances to those impacts. It should also help document the management alternatives the respondents think should be implemented to resolve identified deficiencies.

Recommendation 4.5.9.7: Prepare a Vessel Overcrowding Study (Implementing Agencies: DNR-DOPOR)

Background An analysis was conducted by the Attorney General's office in 1991 of the legal issues related to the imposition of numeric limits on sporting fishing guides by DNR. This analysis found that before such limits could be imposed, it would first be necessary to confirm that the alleged problems associated with vessel overcrowding are linked to guided angling and demonstrate that numeric limits are required to resolve overcrowding conditions.

A study to analyze vessel overcrowding should be immediately undertaken, to provide a factual basis for the imposition of numeric limits, if it is determined that the vessel overcrowding problems on the Kenai River are manifestly related to sport fishing guides. Its purpose would be to: 1) establish the attributes of the overcrowding and safety issues (and any other considerations significant to vessel use) associated with boat use on the Kenai River; 2) suggest an appropriate numeric threshold (or a similar quantitative approach) for sporting fishing guides; 3) identify the conditions that would have to exist to implement numeric limits; and 4) identify the procedures to implement such a program. In order to properly understand the dimensions of the overcrowding issue, this analysis should also include non-guided boat anglers. The study should also recommend management approaches for non-guided boat anglers, including the use of numeric limits, if appropriate.

Recommendation 4.5.9.8: Revise the USGS Boat Wake Erosion Study to assess the effects of varying types of motors and horsepower levels commonly in use on the Kenai River. (Implementing Agencies: ADF&G, DNR, USGS)

Background The US Geological Survey (USGS) completed a Boat Wake Erosion Study on the Kenai River in 1996. Its purpose was to identify erosion prone areas, the general effect of boat use on these areas, and the intensity of boat wakes measured at a common point on the shoreline produced by varying boat operating conditions (number of passengers, type of hull design, location of boat in river, and vessel size). This analysis did not, however, assess the effects of varying horsepower levels and specially designed hybrid outboard motors commonly in use on the Kenai River. Before a change in allowed horsepower level (35 HP) is authorized, the effects of potential horsepower and motor type designs on riverine habitats should be assessed. It may also be necessary to conduct additional, more definitive analyses of vessel design and operating characteristics that may affect wave height and therefore may have the potential to induce erosion. Information now contained in the study on the performance of semi-V-hull designs also needs to be improved.

The USGS study should be revised to deal with these issues in order to provide DNR with information necessary to design an effective boat operating program. Assessment of the effect of increasing outboard motor horsepower on a boat's wake size and sediment movement should be a primary component of this revision.This analysis should characterize the response by cohesive and non-cohesive bank material types with motors of varying horsepower. A second component should assess the effect of various size wakes on different soil types. The analysis should indicate which soils along the Kenai River are most vulnerable to wave erosion and boat wakes. A final component would provide more definitive information on the effect of semi-V-hull designs at 4 and 6 passenger levels in terms of boat wake effects.

4.5.10 Data Collection and Information Management

To properly manage the Kenai River, it is not enough to develop and implement specific recommendations. The dynamics of the river must be understood — how the river functions; the relationship between human induced change and the response to these changes by the river, and the impacts of these changes upon associated fishery resources and recreational activities. The studies that have been identified in the previous section are essential to the development of this understanding and to effective river management.

Many of these studies will require the collection of certain basic information over time on a systematic, periodic basis. It is also important that data be collected using a common spatial reference. In this context 'spatial reference' refers to the use of a specific geographic location identifier that is used to locate and record information.

Based upon our experience in developing this plan, it is apparent that a systematic program of data development needs to be undertaken in order to provide the foundation for the more specific recreational, habitat, and environment analyses. A parcel-specific database exists that uses such a common spatial reference. This database has the potential for application on a wider basis.

4.5.10.1 Data Management. (Implementing Agencies: all agencies)

Recommendation 4.5.10.1: The parcel specific database developed in the '309' Cumulative Impact study by ADF&G should be used as the basis for future spatial data collection efforts. We recommend that a specific geographic identifier (tax parcel and tax parcel number) be used as the common data element in future data collection efforts conducted by local, state, and federal agencies. Note: this recommendation only applies to those areas of the Kenai River presently included within the current GIS database or to areas that may be added to the GIS database in the future.

Background The KPB has developed a geographic information system that uses tax parcel boundaries and tax identification number as the spatial data collection and recordation unit. The ADF&G '309' study used the same spatial units in its analysis process, recording extensive structural, habitat, and other information against this same spatial unit. This data base exists within the Kenai River Center and is used jointly by KPB and ADF&G as an aid to permitting processes and to store the results of a variety of management actions.

Because this system exists, is extensively used by the Kenai River Center, and is to be the basis for future spatial data collection efforts by KPB and ADF&G, wider use of this system seems appropriate. If future data collection efforts by other agencies use the same parcel boundary and parcel number reference, an integrated database would be eventually developed. Analyses could then be conducted on a wide range of data collected by various agencies since data had been collected and recorded using standard rules.

4.5.10.2 Data Collection. (Implementing Agencies: All Agencies) G/O

Recommendation 4.5.10. 2.1: Boat use information should be collected on a systematic, periodic basis by State Parks and ADF&G. The information collected should include data on vessel count (number of guided and non-guided boats), vessel use and configuration, and vessel operation characteristics.

Background DOPOR now collects information on the number of vessels and whether the boat is private or used by guides for the three river Segments (Lower, Middle, and Upper). This information is not collected systematically and serious data gaps exist, making the information difficult to use.

This same type of information should continue to be collected on a statistically relevant basis. This would involve less effort, and it would meet the test of statistical accuracy. Consistency in times and locations of data recordation is also recommended, to ensure data uniformity. The 'Boat Activity Form' used in the USGS Boat wake study should be used as the basis for recording vessel data.

Recommendation 4.5.10.2.2: Water quality information should be collected on a systematic, long-term basis. Ambient monitoring is intended to identify trends over a long period of time and/or to establish baseline conditions. Sampling should include information on physical properties and chemical constituents of water and the health and integrity of resident biological communities at specific representative monitoring sites.

Background The State of Alaska does not operate a statewide ambient monitoring network due to the high operating costs to maintain such a system over large undeveloped areas. However, there have been several water quality analyses conducted by ADEC and ADF&G in the early 1990s. Although these studies indicated that measured water quality parameters were within state and federal compliance standards, impacts of development and use were also evident. ADF&G analyzed water quality at 17 sites distributed between the outlet of Kenai Lake and Cook Inlet. The ADF&G study recommended the intermittent sampling of critical water quality parameters (fecal coliform, hydrocarbon, metals, and nutrients) for the purpose of monitoring future impacts on the Kenai River. Representative sites were suggested to be surveyed at least twice each year. Intensive sampling in the Lower River where concentrations of water quality contaminants were the highest was also recommended.

It is necessary that a water quality monitoring program for the Kenai River assess the status and trends in the water quality of the river. The monitoring program should link the status and trends to an understanding of the natural and human factors that effect the water quality. This program must be integrated among many agencies that have differing objectives and must be of long-term duration. The unique hydrologic features of the Kenai River, such as its glacier origin, require an investigation that can be designed to assess this setting. However, the monitoring program must also be incorporated into a nationally consistent investigative design structure with standard sampling and analysis protocols.

The objective of an integrated water-quality monitoring program is to provide a consistent data set applicable to a wide range of needs. The monitoring program would include: 1) an initial characterization of the broad-scale geographic and seasonal distributions of water-quality conditions in relation to major contaminant sources and background conditions; 2) an assessment of trends and needs in water-quality conditions, and 3) specific case studies designed to determine the source, transport, fate, and spatial and temporal variability of specific contamination problems identified in the first two phases on the monitoring program. Such a water quality monitoring program should be designed to follow standard methods and protocols.

Alaska statute (AS 41.08) requires the Alaska Hydrologic Survey in DNR to "collect record, evaluate, and distribute data on the quantity, quality, and location of underground, surface, and coastal water of the State." In the absence of any documented degradation of water quality, it is within the authority of DNR to be the lead agency of an 'ambient monitoring network' for the Kenai hydrologic basin. This work should be done in conjunction with ADEC and ADF&G.

Recommendation 4.5.10.2.4. The ADF&G '309' Cumulative Impact Assessment should be updated on a periodic basis.

Background The '309' study was the benchmark study that identified the extent of human induced impact on the habitat sensitive areas of the Kenai River. It inventoried the number of in-stream structures, upland land uses, and the extent of vegetation degradation on a parcel specific basis. The study applied the Habitat Evaluation Procedure (HEP) to establish the total quantity of HEP units throughout the Kenai River and to identify the extent of degradation at particular parcels. Because it uses a common data collection point and establishes a level of habitat degradation on a parcel specific basis, it provides a tool to measure the cumulative amount and location of habitat degradation. It, therefore, provides a working methodology to assess habitat impacts and change over time. A periodic update of this study and its associated database is strongly recommended, to gauge the on-going level and location of habitat degradation.

CHAPTER 5

RIVER SEGMENT RECOMMENDATIONS

5.1. Introduction

In Chapter 4, recommendations were included that applied to the Kenai River mainstem and, quite often, to the entire of the river watershed. The majority of the recommendations contained in this Management Plan are areawide, reflecting the need to treat the river as a dynamic *system*.

This Chapter, however, focuses on those recommendations specific to a particular river segment. Its purpose is to give added specificity to the recommendations of the Management Plan tailored to each of the three river segments.

The river system, for reasons of convenience, has been divided into three general segments. These are further sub-divided into seven reaches. Dividing the segments into reaches allows for additional specificity in recommendations and management. This convention of dividing the river into segments and reaches was first developed in the 1986 Management Plan. The same segments and reaches with the same start and end points are retained. See Map 5-1 in this Chapter and Maps 4-1 through 4-4 in Chapter 4.

Lower River Segment: Cook Inlet to Soldotna Bridge (RM 0 - 21)

Reach 1: Cook Inlet to Eagle Rock (RM 0 - 11.5)
Reach 2: Eagle Rock to Soldotna (RM 11.5 - 21)

Middle River Segment: Soldotna Bridge to Outlet, Skilak Lake (RM 21 - 50)

Reach 3: Soldotna Bridge to Naptowne Rapids (RM 21 - 39)
Reach 4: Naptowne Rapids to Skilak Lake (RM 39 - 50)

Upper River Segment: Inlet, Skilak Lake to Kenai Lake Bridge (RM 50 - 82 and to Snow River Bridge on Kenai Lake)

Reach 5: Skilak Lake
Reach 6: Outlet of Skilak Lake to Kenai Lake Bridge
Reach 7: Kenai Lake

Although the Kenai River has been divided into segments and reaches that reflect the way people think about and describe the river, this is, in many respects, an artificial division. It cannot be stated too strongly that the river operates as an integrated unit, with actions occurring upstream affecting the reaches downstream, to varying degrees. This division into units provides more specificity in management prescriptions, reflecting the general uniformity within particular segments and reaches.

The discussion that follows focuses first on a general goal statement for the Kenai River mainstem. Recommendations for the individual river segments are then described. These recommendations include general management intent, and management, facility, and acquisition recommendations. In some instances, these recommendations have already been referenced in the previous Chapter, and are repeated here to give an indication of *where* the previous recommendations apply. Maps 4-1 through 4-4 in Chapter 4 identify the location of the management, facility, and acquisition recommendations. It should be noted that the maps do not depict all of the recommendations included in the Management Plan — only those having a geographic context.

5.2. Kenai River Mainstem: Goals

The following goal and sub-goal descriptions state the central basis for the management of the Kenai River and its various segments and reaches. The goals, objectives, and recommendations that are provided for the Lower, Middle, and Upper segments derive from the underlying principles of these statements.

Goal: To protect and perpetuate the fishery resources, wildlife and habitat of the Kenai River Special Management Area and adjacent areas, and to manage recreational uses and development activities within these areas.

This plan has been developed around the accomplishment of this goal and around the subsequent sub-goals:

To maintain the natural environment and the current natural condition of the river to the maximum extent practicable in order to ensure the continuation of the recreation, fishing, and scenic values of the Kenai River and its tributaries.

To protect fisheries and wildlife resources and their habitat, including migratory waterfowl.

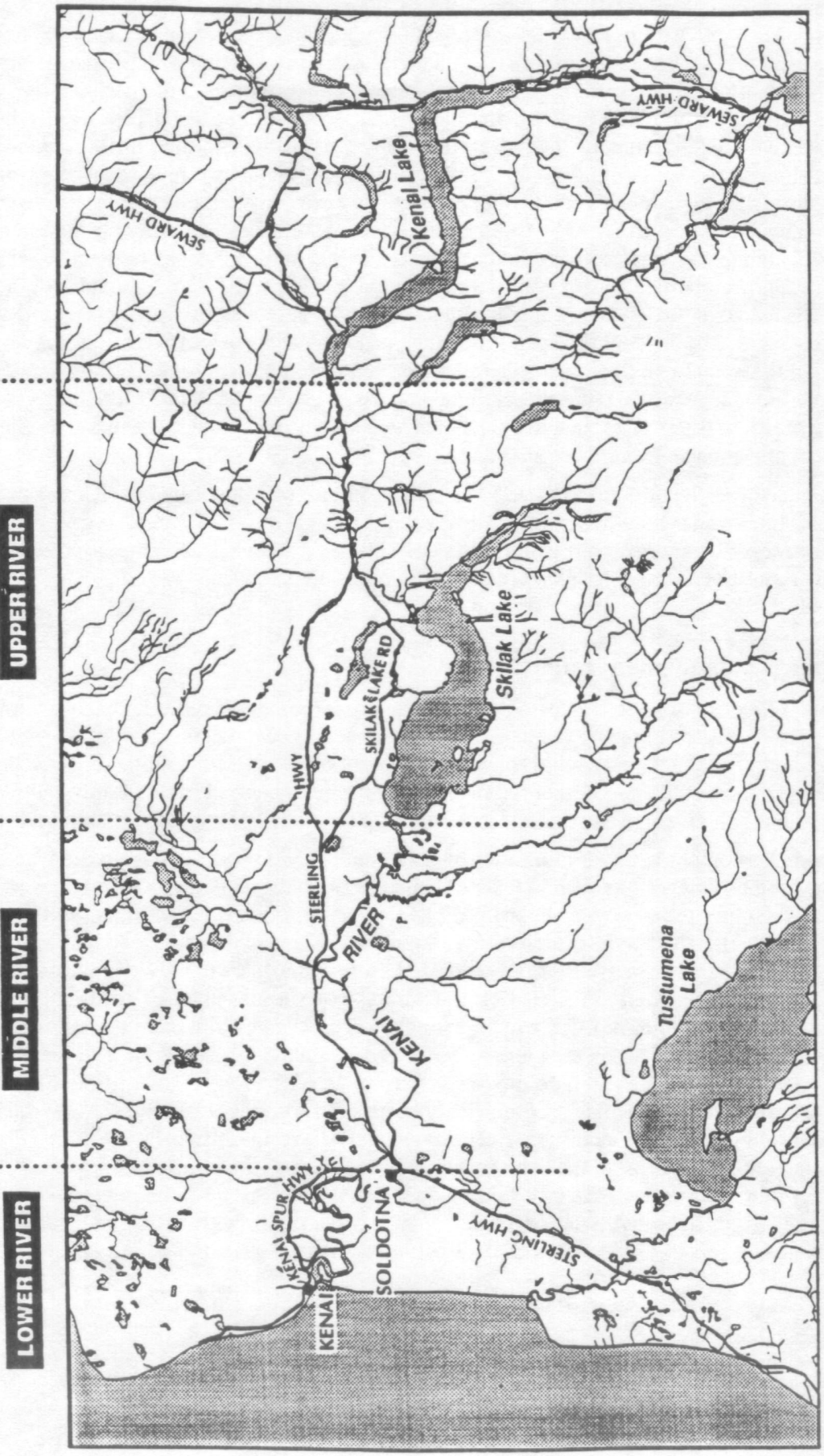
To identify and implement management recommendations that:

- Do not worsen the current overcrowding problems on the Kenai River;
- Maintain the Upper River as a drift only area (no motorized boats for fishing), reflecting an overall sense that this portion of the river should retain its natural character and that use levels should not increase;
- Retain as much of the natural character of the Middle River as practicable and limit the number of additional public facilities so as not to exacerbate the overcrowding beginning to be experienced,
- Recognize the intense recreational uses of the Lower River while maintaining as much of its natural character as practicable and continuing to provide facilities that both accommodate and mitigate the impacts of public use, and
- Limit new development adjacent to the Kenai River to uses that are of low intensity and are water and river dependent.
- Limit new public facilities adjacent to the Kenai River to those that are water related and water dependent (sanitary facilities, walkways, boat launches). Other public facilities (campgrounds) are to be located away from the river at sites appropriate for the public use and having adequate public access.
- Emphasize the upgrading of existing facilities in order to correct existing overuse conditions and limit the size, number, and timing of new public facilities to areas that can handle the projected recreation use and provide the full range of facilities necessary to make a new recreation site work. Public access and parking facilities should be provided to complement all new recreational use facilities.

5.3. River Segments and River Reaches

The following descriptions of river segment management attempt to achieve the desired future condition of a particular portion of the Kenai River mainstem. The goal statements are meant to give direction to the way a particular river section is to be managed and guidance as to the types and levels of public and private uses appropriate for a given section. It is intended that the review and approval processes conducted by the local, state, and federal agencies responsible for the management of the river; its riverine area and contiguous wetlands, and adjacent upland areas are to be administered to be consistent with these goal statements. Recommendations relating to land use are meant to be advisory to local government. It is recommended that they be considered for use in land management actions (rezonings, variances, comprehensive plans).

Map 5-1 KENAI RIVER: RIVER SEGMENTS



There are certain uses that are appropriate to all of these sections,[5-1] given proper siting and development conditions: recreational facilities and areas of public land. Low density residential uses are also appropriate in all areas with adequate setback and the proper siting of on-site disposal systems. Certain other types of residential uses, including recreational vehicle parks, mobile home parks, large campgrounds (larger than 10 units), and both medium and high density residential uses (except within the cities of Kenai and Soldotna) are inappropriate[5-2] in all sections of the mainstem and their further development should not be encouraged. Uses, like trail systems linking bank fishery areas, are appropriate in those sections where medium and high density bank fisheries are to be encouraged. Except for existing areas of industrial and commercial uses, further industrial/ general commercial development along the mainstem is not encouraged. Commercial development that is of limited extent and river dependent may be considered appropriate for specific properties abutting the river with proper siting and design. Examples of these uses include Bed and Breakfasts (B&Bs)[5-3] and small lodges. General commercial uses are appropriate within built-up areas like Cooper Landing, Sterling, and the cities of Kenai and Soldotna, but are not considered appropriate along the mainstem. In all instances adequate protection buffers between the river and proposed development are mandatory in order preserve the important riparian habitats. These buffers are also important to the health of the river's fish and wildlife resources; they also protect against or minimize the physical and economic impacts from flooding and erosion.

The use of All Terrain Vehicles (ATVs) is inappropriate except within beach areas at the confluence with Cook Inlet and where designated within the Chugach National Forest, e.g., abandoned mining roads near Moose Pass. Personal water craft (jet skis)and airboats are inappropriate for use on the Kenai River and Kenai Lake. Jet skis are currently prohibited.

5.3.1. Lower River

5.3.1.1 Management Intent

Lower River: To protect and perpetuate the fishery resources, wildlife and habitat, and natural character of the river while recognizing the intense recreational and commercial use of the lower river. New or reconstructed public facilities should fully accommodate public use while mitigating the impacts of this use on these resources. This section of the river will continue to be used for both drift and motor boat use, as the location for a personal use fishery, and as a high intensity bank fishery at certain designated locations.

The inclusion of the lower four miles of the Kenai River downstream from the Warren Ames Bridge into the KRSMA emerged as a complex issue during the plan revision process. Reasons for possible inclusion included protection of habitat, management of recreation conflicts, and an improved ability to deal with the river as a complete hydraulic unit. The problems associated with the management of recreation uses, in particular, are expected to become increasingly complex and contentious. Arguments against inclusion focused on the addition of another layer of government and permitting, and the uncertain economic effects upon the seafood processors and commercial fishing fleet. After extensive discussions between the state and affected entities, it was determined that the recommendation of the Advisory Board to include the lower four miles of the Kenai River in the KRSMA be set aside. The City of Kenai argued that its municipal charter and existing authorities allow the City to address and manage many of the conflicts and problems that are identified in the Kenai River Comprehensive Management Plan, and that the inclusion of the lower four miles in Reach One is premature and inappropriate. Instead, the City recommended the use of a joint management approach for this portion of the Kenai River involving coordination and cooperation with DNR.

[5-1] By stating the desired future condition of the Kenai River, the Management Plan recognizes existing uses which may be inconsistent with those uses identified in the statement of desired future conditions. The Management Plan does not propose that these inconsistent uses be extinguished but that further expansion of the physical area of the use be precluded. Further, the recognition of river-related commercial (and industrial) activities should not be interpreted to mean that no restrictions will be placed on such commercial (or industrial) uses. Commercial activities within or adjacent to the river should be limited in number, unobtrusive, and specifically related to the commercial needs within the area. For example, commercial (or industrial) uses would be subject to restrictions on clearing, billboards, flashing neon signs, or any other visually objectionable characteristics. These restrictions may be considered for application where local land use regulations exist to control such site development features and through the city or Borough development review and approval processes.

[5-2] However, publicly owned, high density campgrounds may be appropriate if authorized by the Advisory Board or designated in the Management Plan.

[5-3] A bed and breakfast is intended to be a minor and incidental commercial activity located in a host/owner-of-the- enterprise occupied, single-family dwelling as an adjunct and accessory use which is an adjunct to and subordinate land use to the home. The use must be compatible with the character of the residential area in which it is located.

Based upon the previously stated concerns, it is intended that the lower four miles be managed in a cooperative manner between the City of Kenai, State, and other governmental entities. To this end, it will be necessary to monitor and evaluate the extent and intensity of conflicts affecting this portion of the river. The monitoring of recreational conflicts will be especially important. It may be necessary to initiate specific management actions, either by the City or State, to deal with these conditions in the future. It is recommended that the state, through the Advisory Board, meet on a periodic basis with the City of Kenai to jointly identify appropriate management actions.

It is possible that this approach will not be effective in addressing the concerns identified in the Management Plan. In the event that this occurs or conditions develop that cannot be managed by memorandum of understanding or municipal ordinance, the Advisory Board may reconsider its recommendation to include the lower four miles in the KRSMA, and initiate a plan amendment.

Reach 1: Cook Inlet — Eagle Rock In general, development in this section of the river should be focused on water dependent uses and only when these uses do not affect fish and wildlife resources and their habitat, and where there is a low bank erosion hazard. Specific management objectives include the following:

Protecting 1) the extensive Kenai River Flat wetlands for waterfowl resting and feeding, and to provide continued waterfowl viewing opportunities; 2) maintaining the unique and varied wildlife adjacent to this portion of the Kenai River; 3) retaining the viewshed of Mt. Redoubt and the other mountains on the east side of Cook Inlet; 4) recognizing the industrial uses within the last four miles of the Kenai River and the scattered commercial uses occurring in other parts of this river segment; 5) recognizing the traditional industrial and commercial uses within the lower four miles within Reach 1 and the priority of these uses; 6) recognizing and allowing current industrial uses to develop if the industrial use satisfies local, state, and federal permitting requirements; 7) recognizing the low density cabin and single family residential uses in the rural areas adjacent to the river; 8) continuing the motor boat fishery as well as the existing low density and moderate density bank fisheries; 9) continuing the personal dip fishery from boats and designated river banks and providing opportunities for water fowl hunting and like activities; and 10) recognizing the businesses and facilities that support the recreational activities of this part of the river, including but not limited to motor boat guiding and rental use, charter operations, fuel storage and dispensing, and B&Bs.

Reach 2: Eagle Rock — Soldotna Bridge To manage this portion of the Kenai River to 1) recognize low density cabin and single family residential uses in rural areas, and medium and high density residential uses in areas served by city services; 2) protect and preserve the remaining areas of undisturbed, sensitive fish and wildlife habitat; 3) maintain the currently diverse motor boat, bank (low and medium density) and drift boat fisheries; 4) encourage the development of business and facilities that support the recreational activities of this part of the river, including but not limited to motor boat guiding and rental use, charter operations, fuel storage and dispensing, and B&Bs; and 5) promote optimum water quality within this segment through active water management of point source discharges including the reduction and/or elimination of these sources. Canoeing/kayaking/rafting are permitted. Aircraft operations are also allowed except during the period of June and July between Soldotna and Cook Inlet, when such operations are prohibited because of potential inference with boats.

5.3.1.2 General Management Recommendations

In addition to the general management strategies described in Chapter 5, the following management recommendations are to apply to this portion of the river:

2.1 The Lower River should continue to provide designated areas for the personal use fishery. (This recommendation is also an allocation issue and therefore requires concurrence from the Board of Fish.)

2.2 Increased agency enforcement presence should be allocated during the period of peak associated with the chinook and sockeye salmon runs. This increased presence should target vessel activity in habitat sensitive zones and at 'holes' with concentrations of vessels.

2.3 Neither the Borough or the State should authorize additional public accesses to this portion of the river unless adequate access, parking, and sanitary facilities are provided and the other criteria of Recommendation 4.5.3.6.3.

2.4 A high level of protection for waterfowl and wildlife should be afforded in the 'Kenai Flats' Wetlands through the permitting processes administered by the local, state, and federal units of government. Consideration should be given to the acquisition of portions of the more critical wetland areas, to coincide with wildfowl concentrations.

2.5 A 'bank protection zone' designed to manage vessel operations to reduce the effect of boat wakes should be established for the area between River Mile 9 and River Mile 18. DOPOR will consult with the City of Kenai in the development of the bank protection zones and in the identification of any additional areas that may need to be included in the bank protection zone.

2.6 Proposed developments within the Plan Boundary of the Management Plan should be carefully reviewed against the recommendations of the Plan, particularly with reference to the protection of the fishery resources, wildlife, and habitat of the Kenai River.

2.7 The Borough should give consideration to instituting rural, low density zoning in areas outside the corporate limits of Kenai and Soldotna within one-half mile of the Kenai River.

2.8 The City of Soldotna should assess the capability of the sewage treatment plant to meet state and federal quality standards, particularly given the perception of some members of the public that direct discharge into the Kenai River is inappropriate. Depending on the results of this analysis, other methods for sewage treatment and/or discharge from the plant's outfall may be necessary, which may include the relocation of the outfall to a site that does not directly discharge to the Kenai River.

2.9 DOPOR will consult with the City of Kenai, through the Advisory Board, to address any conflicts that develop between recreational boaters and commercial fishers, as well as the management of jet skis, hydroplanes, air boats and hydrofoils below the Warren Ames Bridge.

2.10 The recreational facilities in Table 4-2A should be implemented. The identification of future recreational facilities should follow the procedures described in Recommendation 4.5.1.2.1.2.

2.11 The riverbank restoration/protection projects identified ins Table 4-3A should be implemented. The identification of future restoration projects should follow the procedures described in Recommendation 4.5.2.4.

2.13 The EVOS parcels acquired by the State should be managed according to the classifications in Table 4-4, unless title acquisition or EVOS acquisition restrictions require a different management strategy. If there is a conflict between the recommendations in Table 4-4 and the title acquisition restrictions, the latter shall prevail.

2.14 The Kenai Area Plan should incorporate the parcel retention and other state water and land recommendations of the Management Plan.

5.3.2. Middle River

5.3.2.1 Management Intent

General: To manage this portion of the river to: 1) ensure healthy fish and wildlife populations and their habitats while providing for a high quality recreational environment, 2) accommodate the intense recreational uses associated with bank fishing at sites where adequate access and protective riverine structures exist or may be provided, 3) handle the existing levels of boat use through the provision of additional sanitary facilities and upgraded state recreational sites, 4) maintain as much of the natural character of the river as practicable through the purchase of private property and the inclusion of state and borough parcels in KRSMA, 5) utilize the Middle Segment for both drift and motor boat use, and 6) pursue site rehabilitation efforts on both private and public property.

The Middle Segment is in a transitional state, from relatively low boat use to potentially much greater use intensities as a result of a variety of factors, principal of which is the diversion of sport fishing boats from the Lower River during the King runs. The intensification of boat use on this river section is inappropriate since additional use will worsen the current vessel overcrowding problem(s) and the associated impacts upon private property created through trespass and vessel operation. The Management Plan recommends that the current levels of boat use not increase and that no new major recreational sites be developed except at Bing's Landing and Funny River. High use bank fishing areas would be focused at those state and federal sites with adequate sanitary facilities and parking, and where there is adequate protection of the riverine areas. The central theme for this section of the river is to not engage in efforts that encourage additional bank fishing or vessel use, while at the same time taking active steps to mitigate the impacts that can be expected to occur at existing recreational facilities.

Reach 3. Soldotna — Naptowne Rapids To manage this portion of the Kenai River to: 1) recognize low density cabin and single family residential uses in rural areas, and medium and high density residential uses in areas served by city services; 2) continue the present drift boat and motor boat uses and as well as bank fisheries, including high intensity bank fisheries (only) at designated public accesses and served by adequate public facilities; 3) allow reasonable levels of commercial uses which support but do not damage sport fisheries and their related recreational uses, including but not limited to motor and drift boat rentals and professional guiding; and 4) protect the remaining areas of undisturbed, sensitive habitat. The drift boat fishery is to be actively managed to avoid conflict with motor boat operations. Canoeing/kayaking/rafting are permitted, as are aircraft operations.

Reach 4. Naptowne Rapids to Skilak Lake To manage this portion of the Kenai River to: 1) recognize rural, low density cabin and single family residential uses ; 2) continue drift boat and motor boat and as well as bank fisheries, including high intensity bank fisheries at areas of designated public access and with adequate facilities; and 3) allow commercial uses designed to support these fisheries and their related recreational uses, including but not limited to motor boat and drift boat guiding and rentals as well as drift boat guiding. That section of the river from the outlet of Skilak Lake to the Kenai Keys Subdivision should be retained in its present natural character for the protection of wildlife and fishery habitat. Canoeing/kayaking/rafting is permitted. Aircraft operations are allowed throughout this reach except at the outlet of Skilak Lake during the period of active waterfowl use.

5.3.2.1. Management Recommendations

In addition to the management strategies described in Chapter 4, the following recommendations are also to apply to this portion of the river:

2.1 Increased agency enforcement presence should be allocated during the period of peak associated with the King salmon and Red salmons runs. This increased presence should target vessel activity in habitat sensitive zones and at 'holes' with lots of vessels.

2.2 Neither the Borough or the State should authorize additional public accesses to this portion of the river unless there is a demonstrated need and unless adequate access, parking, and sanitary facilities are provided.

2.3 A high level of protection for waterfowl and wildlife should be afforded in high value wetlands and other sensitive natural areas providing nesting, rearing, and other habitat functions through the permitting processes administered by the local, state, and federal units of government.

2.4 A 'bank protection zone' designed to manage vessel operations to reduce the effect of boat wakes should be established for the area between River Mile 46 and River Mile 39.

2.5 Proposed developments within the Plan Boundary of the Management Plan should be carefully reviewed against the recommendations of the Plan, particularly with reference to the land use guidelines stated above.

2.6 The Borough should give consideration to the institution of rural, low density zoning in all areas outside the corporate limits of Kenai and Soldotna within one-half mile of the Kenai River.

2.7 There should be no further development near the outlet of Skilak Lake unless it can be shown that the proposed project will not impair current wildlife migratory patterns. Note: public sanitary facilities are appropriate within this area, although their citing should adhere to the previous standard. A 'Critical Habitat Area' designation should be developed and subsequently implemented for the area from Skilak Lake outlet to the Lower Killey River confluence. The development of such a designation will require legislation approval.

2.8 The ADOT/PF maintenance yard on the Kenai River in Soldotna should be closed, and the site rehabilitated and redesigned for public recreation use. The salt pile should be removed not later than the end of 1997.

2.9 Prohibit the use of motor vehicles on riverbeds except at boat launches designated by the State or for approved uses (i.e., restoration projects) for which all applicable permits have been issued. This prohibition does not apply to aircraft and vessels.

2.10 Manage aircraft operations in the area between Moose River and Naptowne Rapids to avoid conflicts with other river users and insure the public's safety. Note: aircraft operations are already managed in portions of the Lower and Middle River where such operations might interfere with waterfowl.

2.11 Construct a 30 unit campground at the State's Bing's Landing recreation site, and consider and evaluate the development of a state recreation site at the 'Kenai Ranch' parcel through a public process if the Funny River Bridge is constructed.

2.12 In conjunction with the Funny River Bridge crossing for River Mile 34, ADOT/PF should acquire sufficient land for the construction and operation of a boat launch and associated parking.

2.13 The recreational facilities in Table 4-2B should be implemented. The identification of future recreational facilities should follow the procedures described in Recommendation 4.5.1.2.1.2.

2.14 The riverbank restoration/protection projects identified in Table 4-3B should be implemented. The identification of future restoration projects should follow the procedures described in Recommendation 4.5.2.4.

2.15 The EVOS parcels acquired by the State should be managed according to the classifications in Table 4- 4, unless title or EVOS acquisition restrictions require a different management strategy. If there is a conflict between the recommendations in Table 4-4 and the title acquisition restrictions, the latter shall prevail.

2.16 The Kenai Area Plan should incorporate the parcel retention and other state water and land recommendations of the Management Plan.

5.3.3 Upper River (Including Kenai Lake)

5.3.3.1 Management Intent

General: The management of the Upper River is to be significantly different because of land ownership patterns, the land use and recreation use authorities associated with this ownership, the unique topographic condition of the 'Kenai Canyon' in Reach 6, and the presence of two large lakes — Kenai Lake and Skilak Lake. This area, except for private property along isolated portions of Kenai Lake and along the Sterling Highway within the Cooper Landing Section, is owned by the federal government (Chugach National Forest and Kenai National Wildlife Refuge) and is therefore subject to the plans and development authorities of these agencies. Development pressure is minimal on Skilak Lake and within Reach 6 except at Cooper Landing. Instead, use pressure dominates — fishing pressure along the Russian River and at the confluence of the Russian and Kenai rivers, and float (private and commercial) pressure between the Kenai Highway Bridge in Cooper Landing to Jim's Landing.

The overall management philosophy for this area is:1) to manage Skilak Lake in a low intensity fashion, consistent with the US FWS management plan; 2) retain the natural character and use patterns of Kenai Lake by limiting development to private property and not authorizing the use of Kenai Lake for certain motorized uses during the summer months; and 3) manage the Kenai Lake to Skilak Lake section to retain the natural character and ambiance of this section by limiting development to the Cooper Landing Section, restricting the number of commercial float trips, and precluding motorized use of this section of the river except within the Cooper Landing Section (from RM 80.7 to the Kenai Highway Bridge at RM 82.0).

Reach 5. Skilak Lake To manage this portion of the Kenai River to: 1) recognize low density recreational cabin uses in existing in-holdings 2) continue low intensity motor and bank fisheries; and 3) maintain the current level of campground use. Limited intensity commercial uses may be appropriate if related to wildlife and scenic resources.

Reach 6. Skilak Lake to Kenai Lake To manage this portion of the Kenai River water system to: 1) recognize rural, low density recreational cabin and single family residential uses and limited, river dependent commercial uses in the Cooper Landing section (RM 80 to RM 82); 2) maintain the drift fishery on Kenai River and focus the high density bank fishery to designated areas on the Russian and Kenai Rivers having adequate facilities; 3) expand the drift only area to include the area between the power line and Fisherman's bend (RM 72.9 to RM 80.7); 4) focus the motor boat fishery to the Cooper Landing section (RM 80.7 to RM 82); 5) focus limited intensity commercial uses to sites within the Cooper Landing section; and 6) manage the river to maintain the existing world class rainbow fishing quality of this section. Motor boat rental and guiding facilities are only appropriate within the Cooper Landing section of this reach. The section of the Kenai River between the Russian River (River Mile 73) to Skilak Lake should be maintained in its present natural condition, particularly that area known as the 'Kenai Canyon'. Airplane operations are not appropriate within this section, except in the Cooper Landing section.

Reach 7. Kenai Lake To manage this portion of the Kenai River to:) recognize low density recreational cabin and limited commercial development along the shores of Kenai Lake and the Sterling Highway; 2) continue the motor boat and the low and medium density bank fishery; and 3) encourage the development of business and facilities that support the recreational activities of Kenai Lake and serve the traveling public on the Sterling and Seward Highways, including but not limited to motor boat guiding and rental use, charter operations, fuel storage and dispensing, B&Bs and similar commercial uses. Recreational uses are intended to be more diverse and intense on Kenai Lake, to include water skiing, sail-boating, canoeing, motor boat use, and snow machining. Aircraft operations are recognized. Except for limited recreational cabins and homes and some minor commercial uses along the Sterling Highway, the present natural character of Kenai Lake should be maintained.

5.3.3.2 Management Recommendations

In addition to the general management strategies described in Chapter 4, the following management recommendations are to apply to this portion of the river:

2.1 The drift only area of the Upper River should be expanded to include the section between the definite 'power line' west of Sportsman's Landing (RM 72.9) and Fisherman's bend (RM 80.7).

2.2 The Upper River should be managed in accordance with both this Management Plan and the Upper River Cooperative Management Plan, following the Level of Acceptable Change process described in Table 5-1. Management of the Upper River will be divided between the US FWS, USFS, and DOPOR, depending on jurisdictional authority.

2.3 Increased agency enforcement presence should be allocated during the period of peak sockeye salmon runs. This increased presence should target bank fishing and vessel activity in habitat sensitive zones and the confluence of the Kenai and Russian Rivers.

2.4 Additional public accesses to this portion of the river should not be authorized by either borough, state, or federal agencies unless adequate access/parking, sanitary, and solid waste facilities are provided.

2.5 An upper limit to the number of commercial float operators that use this portion of the river should be considered.

2.6 Efforts should focus on maintaining public ownership and access to the large parcel of federal land at the confluence of the Russian and Kenai Rivers that has been selected by the Cook Inlet Regional Corporation, Inc.

2.7 Proposed developments within the Plan Boundary of the Management Plan should be carefully reviewed against the recommendations of the Plan, particularly with reference to the land use guidelines stated above.

2.8 Continue the prohibition on the use of jet skis, hydroplanes, and airboats on the Kenai River. Restrictions on the use of these craft on Kenai Lake will be evaluated through a stakeholder involvement process. This process is intended to balance the impacts created by jet skis and the interest of individuals to use these craft in an unregulated fashion. Jet ski users as well as affected interests will be involved in these discussions.

2.9 Prohibit the use of motor vehicles on riverbeds except at boat launches designated by state and federal agencies, and on Kenai Lake on areas below ordinary high water. This prohibition does not apply to aircraft or vessels. Travel on the ice in the Winter by motorized vehicles is also permitted, including the use of these vehicles for wood collection authorized by state or federal agencies.

2.10 Prohibit the use of motor vehicles in exposed areas of lake shore below the ordinary high water on Kenai and Skilak Lakes where the purpose of that activity is to transverse the lake shore. Use of the lake shore for the purposes of boat launching is exempted from this requirement. This requirement also does not apply when there is adequate snow cover to support motor vehicles, as determined by DOPOR.

2.11 The unattended anchoring of vessels to either federal or state land in excess of 72 hours should be prohibited.

2.12 The streams on non-federal land draining areas in or near the Cooper Landing, Snow River, Moose Pass, and Quartz Creek areas should be included within KRSMA. These streams include: Crescent, Bean, Quartz, Shakleford, Juneau, Dave's, Dry, Slaughter, Indian, and Cooper creeks; and Trail River and Snow River. Also recommended for inclusion are Upper and Lower Trail Lakes, both of which adjoin state land.

2.13 The State should retain many of its parcels adjoining Upper and Lower Trail Lakes, the Trail River, and Kenai Lake for eventual inclusion in KRSMA. These parcels are identified in Tables 4-6C and 4-6D, and are depicted on Maps 4-3 and 4-4. Note: it is not certain that these parcels will be incorporated into KRSMA until the DNR Kenai Area Plan is adopted. These parcels are also subject to selection by the Kenai Peninsula Borough as part of their Municipal Entitlement. In the event that these parcels are transferred out of state ownership, the policies of Recommendation 4.5.4.5 are to be followed by DNR in the adjudication of the Borough's application for conveyance.

2.14 The State should designate a 200' vegetative buffer adjacent to Lower Trail Lake, Upper Trail Lake, Trail River, and Snow River if state parcels are conveyed to the Kenai Peninsula Borough as part of their Municipal Entitlement.

2.15 The Kenai Area Plan should incorporate the parcel retention and other state water and land recommendations of the Management Plan.

2.16 State and federal land within the Kenai River Watershed should be utilized in a manner consistent with the recommendations of the Management Plan.

2.17 Cooper Creek should be rehabilitated. Consideration of this objective should be included in the FERC re-licensing and approval process.

2.18 Timber harvest on state land depicted in the Upper River and Kenai Lake areas (Maps 4-3 and 4-4) and identified on Tables 4-6C and 4-6D is to be generally prohibited except where necessary to carry out the statutory purposes of the KRSMA. Timber harvest in other areas of the Study Area are to follow the policies included in Recommendations 4.5.5.6.1 and 4.5.5.6.3. It is particularly critical that, in any harvest operations that are authorized, a significant non-devegetated area between the principal highway and the harvest area be retained, prominent viewsheds are not impacted, there is careful adherence to state/federal water quality standards, and harvest plans be consistent with planned recreation uses within or are adjacent to timber harvest areas.

2.19 The recreational facilities in Table 4-2C should be implemented. The identification of future recreational facilities should follow the procedures described in Recommendation 4.5.1.2.1.2.

2.20 The riverbank restoration/protection projects identified in Table 4-3C should be implemented. The identification of future restoration projects should follow the procedures described in Recommendation 4.5.2.4.

2.21 The EVOS parcels acquired by the State should be managed according to the classifications in Table 4-4, unless title or EVOS acquisition restrictions require a different management strategy. If there is a conflict between the recommendations in Table 4-4 and the title acquisition restrictions, the latter shall prevail.

2.22 The Borough should give consideration to the development of low density residential zoning and commercial zoning, to reflect current and expected use patterns, in the Cooper Landing, Moose Pass, and Quartz Creek areas.

2.23 The Borough should consider the exchange of certain properties it owns in the Quartz Creek area for appropriate state lands more suitable for Borough purposes if, in an effort to protect the Quartz Creek watershed, the Quartz Creek area lands are made part of KRSMA. The Borough lands that may be considered for this purpose are classified preservation and are located within sections 36 of T5N., R3W. and section 30 of T5N., R2W. More specifically, these lands are located between the Sterling Highway and the Quartz Creek Road with the northeast boundary being the USFS Crescent Creek Campground, Survey 7937, and the southwest boundary being the USFS Quartz Creek Campground, PLO 6440.

Table 5-1. Upper Kenai River Cooperative Plan Indicators, Actions, Standards, and Monitoring

Value to be maintained or enhanced	Key indicator	Standard to be met	Management action (triggered if standard is not met)	Monitoring procedure & frequency
Healthy Fish Populations	Sockeye escapement at Russian River weir	Minimum escapement 16,000 early run fish & 30,000 late run fish	Restrict or close fishery as called for in the Russian River Sockeye Salmon Management Plan (05AAC 021.0361)	Install weir downstream from Lower Russian Lake from early June to early Sept. Annual escapement counts of early & late run sockeye salmon. (ADFG)
	Population dynamics of Dolly Varden	Maintain historic age, size, and population of Dolly Varden		
	Population dynamics of rainbow trout	Maintain historic age, size, and population of rainbow trout	Continue conservative management as determined by the Board of Fisheries.	A. Use field observations & reports from anglers to indicate when periodic surveys are needed. Compare with data from 1986, 1987, & 1995 studies. B. Conduct three to five counts of spawning rainbow trout on foot between mid-May and mid-June each year. (ADFG, USFS)
Healthy Riparian Areas	Habitat suitability on Kenai River Mainstem	No net loss of habitat as a result of bank angling	Further restrictions on the sockeye salmon fishery by ADF&G as provided for in the Riparian Habitat Fishery Management Plan (05AAC056.0065)	A. Survey bank from ordinary high water inland 10 ft. & ordinary high water offshore 6 ft. Record types of vegetation, cover, substrate, evidence of trampling & human made structures. Use HEP model to quantify habitat units. Conducted annually thru 1998. Comprehensive review of program by Board of Fisheries after 1998. B. Conduct float surveys from mid-June to mid-August and record location and number of bank anglers. Minimum of three surveys per year thru 1998. (ADFG)
	Habitat Suitability on Russian River	Terrestrial Plots in disturbance classes 1-3: no change in condition that results in a more degraded disturbance class. Plots in disturbance class 4-5: positive change in condition. Aquatic Minimum 50% overhanging bank vegetation.	1. Improve visitor education & information materials. 2. Increase informational contacts. 3. Close heavily impacted streambank areas and/or install elevated light penetrating walkways. 4. Revegetate closed areas where natural restoration is not occurring. 5. Increase enforcement.	Establish 15x3m permanent plots adjacent to the river. Measure percent canopy cover, percent ground cover, and percent covered by trail or trampled. Note all species present. Based on these indices, each plot is assigned a disturbance class rating. Repeat every three years. (USFS, FWS)
Water Quality	Benthic invertebrate populations	Less than 15% change in any of the following: Number of Ephemeropters, Plecoptera & Trichoptera (EPT) genera -Decrease in EPT total genera ratio -Increase in Baetids/ EPT ratio	1.Increase frequency of monitoring. 2. Educate public & property owners about materials that may be washed into the river by storm runoff or flooding. 3. Investigate the cause of change. 4. Increase enforcement of water quality laws & regulations.	Use a stovepipe sampler to collect samples at 5 locations between river miles 68 and 80. Record water flow & temperature. Sort & identify benthic invertebrates to the family level. Samples collected every two years in May.

Table 5-1. Upper Kenai River Cooperative Plan Indicators, Actions, Standards, and Monitoring

Value to be maintained or enhanced	Key indicator	Standard to be met	Management action (triggered if standard is not met)	Monitoring procedure & frequency
Healthy Wildlife Populations	Bald eagle nesting success	A. Nesting success rate & average number of eaglets per active nest not less than that recorded for the total surveyed western Kenai Peninsula nesting bald eagle population. B. Maintain historic numbers of overwintering bald eagles based on a 5 year average.	A1. Identify cause of problem & attempt to resolve. A2. Provide information to minimize human disturbance near nests. A3. Close areas around selected nests at critical times. B1. Investigate cause of decline & attempt to resolve.	A. Conduct aerial surveys of bald eagle nests in May to determine active nests,& in June, July or August to determine eaglet productivity. Repeat annually. B. Conduct monthly surveys of overwintering bald eagles by boat or aircraft from November thru March annually. (FWS)
Cultural Resources	Extent of damage to archaeological & historical sites	A. No intentional disturbance of site. B. No mineral soil exposed as a result of foot traffic thru site features or evidence of camping or campfires within features.	A1. Investigation & enforcement of ARPA violations. B1. Improve information materials & education programs. B2. Re-route trails or erect fencing to protect site features from foot traffic. B3. Develop a cultural resource management plan for the area.	Monitor 12 sites to assess conditions & document changes in vegetative cover, bank erosion, presence of trash, & evidence of foot traffic. Note conditions on site maps & document with photographs. In areas of concentrated use, monitor sites annually the remainder at 2 year intervals. (USFS,FWS,CIRI)
Quality Recreation Experience	Accumulation of human waste & litter	No more than six piles toilet paper &/or feces & less than 1/4 bucket of trash per transect.	1. Increase information materials & education programs. 2. Promote "pack it in/ pack it out" as a voluntary program. 3. Install additional toilets at primary access points. 4. Require users to pack out solid human waste.	Establish 8 transect sites. Measure sixteen 100-foot radial transect from center point. While walking each transect line, count the number of piles of toilet paper &/or human feces. Collect other litter in a 5-gal. bucket. Monitor transect annually after the second sockeye run. (USFS,FWS,ASP)
	Tolerance of crowding	At least 75% of the time there is at least 6 ft. between sockeye anglers in the confluence flyfishing area & 15 ft. in other areas & at least 30 ft. between rainbow trout anglers.	1. Provide information about where & when to avoid crowds. 2. Establish fixed capacities for parking areas: no additional or overflow parking areas provided. 3. Restrict drop off or shuttle services for bank anglers.	Observations of distance between bank anglers recorded by staff during routine bank & float patrols. Analyze data & repeat annually. (ASP)
	Competition for fishing sites	No more than 25 % of anglers surveyed had had trouble finding an uncrowded fishing spot.	1. Provide information advising anglers where & how to avoid crowds. 2. Establish fixed capacities of parking areas; no additional or overflow parking provided. 3. Schedule number &/or time of launches for guided trips. 4. Implement a permit system for all upper river users.	On site survey of boat and bank anglers using a random sample design. Ask how often they had trouble finding a fishing spot & what they will tolerate. Survey repeated every 3-5 years. (ASP)

Table 5-1. Upper Kenai River Cooperative Plan Indicators, Actions, Standards, and Monitoring

Value to be maintained or enhanced	Key indicator	Standard to be met	Management action (triggered if standard is not met)	Monitoring procedure & frequency
Agency Stewardship	Availability of agency staff	Minimum 8 hours/day staffing by uniformed law enforcement officers & 8 hours/day staffing by non-enforcement personnel June 15-Aug. 15 in the confluence area.*	1. Coordinate scheduling between all agencies with law enforcement jurisdiction to improve coverage. 2. Require agency personnel involved in law enforcement & visitor services to wear uniforms whenever possible. 3. Request funding for additional law enforcement personnel. 4. Expand volunteer programs, such as Stream Watch.	Record number of hours law enforcement officers and other agency staff are working in the area each day from mid-June thru September. Tabulate annually. (ASP,FWS,USFS)
	Information & education for river users	At least 70% of the survey questions are answered correctly.	1. Identify subject areas where answers are incorrect; improve or add outreach media or delivery to address those subjects. 2. Create a single, multi-agency source for accurate, consistent information.	Random exit survey at primary access points to determine river users' knowledge of 5 categories of information: resource protection, bear safety, fishing regulations, & area facilities. Administered annually. (USFS,FWS,ASP)

*The Confluence Area, for the purpose of this standard, is defined as the corridor between the powerline crossing on the Russian River downstream to the powerline crossing at mile 73 of the Kenai River.

CHAPTER 6

PLAN IMPLEMENTATION

6.0 Introduction

This chapter describes the actions and procedures DNR will take to implement this plan, makes recommendations on implementation measures which other agencies should take, and describes the process for plan review, modification, and amendment.

Many recommendations made in the 1986 plan have been implemented. These include the institution of the 35 horsepower limit, modifications to state park regulations, selection of National Forest land under state entitlement, and additions to KRSMA. In part, the need for this plan revision is due to the absence of recommendations within the 1986 plan to guide the management of KRSMA under the changed conditions that now prevail.

6.1 Implementation Recommendations

The real worth of any plan is its ability to be implemented and thereby direct management actions to achieve some desired future state. Much rests on the ability and willingness of the resource and land management agencies to carry out plan recommendations.

Since there are a variety of local, state, and federal agencies who exercise jurisdiction over some aspect(s) of the in-stream permitting or upland development process, implementation responsibilities are varied. Table 6-1 lists the recommendations contained in chapters 4 and 5 indicating the agency with primary responsibility for implementation. Because of the scope of the recommendations, secondary responsibilities are sometimes identified. There may be more than one agency with primary or secondary responsibilities.

A plan monitoring component is also suggested for use in the implementation of this Plan. DOPOR should review the status of the recommendations identified in Table 6-1 on an annual basis with the Advisory Board. This review would measure efforts towards plan implementation, stop implementation efforts for recommendations that are proving unworkable, and make modifications to plan recommendations that will improve their feasibility. Particular attention should be placed on the efforts of DNR to enact necessary regulatory and planning changes; develop the Kenai River Protection Fund (or an alternative funding mechanism that may prove more suitable); develop and monitor efforts towards enforcement and sport fishing guide management changes; and implement the more critical studies, particularly vessel overcrowding and a revised boat wake study.

6.1.1 Kenai River Advisory Board

DNR will continue to support the Kenai River Advisory Board for the purposes given in legislation. The Advisory Board is responsible for overseeing the revision of the Management Plan, reviewing and recommending implementation actions to the Commissioner for adoption by DNR, and facilitating multi-agency cooperation on projects involving the Kenai River. The Advisory Board should continue to fulfill these functions. However, it is especially important that the Board takes an active role in implementing the Management Plan's recommendations. This will involve the review and recommendation to the Commissioner of orders and regulations intended to adopt the policies and recommendations of this Plan.

The Advisory Board should also be accorded the opportunity to review proposals potentially affecting the Kenai River drainage. This would involve review of significant capital projects; proposed timber harvest plans and sales (Alaska State Forestry and USFS), state land disposals, oil and gas lease sales; and state areawide and local comprehensive plans. This review should occur at the conceptual (feasibility) stage in addition to final plans. This will allow the Advisory Board to review controversial proposals in their earliest, most flexible phase.

The recommendations of the Advisory Board are advisory in character and are to represent the opinions of the Board. (They may not necessarily represent Department positions.)

6.1.2 Enactment of Departmental Orders and Regulations

The Director, DOPOR, has delegated authority to enact changes to operating procedures and practices. The Commissioner has the authority to implement revisions of that section of the Administrative Code dealing with KRSMA.

The recommendations pertaining to KRSMA and other state lands listed in Chapter 4 will be undertaken by the Department. Table 6-1 lists these recommendations and the agencies responsible for their implementation. DOPOR will be responsible for implementation of recommendations directly pertaining to KRSMA; the Division of Land will be responsible for incorporating the recommendations identified in Chapter 4 that pertain to planning and classification actions.

6.1.3. Consistency of Agency Actions with Plan

The Management Plan will be the policy of the Department of Natural Resources, guiding DNR programs along the River and its management of the uplands that are within KRSMA. DNR will use the Kenai Area Plan for the management of state lands and waters not included within KRSMA, as well as those parcels of state land that are intended for eventual inclusion in KRSMA. The latter are to be managed by DNR on an interim basis in a manner consistent with the objectives of KRSMA.

Those departments of the State that are affected by this plan (DNR, ADF&G, ADEC) will, through their planning, permitting and other regulatory programs, implement plan recommendations to the maximum extent practicable. It is also recommended that local (cities of Kenai and Soldotna, Kenai Peninsula Borough) and federal agencies directly involved in resource management along the Kenai River (US COE, US FWS and USFS) implement recommendations through their planning, permitting, regulatory, and other programs to the maximum extent practicable.

6.1.4 Facility Recommendations

DOPOR will implement recommendations identified in Chapter 4 pertaining to park facilities, including but not limited to restoration projects, recreation facilities, and other measures required for the effective management of KRSMA. It is recommended that the non-state agencies implement those park and facility recommendations identified in Chapter 4 relating to their jurisdictional area. These recommendations should be implemented within the next five years or that length of time identified in agency capital improvement programs.

6.1.5 Acquisition Recommendations & KRSMA Inclusions

DNR will identify the parcels recommended for eventual inclusion within KRSMA in the Kenai Area Plan, and will classify these parcels in the retention categories of recreation or habitat, subject to results of the KAP public review process. The Department will submit those parcels identified in this Plan for inclusion within KRSMA to the Legislature for consideration as amendments to the KRSMA boundary.

Subject to the availability of funds, the State will attempt to acquire private property for inclusion in KRSMA on a voluntary, willing seller basis using criteria given in Chapter 4.

6.1.6 Recommendations Relating to Local Government

The Management Plan recommends that the Borough consider certain changes to its subdivision codes well as to both the floodplain and habitat protection ordinances. It is also suggested that the Management Plan be adopted in whole or in part (relating to the recommendation sections) as elements of the Borough's Comprehensive Plan and Coastal Zone Management Program. Similarly, inclusion of the Management Plan in the comprehensive Plan of the cities of Kenai and Soldotna is recommended.

TABLE 6-1
AGENCY IMPLEMENTATION RESPONSIBILITIES

		BOROUGH	DNR/PARKS	DNR/LAND	ADFG	ADEC	USFS	USFWS	SOLDOTNA	CITIES
WATER BASED RECREATION										
4.5.1.1.1	Scenic Operators		o				o	o		
4.5.1.1.2	Rental Boats		o							
4.5.1.1.3	Derbies		o							
4.5.1.1.4	Enforcement		o		o	o	o	o		
4.5.1.1.5	Motorized/Non-motorized Restrictions		o				o			
4.5.1.1.6	Fishing Guides		o							
4.5.1.1.7	Vessel Overcrowding		o							
UPLAND RECREATION FACILITIES										
4.5.1.2.1	Recreation Facilities	o	o		o		o	o		o
4.5.1.2.2	Trails		o				o	o		
4.5.1.2.3	Habitat Restoration Projects	o	o		o	o	o	o		o
HABITAT										
4.5.2.1	Public Access	o	o		o	o	o	o		
4.5.2.2	Public Facilities	o	o		o	o	o	o		o
4.5.2.3	In-Stream Structures		o		o					

TABLE 6-1
AGENCY IMPLEMENTATION RESPONSIBILITIES

		BOROUGH	DNR/PARKS	DNR/LAND	ADFG	ADEC	USFS	USFWS	SOLDOTNA	CITIES
4.5.2.4	Habitat Restoration	°	°		°	°	°	°		°
LAND USE										
4.5.3.1	Extend HPO Ordinance	°								
4.5.3.2	Amend Subdivision Regs	°								
4.5.3.3	Borough Comprehensive Plan	°								
4.5.3.4	Kenai River Center	°	°		°	+				
4.5.3.5	Zoning, Kenai River	°								
4.5.3.6	Public Access Guidelines	°	°	°			°	°		°
LAND MANAGEMENT (PUBLIC)										
4.5.4.1	Borough Land Classification	°								
4.5.4.2	Protection of Parcels	°		°						°
4.5.4.3	Land Acquisition		°		°					
4.5.4.4	EVOS Acquisitions		°		°					
4.5.4.5	Land Disposals	°	°	°	°	°	°		°	°
4.5.4.6	KRSMA, Additional Land		°	°	°					

TABLE 6-1
AGENCY IMPLEMENTATION RESPONSIBILITIES

		BOROUGH	DNR/PARKS	DNR/LAND	ADFG	ADEC	USFS	USFWS	SOLDOTNA	CITIES
4.5.4.7	KRSMA, Additional Water		°	°						
4.5.4.8	Mineral Closure		°	°			°			
ENVIRONMENT										
4.5.5.1	In-Stream Water Reservation			°	°					
4.5.5.2	Impoundment Structure		°		°	°				
4.5.5.3	Drainage Facility Analysis	°								
4.5.5.4	On-Site Disposal Systems	°				+				
4.5.5.5	ADOT Maintenance Yard	°		°		°			°	
4.5.5.6	Logging Standards			°		°	°			
4.5.5.7	Regional Sewage Outfall					°			°	
4.5.5.8	Fuel Storage Standards	°	°	°		°				
4.5.5.9	Wetlands/Water Quality Permitting	+	+	°	+	°	+	+	+	+
FINANCIAL										
4.5.6	River Use Fee		°							

TABLE 6-1
AGENCY IMPLEMENTATION RESPONSIBILITIES

		BOROUGH	DNR/PARKS	DNR/LAND	ADFG	ADEC	USFS	USFWS	SOLDOTNA	CITIES
ENFORCEMENT/REGULATIONS										
4.5.7.1	Enforcement	°	°	°	°	°	°	°		°
4.5.7.2.1	Other Commercial Activities		°	°			°			
4.5.7.2.2	Commercial Review Process		°				°	°		
4.5.7.2.3	End of Season Report		°				°	°		
4.5.7.2.4	Permit Application Process	°	°		°	°	°	°	°	°
4.5.7.2.5	Revised Permit Approval Guidelines	°	°		°	+	°	°	°	°
PUBLIC EDUCATION										
4.5.8	Public Education Program	°	°		°		°	°		
PLANNING & RESEARCH										
4.5.9.1	Water Quality		+		+	°	°			
4.5.9.2	Public Access	°	°	+	+					+
4.5.9.3	River Assessment Studies				°					
4.5.9.4	Floodplain Study	°								

TABLE 6-1
AGENCY IMPLEMENTATION RESPONSIBILITIES

		BOROUGH	DNR/PARKS	DNR/LAND	ADFG	ADEC	USFS	USFWS	SOLDOTNA	CITIES
4.5.9.5	Wetlands Study	°	°	°	+	°	+	+		+
4.5.9.6	Carrying Capacity Study		°							
4.5.9.7	Vessel Overcrowding		°							
4.5.9.8	Boat Wake - Erosion		+		°					
DATA COLLECTION/MANAGEMENT										
4.5.10.1	Data Management	°	°	°	°	°	°	°	°	°
4.5.10.2.1	Boat Use Data		°							
4.5.10.3.2	Water Quality Data				+	°				
4.5.10.4.3	309 Cumulative Impact Report				°					

° Primary
+ Secondary

The Advisory Board also recommends that the Borough consider the institution of some type of zoning immediately adjacent to the Kenai River to ensure the development of land uses compatible with the continued functioning of the river. The Advisory Board recognized that some changes will represent, if implemented, a significant departure from the way that land uses are managed along the Kenai River. Discussion of this issue with the public indicated a strong interest in developing zoning that would recognize and protect existing uses from incompatible uses, and create an effective mechanism for protecting the Kenai River from undesirable development.

The Borough should consider the designation of parcels under its ownership adjacent to the Kenai River in the manner suggested in Chapter 4. This would involve protection of certain properties under the 'preservation' classification and conveyance to the State of certain parcels for eventual incorporation in KRSMA. The State may be willing to exchange replacement parcels for those conveyed parcels by the Borough.

6.1.7 DNR Operating Budget

The Department will seek funding to support the additional enforcement presence identified in Chapter 4. The additional enforcement presence recommended in Chapter 4 should be funded by the recommended increases in the guide license fee and/or by the Kenai River Protection Fund (a user fee), if it is established.

6.1.8 Funding: Kenai River Protection Fund and Tax Incentive Fund

This Plan recommends that the State consider establishing of a Kenai River Protection Fund. As suggested in Chapter 4, this fund would be a type of user fee that would pay for the expected expenses of habitat restoration and protection, parcel acquisition, public education, enforcement, and planning and research. It would be levied against all users of the resource. The Protection Fund should be identified in the enacting legislation as intended for funding of expenses of the Kenai River that are in excess of moneys brought in by guide fees or program receipts. It would be created as a 'special fund' appropriated to the local and state operating agencies responsible for river and adjacent upland management for the purposes described above and in Chapter 4.

It is also recommended that the Borough consider expanding the scope of its Tax Incentive Program to include the costs of in-stream structure removal and rehabilitation.

6. 1.9 Cooperative Agreements

The Department of Natural Resources will seek cooperative management agreements with other land management and regulatory agencies in the river corridor. The scope and extent of potential cooperative agreements is very broad, and specific guidelines for these agreements are recommended. The current Memorandum of Understanding between the agencies pertaining to management of the Kenai River should be re-endorsed in the form represented by Appendix E.

6. 1.10 Permitting

The resource and land management agencies responsible for permitting actions within, adjacent, or hydrologically connected to the Kenai River, should use the Permit Guidelines List in the Appendix C when adjudicating permit applications. These guidelines are intended to interpret the statutory responsibilities of the permitting agencies while at the same time bringing consistency and predictability to the permitting process. The guidelines are not regulations and do not carry the force of law. Individual permitting decisions will continue to be made on a case-by-case basis. This table has been updated from the original 1986 version to reflect changes in siting and design requirements that are commonly used by the permitting agencies and to incorporate recent changes in regulatory authority.

6.1.11 Chugach National Forest Land and Resource Management Plan

The USFS manages its lands and makes decisions on the use of natural resources within the National Forest consistent with its Forest Land and Resource Management Plan. The plan divides the forest into management areas, one of which encompasses Kenai Lake and the upper Kenai River to

the Russian River confluence. USFS has begun the revising the Forest Plan, which will result in recommendations for recreational activities, possible harvest areas, timber management, scenic quality standards, mining activity and other uses of land. It is recommended that the USFS consider the following approach in its resource planning:

Recreational Opportunity Spectrum The Recreational Opportunity Spectrum (ROS) is a system originated by the USFS to categorize areas according to their recreational attributes and ensure that a range of different recreational opportunities (from urban to wilderness) is maintained.

Viewed in context of the entire Chugach National Forest, Kenai Lake is highly developed and would presumably receive an ROS classification that allows intensive recreation activities and facilities. However, when viewed in context of the Kenai River corridor (which contains the highly developed Kenai-Soldotna area), Kenai Lake might be classified as natural or semi-primitive. For the purpose of assigning ROS classifications, the Forest Service should consider Kenai Lake as an element of the Kenai River system. The lake should be classified and managed to maintain scenic values and semi-primitive settings. Intensive recreational facilities should be limited to existing development nodes at the east and west ends of the lake.

Scenery Management System The Forest Service employs the Scenery Management System (SMS) to prescribe standards and guidelines governing scenic values on forest lands. In the Kenai Lake and upper Kenai River viewsheds, the USFS should maintain the highest SMS standards to ensure the continued scenic beauty of those areas. Timber harvests, road maintenance, power line crossings, and other activities should be strictly regulated to prevent any resultant decline in scenic values.

6.2 Plan Review, Modification, and Amendment Procedures

Scope The plan must be able to respond to changing conditions, new technologies, trends in recreation, and other future events which cannot be anticipated at the time of plan adoption. The plan can and should be reviewed, and if appropriate, amended. However, no substantial changes to the plan should be made without the expressed consent of all the signatories to the Memorandum of Understanding.

Periodic Review The Department of Natural Resources will conduct a periodic review of this plan every 10 years after its adoption, or more frequently as determined by the Commissioner. Review may be initiated because of public or agency request for review, policy changes within the department, availability of new resource information, emergence of new technologies, and other changing social or economic conditions which affect KRSMA and adjacent areas. Responsibility for performing this review is delegated to DOPOR. The review will be a public process, including public meetings, advisory board participation, consultation with other government agencies and jurisdictions, and contacts with other interested groups and individuals. The review may be very broad or limited to a single recommendation or group of recommendations. Review will result in one of the following actions:

No Changes of the Plan The review may determine that no changes of the plan are necessary. No further action will be taken.

Modification of the Plan Plan modifications are minor changes that do not alter the intent of the original plan. Modifications may include the incorporation of new resource information, updating of social and recreational data, and the clarification or expansion of original plan recommendations. Authority to modify the Kenai River Plan is delegated to the director of the Division of Parks and Outdoor Recreation. Decisions of the director regarding plan modifications may be appealed to the Commissioner.

Amendment of the Plan Plan amendments add to or modify the plan's basic intent. Amendments may be new state policies which will change recreational uses and patterns in the Kenai River or which might significantly affect the river's fish, wildlife, or other natural resources. Examples of plan amendments are a limitation on the number of guide permits issued under 11 AAC 14 and 11 AAC 18, area closures or use limitations under 11 AAC 12 or 11 AAC 20, revision of the plan's boundary resulting from new criteria, and new or different permitting guidelines for in-river. Amendments of the Kenai River Management Plan are made by the Commissioner.

6.3 Annual Review of Implementation Recommendations

The Advisory Board will annually review the status of the recommended implementation actions identified in Table 6-1. It may make recommendations to the DNR Commissioner; Director, DOPOR; other state and federal agencies; and local units of governments that improve the recommended strategy or are otherwise related to plan implementation.

Appendices

Due to file size, the appendices
are separate pdf documents.
To view, return to the
Kenai River Plan web page.