Juneau coastal Management Plan
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Juneau Wetlands Management Plan

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Changes to the Alaska Coastal Management Program (ACMP) require that all Coastal Management Plans, including Special Area Management Plans be submitted for re-approval by the Commissioner of Natural Resources. This foreword introduces the previously approved Juneau Wetlands Management Plan, a component of the Juneau Coastal Management Plan, and demonstrates how the plan addresses the new ACMP requirements. Revised sections are indicated in the footer. Other modifications to the previously approved document are not substantive and are limited to those necessary to present this document in digital format.

The Juneau Wetlands Management Plan was prepared as a Special Area Management Plan. It was adopted by the former Coastal Policy Council as an amendment to the Juneau Coastal Management Plan and went into effect in November 1993. It was revised to incorporate changes that were required during the approval process and reprinted in 1997. The 1997 revision did not alter the assumptions or methodology that lead to the original wetland classifications, nor modify the enforceable policies that were approved by the former Alaska Coastal Policy Council. As such the Juneau Wetlands Management Plan and its enforceable policies are “grand-fathered” with respect to certain elements of the new laws (see “Adequacy” pg. x). However, under the new laws, in order to have policies that address wetlands, a habitat classification under the ACMP, the plan must designate these wetlands as “important habitat.”

Pursuant to the regulations for designating important habitat, the use of the designated wetland must be shown to have a direct and significant impact on the saltwater environment; and the designated wetlands must be shown by written scientific evidence to be biologically and significantly productive. Once the designations are justified enforceable policies may be written and applied within the designated areas as long as they comply with other requirements for enforceable policies. In this case the objective is to retain the classification system and enforceable policies approved by the former Coastal Policy Council. This foreword provides the necessary documentation to designate the wetlands in the Juneau Wetlands Management Plan as important habitat.
Specifically, this foreword describes the designations and addresses: 1) background scientific basis for the wetlands classification system, 2) direct and significant impact on coastal water and productivity, and 3) adequacy.

**IMPORTANT HABITAT DESIGNATIONS**

The Juneau Wetlands Management Plan is located entirely within the City and Borough of Juneau coastal management boundary. Specific wetland sites, or units, are included within a study area which is about 15 square miles and includes the Mendenhall Valley, Auke Bay, Lemon Creek, and North Douglas. The location of each wetland unit was determined by the U.S. Army Corps of Engineers. The Juneau Wetlands Management Plan includes maps of the wetlands units within the Juneau study area and a list of each wetland unit and its classification. All of the wetland units within the study area are designated important habitat for purposes of coastal management.

**BACKGROUND**

In 1985, the City and Borough of Juneau initiated the planning process by forming a Wetlands Interagency Advisory Committee. The committee selected the “Adamus Wetlands Evaluation Technique (WET)” for the environmental assessment. Paul Adamus was retained to evaluate each of the study area wetlands that had been previously identified and mapped by the Corps of Engineers. The filed work for the environmental evaluation lasted one year, and the study team included researchers from Syracuse University, the State University of New York at Syracuse, and the University of Minnesota. A number of Juneau habitat biologist were employed to conduct the field work, including bird surveys and fish counts. Professionals associated with the National marine Fisheries Service Auke Bay Laboratory, and a variety of State and federal agencies and independent experts, made voluntary contributions. The result was a scientifically based evaluation of functions that eventually lead to the classification system and wetland management policies. Scientific documentation for the classification system can be found in the following studies that were produced specifically for the Juneau Wetlands Management plan.

Adamus Resource Assessment, Inc., 1987 “Juneau Wetlands Functions and Values,” CBJ.


IMPACT ON COASTAL WATER AND PRODUCTIVITY

Wetlands are intermediate between the terrestrial and aquatic environments (Mitsch and Gosselink, 1993) and serve as critical points for the transport and transformation of essential nutrients from the terrestrial to the aquatic realm. In areas of steep terrain and high precipitation such as southeast Alaska, the potential for movement and transformation of elements in the wetlands to the aquatic environment is high. Wetlands are a large component of the landscape in southeast Alaska, comprising more than 29% of the land area (National Wetland Inventory Database).

The wetlands in southeast Alaska are composed of both deep organic soil peatlands and mineral soil wetlands. Peatlands are often difficult to discern from mineral soil wetlands on the landscape (D’Amore and Lynn, 2002). Therefore, the mosaic of mineral soil wetland and peatland are often referred to in a management context collectively as “wetland.” These soils contain nearly three times the amount of carbon stored aboveground in vegetation (Eswaran et al. 1993), and peatlands contain the majority of this terrestrial carbon stock (Gorham, 1991).

Wetlands provide substantial dissolved organic matter (DOM) to surface waters and ultimately the ocean. In many northern ecosystems, peatlands are a major source of DOM to surface waters as evidenced by the link between percentage peat cover and riverine DOM fluxes (Dillon and Molot, 1997; Gorham et al., 1998; Aitkenhead et al, 1999).

At the landscape scale, the strongest correlate of DOM concentrations in aquatic ecosystems is the percentage of wetlands in the watershed. Ongoing studies are demonstrating the response of stream and estuarine foodwebs to alterations of these freshwater wetlands (Bridgham et al Abstract, 2005). On a global scale, northern peatlands account for nearly one third of the total soil carbon pool (Gorham, 1991). The export of this carbon to surface waters is largely controlled by hydrology and climate of these systems (Moore, 1998) and thus may be altered by changes to these variables by development or loss of wetland hydrologic connections.

The few studies of stream nutrient budgets in the region have not considered the wetland contribution of DOM (Stednick, 1981; Sugai and Burrell, 1984), but recent research has shown that wetlands dominated watersheds contribute substantially more carbon to streams than non-wetland watersheds (AGU Abstracts, 2004). Organic rich streams are abundant in southeast Alaska and this flow can be traced to the terrestrial environment. Clearly, the use of wetlands designated in the Juneau Wetlands Management Plan have a direct and significant impact on coastal water. On the basis of carbon-cycling alone, scientific studies have shown that these wetlands are biologically and significantly productive.

In addition to these recent scientific studies, the Adamus studies referenced above document fourteen discreet functions of each individual wetland. Twelve of these functions and values, which include nutrient export, support the argument for direct and significant impact on coastal water biologic and significant productivity, and hence the important habitat designation. The remaining two could be used to support a recreation designation, although that is not considered necessary to achieve the objectives of the Wetlands Management Plan, nor is it proposed. These functions are:

1. **Recharge**: Downward flow of water to ground water aquifers.
2. **Discharge**: Upward flow of ground water, often into streams.
3. **Surface Hydrologic Control**: Moderation of stream water flow fluctuations caused by surface runoff, important for restricting the velocity of runoff, protects streams against flash flooding.

4. **Sediment/Toxicant Retention**: Natural filtering effect for filtering out toxicants and dirt by allowing particulate matter to settle out. Can be good if clear water is passed downstream. Can be harmful if the sediments collect on site and the site has salmon eggs or other sensitive aquatic specimens.

5. **Nutrient Export**: Transports nitrogen and phosphorous downstream or to estuaries. In the "Lower 48" states this can be harmful because too much nitrogen/phosphorous creates algae blooms which choke off oxygen. In Juneau, nutrient export is helpful because streams do not have a lot of nutrients.

6. **Riparian Support**: Foliage along a stream or lake shore. Stream side vegetation protects salmon eggs from too much sun in shallow waters. The foliage also provides nutrients when it falls into the water. Overhanging vegetation provides protection for salmon smolts.

7. **Erosion Sensitivity**: Wetlands with steep slopes are prone to rapid erosion.

8. **Salmonid Habitat**: Habitat for salmon and related species. There are two major habitat types: spawning for adults, and overwintering for juveniles. Of the two habitats, overwintering is often the most critical one determining species abundance.


10. **Ecological Diversity**: The degree to which individual wetlands support a wide variety of plants or animals or has some unusual habitats. A significant component is range of bird species present.

11. **Replacement Cost**: Cost in terms of time needed to replicate a wetland environment. For example, a tidal wetland can be regenerated, but peat takes thousands of years.

12. **Downslope Beneficiary or Passive Economic Service**: A wetland is more important if it prevents flooding of downstream buildings and property.

13. **Recreation Actual**: Actual use as determined by results of public surveys.

14. **Recreation Potential**: Wetlands closest to roads were given a higher potential than isolated wetlands.
ADEQUACY

11 AAC 114.270. District enforceable policies. (i) Notwithstanding any contrary provision of (e)(3) of this section, enforceable policies contained in a district plan approved by the former Coastal Policy Council under former 6 AAC 85.195 – 6 AAC 85.225 and in effect on July 1, 2004, satisfy the requirements of AS 46.40.070(a)(2)(C)(i) and (iii). However, those enforceable policies must be revised as appropriate to meet all other requirements of AS 46.40.030 and 46.40.070. (Eff. 7/1/2004, Register 170; am 10/29/2004, Register 172)

Under State statutes, the enforceable policies of the district coastal management plan must not address a matter regulated or authorized by state or federal law unless the enforceable policies relate specifically to a matter of local concern. A matter of local concern is a specific coastal use or resource within a defined portion of the district’s coastal zone that is

(1) demonstrated as sensitive to development;
(2) not adequately addressed by state or federal law; and
(3) of unique concern to the coastal resource district as demonstrated by local usage or scientific evidence.

Since there are state and federal laws that may regulate or authorize the matters addressed in the management plan’s enforceable policies, the local concern test is applied. Enforceable policies contained in a Special Area Management Plan in effect on July 1, 2004 satisfy the requirements of (1) and (3) above (11 AAC 114.270(i)). In regard to the second prong of the three-part test, the plan’s enforceable policies relate to wetland habitat.

State Laws

The statewide wetlands standard is limited to avoiding, minimizing or mitigating significant adverse impacts to water flow and natural drainage patterns. For these management goals, the

11 AAC 114.270. District enforceable policies. (g) For an area designated by a district under 11 AAC 114.250(b) - (i), for a special area management plan developed under 11 AAC 114.400, .... a district may adopt enforceable policies that will be used to determine whether a specific land or water use or activity will be allowed. (Eff. 7/1/2004, Register 170; am 10/29/2004, Register 172)

Wetlands Management Plan provides specific measures for implementing the avoid, minimize or mitigate sequence. The plan also addresses management goals not addressed by the statewide standard. This increased specificity is needed to determine whether a specific land or water use or activity will be allowed within the special management areas; to protect significant natural resources (the wetland resource); and to provide for coastal-development economic growth and improved predictability in governmental decision making (as permitted by 11 AAC 114.270(g) and 11 AAC 114.400).
11 AAC 114.400. Special area management plans. A district may develop a special area management plan to manage a specific resource or activity within the district. Examples of a special area management plan include a harbor management plan, an ocean resource management plan, a public use management plan, a recreation management plan, a watershed management plan, and a wetlands management plan. A special area management plan may provide for increased specificity in protecting significant natural resources, coastal-dependent economic growth, improved protection of life and property in hazardous areas, and improved predictability in governmental decision making. Development and commissioner approval of a special area management plan for inclusion in the program must follow the procedures for approval of a district plan or significant amendment as described in 11 AAC 114.300 - 11 AAC 114.360. (Eff. 7/1/2004, Register 170)

Federal Laws

Federal statutes and regulations provide authority to the COE to regulate the discharge of dredged or fill material into wetlands that is broad in scope and general in application. The COE has acknowledged the inadequacy of its laws by entering into a MOA with the CBJ for management of district wetland resources.

Specifically, the Corps of Engineers reviews applications for permits to discharge dredged and fill material in wetlands in accordance with federal regulations found in 40 CFR, Part 230, commonly known as the “404(b)(1) guidelines.” The Corps asks the Environmental Protection Agency (EPA) and other federal resource agencies to review the permit application to determine if the proposed use is “water dependent,” and whether there are practicable alternatives to the proposed use if it is not water dependent.

Since all of the wetlands evaluated in the Juneau wetlands plan are interior freshwater wetlands (palustrine), very few permit applicants propose water dependent uses for these wetlands. The determination of the availability of practicable alternatives to wetland sites becomes crucial to the decision whether to issue a permit.

In addition to the practicable alternatives requirement, the Corps of Engineers' permitting process requires a broad-based public interest review that considers and balances a wide range of factors. The Corps of Engineers' regulations state:

All factors which may be relevant-to the proposal must be considered, including the cumulative effects thereof: Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

This statement indicates that any management plan that identifies in advance how wetlands should be managed, must also be based on this comprehensive general balancing process. This comprehensive approach is achieved in the Juneau Wetlands Management Plan by its three components: (1) comparison of the environmental values of wetlands, (2) analysis of practicable alternatives for each type of land use (zoning classification), and (3) consideration of public preferences for management of each wetland unit.
To classify the wetland units, each of the three components listed above was separately evaluated. Each wetland unit was assigned a "ranking" for each of the three components. The City and Borough of Juneau then created and used a new quantitative methodology to consolidate the data from the three components to generate an overall classification for each wetland (Category A, B, C, D or EP).

While the Juneau Wetland Management Plan was designed in accordance with Corps of Engineers regulations, it does not duplicate but “flows from” and supplements the Corp permitting process.

CONCLUSION

The wetlands mapped in the Juneau Wetlands Management Plan meet the criteria for designation as important habitats because (1) the use of the designated wetlands would have a direct and significant impact on coastal water; and (2) the designated wetlands are shown by written scientific evidence to be biologically and significantly productive.

The statewide wetlands standard is limited to avoiding, minimizing or mitigating significant adverse impacts to water flow and natural drainage patterns. The statewide standard fails to provide a management prescription for the special productivity of these important wetland habitats. The Federal statutes and regulations that provide authority to the COE to regulate the discharge of dredged or fill material into wetlands is broad in scope and general in application. The Juneau Wetlands Management Plan addresses management goals not adequately addressed by the state or federal laws.

REFERENCES CITED


American Geophysical Union 2004 Scientific Abstracts
http://www.agu.org/meetings/fm04/index.php?pageRequest=program


U.S. Fish and Wildlife Service National Wetlands Inventory Database
http://wetlands.fws.gov/downloads.htm
CHAPTER I
INTRODUCTION

SUMMARY

The Wetlands Management Plan of the City and Borough of Juneau (CBJ) is designed to:

- classify wetlands based on information regarding environmental functions, public preference for management, and practicable alternatives to wetlands development;
- provide the basis for reasoned decisions regarding protection and development of wetlands;
- require mitigation for development impacts that is appropriate for high value and lower value wetlands;
- increase permit predictability for wetland property owners; and
- reduce wetlands permit processing time and controversy for wetlands that are more suitable for development.

Wetlands management is important in Juneau because a significant portion of the community's remaining undeveloped land is wetlands and development pressures on these wetlands can be great. Wetlands are carefully regulated by the U.S. Army Corps of Engineers and the Environmental Protection Agency (EPA) under authority of the federal Clean Water Act because wetlands perform many important environmental functions. These functions include providing important habitat for fish, birds, and animals; nurturing commercial and sport fisheries; reducing flood damage; and abating water pollution. Wetlands can also be important sites for public recreation and scenic enjoyment. At the same time, many wetlands are in private ownership and are often proposed as development sites. The challenge of wetlands management is balancing wetlands’ values as a productive part of the natural environment with the public interest in using certain wetland sites for development.

To achieve the plan's goals, the CBJ established a study area, evaluated the environmental functions of the wetlands within it, assessed the availability of upland alternatives to wetlands development for all of Juneau, and surveyed public preferences for wetlands management. These three factors were combined to produce a balanced wetlands management plan that classifies wetlands from higher value (called Category A and B) to lower value (Category C and D), and manages development and uses of those wetlands accordingly. The plan also identifies wetlands that have potential for enhancement of wetlands functions (Category EP). The quantitative methodology developed and used by the CBJ to classify wetlands is described in “Chapter II, Classification Methodology.”
The plan adopts enforceable policies that must be complied with before any development in wetlands can occur. Most importantly, the plan includes a wetlands mitigation policy patterned after the federal mitigation regulation implemented by the Corps of Engineers and other federal agencies. The plan also requires use of "best management practices" to prevent impacts to wetland functions and values. The policies of the plan are listed in "Chapter III, Wetland Management Policies."

The plan has been approved by the CBJ, the State of Alaska, and the U.S. Department of Commerce as part of the Alaska Coastal Management Program. The plan is the basis for General Permit 92-1 and subsequent General Permits 2000-01, -02, -03 and -04, issued under Section 404 of the federal Clean Water Act by the U.S. Department of the Army, Corps of Engineers. The General Permits streamline the permitting process for the lower value wetlands covered by this plan by allowing the CBJ Wetlands Review Board to make permit decisions at the local level for development projects in those wetlands. The CBJ proposes to establish a Wetlands Mitigation Bank to assist project developers in meeting the mitigation requirements of the plan. These implementation features are described in “Chapter IV, Implementation.”

The City and Borough of Juneau has seated a nine-member citizen’s Wetlands Review Board to oversee Juneau’s implementation of the Juneau wetlands plan. Board members are required to have expertise in fisheries biology, hydrology, soils, engineering or land use planning. The Board has the responsibility for implementing the wetlands management plan and issuing permits for projects in Category C, D and EP wetlands under the terms of the General Permit.

In addition to its management functions, the plan is an educational document that provides information about individual wetlands in Juneau. It indicates which wetlands contribute the most to the natural environment and what they contribute. The inventory of natural functional values gives very specific information for each wetlands area, including: water flow, salmon stream fish counts, and bird counts. The plan provides one of the most complete comparative wetlands inventories for an area of this size.

This Revised Juneau Wetlands Management Plan incorporates all aspects of the plan that were approved by the CBJ and the State and federal governments, including changes that were made to the Juneau Wetlands Management Plan Concept Approved Draft (dated February 1991) during these approval processes. This plan revision does not update the data that was used to prepare the original plan, nor alter the assumptions or methodology that led to the original wetland classifications that are the basis of the management scheme.

**WETLANDS DEFINED**

To most Juneau residents, the word “wetlands” evokes images of the extensive tidally flooded grasslands along Egan Drive. However, the laws that regulate development in wetlands apply to many areas that do not fit the conventional image of what a wetland looks like. Laws that address wetlands cover estuaries, streams, some forested areas, inland meadows, ponds, and artificial wetlands.
In 1986, the Corps of Engineers located and mapped many of Juneau's wetlands, as they have done in other areas of the United States. The definition used by the Corps of Engineers to identify wetlands subject to their jurisdiction under the Clean Water Act requires the presence of the following three features (Corps of Engineers Wetlands Delineation Manual, 1987):

1. Prevalence of plant species typically adapted for life in saturated soils;

2. Water sufficient to flood or saturate most of the soil surface for at least part of the growing season; and,

3. Soil conditions that indicate saturation (hydric soils).

This Revised Juneau Wetlands Management Plan and the Juneau Wetlands Management Plan Map Atlas (published in May 1994) classified only those wetlands located by the Corps of Engineers in the study area as of 1986. Many additional wetlands have been delineated by the Corps in these intervening years, and new wetlands subject to Corps jurisdiction are continually identified. Users of this plan should contact the CBJ Community Development Department or the Corps of Engineers staff in Juneau for information regarding whether a specific piece of property is wetlands, and what permitting rules apply.

**CONTEXT AND HISTORY**

A large proportion of the land area within the City and Borough of Juneau is classified as wetlands and is subject to the regulatory requirements of the federal Clean Water Act. Wetlands occupy 54 percent of the management plan study area. In the past 20 years, there have been many conflicts between those who want to develop wetland areas, many of which are privately owned, and those who are concerned that wetland functions and values are being impacted by development that could be located on non-wetland properties.

The developing areas of Juneau have been supplied with public water within the last 10 to 15 years as a result of a $45 million expansion of the water distribution system, the largest capital project ever constructed by the CBJ. The water system encourages development in central corridors and prevents sprawl into environmentally sensitive rural areas. Public interest in developing along existing roads and infrastructure can be expected to continue and increase as Juneau's population grows. Many of the areas that will receive development pressure are wetlands.

Man-made development in Juneau's Mendenhall Valley area has progressed in roughly the following sequence.

1. Pre- World War II development consisted of several dairy farms near the mouth of Duck Creek and Jordan Creek, some fur farms on Duck Creek that utilized the salmon runs for animal food, and a few commercial vegetable gardens. The A-J Mine had constructed the Mendenhall Loop Road, which followed the same route as it does today. A few residences were scattered along its length. The airport was built in the 1930's. Airport construction altered the mouths of Jordan and Duck Creeks.
2. World War II brought an army camp into the Jordan Creek drainage and expanded construction at the Juneau Airport.

3. During the post-war years and into the early 1960's several significant events occurred:
   a. Parts of the middle Jordan Creek drainage were logged or high-graded for timber, with little control over logging slash disposal in or near the stream;
   b. Portions of the Mendenhall Loop Road were widened, using alluvial material from dredged ponds near the road; and,
   c. The Duck Creek drainage, particularly near its headwaters, began to be urbanized, with the first tract home construction occurring in 1961.

4. During the past two decades urban development in the Mendenhall Valley has proceeded at an increased rate, particularly as a result of improved transportation and increased state employment. The present population of the Valley is estimated to exceed 10,000 people, an increase of 7,000 since 1967.

If future community growth is to remain an option, locations for industrial and residential development must be found. The natural values of wetlands must be taken into account in the planning process to satisfy existing laws and to assure that growth can progress in the most environmentally responsible manner without degrading our quality of life.

**PLANNING PROCESS**

To achieve the plan's goals, Juneau established a 15 square-mile wetlands study area. The study area encompasses most of the developing areas of Juneau, including: Mendenhall Valley, Auke Bay, Lemon Creek, and North Douglas. The study area excludes the Mendenhall State Game Refuge and all estuaries.

Through the planning process, the CBJ evaluated all wetlands within the study area that had been delineated by the Corps of Engineers (primarily by aerial photograph interpretation) as of 1986. Additional wetlands have been delineated by the Corps of Engineers within the study area since 1986. These wetlands are not mapped, evaluated or categorized by the Juneau Wetlands Management Plan. Permitting for development in these wetlands is administered by the Corps of Engineers under the requirements of Section 404 of the Clean Water Act and its implementing regulations.

1 The plan: (1) evaluated the environmental functions of each wetland unit, (2) assessed the availability of practicable upland alternatives to wetlands development for all of Juneau, and (3) surveyed public preferences for the management of the wetland units in the study area.
These three factors were then combined to produce a wetlands management plan that designates wetlands that are more suitable for development, and those that are less suitable, in advance of any specific development proposal. The four wetlands management categories used for this wetlands plan are Category A, B, C and D – ranging from the highest value wetlands that are least suitable for development, to the lower value wetlands that are most suitable for development. The plan also identified some possible enhancement potential (Category EP) wetlands, where wetland values can be restored and enhanced. The classifications of the wetland units within the study area are listed in Appendix D of this plan, and in the Juneau Wetlands Management Plan Map Atlas (May 1994).

Ninety percent of the wetlands within the study area (a total of approximately 2,600 acres) are classified as Category A or B. Ten percent, or a total of 300 acres, are classified as Category C or D. Six freshwater ponds were classified as Category EP, due to their enhancement potential.

A more stringent "Shoreline Corridor Rule" classifies all wetlands within 50 feet of anadromous fish streams and lakes as the highest value, Category A, wetland type. This rule affects 22 wetland units. A special “Residential Road Corridor” classifies many wetlands within 100 feet of existing roads served by public water as lower value, Category C, wetlands.² This less stringent designation ensures that single family homes will be permitted to locate along existing roads and make use of existing public utilities. This rule affects 124 residential lots within 15 wetland units.

By classifying each wetland area into one of the four primary management categories (Category A, B, C or D), the plan balances people's development needs with the public and environmental benefits that wetlands provide. These land management categories have been agreed to by the City and Borough of Juneau and the State and Federal government regulatory agencies. This agreement on the management approach for each wetland will decrease permit processing time, make permit decisions more predictable, and ensure that potential impacts from wetlands development will be fully evaluated and appropriately mitigated.

The Revised Juneau Wetlands Management Plan includes enforceable policies that will guide the issuance of permits for discharge of dredged or fill material in wetlands. Most importantly, the plan adopts a mitigation policy patterned after the federal “mitigation sequence,” including requirements for avoidance, minimization, restoration and compensation. The plan requires appropriate mitigation for each wetland category.

² Not all wetlands within 100 feet of existing roads and utilities are classified as Category C. In some cases, the higher value Category A or B classification was retained due to the presence of higher environmental functions and values at the site.
PLAN IMPLEMENTATION

On June 30, 1995, the Corps of Engineers issued General Permit 92-1 for wetlands that are classified as Category C, D, and EP in the Revised Juneau Wetlands Management Plan. On July 24, 2000, the Corps of Engineers issues four General Permits (2000-01, -02, -03 and -04) that replaced 92-1. The General Permits address the discharge of dredged or fill material, and excavation and mechanized clearing in these wetlands for residential, commercial, industrial, transportation and public use development projects. Copies of both original and the new General Permits are included in Appendix F.

The Corps of Engineers has authorized the CBJ Wetlands Review Board to administer the General Permit through the permitting process outlined in this plan. The Board has the authority to issue wetland permits locally for the discharge of dredged or fill material in these lower value and enhancement wetlands (Category C, D and EP) for the purposes listed in the General Permit. The Board will issue permits in compliance with the enforceable policies of this plan and the specific and general conditions included in the General Permit.

For the Category C, D and EP wetlands, the CBJ has become a 'one-stop' wetlands permitting agency, greatly reducing permit processing time. No individual permit from the Corps of Engineers, consistency determination from the Alaska Department of Natural Resources, Office of Project Management and Permitting, nor individual water quality certification ("401 certification") from the Alaska Department of Environmental Conservation, is required for development in these wetlands. However, other local, State and federal permits may be needed for the project and it is the responsibility of the applicant to obtain all required permits.

For development proposals in Category A and B wetlands, and for any wetlands that are not within the Juneau Wetlands Management Plan study area or are not classified under the plan, a permit must still be obtained from the Corps of Engineers. The enforceable policies of the wetlands plan will be applied when those permit applications are reviewed by the Corps of Engineers.

The CBJ has committed to establish a Wetlands Mitigation Bank. The Bank will, in certain cases, allow permit applicants to compensate for damage to wetlands that will result from their development. The Mitigation Bank will allow development of certain wetlands that are generally suitable for development with no net loss of wetland functions and values in Juneau.
CHAPTER II
CLASSIFICATION METHODOLOGY

The City and Borough of Juneau (CBJ) established a 15 square mile study area for the Juneau Wetlands Management Plan (Map 1). The study area encompasses most of the developing areas of Juneau, including: Mendenhall Valley, Auke Bay, Lemon Creek, and North Douglas. The study area excludes the Mendenhall State Game Refuge and all estuaries.

The Juneau Wetlands Management Plan classifies wetland units within the study area into four main categories from higher value (Category A or B) to lower value (Category C or D) wetlands, and a fifth category for wetlands with particular potential for wetlands enhancement projects (Category EP). The wetland units will be managed, under the terms of the wetlands plan, in a manner appropriate to their value and classification.

The quantitative method used by the City and Borough of Juneau to classify its wetlands is detailed in this chapter. The enforceable policies that will be used to guide future management of the wetland units within each management category are listed in “Chapter III, Wetland Management Policies.”

The classification of the wetland units was based on consideration of:

1. The environmental functions served by the wetland unit,
2. The public's preferences for protection or development of each wetland unit, and
3. The availability of non-wetland practicable alternative development sites.

As a result of the classification process, and policy decisions made during the plan review and approval process, the wetland acreage within the plan's study area was classified as follows:

**Category A**: 1228 acres (42.5 percent of the wetlands classified)
**Category B**: 1365 acres (47.2 percent of the wetlands classified)
**Category C**: 290 acres (9.9 percent of the wetlands classified)
**Category D**: 10 acres (0.3 percent of the wetlands classified)
**Category EP**: 6 ponds in the study area, acreage not calculated
BASIS FOR CLASSIFICATION

To classify its wetlands, Juneau comprehensively considered the same broad range of factors that are specified in the Corps of Engineers process for evaluating individual permit applications for the placement of dredged and fill material in wetlands. The Juneau Wetlands Management Plan considered each factor for all wetland units in advance of any individual permit application.

The Corps of Engineers’ regulations state: “We have found through experience in administering the Section 404 discharge of dredge and fill permit program that wetlands vary in value. While some are vital areas, others have very little value; however, most are important.” Although the Corps of Engineers states that most wetlands are important, the recognition that individual wetlands serve environmental functions that vary in value provides the rationale for classifying wetlands according to their relative value and using that classification as a basis for permitting decisions.

The Corps of Engineers reviews applications for permits to discharge dredged and fill material in wetlands in accordance with federal regulations found in 40 CFR, Part 230, commonly known as the “404(b)(1) guidelines.” The Corps asks the Environmental Protection Agency (EPA) and other federal resource agencies to review the permit application to determine if the proposed use is “water dependent,” and whether there are practicable alternatives to the proposed use if it is not water dependent.

Since all of the wetlands evaluated in the Juneau wetlands plan are interior freshwater wetlands (palustrine), very few permit applicants propose water dependent uses for these wetlands. The determination of the availability of practicable alternatives to wetland sites becomes crucial to the decision whether to issue a permit.

In addition to the practicable alternatives requirement, the Corps of Engineers’ permitting process requires a broad-based public interest review that considers and balances a wide range of factors. The Corps of Engineers’ regulations state:

All factors which may be relevant to the proposal must be considered, including the cumulative effects thereof: Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

1 Federal Register 33 CFR 320.4, November 13, 1986.
3 Federal Register 33 CFR 320.4(8), November 13, 1986.
This statement indicates that any management plan that identifies in advance how wetlands should be managed, must also be based on this comprehensive general balancing process. This comprehensive approach is achieved in the Juneau Wetlands Management Plan by its three components: (1) comparison of the environmental values of wetlands, (2) analysis of practicable alternatives for each type of land use (zoning classification), and (3) consideration of public preferences for management of each wetland unit.

To classify the wetland units, each of the three components listed above was separately evaluated. Each wetland unit was assigned a “ranking” for each of the three components. The City and Borough of Juneau then created and used a new quantitative methodology to consolidate the data from the three components to generate an overall classification for each wetland (Category A, B, C, D or EP). The methodology for evaluating each component, and reaching a consolidated classification for each wetland, is described below.

ENVIRONMENTAL COMPONENT

The City and Borough of Juneau initiated the planning process by forming a Wetlands Interagency Technical Advisory Committee. The City and Borough of Juneau invited representatives from State and federal resource and land use agencies to nominate their own representatives to the committee. The purpose of the committee was to select a methodology to evaluate wetlands biological functions and to provide oversight for the field work and drafting of the environmental evaluation.

As a result of committee discussions and consultation with a representative of the National Wetlands Technical Council, the committee selected the Adamus Wetlands Evaluation Technique (WET) for the environmental assessment. Paul Adamus was retained to evaluate each of the study area wetlands that had previously been identified and mapped by the Corps of Engineers. The study area (see Map 1) includes the areas of Juneau that were experiencing development pressure and that were provided with a public water supply in the recent years preceding plan preparation. The field work for the environmental evaluation lasted one year, and the study team included researchers from Syracuse University, the State University of New York at Syracuse, and the University of Minnesota. A number of Juneau habitat biologists were employed to conduct field work, including bird surveys and fish counts. Professionals associated with the National Marine Fisheries Service Auke Bay Laboratory, and a variety of State and federal agencies and independent experts, made voluntary contributions.

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4 Dr. Hank Sather, November 11, 1985, in Juneau, Alaska.
ENVIRONMENTAL FUNCTIONS EVALUATED BY ADAMUS WET TECHNIQUE

Paul Adamus and his subcontractors evaluated fourteen functions for each freshwater (palustrine) wetland in the study area. These functions are:

1. **Recharge**: Downward flow of water to ground water aquifers.

2. **Discharge**: Upward flow of ground water, often into streams.

3. **Surface Hydrologic Control**: Moderation of stream water flow fluctuations caused by surface runoff. Important for restricting the velocity of runoff. Protects streams against flash flooding.

4. **Sediment/Toxicant Retention**: Natural filtering effect for filtering out toxicants and dirt by allowing particulate matter to settle out. Can be good if clear water is passed downstream. Can be harmful if the sediments collect on site and the site has salmon eggs or other sensitive aquatic specimens.

5. **Nutrient Export**: Transports nitrogen and phosphorous downstream or to estuaries. In the “Lower 48” states this can be harmful because too much nitrogen/phosphorous creates algae blooms which choke off oxygen. In Juneau, nutrient export is helpful because streams do not have a lot of nutrients.

6. **Riparian Support**: Foliage along a stream or lake shore. Stream side vegetation protects salmon eggs from too much sun in shallow waters. The foliage also provides nutrients when it falls into the water. Overhanging vegetation provides protection for salmon smolts.

7. **Erosion Sensitivity**: Wetlands with steep slopes are prone to rapid erosion.
8. **Salmonid Habitat**: Habitat for salmon and related species. There are two major habitat types: spawning for adults, and overwintering for juveniles. Of the two habitats, overwintering is often the most critical one determining species abundance.


10. **Ecological Diversity**: The degree to which individual wetlands support a wide variety of plants or animals or has some unusual habitats. A significant component is range of bird species present.

11. **Replacement Cost**: Cost in terms of time needed to replicate a wetland environment. For example, a tidal wetland can be regenerated, but peat takes thousands of years.

12. **Downslope Beneficiary or Passive Economic Service**: A wetland is more important if it prevents flooding of downstream buildings and property.

13. **Recreation Actual**: Actual use as determined by results of public surveys.

14. **Recreation Potential**: Wetlands closest to roads were given a higher potential than isolated wetlands.

In applying the WET evaluation methodology to Juneau, Paul Adamus designed and calibrated his Rapid Assessment Technique to fit conditions in Southeast Alaska. The Rapid Assessment provided an efficient way to derive a numerical value for individual wetland functions. The technique consisted of making field observations to answer a number of specific questions related to each wetland function.

As a result of the Rapid Assessment, each of the 14 wetland functions was scored within a range of “very low” to “very high” for potential presence or performance within each wetland unit. The scores for each function for each wetland unit are published in the Juneau Wetlands Functions and Values, Map Appendix (dated September 1987) and in Appendix E. The Map Appendix contains matrix charts and aerial photographs showing the environmental scores and basic land use information for each wetland unit. Land use information is provided regarding the availability of municipal water and sewer, property ownership, and comprehensive plan land use designations. See Figures 1 and 2 for sample pages from the Map Appendix.

Each aerial photo in the Map Appendix depicts one square mile of the study area. The photographs are reductions of the original 1:200 scale aerial photography that the Corps of Engineers used to identify the location of each wetland. The 1:200 scale is the same scale as the City and Borough of Juneau property ownership maps, a feature that enables plat maps to be overlaid on wetlands maps so that wetlands can be approximately located in relation to property lines, streets and other landmarks. There is some discrepancy due to natural curvature of aerial photography.

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The data and conclusions from the environmental component are also published in *Juneau Wetlands Functions and Values* (dated September 1987). This publication gives more detailed information regarding the environmental data collected for the wetland units within each watershed in the study area.

**“CONVERTED FUNCTIONAL VALUE” (ENVIRONMENTAL SCORE)**

The City and Borough of Juneau developed and used a new quantitative methodology to consolidate the 14 environmental function scores assigned by Adamus’ Rapid Assessment Technique into one “converted functional value” (environmental score) that characterized the environmental importance of each wetland unit. The four-step quantitative methodology is described below and illustrated in Figures 3 and 4.

1. **Categories of Environmental Functions**: The wetland functions rated by the Adamus WET Rapid Assessment were grouped into three major categories: (1) support for aquatic habitat, (2) support for human uses of the wetlands, and (3) support for terrestrial habitat. Thirteen of the 14 environmental functions scored by Adamus were grouped into these three categories. Figure 3 shows which functions were grouped into each category.

2. **Weighting Factors**: The City and Borough of Juneau derived “weighting factors” for each of the thirteen environmental functions (see Figure 3). The weighting factors allowed the following four issues to be considered when scoring each of the environmental functions for each wetland unit:
   
   a. **Confidence**: Ability to extrapolate values for a wetland unit based on direct measurements of other wetlands. Confidence is high for all functions except recreation,
   
   b. **Component Contribution**: Relative contribution of the function to the Aquatic Support, Human Use Support, or Terrestrial Support category. Note that within the Human Use Support category, the groundwater recharge function of wetlands (the downward flow of water to aquifers) was considered relatively important when public water was not available, but was considered less important when public water was available.

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8 *Weighting Procedure and Formula*, Ira Winograd, City and Borough of Juneau, Department of Community Development, April 13, 1988.

9 One of the fourteen Adamus WET functions, “ecological replacement cost,” was not considered in the consolidation process because it does not contribute to the aquatic, human or terrestrial habitat. It is a measure of the geologic time that it takes to naturally replicate a given-wetland. For example, estuarine wetlands are created in less time than peat wetlands.
c. **Sensitivity to Human Presence**: Direct sensitivity of the function to dredge and fill activity and/or indirect sensitivity based on general human activity. For example, the groundwater discharge function was considered to be “insensitive” since a wetland will continue to discharge (produce an upward flow of water) regardless of surface disturbance. However, the salmonid habitat function was considered to be “sensitive” since salmonids are very vulnerable to human presence. If you build a house on a wetland that discharges water, the basement will flood as discharge continues. However, if you build a house near a wetland that supports salmonid habitat, salmon populations can decrease over time as people occupy the house and use the adjacent wetlands.

d. **Economic Value Based on Availability of Substitutes**: The relative importance of the wetland in providing the environmental function, in light of any alternative means to perform the function. For this factor, the weight is in inverse proportion to the relative availability of natural and artificial substitutes for the wetlands function. For example, the weighting score is relatively low for the sediment toxicant retention function because there are artificial ways to perform this function such as public sewer systems. But, the weighting score for the riparian support function is relatively high because there is no substitute for the habitat and temperature control provided by streamside vegetation.

The “weighting factor” used for one wetland function, groundwater recharge, varied depending on whether the property was served by the public water system. With this exception, the weighting factors were the same for each function in every wetland unit.

3. **Equalization Factors**: The City and Borough of Juneau applied “equalization factors” to equalize the contribution of the Aquatic Support, Human Use Support and Terrestrial Support categories to the final “converted functional value” (environmental score). This was necessary since there were not an equal number of wetland functions grouped under each of these three categories. For example, six wetland functions were grouped under the Aquatic Support category, whereas only two functions were grouped under the Terrestrial Support category. If the various wetland functional scores were simply added together within each category to determine the “converted functional value,” then the Aquatic Support category would always have the greatest influence over the final environmental score for the wetland unit. The use of the “equalization factors” ensured that each of the three categories had an opportunity to contribute equally to the final environmental score for each wetland unit.
FIGURE 3

CALCULATION OF “WEIGHTING FACTORS”
FOR EACH CATEGORY OF ENVIRONMENTAL FUNCTIONS

In the charts below:

1 = Small positive correlation.
2 = Intermediate or indeterminate positive correlation.
3 = Strong positive correlation.

<table>
<thead>
<tr>
<th>AQUATIC SUPPORT CATEGORY</th>
<th>WETLAND FUNCTION</th>
<th>CONFIDENCE</th>
<th>COMPONENT CONTRIBUTION</th>
<th>SENSITIVITY TO HUMAN USE</th>
<th>AVAILABILITY OF SUBSTITUTES</th>
<th>TOTAL = “WEIGHTING FACTOR”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discharge</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Sediment/Toxicant Retention</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1 (discharge controls)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Nutrient Export</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Riparian Support</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Salmonoid Habitat</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2 (hatcheries)</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Erosion</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2 (drainage controls)</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HUMAN USE SUPPORT CATEGORY</th>
<th>WETLAND FUNCTION</th>
<th>CONFIDENCE</th>
<th>COMPONENT CONTRIBUTION</th>
<th>SENSITIVITY TO HUMAN USE</th>
<th>AVAILABILITY OF SUBSTITUTES</th>
<th>TOTAL = “WEIGHTING FACTOR”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recharge</td>
<td>3</td>
<td>1 or 3*</td>
<td>2</td>
<td>1 or 3*</td>
<td>7 or 11*</td>
</tr>
<tr>
<td></td>
<td>Recreation Potential</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Recreation Actual</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Hydrologic</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2 (drainage controls)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Downslope Beneficiary</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2 (drainage controls)</td>
<td>9</td>
</tr>
</tbody>
</table>

*Value used depends on whether CBJ public water is present at the wetland unit.

<table>
<thead>
<tr>
<th>TERRESTRIAL SUPPORT CATEGORY</th>
<th>WETLAND FUNCTION</th>
<th>CONFIDENCE</th>
<th>COMPONENT CONTRIBUTION</th>
<th>SENSITIVITY TO HUMAN USE</th>
<th>AVAILABILITY OF SUBSTITUTES</th>
<th>TOTAL = “WEIGHTING FACTOR”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disturbance Diversity</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Diversity</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>
The following "equalization factors" were applied. Two sets of equalization factors were used, depending on whether the wetland unit was supplied with public water.

Aquatic Support category = 1.082 or 1.113

Human Use Support category = 1.251 or 1.159

Terrestrial Support category = 0.783 or 0.806

4. **Final Environmental Score**: Using the quantitative factors derived above, the City and Borough of Juneau developed a “converted functional value” (environmental score) for each wetland unit as follows (see Figure 4). For each wetland unit, each of the thirteen wetland functions was scored from 1 (for a “very low” Adamus rating) to 7 (for a “very high” Adamus rating) based on the results of the Adamus WET Rapid Assessment. Each functional score was then multiplied by the applicable “weighting factor” (see Figure 3). The weighted scores were tallied within the Aquatic Support, Human Use Support and Terrestrial Support categories. Mean scores were derived for each category. The mean score for each category was then multiplied by the applicable “equalization factor” to yield a “Final Score” within each category of environmental functions. Finally, the “Final Scores” for each category were added together to yield a single environmental score, called the “converted functional value,” for each wetland unit.

The “converted functional values” (environmental scores) for wetland units in the study area ranged from approximately 55 at the low end to 155 at the high end. However, the scores were not evenly distributed. Many wetland units have scores around 75, and many others have scores around 110. The environmental scores for the wetland units are listed in Appendix D.

The distribution of the "converted functional values" (environmental scores) for all of the wetland units is shown in Figure 5. This frequency distribution shows that, within the study area, wetland units fell into five visual evident clusters. The exact placement of the boundaries of each cluster was accomplished by statistical calculation to determine which scores lie within or beyond one standard deviation from the peak of each cluster.

**PUBLIC PREFERENCE COMPONENT**

After evaluating each wetland unit's individual functions and publishing the findings in the *Juneau Wetlands Functions and Values, Map Appendix*, large-scale display maps were created to show each function. Three acetate overlays were used to show the relative values for each function: one overlay for “very low” and “medium low” values; one acetate overlay for “medium low”, “medium”, and “medium high” values; and one overlay for “high” and “very high” values.
### FIGURE 4

**CALCULATION OF “FINAL SCORES” FOR EACH CATEGORY OF ENVIRONMENTAL FUNCTIONS**

**AQUATIC SUPPORT CATEGORY**

<table>
<thead>
<tr>
<th>WETLAND FUNCTION</th>
<th>ADAMUS SCORE</th>
<th>WEIGHTING FACTOR</th>
<th>ADAMUS SCORE X WEIGHTING FACTOR =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge</td>
<td></td>
<td>(See Figure 3)</td>
<td></td>
</tr>
<tr>
<td>Sediment/Toxicant Retention</td>
<td><strong>9</strong></td>
<td><strong>6</strong></td>
<td></td>
</tr>
<tr>
<td>Nutrient Export</td>
<td></td>
<td><strong>7</strong></td>
<td></td>
</tr>
<tr>
<td>Riparian Support</td>
<td></td>
<td><strong>10</strong></td>
<td></td>
</tr>
<tr>
<td>Salmonoid Habitat</td>
<td></td>
<td><strong>11</strong></td>
<td></td>
</tr>
<tr>
<td>Erosion</td>
<td></td>
<td><strong>7</strong></td>
<td></td>
</tr>
</tbody>
</table>

“Mean raw weighted score” for Aquatic Support Category = Raw weighted score divided by 6

“FINAL SCORE” for Aquatic Support category = Mean raw weighted score x 1.082 or 1.113 (equalization factor)

**HUMAN USE SUPPORT CATEGORY**

<table>
<thead>
<tr>
<th>WETLAND FUNCTION</th>
<th>ADAMUS SCORE</th>
<th>WEIGHTING FACTOR</th>
<th>ADAMUS SCORE X WEIGHTING FACTOR =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recharge</td>
<td></td>
<td>(See Figure 3)</td>
<td></td>
</tr>
<tr>
<td>Recreation Potential</td>
<td></td>
<td><strong>5</strong></td>
<td></td>
</tr>
<tr>
<td>Recreation Actual</td>
<td></td>
<td><strong>6</strong></td>
<td></td>
</tr>
<tr>
<td>Hydrologic</td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
<tr>
<td>Downslope</td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
<tr>
<td>Beneficiary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Value used depends on whether CBJ public water is present at the wetland unit.

“Mean raw weighted score” for Human Use Support Category = Raw weighted score divided by 5

“FINAL SCORE” for Human Use Support category = Mean raw weighted score x 1.251 or 1.159 (equalization factor)
FIGURE 4 (Continued)

CALCULATION OF “FINAL SCORES”
FOR EACH CATEGORY OF ENVIRONMENTAL FUNCTIONS

AQUATIC SUPPORT CATEGORY

<table>
<thead>
<tr>
<th>WETLAND FUNCTION</th>
<th>ADAMUS SCORE</th>
<th>WEIGHTING FACTOR (See Figure 3)</th>
<th>ADAMUS SCORE X WEIGHTING FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance</td>
<td>Score of 1-7, depending upon Adamus ranking for each wetland function (VL=1, L=2, ML=3, M=4, MH=5, H=6, VH=7)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>“”</td>
<td>“”</td>
<td>11</td>
<td>“RAW WEIGHTED SCORE” = TALLY OF ABOVE SCORES</td>
</tr>
</tbody>
</table>

“Mean raw weighted score” for Terrestrial Support Category = Raw weighted score divided by 2

“FINAL SCORE” for Terrestrial Support category = Mean raw weighted score x 0.783 or 0.806 (equalization factor)
FIGURE 5

FREQUENCY DISTRIBUTION OF WETLANDS EVALUATION RESULTS.
Additional acetate overlays were prepared for relevant land use functions. These functions included developability, location of public water and sewer and proposed public utilities, property ownership, comprehensive plan land use designations, and topography. Over 100 multi-colored display maps were produced by the City and Borough of Juneau to illustrate the environmental and land use findings for the wetland units in the study area.

Each map was divided into separate neighborhoods: Auke Bay, East Valley, North Douglas, Lemon Creek, Montana Creek, and West Valley. Community meetings were held in each neighborhood for presentation of the maps and explanation of the wetlands units’ environmental functions. Meetings were held at the Auke Bay Elementary School, Floyd Dryden Junior High, Douglas Library, Switzer Village Recreation Hall, Mendenhall River Elementary School, Mendenhall Mall Library, and City Hall.

**PUBLIC PREFERENCE SURVEY**

A special survey called the *Blue Book* was distributed at the public meetings to solicit the wetlands management preferences of the people attending the meetings. Figure 6 shows a sample page from the *Blue Book* survey. Each meeting started with introductory explanations of the wetlands functions and land use findings. Participants were given a chance to review the large map overlays. They were then asked to fill out multiple choice responses in the chapter of the *Blue Book* corresponding to their neighborhood.

For each wetland unit, the same set of multiple choice questions was asked. Using scores between 1 and 5, people were asked to state their preference for wetlands development or protection. The *Blue Book* corresponded page for page to the published *Wetlands Functions and Values Map Appendix*; however, instead of listing the wetland scores for environmental functions, each *Blue Book* contained only a blank box for the multiple choice protection/development preference score for each wetland and space for written comments.

The public survey results are published in *Results Blue Book* which shows the mean public preference score and standard deviation for each wetland unit. The document also consolidates all written public comments for each wetland unit.

A frequency distribution of the individual wetland management public preference scores was statistically calculated and the wetland units were divided into five public preference categories corresponding to the number of environmental categories. Figure 7 shows the public opinion frequency distribution.

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10 Juneau Wetlands Functions and Values: Land Management, Resident Comments, September 1987; Ira Winograd, project manager; Jere Smith, graphic artist; City and Borough of Juneau.

11 Juneau Wetlands Functions and Values: Land Management, Resident Comments - Results, March 1987; Ira Winograd, project manager; Jere Smith, graphic artist; City and Borough of Juneau.
FIGURE 6

SAMPLE PAGE FROM THE BLUE BOOK SURVEY

<table>
<thead>
<tr>
<th>WETLAND NUMBER</th>
<th>Mw2</th>
<th>Mw3</th>
<th>Mw3A</th>
<th>Mw4</th>
<th>Mw5</th>
<th>Mw6</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND USE RATING</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WETLAND NUMBER</th>
<th>Mw17</th>
<th>Mw19</th>
<th>Mw21</th>
<th>Mw22</th>
<th>Mw23</th>
<th>MwGU</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND USE RATING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RATINGS:
1 = HIGH DEVELOPMENT; (e.g. Commercial/Industrial)
2 = MODERATE DEVELOPMENT; (e.g. Residential Subdivisions)
3 = LOW DEVELOPMENT; (e.g. 2.5 acre Residential Lots)
4 = NO DEVELOPMENT
5 = RETAIN CURRENT COMPREHENSIVE PLAN DESIGNATION
6 = NO OPINION OR UNCERTAIN

COMMENTS:


DO YOU OWN ONE OF THE PRIVATELY OWNED WETLANDS? IF SO PLEASE CIRCLE THE WETLAND AND WRITE YOUR NAME AND ADDRESS.

(page # same as map appendix)
For the sake of comparison of the preferences of the general public and the people who attended the public meetings, the City and Borough of Juneau also sponsored a random mail survey that asked general questions about preferences for management of hypothetical wetlands. These same general questions were asked of 100 people who attended an introductory wetlands meeting in the Mendenhall Library just prior to the neighborhood meetings. A comparison of the two groups is shown in Figure 8. The exercise showed that the participants in public meetings held more polarized views regarding wetlands management in comparison to the random survey respondents. In addition, the meeting participants had a stronger preference for protection than the general public. Since the public preference component used in the Juneau Wetlands Management Plan was based solely on the response of public meeting participants, it represents more polarized scores and a stronger preference for wetlands protection than would be obtained by a survey of the general Juneau public.

PRACTICABLE ALTERNATIVES COMPONENT

The practicable alternatives component of the Juneau Wetlands Management Plan was based on the Environmental Protection Agency 404(b)(l) regulations implementing the Clean Water Act. The regulations state that permits should not be granted for non-water-dependent activities on wetlands unless there are no practicable alternatives to wetlands development. Practicable alternatives are defined as follows:

An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized or expanded or managed in order to fulfill the basic purpose of the proposed activity, may be considered.

This requirement has been controversial because most wetlands subject to development interest in Juneau are located away from the coast, so are obviously not suitable for water-dependent uses. Furthermore, there are limited upland (non-wetland) alternative sites for many types of development. Juneau receives 100 inches of rain a year and the habitable areas are hemmed in by one of the world's tallest coastal mountain ranges. Due to Juneau's extreme topography and climate, an unusually high percentage of available land is wetlands. This circumstance of nature leaves a relatively small amount of dry flat land available as a practicable alternative to wetlands development.

12 Dr. James Palmer and Dr. Richard Smardon, State Univ. of New York at Syracuse, Measuring Human Values Associated with Wetlands: Comparing Public Meetings and Sample Surveys, p. 36.
FIGURE 7

FREQUENCY DISTRIBUTION OF PUBLIC OPINION RESULTS
FIGURE 8

DISTRIBUTION OF PUBLIC PREFERENCE SCORES FOR SURVEY AND WORKSHOP PARTICIPANTS

-2 = Development Extreme
+2 = Protection Extreme
Some development projects proposed on wetland sites in Juneau remained in the permit review stage, without resolution, for several years because of arguments regarding the availability of practicable alternative sites. In the past, some applicants have selected a site for development and then were informed when they applied for a permit that they should have picked a less environmentally sensitive site. The Juneau Wetlands Management Plan attempts to resolve this situation by evaluating practicable alternatives on a comprehensive basis. For each land use (zoning) district, an inventory was conducted to determine the availability of upland (non-wetland) practicable alternative sites. Practicable alternatives for each type of land use were ranked according to availability.

**PRACTICABLE ALTERNATIVES INVENTORY**

The area inventoried for practicable alternatives was larger than the plan's environmental study area valued by the Adamus WET method. It included most of the roaded area of Juneau, including downtown Juneau and Douglas. Thus, the inventory measured the relative need for additional land for development in urban and suburban Juneau. Maps 1 and 2 show the relationship between the Adamus WET Rapid Assessment study area (Map 1) and the practicable alternatives land use inventory study area (Map 2).

The practicable alternatives inventory compared land supply to demand by comparing developable uplands (non-wetlands) to all developed land. Each type of land use can be located only in a zoning district that allows that particular use. The "supply" of each type of land is represented by the amount of developable vacant upland in each zoning district. The "demand" for land is represented by the amount of developed land in each zoning district.

The land use inventory data was obtained by reviewing thousands of property tax files and a variety of City and Borough of Juneau land use maps. Land was considered developable if:

1. It is not a wetland;
2. The slope is less than 20 percent;
3. The value of its improvements is less than twice the value of the parcel;
4. A portion of the property is within 1,200 feet of an existing road; and
5. The land is not reserved in a special nondevelopment category, such as city park or National Forest.
The practicable alternatives inventory eliminated wetlands, steep slopes, inaccessible property, land dedicated to special restricted uses, and heavily developed land from the supply of developable land.

Most land use inventories consider any parcel with a structure to be a developed parcel because additional development usually requires subdivision of a parcel to make two or more smaller parcels. In order to subdivide a parcel, the subdivider has to provide improvements in accordance with the City and Borough of Juneau Land Use Code. As a result of the cost of improvements, and also of land owner preferences, not all parcels are subdivided down to their legal minimum lot size allowed in each zoning district. However, it is reasonable to expect that some land will be subdivided.

In this inventory it was assumed that all land not heavily developed would be subdivided. Any parcel whose structures were not assessed at a value at least twice as much as that of the land was considered developable. For over 11,000 parcels, the value of capital improvements was compared to land values.

For example, a parcel worth $50,000 was not considered developed unless it had a building worth over $100,000. This process exaggerated the amount of developable land because it assumed that every one of these lightly developed parcels would be subdivided and developed.

The ratio of developable vacant land to developed land in a zoning district was considered to indicate the relative supply of vacant land compared to demand for land. It was assumed that the future demand for various types of land use will be approximately equal to the current mix of land use, at least for the next five years.

For example, the inventory showed that Juneau had 219 acres of developed industrial land and 81 acres of developable industrial uplands. The ratio of developable to developed land is 0.37 (81 acres/219 acres), which means that if future residents use as much industrial land as current residents, Juneau can accommodate a 37 percent increase in population before it runs out of industrial land.

Land prices become prohibitively expensive long before the last bit of available land is used. Data taken from the Cost of Living Index published by the Research Association of the American Chamber of Commerce in October 1988, as the practicable alternatives inventory was being conducted, indicated that Juneau had the third highest average cost of living out of 260 participating urban areas across the United States. The Juneau cost of living exceeded those of Anchorage, Fairbanks, Ketchikan and Kodiak in Alaska. The cost of land is a significant component of the local cost of living. The anticipated increase in mining activity will only increase demand for the limited supply of developable land.

Once the demand/supply ratios for each zoning district was calculated, each land use zone was placed into one of five quintiles and given a score from 1 to 5. A score of 1 meant that the most upland practicable alternatives are available, and a score of 5 indicated that the least upland practicable alternatives are available for a particular zoning category.
The resulting distribution showed the relative abundance of practicable upland alternatives to wetlands development for each zoning district. A zone in the highest quintile (5) had the least amount of developable land in relation to land already developed. In these zones there are fewer practicable alternatives; hence, there is more pressure to develop wetlands. Figure 9 lists the results for the practicable alternatives land use inventory, completed on August 15, 1988.

For example, the Industrial zone, with a ratio of developable land to developed land of 37 percent, placed in the fourth quintile within the range of land demand/supply ratios (1% to 150%). All wetlands zoned Industrial received a practicable alternative score of 4, which indicates that there are relatively few upland industrial alternatives to development of wetlands in Industrial zones.

ZONING AND SUPPLY OF DEVELOPABLE LAND

The City and Borough of Juneau Planning Commission is responsible for making rezoning recommendations to the Assembly. If more land were available, the Planning Commission could alleviate wetlands development pressure by rezoning land into the zoning categories where there is the greatest shortage of developable uplands. However, there are not enough alternative sites that might be rezoned to alleviate development pressure in one zone without creating more pressure in another zone. Nor is there developable land that is not currently zoned.

Zoning is constrained by legislation and court rulings. When an applicant applies for a land use or building permit, the use must be allowed in the zone for the permit to be granted. It is not legal in the United States to grant a variance to allow a land use not permitted within a zoning district to locate in that zone. It is also illegal to zone a use in the middle of an incompatible zone (spot zone) and to grant a zone change with special conditions for a particular party (contract zone).

Once an area is zoned and permissible uses are established, zone changes are constrained to be compatible with reasonable investment backed expectations of all affected property owners. For all these reasons, zone changes are not a way to significantly increase practicable alternatives to wetlands development.

It is difficult to make additional land available to increase the area of any zoning district because existing uses preclude rezoning. An alternative solution for some communities is to zone undeveloped land. However, in Juneau, the undeveloped land is not available for development because it lacks basic urban utilities and access. Most undeveloped land could not be utilized without new access, such as an extension of North Douglas road or construction of a road into Bemers Bay.
### FIGURE 9

**LAND USE INVENTORY**

*August 15, 1988*

<table>
<thead>
<tr>
<th>ZONE</th>
<th>TOTAL ACRES</th>
<th>DEVELOPED ACRES</th>
<th>VACANT ACRES</th>
<th>DEVELOPABLE ACRES</th>
<th>DEVELOPABLE DIVIDED BY DEVELOPED</th>
<th>QUINTILE</th>
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<tbody>
<tr>
<td>D1</td>
<td>3,489</td>
<td>1,242</td>
<td>2,246</td>
<td>650</td>
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<td>D3</td>
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<td>340</td>
<td>663</td>
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<tr>
<td>D5</td>
<td>4,829</td>
<td>3,376</td>
<td>1,453</td>
<td>475</td>
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<td>5</td>
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<tr>
<td>D10</td>
<td>140</td>
<td>54</td>
<td>86</td>
<td>61</td>
<td>.94</td>
<td>2</td>
</tr>
<tr>
<td>D15</td>
<td>1,308</td>
<td>338</td>
<td>970</td>
<td>608</td>
<td>1.50</td>
<td>1</td>
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<tr>
<td>D18</td>
<td>373</td>
<td>244</td>
<td>129</td>
<td>59</td>
<td>.24</td>
<td>5</td>
</tr>
<tr>
<td>MU</td>
<td>155</td>
<td>108</td>
<td>46</td>
<td>4</td>
<td>.04</td>
<td>5</td>
</tr>
<tr>
<td>LC</td>
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<td>171</td>
<td>59</td>
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<td>.18</td>
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<td>154</td>
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<td>45</td>
<td>.29</td>
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<td>105</td>
<td>16</td>
<td>10</td>
<td>.10</td>
<td>5</td>
</tr>
<tr>
<td>WCR</td>
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<td>22</td>
<td>2</td>
<td>2</td>
<td>.08</td>
<td>5</td>
</tr>
<tr>
<td>WCI</td>
<td>362</td>
<td>289</td>
<td>73</td>
<td>71</td>
<td>.24</td>
<td>5</td>
</tr>
<tr>
<td>I</td>
<td>575</td>
<td>219</td>
<td>356</td>
<td>81</td>
<td>.37</td>
<td>4</td>
</tr>
<tr>
<td>RR</td>
<td>18,672</td>
<td>2,565</td>
<td>16,107</td>
<td>1,024</td>
<td>.40</td>
<td>4</td>
</tr>
<tr>
<td>A</td>
<td>667</td>
<td>655</td>
<td>12</td>
<td>6</td>
<td>.01</td>
<td>5</td>
</tr>
</tbody>
</table>

Range = .01 to 1.50 = 1.49  
Interval 1.49/5 = .30  
Quintiles .01 - .31 – 5, .31 - .61 = 4, .61 - .91 = 3, .91 – 1.21 = 2, 1.21 – 1.51 = 1

1 From Central Sewage Treatment Plant to Indian Cove and from St. Annes (Linellen Heights) to Bay View (Entrance Pt.), inclusive.

2 Parcels with building values more than half of the land values.

3 Uplands, less than 20% slope, less developed land (parcels having land values less than twice building values), less avalanche zones, less parcels not having reasonable access (a boundary within 1,200 feet of an existing road), less reserved open space and greenbelts, less State and Federal land. Wetlands are not inventoried as developable land.

4 Based on square foot raw data which is more precise than acreages.
Utility extensions and new access are not desirable from an environmental perspective because they create sprawl and subject additional wetlands to direct and indirect development pressure.

The only other direction available for growth is up steep slopes. Growth in Juneau has already been pushed onto hill sides. Development on steep slopes creates its own set of problems including catastrophic danger to residents and turbid runoff to anadromous streams and wetlands.

The Planning Commission wants to alleviate pressure on wetlands within heavily utilized zones by making appropriate rezones. The wetlands plan is to be updated every five years. At that time, the land use inventory will be recalculated to reflect any additions to the existing supply of developable land for any zone.

ASSIGNMENT OF WETLAND MANAGEMENT CATEGORIES

The wetland units covered by the Juneau Wetlands Management Plan were assigned management categories (Category A, B, C, D and EP) through a two-step process:

1. "Consolidation" of data from the environmental analysis, public preference survey, and practicable alternatives analysis, and

2. Determination of final management categories through consultation with State and federal agencies and the public regarding the environmental values of particular wetlands.

CONSOLIDATION OF DATA

The City and Borough of Juneau followed a detailed quantitative process to consolidate the three component data sets (environment, public preference and practicable alternatives) for each wetland unit and assign an initial wetlands management category. Figure 10 illustrates the process used.

Each of the three component data sets was divided into quintiles. Wetland units were assigned to a quintile based on the "Final Score" for each data set derived through the process shown on Figure 4. Each wetland unit received a score from 1 -5 for each of the three component data sets.

For the environmental component, the "converted functional value" (environmental score) represents the relative functional value of the wetland. An environmental score of 1 indicated a high functional value, whereas a score of 5 indicated a lower functional value.

For the public preference component, the score represents the relative desire for preservation or development. A score of 1 indicated a public preference for preservation of the wetland, whereas a score of 5 indicated a public preference for development.
For the practicable alternative component, the score represents the relative abundance of non-wetland developable land compared to developed lands within the zoning district. A score of 1 indicated an abundance of upland (non-wetland) development alternatives within the zoning district. A score of 5 indicated a scarcity of upland alternatives.

A two-step process was used to consolidate the three sets of data (now expressed in quintiles from 1 to 5), and assign an appropriate management classification (Category A, B, C or D) for each wetland unit (see Figure 10). First, the quintile ranking for the "converted functional value" (environmental score) was used to determine a range of two management categories that could be considered for the wetland unit. For example, a high environmental quintile ranking of 1 would indicate that the wetland should be assigned either a Category A or B classification. It would not be appropriate to place a highly valuable wetland in a lower management category.

Second, the public preference and practicable alternatives quintile rankings were used to select from the two management categories within the range. The public preference and practicable alternatives rankings were averaged to determine which management category was finally assigned. If the average was greater than three (3), then the less restrictive management category was chosen. If the average was less than three, then the more restrictive management category was chosen. An average of exactly three indicated that "best professional judgment" would need to be used to choose the final management category, based on consideration of individual environmental functions noted by Adamus and public comments regarding management preferences. When "best professional judgment" was used to assign a wetlands category, the rationale is provided in Appendix D.

DETERMINATION OF FINAL WETLAND MANAGEMENT CATEGORIES

The City and Borough of Juneau determined the initial management categories for each wetland unit in the study area through the consolidation process described above. These initial management categories were published in the Concept Approved Draft of the Juneau Wetlands Management Plan, dated February 1991. This draft plan was then submitted to the State of Alaska and the federal government for incorporation into the Alaska Coastal Management Program. It was also sent to the Corps of Engineers with a request that the Corps issue a General Permit to reduce permit processing time for the Category C, D and EP wetlands.

As a result of the State and federal approval processes, many changes were made to the wetland unit management categories that were initially assigned in the Concept Approved Draft of the plan. These changes were made primarily to respond to concerns raised by State and federal agencies and the public regarding the environmental values of particular wetlands. The Corps of Engineers coordinated meetings and field visits involving the City and Borough of Juneau, State and federal agency personnel, and interested members of the public to discuss the particular sites and reach agreement on final the final management category for each disputed wetland unit.
FIGURE 10
CONSOLIDATION OF DATA SETS AND ASSIGNMENT OF INITIAL WETLAND MANAGEMENT CATEGORIES

INPUT DATA QUINTILES

<table>
<thead>
<tr>
<th>QUINTILE RANKING</th>
<th>ADAMUS WET METHOD</th>
<th>PRACTICABLE ALTERNATIVES INVENTORY</th>
<th>PUBLIC PREFERENCE FOR MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Value</td>
<td>Abundant Upland Alternatives</td>
<td>Preservation of Wetland</td>
</tr>
<tr>
<td>2</td>
<td>Medium High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Medium Value</td>
<td>Moderate Availability</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Medium Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Low Value</td>
<td>Scarce Upland Alternatives</td>
<td>Development of Wetland</td>
</tr>
</tbody>
</table>

CONSOLIDATION METHOD

1. The Adamus WET (environmental value) quintile ranking determined the range of wetland management categories that could be considered for the wetland unit:
   - High WET (1) = Category A or Category B management range
   - Medium High (2) = Category B or Category C
   - Medium (3) = Category B or Category C
   - Medium Low (4) = Category B or Category C
   - Low (5) = Category C or Category D

2. For each wetland unit, the quintile rankings for the practicable alternatives data and the public preferences data were averaged. If the resulting score was:
   - Greater than 3 = select the least restrictive management category of the two possible choices.
   - Less than 3 = select the most restrictive management category of the two possible choices.
   - Equal to 3 = Use best professional judgment based on review of individual environmental functions and public comments in the public preference Blue Book.
The final wetland management categories included in this document (listed in Appendix D) were approved by the City and Borough of Juneau, State of Alaska, U.S. Department of Commerce and the U.S. Army Corps of Engineers. In all, 22 wetland units were changed from a lower management category (Category C, D or EP) to a higher management category (Category A or B) as a result of these discussions. In addition, 16 wetland units were changed from a higher management category (Category A or B) to a lower category (Category C or D) based on federal agency agreement that these wetland units were actually less environmentally valuable and were more suitable for fill. These wetland units are generally inaccessible and are not expected to receive development pressure.
CHAPTER III
WETLAND MANAGEMENT POLICIES

The policies of the Revised Juneau Wetlands Management Plan, that apply to all wetland units classified under this plan, are listed in this chapter. Development will be allowed in these wetlands units only if the proposed project is in compliance with the enforceable policies of the plan. The process for applying these policies during permitting is described in detail in "Chapter IV, Implementation."

The policies of the Juneau Wetlands Management Plan have been approved by the City and Borough of Juneau, the State of Alaska Coastal Policy Council, and the U.S. Department of Commerce. These policies have the force and effect of local, State and federal law to guide wetlands management in Juneau.¹⁶ The policies are part of the federally-approved Alaska Coastal Management Program, administered by the State of Alaska, Division of Governmental Coordination. The policies have also been adopted into the CBJ Land Use Code, in section 49.70.1080.

APPLICATION OF THE WETLAND POLICIES

The City and Borough of Juneau has the authority to issue permits for development in Category C, D and EP wetlands under the terms of General Permit 92-1 issued by the Corps of Engineers in June 1995 (Appendix F). Development activities on Category C, D and EP wetlands will be required to comply with the enforceable policies of this chapter. They will also be required to comply with the general and specific permit conditions listed in the General Permit. A copy of the conditions of the General Permit will be provided to the permit applicant as part of the permit application materials.

For Category A and B wetlands, the Corps of Engineers will continue to administer their individual permit process under Section 404 of the Clean Water Act. All developments permitted by the Corps must comply with the enforceable policies of this chapter. The CBJ will continue to participate in the Corps of Engineers permitting process through participation in the Alaska Coastal Management Program, coordinated by the State of Alaska, Division of Governmental Coordination.

Three administrative policy statements were also adopted by the CBJ and are included in this chapter. The CBJ will implement these administrative policies to farther protect the Category A, B and EP wetlands. These administrative polices have been incorporated into the CBJ Comprehensive Plan as city land management policy.

¹⁶ The "effective date" for the policies of the Juneau Wetlands Management Plan was November 23, 1994.
INTENT OF THE WETLAND MANAGEMENT POLICIES

The policies of the Juneau Wetlands Management Plan will ensure that each wetland unit is managed in a manner that is appropriate to its classification (Category A, B, C, D or HP). The wetland classifications were assigned based on the wetland unit's environmental value, the availability of practicable upland alternatives to its use, and the public's preference for its management (see Chapter IV, Classification Methodology).

Generally, permit requirements for Category A and B wetlands will be more stringent and more difficult to satisfy than those for wetlands that are Category C and D. More substantial mitigation will be required for wetland impacts in Category A and B wetlands, than in Category C wetlands. Juneau is proposing development of a wetlands Mitigation Bank that could be used by applicants for permits in Category C wetlands to satisfy mitigation requirements that might be imposed (see Chapter IV, Implementation).

The policies of the plan further refine the classification of wetlands that are located either (1) along an anadromous fish stream or lake, or (2) along a developed roadway, suitable for residential development. The plan's "shoreline corridor rule" provides greater protection for all wetlands within 50 feet of an anadromous fish stream or lake. This shoreline corridor rule takes precedence over all other policies and provides heightened protection for anadromous stream habitat. The 'Residential road corridor rule" allows wetlands within 100 feet of an existing roadway served with public water, that are already platted into small residential parcels, to be considered Category C. This rule is intended to ease permitting for single-family residences in areas already platted, served and zoned for such development. This policy will help to consolidate additional residential development in existing neighborhoods, along existing roadways.

The management categories affect how practicable alternatives to wetlands development are considered. For Category C, D and EP wetlands, the City and Borough of Juneau will presume that there is no less damaging practicable upland alternative to the proposed development. This presumption may allow development that is not water-dependent to occur in Category C, D and EP wetlands. The presumption is rebuttable and can be reversed by the weight of evidence presented during the permit review process administered by the Wetlands Review Board. For all other wetlands, the Corps of Engineers will continue to assume that there are practicable upland alternatives to all non-water-dependent development proposals, and applicants will continue to bear the responsibility of demonstrating that alternatives are not available on a permit by permit basis.

Finally, the policies of the plan require the application of "best management practices" for development in all wetland categories. These practices are intended to assure that the placement of fill in wetlands does not unduly degrade the values of the wetland unit or adjacent wetlands.
WETLAND MANAGEMENT POLICIES

ADMINISTRATIVE POLICIES


2. All Category A and B wetlands owned by the CBJ will be retained by the CBJ and managed for environmental protection.

3. Category A wetlands will generally be kept in their natural condition.

ENFORCEABLE POLICIES

4. All individual wetlands will be managed in accordance with the wetland management designations presented in the charts and maps in Appendix F and the Shoreline Corridor and Residential Road Corridor Designation Rules described in policies 8 and 9, respectively. (CBJ Land Use Code: 49.70.1080(b)(f))

5. The Shoreline Corridor and Residential Road Corridor Designation Rules, take precedence over the underlying wetland management designations presented in Appendix F. (CBJ Land Use Code: 49.70.1080(b)(2))

6. The Shoreline Corridor Designation Rules take precedence over the Residential Road Corridor Designation Rules. (CBJ Land Use Code: 49.70.1080(b)(3))

7. Category A, B, C, D and EP wetlands will be managed according to the management guidelines described below:

   A. Category A wetlands might be developed only if there is no net loss of individual functional values in the wetland unit. One environmental function could not be substituted for another. (CBJ Land Use Code: 49.70.1080(b)(4)(A))

   B. Category B wetlands might be developed only if there is no net loss of aggregate functional values in the wetland unit. One environmental function could be substituted for another. However, to the extent feasible and prudent, individual environmental functions that are rated high or medium high in Appendix F will be retained within the wetland unit. (CBJ Land Use Code: 49.70.1080(b)(4)(B))

   C. Category C wetlands might be developed if there is no net loss of aggregate functional values in the roaded area. To the extent feasible and prudent, individual environmental functions that are rated high or medium high in Appendix F will be retained either within or outside the wetland unit. (CBJ Land Use Code: 49.70.1080(b)(4)(C))
D. Category D wetlands can be developed using best management practices. Project design and scheduling must minimize adverse impacts. (CBJ Land Use Code: 49.70.1080(4)(D))

E. Dedicated land refers to land that has special land use restrictions in addition to wetlands restrictions. They include city and State parks, State land, municipal rural reserves, Tongass National Forest, etc. These lands are not generally available for development because of public ownership and associated restrictions. They have not been evaluated by the plan because their management is already determined. The Mendenhall Wildlife Refuge and all estuaries are in this category. Dedicated land is not available for general development. (CBJ Land Use Code: 49.70.1080(4)(E))

F. Enhancement potential (Category EP) wetlands are wetlands that have potential for environmental enhancement. These are, in large part, wetlands that have been created or degraded by development. Enhancement could be only required if the wetland is publicly owned. Publicly owned TiP' wetlands can only be used for enhancement projects. (CBJ Land Use Code: 49.70.1080(4)(F))

8. Shoreline Corridor Designation Rule:

A. For riverine wetlands (rivers): All catalogued anadromous fish streams shall have a 50-foot shoreline corridor on each side of the stream, measured from ordinary high water in the main channel. The 50-foot corridor shall be designated and managed as wetlands Category A. This rule applies only to wetlands adjacent to anadromous fish streams included in the "Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes" published by the Alaska Department of Fish and Game and streams that have been nominated for inclusion in the catalog as of the date of Coastal Policy Council approval of this plan (October 31, 1991). The shoreline corridor extends upstream to the limit of anadromous fish use indicated in the catalog. Additional streams may be catalogued by the Alaska Department of Fish and Game subsequent to the approval of this plan. Once catalogued, these streams would also be subject to the Shoreline Corridor Designation Rule. (CBJ Land Use Code: 49.1080(5)(A))

B. For lacustrine wetlands (lakes): There shall be a 50-foot shoreline corridor measured from the ordinary high water of the shoreline. If the lacustrine wetland or adjacent palustrine wetland is designated Category A, then the 50-foot corridor shall be designated and managed as Category A. In all other cases, the corridor shall be designated and managed as Category B. (CBJ Land Use Code: 49.70.1080(5)(B))

C. Shoreline corridors alongside lakes and anadromous fish streams take precedence over all other management categories and designations. For example, if a shoreline corridor intersects a residential road corridor, the shoreline corridor would be the applicable wetlands classification. (CBJ Land Use Code: 49.1080(5)(C))
9. Residential Road Corridor Designation Rule: The Residential Road Corridor Designation Rule allows residential development on certain palustrine (vegetated non-tidal) Category A or B wetlands under the Category C guidelines. The rule applies only to residential parcels where public water is already provided, the parcel is already affected by development and is subdivided into small lots. This rule allows residential development applications to be reviewed under Category C guidelines in cases where: (1) the residential parcel is in a development corridor served by public water and existing local access roads; and (2) the property owner has no practicable upland alternative to wetlands development. Existing roads and public water utility lines means those built as of the date of Coastal Policy Council approval of this plan (October 31, 1991). Application of the rule allows land use patterns consistent with CBJ land use policy and public investment in infrastructure. (CBJ Land Use Code: 49.70.1080(6))

A. Undeveloped palustrine wetland residential parcels with no practicable upland development alternative shall have a temporary 100-foot Category C designation corridor measured from the road frontage right-of-way, unless there is not a building site with less than 20 percent slope in the temporary corridor. In this case, the temporary corridor is extended into the individual parcel until a building site with less than 20 percent slope is located. Once a fill permit is obtained, the temporary corridor is eliminated except for a designated "envelope" surrounding and equaling 30 percent of the nil footprint. Once the fill is completed, the temporary corridor reverts to the original wetlands management category, except that the 30 percent envelope remains. (CBJ Land Use Code: 49.70.1080(6)(A))

B. Developed palustrine residential parcels shall have a Category C designated envelope that is 30 percent larger than their existing fill footprint. For example, if the existing fill footprint is 1,000 square feet, then the existing fill could be expanded under the guidelines of a Category C wetland, only up to 300 square feet. (CBJ Land Use Code: 49.70.1080(6)(B))

C. Undeveloped residential parcels with an upland practicable alternative on the parcel shall retain their original designated management category. When a practicable alternative is available on the parcel, the development corridor is not available. (CBJ Land Use Code: 49.70.1080(6)(C))

10. Best management practices are required for development on any wetland. The following conditions will be prescribed for all wetland developments. The CBJ Wetlands Review Board can prescribe further conditions based on its analysis of individual projects for Category C and D wetlands and comments received during the permit review process. (CBJ Land Use Code: 49.70.1080(7))
A. There shall be no work in or adjacent to stream beds in the spring during out-migration of salmon smolts. (CBJ Land Use Code: 49.70.1080(7)(A))

B. Filtration curtains shall be used to protect streams from turbidity due to adjacent soil disturbance activities. (CBJ Land Use Code: 49.70.1080(7)(B))

C. Existing wetlands vegetation shall be stripped in mats and repositioned over regarded soil. (CBJ Land Use Code: 49.70.1080(7)(C))

D. The amount of fill shall be restricted to the minimum amount necessary to achieve stated project purposes. (CBJ Land Use Code: 49.70.1080(7)(D))

E. Hydrology surrounding the discharge site shall be maintained with the use of culverts, if necessary. Activities shall not adversely impact adjacent wetlands by causing ponding, drainage, siltation or inadvertent fill. (CBJ Land Use Code: 49.70.1080(7)(E))

F. All discharge material shall be free from toxic pollutants in toxic amounts. (Toxic amounts are defined by Alaska State Law.) (CBJ Land Use Code: 49.70.1080(7)(F))

G. Erosion at the construction site shall be controlled through revegetation and other appropriate means. Exposed soils shall be revegetated within one year. (CBJ Land Use Code: 49.70.1080(7)(G))

H. All work must be completed within three years of the authorization. (CBJ Land Use Code: 49.70.1080(7)(H))

11. For each wetland unit, individual functions which have potential for high values as presented in Appendix F will be considered during review of a project. Any new information regarding the value of individual wetland functions will be evaluated and considered during the review of a project. Individual wetland functions may either be demonstrated to be less, or more, important than the data in Appendix F indicate. As wetlands are developed, some functions may become scarce, increase in value, and require special consideration during a project review. (CBJ Land Use Code: 49.70.1080(8))

12. The following mitigation policies will apply to a development proposal that would be located in Category A or B wetlands and that requires municipal, State or federal permits:

A. Avoid damage to the functional values by avoiding or relocating the development proposal. (CBJ Land Use Code: 49.70.1080(9)(A))

B. Where loss or damage to the functional values cannot be avoided, minimize loss or damage by limiting the degree or magnitude of the development and the actions associated with conducting the development. (CBJ Land Use Code: 49.70.1080(9)(B))
C. Where the loss of functional values cannot be minimized, restore or rehabilitate the wetland to its pre-disturbance condition, to the extent feasible and prudent. (CBJ Land Use Code: 49.70.1080(9)(C))

D. Where the loss of functional values at the development site is substantial and irreversible and cannot be avoided, minimized, or rectified, compensate for the loss as follows:

(i) For Category A wetlands, the compensation actions must be in-kind and must be on-site, located as close as possible to the development site(s).

(ii) For Category B wetlands, the compensation actions may be in-kind or out-of-kind provided the net aggregate values of the wetland unit are maintained. Compensation actions must occur on-site, located as close as possible to the development site(s). (CBJ Land Use Code: 49.70.1080(9)(D))

13. The following mitigation policies will apply to a development proposal that would be located in Category C or D wetlands and that requires municipal, State or federal permits:

A. Based on the extensive analysis of land use alternatives conducted in the land use inventory for the JWMP, the CBJ will presume that there is no practicable alternative for developments proposed on Category C and D wetlands. This presumption is rebuttable for individual projects, which means that the Wetlands Review Board can still conclude that there is a practicable alternative based on its review of project-specific evidence during the permit review process. (CBJ Land Use Code: 49.70.1080(10)(A))

B. Where the development proposal is otherwise lawful and entitled to a wetlands development permit, minimize the loss of functional values by limiting the degree or magnitude of the development and the actions associated with conducting the development. (CBJ Land Use Code: 49.70.1080(10)(B))

C. Where the wetland loss cannot be reduced by minimizing the development, mitigate by restoring or rehabilitating the wetland to its pre-disturbance condition, to the extent feasible and prudent. (CBJ Land Use Code: 49.70.1080(10)(C))

D. Where the loss cannot be reduced by minimization and restoration/rehabilitation, mitigate by compensating for the loss as follows:

(i) For Category C wetlands, the form of compensation required will be selected on the basis of: (1) probability of success, (2) potential gain in functional values, (3) extent to which high and medium high functional values are retained, and (4) cost effectiveness. In general, the order of preference for compensation is:

(a) on-site and in-kind;
(b) on-site and out-of-kind;

(c) off-site and in-kind; and

(d) off-site and out-of-kind.

For small-scale developments (five acres or less), the CBJ mitigation bank may be used to meet this requirement.

(ii) For Category D wetlands, off-site compensatory mitigation is not required provided the minimization and restoration steps above in 13(B) and (C) are followed and best management practices are employed. (CBJ Land Use Code: 49.70.1080(10)(D))

14. Some wetland units may receive a Category B designation for a portion of the unit and a Category C for the rest of the unit. If on-site mitigation is required as compensation for development within the Category B area of the wetland unit under policy 12(D)(ii), the mitigation project should occur within the Category B wetland area unless: (1) a suitable site or mitigation opportunity is not available within the Category B wetland area, or (2) the same or greater environmental benefit could be gained with less expenditure by conducting a mitigation project with the Category C wetland area. (CBJ Land Use Code: 49.70.1080(11))

15. A Mitigation Bank will be established to provide bank credit to satisfy compensation requirements for certain developments in Category C wetlands. The Mitigation Bank will operate under the following conditions:

A. Credits are not available to a permit applicant until the bank completes the wetlands protection, enhancement or creation project and the Wetlands Review Board, in consultation with the agency working group, certifies that the wetlands functions and values have been or will be established.

B. Mitigation Bank credits cannot be used for any permit action where the wetlands area to be adversely affected by a dredge or fill activity exceeds five acres. This requirement prevents bank credits from being exhausted by a single large development.

C. A permit applicant will be required to perform mitigation through individual actions rather than through the bank for fill activities that exceed five acres. The bank is designed to facilitate mitigation for small-scale developments that might otherwise cause cumulative incremental damage to overall wetlands values.

D. To the extent feasible and prudent, projects using least damaging technologies will be given priority in using Mitigation Bank credits.
E. The calculation of cost charged to a project applicant for each Mitigation Bank credit will be based on all costs and expenses incurred or expected to be incurred by the bank in establishing and maintaining the bank. This includes, but is not limited to, applicable land costs and project monitoring.

F. The Mitigation Bank should focus on proven mitigation techniques. Restoration and enhancement is preferred over wetlands creation. Protection of existing wetlands (such as through public purchase) is the lowest priority for the bank and should only be considered when development and the loss of wetlands functions and their values are imminent.

G. To the extent feasible and prudent, mitigation shall occur in the same watershed as the development for which it is compensation.17

17 Enforceable policy 15 has not been adopted into the CBJ Land Use Code as of the date of this plan revision. However, the CBJ's operation of the wetlands mitigation bank will be bound by this enforceable policy and it will be incorporated into the Land Use Code with the adoption of the ordinance detailing the procedures of the Mitigation Bank.
CHAPTER IV
IMPLEMENTATION

The Juneau Wetlands Management Plan will be implemented primarily through permits required for development on wetlands. Permits will be issued by the City and Borough of Juneau or the Corps of Engineers for development projects on wetlands only when those projects are in compliance with the policies of this plan (“Chapter III, Wetland Management Policies”). Juneau will also take other, non-regulatory actions, to implement the wetlands plan, including implementing a wetlands mitigation strategy, taking action to encourage protection of high value wetlands on private property, and retaining ownership of high value wetlands currently owned by the City and Borough of Juneau.

The Juneau Wetlands Management Plan has been approved by the City and Borough of Juneau, the former Alaska Coastal Policy Council, and the U.S. Department of Commerce, Office of Ocean and Coastal Resource Management as a component of the Alaska Coastal Management Program. It has also been adopted into the City and Borough of Juneau Land Use Code (Title 49, Chapter 70). Since November 23, 1993, the regulatory provisions of the plan have had the full effect of local, State and federal law.

On June 30, 1995, the Corps of Engineers also issued General Permit 92-1, which is an important implementation tool for the Juneau Wetlands Management Plan. The General Permit gives the City and Borough of Juneau authority to issue local wetlands permits for placement of dredge and fill material in the Category C, D and EP wetlands designated in the wetlands plan. The General Permit also includes general and specific permit conditions that will apply to all developments covered under the permit.

On July 24, 2000, The Corps of Engineers re-issued a general permit for local wetlands permits. This time issuing four related General Permits 2000-01, -02, -03 and -04. Copies of both the original General Permit 92-1 and the newer General Permits are included in Appendix F.

IMPLEMENTING ORGANIZATIONS

The wetlands plan is implemented by the City and Borough of Juneau in its decisions regarding local wetlands permits, and in other actions it takes in managing public wetland resources. The primary point of contact for CBJ implementation is: Director, Community Development Department, City and Borough of Juneau, 155 South Seward Street, Juneau, AK 99801, Telephone: (907)586-5230, FAX: (907)586-3365.

The City and Borough of Juneau established a citizens Wetlands Review Board in 1992. By ordinance, the Board has authority to: (1) serve as the decision-making body for the issuance of wetlands development permits in Category C and D wetlands, and enhancement project permits in Category EP wetlands; (2) administer the CBs Wetlands Mitigation Bank and develop and implement a long-term mitigation strategy for Juneau wetlands; and (3) prepare an annual report on the status of the Mitigation Bank. The Board also functions as an advisory body to the Planning Commission and the Director of the Community Development Department on other wetlands issues, such as CBJ comments on wetland permit applications being considered by the Corps for wetlands not covered by the General Permit; the
protection of stream side riparian areas; and the conduct of CBJ, State and federal projects that affect wetlands and streams.

The Board is composed of seven members of the public at large and two representatives of the CBJ Planning Commission. Board members are appointed by the Assembly. When making appointments, the Assembly is required to consider obtaining the "broadest possibility representation from those technical fields with knowledge of the values, functions and uses of wetlands, such as fish or wildlife biology, geology, hydrology, land use planning and engineering." (CBJ 49.70.1010). Appointments are for three year terms. The Board meets monthly to hear and decide wetland permit applications. The presence of five members constitutes a quorum and any action of the Board requires five or more affirmative votes to be approved.

The Juneau Wetlands Management Plan is also implemented by the Corps of Engineers. For Category A and B wetlands, and for any wetlands in Juneau which are not classified under the wetlands plan, an individual or nationwide permit from the Corps of Engineers is required. The Corps will process these permits through their normal regulatory procedure. A permit can be issued by the Corps for development in a Category A or B wetland only if it is determined that the project is "consistent with" the enforceable policies of the Juneau wetlands plan. The Corps permit process invites comment from State and federal resource agencies, the CBJ and the public.

WETLAND DELINEATION AND BOUNDARY DETERMINATIONS

The Corps of Engineers has the responsibility and authority to delineate wetlands that are subject to regulation under the Clean Water Act. The Corps delineates wetlands in accordance with the federal definition of what constitutes a "wetland" under the Clean Water Act. Corps personnel in Juneau are responsible for visiting local properties and delineating any wetlands on the site. The Corps has also used aerial photography to locate wetlands in Juneau. Wetland mapping done by the Corps in 1986 from aerial photographs was used as the base map for the Juneau Wetlands Management Plan. However, more detailed field visits by the Corps continually result in revisions to these maps and new wetlands have been delineated since the date of that mapping. Property owners should contact the Corps of Engineers to determine whether they have wetlands on their property.

The Juneau Wetlands Management Plan provides a procedure for applicants to obtain boundary determinations for wetlands covered under the Plan. The Category A, B, C, D and EP wetlands of the CBJ are mapped in the Juneau Wetlands Management Plan, Wetlands Map Atlas (dated May 1994). These maps have been reproduced at a scale suitable for printing in this document and can be found in Appendix C. The determination as to whether a land parcel is within a wetland unit classified as Category C, D, or EP and is, therefore, subject to the jurisdiction of the CBJ Wetlands Review Board, is made by the CHI's Community Development Department. The Department may request additional information from the permit applicant to aid in the determination. The Department will provide a copy of its determination to the applicant and the Corps of Engineers. The Department's determination will be subject to review, modification or revocation by the Corps of Engineers. The Department will proceed with the local wetlands permit process for wetland units classified as Category C, D, or EP unless and until it receives notice from the Corps of Engineers that the Department's determination was in error.
PERMITS FOR DEVELOPMENT IN WETLANDS

The Juneau Wetlands Management Plan and General Permits 2000-01, -02, -03 and 04 give the CBJ Wetlands Review Board the authority to issue wetlands permits for disposal of dredge and fill material in wetlands classified as Category C, D or EP under the Juneau plan. The Board must follow the procedures and policies listed in this plan and the general and special conditions listed in the General Permit (Appendix F).

The Corps of Engineers will continue to issue individual or nationwide permits for disposal of dredge and fill material in Category A and B wetlands, and in all other wetlands not classified under the Juneau wetlands plan. The Corps may also issue nationwide permits for activities on Category C, D or EP wetlands that qualify for that type of permit.

The Corps of Engineers considers the following criteria in evaluating individual permit applications for the discharge of dredged or fill material, and in determining whether a General Permit should be issued for discharges in specific wetland areas. These criteria have been addressed in advance for discharge of dredged or fill material on Category C and D wetlands through: (1) preparation of the Juneau Wetlands Management Plan, including the designation of wetland management categories C and D; (2) the future review of individual disposal of dredged or fill material projects on Category C and D wetlands for compliance with the enforceable policies of this plan; and (3) implementation of the Mitigation Strategy and Mitigation Bank discussed later in this chapter. The Corps of Engineers’ criteria are as follows:18

1. The benefits which reasonably may be expected to accrue from the proposal are balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which is will be allowed to occur, are determined by the general balancing process. All factors which may be relevant to the proposal must be considered, including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people.

2. The relative extent of the public and private need for the proposed structure or work.

3. Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work.

4. The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.

5. The specific weight of each factor is determined by its importance and relevance to the particular proposal. Accordingly, how important a factor is and how much consideration it deserves will vary with each proposal. A specific factor may be given great weight on one proposal while it may not be present or as important on another. Full consideration and appropriate weight will be given to all comments, including those of federal, State and local agencies and other experts on matters within their expertise.

LOCAL WETLANDS PERMITS

The CBJ Wetlands Review Board will use the following procedures for processing applications for local wetlands permits. These procedures are found in the CBJ Land Use Code at 49.70.1060-1075.

**Jurisdiction of Local Wetlands Permits**

A local wetlands permit can be issued by the Wetlands Review Board for development activities requiring placement of dredged or fill material on Category C and D wetlands, and enhancement activities on Category EP wetlands, with the following exceptions:

1. **Nationwide Permits**: If the activity proposed by the applicant is covered by a nationwide permit issued by the Corps of Engineers, no local wetlands permit will be required provided the activity is conducted in compliance with the requirements of the nationwide permit.

2. **Excluded Activities**: The following activities cannot be permitted under a wetlands permit issued by the CBJ Wetlands Review Board: placement of dredged or fill material in waters of the United States for purposes of heavy industry, dry cleaning operations, hazardous waste disposal, battery transfer yards, commercial auto repair garages, and fuel storage sites. These activities, in order to be undertaken, must be authorized by an individual permit issued by the Corps of Engineers.

**Local Wetlands Permit Review Procedure**

1. **Submittal of Application**: An application for a wetlands permit must be filed with the CBJ Community Development Department on the form provided by the Department, and must include the required application fee. The permit application form requires a description of the project location, the proposed activity, and the purpose and need for the project. The project description must include quantities of fill material, acreage of disturbed surface area, measures that the applicant proposes to take to comply with the enforceable policies of the Juneau Wetlands Management Plan, source of fill and any off-site disposal locations. The application must include a site plan and narrative description.
2. **Director Action**: Upon a determination by the Director of the Community Development Department that the permit application is complete, the application will be scheduled for Wetlands Review Board action at the next regular meeting.

3. **Public and Agency Notice**: Public notice will be provided by the Community Development Department, including notice in the newspaper and direct mail notification to neighboring property owners within 300 feet. The applicant will be required to post on-site a large red public notice sign, prepared by the Department, seven days prior to the Board hearing. Copies of the permit application will be distributed by the Department to the State and federal resource agencies (including the Corps of Engineers) and members of the public who request the opportunity to review and comment on wetlands permit applications.

4. **Staff Report**: The Department's report to the Wetlands Review Board presented at the meeting will include the following:

   a. Information regarding the project, the management designation for the wetland unit under the Juneau Wetlands Management Plan (Category C, D or EP), the applicability of the Shoreline Corridor Designation Rule and the Residential Road Corridor Designation Rule to the wetland unit, the applicability of the policies of the Juneau Coastal Management Program, and the applicability of the general and specific conditions listed in General Permits 2000-01, -02,-03 and -04. (Appendix F);

   b. An assessment of how the project meets the enforceable policies of the Juneau Wetlands Management Plan, including:

      (i) Any new information regarding the wetland functions listed in the Juneau Wetlands Management Plan and practicable alternatives to the proposed wetlands development,

      (ii) For Category C wetlands, recommendations for maintaining high or medium high individual wetland functional values either on-site or off-site, to the extent feasible and prudent,
(iii) Recommended project modifications or best management practices to avoid or minimize project impacts on wetland acreage and values, and

(iv) Recommended restoration, rehabilitation or compensation as required under the enforceable policies of the plan, including any proposed use of the Mitigation Bank for compensation;

c. An estimate of cumulative changes in both function and acreage of the Juneau wetlands base as a result of the project and any related mitigation. The estimate of cumulative changes will be primarily based on the information regarding individual wetlands functions included in Appendix E of this plan; and

d. A recommendation to the Wetlands Review Board for approval of the project with or without specified conditions, or a recommendation for denial. A recommendation for permit denial may be based on available practicable alternatives, or inability to mitigate against loss of wetland functions and values, as required under the enforceable policies of the plan.

5. Public Hearing: A public hearing will be advertised and held at the Wetlands Review Board meeting at which action on the permit application is scheduled. Any one is welcome to present written or oral testimony regarding the project.

6. Wetlands Review Board Action: The Board will evaluate the application for compliance with the enforceable policies of the plan and the conditions of General Permits 2000-01, -02, -03 and -04. The Board will presume that there is no less damaging practicable alternative site for the proposed development. This presumption will be evaluated in the staff report, and may be reversed by the Board on consideration of the information presented during the permit review process.

The Board may grant a wetlands permit as described in the original permit application or with conditions necessary for compliance with the enforceable policies of the plan. The Board may require that the applicant submit revised plans, narratives and other information which reflect the conditions applied by the Board prior to issuance of the permit. The Board will make a final decision on a permit no later than sixty days after the Director determines that the application is complete. The Director shall issue or deny a wetlands permit in accordance with Board action on the application.

All Board meetings and public hearings will be recorded and minutes will be taken by a secretary. Minutes and recordings are available to the public.

Actions of the Board are appealable to the CBJ Assembly under the appeal provisions of the CBJ City Code (CBJ 01.50).
7. Temporary Emergency Permit: In cases where there is an imminent threat to life or severe loss of property, the Director may issue a temporary emergency wetlands permit without action of the Board. The permit may include conditions necessary to ensure compliance with the enforceable policies of the plan. The permit shall be in effect only until the next regular meeting of the Wetlands Review Board, when formal action on the permit application can be taken.

8. Permit Expiration and Extension: The maximum duration of a local wetlands permit is three years. The permit will expire within 18 months of issuance if no associated building permit, right-of-way permit, or similar permit for construction has been issued and substantial construction progress made, unless otherwise specified in the wetlands permit or unless the permit is extended by the Board. The permittee shall restore the site to pre-project conditions upon expiration of a wetlands permit.

The Board may extend a wetlands permit. The applicant must submit a request for extension at least thirty days before the expiration of the permit. A new application fee will be assessed for a permit extension. The Board will hold a public hearing to consider whether the permit should be extended. At the hearing, the burden of proof for the justification for a permit extension shall rest with the applicant. The Board may grant no more than one extension, not to exceed 18 months, and may not change the original permit conditions. If the Board finds that the applicant's burden has not been met, or that the conditions contained in the permit should be changed, or both, the Board will deny the request to extend the permit. The applicant can then reapply for a new wetlands permit.

**CORPS OF ENGINEERS PERMITS**

The Corps of Engineers has retained the jurisdiction to decide whether to issue permits for disposal of dredged or fill material in wetland units classified as Category A and B under the Juneau Wetlands Management Plan, and in all wetlands not classified under the plan. The Corps will follow the requirements of the Clean Water Act and its implementing regulations and procedures in reaching permit decisions.

Before the Corps of Engineers issues a permit for a development project in a Category A or B wetland unit, it must ensure that the project is "consistent with" the enforceable policies of the Juneau Wetlands Management Plan and the Juneau Coastal Management Program. This "consistency requirement" exists because the Juneau plan has been approved by the U.S. Department of Commerce under the federal Coastal Zone Management Act. As a federal agency, the Corps is required to issue permits only if they are consistent with all plans approved under that Act, or can be made consistent if the project is modified. The Corps may require the applicant to comply with permit conditions to make the project consistent with the plan's policies.
The City and Borough of Juneau will comment on all applications for Corps of Engineers permits through the review process coordinated by the State Department of Natural Resources, Office of Project Management and Permitting under the Alaska Coastal Management Program (11 AAC 110). The CBJ Community Development Department will provide comments regarding whether the proposed project is consistent with, or can be made consistent with (through permit conditions), the enforceable policies of the Juneau Wetlands Management Plan and Juneau Coastal Management Program. The Wetlands Review Board will review and provide advisory comments to the Director of the Community Development Department regarding the CBJ's comments on all Corps of Engineers permit applications for development on wetlands. Under State regulations (11 AAC 110.255), under certain circumstances, the CBJ will be given "due deference" by the agency coordinating the consistency review when it makes its consistency determination. Due deference is a concept and practice within the consistency review process that affords the commenting review participants the opportunity to include, review, or refine the alternative measures or consistency concurrence if they have expertise in the resource or the responsibility for managing the resource. The CBJ and resource agencies are provided deference in interpretation of policies and standards in their area of expertise or area of responsibility. Then the CBJ may be afforded due deference if the CBJ can demonstrate expertise in the field.

If the coordinating agency rejects the comments of the CBJ or any alternative measures that the CBJ might seek to have imposed on the application in connection with a consistency determination, the coordinating agency must provide a brief written explanation stating the reasons for rejecting or modifying the alternative measure.

**MITIGATION STRATEGY**

The Wetlands Review Board will develop and implement a long-term, comprehensive wetlands mitigation strategy for Juneau wetlands, in consultation with State and federal agencies. The goal of the strategy is to create the greatest environmental benefit for each expenditure for a mitigation project. The strategy will include:

1. Restoration and enhancement objectives with consideration to historical losses of wetland acreage and functional values;
2. Suitable mitigation sites based on the degree and type of wetlands degradation at each site and opportunities for obtaining the site for the mitigation bank;
3. Appropriate and feasible mitigation projects for each identified site;
4. Individual functional values that can be recreated at each site with a high probability of success; and
5. Restoration and enhancement opportunities outside the proposed Mitigation Bank sites.

To date, the Wetlands Review Board has taken the following actions regarding the Mitigation Strategy. The CBJ contracted with the Alaska Department of Fish and Game (ADFG) to prepare a recommendation of potential mitigation projects and sites in Juneau. The ADFG evaluated each wetland unit included in the Juneau Wetlands Management Plan and recommended possible mitigation projects for the Board's consideration.
On November 3, 1993, the Board adopted a general mitigation strategy that established the three broad categories of Protection, Education, and Restoration/Creation Projects as an outline for the CBJ's approach to wetlands mitigation.

Protection: includes land acquisition, land trades, and retention of high value wetlands in public ownership; designations of greenbelts and open space; vacating unbuilt plats in wetland areas; improving enforcement of existing and newly-issued wetlands permits; requiring the application of Best Management Practices (pollution prevention/abatement); additional inventory and data collection for Juneau wetlands to expand the coverage of the wetlands plan; and participation in cooperative watershed management and restoration plans.

Education: includes providing public and student education on wetland types, values and functions; and participation in cooperative education projects.

Restoration/Creation Projects: includes gathering baseline information and analysis of problem wetland areas; restoration of lost or impaired functions at existing wetland sites; making changes from one wetland type to another (e.g., open water to emergent vegetation, or reverse); creation of particular habitat attributes (e.g., spawning/rearing areas; waterfowl staging ponds) within newly-created or historic wetland areas.

The Board also decided that the CBJ should focus on a single watershed for protection, restoration and education efforts, to the extent feasible. However, the Board also opted to retain the flexibility to take advantage of other opportunities and address other situations outside of that system when it is in the public interest to do so. On January 20, 1994, the Board decided to focus its initial mitigation efforts on the Duck Creek drainage, since that watershed is already the subject of an intensive interagency stream restoration program.

In 1999, CBJ Community Development Department, funded through a grant from US Environmental Protection Agency, hired Wildlands, Inc. to assist in the development of a mitigation program for the Juneau area. The Community Development Department with the assistance of Wildlands convened a number of meetings with interested stakeholders and regulatory staff to review the status of mitigation efforts and receive input on preferred methods to address wetland mitigation issues. The results of that effort are published in “Final Draft Preferred Wetlands Mitigation Program Alternative, City and Borough of Juneau, March 1, 2000.”

MITIGATION BANK

The City and Borough of Juneau will establish a Wetlands Mitigation Bank that will be administered by the Wetlands Review Board, with staff assistance from the Community Development Department. The Mitigation Bank will manage wetland sites that can be protected or enhanced. The managed sites will be used primarily to compensate for adverse impacts on Category C wetlands.

A detailed ordinance, outlining the procedures for operation of the Bank, will be approved by the CBJ Assembly and adopted into the CBJ Land Use Code before the Bank begins operation. State and federal resource agencies, and interested members of the public, will be invited to participate in the development and review of the ordinance establishing Bank procedures. As of December 2005, efforts to establish a mitigation bank are ongoing.
BASIC CONCEPTS OF MITIGATION BANKING

The purposes of the Wetlands Mitigation Bank are to:

1. Promote, in concert with federal and State programs as well as interested parties, the maintenance and conservation of wetlands;

2. Improve cooperative efforts among private, non-profit and public entities for the management and protection of wetlands;

3. Offset losses of wetlands values caused by activities that otherwise comply with local, State and federal law in order to restore, enhance or create wetlands values and functions;

4. Maintain and encourage a predictable, efficient regulatory framework for environmentally acceptable development; and,

5. Provide an option for permit applicants directed to accomplish off-site mitigation under the terms of a CBJ wetlands permit for Category C wetlands.

The Mitigation Bank will operate like a "bank" in that it will issue credit and accept cash payments. The CBJ will use the Bank's initial capital to conduct wetland mitigation projects, thereby improving wetland values at the site of the enhancement project and accruing "wetland mitigation credits." Bank funds could be used to accomplish a variety of projects that will improve wetland and stream habitat values, such as replacing culverts that are currently blocking fish passage and reducing important fish habitat in Juneau's stream, or reestablishing wetlands hydrology and vegetation at a site that has been previously filled or disturbed.

Once the Bank accrues a balance of "wetland mitigation credits," private developers will be able to conveniently purchase credits from the Bank to offset their project's wetland impacts, rather than having to undertake complex wetland mitigation projects on their own. For example, a permit applicant in Category C wetlands might be directed to conduct an off-site wetlands mitigation project to compensate for wetland losses at their development site. In lieu of conducting this mitigation project, the developer could choose to purchase credits from the Mitigation Bank.

The cost of the purchase of mitigation credits will be determined by assessing the CBJ's costs for conducting wetlands enhancement projects and accruing initial credits to the Bank. The CBJ will calculate its costs in creating additional habitat benefits through wetlands restoration, enhancement or creation. The cost of each credit gained through the mitigation project will then be calculated, ensuring that the CBJ recovers its project costs. The cash payments that a developer pays to the Bank will, in turn, be used by the CBJ to conduct additional mitigation projects and recapitalize the Bank's credits.

The Mitigation Bank will operate under the following restrictions:

1. Credits are not available to permit applicants until the Bank has already conducted wetlands protection or enhancement projects and the Wetlands Review Board, in consultation with the agency working group, certifies the success of the mitigation project. This requirement guarantees that mitigation will be performed. (The CBJ typically requires applicants to post bonds to guarantee fulfillment of conditions attached to land use permits. However, wetlands enhancement is a fairly new concept and private sector bonding is not generally available for environmental restoration.)
2. Mitigation Bank credits cannot be used for any permit action where the wetlands area to be adversely affected by placement of dredged or fill material exceeds five acres. This requirement will prevent Bank credits from being exhausted by a single large development. Large-scale developers will be required to perform mitigation through individual actions rather than through the Bank. The Bank is designed to facilitate mitigation for small-scale developments that might otherwise cause cumulative incremental damage to overall wetlands values.

**SELECTION OF MITIGATION BANK PROJECTS**

The Wetlands Review Board will recommend areas where wetlands can be protected, restored, enhanced or created for the Mitigation Bank. The recommendations will be forwarded to the CBJ Assembly (Lands Committee) which will approve a priority list of mitigation bank projects.

A successful Mitigation Bank will create the most amount of environmental benefit for any given expenditure. The CBJ Wetlands Review Board will consult with State and federal natural resource and regulatory agencies, affected organizations, and other interested parties in selecting projects for the Bank. State and federal resource agencies, and interested members of the public, will be invited to participate in a Mitigation Bank working group.

In consultation with the agency working group, the Wetlands Review Board will:

1. Review opportunities for inclusion of appropriate wetlands in the Bank; and
2. Develop and recommend a wetlands priority plan for inclusion in the Bank.

Creation or enhancement projects will only be funded after specific plans are reviewed and approved by the CBJ. The CBJ will consult with the agency working group.

It is anticipated that most of the Bank's activity will consist of wetlands protection, restoration, and enhancement, although some creation may be possible. There is some preliminary evidence that natural conditions in Juneau are more favorable to creation than in other areas of the country. For example, wetland unit DW17 is a high value wetland that was artificially created by dredging. However, since wetlands creation is less certain and requires long term monitoring, any creation will most likely take place contiguous to an existing wetland and will be accomplished in close consultation with resource agencies.

**BANK OPERATION**

The Wetlands Review Board will develop detailed Bank operating procedures that will be approved for adoption into the CBJ Land Use Code by the Planning Commission and the Assembly. The following criteria will be used to create these operating procedures for the site selection process, operation, and evaluation of the Mitigation Bank:
1. Historic wetlands trends, including the estimated rate of current and future losses of the respective types of wetlands (these data are published in the Appendix to the Functions and Values report);

2. Contributions of wetlands to:
   a. Wildlife, migratory birds and resident species;
   b. Commercial and sport fisheries;
   c. Surface and ground water quality and quantity, and flood moderation;
   d. Outdoor recreation and environmental education; and
   e. Scientific and research values;

3. Economic needs;

4. Value of wetlands functions attributed to the wetlands most likely to be degraded;

5. Potential bank sites suitable for restoration, creation, and functional enhancement projects including those wetlands not evaluated in the Adamus study;

6. State-of-the-art mitigation techniques appropriate for each potential bank site;

7. Identified problems associated with restoration, creation, and enhancement projects that have been implemented in similar wetland environments elsewhere; and

8. Monitoring and evaluation strategies for determining the effectiveness of creation, restoration, and enhancement projects in achieving stipulated objectives. Mitigation Bank funds will be managed by establishing a revolving "Capital Improvement Project" (CIP) fund account. All money received by the Bank will be paid into the CBJ Treasury, credited to the CIP account and appropriated only to the Bank. The Bank will follow strict accounting procedures.

Bank funds can be used for the following purposes:

1. To acquire land suitable for use as Mitigation Bank projects;

2. To pay the cost of restoring, enhancing or creating wetlands areas; and,

3. To pay the cost of administrative, scientific research, and monitoring expenses.

The Bank can also accept land donations. Any land donation accepted by the Bank will be valued at its fair market value as determined by an independent appraisal.
REPORT ON BANK OPERATION

The Wetlands Review Board will be responsible for preparing an annual report regarding the Mitigation Bank. The report will be presented to the City and Borough of Juneau Assembly and the Corps of Engineers, and will:

1. Evaluate the wetlands functions and values created;
2. Compare the mitigated functions and values with the functions and values that were anticipated; and,
3. Audit the financial status of the account including:
   a. Credits sold for each specific permit activity,
   b. Total credits sold during the year,
   c. Credits accrued during the year through mitigation projects,
   d. Credits balance in the account, and
   e. Status of pending activities.
4. Estimate the cumulative changes in wetland functions and acreage in the Juneau area as a result of development projects and related mitigation.

ENFORCEMENT

Monitoring the compliance of developers with local wetlands permit applications is critical to ensuring that the Juneau Wetlands Management Plan is effective. Monitoring of permit compliance will be done by the staff of the Community Development Department. Staff will report regularly to the Wetlands Review Board on monitoring and enforcement activities associated with permits issued by the Board.

If violations of permit conditions are noted, staff will follow the enforcement provisions established in the CBJ City Code (CBJ 10.600 - 660). If the CBJ determines that a permittee has violated the terms or conditions of a permit, staff will contact the permittee, request new plans showing the actual work that has taken place, and attempt to work with the applicant to resolve the violation through their voluntary compliance with the original permit, or, if appropriate, through a permit modification approved by the Board.

If a mutually agreeable solution cannot be reached, a written order requiring compliance will normally be issued; however, issuance of an order is not a prerequisite to legal action. If an order is issued, it will specify a time period of not more than 30 days for the developer to bring the project into compliance. If the permittee fails to comply with the order within the specified period of time, the CBJ may consider suspending or revoking the permit, or it may pursue legal action.

The CBJ will pursue criminal or civil actions to obtain penalties for violations, compliance with the orders it has issued, or other relief as appropriate. Appropriate cases for civil or criminal action include, but are not limited to, violations that in the opinion of the CBJ are willful, repeated, flagrant, or of substantial impact.
Local enforcement measures can not supersede or replace the authority of the Corps of Engineers and the U.S. Environmental Protection Agency to enforce the Clean Water Act, including enforcement against unauthorized fills and violations of individual wetlands permits or General Permits 2000-01, -02, -03 and -04.

ADDITIONAL MANAGEMENT TECHNIQUES FOR WETLANDS

The City and Borough of Juneau will take steps to alleviate development pressure on high and medium high value wetlands. The CBJ will retain high value wetlands (Category A and B) that are in city ownership and manage them for environmental protection. The CBJ will also seek to acquire additional Category A and EP wetlands, as funding or opportunities for land trades permit.

The CBJ will consider wetland designations and the goal of preserving high and medium high value wetlands during its biennial revisions of the CBJ's Comprehensive Plan. The reports of the Wetlands Review Board on cumulative changes to Juneau's wetlands, and the Board's ideas for land use policy or zoning changes to implement wetlands protection goals, will be considered by the CBJ Planning Commission and Assembly during Comprehensive Plan revisions. Public and agency comments on changes to Juneau's land use plans and ordinances to further wetlands protection goals will also be considered.

TAX ASSESSMENTS FOR WETLANDS PROPERTY

The CBJ will encourage private land owners to protect Category A and B wetlands by considering the wetland management classification when fair market values are determined during property tax calculations. The CBJ will consider the presence of wetlands on a property, and the effect on its development potential, when determining the fair market value for property tax assessments. The CBJ Assessor is authorized to consider denied permits in a property assessment. In addition, any owner of a wetland classified as Category A or B may request, and the tax assessor shall provide, that this fact be taken into account when the property is assessed.
REPORTS ON GENERAL PERMIT ADMINISTRATION

The CBJ Community Development Department will submit quarterly reports to the Corps of Engineers reporting on the implementation of General Permits 2000-01, -02, -03, and -04 (Appendix F). The quarterly reports shall compile information on local wetlands permits issued by the Wetlands Review Board under the General Permit and shall include copies of all applications and wetlands permits.

The Department shall also submit an annual report to the Corps that tallies the total acreage permitted for discharge of dredged and fill material, the number of local wetlands permits granted, the average permit processing time, and monitoring and enforcement activities.

The Department has developed a computer database for recording information regarding the local wetlands permits issued by the Board. A copy of the database will be submitted to the Corps of Engineers with each annual report.

WETLANDS PLAN AMENDMENTS

The Juneau Wetlands Management Plan may be amended by the CBJ at any time to include new wetland areas into the plan, incorporate new information regarding wetland values, revise wetland unit classifications, revise or supplement the standards for issuance of permits, or make other changes necessary for the proper management of wetlands in the Juneau area. As a matter of course, the Juneau Wetlands Management Plan should be reviewed and updated every five years to respond to new data and to improve its implementation.

Every ten years, the CBJ must review and submit the Juneau Wetlands Management Plan to the State Department of Natural Resources, Office of Project Management and Permitting for reapproval (11 AAC 114.365 (b)). The submittal must include an evaluation of the plan effectiveness and implementation, a presentation of any new issues, and a recommendation for resolving any problem that have arisen.

SCOPE OF PLAN REVIEW

The plan review will include information on the number of wetlands permits issued through the local wetland permit process; the number of acres filled; loss of wetland functions and values; the status and implementation of the Wetlands Mitigation Bank; and other information necessary to evaluate cumulative impacts, other requirements of the Corps of Engineers, or compliance with the requirements of the Alaska Coastal Management Program.

The environmental scores for the wetlands inventoried in the Juneau Wetlands Management Plan area a result of a rapid assessment of wetlands by Adamus Resource Associates, under contract to the CBJ. The rapid assessment is, in turn, based on a field check of the Adamus Wetland Evaluation Technique calibrated for Southeast Alaska. The scores are subject to revision if they are contradicted by new field work. The Wetlands Review Board will be authorized to obtain additional field work as needed to evaluate individual proposals.
The CBJ Planning Commission wants to alleviate pressure on wetlands within heavily utilized zoning districts by making appropriate rezones. At that time, the land use inventory will be recalculated to reflect any additions to the existing supply of developable land for any zoning district. The relative value of individual wetlands functions within a wetland unit or drainage basin also may change as wetlands are developed. Certain functions may become scarce, and therefore increase in value in the future. The Wetlands Review Board will keep track of impacts to individual functions so that the scarcity of any function can be considered during individual project reviews. This information will also be used to update the Juneau Wetlands Management Plan and may result in the reclassification of management categories.

**PROCESS FOR PLAN AMENDMENTS**

The review of the Juneau Wetlands Management Plan will be conducted by the Wetlands Review Board, with assistance from the Community Development Department and oversight and participation by the state and federal resource agencies. Public and agency comments on the implementation of the plan and any suggested changes will be solicited. Formal opportunities for public involvement, including public notice, will be provided by the Wetlands Review Board.

Any significant revisions to the Juneau Wetlands Management Plan, including changes to management designations, policies and implementation techniques, will also be reviewed and approved by the CBJ Planning Commission and Assembly. Formal opportunities for public involvement in this process, including public notice, will again be provided.

Amendments to the Juneau Wetlands Management Plan will be processed by the State Department of Natural Resources, Office of Project Management and Permitting, as either a "significant amendment" or a "minor amendment" to the Juneau Coastal Management Program, in accordance with State regulation (11 AAC 114, Article 3). A significant amendment is defined in 11 AAC 114.990 (42). A change that is not a significant amendment is considered to be a minor amendment and is described in 11 AAC 114.340. The State Department of Natural Resources, Office of Project Management and Permitting, in consultation with the CBJ and the State agencies participating in the Alaska Coastal Management Program, will determine whether a change to the Juneau wetlands plan is a significant amendment or a minor amendment.

If the plan amendment affects wetlands units covered under the General Permit, then the approval of the Corps of Engineers will also be required.
APPENDIX A
DEFINITIONS

Developed: The value of improvements on the property is greater than twice the land value.

Discharge of Dredged Material: Any addition of dredged material into wetlands.

Discharge of Fill Material: The addition of fill material into wetlands.

Dredged Material: Material that is excavated or dredged from wetlands.

Enhancement: Increase in functional value.

Estuarine Wetlands: Tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is diluted by freshwater runoff.

Fill Material: Any material used for the primary purpose of replacing a wetland with dry land. Pilings are not considered to be fill material.

In-Kind Compensation: Substitution of a degraded wetland function with an enhancement of the same function.

Lacustrine Wetlands: Wetlands situated in a topographic depression or a dammed river channel, lacking persistent vegetation greater than 30% aerial coverage, and whose total area exceeds 20 acres.

Mitigation: Avoidance, minimization including project modifications, rectification and compensation.

On-Site: The area within a wetlands unit.

On-Site Mitigation: All measures that may be taken to reduce, offset or eliminate damage or destruction to wetland function including but not limited to relocating, reducing the size or scope, or changing the operational characteristics of the proposed activity, or creating or enhancing wetland functions in the wetland unit.

Out-of-Kind Compensation: Substitution of a degraded wetland function with an enhancement of another wetland function.

11 AAC 112.900 (13) "freshwater wetlands" means those environments characterized by rooted vegetation that is partially submerged either continuously or periodically by surface freshwater with less than 0.5 parts per thousand salt content and not exceeding three meters in depth; (Eff. 7/1/2004, Register 170; am 10/29/2004, Register 172)Authority: AS 46.39.010, AS 46.39.040, AS 46.40.040, AS 46.39.030, AS 46.40.010
Palustrine Wetlands: Non-tidal wetlands dominated by trees, shrubs, persistent emergents, or emergent mosses or lichens.

Riverine Wetlands: Wetlands in a freshwater channel; the channel either natural or artificial

11 AAC 112.900 (25) "saltwater wetlands" means those coastal areas along sheltered shorelines characterized by halophilic hydrophytes and macroalgae extending from extreme low tide to an area above extreme high tide that is influenced by sea spray or tidally induced water table changes; (Eff. 7/1/2004, Register 170; am 10/29/2004, Register 172)Authority: AS 46.39.010, AS 46.39.040, AS 46.40.040, AS 46.39.030, AS 46.40.010

11 AAC 112.900 (33) "wetlands" means saltwater wetlands and those freshwater wetlands that have a direct drainage to coastal waters; (Eff. 7/1/2004, Register 170; am 10/29/2004, Register 172)Authority: AS 46.39.010, AS 46.39.040, AS 46.40.040, AS 46.39.030, AS 46.40.010

Wetlands Unit: The wetlands designations used by the CBJ from A1 to UM11.

Wetland Functional Value: The weighted sum of the functional values as per the Wetlands Management Plan formula.
JUNEAU WETLANDS MANAGEMENT PLAN includes the following documents:


ENVIRONMENTAL DATA for the Juneau Wetlands Management Plan is published in three documents:


METHODOLOGY FOR THE ENVIRONMENTAL DATA COLLECTION is published in:


HYDROLOGIC AL COMPONENT is published in:


RECREATION COMPONENT is published in:


PUBLIC PREFERENCES are published by the City and Borough of Juneau in the following documents:


OVERALL PROJECT METHODOLOGY is published in:

"Comprehensive Special Area Management Planning - Juneau, Alaska, Case Study," Ira Winograd in Urban Wetlands, the Association of State Wetland Managers, Inc.
APPENDIX C
MAPS OF WETLAND UNIT LOCATIONS

The following maps show the locations of wetland units classified through the Juneau Wetlands Management Plan and lists their designations (Category A, B, C, D or EP). Please refer to the Juneau Wetlands Management Plan Map Atlas (May 1994) for a larger scale map of each wetland unit.

These maps include the revisions required by the U.S. Army Corps of Engineers authorization of General Permits 2000-01, 2000-02, 2000-03, and 2000-04. They were revised again in 2005 to include mapping protocols required by the Office of Project Management and Permitting, Department of Natural Resources.
JUNEAU WETLANDS MANAGEMENT PLAN
Management and Important Habitat Designations
WEST VALLEY
Juneau Coastal Management Plan
December 2005

Source: Base Maps: City & Borough of Juneau/Geographic Information System
Wetland Boundaries: Juneau Wetlands Management Plan- May 1994
JUNEAU WETLANDS MANAGEMENT PLAN
Management and Important Habitat Designations
AUKE BAY
Juneau Coastal Management Plan
December 2005

Source: Base Maps: City & Borough of Juneau/Geographic Information System
Wetland Boundaries: Juneau Wetlands Management Plan- May 1994

WETLAND CLASSIFICATION

A1  C  A10  B
A2  LAKE  A11  B(S)
A5  A(R)  A12  C
A5A  C  A13  B
A5B  C  A14  C
A6  B(R)  A15  C
A7  B(S)  A17  C
A8  C  A19  D
A9  C
APPENDIX D
WETLAND UNIT MANAGEMENT DESIGNATIONS

This Appendix lists the category designations for each of the wetland units evaluated in the Juneau Wetlands Management Plan (Category A, B, C, D or EP). These designations are considered to be enforceable components of the wetlands plan. The management designations were determined through the process described in Chapter II, Classification Methodology.

Each wetland unit is listed along with its consolidated functional score (the environmental score determined by the City and Borough of Juneau from the Adamus WET information for each wetland unit), public preference score (PP), practicable alternatives score (PA) and zoning. The resultant management range and the final management category is shown for each wetland unit.

There is also a brief narrative description of each wetland, including general references to its location, size, land use features, accessibility and infrastructure. Special features are discussed. The narrative also describes whether or not the Shoreline Corridor Rule and/or the Residential Road Corridor Rule apply to each wetland unit.
### WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
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<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
<th>PA Zone</th>
<th>(PA+PP)/2</th>
<th>Management Range</th>
<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
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<td>AUKE BAY</td>
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<td>A1</td>
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<td>40 inaccessible forested acres in undeveloped part of east valley about midway between Mendenhall River and Auke Lake and about midway between Old Glacier Highway and Back Loop Road. The formula allows limited use of best professional judgment for this wetland. It is Category C primarily due to a WET score that indicates low environmental values, and because the site was determined to be a &quot;potential future disposal site&quot; by the Corps of Engineers and Environmental Protection Agency (EPA) in an Advanced Identification determination.</td>
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<td></td>
<td>Auke Lake</td>
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<td>Unclassified</td>
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<tr>
<td>A5</td>
<td>1</td>
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<td>4:D1/D5&amp;RR</td>
<td>2.5</td>
<td>A-B</td>
<td>A(R)</td>
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<td>44 forested acres within the study area plus 45 acres in National Forest above Auke Lake between Lake Creek and Montana Creek, in a general north/south orientation. The lower portion encompasses a Lake Creek anadromous tributary above Back Loop Road. Two residential lots are within a Category C residential road corridor (see Map Atlas).</td>
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<td>ASA</td>
<td>4</td>
<td>2</td>
<td>4:D1/D5</td>
<td>3</td>
<td>B-C</td>
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<td>3 inaccessible forested acres in undeveloped part of east valley about midway between Montana Creek and Lake Creek above Back Loop Road. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment, because the site was determined to be a &quot;potential future disposal site&quot; in the Corps/EPA Advanced Identification.</td>
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<td>B-C</td>
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<td>6 inaccessible forested acres in undeveloped part of east valley about midway between Montana Creek and Lake Creek above Back Loop Road. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment, because the site was determined to be a &quot;potential future disposal site&quot; in the Corps/EPA Advanced Identification.</td>
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<td>3 acres adjacent to the east side of the north shore of Auke Lake and bounded on the north by Old Glacier Highway. The formula allows limited use of best professional judgment. It is Category B because of its proximity to Auke Lake. Four residential lots bordering the Back Loop Road are within a Category C residential road corridor (see Map Atlas).</td>
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<td>4:D3</td>
<td>3.5</td>
<td>B-C</td>
<td>B(S)</td>
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<td>101 forested acres north of the intersection of Back Loop Road and Old Glacier Highway extending as far east to include the University of Alaska Southeast student housing and traversed by anadromous Bay Creek towards the west side, and two unnamed anadromous fish streams at the east side. The stream corridors along these fish streams are Category A (see Map Atlas).</td>
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**WETLAND UNIT MANAGEMENT DESIGNATIONS**

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<td>A8</td>
<td>4</td>
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<td>4:D3</td>
<td>3</td>
<td>B-C</td>
<td>C</td>
<td>19, 20</td>
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</table>
11 inaccessible acres of scrub shrub vegetation immediately west of upper Lake Creek north of Auke Lake. A portion of the wetland unit is located within the National Forest. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment, because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

| A9           | 3   | 4  | 2&5&4;  | 3&4.5&4   | B-C              | c                    | 21                     |
4 acres of forested wetlands west of Bay Creek and Auke Bay Elementary School adjacent to residential development in Auke Bay. The formula allows limited use of best professional judgment for this wetland. It is Category C because it is relatively close to good access and infrastructure, and the public preference was for development. It was also determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

| A10          | 2   | 2  | 4:D1/D3 | 3         | B-C              | B                    | 21                     |
5 inaccessible forested acres on upper Waydelich Creek adjacent to the National Forest. The formula allows limited use of best professional judgment for this wetland. It is Category B by best professional judgment because the wetland is at the headwaters of Waydelich Creek, and is small, isolated and inaccessible.

| A11          | 2   | 1  | 4:D1/D3 | 2.5       | B-C              | B(S)                 | 21                     |
15 forested acres bisected by Waydelich Creek. The stream corridor along Waydelich Creek is Category A (see Map Atlas).

| A12          | 4   | 3  | 2:D10/D15 | 2.5     | B-C              | C                    | 21                     |
1 acre to the east of Waydelich Creek close to residential land in Auke Bay. Classified as Category C because it was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

| A13          | 3   | 3  | 2:D10/D15 | 2.5     | B-C              | B                    | 21                     |
4 acres of forested land west of Waydelich Creek.

| A14          | 5   | 2  | 4:RR&D1/D3 | 3      | C-D              | C                    | 21                     |
2 acres of inaccessible forested land on upper Bay Creek. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment, because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

| A15          | 4   | 2  | 4:RR     | 3      | B-C              | C                    | 24                     |
2 acres of scrub shrub vegetation near Auke Nu Creek adjacent to residential development. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment because it is adjacent to residential development and infrastructure, and its WET score indicates low environmental values. This site was also determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.
### WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
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<th>Management Range</th>
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2 acres of scrub shrub vegetation on Federal land bordering the south side of Back Loop Road, to the west of Auke Lake.

<table>
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2 acres of scrub shrub vegetation to the east of and adjacent to the Auke Bay Elementary School access road.

### DUCK CREEK

<table>
<thead>
<tr>
<th>DUCK CREEK</th>
<th>D2</th>
<th>D3</th>
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</table>

These ponds were created by dredging during construction of the Mendenhall Loop Road. Although they are linked to Duck Creek, the ponds are essentially stagnant. Some are devoid of salmonids and others have low populations. The potential for salmonid habitat is medium high and there is potential to design the ponds to enhance Duck Creek productivity.

<table>
<thead>
<tr>
<th>D7</th>
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</tbody>
</table>

This is a small pond adjacent to and north of the intersection of Mendenhall Mall road and the Back Loop Road, formerly a Tire pond for nearby commercial development. Most of the wetland is within a Category A stream corridor along Duck Creek (see Map Atlas).

<table>
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</table>

This is a small wetland adjacent to and south of the intersection of Mendenhall Mall Road and the Back Loop Road. Most of the wetland is within a Category A stream corridor along Duck Creek (see Map Atlas).

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Lakewood Pond is a CBJ park consisting of a pond with pedestrian amenities.

### DOUGLAS ISLAND, EAST OF FISH CREEK

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5 forested acres adjacent to residential housing between the North Douglas Highway and Gastineau Channel. Lots along the highway are in a Category C residential road corridor (see Map Atlas).
**WETLAND UNIT MANAGEMENT DESIGNATIONS**

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
<th>PA Zone</th>
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<th>Management Range</th>
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<td>A(R)</td>
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172 scrub shrub vegetated acres constituting a peninsula on the channel side of North Douglas Highway between Hendrickson Creek and Johnson Creek. Most of the interior is CBJ owned and is managed for open space. There is a Category C residential road corridor along the highway (see Map Atlas).

95 acres of predominantly scrub shrub vegetation, east of Hendrickson Creek above North Douglas Highway. One platted lot bordering North Douglas Highway is in a Category C residential road corridor (see Map Atlas).

Approximately 500 scrub shrub and forested acres in a large bog on the east side of Fish Creek Road above and below North Douglas Highway as far east as Hendrickson Creek, and including Johnson Creek. The property bordering the highway is within a Category C residential road corridor. Johnson Creek has a Category A stream corridor where it passes through the residential road corridor (see Map Atlas). The CBJ and State own the platted lots traversed by Johnson Creek.

3 isolated acres south and upland of North Douglas Highway.

3 acres of scrub shrub vegetation bisected by a small anadromous fish stream on the channel side of North Douglas Highway. The stream corridor is Category A. That portion of the wetland unit in the residential road corridor, but not within the Category A stream corridor, is designated Category C. The formula allows use of best professional judgment on the portion of the wetland unit that is neither within the stream corridor nor the residential road corridor. That section was designated as Category B due to its adjacency to the fish stream. (See Map Atlas).

Small, isolated inaccessible parcel within the National Forest.

5 acres of scrub shrub vegetation on the channel side of North Douglas Highway. Lots bordering the highway are in a Category C residential road corridor (see Map Atlas).

3 acres of scrub shrub vegetation on the channel side of North Douglas Highway. Lots bordering the highway are in a Category C residential road corridor (see Map Atlas).
WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
<th>PA Zone</th>
<th>(PA+PP)/2</th>
<th>Management Range</th>
<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
</tr>
</thead>
</table>

DOUGLAS ISLAND, WEST OF FISH CREEK

DW2 2 1 4:D1&RR 2.5 B-C B(R) 29, 30, 32
Approximately 225 scrub shrub and forested acres in a large bog on the west side of Fish Creek Road above North Douglas Highway. The lots bordering the highway are within a Category C residential road corridor (see Map Atlas).

DW3 4 1 4:RR 2.5 B-C C 32
14 isolated inaccessible forested acres west of upper Fish Creek Road. Classified as Category C because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

DW4 4 1 4:RR 2.5 B-C C 32
22 isolated inaccessible forested acres west of upper Fish Creek Road. Classified as Category C because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

DW5 5 1 4:RR 2.5 C-D C 32
10 isolated inaccessible forested acres west of upper Fish Creek Road.

DW6 4 1 4:RR 2.5 B-C C 32
1 isolated inaccessible forested acre west of upper Fish Creek Road. Classified as Category C because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

DW7 3 2 4:RR&D1 3 B-C B(R) 30, 32
52 forested acres south of, and partially adjacent to, North Douglas Highway. A small portion of the northeast corner is in a Category C residential road corridor (see Map Atlas). The formula allows use of best professional judgment on the portion of the wetland unit outside the residential road corridor. This land is owned by the CBJ. It is designated Category B by best professional judgment because it is managed for public open space.

DW8 2 1 4:RR&D1 2.5 B-C B 30, 31, 32
Approximately 100 forested acres constituting a peninsula on the channel side of North Douglas Highway. The west side is adjacent to the Bayview Subdivision.

DW9 2 1 4:RR 2.5 Fish Creek Park CBJ Unclassified 31, 32
34 scrub shrub acres owned by the CBJ and managed as part of the park and open space system.

DW11 4 1 4:RR 2.5 B-C C 32
8 isolated inaccessible forested acres south of North Douglas Highway. Classified as Category C because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.
**WETLAND UNIT MANAGEMENT DESIGNATIONS**

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
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<th>(PA+PP)/2</th>
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<td>5 isolated inaccessible forested acres south of North Douglas Highway. Classified as Category C because the site was determined to be a &quot;potential future disposal site&quot; in the Corps/EPA Advanced Identification.</td>
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<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 scrub shrub acres adjacent to North Douglas Highway on the channel side.</td>
</tr>
<tr>
<td>DW16</td>
<td>2</td>
<td>1</td>
<td>4:RR</td>
<td>2.5</td>
<td>Mendenhall Refuge</td>
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<td>32</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>32</td>
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<td></td>
<td></td>
<td></td>
<td>Mendenhall Refuge</td>
</tr>
<tr>
<td>DW18</td>
<td>2</td>
<td>1</td>
<td>4:RR</td>
<td>2.5</td>
<td>Mendenhall Refuge</td>
<td>Unclassified</td>
<td>32</td>
</tr>
</tbody>
</table>

**MENDENHALL STATE GAME REFUGE ESTUARIES**

ES1 - ES42

All study area estuaries, except ES 41 and ES42, are part of the Mendenhall State Game Refuge, and are managed by the Alaska Department of Fish and Game in accordance with Refuge regulations. The estuaries were not included in the relative rankings used to determine wetland scores for freshwater wetlands. All estuaries will remain under Corps jurisdiction. There may be enhancement potential for waterfowl habitat and public access.

**JORDAN CREEK**

J1 3 1 5:D5 3 B-C B(S) 16

18 forested acres bisected by Jordan Creek, an anadromous fish stream. Application of the formula allows limited use of best professional judgment for this wetland. It is Category B by best professional judgment primarily because it is part of the general Jordan Creek drainage. The stream corridor along Jordan Creek is Category A (see Map Atlas).

J2 1 1 5:D5 3 A-B A 16

34 forested acres bisected by Jordan Creek, an anadromous fish stream. Application of the formula allows limited use of best professional judgment for this wetland. It is Category A by best professional judgment because of its high value for support of Jordan Creek.
### WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
<th>PA Zone</th>
<th>(PA+PP)/2</th>
<th>Management Range</th>
<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>J3</td>
<td>1</td>
<td>1</td>
<td>5:D5</td>
<td>3</td>
<td>A-B</td>
<td>A</td>
<td>16</td>
</tr>
<tr>
<td>J4</td>
<td>1</td>
<td>1</td>
<td>5:D5</td>
<td>3</td>
<td>A-B</td>
<td>A</td>
<td>13, 16</td>
</tr>
<tr>
<td>J5</td>
<td>1</td>
<td>1</td>
<td>5:D5</td>
<td>3</td>
<td>A-B</td>
<td>A(R)</td>
<td>13</td>
</tr>
<tr>
<td>J6</td>
<td>2</td>
<td>2</td>
<td>5&amp;2:D5&amp;D10</td>
<td>3.542</td>
<td>B-C</td>
<td>B(S)</td>
<td>6, 13</td>
</tr>
<tr>
<td>J7</td>
<td>2</td>
<td>3</td>
<td>2:D10</td>
<td>2.5</td>
<td>B-C</td>
<td>B(R)&amp;C</td>
<td>6, 7</td>
</tr>
</tbody>
</table>

3 forested acres bisected by Jordan Creek, an anadromous fish stream. Application of the formula allows limited use of best professional judgment for this wetland. It is Category A by best professional judgment because of its high value for support of Jordan Creek.

Approximately 40 acres of forested wetland adjacent to and immediately east of Jordan Creek. Application of the formula allows limited use of best professional judgment for this wetland. The wetland is Category A by best professional judgment because of its high value for support of Jordan Creek.

36 forested and scrub shrub acres. Jordan Creek meanders through the wetland unit. Application of the formula allows limited use of best professional judgment for this wetland. The wetland unit is Category A by best professional judgment because of its high value for support of Jordan Creek. A very small portion of the wetland unit on Marilyn Avenue is in a Category C residential road corridor (see Map Atlas).

21 forested acres. Jordan Creek crosses the length of the wetland unit in a north/south direction. The creek is protected by a Category A stream corridor (see Map Atlas). The upper portion of the unit, zoned D5 would be Category C according to the formula. However, the lower portion, zoned D10, would be Category B. The entire wetland unit is classified as Category B to protect its integrity and for consistent management.

8 forested acres northeast of the intersection of Egan Drive and Mendenhall Loop Road. It is adjacent to existing development and it is served by urban utilities. It is bordered on all four sides by existing roads: Atlin Drive to the north, Teslin Street to the east, Egan Drive to the south, and the Mendenhall Loop Road to the west. The one acre of wetland west of Teslin Street is Category C. The seven acre wetland east of Teslin Street is hydrologically connected to Jordan Creek and it Category B. However, five residential lots bordering Teslin Street in this wetland unit are within a Category C residential road corridor (see Map Atlas).

### LEMON CREEK

| L1 | 3   | 3   | 5&1:LC&D15 | 4&2 | B-C | B | 4, 5 |
| L4 | 2   | 1   | 4:RR      | 2.5 | B-C | B | 4   |
| L5 | 2   | 1   | 4:RR      | 2.5 | B-C | B | 4   |

1 acre fronting Old Glacier Highway near the DOT/PF Southeast Regional Office Building.

6 acres containing an excavated borrow pit.

16 acre excavated borrow pit.
## WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
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<th>PP</th>
<th>PA Zone</th>
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<th>Management Range</th>
<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>L6</td>
<td>1</td>
<td>1</td>
<td>5&amp;1:D5&amp;D15</td>
<td>3&amp;1</td>
<td>A-B</td>
<td>A&amp;B(S)</td>
<td>3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37 acres predominated by emergent vegetation with scrub shrub and forest on the upper portion. Switzer Creek meanders through the lower portion. The southwest portion is Category A. Application of the formula allows limited use of best professional judgment for the rest of the wetland. It is Category B by best professional judgment, except for the stream corridor along Switzer Creek, which is Category A (see Map Atlas).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L7&amp;7A</td>
<td>4</td>
<td>4</td>
<td>4:1</td>
<td>4</td>
<td>B-C</td>
<td>C</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 acre excavated borrow pit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L8</td>
<td>1</td>
<td>1</td>
<td>1:D15</td>
<td>1</td>
<td>A-B</td>
<td>A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 acres of emergent vegetation between Vanderbilt Hill Road and the Pioneers Home.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L12</td>
<td>2</td>
<td>1</td>
<td>5:D18&amp;GC</td>
<td>3</td>
<td>B-C</td>
<td>B(S)</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 emergent vegetation acres adjacent to the east side of old Glacier Highway and bisected by Vanderbilt Creek. The corridors along the creek are Category A. Application of the formula allows limited use of best professional judgment for the rest of the wetland unit. The wetland is Category B by best professional judgment to protect the productivity of Vanderbilt Creek.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L13</td>
<td>2</td>
<td>3</td>
<td>5:GC</td>
<td>4</td>
<td>B-C</td>
<td>B(S)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 acre of forested wetland adjacent to Old Glacier Highway. L13 is separated from the Vanderbilt drainage of L12 and L14 by an old berm. While L12 and L14 have high salmonid habitat values, L13 has low salmonid habitat values.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L14</td>
<td>2</td>
<td>2</td>
<td>5:D1B&amp;GC</td>
<td>3.5</td>
<td>B-C</td>
<td>B(S)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9 acres of emergent vegetation within a forested area, which is crossed by Vanderbilt Creek. The corridors along the creek are Category A (see Map Atlas).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L15</td>
<td>2</td>
<td>4</td>
<td>5:D5</td>
<td>4.5</td>
<td>B-C</td>
<td>B(S)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 acre of scrub shrub vegetation adjacent to Mobile Haven Trailer Park. There is a small drainage through the wetland which is a tributary to an anadromous fish stream. The stream corridor is Category A (see Map Atlas).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L17</td>
<td>4</td>
<td>4</td>
<td>4:1</td>
<td>4</td>
<td>B-C</td>
<td>C</td>
<td>3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 acres of scrub shrub vegetation in the industrial area between Lemon and Vanderbilt Creeks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L18</td>
<td>2</td>
<td>4</td>
<td>4:1</td>
<td>4</td>
<td>B-C</td>
<td>C</td>
<td>2, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 acres of emergent vegetation west of Old Glacier Highway.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L20</td>
<td>2</td>
<td>3</td>
<td>4:1</td>
<td>3.5</td>
<td>B-C</td>
<td>C</td>
<td>2, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 acre excavated borrow pit west of Old Glacier Highway.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L21</td>
<td>2</td>
<td>3</td>
<td>4:1</td>
<td>3.5</td>
<td>B-C</td>
<td>C</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 acre excavated borrow pit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
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<th>PP</th>
<th>PA Zone</th>
<th>Management Range</th>
<th>PA Zone</th>
<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
</tr>
</thead>
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<tr>
<td>L22</td>
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<td>4:1</td>
<td>3</td>
<td>B-C</td>
<td>C</td>
<td>4</td>
</tr>
<tr>
<td>L23</td>
<td>4</td>
<td>4</td>
<td>4:1</td>
<td>4</td>
<td>B-C</td>
<td>C</td>
<td>4</td>
</tr>
<tr>
<td>L90</td>
<td>5</td>
<td>3</td>
<td>5:D5&amp;LC</td>
<td>4</td>
<td>C-D</td>
<td>D</td>
<td>5</td>
</tr>
<tr>
<td>L91</td>
<td>5</td>
<td>4</td>
<td>5:D5</td>
<td>4.5</td>
<td>C-D</td>
<td>D</td>
<td>5</td>
</tr>
</tbody>
</table>

1 acre excavated borrow pit. Application of the formula allows limited use of best professional judgment. It is Category C by best professional judgment, because the site was determined to be a "potential future disposal site" in the Corps/EPA Advanced Identification.

4 acre excavated borrow pit.

2 acres of scrub shrub vegetation on the north side of and adjacent to Old Glacier Highway.

2 acres of scrub shrub vegetation on the north side of Old Glacier Highway.

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### LOWER MENDEHALL RIVER: EAST SIDE AND AIRPORT VICINITY

**M1**

Float plane pond south of and parallel to airport runway. Although the pond was stocked when the Salmon Creek Hatchery was closed, and trapping was conducted at two separate sites and times, no salmonids were found. The only development allowed would be in accordance with the federally approved FAA Airport Master Plan. The plan calls for no development south of the runway except for expansion of the float plane ponds. Strict application of the formula would have resulted in a Category C classification. However, the environmental values of the site and the significant public recreation use resulted in a Category B classification.

**M1A**

Long narrow pond adjacent to and south of float plane pond. No salmonids. Strict application of the formula would have resulted in a Category C classification. However, the environmental values of the site and the significant public recreation use resulted in a Category B classification.

**M1B**

Forested and scrub shrub wetland south of and adjacent to float plane pond. Strict application of the formula would have resulted in a Category C classification. However, the environmental values of the site and the significant public recreation use resulted in a Category B classification.

**M1C**

Canal south of and adjacent to the float plane pond. No salmonids. Strict application of the formula would have resulted in a Category C classification. However, the environmental values of the site and the significant public recreation use resulted in a Category B classification.

**M2**

28 acre pond created by gravel pit excavation between east end of runway and Egan Drive. No salmonids are present. There is enhancement potential to create riparian environment and salmonid habitat. The steep sides of the pond might be graded to a gradual slope and the pond might be connected to saltwater of Gastineau Channel.
### WETLAND UNIT MANAGEMENT DESIGNATIONS

<table>
<thead>
<tr>
<th>WETLAND UNIT</th>
<th>WET</th>
<th>PP</th>
<th>PA Zone</th>
<th>(PA+PP)/2</th>
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<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>2</td>
<td>2</td>
<td>4:RR</td>
<td>3</td>
<td>B-C</td>
<td>B</td>
<td>5</td>
</tr>
</tbody>
</table>

13 acres of emergent vegetation adjacent to Egan Drive and the gravel pit pond. Application of the formula allows limited use of best professional judgment. It is Category B by best professional judgment since there is potential for mitigation to enhance public appreciation of the area, especially in conjunction with enhancement of the pond.

| M4           | 2   | 3  | 5:A     | 4         | B-C              | C                   | 6, 8                   |

This is a small pond adjacent to the north side of the runway and parallel taxiway. It is an attractive area for birds, which creates bird strike hazard conditions. The bird strike hazard is created because the pond is so close to the runway that is encourages birds to cross from one side of the runway to the other in a very low flight path. A portion of this pond was filled during construction of the Airport parallel taxiway.

| M5           | 2   | 3  | 5:A     | 4         | B-C              | A                   | 6, 8                   |

3 acres between airport tie down area and fire crash station. Jordan Creek passes through the site, and the wetland unit has been the site of stream enhancement work as mitigation for construction of the parallel taxiway. For this reason, the wetland unit is classified as Category A.

| M6           | 4   | 5  | 5:A     | 5         | B-C              | C                   | 6, 8                   |

4 acres adjacent to taxiway next to tie down area. This wetland was filled during construction of the Airport parallel taxiway.

| M7           | 2   | 3  | 5:GC&A  | 4         | B-C              | B(S)&C(S)           | 6, 7, 8                |

12 emergent vegetation acres between the Airport and the back of Nugget Mall commercial area. The eastern portion is Category C; the western portion is Category B. Jordan Creek runs down the middle of this narrow wetland and is surrounded by a Category A stream corridor (see Map Atlas). The eastern portion of the wetland is within the CBJ-owned Jordan Creek greenbelt.

| M8           | 4   | 5  | 5:A     | 5         | B-C              | C                   | 6, 7, 8                |

3 acres adjacent to Airport taxiway next to tie down area.

| M9           | 2   | 4  | 4:1     | 4         | B-C              | C                   | 6, 8                   |

5 acres of emergent vegetation on the east side of Crest Avenue.

| M10          | 4   | 5  | 4:1     | 4.5       | B-C              | C                   | 6, 8                   |

1 acre of emergent vegetation on the north side of and adjacent to Yandukin Drive.

| M13          | 4   | 5  | 5:GC    | 5         | B-C              | C                   | 6, 8                   |

1 acre adjacent to Alpine Avenue.

| M14          | 3   | 1  | 2&4&1:10| 1.5&2.5&1   | B-C              | B                   | 6                      |

3 acres of scrub shrub vegetation in a long narrow strip on the north side of and adjacent to Egan Drive, owned by the State of Alaska.
**WETLAND UNIT MANAGEMENT DESIGNATIONS**

<table>
<thead>
<tr>
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<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
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</thead>
<tbody>
<tr>
<td>M15</td>
<td>4</td>
<td>4</td>
<td>5:A</td>
<td>4.5</td>
<td>B-C</td>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>Small scrub shrub wetland between Flight Service Center and airport plane access ramp.</td>
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</tr>
</tbody>
</table>

| M17          | 4   | 4  | 5:LC    | 4.5       | B-C              | C                    | 7                      |
| 2 acres of scrub shrub at the southeast corner of the intersection of Riverside and Egan Drives. |

| M18          | 4   | 4  | 5:LC    | 4.5       | B-C              | C                    | 7                      |
| 1 acre of emergent growth vegetation, owned by the State of Alaska, adjacent to the south side of Egan Drive in the vicinity of Mendenhall Mall. |

| M19          | 2   | 2  | 5:LC    | 3.5       | Unclassified     |                      | 7                      |
| Less than one acre, Duck Creek Greenbelt. |

| M20          | 2   | 2  | 5:LC    | 3.5       | Unclassified     |                      | 7                      |
| 1 acre, Duck Creek Greenbelt. |

| M21          | 2   | 3  | 5:LC    | 4         | Unclassified     |                      | 7                      |
| 2 acres, Puck Creek Greenbelt. |

| M26          | 3   | 2  | 5&D5&14D15 | 3.5&D15 | B-C              | B                    | 5                      |
| 5 acres of emergent vegetation between Old Glacier Highway and Egan Drive in the vicinity of the old dairy farm. |

| M27          | 2   | 2  | 5&D5    | 3.5       | B-C              | B                    | 5                      |
| 6 emergent growth acres in a long narrow strip on the north side of and adjacent to Egan Drive east of the old dairy farm. |

| M49          | 3   | 3  | 5:A     | 4         | C(S)            |                      | 7                      |
| Duck Creek Greenbelt. Considered Category C, in the event this section of Duck Creek is relocated to the northern airport boundary. |

| M50          | 4   | 4  | 5&D15 &14A&D15 | 4.5&D15 | B-C              | C                    | 7                      |
| 1 acre of scrub shrub vegetation west of Duck Creek. |

| M51          | 2   | 3  | 5:A     | 4         | C(S)            |                      | 7, 8                   |
| Duck Creek Greenbelt. Considered Category C, in the event this section of Duck Creek is relocated to the northern airport boundary. |

| M52          | 4   | 3  | 5:GC&A  | 4         | B-C              | C                    | 7, 8                   |
| Small area of emergent vegetation northwest of the end of the Airport runway. |

| M53          | 2   | 3  | 5:A     | 4         | C(S)            |                      | 7, 8                   |
| Duck Creek Greenbelt, at the west end of the Airport runway. Considered Category C, in the event this section of Duck Creek is relocated to the northern airport boundary. |
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<th>Management Category</th>
<th>Wetlands Map Atlas Page</th>
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<tr>
<td><strong>LOWER MONTANA CREEK</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4:D1/D5</td>
<td>2.5</td>
<td>A-B</td>
<td>A</td>
<td>17, 18</td>
</tr>
<tr>
<td>245 acres in a large patterned fen traversed by Montana Creek to the west side of the fen. Although it might seem that the fen recharges Montana Creek, or discharges into an aquifer, the Siegel hydrological study (August 1988) determined that there is very little hydrological connection between the fen and Montana Creek or an aquifer. It also found that the wetland has a very low value for groundwater discharge. However, it has a high value for most other evaluated functions.</td>
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</tr>
<tr>
<td>ML2</td>
<td>4</td>
<td>2</td>
<td>4:1</td>
<td>4:D1/D5</td>
<td>3</td>
<td>B-C</td>
<td>C</td>
<td>18</td>
</tr>
<tr>
<td>1 isolated inaccessible acre of scrub shrub. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment because the site was determined to be a &quot;potential future disposal site&quot; by the Corps/EPA Advanced Identification.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML15</td>
<td>2</td>
<td>1</td>
<td>4:1</td>
<td>4:D1/D5</td>
<td>2.5</td>
<td>CBJ</td>
<td>Unclassified</td>
<td>17</td>
</tr>
<tr>
<td>A small isolated strip within the CBJ-owned Mendenhall River greenbelt.</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>8 acres in a narrow northeast/southwest orientation between Back Loop Road and Skaters Cabin Road. The formula allows limited use of best professional judgment for this wetland. It was designated Category B because there are relatively few practicable alternatives for development in this zoning district, and there are adjacent subdivisions and infrastructure. Several residential lots are in a Category C residential road corridor (see Map Atlas).</td>
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<td>ML17</td>
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<td>B-C</td>
<td>C</td>
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<tr>
<td>2 acres of isolated inaccessible forest wetland. The formula allows limited use of best professional judgment for this wetland. It is Category C by best professional judgment because the site was determined to be a &quot;potential future disposal site&quot; in the Corps/EPA Advanced Identification.</td>
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<td>B-C</td>
<td>B</td>
<td>17, 18, 22</td>
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<tr>
<td>1 acre pond between the patterned fen and Back Loop Road. The formula allows limited use of best professional judgment for this wetland. It is Category B by best professional judgment because of its relatively high score for human use support.</td>
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<td><strong>MENDENHALL RIVER: ADJACENT TO OLD GLACIER HIGHWAY</strong></td>
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<td>B-C</td>
<td>A&amp;B</td>
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<td>22 acres of emergent vegetation west of the south terminus of Old Industrial Blvd. The Corps of Engineers required that a portion of the wetland unit, adjacent to Industrial Blvd., be restored as a wetland as mitigation for adjacent fills. This restored wetland area is designated Category A (see Map Atlas). The remainder of the wetland unit is Category B. Wetland unit MW1 is currently used for recreational purposes by the Mendenhall Golf Course.</td>
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### WETLAND UNIT MANAGEMENT DESIGNATIONS

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Approximately 70 acres of emergent vegetation from the industrial developed land on the east all the way to Mendenhall Peninsula on the west. Two anadromous fish streams meander through the wetland unit (Pederson Hill Creek and Casa del Sol Creek). Application of the formula allows limited use of best professional judgment for this wetland. The wetland is designated Category B, with Category A stream corridors (see Map Atlas). The Category B designation was given since there are few practicable alternatives for development in this zoning district and because there is developed access nearby. Wetland unit MW2 is currently used for recreational purposes by the Mendenhall Golf Course.

23 acres of emergent vegetation in a north/south orientation as far north as Old Glacier Highway. An anadromous fish stream meanders in the wetland unit. The stream corridor is Category A (see Map Atlas). The far eastern portion of the wetland unit (approximately 1.5 acres), adjacent to the developed Industrial Blvd. corridor, is Category C (see Map Atlas).

8 acres of emergent vegetation in a relatively narrow rectangle oriented in an east/west direction, west of Crazy Horse Drive. Strict application of the formula would have resulted in a Category C designation. However, the wetland unit was designated Category B due to its adjacency to higher value undeveloped wetlands and an anadromous fish stream (Casa del Sol Creek).

13 acres of emergent vegetation in a rectangular shape, occupying an old sludge disposal site adjacent to industrially developed land. Strict application of the formula would have resulted in a Category C designation. However, the wetland unit was designated Category B due to its adjacency to other higher value undeveloped wetlands.

20 acres of scrub shrub vegetation and forested wetlands. The eastern portion of the wetland unit (approximately 6.5 acres) adjacent to the developed Industrial Blvd. corridor is designated Category C (see Map Atlas). The remainder of the wetland unit is Category B.

40 acres of emergent vegetation, a large portion of which is in CBJ-owned Brotherhood Park. Application of the formula allows limited use of best professional judgment. The wetland unit is designated as Category B by best professional judgment due to its relatively high wetland values and the fact that a portion of the wetland is in CBJ park land.

1 acre of isolated scrub shrub wetland north of Old Glacier Highway.

54 acres of forested wetland on Mendenhall Peninsula. Application of the formula allows limited use of best professional judgment. The east boundary along Engineer's Cutoff is in a Category C residential road corridor, except for a portion within a Category A stream buffer (see Map Atlas). The rest of the wetland is Category B.