CHAPTER 1

PURPOSE AND NEED

This Final Environmental Impact Statement (FEIS, or EIS) discloses the environmental consequences associated with proposed development activities at the Juneau International Airport (referred to herein as the Airport or as JNU, its 3-letter airport code). The Federal Aviation Administration (FAA), cooperating state and federal agencies, and a third-party consultant team have evaluated the proposed actions and alternatives to the proposed actions. Environmental issues and concerns expressed by the public and other agencies during scoping for this EIS have been considered and incorporated into the analysis. This EIS also reflects changes made in response to public comments on the Draft EIS for JNU. The FEIS has been prepared in accordance with the National Environmental Policy Act (NEPA, 42 U.S.C. 4321), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500 et seq.), and other applicable federal laws and regulations. Requirements and guidance specific to FAA were also used in development of the FEIS, including FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (2006) and FAA Order 1050.1E, *Policies and Procedures for Considering Environmental Impacts* (2004a).

This chapter of the EIS includes:

- a brief description of JNU, the Airport Master Plan, and the Environmental Assessment (EA) prepared in 2000 to evaluate effects of some Airport proposals;
- a description of existing airfield operations and projected future aviation demands;
- an explanation of the purpose of and need for the actions and for federal agency preparation of an EIS to evaluate those actions;
- a summary of the actions proposed by the Airport to meet the existing and future development needs;
- a list of the major regulatory authorities and statutory responsibilities of the various agencies that have a role in the environmental analysis or permitting decisions,
- a description of the issues and concerns identified during scoping and the issues and concerns used to develop alternatives to the proposed actions, and
- a summary of the process used by FAA to invite public comment on the Draft EIS.

1.1 AIRPORT DESCRIPTION

JNU is classified by the Alaska Airport System Plan as a Regional Center Airport and thus provides primary intrastate access to the southeast region of Alaska and to the Juneau area population. JNU also serves as a main interstate connection between southeast Alaska and Seattle,

Washington, and provides transportation access to the state's other large cities. JNU is certified under Federal Aviation Regulation (FAR) Part 139, which designates the Airport as capable of accommodating both Part 121 Air Carrier and Part 135 Commuter and Air Taxi operations.

Scheduled passenger service at JNU is provided by one large Part 121 Air Carrier operator, Alaska Airlines. Alaska Airlines, Federal Express, and Alaska Central Express provide air-cargo service to Seattle and within Alaska, and a number of air-taxi operators[1] fly to destinations around Juneau and southeast Alaska. JNU receives scheduled international service by Air North from Whitehorse, Canada.

Juneau is located in the panhandle of southeast Alaska, approximately 950 air miles northwest of Seattle and 570 air miles southeast of Anchorage (Figure 1-1). Located in southeast Alaska in the heart of the Inside Passage along the shore of Gastineau Channel, Juneau is Alaska's state capital. The Airport plays an important role in serving the capital of Alaska by providing direct, non-stop service to Anchorage and other Alaskan cities. The Airport is located within the City and Borough of Juneau (CBJ), approximately 9 miles northwest of downtown Juneau. Airport property encompasses approximately 662 acres of land.

Alaska's mountain ranges, glaciers, and vast wilderness create natural barriers to transportation. For most Alaskans, flying is a necessary part of life. Alaska has approximately 6 times as many pilots and 14 times as many aircraft per capita as the rest of the U.S. JNU is the primary commercial service airport for southeast Alaska and, other than ferry service, provides the only access to areas outside the Juneau area. (It is not possible to drive directly from Juneau to other major parts of Alaska or to the lower 48 states.) The following sections provide an overview of the Airport and the Airport planning and management structure.

1.1.1 JUNEAU INTERNATIONAL AIRPORT (JNU OR THE AIRPORT)

Historical records indicate that the Juneau area began as a fish camp for the indigenous Tlingit Indians. The Spanish and English explored the area during the late eighteenth century, but the earliest European inhabitants were Russian fur traders. The first colony was established by the Russian trader Grigorii Shelekhov in 1784 at Three Saints Bay on Kodiak Island. Sitka was later designated the capital of Russian Alaska.

In 1867, the U.S. purchased Alaska from Russia. In 1880, Joe Juneau and Richard Harris were led to Gold Creek by Chief Kowee of the Auk Tribe, where the pair "discovered" and laid claim to gold deposits. This mining activity resulted in the formation of a 160-acre city called Harrisburg, which brought many prospectors to the area. By the end of 1880, the town site of Juneau had been established, and large-scale mining activity followed on Douglas Island and in the Juneau area. The capital of Alaska was moved from Sitka to Juneau in 1906.

1. Part 135 Air Taxi operators include: Air Excursions, Alaska Central Express, Coastal Helicopters, LAB Flying Service, Tal-Air, Alaska Seaplanes (formerly Loken Aviation), Skagway Air, TEMSCO Helicopters, Ward Air Service, Wings of Alaska, Fjord Air, Wilson Air, and Southeast Air.

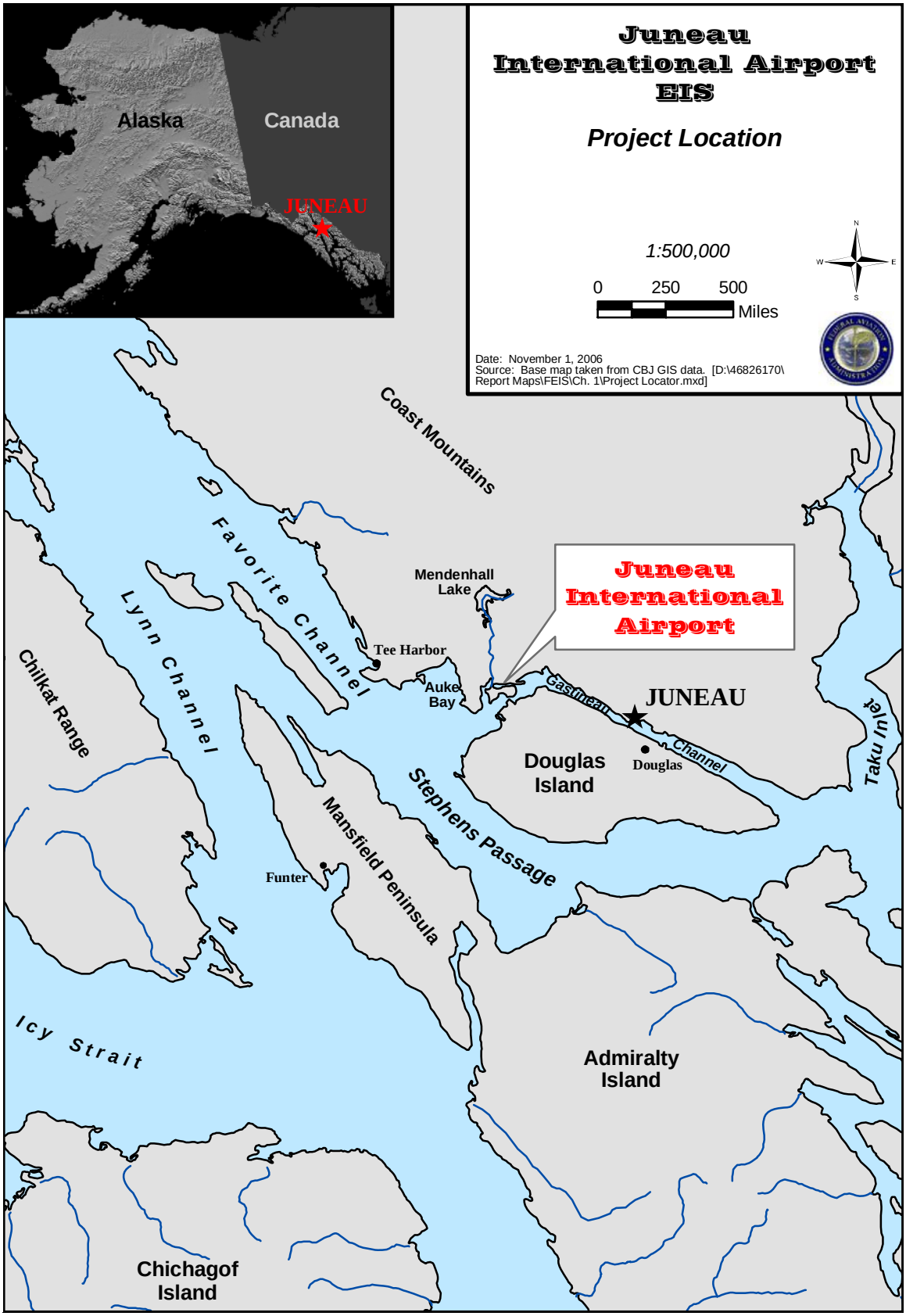

Figure 1-1. Project area locator map.

The Airport was developed by the U.S. government to support military Air Corps operations in Alaska. Prior to World War II, the area was served by a limited number of small aircraft, mostly float planes. The paved runway at the Airport was constructed in 1942. Following the war, Pan American Airlines and Pacific Northern Airlines established service to Juneau from Seattle and Anchorage. The original terminal was constructed in 1948. In 1953, the Airport was transferred from U.S. government ownership to the City of Juneau. The first of two major terminal expansions took place in 1957, and the second expansion, resulting in the Airport's present configuration, took place in 1984.

The Airport has undergone other modifications as well. In 1961, the runway was extended to accommodate jet aircraft operations in Alaska. In 1989, a full-length parallel taxiway was constructed to connect both ends of the runway to the aircraft parking apron and passenger terminal area. Other facility improvements have taken place periodically, most recently for additional aircraft parking and hangar spaces.

1.1.2 AIRPORT MANAGEMENT

JNU is owned and operated by CBJ, a first-class, home-rule municipality[2]. The CBJ Assembly has nine members with the Mayor as presiding officer. A seven-person Airport Board, appointed by and accountable to the CBJ Assembly, governs the Airport. The Airport Board oversees the maintenance and operations of the Airport, while fiscal responsibility is vested with the CBJ Assembly. The Airport Board also oversees the activities of the Airport Manager, who is responsible for the day-to-day operation of JNU.

1.1.3 AIRPORT MASTER PLAN

The CBJ initiated a Master Plan for JNU in 1996. An objective of the Master Plan was to identify aviation facilities needed at the Airport over a 20-year period (through the year 2015). The Master Plan accomplished this by preparing to inventory existing conditions, forecasting future activity levels, evaluating the facility needs associated with existing and future demand, and then developing a plan to address the facility needs. An update to the JNU Noise Compatibility Plan was conducted at the same time. At the conclusion of the Master Plan an updated, detailed Airport Layout Plan narrative and drawing set were submitted to the FAA for approval.

The Juneau International Airport Board approved the Airport Master Plan on April 14, 1999. The Airport Layout Plan was conditionally approved by FAA subject to environmental review on November 24, 1999, and the Master Plan was accepted by FAA on June 27, 2000.

2. A first-class city that has adopted a home rule charter is called a home rule city; adoption allows the city to revise its ordinances, to the extent that the powers it assumes are those not prohibited by law or charter. A borough and all cities located within it may unite in a single unit of government called a unified municipality. Juneau has been unified into a single municipality.

The Master Plan identified a number of recommendations for the Airport intended to enhance land use compatibility, resolve design and capacity deficiencies, accommodate existing and future air traffic, and reconstruct or rehabilitate Airport facilities (USKH 1999). FAA subsequently determined that some of the improvements identified in the Master Plan were needed to comply with the Federal Aviation Act or design standards for runways (40 CFR §139.309(a)(2); FAA 1989a). All of the recommendations in the Master Plan that required federal action, including partial or total federal funding, federal agency approval, or federal permit issuance, are subject to review and analysis under NEPA.

1.1.4 Access to the Capital

According to information supplied by the CBJ Engineering Department (Stone 2003), there have been nine separate initiatives since the early 1960s to move the capital to another city, move the legislature to another city but retain the capital in Juneau, or simply to identify costs associated with those actions. Seven of those initiatives have been on the general election ballots. Residents, businesses, and elected officials in Juneau believe that continued economic vitality is dependent on maintaining its status as the capital.

A reason often cited by proponents of a capital move is that Juneau does not have sufficiently dependable or affordable transportation access. According to a 2002 Ballot Initiative supporting a capital move,

> The Legislative sessions will be much more accessible to the vast majority of Alaskans. The meetings will be on the road system, instead of in a location inaccessible by road and rail, and often closed to air travel. Because it is so expensive to travel to Juneau, many Alaskans have never visited our capital city [from Heese et al. 2003].

Since the 1960s, the CBJ has undertaken a number of efforts to maximize access to and from Juneau and to change a perception among some in Alaska that Juneau has insufficient transportation reliability to support the requirements of a capital and legislature. Many of these efforts, typically supported by FAA and funded in large part by the federal government, have been directed at improving aviation safety while at the same time increasing air service reliability into the Airport. For example, the use of state-of-the-art navigation systems has resulted in the development of special-use approach procedures and innovative departure procedures that enhance air carrier reliability under challenging weather, winds, and terrain constraints. CBJ continues to search for opportunities to facilitate access to the capital through enhancements to aviation and other modes of transportation.

1.2 Master Plan Environmental Assessment (EA) and EIS

Under provisions of NEPA and its implementing regulations, all federal actions fall into one of three categories: those normally requiring an EIS, those normally requiring an EA, and those that are normally categorically excluded from analysis (40 CFR §1508 et seq.). Some of the actions identified in the Master Plan, such as the expansion of the passenger terminal or paving of gravel

tiedown areas, are categorically excluded from the need for an EA, as long as no extraordinary circumstances exist (FAA 2006, 2004a). Other actions in the Master Plan required development of an EA to determine whether implementation would cause significant impacts to the human environment.

An EA was prepared and published in 2000 to evaluate some of the Master Plan recommendations (USKH 2000). The potential for numerous environmental impacts was disclosed in the Draft EA, but a number of concerns were raised by state and federal agencies, local citizens, and special interest groups about the magnitude of environmental impacts. Additional concerns were raised in comment letters, including the potential for significant impacts to wetlands, essential fish habitat, recreation, wildlife, area hydrology, and other resources. In response to these concerns, the FAA announced in June 2000 that a more comprehensive EIS would be necessary to thoroughly consider and evaluate project alternatives, environmental impacts, and mitigation options. This EIS is the product of the FAA's decision.

This EIS examines the effects of separate yet connected actions in four categories of needs that, if approved and funded, would likely be implemented in the next 2 to 15 years. Other projects recommended in the Master Plan are not ripe for implementation in the near term, and FAA has determined that environmental analysis for those actions would be premature if conducted at this stage. Those projects will be subject to future environmental analysis and regulatory decision. This EIS does, however, consider the cumulative impact of past, present, and reasonably foreseeable future actions, including those identified in the Master Plan for later implementation.

1.3 Description of Aviation Operations at JNU

This section documents the existing aviation operations and facilities at JNU. Figure 1-2 identifies most of the facilities described in this section. Because some proposed actions are linked to future increases in Airport operations, an independent assessment of future aviation demands is also included in this section. This information then serves as the baseline context by which the purpose of and need for actions can be validated, as described in the following section (Section 1.4).

Many of the factors establishing the need for safety improvements and additional facilities had not been sufficiently well-documented in either the Master Plan or the Draft EA. As a result, comments on the Draft EA and comments submitted during EIS scoping requested a more comprehensive explanation of aviation procedures, terrain obstructions and their effect on flight paths, design aircraft, navigational constraints, and other factors normally determined during an airport planning process. To provide this documentation, FAA authorized additional analyses of the relatively complex operational requirements at JNU. This section summarizes information and analyses from that effort.

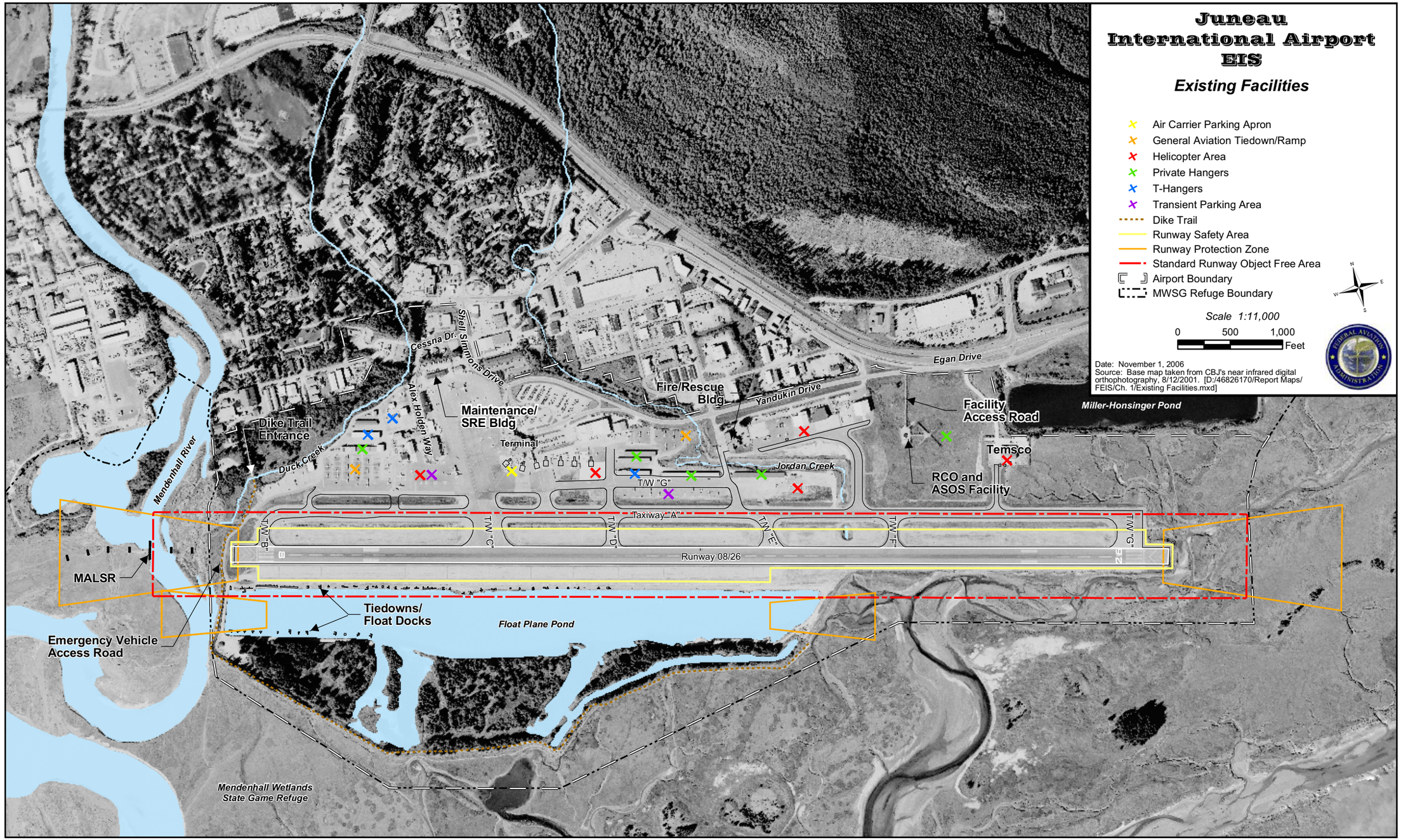

Figure 1-2. Existing facilities.

THIS PAGE INTENTIONALLY LEFT BLANK

1.3.1 AIRSIDE FACILITIES

For wheeled aircraft, JNU has a single runway that is 150 feet wide and 8,456 feet long. The runway is by far the longest one serving air carrier traffic in southeast Alaska. It is 956 feet longer than Ketchikan's runway, more than 1,950 feet longer than Sitka's or Yakutat's, and almost 2,460 feet longer than either Wrangell's or Petersburg's. Although Juneau's runway is the longest in southeast Alaska, other Alaska and northwest hub airports have even longer runways. For example, the three runways at Ted Stevens Anchorage International Airport range in length from 10,600 feet to 11,584 feet, and the two runways at Seattle-Tacoma International Airport are 9,425 feet long and 11,900 feet long.

JNU's runway is constructed of grooved asphalt with a gross weight-bearing capacity dependent on the main landing gear configuration, as follows:

- 75,000 pounds (lb) single wheel
- 200,000 lb dual wheel
- 340,000 lb dual tandem-wheel
- 500,000 lb double dual tandem-wheel

The runway is aligned in an almost east-west direction. Takeoffs to the west and landings from the east use Runway 26, while takeoffs to the east and landings from the west use Runway 08. It is estimated that 65% of the aviation operations use Runway 08 as either the departing or arriving runway. The Float Plane Pond also serves as a runway for water takeoffs and landings. It has the same alignment as the hard surface runway and is 4,900 feet long and 450 feet wide. Surrounding the main runway is a runway safety area (RSA), which is defined by the FAA as:

> A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot, or excursion from the runway [FAA 1989a: page 3]

The RSA at the Airport extends approximately 250 feet beyond the end of Runway 08 (at a width of approximately 232 feet), and approximately 289 feet beyond the end of Runway 26 (at a width of approximately 228 feet). The width of the RSA also varies along the lateral extent of the runway. It is approximately 362 feet wide for approximately 3,500 feet of runway length and is 500 feet wide for the remainder of the runway.

The airside facilities at the Airport consist of taxiways that provide access between the runway surfaces and the landside aviation use areas. Taxiway A and its six connectors provide a full, parallel taxiway system on the north side of the runway and connect the runway with the passenger terminal apron area, the Fixed Base Operators, and the General Aviation facilities.

There are several aircraft parking aprons at JNU. The passenger terminal apron and commercial-based aircraft apron are currently co-located north of Runway 08/26 and consist of approximately 16 acres of aircraft parking and movement area. This apron serves the air carrier and based air taxi

and general aviation fleet. A second apron, for general aviation, is located west of the terminal apron and provides roughly 3 acres of aircraft parking and movement space. Other general aviation aprons are located east of the terminal. In addition, there are numerous tenant helicopter-parking areas located adjacent to the parallel taxiway system (Taxiways A and H) and within the northeast quadrant of the Airport.

1.3.2 AIRPORT NAVIGATIONAL SYSTEMS

The Airport is situated in a mountainous region of southeastern Alaska. The mountainous terrain places limits on flight operations (e.g., weight limitations placed on some aircraft to ensure that these aircraft clear obstructions when departing). The FAA and JNU have been constantly improving facilities and seeking system improvements to increase the ability of the Airport to safely serve the passenger and cargo demand of the Juneau region. Instrument Flight Rule (IFR) air traffic within Alaska and enroute to Juneau is handled by the Anchorage Air Route Traffic Control Center, while traffic landing at and taking off from JNU is handled by the Juneau Air Traffic Control Tower. The control tower does not have radar service due to the mountainous terrain that surrounds the Airport. Therefore, aircraft arriving and departing JNU on an IFR flight plan must be handled in a non-radar environment. This increases the separation requirements between aircraft and results in a much slower flow of operations during peak periods.

An example of how terrain restricts operations at JNU is the offset approach to Runway 08. The rising terrain west of the Airport (i.e., Pederson Hill) negatively impacts or elevates the existing straight-in landing minimums to Runway 08, while the higher mountains on Douglas Island constrain the existing missed approach procedure to this runway. The Coastal Range and other terrain in the vicinity of Juneau limit and define both approach and departure procedures at JNU.

Alaska Airlines has developed, received FAA approval for, and implemented special-use approach and departure procedures for each end of the runway. These procedures are based on the existing aircraft fleet mix, maximum passenger and cargo load weights[3], and aircraft operational performance. The Runway 08 special-use departure procedures (i.e., the Lemon, Fox, and the Gastineau Channel departures) and Area Navigation (RNAV) GPS enable aircraft to safely operate to and from JNU during challenging atmospheric conditions. An important factor in considering changes to runways is that the special-use departure procedures depend on the brake-release point, which is the point at which an aircraft begins its departure run.

Because of the complexity and regional importance of aircraft flight into the Airport, a number of navigational aids are available to flight operations at JNU, as shown on Table 1-1.

3. Again, the close proximity of rising terrain in the vicinity of the Airport somewhat limits the amount of payload that can be carried by the commercial passenger and cargo aircraft that currently operate at JNU; details regarding these limitations are presented in Section 1.3.6 of this chapter.

Table 1-1. Navigational Aids at JNU

Navigational Aid	Location	Description
Very High Frequency Omnidirectional Range (VOR) with Distance Measuring Equipment (DME)	Sisters Island (24 miles southeast of JNU)	Provides course guidance to aircraft by way of a VHF radio frequency.
Tactical Air Navigation (TACAN) facility with DME	Sisters Island	Provides course guidance to aircraft by way of an ultra-high frequency radio.
Elephant Non-Directional Beacon	Sisters Island	Provides the initial approach fix for the NDB-1 approach to JNU.
Coghland Non-Directional Beacon	Coghland Island	Provides departure course guidance and final approach bearing for the NDB-1 approach, and missed approach procedure for NDB-1 and LDA-1 approaches.
Lead-In Lights (LDIN)	Engineer's Cut (west of JNU on Mendenhall Peninsula) and Battleship Island	Flashing lights near ground level established to illustrate the desired course to the runway threshold.
Juneau Airport Wind System	JNU	A series of anemometers on and off airport, Doppler wind profilers, and associated displays to support IFR operations.
Mendenhall Non-Directional Beacon	Engineer's Cut	Primarily for departing west-bound aircraft course direction.
Localizer Directional Aid with DME	Engineer's Cut	Provides distance information and approach path for exact alignment for arrivals from west.
Runway-specific Navigational Aids		
Runway 08	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), Visual Approach Slope Indicator (VASI), High Intensity Runway Lights, Global Positioning System (GPS)[1], and runway centerline lights.	
Runway 26	GPS[1], VASI, High Intensity Runway Lights, Runway End Identifier Lights (REIL), and runway centerline lights.	

[1] The GPS is used with sophisticated and redundant onboard systems to achieve Required Navigational Approach procedures at JNU (that reduce the minimums on Runway 26 to a 337-foot ceiling and 1-mile visibility). Alaska has equipped all of their B737-400/700/900 series aircraft with the necessary equipment to be certified and capable of flying these procedures.

FAA Advisory Circular 150/5060-5, Airport Capacity and Delay, describes three categories of ceiling and visibility minimums for use in both capacity and delay calculations. Visual Flight Rules (VFR) conditions occur whenever the cloud ceiling is at least 1,000 feet above ground level and the visibility is at least three statute miles. Instrument Flight Rules (IFR) conditions occur when the reported cloud ceiling is at least 500 feet, but less than 1,000 feet and/or visibility is at

least one statute mile, but less than three statute miles. Poor Visibility and Ceiling (PVC) conditions exist whenever the cloud ceiling is less than 500 feet and/or the visibility is less than one statute mile.

However, meteorological data obtained for JNU from the National Climatic Data Center for use in this study, has been categorized in more specific terms:

1. VFR-1 conditions: Ceiling equal to or greater than 1,000 feet above ground level and visibility is equal to or greater than 3 statute miles. These conditions occur at the Airport approximately 94.9% of the time annually.
2. VFR-2 conditions: Ceiling equal to or greater than 2,000 feet above ground level and visibility is equal to or greater than 4 statute miles. These conditions occur at the Airport approximately 90.1% of the time annually.
3. IFR-1 conditions (Special): Existing VFR-2 minimums to "special" non-precision approach minimums - ceiling less than 2,000 feet and/or visibility less than 4 statute miles, but ceiling equal to or greater than 700 feet and visibility equal to or greater than 1-statute mile. These conditions occur at the Airport approximately 6.9% of the time annually.
4. IFR-2 conditions (Special): Existing VFR-2 minimums to non-precision approach minimums - ceiling less than 2,000 feet and/or visibility less than 4 statute miles, but ceiling equal to or greater than 300 feet and visibility equal to or greater than 1-statute mile. These conditions occur at the Airport approximately 8.2% of the time annually.
5. Existing below minimums – ceiling less than 300 feet and/or visibility less than 1-statute mile. These conditions occur at the Airport approximately 1.7% of the time annually.
6. Potential IFR-3 conditions (Special): VFR-2 minimums to non-precision approach minimums - ceiling less than 2,000 feet and/or visibility less than 4 statute miles, but ceiling equal to or greater than 300 feet and visibility equal to or greater than 3/4-statute mile. These conditions occur at the Airport approximately 8.4% of the time annually.
7. Potential IFR-4 conditions (Special): VFR-2 minimums to Category I ILS minimums - ceiling less than 2,000 feet and/or visibility less than 4 statute miles, but ceiling equal to or greater than 200 feet and visibility equal to or greater than ½-statute mile. These conditions occur at the Airport approximately 8.9% of the time annually.

Operating conditions at JNU are rather complex, due to the changing weather and winds and the need for aircraft to maintain adequate clearance from terrain and other aircraft. Most aircraft are capable of operating into or out of JNU during VFR conditions. However, during IFR-only conditions, special procedures and equipment are required to ensure that aircraft maintain adequate clearances from the surrounding terrain. As noted earlier, Alaska Airlines has developed and received approval to use special approach and departure procedures when operating during poor weather conditions at JNU.

Meteorological data for JNU were obtained for this EIS from the National Climactic Data Center. Generally, according to these data, the winds in JNU are very variable, with both wind speed and direction influenced by the terrain. These types of conditions typically result in a need for exten-

sive aircraft maneuvering to align the aircraft for a landing, causing a shorter stabilized approach to the runway. Turbulence and wind shear are common in the vicinity of the Airport. Temperatures often hover near freezing throughout the winter, and the maritime location contributes to extensive icing conditions. The runway at JNU is classified as "wet" much of the time. According to a report prepared for JNU concerning possible operational impacts of RSA alternatives, the Airport vicinity experiences precipitation some 330 days per year (Bowers 2003). Approximately 98 inches of snow fall, mostly between November and March, but the wettest months are between August and December. An independent estimate of the percentage of time annually that the runway would be classified as "icy" cannot be derived from the available data, but Alaska Airlines has provided correspondence estimating that contaminated runway issues were encountered at the Airport approximately 20 days per year. All of these factors can result in long, fast landings (FAA 2002a).

When considering the published "public-use" approaches, the Airport can be expected to experience VFR conditions approximately 90.1% of the time, and to be below minimums approximately 9.9% of the time. The term "below minimums" indicates the percentage of time that the ceiling or visibility is so reduced that most operators cannot operate at JNU.

In consideration of the "special-use" approaches authorized for use only by Alaska Airlines, the Airport can be accessed under IFR conditions an additional 6.9% to 8.2% of available time, depending on which runway is utilized for landing. This means the Airport would be below minimums, for Alaska Airlines equipment, approximately 1.7% and 3.0% of the time annually. As a result, Alaska Airlines has improved its service reliability at JNU by being able to operate under special use approaches about 30 more days per year. However, weather conditions during about 11 days annually, are still so poor (below minimums) that the airline will experience flight cancellations.

1.3.3 AIRPORT FACILITIES

JNU maintains a number of existing facilities for a variety of tenants, ranging from private aircraft parking and storage to commercial aviation services and military operations. The following sections describe only those facilities for which an action has been proposed and evaluated in this EIS: snow removal resources, fuel farm access road, and general and commercial aviation parking and storage.

1.3.3.1 SNOW REMOVAL EQUIPMENT AND MAINTENANCE BUILDING

The existing Airport snow removal equipment and maintenance building, located immediately north of the commercial aircraft apron, covers approximately 5,200 square feet. It has received only minor repairs since it was originally built. The main building was designed to accommodate three airfield pieces of snow removal equipment: a grader, loader, and a plow truck. Since the early 1950s, the snow removal equipment and maintenance building has also served as a storage facility for some of the snow removal equipment, although currently, because of the space limitations, many pieces of equipment are left outside.

Another hangar, built in the 1940s and across the terminal from the snow removal equipment and maintenance building, serves as storage for sand, pavement de-icing/anti-icing compounds, and other materials and supplies. The sand storage hangar is also in a state of disrepair and is not designed to efficiently load sand or de-icing compounds. CBJ engineers observed during a visual inspection in July 2002 that the roof of the sand storage shed is leaking in so many places that it needs to be completely replaced rather than repaired, and that the structural steel supporting the building is rusted and unsound (Stone 2002a).

1.3.3.2 FUEL FARM ACCESS

There are presently two fuel storage facilities located on the Airport. The primary facility, owned by CBJ and which serves as the bulk storage fuel farm for the Airport, is located northwest of the SREF (see Figure 1-2). The tanks at this facility contain up to 120,000 of Jet A fuel, and 53,000 gallons of two different formulations of AvGas. The second fuel storage facility consists of one fuel storage tank owned by Costal Fuel located just west of Taxiway D-1 and north of Taxiway A. Access to and from the bulk storage fuel farm is not direct, and refueling tanker trucks are required to travel outside of the secure Airport environs on Alex Holden Way to reach the terminal aviation ramp.

1.3.3.3 AVIATION FACILITIES: EXISTING DEMAND AND PROJECTED NEEDS

Aircraft based at or using JNU can be classified as either rotary wing (i.e., helicopters) or fixed wing. When the Master Plan was prepared in 1996, there were 259 single-engine and multi-engine[4] fixed wing aircraft in need of land-based facilities. These, as well as transient aircraft, were accommodated west of the terminal area (West End General Aviation Area) and east of the terminal area (East End General Aviation Area). There were also 31 helicopters based at JNU, primarily supporting the growing tourism industry of southeast Alaska. These aircraft were parked near the facilities of their operators, including TEMSCO, Coastal Helicopters, and NorthStar Trekking.

Considering the demand and existing operations at that time, the Master Plan predicted the future need for facilities. To support the development of alternatives and the evaluation of impacts, the existing facilities, the existing facility deficiencies, and the projected future need have been reviewed for comparison to the Master Plan projections and to develop alternatives to the proposed actions. A comparison of the Airport operational forecast against FAA's Terminal Area Forecast (TAF) for 2004 was conducted for this EIS, which suggested that growth (in terms of both aviation operations and facilities to support that growth) would occur at a slower rate than that projected in the Master Plan (see FAA 2003a). Table 1-2 presents the forecast aviation facility needs for JNU through the year 2015, derived for this EIS and using Airport Waiting List data for storage space.[5]

4. Not including helicopter (rotary wing) aircraft, float planes, or air carrier jets.
5. Needs are based on review/compilation of the JNU Hangar Waiting list, February 2004.

Table 1-2. Existing and Projected Future Aviation Facility Requirements

Facility/Aircraft	Number Existing and Approved [1]	Additional Demand [2]	EIS Forecast (year 2015)	Projected Number Increase [3]
T-Hangars/Executive Hangars	80	16	116	36
Other Hangars (Large Private/ Commercial) [4]	9	1	16	7
Transient Aircraft Tiedowns	128	var. [5]	153	25
Based Aircraft Tiedowns	196	var. [5]	194	<2>
Helicopter FBO [6]	5	2	6 [7]	2 [8]
Based and Transient Helicopter Parking Sites	32	7	46 [7]	14

[1] Total number in use as of June 2004 as well as those in construction or already authorized but not yet in use.
[2] Only shows additional demand over and above value in previous column. Based on February 2004 Wait Lists. Recent data indicates greater demand exists for commercial and private hangars.
[3] Difference between demand in year 2015 vs. number existing and approved.
[4] Number of aircraft stored can vary by size and need, particularly for commercial hangars. For example, Wings hangar is approximately 20,000 sq/ft.
[5] Current tiedown needs vary according to available hangar space, seasonal operations, etc.
[6] FBO = Fixed Base Operator; typically includes hangar, building, access road, aircraft parking, vehicle parking, and operational area.
[7] Helicopter forecasts based on Master Plan, as FAA's Terminal Area Forecast does not track or project helicopter operations.
[8] Demand already exceeds Master Plan forecast.

Based on a comparison of the available facilities versus those currently needed, the Airport's existing aircraft facility deficiency is more pronounced than indicated in the Master Plan. One indicator of this deficiency is the lengthy waiting list for additional leases, and it is expected that the majority of future based aircraft will require some type of indoor storage. The greatest deficiency is the availability of executive hangars and T-hangars. The forecasts indicate that the space needed for T-hangars and executive/corporate hangars will increase from that currently available by almost 50% through the planning horizon (2015). As of March 2006, there were 29 people on the waiting list for an executive or T-hangar, and two companies on the commercial hangar waiting list (Mello 2006).[6] Currently, aircraft are parked in obscure places or with insufficient space that is cramped, thus, there is unnecessary aircraft movement and a lack of separation between aircraft and operational surfaces, all of which result in potential safety concerns.

In addition, relatively recent requests for accommodations for large aircraft and commercial operations have come from ExecuFlight, Empire Airlines, Federal Express, Alaska Flight Center, and the U.S. Forest Service (USFS; for one or more fire-suppression tanker planes). Cargo carriers

6. Individuals desiring hangar or tiedown space pay $25/ per year to remain on the waiting list. Because it can take many years on the waiting list to get a hangar or parking space even this fee may discourage some persons from registering.

have expressed an interest in expanding service to southeast Alaska but are limited by lack of parking space and maintenance facilities. Development of new commercial hangars and parking spaces for larger aircraft would allow them to expand their cargo services and operations at JNU.

Finally, some conflict has arisen at the Airport between rotary wing and fixed wing operators in places where they are stored in close proximity. JNU has identified a need to relocate the existing NorthStar operations to alleviate some of this concern. ERA has provided notification of their potential desire to move their entire fleet of helicopters (estimated at 14 and currently operating out of North Douglas Island) onto the Airport once space is available (Mello 2006). These actions would involve development of appropriate support facilities such as hangar, ramp space, parking, etc. TEMSCO would expand operations into the lease lot immediately west of their existing facility.

This EIS considered the spatial requirements to provide for all of the current needs plus forecasted needs. Approximately 35 acres are being used at JNU to accommodate aircraft: this area includes hangars and aircraft parking. Based on the existing demand for facilities and projected growth in demand for aviation services, the EIS study team estimates that approximately 9.1 additional acres will be needed. These estimates *do not* fully account for the supporting infrastructure to support such growth, such as additional taxiways, public access routes, snow storage, utilities, and vehicle parking. In accordance with standard airport design practices, some operational flexibility is also desirable to accommodate changing economic conditions or social needs or unanticipated requests for aircraft storage and parking. For example, during 2002, JNU was asked to provide parking and refueling facilities for forest-fire tanker aircraft.[7]

1.3.4 EXISTING AVIATION ACTIVITY

Over about the last decade (from 1990 through 2003) aviation activity at JNU has been relatively stable, but with an overall trend of increased operations. The peak year of aircraft operations was 1995, with 156,987 annual aircraft operations. The peak year for passenger activity was 1996, with 326,947 boarding (enplaning) passengers[8]. The annual fluctuations shown in Table 1-3 are attributed to the entrance and exit of carriers from the Airport as well as increased tourism to the Juneau area, possibly associated with the growth of the cruise ship industry in southeast Alaska. Total operations at JNU began a decreasing trend in 1999 which continued through 2003. However, air carrier operations in particular appear to be increasing and numbers of enplaned passengers are also on an upward track. Data compiled on a monthly and annual basis by the Airport suggest overall enplanements for Alaska Airlines in 2005 were up approximately 3% over 2004. Alaska Airlines has steadily increased operations for the past four years and is now operating at greater levels than in 2002, their previous peak year for operations at JNU.

7. While it may not be desirable to design airfield facilities around undocumented needs, it is prudent to incorporate some spatial flexibility into the design for unanticipated but justifiable future needs. However, expansion beyond the spatial estimates would necessitate the appropriate level of inter-agency review and NEPA documentation.)
8. Data identified by FAA in the 2004 TAF (showing historical activity levels).

Table 1-3. Actual Historical Activity (Annual Operations)

Year	Air Carrier	Air Taxi	General Aviation	Military	Total Operations	Total Enplaned Passengers[1]	
						TAF	ACAIS
1990	7,204	79,890	36,044	1,098	124,236	236,056	294,827
1991	6,519	72,525	34,987	1,098	115,129	220,715	322,000
1992	8,771	82,818	33,881	990	126,460	262,601	351,936
1993	6,869	86,723	38,741	1,061	133,394	241,073	326,701
1994	8,164	99,658	38,847	1,108	147,777	263,485	344,500
1995	7,972	112,798	34,995	1,222	156,987	294,964	373,712
1996	7,574	109,054	31,079	737	148,444	326,947	382,191
1997	7,198	98,048	30,626	590	136,462	314,721	379,083
1998	7,585	107,069	35,760	650	151,064	283,107	383,118
1999	7,774	106,165	33,642	763	148,344	280,986	377,559
2000	8,391	103,418	32,916	906	145,631	287,900	393,905
2001	9,175	103,383	30,389	684	143,631	294,265	402,117
2002	9,398	91,143	29,125	724	130,390	266,184	353,001
2003	9311	90529	27844	815	128,499	279,731	366,200
2004	9514	98,565	22874	870	131,823	286,259	377,505

Air taxi includes rotor-winged tourism.
Source: Historic operations and enplanements from 2005 FAA Terminal Area Forecast www.apo.data.faa.gov
[1] Two columns of enplanement data are shown. The TAF column is presented so as to be consistent with the database used to forecast travel demand (see Table 1-4) and future facility needs (see Table 1-2), derived in part from the types of aviation operations listed in the other columns (GA, Air Carrier, etc.). However, the Air Carrier Airport Information System (ACAIS) database in the far right column is also shown because, unlike TAF, it includes unscheduled air charter/air taxi in the enplanement total. As a result, ACAIS enplanement totals are typically substantially higher than the TAF enplanements.

1.3.5 Forecast for Future Aviation Activity

The Master Plan relied on a seasonal forecast methodology to estimate aviation demand through the year 2015. This method was applicable to Juneau because of the large variation in seasonal aviation activity, primarily due to summer tourism. As shown on Table 1-4, the Master Plan analysis predicted there would be over 620,000 enplanements, translating to more than 1.24 million passengers in the year 2015. The annual growth rate of approximately 2.6% in passenger numbers, a rate generally consistent with national trends, was specifically noted in the Master Plan as associated with the anticipated continued growth in tourism. The Master Plan projected that aircraft operations would increase 8.6% between 2000 and 2015, from 161,711 to 175,624. In reality, neither passenger numbers nor aircraft operations have met the forecasts presented in the

Master Plan. For example, in 2000 there were 145,631 aircraft operations, approximately 10% fewer than projected, while the difference between forecast and actual passenger numbers was even greater.

Table 1-4. Comparison of Air Travel Demand Forecasts

	2005		2010		2015	
	TAF	**MP**	**TAF**	**MP[1]**	**TAF**	**MP**
Annual Operations						
Air Carrier	9,751	9,306	10,811	10,454	11,871	11,602
Air Taxi/Commuter	93,596	116,224	101,265	119,705	108,934	123,186
General Aviation	28,447	37,954	29,955	38,895	31,464	39,836
Military	815	1,000	815	1,000	815	1,000
Total	**132,609**	**164,484**	**142,846**	**170,054**	**153,084**	**175,624**
Average Annual Day	363	451	391	466	419	481
Peak Month	20,926	25,957	22,533	26,825	24,139	27,693
PM/AD	675	837	727	865	778	893
Peak Hour	104	129	113	134	120	138
Annual Enplanements						
Air Carrier	269,011	317,831	308,025	366,821	347,039	415,811
Air Taxi	32,881	156,544	41,094	180,673	49,307	204,802
Total	**301,892**	**474,375**	**349,119**	**547,494**	**396,346**	**620,613**

Sources: JNU Master Plan (MP), Table 3-Q and FAA 2004 Terminal Area Forecast (TAF), April 2004
[1] Extrapolated from 2015 and 2005 forecasts in Master Plan.
Note: Enplanements (passengers boarding aircraft) represent approximately half of total passengers

The Master Plan inaccurately forecasted *continuous* growth in passenger traffic and aircraft operations. This variance is not unexpected for airports the size of Juneau, since aviation activity often fluctuates and would be particularly responsive to fluctuations in a seasonally based market heavily influenced by tourism. Forecasts are prepared to reflect average annual growth rates, and therefore, rarely match actual activity levels. While the overall trend has been upward since 1995, it has not been a constant increase and during the past few years the trend has been downward.

To assess whether the Master Plan forecasts were based on acceptable assumptions and reflect appropriate long-term trends at JNU, this EIS also considered another forecast tool, the FAA's Terminal Area Forecast (TAF). Each year the FAA prepares a TAF for more than 300 airports in the U.S. These forecasts are prepared for FAA purposes such as "developing its program plans

and … assessing the level of resources needed to meet anticipated demand for its services."[9] While FAA also indicates that these forecasts could be used by local airport authorities in airport planning activities, the information is not prepared at a sufficiently refined level (such as by fleet mix or peak periods) to enable their use in evaluating environmental impacts at an air carrier airport.

The FAA has issued guidance concerning forecast comparisons. For instance, if an airport's forecast (from, say, a Master Plan) deviates by 10% or more from the TAF, or affects timing and/or cost of development in the ALP, then differences must be reconciled between FAA and the airport.[10] As can be seen by comparing aviation operations totals in Table 1-4, the 2003 TAF forecast for JNU operations is approximately 20%, 16%, and 13% less than the Master Plan forecast of operations in years 2005, 2010 and 2015, respectively. The passenger forecasts differ by about 36% in those same years. However, upon close review, it was determined that the TAF operations forecast did not accurately account for seasonal and recreational aircraft. (This is probably because the TAF is based on assumptions reflecting conditions at the national level, and Juneau's seasonal aviation operations differences are not typical of most airports.) As a result, the FAA agreed that the Master Plan forecasts could be incorporated into the EIS planning and analysis for limited uses considered very specific to JNU, such as float plane and helicopter facilities. The TAF forecasts were used to project other facility needs considered in this EIS, such as hangar and tiedown spaces.

1.3.6 Fleet Mix and Critical Aircraft

While the TAF serves as the basis for determining a number of the spatial facility needs considered in the EIS, the aircraft fleet mix also has an influence on development requirements. The Master Plan anticipated that Alaska Airlines would remain the dominant carrier at JNU, and the fleet mix forecast reflected that assumption. For this EIS, the fleet mix determinations are especially important, because they dictate the design requirements and options available to provide standard RSA.

A re-evaluation of the aircraft fleet mix was conducted for this EIS. The re-evaluation included a review of the aircraft presently in a given carrier's fleet, as well as anticipated acquisitions through the year 2015. In the re-evaluation, conducted in 2002, Alaska Airlines' fleet was expected to continue to be dominated by the B-737 series of aircraft, with both the B737-200 and B737-400 models currently employed at JNU. However, in 2002, Alaska Airlines took delivery of their newest version, the B737-900. Notably, the Master Plan identified the B737-900 as the future critical aircraft at JNU from a planning perspective, which could potentially require the greatest runway operational needs and place the greatest demand on terminal and landside facilities.

9. TAFs - Fiscal Years 1992-2005, FAA, July 1992, Preface page
10. FAA Order 5100.38B provides guidance for approval of aviation forecasts. Paragraph 428(a) indicates that "FAA should review sponsor forecasts to ensure they are appropriate and provide an adequate justification for the airport planning and development…..When the forecast is different from the TAF (differences of 10 percent and more, or any difference that affects timing and/or cost of development in the National Plan of Integrated Airport System/Airport Layout Plan), differences must be resolved with APO-110 and/or the sponsor."

Despite the forecast for fleet changes, aircraft landing data compiled by the Airport shows that, through 2006, Alaska Airlines is still relying heavily on the B737-400 for Juneau operations and use of the B737-900 is still limited. For example, 1.2% of Alaska Airlines landing operations at JNU in 2005 were conducted by B737-900 aircraft, with an even smaller percentage (1.0%) in 2006.[11]

The B737-900 aircraft would require the most runway length for both landing and takeoff, considering the obstruction-limited operating weights in effect at JNU. However, based on Alaska Airlines' maximum stage length requirements (i.e., the distance from Juneau to Seattle) for both the B737-400 and B737-900 aircraft, the B737-400 would continue to be the critical aircraft at JNU for takeoffs, while the B737-900 would be the future critical aircraft for landings. Previous documentation from Alaska Airlines indicated their desire to use the aircraft at JNU during the summer peak tourist season (Alaska Airlines 2002a). According to Airport staff, the B737-900 was being used several times a week during the 2006 summer schedule (Mello 2006). As an element of the JNU critical aircraft evaluation, it was also necessary to consider the potential for new carriers entering the JNU market that may employ other aircraft and serve other cities.

The Airport's 2000 Economic Impact Study determined that of the top 20 passenger markets, 8 cities are located outside Alaska: Seattle, Portland, Phoenix, Los Angeles, San Francisco, Las Vegas, Spokane, and San Diego (McDowell Group 2000). Service is currently provided by Alaska Airlines to all of these cities via connection or stopover in Seattle, but the assessment of other carriers was based on three assumptions:

1. That a new carrier would be flying from a non-Alaskan city other than Seattle, since Alaska already serves that market.
2. That a direct flight from another non-Alaskan city would have to come from a major hub or gateway for an air carrier, so as to offer easy connections for people traveling to Juneau.
3. That demand for air travel from that city to Juneau would exist.

Of the cities identified in the top 20 passenger markets, listed in Table 1-5, Los Angeles, Phoenix, and San Francisco all represent international gateways, in addition to acting as major airport hubs serving the rest of the country. Phoenix and Los Angeles have approximately the same number of passengers traveling to Juneau, and more than San Francisco. Because most major carriers have a presence in Los Angeles and that city is a reasonable flight distance from JNU, Los Angeles was considered in evaluating alternative city-pairs. It is instructional to recognize, however, that none of the originating cities from outside Alaska provide as much as 12% of the traffic carried by Alaska Airlines from Seattle. These numbers suggest that at this time, there is not sufficient passenger demand to support direct flights to Juneau from any of the city pairs evaluated.

Aside from passenger demand considerations, the relevance of evaluating city-pairs and selecting Los Angeles is to consider whether a direct flight from another city, further than Seattle or Anchorage, would alter the selection of the design aircraft. Any changes in or additions to the design aircraft may affect minimum runway lengths or other facilities' requirements at JNU.

11. Data from monthly aircraft landing statistics for major commercial carriers compiled by JNU staff.

Table 1-5. Total Passengers/Cargo by City Pair (1999)

City	Passengers Arrive/Depart	Cargo (lbs) Arrive/Depart
Seattle, Washington	87,350	2,672,887
Anchorage	85,880	2,903,425
Sitka	27,098	842,483
Ketchikan	24,845	1,407,454
Hoonah	16,682	339,473
Haines	14,379	330,268
Skagway	13,560	160,933
Portland, Oregon	10,220	NA
Gustavus	9,968	58,681
Fairbanks	9,780	3,947
Los Angeles, California	6,440	NA
Phoenix, Arizona	6,440	NA
Petersburg	6,296	377,106
San Francisco, California	5,330	NA
Las Vegas, Nevada	4,470	NA
Kake	4,329	149,972
Angoon	4,235	97,284
Spokane, Washington	4,190	NA
Yakutat	4,040	706,063
San Diego, California	3,740	NA

Source: JNU, Economic Impact Study, CBJ, December 2000.
NA = Not Applicable

Based on the carriers currently serving Los Angeles and the dominant aircraft fleet within those carriers, it is likely that one of the B737-series aircraft would be used to provide service to Juneau. For this analysis, it was assumed that the Los Angeles carrier would be American Airlines, using a B737-700 aircraft. Los Angeles is approximately 1,600 nautical miles from Juneau; therefore, a conservative stage length of approximately 1,750 nautical miles was selected for the runway length evaluation.

Table 1-6 illustrates the runway takeoff length requirements for various types of aircraft operating under different conditions for each runway use configuration. Using the assumptions and aircraft performance criteria detailed in Table 1-6, it was determined that a direct flight from Juneau to Los Angeles is technically feasible for a passenger-only flight, using Runway 08 for departures.

Table 1-6. Runway 08/26 Takeoff Length Analysis

Aircraft/ Runway Data	Temperature (ºF)	Estimated Mission Weight (lb)	Obstruction-Limited Weight (lb)	Maximum Take-off Weight (lb)	Runway Length Required (feet)
Boeing 737-400 (Alaska Airlines)					
Runway 08[1]	68° F	138,500[2][3]	140,600[4]	143,500[4]	7,806[4]/8,065[4]
Runway 08[6]	68° F		141,500[4]	143,500[4]	8,456[4]
Runway 26[1]	68° F	138,500[2]	128,700[4]	143,500[4]	---[5]/6,663[4]
Runway 26[6]	68° F		130,700[4]	143,500[4]	8,246[4]
Boeing 737-200C (Alaska Airlines)					
Runway 08[1]	68° F	118,000[8]	118,600[4]	125,000[4]	6,600[7]/7,057[4]
Runway 08[6]	68° F		122,400[4]	125,000[4]	8,356[4]
Runway 26[1]	68° F	118,000[8]	111,000[4]	125,000[4]	6,600[7])/6,234[4]
Runway 26[6]	68° F		112,900[4]	125,000[4]	7,650[4]
DC-9-33F (Evergreen Airlines*)					
Runway 08	66° F	85,000[8]	99,400[9]	108,000[10]	4,000[11]/6,700[12]
Runway 26	66° F	85,000[8]	96,000[9]	108,000[10]	4,000[11]/4,600[12]
Runway 08	10° F	85,000[8]	105,700[9]	108,000[10]	4,000[11]/6,900[12]
Runway 26	10° F	85,000[8]	93,500[9]	108,000[10]	4,000[11]/4,700[12]
Learjet 35A (Business Jet Operator)					
Runway 08	66° F	---	18,300[9]	18,500[10]	5,431[13]
Runway 26	66° F	---	18,300[9]	18,500[10]	5,431[13]
Runway 08	5° F	---	18,300[9]	18,500[10]	4,735[13]
Runway 26	5° F	---	18,300[9]	18,500[10]	4,735[13]
Boeing 737-700 (American Airlines Services Option)					
Runway 08	68° F	132,000[14]	132,400[9]	153,500[10]	4,600[15]/4,600[16]
Runway 26	68° F	132,000[14]	123,300[9]	153,500[10]	4,600[15]/4,100[16]
Runway 08	14° F	132,000[14]	132,600[9]	153,500[10]	4,600[15]/4,600[16]
Runway 26	14° F	132,000[14]	124,900[9]	153,500[10]	4,600[15]/4,100[16]
Boeing 737-900 (Alaska Airlines)					
Runway 08[1]	68° F	159,000[2]	170,300[4]	174,200[4]	7,285[4]/8,354[4]
Runway 08[6]	68° F		170,800[4]	174,200[4]	8,456[4]

Table 1-6. Runway 08/26 Takeoff Length Analysis, continued

Aircraft/ Runway Data	Temperature (ºF)	Estimated Mission Weight (lb)	Obstruction-Limited Weight (lb)	Maximum Take-off Weight (lb)	Runway Length Required (feet)
Runway 26(1)	68° F	159,000(2)	166,100(4)	174,200(4)	7,285(4)/7,942(4)
Runway 26(6)	68° F		167,400(4)	174,200(4)	8,391(4)

Key for Table 1-6

(1) Standard Departure Procedure.
(2) Estimated required mission weight to Seattle tabulated by Barnard Dunkelberg & Company (BDC) and reviewed by Alaska Airlines.
(3) Alaska Airlines provided additional estimated mission weight data indicating that approximately 60% of the B737-400 departures were conducted at or below 117,000 lbs.
(4) Data tabulated by Alaska Airlines. (For the B737-400 aircraft, Alaska Airlines operates the 3C-1 engines at 3B-1 and 3B-2 power settings, which increase the required runway length).
(5) A Runway 26 departure at JNU cannot be conducted at the estimated maximum mission weight due to obstruction limitations within the departure surface.
(6) Improved Climb Procedure.
(7) Runway lengths tabulated by BDC using the JT8D-17 engine for standard day temperature (i.e., 59°) for estimated mission weight as specified in Boeing 737-100/737-200 Airplane Characteristics-Airport Planning/ September 1988.
(8) Estimated mission weights to Seattle tabulated by BDC and reflect a maximum payload/all cargo configuration.
(9) Obstruction-limited weights were tabulated by Jeppesen OpsData.
(10) Maximum take-off weights were obtained from Jane's Aircraft Upgrades/Jane's All the Worlds Aircraft Volume II Seventh Edition, 1999-2000 and various Boeing aircraft planning manuals.
(11) Runway lengths were tabulated by BDC using the JT8D-7 engine for standard day temperature (i.e., 59°) for the estimated mission weight as specified in DC-9 Airplane Characteristics For Airport Planning/June 1984. Evergreen Airlines currently operates this aircraft with JT8D-9 engines, which provide increased runway performance capability.
(12) Runway lengths were tabulated by BDC using the JT8D-7 engine for standard day temperature (i.e., 59°) for the obstruction-limited weight as specified in Boeing DC-9 Airplane Characteristics For Airport Planning/ June 1984. Evergreen Airlines operates this aircraft with JT8D-9 engines, which provide increased runway performance capability.
(13) Runway lengths were tabulated by Bombardier Aerospace personnel utilizing the ASE TFE731-2 engine for the specified temperatures and the obstruction-limited weight as specified in the Airplane Flight Manual.
(14) Estimated mission weights to Los Angeles were tabulated by BDC in consideration of a passenger-only configuration. For comparison, an approximately 150,000 lb. mission weight would be required to accommodate the maximum zero fuel weight, consisting of both passengers and cargo.
(15) Runway lengths were tabulated by BDC using the CFM56-7B22 engine for standard day temperature (i.e., 59°) for the estimated mission weight as specified in Boeing 737-600/-700/-800/-900 Airplane Characteristics for Airport Planning/December 2000.
(16) Runway lengths were tabulated by BDC utilizing the CFM56-7B22.
* Evergreen Airlines is no longer operating but DC-9 aircraft are still used in SE Alaska for cargo hauls; the analysis was retained for comparative purposes in the EIS.

No additional cargo could be carried on such a flight. However, departures on Runway 26 would be severely weight restricted because of the terrain obstructions, resulting in a reduction to the maximum passenger payload of approximately 8,700 lb. The weight restrictions at JNU are caused by terrain that obstructs departures from both runways, and these weight restrictions could severely limit the potential for long-distance commercial routes from Juneau. As distances increase, more of the total allowable weight must be allocated to fuel required for the longer transport; correspondingly, less weight is available for passengers and cargo payload. As noted previously, these weight restrictions reduce the potential economic viability of a Los Angeles-Juneau

direct connection using the B737-700 aircraft. Comments received during EIS scoping suggested potential opportunities for Juneau to establish direct tourist charter flights to Mexico or European cities, but weight restrictions at JNU reduce the practicability of such ventures as flight distances from JNU increase.

In June 2003, representatives from Air China met with Airport staff to discuss use of JNU as an alternate between Beijing and Vancouver (deLaBruere 2003). No additional information was provided as to when or how often JNU would be used if designated as an alternate, or what type of aircraft would be served. "Alternate" designation typically signifies use of the Airport for emergency purposes or when the primary destination is not open to traffic due to weather or other conditions. In this scenario, it is likely that even if JNU were selected as an alternate destination, Air China would land at the Airport infrequently. The FAA does not consider designation or use of an airport as an alternate a basis for the operational activity and airfield needs assessment.

Table 1-6 indicates that the aircraft type *currently* scheduled for use year round and placing the greatest demand on departure runway length at JNU is the B737-400. (As noted earlier, Alaska has begun using the B737-900 for several flights per week at JNU during the busy summer season.) The B737-400 requires approximately 8,065 feet to take off with a full, obstruction-limited weight on Runway 08 using a standard departure procedure. Approximately 900 additional pounds of payload can be added (representing less than 1% difference) if the improved climb procedures are used during takeoff and the full length of existing runway is available. The improved climb procedure can add somewhat more allowable payload to Runway 26 departures for this aircraft, approximately 2,000 lb or 1.5% additional payload, but the extra payload and procedure necessitate almost 1,600 extra feet of runway (from 6,663 feet to 8,246 feet). The B737-200C generally requires less runway length for departures, although its payload can also be increased when improved climb procedures are used.

Alaska Airlines' improved climb procedures at JNU permit the operator to carry more payload weight, typically in the form of cargo but potentially in the form of passengers. However, the improved climb procedure also requires more runway length to achieve a safe takeoff and climb airspeed, due to variables associated with engine and flap settings that are specific to Alaska Airlines' fleet of aircraft. According to data provided by Alaska Airlines, less than 10% of the B737-400 departures use the improved climb procedures, and the vast majority of these operations are conducted on Runway 08. During the course of the EIS preparation, the FAA requested actual takeoff weights for Alaska Airlines aircraft departing from JNU during 2001. FAA was interested in comparing cost and safety benefits of maintaining or providing additional runway for this procedure versus environmental impacts and costs associated with changes to available runway length (as a result of RSA development). However, correspondence from the airline suggests the information is not readily available in a form that is appropriate for such comparative analysis (Alaska Airlines 2002b).

These examples and Table 1-6 highlight the tradeoffs that are considered when evaluating alternative runway lengths in Chapter 2 of this EIS. In general, the more runway available the more weight (which translates to payload, i.e., revenue to the Airline and other benefits to the community such as reliability of Airline service) an aircraft can carry, up to its obstruction limited weight. Shorter runways do not necessarily preclude or restrict the operation of commercial

aircraft at JNU, as long as the aircraft's required mission weight can still be accommodated. However, incrementally reduced runway lengths can incrementally reduce payload for a specific aircraft, at some point affecting operational viability at the Airport.

Table 1-7 illustrates the pavement landing runway length requirements for JNU aircraft using the maximum landing weight configurations.

Table 1-7. Runway 08/26 Landing Length Analysis (Existing Condition), JNU

Aircraft: Runway and (Runway Landing Conditions	Flaps (°)	Maximum Landing Weight (lb)	Estimated Mission Weight (lb)	Runway Length Required (feet)
Boeing 737-400 (Alaska Airlines)				
Runway 08 & 26 (good)	40°	121,000(1)	138,500(2)	4,750(3)
Runway 08 & 26 (FAR wet)	40°	121,000(1)	138,500(2)	5,625(3)
Runway 08 & 26 (medium)	40°	121,000(1)	138,500(2)	6,100(3)
Runway 08 & 26 (poor)	40°	121,000(1)	138,500 (2)	7,850(3)
Boeing 737-200C (Alaska Airlines)				
Runway 08 & 26 (dry)	30°	107,000(4)	118,000(2)	4,700(5)
Runway 08 & 26 (wet)	30°	107,000(4)	118,000(2)	5,600(5)
DC-9-33F (Evergreen Airlines*)				
Runway 08 & 26 (dry)	40°	99,000(6)	85,000(2)	5,300(7)
Runway 08 & 26 (wet)	40°	99,000(6)	85,000(2)	6,200(7)
Learjet 35A (Business Jet Operator)				
Runway 08 & 26 (66° F.)	20°	15,300(8)	18,300(2)	3,010(9)
Runway 08 & 26 (5° F.)	20°	15,300(8)	18,300(2)	2,925(9)
Boeing 737-700 (American Airlines Service Option)				
Runway 08 & 26 (dry)	30°	129,200(10)	132,000(2)	4,800(11)
Runway 08 & 26 (wet)	30°	129,200(10)	132,000(2)	5,600(11)
Boeing 737-900 (Alaska Airlines)				
Runway 08 & 26 (good)	40°	146,300(1)	159,000(2)	5,450(12)
Runway 08 & 26 (FAR wet)	40°	146,300(1)	159,000(2)	6,200(12)
Runway 08 & 26 (medium)	40º	146,300(1)	159,000(2)	7,250(12)
Runway 08 & 26 (poor)	40º	146,300(1)	159,000(2)	9,700(12)

Table 1-7. Runway 08/26 Landing Length Analysis (Existing Condition), JNU, continued

Aircraft: Runway and (Runway Landing Conditions	Flaps (°)	Maximum Landing Weight (lb)	Estimated Mission Weight (lb)	Runway Length Required (feet)

Key for Table 1-7

(1) Landing weight as specified by Alaska Airlines (e-mail correspondence January 2007).
(2) Estimated mission weights were tabulated by Barnard Dunkelberg & Company.
(3) Runway length estimated for the FEIS using data provided by Alaska Airlines for the Boeing 737-400 (CFM56-3B-2 engines). The calculated length includes the 60% buffer as specified for landing by FAR Part 121.195 (Alaska Airlines 2007).
(4) Maximum landing weight as specified in Boeing 737-100/737-200 Airplane Characteristics-Airport Planning/ September 1988.
(5) Runway lengths were tabulated by Barnard Dunkelberg & Co. utilizing the JT8D-17 engine for maximum landing weight as specified in Boeing 737-100/737-200 Airplane Characteristics-Airport Planning/September 1988.
(6) Maximum landing weight as specified in Boeing DC-9 Airplane Characteristics For Airport Planning/June 1984.
(7) Runway lengths were tabulated by Barnard Dunkelberg & Co. utilizing the JT8D-7 engine for maximum landing weight as specified in Boeing DC-9 Airplane Characteristics For Airport Planning/June 1984.
(8) Maximum landing weights were tabulated by Bombardier Aerospace personnel utilizing the ASE TFE731-2 engine.
(9) Runway lengths were tabulated by Bombardier Aerospace personnel utilizing the ASE TFE731-2 engine for the specified temperatures utilizing the Airplane Flight Manual.
(10) Maximum landing weight as specified in Boeing 737-600/-700/-800/-900 Airplane Characteristics for Airport Planning/December 2000.
(11) Runway lengths were tabulated by Barnard Dunkelberg & Co. utilizing the CFM56-7B22 engine for maximum landing weight as specified in Boeing 737-600/-700/-800/-900 Airplane Characteristics for Airport Planning/ December 2000.
(12) Runway length was estimated for the FEIS using data provided by Alaska Airlines for the Boeing 737-900. The calculated length includes the 60% buffer as specified for landing by FAR Part 121.195. (Alaska Airlines 2007)

* Evergreen Airlines is no longer operating but DC-9 aircraft are still used in SE Alaska for cargo hauls; the analysis was retained for comparative purposes in the EIS

In addition to this general planning data, which is derived from aircraft flight manuals and Alaska Airline procedures, Boeing also provides advisory landing information to assess the impacts of reduced braking action caused by slippery runway conditions (also referred to as contaminated runways). Contaminated runway conditions can be caused by heavy rain, snow, slush, ice, or combinations of these conditions. According to correspondence and data provided by Alaska Airlines, these conditions are encountered at JNU approximately 20 days per year and should be considered in the assessment of required runway length for the RSA alternatives analysis. As can be seen from Table 1-7, both the Boeing 737-400 and 737-900 aircraft require considerably more runway when landing on contaminated runways (designated as "Poor" runway landing condition in Table 1-7).[12]

Tables 1-6 and 1-7 also highlight the performance of the B737-900, which has been considered as a future critical aircraft from a planning perspective for runway requirements and for space on terminal and landside facilities. If the decision were based only on the full obstruction-limited

12. Estimated landing lengths vary depending on braking coefficient, flap settings, and a number of other factors.

operating weights, the B737-900 would require more runway takeoff and landing length at JNU than any of the existing commercial-use aircraft. However, for the estimated mission aircraft mission weight from Juneau to Seattle, the B737-400 still requires more runway length (7,806 feet) for departures than the B737-900 (7,285 feet). The B737-900 places considerably greater demand for landing runway length than any other aircraft, approximately 1,850 feet more than the B737-400 aircraft in poor (contaminated) pavement conditions.

Based on this re-evaluation of the Master Plan critical aircraft analysis, current fleet use at JNU, and airline projections for the future fleet mix, both the B737-400 and the B737-900 will be used as the critical aircraft for analysis of JNU runway length and RSA needs. The B737-900 aircraft is within Alaska Airlines' fleet and may be used more frequently in the future at JNU, with little or no modification required of the Airport infrastructure (gates, ramps, etc.). According to discussions with airline representatives, the B737-900 aircraft is equipped and certified to conduct the special Required Navigational Approach procedures at JNU and could be approved to conduct the Fox departure procedure. Therefore, the B737-900 would be the current and future critical aircraft for landing operations at JNU, while the B737-400 is the current and future critical aircraft for takeoff considerations.

1.3.7 WILDLIFE HAZARD MANAGEMENT

Airports that accommodate commercial service air carriers are required to maintain an operating certificate in accord with FAR Part 139 to show that the Airport is properly and adequately equipped and able to conduct safe operations, pursuant to the Federal Aviation Act of 1958. One of the potential requirements of certification is for an airport conduct an ecological study/wildlife hazard assessment (WHA) and, if necessary, establish a wildlife hazard management plan (WHMP). Based upon the results of the WHA, aviation activity at the Airport and other factors, the FAA Administrator must determine whether a WHMP is needed, which addresses the responsibilities, polices, and procedures necessary to reduce wildlife hazards. FAR Part 139.337(a) requires preparation of a WHA when any of the following events occurs on an airport:

- An air carrier aircraft experiences a multi-bird strike or engine ingestion.
- An air carrier aircraft experiences a damaging collision with wildlife other than birds.
- Wildlife of a size or in numbers capable of causing an event noted above are observed to have access to any flight pattern or movement.

In accordance with 14 CFR Part 139.337(d), JNU is responsible for development and implementation of a WHMP, including the need to take immediate measures to alleviate wildlife hazards whenever they are detected. JNU has a WHMP under which it operates in compliance with FAA requirements. After completing an updated WHA in 2001, the Airport submitted a revised WHMP in April 2002. Because some actions proposed in the WHMP could have a significant affect on the environment the FAA decided to include an analysis of those actions and alternatives within this EIS.

1.4 PURPOSE OF AND NEED FOR ACTION

The CEQ regulations implementing NEPA require that an EIS specify the underlying Purpose and Need to which an agency is responding in proposing actions and alternatives (40CFR§1502.13). The following sections document the Need to improve those facilities and the stated Purpose for actions proposed by the Airport and FAA. Actions proposed to satisfy the Need are described in Section 1.5.

1.4.1 RUNWAY SAFETY AREA (RSA)

The RSA dimension for Runway 08/26 is defined as a 500-foot-wide rectangular area centered upon the runway and extending 1,000 feet beyond each runway end. These dimensions are based on the type of design aircraft using the Airport, specifically the wingspan and approach speed of the design aircraft[13]. According to a study conducted by FAA's Office of Safety Oversight, of more than 500 aviation incidents occurring primarily in the U.S. (but also in U.S. Trust Territories as well as in Guam and Panama), approximately 93% of aircraft overshoots come to rest within 1,000 feet of the runway's end, and approximately 83% of undershoots occurred within 1,000 feet of the landing threshold. Of the veer-offs from the runway for which a distance was recorded, approximately 88% of the aircraft stayed within 250 feet of the runway centerline (FAA 1990).[14]

The FAA conducted a comprehensive study of the instrument and VFR operational safety at JNU in 1995 (FAA 1996). This study was directed by Congress following three aircraft accidents on the instrument approach at JNU. Between 1983 and the time the study was conducted, 32 aviation accidents had been documented in the greater Juneau area, and nearly half of those accidents occurred immediately in the Airport vicinity.

This EIS reviewed aviation accident/incident data for the Airport vicinity contained in the National Transportation Safety Board records; approximately 19 accident reports were identified to have occurred at or near the Airport since 1982[15]. Sixteen of the accidents (84%) involved general aviation aircraft, two accidents involved FAR Part 135 air taxi operators, and one accident involved Alaska Airlines, which is certified as a FAR Part 121 air carrier operator. The Alaska Airlines accident was described only as a firm landing, and no injuries were reported. Approximately 64% of all the accidents were attributed to the landing, descent, or approach phase of flight; 11% occurred in the takeoff phase; and 17% occurred in the maneuvering phase of flight. The remaining 8% of accidents occurred during aircraft taxi or parking maneuvers. It was determined that three of these accidents involved undershoots of the landing threshold, and at least two of the accidents included a lateral veer-off from the runway.

13. All of the B737-series aircraft using or projected to use JNU fall within the wingspan category of Group III and approach category of C, thereby defining the 1,000 feet x 500 feet RSA dimensions.
14. An Overshoot occurs when an aircraft runs off the end of the runway during landing rollout or takeoff roll. An Undershoot occurs when an aircraft touches down prior to the runway landing threshold. A Veeroff occurs when an aircraft runs off the side of the runway during landing rollout or takeoff roll (FAA 1990).
15. Based on review of National Aviation Safety Data Analysis Center website on August 27, 2001 and November 10, 2003. See http://nasdac.faa.gov/.

The RSA should be cleared, drained, and graded. Under dry conditions, this area should be capable of supporting occasional aircraft that could overrun, underrun or veer off the runway without causing structural damage, as well as supporting aircraft fire-fighting and rescue equipment. Although the runway at JNU was originally built to meet then-current runway design standards, the RSA dimension standards were changed nationwide in the mid-1980s. In order to meet federal special grant conditions associated with the 1997 runway rehabilitation, the RSA must be brought into compliance with FAR Part 139. Figure 1-3 highlights the existing RSA deficiencies by illustrating how standard safety area would be developed using existing runway alignment and threshold locations. The deficiencies associated with the runways at JNU are:

- Width of the RSA along the extent of the runway – For a length of 3,500 feet along the east portion, the current RSA extends only 112 feet south from the centerline and is therefore 138 feet too narrow on the south side. This deficiency on the east end exists due to the slope of the land south of the runway and estuarine channels adjacent to the runway. The RSA width is also non-standard on the north side of the runway where Jordan Creek intersects the RSA. Existing lateral RSA and lateral RSA deficiencies are highlighted on Figure 1-3.
- Runway 08 RSA – None of the RSA extending beyond the end of Runway 08 meets the requisite 500-foot width dimension, and most of this RSA is too narrow by approximately 268 feet. This RSA is also merely 250 feet long, about 750 feet short of standard. Figure 1-4 illustrates the RSA deficiency at the beginning of Runway 08.
- Runway 26 RSA – The current RSA extends 289 feet beyond the end of the runway (a deficiency of 711 feet), and none of this meets the full 500-foot-width requirement; most of it is too narrow by approximately 272 feet. Figure 1-5 highlights the RSA deficiency at the beginning of Runway 26.

The deficiencies described above encompass the Need: to bring the Airport into compliance with FAA's standards for RSA. FAA believes it is important that this be accomplished without adversely affecting existing or future airport operational capability. As was described in previous sections, aircraft at JNU operate in a complex environment due to the surrounding terrain and variable weather conditions. Therefore, the ability of aircraft to operate safely in light of complex procedures and during difficult weather conditions is another factor that must be considered in the Airport's operating capability. Maintaining the existing and future operational capability is essential to maintaining commercial air service at the Airport and to the economic welfare of the Juneau area. Alaskans (and particularly residents of the Juneau area and nearby vicinity) rely on air transportation to access other areas in Alaska and the nation. A reduction in operational capability, particularly for commercial passenger and freight service, would adversely affect the transport of goods to and from the area and the ability of residents, tourists, legislators and staff, and business travelers to come to and leave from Juneau.

The Purpose of improving RSA is to bring the Airport into compliance with FAA's standards. In doing so, the Airport shall not be required to reduce the length of the runway or declare the length of the runway to be less than the actual pavement length in order to meet the FAA requirements for RSAs. Improvement of the RSA will meet FAA's statutory responsibility to ensure that the

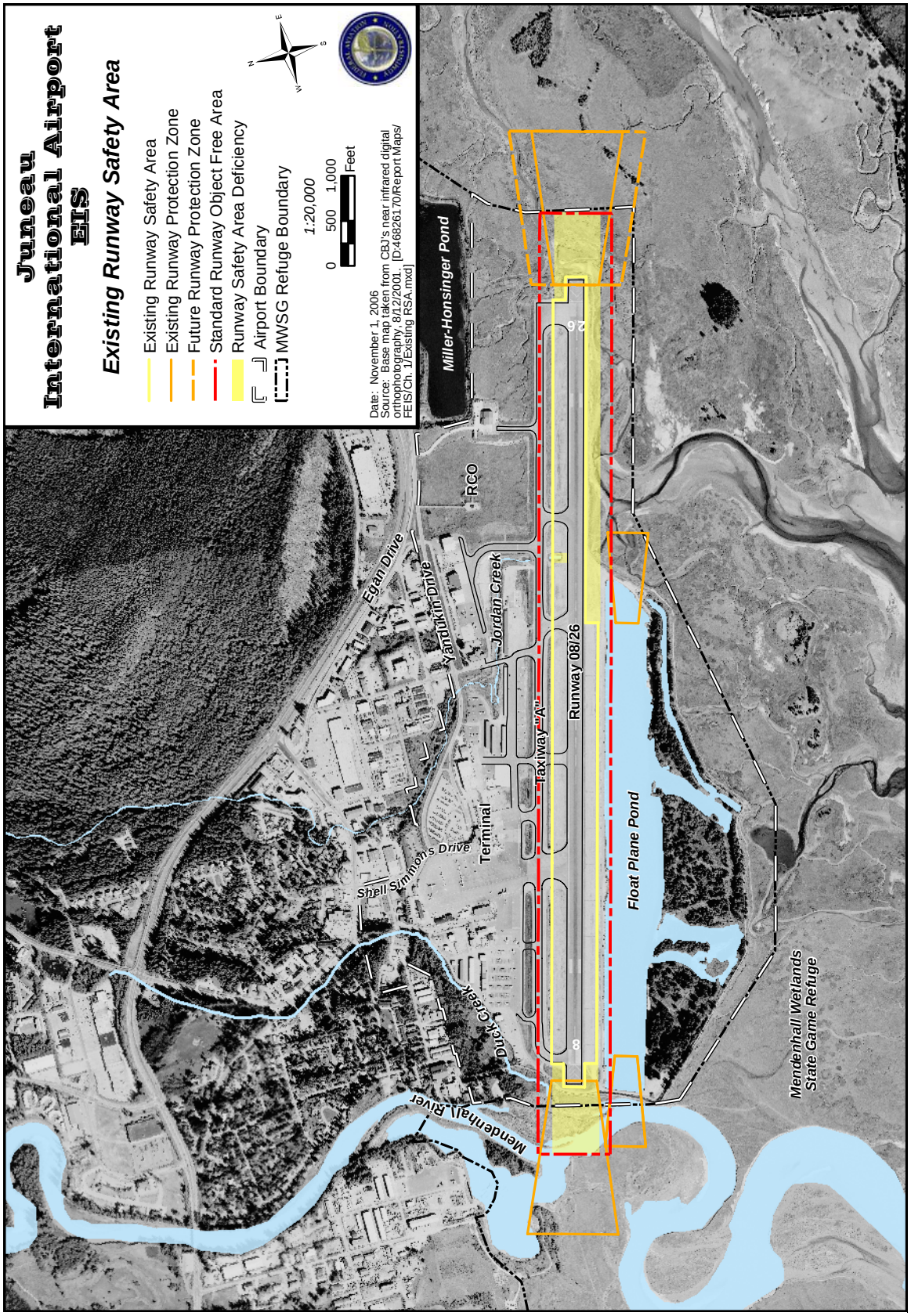

Figure 1-3. Existing Runway Safety Area deficiencies.

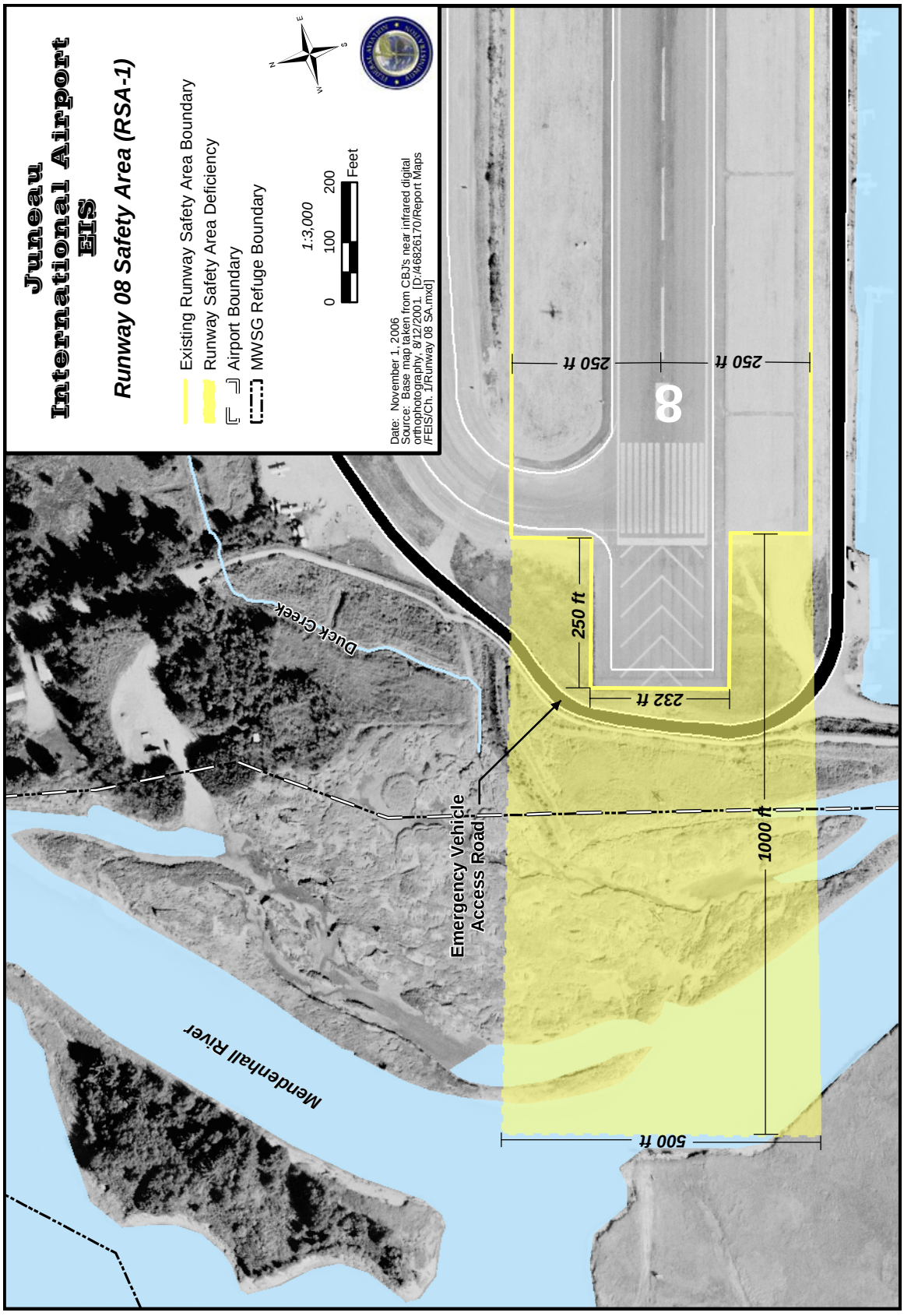

Figure 1-4. Runway 08 Safety Area for Alternative RSA-1.

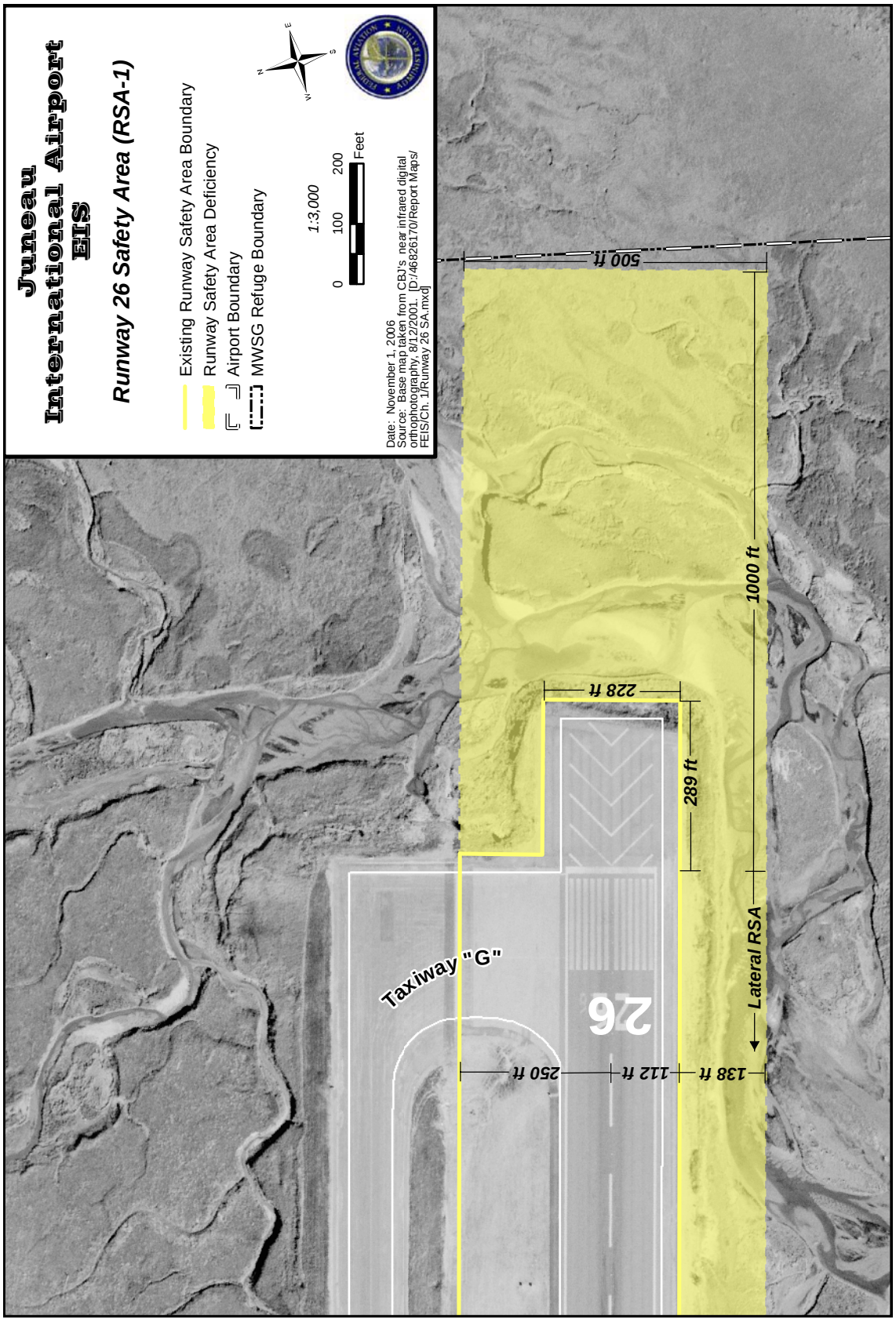

Figure 1-5. Runway 26 Safety Area for Alternative RSA-1.

safe operation of the Airport and runway system is the highest aviation priority (49 U.S.C. 47101(a)(1)). Public Law 109-115, which became law on November 30, 2005, also requires RSAs meeting FAA standards at certificated airports.

1.4.2 IMPROVE NAVIGATIONAL ALIGNMENT

JNU is situated in a mountainous region of southeast Alaska, creating limitations on flight operations: they must safely clear terrain obstructions. Beyond the challenges created by the mountains, Juneau's weather and ground conditions further complicate flight operations. Fog, rain, snow, ice, and various combinations of these are consistently common issues that must be considered when operating aircraft at JNU. When the Airport is below minimums, some aircraft are not capable of landing or taking off, creating delays and, in some cases, flight cancellations. On an annual basis, this affects accessibility to the Airport by as many as 464 hours per year for aircraft relying on public-use procedures, and up to 262 hours per year for Alaska Airlines using special approach procedures approved for IFR conditions. As a result, flight schedule reliability, particularly for commercial traffic, is reduced, which has clear economic and social impacts. Additional approach lighting is needed to improve pilot alignment and create safer landing conditions for all aircraft.

The Purpose of installing additional approach lighting systems is to improve pilot alignment with the runway and improve transition to visual references for landing at JNU at night and during poor weather conditions. This project would help to fulfill FAA's statutory responsibility to ensure that the safe operation of the Airport and runway system is the highest aviation priority.

1.4.3 IMPROVE AND INCREASE AVIATION FACILITIES

Section 1.3 described existing facilities at JNU and provided forecasts for aviation activity through the year 2015. The Purpose of improving and adding additional aviation facilities is to efficiently meet current and reasonably foreseeable Needs for snow removal resources, access to the fuel farm, and aircraft parking for general aviation users. All of these actions support FAA's statutory responsibility to ensure that the safe operation of the airport and runway system is the highest aviation priority. The following sections document the Needs to improve those facilities and the stated Purpose for actions proposed by the Airport.

1.4.3.1 SNOW REMOVAL EQUIPMENT AND MAINTENANCE FACILITY (SREF)

The current SREF used for snow removal equipment does not meet current building codes or worker safety codes. Because of space limitations, many pieces of equipment are stored outside. (The Airport now has 19 pieces of FAA-authorized snow removal and maintenance equipment, valued at approximately $6.5 million [USKH 2000 and 2004]). The heavy equipment that is stored outside is subjected routinely to freeze-up and long-term damage, even though it is covered with tarps whenever possible. Because the snow removal equipment has numerous sensitive electronic controls that fail more rapidly when exposed to inclement weather, the Airport staff must spend substantial time each winter performing tasks such as thawing engine blocks on the heavy equipment.

This work delays airfield operations and other time-critical activities, such as keeping the runway surface cleared to a condition suitable for landing and takeoff during wet snow (a condition experienced frequently during the winter in Juneau), and mobilizing on short notice in order to maintain the runway and taxiways in safe condition.

The sand storage hangar, located across the terminal from the SREF, is also in a state of disrepair. This facility was not designed as a storage area for efficient loading and unloading of sand, nor was it constructed to hold airfield chemicals, such as de-icing compounds. JNU needs a larger SREF that is designed to shelter equipment and reduce mobilization time for snow removal operations, and a new sand storage building designed for such use. Co-location of the SREF with the sand shed would also increase operational efficiency.

1.4.3.2 Fuel Farm Access

A fuel storage site must offer good landside access for tankers delivering fuel to the site, as well as good airside access for supply trucks that fuel aircraft. In addition, the associated access roadway system must be designed to accommodate the maneuvering requirements of fuel trucks, and the operation of these vehicles should be segregated as much as possible from other users of the Airport. A new access route between the bulk fuel farm and the general aviation ramp has been proposed by JNU to create safer traffic conditions by keeping fuel supply trucks off public thoroughfares. A new fuel farm access road would also increase airfield efficiency because of the shorter distance trucks would travel to reach the aviation ramp. The new road would provide better security for the Airport and fuel supply trucks, as all fuel loading and transport would take place within the bounds of the Airport fence.

1.4.3.3 Aircraft Parking and Storage

Table 1-2 illustrates the existing deficiencies in parking space and hangar facilities for general aviation aircraft, particularly the shortage of T-hangars and itinerant parking. At the present time, aircraft at JNU are parked in obscure places or with insufficient space, resulting in unnecessary aircraft movement and inadequate separation between aircraft and operational surfaces. These conditions increase the risk of accident and human injury. Projections of existing and future aviation demands for JNU are also presented in Table 1-2. Additional space would be needed to accommodate necessary taxiways, public access, snow storage areas, utilities, administrative and office space, curbing, etc.

The Master Plan for JNU identified a number of development objectives to improve operational efficiency and improve ground safety while increasing facilities to meet demand. Also, recent data from JNU indicate some additional demands for large aircraft tiedowns and storage that may not have been projected in the Master Plan (JNU 2002a and 2002b). Overall, objectives for facility development include:

- Relieve facility and parking congestion.
- Separate small, general aviation hangars from commercial operations, including new and relocated helicopter operators from fixed wing operators where possible.

- Accommodate increased demand for new and growing Fixed Based Operations.
- Accommodate new commercial operators and expansion of existing commercial operations.
- Develop new itinerant[16] parking positions and facilities for large aircraft (i.e., private business jets, fire-fighting tanker aircraft, military aircraft, etc.).
- Incorporate some facility flexibility into the design and development to allow for shifting needs as they develop during the planning period, including necessary infrastructure to accommodate the above developments.

Therefore, additional facilities and apron space are needed to satisfy existing private and commercial aviation demands and to accommodate the projected growth in aviation needs, as described in Section 1.3.5. These developments would reflect FAA's responsibility to undertake airport construction and improvement projects that increase the capacity of facilities to accommodate passenger and cargo traffic to the maximum feasible extent, so that safety and efficiency increase and delays decrease (49 U.S.C. 47101(a)(7)).

1.4.4 Wildlife Hazard Management Plan (WHMP)

In April 2001, a WHA was completed for JNU (USDA 2001). The general conclusion of the U.S. Department of Agriculture (USDA) assessment was that hazards continue to exist at JNU. The number of bird strikes and the abundance of wildlife in the vicinity of the Airport necessitate the implementation of an updated WHMP. In accordance with FAR Part 139, an updated WHMP is necessary to implement habitat modifications and management actions that will reduce potential for aircraft collisions with wildlife. Update of the WHMP will meet FAA's statutory responsibility to ensure that the safe operation of the Airport and runway system is the highest aviation priority (49 U.S.C. 47101(a)(1)). JNU has published a revised WHMP (CBJ 2002) and identified species and problem areas presenting a hazard to aviation. This EIS evaluates the potential environmental consequences associated with implementing the actions proposed in that WHMP and alternatives.

1.4.4.1 Problem Species

Of the 59,196 wildlife strikes to U.S. civil aircraft reported between the years 1990 and 2004, 97.5% involved birds, and most of the remainder involved mammals[17] (FAA 2005a). Strikes were reported at 1,442 airports, including 1,258 domestic airports and 184 airports in foreign countries used by aircraft based in the U.S. There were 450 reported wildlife strikes to civil aircraft in

16. "Itinerant" apron areas are typically designed to accommodate a variety of aircraft types and sizes. For design efficiency, it is desirable to segregate the small aircraft and large aircraft parking positions. It's appropriate for a large aircraft parking position to be available for potential use by either a private jet or military aircraft. It should also be noted that there are scheduled or frequent itinerant operators (e.g., daily cargo carriers) that typically lease space for a designated itinerant parking position on the apron.
17. Starting in 1995, the FAA in coordination with USDA has published a series of reports on wildlife strikes to civilian aircraft. The purpose of these reports is to obtain objective estimates of the magnitude and nature of the national wildlife strike problem for civil aviation. The information provided in the following two paragraphs may be found in the eleventh and most current report, covering the 15-year period from 1990 through 2004 (FAA 2005a).

Alaska during this period, of which 96% were bird strikes. Of the strikes reported with specific information concerning relevant factors (about 75% of those reported), approximately two-thirds of the bird strikes occurred during the day, about 50% of the strikes occurred when the aircraft was on landing approach or landing roll, and 39% occurred during take-off and climb. In other words, the vast majority of strikes took place when the aircraft was on or near the airport and at a relatively low altitude. These numbers have been confirmed by additional FAA analysis, which documents that 61% of the bird strikes occurred less than 100 feet above ground level, 82% occurred at less than 1,000 feet above ground level, and 89% of the strikes took place when aircraft were less than 2,000 feet above the ground.

Gulls, doves, raptors, blackbirds and starlings, and waterfowl were the most commonly struck bird groups during the strike period evaluated for FAA's eleventh report on the data (although it should be noted that only about 42% of the reported bird strikes provided information on the type of bird, and about half of that number contained sufficient information so as to identify species). The FAA has estimated losses from wildlife strikes during the 15-year study period to be 533,092 hours of aircraft down time, valued at over $214 million. Furthermore, using strike reporting data from three major airlines and three major U.S. airports, the FAA calculated that somewhere between 10% to 21% of all wildlife strikes were officially reported, indicating the reported economic and other losses are greatly underestimated (FAA 2005a). It is easy to understand how much damage can occur, considering that a 2-lb gull can produce a force equal to approximately 8,000 lb when it collides with an aircraft traveling at 180 knots. A gull or goose or other large bird can destroy an aircraft engine when ingested at sufficient speed. Obviously, the consequences of an aircraft/mammal strike can be even greater.

Unfortunately, the impacts of wildlife strikes to aircraft are not measured just in dollars or lost aircraft time. In the worst situations, wildlife collisions with aircraft have resulted in the loss of human life. A tragic example occurred in Anchorage, Alaska in 1995, when a Boeing E-3 collided with a flock of Canada geese on departure, causing the aircraft to crash and killing 24 people on board. According to FAA's most recent summary of strike data, wildlife strikes have killed more than 194 people and destroyed over 163 aircraft worldwide since 1988 (FAA 2005a).

Wildlife species identified in the WHMP as presenting the greatest threats to aviation at JNU are birds with flocking tendencies or of relatively large size, such as waterfowl, gulls, shorebirds, corvids (crows and ravens), and raptors (especially bald eagles). Swans, herons, and geese represent a substantial hazard due to their large body mass. Mammals such as deer and otter may also present an extreme hazard, although they are not present at JNU in the numbers of most bird species. Juvenile animals and migratory species may also pose higher risks for aviation because of their general unfamiliarity with the Airport environment. Proposed management of wildlife hazards focuses on (but is not necessarily limited to) the above species. Further monitoring efforts could identify other species of concern.

There have been a number of wildlife strikes to aircraft approaching or departing JNU. FAA's strike database includes 44 documented strike reports for JNU during the years 1990 through 2005 (Cleary 2006). Except for one reported bat strike, all of the strikes involve birds, including a variety of species such as herons, owls, sandpipers, sparrows, ducks, ravens and geese. One example of a major event occurred on August 17, 2004. An Alaska Airlines B-737-400 was struck

on departure from Runway 26 by a medium-sized bird at approximately 1,000 ft elevation. According to the Wildlife Strike Report, the bird was ingested into one of the engines. No passenger or crew injuries were reported but the aircraft was out of service for inspection and repair for approximately 24 hours.

1.4.4.2 PROBLEM AREAS

JNU is surrounded on three sides by the Mendenhall Wetlands State Game Refuge (the Refuge), a well-known staging and wintering area for migratory waterfowl and shorebirds. The intertidal wetlands and open marine waters found on the Refuge create habitats that attract most species of wildlife considered to present hazards to JNU aviation. Some of the habitat of the Refuge extends onto JNU property, and JNU also has other natural and man-made habitats that attract wildlife. The most attractive of these areas includes intertidal wetlands, a brackish water pond, stands of spruce-hemlock forest, and two freshwater salmon streams that empty into the intertidal wetlands. In addition, grassy areas bordering aircraft movement areas (e.g., the runway and taxiways) support earthworms, which attract large numbers of gulls, crows, and shorebirds at times. Man-made habitats that attract wildlife include the Float Plane Pond, the swales, and areas along the edges of the runway and parallel taxiway that pond water.

1.4.4.3 WILDLIFE HAZARDS

Specific hazards identified in the WHMP and subsequent observations documented by JNU staff include:

- Birds attracted to worms, insects, mice, new grass, and other forage in vegetated areas near runways and taxiways.
- Birds attracted to wetlands on the west portion of Airport property, including forage and stranded and dying fish that collect in pools.
- Birds attracted to wetlands west of Airport property at the mouth of Duck Creek.
- Birds feeding on fish staging at the mouth of Duck Creek and on carcasses collecting in this area.
- Birds attracted to surface water conveyances on Airport property.
- Birds attracted to swales that collect rainwater/runoff.
- Use of airfield equipment as bird perches, particularly for eagles but also other species.
- Ducks and waterfowl feeding on Float Plane Pond vegetation.
- Migration of fish into the Float Plane Pond and attracting feeding birds and otter.
- Birds feeding on fish at the mouth of Jordan Creek.
- Forest habitat providing both perch and nest sites for eagles and corvids and wildlife cover for increasing populations of deer and otter.

1.5 SUMMARY OF PROPOSED ACTIONS

The following sections briefly summarize the actions proposed by JNU to meet the Purpose and Need identified in Section 1.4. Each of these actions is described in detail in Chapter 2. See Figure 1-2 for locations of major Airport facilities.

1.5.1 INCREASE RUNWAY SAFETY AREA (RSA)

To bring the Airport into compliance with FAA standards for RSA, CBJ has proposed a number of additions to the RSA and limited changes to the runways. These actions are described in Chapter 2 as Alternative RSA-5E[18] and are summarized here.

The location of the Runway 08 landing threshold would be displaced 120 feet east, although departures from that runway would begin at their current brake-release point. Runway 26 would be extended 520 feet to the east to preserve existing runway length. Each runway would have 600-foot undershoot protection and 1,000-foot RSA for overruns. These modifications in conjunction with the implementation of declared distances standards would meet standards for runway safety area.

To enable aircraft to taxi to and from the new Runway 26 threshold, the parallel taxiway would be extended 520 feet east. The Runway 08 MALSR leading to the west end approach would also have to be relocated east about 120 feet because of the threshold shift to the east. Approximately 850 feet of fill would be necessary on the east end of the runway for the threshold relocation and construction of the RSA, including a 4:1 fill slope, and 230 feet of new disturbance would be added to the west runway end to complete the RSA. The Float Plane Pond access road, emergency vehicle access road, Dike Trail and Duck Creek would be relocated. A new Airport boundary would be surveyed, since these facilities would project into the Refuge, and the perimeter security fence installed between the road and the Dike Trail.

The lateral RSA for about 3,500 feet south of the runway would be widened an additional 138 feet to meet FAA's 500-foot width requirements for RSA. Finally, RSA would be extended out over Jordan Creek on the north side of the runway, between the runway and Taxiway A.

1.5.2 INSTALL MALSR ON RUNWAY 26 APPROACH

To improve navigational alignment with Runway 26, FAA has proposed to install a medium-intensity approach lighting system with runway alignment indicator lights (MALSR). The MALSR is a series of lights on standards that align with the runway centerline. Depending on modifications to the runway threshold and extension of RSA, the Runway 26 MALSR would consist of up to 14 light support towers spaced at 200-foot intervals, extending 2,400 feet east of

18. CBJ's proposed action for RSA improvement is different from that described in the DEIS. Alternative RSA-5E was developed in response to public and agency comments about impacts to the Mendenhall RIver. See Section. 2.2.2.

the threshold. Access to the MALSR for maintenance would require a permanent road or other means, whichever method has least impact on the estuarine habitat while still facilitating maintenance.

1.5.3 DEVELOP AIRPORT FACILITIES

Section 1.4.3 describes the need to improve some facilities at JNU to improve operational efficiency, increase airfield capacity, and accommodate future growth in aviation activity. The following sections describe the actions proposed by the Airport to satisfy those needs.

1.5.3.1 SNOW REMOVAL EQUIPMENT AND MAINTENANCE FACILITY (SREF)

JNU has proposed to construct a new SREF, co-located with a new sand and chemical storage building. Estimates developed for the Master Plan indicated that approximately 4.5 acres of land would be needed for the entire facility, which would include a 44,000 square foot building for inside storage of and maintenance on vehicles and equipment as well as loading and storage areas for de-icing compounds. A separate, 12,100-square-foot sand storage building would be constructed adjacent to the SREF. The remainder of the area would be needed for parking, equipment turnaround and changeovers, outside loading and unloading, and snow storage. However, CBJ recently published a new conceptual design for the SREF that indicates about 6.7 acres is necessary to accommodate the SREF buildings, parking, and access roads (USKH 2004). JNU's preferred location for the SREF is in the Northeast Development Area.

1.5.3.2 FUEL FARM ACCESS ROAD

JNU has proposed to construct a new road that leads directly south from the fuel farm to the main Airport facilities. This roadway would directly link the bulk fuel storage facility with the aircraft operating area. The proposed roadway alignment would require installation of a bottomless arch culvert in Duck Creek.

1.5.3.3 AIRCRAFT PARKING AND STORAGE NEEDS

- Recognizing the current facility deficiencies at the Airport and relying on aviation demand estimates generated for this EIS, as illustrated on Table 1-2, JNU has proposed to develop the following facilities for general aviation through the year 2015:
- Additional transient aircraft parking and tiedowns in the northeast portion of the Airport.
- Additional aircraft parking and tiedowns for locally-based aircraft in the northwest portion of the Airport.
- Thirty-eight new T-hangars and executive hangars, primarily in the northwest portion of the Airport.
- Two new, fixed-base helicopter operations in the northeast portion of the Airport.
- Expansion of existing commercial operations in the northeast portion of the Airport, including 7 new commercial or corporate hangars and/or fixed base operations.

1.5.4 Implement a Revised Wildlife Hazard Management Plan (WHMP)

JNU completed a WHMP for the Airport that recommends a number of actions to address the specific issues identified in Section 1.4.4.3 (CBJ 2002a). The habitat modifications described in the WHMP and incorporated into Alternative WH-1 of this EIS, include:

- Removing grass from infield areas and installation of artificial turf or asphalt.
- Filling the wetlands located near the mouth of Duck Creek on Airport property to above high-tide level.
- Filling the wetlands on the Refuge, west of Runway 08 and extending north past the mouth of Duck Creek, to above high-tide level.
- Relocating the mouth of Duck Creek to the north.
- Converting surface water drainage ditches to drainage pipes.
- Removing swales and areas that pond water along the edges of the runway and parallel taxiway by filling, leveling, grading, and covering the areas with artificial surface material or asphalt.
- Removing vegetation from the Float Plane Pond by dredging it to a depth of at least ten feet in all waters south of the main Float Plane Pond and in the main portion of pond where vegetation exists. (Dredging to greater depths would be conducted as necessary to provide materials for new construction projects associated with the RSA, facilities, etc.).
- Removing the dam at the mouth of Jordan Creek.
- Consultation with wildlife experts concerning the woodlands adjacent to the Float Plane Pond to determine if their presence increases or decreases risk to aviation operations, and potentially subsequent action to remove all or a portion of the trees.

Since publication of the WHMP and in coordination with development of this EIS, Airport staff has continued to evaluate and refine the habitat modifications under consideration. The actions currently proposed by JNU that would alter wildlife habitat incorporate a subset of activities from the alternatives described in Section 2.9 of this EIS. The proposed action for wildlife hazard management includes:

- Filling and grading of the wetlands located near the mouth of Duck Creek on Airport property to a free-draining surface above high-tide level at about the level of the proposed Northwest Development Area.
- Selective dredging and filling of the wetlands on the Refuge, west of Runway 08 and extending north past the mouth of Duck Creek, starting above high-tide level to create a free-draining surface to the Mendenhall River.
- Relocating the mouth of Duck Creek to a more-northerly discharge location into the Mendenhall River.

- Removing swales and areas that pond water along the edges of the runway and parallel taxiway by filling, leveling, and grading the areas to approximately the level of the RSA.
- Altering vegetation management techniques and increased hazing in the infield areas.
- Removing vegetation from the Float Plane Pond by dredging it to a depth of at least ten feet in all waters south of the Float Plane Pond and in the main portion of pond where vegetation exists. (Dredging to greater depths would be conducted as necessary to provide materials for new construction projects associated with the RSA, facilities, etc.).
- Removing the dam at the mouth of Jordan Creek.
- Implementation of an adaptive hazard management approach to the Float Plane Pond woodlands. The Airport would monitor, evaluate and document hazards along with the effectiveness of wildlife hazard control techniques (such as those described in Section 2.5.1.2) to assess whether additional habitat modifications may be needed in the future. The following habitat modifications would be implemented:
  - Installation of a deer fence along the north side of the dike, from the existing fence on the west end to the existing fence on the east end, and
  - Removal of corvid nests as needed to prevent re-establishment of crow rookeries in the woodlands.

This EIS considers the environmental impacts of implementing the WHMP, with the incorporation of some modifications and refinements identified by JNU subsequent to preparation of the Plan. Other options for hazard control are identified and packaged into a range of alternatives to meet the need for aviation safety. As stated earlier, JNU's current proposed action for wildlife hazard management at the time of EIS preparation, as incorporated into the applications for environmental permits, consists of elements from all of the alternatives considered in Section 2.9.

1.6 Regulatory Authority and Responsibilities

The FAA is the lead federal agency responsible for preparation of this FEIS and for issuing a final Record of Decision concerning the proposed airport development actions. FAA will consider the proposed actions and alternatives presented in this EIS and issue a single Record of Decision that includes a decision for each of the identified needs.

Four other agencies with permitting authority and/or resources management responsibilities are cooperating with the FAA in the development of this EIS. Details concerning the responsibilities of the FAA and the cooperating agencies, as well as other agencies consulted during development of the EIS, are presented in the following sections.

1.6.1 Federal Aviation Administration (FAA)

The FAA has statutory authority to ensure that the safe operation of JNU and the nation's airport and airway system is the highest aviation priority (49 U.S.C. 47101(a)(1)). In carrying out its responsibilities, the FAA is responsible for ensuring that its actions are in compliance with NEPA.

The FAA's Airports Program is responsible for analyzing the environmental impacts and consequences of a proposed federal action involving airports. FAA is also responsible for ensuring that airport development projects provide for the protection and enhancement of natural resources and the quality of the environment (49 U.S.C. 47101(a)(6)). As the lead federal agency, the FAA is responsible for supervision of preparation of the EIS (40 CFR §1501.5(a)) and for requesting the participation of cooperating agencies (40 CFR §1506.6). FAA will issue a Record of Decision (ROD) documenting which actions are to be implemented following analysis of the actions and alternatives presented in this EIS.

There are other decisions FAA must make in conjunction with these actions. The Airport Layout Plan must be updated to reflect changes, and JNU must receive FAA approval of the Airport Layout Plan. FAA will also ensure that proposed development will not adversely affect safe and efficient use of airspace. Full approval of the revised WHMP depends on FAA's approval of the updated Airport Certification Manual. FAA and the Airport will develop an airport capital improvement program to financially assist the Airport with implementation of those actions determined to be eligible for FAA funding through the federal grant-in-aid and the use of passenger facility charge funds. Other possible FAA determinations and approvals concerning specific changes to the Airport and airspace are listed in Table 1-8 at the end of this chapter.

Under the Department of Transportation Act (49 U.S.C. Subtitle I, Section 303), the FAA must consult with the landowners of Section 4(f) properties and officials having jurisdiction over those properties[19]. These properties can include significant publicly-owned park lands, recreation areas, wildlife or waterfowl refuges, and historic sites. Potential Section 4(f) properties must be identified and described, and potential impacts to them disclosed, in the EIS. If one or more of the actions considered in this EIS would require the use of Section 4(f) lands, the FAA must demonstrate that there is no feasible and prudent alternative unless impacts are determined to be de minimis. In addition, the action(s) must include all possible mitigation plans to minimize harm resulting from the use of Section 4(f) lands. FAA will consult with the officials having jurisdiction over the Section 4(f) properties when making determinations of use, impact, significance, and mitigation measures.

1.6.2 COOPERATING AGENCIES

Four agencies are cooperating for this EIS, pursuant to the CEQ regulations implementing NEPA (40 CFR §1501.6). This regulation provides that the lead agency may request any other federal, state, or local agency, or Native American Tribe that has special expertise or regulatory jurisdiction with respect to the issues, to participate as a cooperating agency (40 CFR §1508.5). Memorandums of Agreement (MOAs) have been developed between FAA and these agencies to outline their respective roles and responsibilities. The following sections provide a brief description of

19. "Section 4(f)" represents an outdated reference to the recodified and renumbered Department of Transportation Act. The correct citation is Section 303c of 49 U.S.C., but this EIS will continue to refer to Section 4(f) because of it's common recognition by other agencies and parties.

each cooperating agency's regulatory responsibilities regarding this EIS. Table 1-8 illustrates the regulatory consultations, actions, and approvals, including permits that may be required for the alternatives described in Chapter 2.

1.6.2.1 U.S. ARMY CORPS OF ENGINEERS (CORPS)

The U.S. Army Corps of Engineers (Corps) is a cooperating agency in this EIS because of its regulatory authority to issue or deny permits necessary for some of the actions being considered for the Airport. This authority includes permitting responsibilities under:

- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) to require Department of Army permits (issued by the Corps) for structures or work in or affecting navigable waters of the U.S.
- Section 404 of the Clean Water Act of 1977 (33 U.S.C. 1344) for the discharge of dredged and/or fill material into waters of the U.S., including wetlands.
- Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413) for the transport of dredged material for the purpose of dumping it into ocean waters.
- Section 307 of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1458(c)), requiring the applicant to certify that the project is in compliance with an approved State Coastal Zone Management Program and that the State concurs with the applicant's certification prior to the issuance of a Corps permit.

1.6.2.2 NATIONAL MARINE FISHERIES SERVICE (NMFS)

The National Marine Fisheries Service (NMFS) is located within the National Oceanic and Atmospheric Administration in the Department of Commerce. Under the Marine Mammal Protection Act, NMFS (as delegated by the Secretary of Commerce) is responsible for the conservation and management of pinnipeds (other than walruses) and cetaceans. NMFS has ocean stewardship responsibilities under many federal laws, and federal agencies must consult with NMFS on all actions that may adversely affect essential fish habitat (EFH). In accordance with the implementing regulations under NEPA, NMFS must be given the opportunity to provide comment regarding protection of living marine resources that might be affected by the proposed Airport actions. To facilitate that opportunity, NMFS has accepted a role as a cooperating agency for this EIS. NMFS will be considering the effects of Airport actions for compliance with the following statutes:

- Magnuson Stevens Fishery Conservation and Management Act (16 U.S.C. 1801-1803), which conserves and manages the fishery resources found off the coasts of the U.S. and the anadromous species and Continental Shelf fishery resources of the U.S.
- Endangered Species Act (16 U.S.C. 1531-1543; Pub. L. 93-205, as amended), which makes it illegal for any individual to kill, collect, remove, harass, import, or export an endangered or threatened marine species without an incidental take permit (or incidental take statement, in the case of a federal agency affecting the marine species) from the Secretary of the Department of Commerce.

Table 1-8. Coordinating and Consulting Agencies and Actions

Agency	Action	Authority and Basis of Action
Federal Aviation Administration	Record of Decision	42 U.S.C. §4321 et seq. and 40 CFR §1500 et seq. The FAA's Airports Program is responsible for analyzing the environmental impacts and consequences of a proposed Federal action involving airports. The Record of Decision will document authorization for actions approved.
	Certifications	Federal Aviation Regulation Part 139 FAA approval of a revised Wildlife Hazard Management Plan and potentially other actions will necessitate approval of the Airport's Certification Manual. 49 U.S.C. §44502(b). A certification that the proposed facility is reasonably necessary for use in air commerce or from the national defense.
	Approval	49 U.S.C. §40103; 49 U.S.C. §44502; and 49 U.S.C. §47105. FAA must approve revisions to the Airport Layout Plan based on the safety, efficiency, and utility of the Plan and make a determination that the proposed development will not adversely affect the safe and efficient use of the airspace.
	Approval and Funding	49 U.S.C. §47104 et seq. and 49 U.S.C. §470117. FAA will determine how much financial support can be provided for the proposed development projects through the federal grant-in-aid program and approval for the use of passenger facility charge funds, considering eligibility and available funds.
	Approval	49 U.S.C. §44502(a)(1). FAA must approve any relocation and/or upgrade of existing navigational aids.
	Determinations	14 CFR Part 77. Concerning possible obstructions to navigable airspace. 14 CFR Part 157. Whether or not the agency objects to the Airport development proposal from an airspace perspective. 49 U.S.C. Subtitle I, Section 303, Department of Transportation Act, Section 4(f). Concerning impacts to public parks, recreation area, or wildlife and waterfowl refuge of national, state or local significance.
	Consultation	Section 307 of the Coastal Zone Management Act (16 U.S.C. §1458(c)). Requires that the applicant certify that the project is in compliance with an approved State Coastal Zone Management Program and that the State concurs with the applicant’s certification prior to FAA approval of the project and Airport Layout Plan.

Table 1-8. Coordinating and Consulting Agencies and Actions, continued

Agency	Action	Authority and Basis of Action
U.S. Army Corps of Engineers	Permit	Section 10 of the Rivers and Harbors Act (33 U.S.C. §403). Approval required for any structures to be placed in navigable waters of the U.S., or for work in or affecting navigable waters of the U.S.
	Permit	Section 404 of the Clean Water Act (33 U.S.C. §1344). Approval required for the discharge of dredged and/or fill material into waters of the U.S., including wetlands.
	Permit	Section 103 of the Marine Protection, Research, and Sanctuaries Act (33 U.S.C. §1413). Approval required for the transport of dredged material for the purpose of dumping it into ocean waters.
	Consultation	Section 307 of the Coastal Zone Management Act (16 U.S.C. §1458(c)). Requires that the applicant certify that the project is in compliance with an approved State Coastal Zone Management Program and that the State concurs with the applicant's certification prior to the issuance of a Corps permit.
National Marine Fisheries Service	Consultation And Opinion	Section 7 of Endangered Species Act. NMFS will issue a Biological Opinion concerning potential effects of the Airport actions on endangered or threatened species. Although no federally listed or candidate species are present at JNU, consultation will occur as a result of potential effects on species upon which both the Steller sea lion and humpback whale feed.
	Consultation and Recommendation	Magnuson-Stevens Act (16 U.S.C. §1855(b)). Federal agencies have a mandatory statutory requirement to consult with NMFS concerning all proposed actions that may affect essential fish habitat. NMFS will provide a conservation recommendation to the lead federal agency, and the agency must provide a detailed response in writing documenting measures for avoiding, mitigating, or offsetting the impacts on essential fish habitat.
	Consultation	Marine Mammal Protection Act (16 U.S.C. §1361-1421; Pub. L. 92-522). Service will determine whether the actions being considered have the potential to constitute a "taking" of marine mammals.

Table 1-8. Coordinating and Consulting Agencies and Actions, continued

Agency	Action	Authority and Basis of Action
National Marine Fisheries Service (continued)	Consultation	Fish and Wildlife Coordination Act (16 U.S.C. §661-667e). Requires consultation with NMFS (and FWS and ADF&G) when waters are proposed or authorized or permitted to be controlled or modified, so that loss of and damage to wildlife resources can be prevented. The Act requires that wildlife conservation be given equal consideration when determining how water resources should be used. The Act also provides authority for NMFS and FWS to evaluate the environmental impact of federally permitted projects. Pursuant to authority of this Act, NMFS (and FWS) also provide comment and recommendations to the Corps of Engineers concerning Section 404 Permits issued under authority of the Clean Water Act and Section 10 Permits issued under authority of the Rivers and Harbors Act.
U.S. Fish and Wildlife Service	Permit	Migratory Bird Treaty Act (regulations at 50 CFR Part 21.43). A federal depredation permit is required for the destruction of birds to control wildlife hazards at airports. This permit is issued annually by the FWS, who require as part of the permit conditions that a report detailing the number of birds harassed on Airport property and methods used be submitted annually.
	Permit	Bald and Golden Eagle Protection Act (regulations at 50 CFR Part 22.23). An eagle depredation permit which allows the harassment of bald eagles but prohibits the killing, injuring, or capturing of eagles may be issued by the FWS for the alleviation of hazards to aircraft safety. JNU has a current eagle depredation permit which allows harassment on the Airport using noise-making devices. This permit also has an annual reporting requirement detailing the numbers of eagles harassed on Airport property and the methods used.
	Consultation	Fish and Wildlife Coordination Act (16 U.S.C. §661-667e). Requires consultation with FWS (and NMFS and ADF&G) when waters are proposed or authorized or permitted to be controlled or modified, so that loss of and damage to wildlife resources can be prevented. The Act requires that wildlife conservation be given equal consideration when determining how water resources should be used. The Act also provides authority for NMFS and FWS to evaluate the environmental impact of federally permitted projects. Pursuant to authority of this Act, FWS (and NMFS) also provide comment and recommendations to the Corps concerning Section 404 Permits issued under authority of the Clean Water Act and Section 10 Permits issued under authority of the Rivers and Harbors Act.

Table 1-8. Coordinating and Consulting Agencies and Actions, continued

Agency	Action	Authority and Basis of Action
U.S. Environmental Protection Agency	Consultation	Section 309 of Clean Air Act. This Act provides the EPA with authority to review and comment on federal actions conducted under NEPA. Therefore, the EPA would review the environmental analyses within this FEIS for compliance with NEPA requirements and guidelines of the CEQ.
	Permit	Section 401 and 402 of the Federal Water Pollution Control Act. Certification that the projects would meet discharge requirements of the Clean Water Act is required under Section 401. EPA also maintains authority for National Pollution Discharge Elimination System (NPDES) permits issued under Section 402. These permits are issued by EPA's Region 10 Office for any new or changes in discharges from the Airport. Alaska Department of Environmental Conservation (ADEC) has certification authority of the permit.
Alaska Department of Fish and Game	Special Area Permit	5 AAC §95.420. A special area permit is required for any habitat-altering work, including any construction activity in a designated state refuge, critical habitat area, or sanctuary.
	Public Safety Permit	Permit for Scientific, Educational, Propagative, or Public Safety Purposes (5 AAC §92.033). The taking (the definition of which includes both harassment and lethal removal) of game is prohibited unless otherwise permitted. A public safety permit for the taking of game species at JNU is necessary for all direct wildlife control operations. The Airport currently has a public safety permit for this purpose, which details the species that can be killed as well as harassed. (All wildlife species that at occur at JNU are considered "game" species by Alaska law.)
Alaska State Historic Preservation Office and Consulting Parties	Consultation and Concurrence	Section 106 of National Historic Preservation Act. No permits are issued by the SHPO, but a written statement from that agency acknowledging appropriate consultation was undertaken and concurring with the findings of the field inventories should be received as evidence of compliance with the governing legislation. It is FAA's responsibility to initiate consultation with the SHPO and develop procedures to assure compliance with Section 106. Documentation of consultation with interested parties should prove a reasonable and good faith effort to gather and address any issues of concern raised by said parties. SHPO's concurrence constitutes agreement with the determinations concerning historic eligibility or non-eligibility of sites inventoried during the surveys, the assessment of possible adverse impacts, and any mitigating measures that should be undertaken.

Table 1-8. Coordinating and Consulting Agencies and Actions, continued

Agency	Action	Authority and Basis of Action
Alaska Department of Environmental Conservation	Certification	Section 401 of the Clean Water Act (33 U.S.C. §1344). Certification would be required that the Airport actions will meet state water quality standards before federal permits are approved. This regulation covers projects affecting waters of the U.S., including wetlands.
	Certification	ADEC maintains certification authority for the NPDES program, although EPA has permitting authority.
Alaska Department of Natural Resources, Division of Mining, Land and Water	Approval	Disposal of Refuge property through a sale or lease to the Airport (to accommodate one or more of the actions that would encroach onto Refuge property) would require a finding that the action is in the best interest of the State of Alaska.
	Permit	Leasing and Permitting of State-owned Tidelands (11 AAC §58/11 AAC §62.690-730). In some instances, the State of Alaska will provide a lease or permit for use of State-owned tidelands. Actions considered could involve lease, easement on, or purchase of State-owned lands.
Alaska Department of Natural Resources, Office of Habitat Management and Permitting	Permit	Anadromous Fish Act (AS §41.14.870). Requires that an individual or governmental agency notify and obtain approval from ADNR for all activities within or across a specified anadromous water body and all instream activities affecting a specified anadromous water body. These include construction, road crossings, gravel removal, placer mining, water withdrawals, the use of vehicles or equipment in the waterway, stream realignment or diversion, bank stabilization, blasting, and the placement, excavation, deposition, disposal, or removal of any material, and other activities.
	Permit	Fishway Act (AS §41.14.840). Requires that an individual or governmental agency notify and obtain authorization from the ADNR for activities within or across a stream used by fish if the ADNR determines that such uses or activities could represent an impediment to the efficient passage of fish. Culvert installation, stream realignment or diversions, dams, low-water crossings, and construction, placement, deposition, or removal of any material or structure below ordinary high water all require approval from the ADNR.

Table 1-8. Coordinating and Consulting Agencies and Actions, continued

Agency	Action	Authority and Basis of Action
Alaska Department of Natural Resources, Office of Project Management and Permitting	Consistency Determination	Alaska Coastal Management Program (6 AAC 80). The ACMP establishes a number of standards against which the Airport actions may be evaluated, including requirements for management of coastal habitat and protection and preservation of land, air, and water quality. The ACMP relies on the application of appropriate standards and mitigation measures for effects by other state and local jurisdictions. The Coastal Management Program of ADNR manages the Consistency Review process that ensures all applicable requirements are considered and complied with. The Sponsor is required to submit a Coastal Project Questionnaire with supporting documentation to the Coastal Management Program, which coordinates with federal and state agencies and state agency comments are incorporated into the consistency determination.
City and Borough of Juneau	Review and Approval	Juneau Coastal Management Plan (Section 49.70.950f). This policy, applied to development activities as part of the Juneau Coastal Management Plan and Consistency Review process, establishes a 50-foot setback from streams or lakes for all structures and foundations. Projects proposed for JNU near anadromous streams, including estuarine channels, must meet the development standards and mitigation policies set forth in this policy as well as the rehabilitation requirements of 49.70.950e. Work within a 50-foot setback would have to receive CBJ approval through a variance process.
	Review and Approval, Permit	Juneau Wetland Management Plan (CBJ Land Use Code 49.70.1065-1075). Any elements of the project involving fill of wetlands and impacts to habitat in general would require evaluation for consistency with the Juneau Coastal Management Plan. The review would be incorporated into the overall ACMP consistency review and coordination processes. A conditional use permit from CBJ Wetlands Review Board could be required depending on class of wetland to be filled.
	Permit	New buildings, modifications to existing buildings, and preparation for structures and surface would require building and grading permits from CBJ.

- Marine Mammal Protection Act (16 U.S.C. 1361-1421; Pub. L. 92-522), which regulates interactions with marine mammals and establishes a moratorium, with certain exceptions, on the taking of marine mammals, and the importing of marine mammals and marine mammal products into the U.S.
- Fish and Wildlife Coordination Act (16 U.S.C. Sections 661-667, as amended), which mandates consultation with NMFS and the U.S. Fish and Wildlife Service (FWS) where the "waters of any stream or other body of water are proposed or authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified." The Act requires that wildlife conservation be given equal consideration when determining how water resources should be used. The Act also provides authority for NMFS and FWS to evaluate the environmental impact of federally permitted projects. Pursuant to authority of this Act, NMFS (and FWS) also provide comment and recommendations to the Corps concerning Section 404 Permits issued under authority of the Clean Water Act and Section 10 Permits issued under authority of the Rivers and Harbors Act.

1.6.2.3 U.S. FISH AND WILDLIFE SERVICE (FWS)

The Secretary of the Interior has responsibility under the Marine Mammal Protection Act for the conservation and management of some marine mammals, including walruses, sea otters, and polar bears. The FWS has been given this responsibility, as well as responsibilities for wildlife under other federal laws. Included in these responsibilities is issuance of permits for all depredation of wildlife for various reasons. At JNU, a depredation permit is issued annually to allow the control of wildlife presenting hazards to aircraft. The following acts for which FWS has jurisdictional authority may be applicable to some of the proposed actions for the Airport:

- Migratory Bird Treaty Act (16 U.S.C. Sections 703-712), which prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter of any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR §21.11).
- Bald and Golden Eagle Protection Act (16 U.S.C. Section 668, as amended), which provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds.
- Fish and Wildlife Coordination Act (16 U.S.C. Sections 661-667, as amended), which mandates consultation with FWS and NMFS where the "waters of any stream or other body of water are proposed or authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified." The Act requires that wildlife conservation be given equal consideration when determining how water resources should be used. The Act also provides authority for NMFS and FWS to evaluate the environmental impact of federally permitted projects. Pursuant to authority of this Act, FWS (and NMFS) also provide comment and recommendations to the Corps concerning Section 404 Permits issued under authority of the Clean Water Act and Section 10 Permits issued under authority of the Rivers and Harbors Act.

The FWS is often the lead agency for evaluations and decisions involving federally listed endangered or threatened species. However, NMFS has jurisdictional authority over the only two federally listed endangered or threatened species of concern for this project (i.e., the humpback whale and Steller sea lion).

1.6.2.4 ALASKA DEPARTMENT OF FISH AND GAME (ADF&G)

The Alaska Department of Fish and Game's (ADF&G's) mission is to manage, protect, maintain, and improve the fish, game, and aquatic plant resources of Alaska. The goals of ADF&G for the Refuge include maintenance, enhancement, and public use of fish and wildlife habitat. According to the statute establishing the Refuge (AS 16.20.034), ADF&G must have a management plan for the Refuge that includes provisions under which

> the CBJ may acquire land, by sale, exchange, or otherwise, for purposes of expanding the Juneau Municipal Airport, establishing additional transportation corridors, including water corridors, and establishing publicly owned and operated docking facilities, and these uses are considered preferential under article VIII of the state constitution ...

ADF&G's responsibilities for the actions proposed by the Airport could include sale or lease of land for Airport expansion. However, for the Airport to expand onto Refuge lands, a number of requirements must be demonstrated:

- That there is a significant public need for the expansion that cannot reasonably be met off-Refuge or via use of alternative transportation modes and technologies.
- That impacts to Refuge lands are avoided or minimized to the maximum extent feasible.
- That all impacts to the Refuge and to Refuge resources are fully mitigated through restoration and/or replacement.
- That the Airport expansion project will not create hazardous attractants for waterfowl.

ADF&G has other statutory authority relative to this project, including some permitting authority for activities within the Refuge that would alter habitat. In addition, ADF&G issues a public safety permit for the taking of game species associated with the control of wildlife hazards. The Refuge Management Plan legislation creating the Refuge requires ADF&G to work with the Airport to minimize wildlife hazards to aviation (see AS §16.20.034(h).

1.6.3 OTHER COORDINATING AND CONSULTING AGENCIES

Other state and federal agencies may have consultation responsibility and/or permitting authority for actions being considered in this EIS. Their responsibilities are briefly described in the following sections.

1.6.3.1 U.S. Environmental Protection Agency (EPA)

Section 309 of the Clean Air Act provides the U.S. Environmental Protection Agency (EPA) with authority to review and comment on federal actions under NEPA. Therefore, EPA will review the environmental analyses within this FEIS for compliance with NEPA requirements and guidelines established by the CEQ. In addition, EPA has overall authority for some permits that may be required. Specifically, although the Corps has authority to issue permits under Section 404 of the Clean Water Act, EPA has a statutory veto power over the Corps decision. EPA retains authority for review and approval of the Airport's Stormwater Management Plan. The EPA has delegated permitting authority for some relevant programs, such as the National Pollutant Discharge Elimination System (NPDES) permits and air emissions permits, to the State of Alaska.

1.6.3.2 Alaska State Historic Preservation Office (SHPO)

The State Historic Preservation Office (SHPO) has the responsibility under the National Historic Preservation Act (NHPA) to advise state and federal agencies when potentially significant historical, archaeological, or other cultural resources are located in a project area. The federal agencies must comply with Section 106 of this Act, which requires specific steps to be taken by the agencies when historic, archaeological, or other cultural resources in (or eligible for listing in) the National Register of Historic Places could be affected by an action. In brief, these steps are:

- Identification of historic properties that may be affected.
- Assessment of the potential effects to these properties.
- Development of a mitigation plan for adverse affects to historic properties.
- Consultation with the SHPO and interested parties including Native American groups.

1.6.3.3 Alaska Department of Environmental Conservation (ADEC)

The Alaska Department of Environmental Conservation has regulatory authority for a variety of resource-based and industry-specific programs. Its approval could be required for air emissions generated by construction activities, plans to discharge stormwater during construction, and new or modified point source discharges.

1.6.3.4 Alaska Department of Natural Resources (ADNR) Office of Habitat Management and Permitting

The Alaska Department of Natural Resources (ADNR) manages the Refuge in cooperation with ADF&G. Some actions considered in this EIS would encroach on Refuge property, and it is unclear at this time whether approval by the ADNR would necessitate only permits for use of Refuge land, a right-of-way (ROW) grant to use the land, or an actual sale/lease to CBJ of that portion of the Refuge needed for Airport use. Disposal of Refuge property via a sale or lease would require a finding that the action is in the best interest of the State of Alaska.

In April 2003, some regulatory functions relating to the protection of fish habitat in the state's lakes, streams, and rivers, and related functions regarding fish and game protection, were transferred from ADF&G to a new department within ADNR, the Office of Habitat Management and Permitting (Alaska Executive Order 107). This office has been given specific statutory responsibilities for protecting freshwater anadromous fish habitat under the Anadromous Fish Act (AS 41.14.870) and for providing free passage of anadromous and resident fish in fresh water bodies (AS 41.14.840). The Airport would be required to obtain permits from ADNR, through the Office of Habitat Management and Permitting, for activities affecting fish streams and/or anadromous water bodies.

1.6.3.5 ADNR Office of Project Management and Permitting

The ADNR's Office of Project Management and Permitting is the lead agency for coordinating the Alaska Coastal Management Program (ACMP). In 1972, Congress passed the Coastal Zone Management Act to promote the orderly development and protection of the country's coastal resources. This Act established a voluntary partnership among the federal government, coastal states, and local governments to develop individual state programs for managing coastal resources. The ACMP implements legislation passed by the State of Alaska in 1977. With this legislation, called the Alaska Coastal Management Act, Alaska joins the partnership envisioned by Congress in the Costal Zone Management Act. The ACMP improves stewardship of Alaska's coastal land and water uses and natural resources by creating a network of local, state, federal, and applicants interested in the project-approval process. The networking provided by the ACMP helps to ensure that all aspects of a project are considered during a single review and approval process. This integrated approach promotes both economic and environmental productivity of Alaska's rich and diverse coastal resources. The ACMP requires that projects in Alaska's coastal zone be reviewed by coastal resource management professionals from the applicable governmental agencies. A finding of consistency with the statewide standards of the ACMP and the Juneau Coastal Zone Management Plan (JCMP) must be obtained before FAA can unconditionally approve the Airport Layout Plan and before other permits can be issued for the project.

1.6.3.6 ADNR Division of Mining, Land and Water

The Division of Mining, Land and Water manages most state-owned lands including tidelands, shorelands, and submerged lands. Some state-owned lands, including trust properties, the Alaska state park system, and highway and public facilities, are managed by other agencies, and other state-owned lands (such as state wildlife refuges) are managed jointly by the Division of Mining, Land and Water and the Department of Fish and Game. The Division also has jurisdiction over all of Alaska's water resources. The Division of Mining, Land and Water issues decisions for a number of activities involving state resources including providing access for public and private entities across state lands and waters, and water rights and water use authorizations. The Division is responsible for approving the acquisition or disposal of state lands, and for issuing permits for the use of State-owned tidelands. Because some of the actions considered in this EIS would involve the disposal or use of State-owned lands (for example, transfer to CBJ of Refuge tidelands west of the runway for runway safety area development), and possibly the acquisition of new lands (through the compensatory mitigation process), the Division has served as a consulting agency for the EIS and an active participant in development of a mitigation plan.

1.6.3.7 U.S. Department of Agriculture Wildlife Services

The U.S. Department of Agriculture's Wildlife Services program provides wildlife hazard assessment and hazard management program services at many airports. Through their National Wildlife Research Center, they also conduct research on such topics as wildlife harassment methods, wildlife habitat and behavior, and how activities at or near airports affect potential for wildlife strikes with aircraft. Because of the experience, training, and background of its personnel, Wildlife Services is in demand by the aviation industry to provide wildlife hazard assessment and hazard management consulting services. The FAA relies heavily on the assistance of Wildlife Services in dealing with wildlife hazards to aviation. A Memorandum of Understanding between the two agencies establishes a cooperative relationship for resolving wildlife hazards to aviation. JNU contracted with Wildlife Services to prepare a wildlife hazard assessment, based on both historic wildlife data and information systematically collected on the Airport by a Wildlife Services biologist. This information was later used by Wildlife Services to prepare a recommended wildlife hazard management plan for JNU. Wildlife Services has also reviewed and commented on wildlife-hazard related elements of this EIS, including the analysis of potential strike risks and alternatives for hazard management.

1.6.3.8 Mendenhall Wetlands State Game Refuge

The Mendenhall Wetlands State Game Refuge is not a separate consulting or coordinating agency, but it is listed here because of the distinct relationship between the Airport and actions potentially involving direct and indirect impacts on Refuge resources. The Refuge was established by the Alaska Legislature in 1976 to protect the natural resources of the wetlands in Gastineau Channel. As required by AS 16.20.034(I), management of the Refuge includes provision for expanding the Airport, adding new transportation corridors, and adding publicly-owned and operated docking facilities (ADF&G 1990:8-11). The Refuge Management Plan of 1990 contains the policies that guide how the CBJ may acquire land for these purposes. A more extended discussion of these policies is included in Section 3.3.3.5 of this EIS.

1.6.3.9 City and Borough of Juneau (CBJ)

The Airport is located within the CBJ, and CBJ has a number of authorities to be considered for Airport project development. In particular, Title 49, CBJ Land Use Code, applies because it contains policies concerning resources such as floodplains, coastal management, habitat, zoning and land use, and special areas. CBJ will review the project for consistency with the JCMP and the Juneau Wetlands Management Plan. This consistency review will be submitted to the ADNR, to be incorporated with other agency comments. Some project actions may have to go through CBJ's variance (from the CBJ planning criteria) process, which includes a city staff review, a hearing before the Planning Commission, and public comment. New Airport structures and fill and grade activities would also need CBJ permits.

The CBJ Comprehensive Plan (1995 Update) provides for "the orderly development of the Airport to meet the expanding needs of Juneau residents and to provide access for Alaskans to their legislature and state government." Guidelines in the Plan for land use near the Airport are discussed further in Section 3.2.3 of this EIS.

1.7 IDENTIFICATION OF ISSUES AND DEVELOPMENT OF ALTERNATIVES

Public and intergovernmental agency participation is a key requirement of NEPA and vital to development of alternatives and consideration of potential project impacts. The FAA has used a process known as *scoping* to inform the public and other agencies about the Purpose and Need for each of the proposed actions, to identify important issues, and to determine the extent of analysis necessary for the FAA and other agencies to make informed decisions. After scoping, the issues to be addressed by this EIS were then refined so that a range of reasonable alternatives could be developed for each Purpose and Need. The analysis of potential environmental effects has also focused on the significant issues of concern identified during scoping.

Public and agency comments to the Draft EA (USKH 2000) were used to develop an initial scope of work for this EIS. FAA formally advertised a Notice of Intent to conduct an EIS for the Airport on June 1, 2001. This notification in the *Federal Register* initiated a 60-day public comment period to solicit input concerning the EIS. Early in the scoping period, FAA advertised initiation of the EIS through ads in the local newspaper, public service announcements, and direct mailing to more than 330 residents, agencies, and special interest groups. A public scoping meeting was held in Juneau on June 20, 2001, to inform people about the purpose of and need for the actions, and to solicit comments and questions. A list of agencies, organizations, and individuals consulted, plus details regarding the extent of public participation, are provided in Chapter 6 of this EIS.

The initial scope of work did not include actions related to wildlife hazard management. However, during the scoping period, a number of comments were received from individuals and other agencies that a pending WHMP was related to the environmental studies and should be evaluated in the EIS. Although a specific WHMP had not yet been received by the FAA[20], the FAA recognized the merit of the comments because 1) the anticipated scope of some projects being considered for inclusion in the WHMP involved sensitive resources, with potentially significant impacts, and 2) effects of some potential WHMP projects could be related in time and/or extent to actions already being considered in the EIS. As a result, the FAA modified the scope of the EIS to include the WHMP and extended the formal scoping period for an additional 60 days to allow sufficient time for public consideration and comment. A supplemental Notice of Intent was published in the *Federal Register,* additional advertisements and announcements were placed, and an additional public mailing was distributed. A second public scoping meeting was held on September 18, 2001.

Comments, suggestions, and concerns about the projects were gathered during the scoping process. The issues and concerns raised by the public and other agencies were used to develop a range of reasonable alternatives to the proposed actions and to develop specific components of the

20. A WHA had been completed in April 2001, but the WHMP is necessary to trigger FAA's review and approval process. As a result of this decision, the Airport volunteered to expedite preparation of the WHMP so that effects of implementation could be reviewed in the EIS.

FAA's preferred alternative that could avoid or reduce impacts to the human environment. Chapter 2 of this EIS documents the process used to develop alternatives and describes alternatives and components of the alternatives carried forward for detailed environmental analysis.

The issues identified in the following sections and tables represent a synthesis of concerns expressed about the proposed actions and have been considered by FAA to establish the scope of the environmental analysis.

1.7.1 KEY ISSUES IDENTIFIED DURING SCOPING

The issues considered key to this EIS were critical to verifying need for actions, helped to guide development of alternatives, or reflected analysis critical to understanding of the project impacts. For example, FAA concurred with comments that previous environmental documentation did not adequately demonstrate whether additional development is necessary at the Airport. For this reason, an independent analysis of current aviation demand at JNU was conducted for this EIS and aviation demand through the year 2015 (a 20-year planning cycle) was forecast. This analysis verified deficiencies in existing facilities and provided assurance of the need for more airfield apron and the extent of that need.

The estuarine channels east of the runway are an example of how key issues influence the development of alternatives. These tidal channels provide essential fish habitat (EFH) and moderate-to-high-value wetlands because of their ability to support nutrients, their ecological diversity and their value as buffer to protect disturbance-sensitive wildlife. FAA attempted to develop an RSA alternative that would avoid this area completely, essentially by shifting the runway to the west. However, the resulting change in runway thresholds would have affected current and reasonably foreseeable future operating capability, particularly Alaska Airlines' special approach and departure procedures. (A westward shift would also have had detrimental impacts on other environmental resources, such as the Dike Trail, intertidal wetlands, and Mendenhall River.) It was determined during the evaluations of operational needs for critical aircraft that no alternative that would completely avoid this sensitive wetland area could be implemented without also reducing the available runway length. To provide opportunities to minimize impacts to this area, FAA has developed alternatives that use aircraft arresting technology and shorten overrun and undershoot areas, as well as threshold displacements, to take advantage of all available pavement for takeoff roll.

An example of a key issue relating to impacts analysis is air quality. It was noted during scoping by one agency that the General Conformity applicability analysis should consider impacts on the nonattainment area and ensure that improvements do not exceed 100 tons per year of PM_{10}[21]. JNU is located in an attainment area for all pollutants; the boundary for the nonattainment area is the northern boundary of the Airport. Thus, a conformity analysis is not required by law or regulation.

21. Particulate matter equal to or less than 10 microns in size is termed "PM_{10}" a regulatory standard under authority of the Clean Air Act. In the most recent update to these standards, fine particulate matter equal to or less than 2.5 microns in size ($PM_{2.5}$) may also be applicable. See Section 3.4 of Chapter 3 of this EIS.

While the FAA will not be preparing a conformity analysis, this EIS does disclose project-related emissions that provide 1) data in response to the scoping concerns, and 2) an impact methodology consistent with industry standards and accepted regulatory procedures.

As is demonstrated in the Chapter 4 analysis, many environmental impacts cannot be avoided in implementation of these actions, but the severity and duration of effect can be reduced through design measures. Table 1-9 (at the end of this chapter) lists a consolidated summary of the key issues raised by the public and agencies during the scoping process for the Airport projects.

1.7.2 Issues Not Considered for Further Analysis

A second category of issues raised during scoping is those not considered for further analysis. After careful review by the FAA, it was determined that certain issues were either outside the scope of the project (i.e., unrelated to actions proposed) or could be easily addressed through standard construction or operation practices. Details of applicable construction and operation practices are described in Chapter 2, Proposed Actions and Alternatives, and Chapter 4, Environmental Consequences. Table 1-10 (at the end of this chapter) lists a consolidated summary of the issues raised in public comment that are not considered for further analysis, including brief rationales for the dismissal of each issue from consideration.

1.7.3 Elements of the Human Environment Not Affected

NEPA and its implementing regulations require a comprehensive evaluation of the impacts to the human environment for major federal actions. FAA has refined this requirement by identifying the particular environmental and social resources to be evaluated by the EIS (FAA 2006, 2004). Most of these elements of the human environment are specifically addressed in Chapter 4. As documented in Section 4.2.15 of Chapter 4, FAA has determined that some of these elements would not be affected or are not relevant to JNU and this EIS, including:

- Farmlands
- Wild and Scenic Rivers
- Coastal Barriers
- Environmental Justice
- Children's Environmental Health and Safety Risks
- Natural Resources and Energy Supply

1.8 Public Review and Comment on Draft EIS

The CEQ regulations implementing NEPA direct the lead agency to solicit comments concerning the actions, alternatives and analysis within a Draft EIS from the public, government agencies, the project sponsor, and other interested parties (40 CFR 1503). The FAA prepared a Draft EIS for the Airport actions that was released to the public on April 29, 2005, initiating a comment period

that lasted until June 30, 2005. The FAA's Notice of Availability (of the Draft EIS) appeared in the Federal Register on April 13, 2005. The FAA held public hearings on the Draft EIS in Juneau on June 1 and 2, 2005 including opportunities for the public to discuss the Draft EIS with the EIS preparation team. The FAA also held meetings at this time with public officials and cooperating and consulting agencies.

The FAA received comments by e-mail and letter, and through oral testimony at the public hearings. All substantive comments have been included in Appendix M of this FEIS. Not every comment resulted in a change to the alternatives or analysis, but some resulted in clarifications, factual corrections or modifications and improvements to the analysis. In any case, FAA has carefully considered all of the Draft EIS comments and provided a response to each one, also shown in Appendix M.

Table 1-9. Key Issues of Concern for the JNU EIS

Issue ▪ Description
Air Quality ▪ Under the Clean Air Act Amendments of 1990 the EIS should address this issue (of compliance). ▪ The applicability analysis should consider impacts on the nonattainment area and ensure that improvements do not exceed 100 tons per year of PM-10. ▪ The air quality analysis required to meet NEPA is not enough by itself to satisfy general conformity, and the general conformity analysis does not meet all requirements of NEPA.
Aircraft Access ▪ It is critical to maintain access at its highest level, and large jets, fully loaded, can only land using the longest of runways. ▪ The alternative of shorter runways to create safety areas could reduce accessibility (by some aircraft) to Juneau. The EIS should evaluate whether proposed alternatives would result in restrictions of fully loaded aircraft or the use of certain types of aircraft. ▪ The full runway length should be maintained and full RSA added, for access and to account for the difficult conditions pilots face in landing at and departing from JNU. ▪ Runway changes should not affect special procedures used by Alaksa Airlines (RNPs) to get in and out of Juneau.
Alternatives – Aviation Facilities ▪ The EA (sic) should describe and discuss the existing and future need for space for fixed wing and helicopter operations. ▪ Concentrating all helicopter operations in one area will create congestion, and safety and efficiency will decrease. ▪ All alternative sites should be considered reasonable for the construction of a new facility to replace the existing SREF and Sand Shed. ▪ Relocate the helicopter area offsite and away from the existing airplane traffic.
Alternatives ▪ Expansion of filled lands should be accomplished to meet existing demand as well as projected demands for the next 20 years. ▪ When considering alternatives and selection of a preferred alternative, all measures that reduce Refuge "takings" and/or the filling of wetlands should be given full consideration. Any Refuge takings should be fully justified by the design criteria of the JNU critical aircraft. ▪ Innovative solutions that utilize the existing paved surface to the maximum extent possible are encouraged. ▪ Alternatives that do not rely on filling important wetlands and water bodies should be further explored. ▪ Regulations allow for alternatives if development is not practicable.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Alternatives – Runway Safety Area
▪ The issue of how stage length would affect runway length should be addressed.
▪ Water bodies and wetlands around the Airport complicate the development of RSA and should be considered justification for alternative methods to achieve FAA standards (such as EMAS).
▪ Evaluate how smaller areas of "overrun" will affect the degree of risk.
▪ Consider using EMAS instead of enlarging the RSA.
▪ The EIS should evaluate all potential adverse impacts in a worst-case analysis for the RSA alternatives.
▪ The FAA should accurately describe and respond to the intent and alternatives presented in Order 5200.8.
▪ The FAA Order concerning RSA recognizes environmental conditions when considering practicability. It seems that the conditions (habitat, wetlands, etc.) at JNU make compliance impracticable.
▪ Use of "declared distances" to accommodate increased RSA should be evaluated as a viable alternative.
▪ The taxiway at the east end of the runway should not be extended due to valuable habitat.
▪ Consider a variation of RSA Alternative 2 that does not include extending the taxiway from its present location.
▪ An aircraft arrestor system should be used instead of more development.
▪ The preferred RSA alternative, RSA Alternative 2, would result in significant adverse impacts to approximately 32.5 acres of high-valued, intertidal wetlands and special aquatic sites.
▪ The EA (sic) is using speculation of what aircraft may be using JNU.
▪ There are serious safety and performance tradeoffs in the use of Declared Distances at JNU.
▪ The EA doesn't provide meaningful discussion of FAA design standards that predicate the need for RSA improvements.
▪ Keep the identical start of takeoff point for departures on Runway 08.
▪ NTSB and FAA data show that about ten overruns occur per year at part 139 or air carrier airports on an annual basis. Of these, 70% occur during landing.
▪ Historically, Alaska has had the highest rate of aviation accidents in the U.S.
▪ Test facilities for EMAS should be established in southeast Alaska and Interior as well.
▪ Usable runway surface must take into consideration not only normal aircraft performance requirements but nonstandard, abnormal, and emergency requirements, including engine failures, hydraulic and control surface failures, breaking and anti-skid malfunctions, and overweight landings. Other things to consider are adverse extreme weather and surface conditions, runway surface conditions, and in the case of JNU, a lack of any precision navigational guidance to the landing surface.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Alternatives – Runway Safety Area (continued) ▪ The EIS should take into account that Juneau is the only 24-hour airport between Vancouver and Anchorage that is available to all air carriers and types of aircraft. ▪ Alaska Airlines and the FAA are investing substantial resources to improve the safety of existing air service into Juneau, and shortening the runway could very well result in wiping out any gains that have been made in safety. ▪ More culverts and/or longer culverts in Duck Creek and Jordan Creek will only cause more problems for habitat, fisheries.
Alternatives – Wildlife Hazard Management ▪ Needle strips or other deterrents should be installed on top of light towers at both runway ends to prevent birds from perching or roosting on the structures. ▪ The EIS should discuss the planned future relocation of lower Duck Creek and weigh the potential gains of the culvert replacement against the longevity of this site.
Alternatives – Navigational Systems ▪ The east-end MALSR can be adequately maintained without constructing the proposed elevated access road (which, if constructed, would affect wetlands, disrupt nutrient and sediment cycling, etc.). ▪ If wetland fill is required for construction or maintenance of the MALSR, then culverts that match channel widths with up to one-third embedded should be used in drainages to ensure nutrient cycling and sediment transport capability are not further reduced. ▪ The use of special, balloon-tired vehicles and ATV-type vehicles should be included in the alternatives (for the MALSR). ▪ Evaluate whether or not a road is necessary for maintenance of the MALSR. ▪ The assessment should be both for year-round use (thereby eliminating the necessity for the MALSR road), and for winter use alone, when potentially weather conditions would make a MALSR road ineffective for preventing Refuge damage. ▪ The maintenance road for the existing MALSR system has created unacceptable impacts to wetlands in the Refuge. ▪ The DEIS should consider alternatives that minimize or eliminate impacts that result from the installation of navigational lights on the east end of the runway. ▪ The EIS should consider whether a permanent road is really necessary for access to the MALSR. ▪ Without this kind of guidance (i.e., the MALSR), the statistics show that the transition from an instrument to a visual flight is very critical; under periods of reduced visibility or darkness, pilots are virtually flying into a black hole.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Impacts Analysis ▪ Describe the significance of the impacts in terms of intensity and context. ▪ A cumulative impacts analysis must include past developments in the JNU vicinity. ▪ A detailed inventory is needed to show what will be affected by construction/new development. ▪ The EA is deficient in evaluating cumulative impacts of air safety and increased noise.
Mendenhall Wetlands State Game Refuge ▪ Address the impacts of changing the flow of tidewater on the remaining Refuge flats. ▪ Consider the effect of runoff from the Airport onto the Refuge and Refuge habitat. ▪ Evaluate the importance of Jordan Creek to the estuarine wetlands of the Refuge. ▪ The management goals of the Refuge need to be considered in the EIS. ▪ To the extent possible, minimize the impact to or loss of fish and wildlife habitat in the vicinity of the Airport and the Refuge, regardless of land ownership. ▪ To the extent possible, maintain the existing recreational values of the Dike Trail. ▪ The EIS should include an assessment of what the Refuge will look like in 20 years as a result of naturally occurring processes, specifically isostatic rebound and the natural deposition of silt. ▪ Many alternatives would affect habitat in the Refuge; alternatives [that would avoid the impacts or reduce the impacts] should be considered. ▪ The EIS should include results of the studies on Jordan Creek fish populations and consider alternatives that avoid adverse effects to the creek and connected estuarine habitat and Refuge.
Miscellaneous Comments ▪ The EA assumptions (concerning aviation growth, existing demand, design aircraft, etc.) need to be reevaluated. ▪ Need to disclose the regulations or requirements concerning obstructions and obstacles on Airport property, such as maximum tree height and structure height. ▪ Please interact with the public more often. As plans get flushed out a little more and as the studies become available, put them on the website and allow for public comment.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Mitigation
▪ A complete list of functions and values for each mitigation site should be provided.
▪ For high-value wetlands, provide onsite, in-kind mitigation.
▪ Describe the methodology applied to determine appropriate mitigation.
▪ In conceptual terms, describe measures necessary to mitigate below the threshold of significance.
▪ A plan to provide monitoring to ensure long-term success of mitigation should be included. This plan should describe how the impacts to each of the affected biotic communities and wetlands will be mitigated.
▪ Dismissing mitigation of waterfowl habitat loss because similar habitat is not limited in the vicinity or for safety concerns is not appropriate.
▪ Mitigation funds should be directed toward designing and re-routing Jordan Creek along Egan Highway through Miller-Honsinger Pond.
▪ Transfer of the 35-acre parcel of the Refuge to CBJ provides for mitigation that must be accomplished by protection in perpetuity.
▪ The proposed mitigation plans identified in the Draft EA do not adequately mitigate for unavoidable adverse impacts to the wetlands.
▪ The proposed mitigation plan would not create, restore, and/or enhance additional wetlands on the Airport property to reduce overall net loss of wetlands on Airport property. The Draft EA does not provide adequate measures to mitigate for the direct, secondary, and cumulative wetland impacts below levels of significance.
▪ Part of the East Aviation Area (Northeast Development Area in this EIS) that would be filled was formerly a mitigation site for other Airport development.
▪ If specific mitigation projects cannot be decided upon at the time of permitting, the option of the Airport placing funds in the existing CBJ wetlands mitigation account should be explored.
▪ The rehabilitation of dredge ponds on the Refuge should be considered as potential mitigation projects.
▪ Funding land acquisitions and easements along sensitive portions of Montana Creek are of higher long-term benefit to the watershed.
▪ The creation of wetlands on Duck Creek is a viable restoration alternative, provided fill material and resources for planting aquatic plants are available at a reasonable cost.
▪ Duck Creek right now is kind of in a bad spot: it is very channelized, and it would be a very nice thing for the creek to actually move it away and create a nice channel and floodplain for it and make it a much more healthy entrance.
▪ It would be good if the EIS could consider the viability of joining Duck Creek and Jordan Creek into one healthy, protected channel.
▪ The EIS should look at the entire needs of the Airport and design a complete, final mitigation package that will settle all past and future claims and issues.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Native American Interests ▪ Protect the spruce trees in the wetlands by the Float Plane Pond. Culturally important baskets are woven from the long, straight roots that grow in the sand beds there.
Noise ▪ Evaluate the impacts of runway threshold shifts on noise in residential areas. ▪ Noise impacts are not sufficiently addressed [in the EA].
Other Actions at the Airport or Connected Actions ▪ The proposed rerouting of Duck Creek must provide a substantial noise buffer for the neighborhood and a streamside buffer for fish. ▪ Regarding the remote transmitter/receiver (identified as the Remote Communications Outlet or RCO in this EIS), the EIS needs to disclose the need for moving the RCO and the feasibility of doing so, i.e., how far away it can go, what the disturbance area is, and how much area is needed.
Recreation ▪ Keep the Dike Trail intact. ▪ To the extent possible, maintain the existing recreational values of the Dike Trail. ▪ The Airport dikes, adjacent ponds, and surrounding wetlands are important for walking dogs, wildlife viewing, environmental education, and enjoying the ever-changing beauty of the wetlands. ▪ Maintain uninterrupted pedestrian access to the Dike Trail. ▪ Preserve the Dike Trail; it is important to residents and the community. ▪ The analysis needs to describe why the Dike Trail is not protected by Section 4(f) of DOT statutes.
Social and Socioeconomic ▪ Address the impact of the Northwest Development Area on the adjacent neighborhood. ▪ Find solutions without potential long-term damage to the regional economy. ▪ Aviation is crucial to the socioeconomic well-being of Juneau. ▪ JNU is the critical transportation/economic hub for Alaska's capital city and the entire southeast Alaska region and should be constantly updated with the most sophisticated safety features. ▪ The economy of many communities in southeast Alaska is tied directly to their ability to ship fresh fish to market. ▪ Safe and reliable air access now and in the future is vital to the survival of southeast Alaska. ▪ JNU must be positioned to not only efficiently meet current demand but to accommodate future aviation growth in the region and state.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Social and Socioeconomic (continued) ▪ Cost-effective air travel and air cargo is critical for a viable economy. ▪ Some alternatives discussed for the RSAs will negatively affect the ability of businesses in Juneau and the region to compete in a market sustainable manner. ▪ The destiny of southeast Alaska is directly linked to the Airport's ability to support future Airport demands. ▪ As the tourism industry in Juneau continues to evolve so will the need to accommodate future aircraft. ▪ The Airport must be able to meet reasonably foreseeable future [aviation] needs and allow Juneau to take advantage of future opportunities to enhance service to citizens of Juneau, Alaska, and the nation.
Stormwater and Water Resources ▪ Evaluate protection to the watershed from runoff of contaminants from aircraft operations. ▪ Consider effects of runoff from the Airport onto the Refuge and adjacent habitats. ▪ Stormwater, nonpoint pollution and disposal of toxic substances must be examined to prevent discharges to streams and wetlands. ▪ The EIS should address the effects of chemical runoff from de-icing operations, oil and fuel spills, and other hazardous materials on Refuge habitat. ▪ Potential solutions to run-off problems, including oil/water separators and other state-of-the-art technology, should be assessed when considering the various construction projects envisioned in the DEIS alternatives. ▪ The loss of areas on Airport property that perform filtering functions (such as the paving over of vegetation and grassy swales bordering the runways to reduce wildlife hazards) needs to be assessed and, if appropriate, should be compensated for by improvements to the stormwater runoff control system. ▪ Ice flows in the intertidal zones could potentially make it impossible for vehicles to use the MALSR road that was proposed in the EA that predated this EIS process. Potentially utility vehicles could be forced to detour off the road surface causing unacceptable damage to the Refuge. ▪ A MALSR road may affect the hydrology of the wetland areas to the north and south of the proposed road. These concerns include the effects freeze down may have on the surface and sub-surface flow of water. A build up of ice on the road surface may create a situation that leads to localized flooding on the wetlands resulting in the creation of new channels or loss of existing ones and disturbance of the plant regimes. ▪ Paving and/or graveling operation areas would inhibit proper water filtration within the area and interfere with the area hydrology. ▪ Additional measures must be taken to ensure that the proposed RSA improvement will not contribute to further impairment of Jordan Creek and Duck Creek.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue
▪ Description
Stormwater and Water Resources (continued)
▪ To improve water quality and fish habitat in Jordan Creek, the existing culvert under the runway should be retrofitted concurrently with the proposed lengthening at each end.
▪ The RSA improvements, as well as the SREF, Sand Shed, East Aviation Area, Helicopter Area, and MALSR, must comply with the NPDES stormwater requirements.
Vegetation
▪ Conduct vegetation and habitat typing to determine cumulative changes.
▪ Elimination of grass adjacent to the aircraft operations area has not been fully investigated.
Wetlands
▪ Assess the direct effects that the Proposed Actions would have on the Refuge.
▪ The EIS should consider how full mitigation could be made for any proposed wetland losses.
▪ Any mitigation must replace function, not just acreage, of wetlands. There must be a defined boundary beyond which cumulative impacts are significant.
▪ Assess direct effects on the Refuge, particularly destruction of habitat and the importance of Jordan Creek to estuarine wetlands.
▪ Further loss of wetland habitat would result in decreased value of the area as a migration stopover site.
▪ Eliminating standing water may not reduce the number of waterfowl and shorebirds that utilize the airfield.
▪ The high-value, emergent, estuarine wetlands on JNU property and the surrounding Refuge are extremely productive and rare in southeast Alaska (comprising 10% of the wetlands in Alaska).
▪ The EIS should include an accurate delineation, including functional analysis, of wetlands in the Northwest Development Area and should develop alternatives to avoid or minimize impacts to this important and productive area.
▪ Cumulative effects analysis should present information on all historic wetland loses and on all wetland losses and other effects associated with the JNU Master Plan.
▪ Wetland losses for each action, including related but already permitted projects and historic losses, should be included.
▪ The EA tallies wetland losses from 1948 to 1984. The list is incomplete and should account for wetland losses from 1984 to the present.
▪ The filling of wetlands could affect runoff and drainage adversely, causing flooding in the Mendenhall Valley.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Wildlife and Habitat ▪ Further loss of the unique, limited habitat surrounding the Airport could result in decreased value as a migration stopover site. ▪ Significant reduction of the Mendenhall Wetland's productivity could have far-reaching impacts for a broad variety of both migratory and resident birds. ▪ Fish production in the area streams contributes to substantial and important sport, subsistence, and commercial fisheries in nearby marine waters. ▪ Many of the actions being considered would eliminate or compromise productive habitat. ▪ The least-impacting methods available to reduce risks to aircraft while maintaining fish and wildlife habitat that support species of little concern to air traffic should be implemented. ▪ The EIS should characterize the attributes of the habitat in the Northeast Development Area to better assess the potential effects of the Proposed Action and to determine if potential wildlife hazards exist. ▪ An analysis of essential fish habitat (EFH) should be included. ▪ Marine fish habitat should be considered separately from anadromous fish habitat. ▪ How can you mitigate for the small passerines, shorebirds, and mammals that are not a factor at the Airport? ▪ Impacts due to filling intertidal wetlands below ordinary high water of the Mendenhall River will impact anadromous fish habitat. ▪ Recent studies show that Jordan Creek is a very viable salmon fishery and habitat, and that would argue against any plans or proposals to join it with Duck Creek.
Wildlife Hazard Management ▪ Evaluate the impacts of the Wildlife Hazard Assessment (WHA) recommendations. ▪ Evaluate how the proposed flat gravel or grassed areas will discourage bird activity. ▪ Do not disturb the eagle's nest bordering the Dike Trail. ▪ The EIS must examine the recommendations of the May 2001 WHA and provide opportunities for public and expert scrutiny. ▪ Evaluate bird management and wildlife hazard concerns. ▪ Some recommendations in the WHA could increase the likelihood of wildlife strikes. The potential for proposed management activities to cause greater risks needs to be evaluated and considered in the EIS. ▪ Many of the suggestions in the WHA are likely to cause significant adverse harm to aircraft safety. ▪ Ravens and crows are not historically a species that constitute a strike hazard to aircraft.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Wildlife Hazard Management (continued)
▪ Extend fencing around the south side of the Float Plane Pond access road, runway, and taxiway to prevent deer and other mammals from Airport incursions. Such barriers are in wide use in other locations and have the added function of increasing safety at the Airport in regard to human intrusions.
▪ The WHA does not adequately justify the proposed management actions, given the low number of wildlife strikes.
▪ All wildlife species are not equally hazardous to Airport operations.
▪ Wildlife hazard management actions should be prioritized after evaluating the level of risk of each species group in the vicinity.
▪ Fill will create flat surfaces that will attract birds when it rains and worms come to the surface.
▪ Many actions proposed in the WHA do not appear to be justified, as there is no indication of how much each hazard would be reduced.
▪ Some actions identified in the WHA would create one habitat while destroying another. Creative management could convert high-risk species habitat into habitat for lower-risk species instead of eliminating the habitat altogether.
▪ Eliminating standing water may not reduce the number of waterfowl and shorebirds that use the airfield.
▪ Application of chemical treatments could coincide with fall migrations to minimize wildlife strikes during high-use periods (as chemical deterrents have been successful in reducing foraging time in ponds).
▪ Alternatives to elimination of grass in the operations areas (including the maintenance of optimum grass heights to reduce bird forage, the application of bird repellants, and the application of chemical treatments) should be fully explored in the EIS.
▪ An adaptive management program experimenting with minimal impact actions should be considered first.
▪ Wildlife habitat in the vicinity of the Airport is uniquely valuable, and it is not necessary to eliminate that habitat to achieve the objectives of the WHA.
▪ Development, enhancements, mitigation, or other work accomplished on or around the Airport should be done in a manner that minimizes hazards to aviation safety including those resulting from wildlife.
▪ Permits issued for a seafood processing facility within 5 miles of the project area will likely attract numerous birds feeding on disposed seafood waste. As a result, JNU should consider methods of bird control other than limiting habitat.
▪ The EIS needs to show or reassert or somehow provide information to the public regarding what wildlife hazard scenarios can realistically be expected at JNU or at any airport that is sited next to a wetland.
▪ The Wildlife Damage (Hazard) Management Plan should be provided to the public and the agencies for review and comment prior to making any decisions regarding wildlife habitat management at JNU.
▪ The EA does not address the potential safety hazards to aircraft that could be caused by shifting the runway east and expanding the RSA into heavily utilized Vancouver Canada Geese foraging areas.

Table 1-9. Key Issues of Concern for the JNU EIS, continued

Issue ▪ Description
Wildlife Hazard Management (continued) ▪ A wildlife management plan has the potential to increase wetlands loss. ▪ The EIS should consider the history of aircraft strikes from wildlife at JNU and consider whether the probability for strikes is higher here than at other airports. ▪ The EIS should consider the possibility/likelihood that cutting the trees will make the birds that have to perch there or nest there move inland; then they're going to have to fly right back across the runway to feed because a lot of those birds feed in the tidal zone. ▪ The birds are adaptive, and if habitat is removed other habitat will be used. Similarly, if the trees, which serve as a barrier, are removed the birds will tend to fly across the runways more often. As it is now, the birds fly parallel to the trail and parallel to the runway on the far side of the trees to the river, and fly up that way. ▪ The major migration of birds into Juneau occurs in April, May, and June and there are no bird strikes during that period of time even though there are tens of thousands more birds in Juneau at that point on the wetlands than any other time of year. However, fully half of the air strikes that were recorded in Table 1 [of the WHA] occurred during the hunting period, and it would appear that there may be some relationship between hunting and the bird strikes. ▪ The eagles do not interfere with the runway except where they perch on approach lights. ▪ You need to determine what impact hazing is going to have, rather than just doing hazing because everybody else does hazing. ▪ Hunting may actually attract birds to fly to the area because of the use of decoys and the dead ducks left floating in the ponds. ▪ A risk of filling in the Float Plane Pond fingers is that birds will then be attracted to the Float Plane Pond only. If this happens, bird activity will actually increase due to planes coming and going on the Float Plane Pond compared to the current level of activity due in part to birds being permitted in the adjacent sloughs. ▪ Helicopters and small aircraft are now using the finger ponds as approach and departure routes, which means they're flying right over birds, and they certainly have the opportunity to stir up birds (causing them to move, possibly fly in aviation paths). The EIS should analyze those flights and consider not doing it. ▪ Wire grids are incredibly expensive to put in and almost impossible to maintain, and they are going to be lethal to a small plane if they crash into the grid. Are they really the most beneficial way to deal with this problem?

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS

Issue	Rationale for Not Including in the Analysis
Alternatives	
The scope of the EIS should be inclusive of other airports in the area.	The demonstrated needs described in Chapter 1 are specific to JNU and are not relevant to other area airports.
The EIS must consider limiting the types and sizes of aircraft using the runways.	Under the Airline Deregulation Act of 1978 FAA does not have the authority to regulate the types of aircraft serving JNU. As demonstrated in Chapter 1 and Technical Working Paper #1, terrain surrounding the Airport combined with stage lengths and other factors do limit the types of service that commercial carriers can provide.
The EIS should consider how other airports handled the requirement for RSAs and those that have used smaller RSAs.	The regulations specify the size of RSA applicable to JNU, so that other airports requiring smaller RSAs are not relevant (see below).
Alternatives should include variances from the RSA "standards."	The FAA Order on Runway Safety Area does not allow "variances" from standards, but a determination may be made that it is not practicable to meet standards. Please see Section 2.2 concerning application of the method outlined in the Order to evaluate alternatives for RSA.
The Purpose and Need (re: RSA) is too narrow and constricts the range of alternatives.	FAA disagrees. Please see Section 1.4.1 regarding the basis for RSA additions at JNU. There is a range of reasonable alternatives considered in the EIS, including alternatives that result in no impact (the No Action) and alternatives that limit environmental impacts by reducing runway length.
Are safety zones being devised for twentieth-century airplanes to be phased out for twenty-first-century airplanes?	The purpose of RSAs is described in Section 1.4.1. It is not within the scope of this EIS to assess the development of aircraft in the twenty-first century. However, it should be noted that the trend in the past 30 years is for aircraft to become more efficient and quieter. Also, this EIS does consider those aircraft likely to serve JNU in the planning horizon through the year 2015. The RSA required for JNU is based on a "group" of aircraft of particular size and approach speed.

[1] Comments reflecting personal preferences are not used in the development of alternatives and have not been listed on this table. For example, "aircraft access is as important as safety" or "people are more important than geese" reflect personal preference

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
An EIS is recommended for future actions at the Airport.	This EIS does consider actions proposed for implementation within the planning and funding period of the next 5 years, and provides aviation forecasts/analysis through the year 2015. Other federal actions that could occur in the future would require their own analysis under NEPA
Other Airport Actions	
Include in this EIS the Float Plane Pond proposal and all other projects described in the Master Plan.	See above response re: future actions, with respect to other possible future uses of the Float Plane Pond. (In the event this comment concerns the "proposal" to cut woodlands adjacent to the Float Plane Pond, see Section 1.5.4 of this EIS for a summary of the current proposed approach.
A significant number of past actions in the Airport vicinity have affected similar habitats as those proposed by in the Draft EA. Past projects are not described in the Draft EA.	Past projects are described in this EIS (see Section 5.2, Cumulative Effects). However, these projects are not evaluated on their own, as they have already been completed or at least permitted.
The Cessna Drive culvert installation cannot be considered beneficial to Duck Creek fish habitat.	This question is not relevant to the EIS. Fish habitat in Duck Creek is described in Section 3.8 and cumulative effects are described in Section 5.5.
What is the "possible future Airport use" of the 47-acre parcel to be retained by CBJ for "land use to be determined by the community"?	
The specific cost of the Cessna Drive culvert replacement should be given in both the WTR(?) and the EA.	This comment is not relevant to the EIS.
Noise	
Residents north of the runway are heavily impacted by the current patterns of helicopter noise. The helicopter operations and nighttime snow removal at the Airport are negative noise impacts to our neighborhood, and should demand specific attention in the EIS.	The purpose of this EIS is not to evaluate existing environmental impacts from projects already permitted and operations already authorized. The EIS does, however, consider existing impacts in addition to the potential changes in noise levels caused by new facilities, operations, changes in runway thresholds, etc. Please see Sections 3.1 and 4.1. Also, it is noted that a noise study on Airport operations was completed in 1999 (HMMH 1999). That study concluded that, with one exception, noise levels associated with the Airport facilities and operations were compatible with surrounding land uses based on the FAA's established threshold for adverse noise impacts (Federal Aviation Regulation Part 150).

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
Tree Removal on Jordan Creek	
The tree cutting may have violated the Migratory Bird Treaty Act, the Clean Water Act, and requirements of the CBJ ordinance and variance conditions. It also should not have been done during development of an EIS.	The tree cutting was an independent action undertaken by JNU without the requirement for FAA funding or approval. The determination as to whether it violated federal or local laws is best left to the appropriate resource management agency. It is not relevant to the EIS, except to the extent cumulative effects analysis includes impacts to this habitat.
The Airport did what they felt was in their best interest based on line-of-sight concerns between tower and aircraft, and for wildlife hazards.	As noted above, this issue is not relevant to the EIS.
The Airport stated that this (tree cutting on Jordan Creek) was also a wildlife hazard issue, which was not mentioned in the recently completed WHA.	As noted above, this issue is not relevant to the EIS.
Tree cutting was unnecessary; it removed essential sound abatement that protected nearby business and residences, created an eyesore, and it was performed in complete disregard of acceptable forest practices. No silt fencing was used, no streamside buffers were left in place, and tracked vehicles crossed the stream.	As noted above, this issue is not relevant to the EIS except that cumulative effects analysis does incorporate the results of this action.
The trees along Jordan Creek were to be topped, not cut down.	This issue is not relevant to the EIS.
Regulatory, Purpose and Need	
Need to disclose the regulations or requirements concerning obstructions and obstacles on Airport property, such as maximum tree height or structure height.	Where appropriate to the consideration of alternatives or analysis, obstructions and limitations are provided. However, this EIS does not serve as an evaluation of the Airport's airspace and obstructions.
Juneau is better served by an airport in a new and different location.	See Section 2.1 for more information. However, the construction of another airport does not satisfy the Purpose and Need for the actions being considered. The requirement to meet standards for RSA at JNU is based on existing uses.

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
Recent security changes suggest there is not enough space to support jet carrier operations at the Airport.	Jet carrier operations are being served at the Airport. JNU is considering the effect of new and potential security measures on Airport design, particularly terminal layout. However, no changes or recommendations have been proposed as of this time.
Wildlife Hazards	
Address the impact of potential changes in bird behavior caused by the tree cutting that has been proposed by the Airport management. Evaluate if the trees along the Dike Trail provide a barrier to discourage waterfowl from crossing the runway. When birds do cross, they may be forced to do so at an increased elevation, lessening the hazard they constitute. The ponds and trees south of the runway mitigate wildlife hazards for the float planes and runway and should not be removed. Removal of trees would eliminate a unique forested island within the wetlands; retention of downed timber and shrubs would most likely attract other low-hazard species of birds.	The Airport has decided not to propose the cutting of Float Plane Pond trees at this time. The EIS does consider potential impacts associated with habitat modifications to the woodlands south of the Float Plane Pond. This EIS also considers the environmental consequences of removing understory and approximately 1/3 of the trees in the woodlands. See Section 2.9.1.9 for a description of this action, and Section 4.8 of the impact analysis.
JNU does not have a problem with airplane/bird collisions and never has.	FAA disagrees. The USDA's Wildlife Hazard Assessment (USDA 2001) provides documentation on reported bird strikes at JNU. It is estimated that many other strikes have occurred but have not been reported. In addition to the documented bird strike history, the vicinity of the Airport has wildlife of a size and in numbers capable of causing an air carrier aircraft to experience a damaging collision with wildlife.
An analysis of wildlife strikes at JNU should be conducted and results compared, including strike rates, to other airports.	This analysis is unnecessary. A hazard has been documented to exist at JNU.
If there are many unreported strikes, a study should be conducted to calculate reporting rates.	This analysis is unnecessary. Although FAA believes many other strikes have occurred but not been reported, the evidence of reported bird strikes, as well as the presence of wildlife species frequently involved in aircraft wildlife strikes in the vicinity of the Airport, are sufficient to require implementation of an appropriate wildlife hazard management program.

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
Bird and mammal population surveys should be conducted for a minimum of one year and use of each habitat by migratory and resident birds and mammals should be documented throughout the year. More studies should be conducted on the flight and usage patterns of the Refuge and Mendenhall Valley birds. Additional biological surveys should be conducted to evaluate the magnitude of individual risks that are present and should be able to prioritize actions to accomplish the greatest reduction in relative risk with the least possible impact on non-target species.	Additional bird and mammal surveys have been conducted during this study. FAA believes sufficient information is available to make reasoned decisions concerning the Proposed Actions.
Water Resources	
Do not change the flow of the Mendenhall River.	The flows in the Mendenhall will not be increased or decreased by the Proposed Actions in any amount that would be meaningful in terms of average flows. (Changes to the Mendenhall River path and geomorphology are evaluated with respect to RSA alternatives and alternatives to fill wetlands for wildlife hazard control).
Mitigation	
A local environmental trust fund should be established to support local restoration projects.	This is an admirable suggestion, but the forms of mitigation for any approved actions will be determined through coordination with the Corps and other agencies.
The EIS should specifically outline what properties, easements, materials, labor, and other measures will be applied to the Duck Creek restoration projects as mitigation for the Proposed Actions.	The specific plan for mitigating impacts is dependent on decisions by the FAA and applicable resources management and permitting agencies, and will be addressed in the permitting decisions rather than in the EIS. The EIS will incorporate by reference the proposed mitigation plan, and it will be available for review during the Draft EIS public comment period. Relocation of Duck Creek, proposed as part of the wildlife hazard management actions and for development of aviation facilities (see FW/RW-2) would alleviate some hazards to aviation. At the same time, the relocation plan would be to design a new channel on Airport property that retains flows and facilitates fish passage.

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
Proposed specifications for the relocation of Duck Creek, as well as measures to protect in perpetuity the relocated stretch of Duck Creek included in the EIS, should be endorsed by the Duck Creek Advisory Group.	The Duck Creek Advisory Group should be consulted for any actions specific to relocation of the Creek. However, an endorsement is not necessary for regulatory approval. Mitigation stipulations for long-term protection would be incorporated into the final Mitigation Plan.
TEMSCO was required to pay $5,000 toward mitigation. That amount should be corrected for inflation and required of all other JNU land users.	This previous action is not within the scope of the EIS.
Light Pollution	
Address light pollution visible to residences along Gastineau Channel.	The EIS does not address existing light pollution, only changes that may occur as a result of proposed Airport improvements and the additive effects of new light pollution combined with existing. According to discussions with FAA and Airport staff, there have been no reported or documented complaints concerning light emissions emanating from JNU. See Section 4.2.12.
Vegetation	
Address the silt that has accumulated in Jordan and Duck Creeks due to the removal of vegetation.	It is unclear what vegetative removal project is referred to, but the scope of the EIS does not include evaluation of impacts from previous projects. It does include a description of existing water quality in both streams.
Evaluate how the proposed flat gravel or grassed areas will discourage alder growth.	It is unclear to what this comment refers.
The field studies of Dr. John Crow must be incorporated into the EIS.	Attempts to obtain data from these field studies were not successful. Should this information become available for the Final EIS it will be reviewed and potentially incorporated into the environmental analysis.
Elimination of grass adjacent to the aircraft operations area has not been fully investigated.	The purpose of this EIS is not to address all past permitted or unpermitted actions on the Airport. A description of existing environmental conditions is included, and an assessment of cumulative effects incorporates any consequences of this action.

Table 1-10. Issues Not Considered for Further Analysis for the JNU EIS, continued

Issue	Rationale for Not Including in the Analysis
Wildlife	
The bald eagle nest and its occupants should not be disturbed under any circumstances.	Local ordinance addresses this concern. During 6 months of the year (March 1 through August 30), no activity is allowed within 330 feet of a bald eagle nest, and for the remaining 6 months of the year, no activity is allowed within 50 feet of the nest.