



PORT LIONS AIRPORT IMPROVEMENT
Wildlife Assessment

Project Z527960000

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PORT LIONS AIRPORT IMPROVEMENT WILDLIFE ASSESSMENT

INTRODUCTION

The Port Lions airport improvement project is designed to realign and expand the existing village runway to provide enhanced aviation and passenger safety. This wildlife assessment examines the flora and fauna within and adjacent to the project area, highlights the species of special concern, and assesses the anticipated impacts of the project on those species and their habitats.

LOCATION

The Port Lions airport is located on the north end of Kodiak Island, Alaska at the head of Kizhuyak Bay (N57.8850° x W152.8472°), 1.8 mi (2.9 km) northeast of the village and 250 mi (402 km) south of Anchorage (Appendix 1). Kodiak, the largest and most complex island in the Kodiak Archipelago, is located in the western Gulf of Alaska. It is up to 100 mi (160 km) long, varies from 9 to 80 mi (15 to 130 km) in width and has a landmass of 3,465 mi² (8,975 km²). No point of the island is farther than 13 mi (21 km) from the sea as deep fjords slice into the island. Shelikof Strait separates Kodiak from the mainland on the west, with a 25 to 40 mi (40–65 km) swath of extreme ocean currents and windswept waves.

The Port Lions Airport Wildlife Study Area (PLAWSA) encompasses approximately 263 acres (106 ha) in the immediate vicinity of the existing Port Lions airport including upland areas above mean high tide. In 2019, the scope of this report was expanded to include intertidal lands (between mean high line, +12.3' (+3.7 m); and mean low tide, +1.1' (0.3 m)) immediately adjacent to the existing runway. Land ownership is primarily State of Alaska (Department of Natural Resources) and Afognak Native Corporation, with smaller parcels owned by the Native Village of Port Lions and the City of Port Lions (Figure 1). There are no private (individual) parcels identified within the area. The airport and the PLAWSA are within the municipal boundaries of the City of Port Lions.

METHODOLOGY

Information on flora and fauna likely to be present in and adjacent to the study area was derived from personal knowledge of the author based on working on Kodiak Island as a professional wildlife biologist for 37 years and living in the area for most of that time, interviews of local residents, a comprehensive bird list for Kodiak created by Audubon Society and US Fish and Wildlife Service (USFWS) (USFWS 2009a), review of available survey and harvest data from State and Federal agencies, and a comprehensive cover type analysis conducted for the Kodiak archipelago in 2000 (Fleming and Paige 2004). Additionally, a bald eagle nesting survey and a

ground survey of flora and fauna in terrestrial portions of the study areas were conducted on 14 May 2018, and an intertidal flora and fauna survey was conducted on 10 May 2019.

Determination of species of special concern was based on a review of pertinent State and Federal laws and regulations, and unique situations (*Exxon Valdez* oil spill recovery). Analysis of potential impacts on all avian and mammalian species was based on professional judgement of direct impacts on individual animals (mortality and displacement) and on anticipated alterations of habitat.

CLIMATE

The Kodiak Archipelago has a sub-polar oceanic climate. Low-pressure systems, spawned along the Aleutian Chain, spin counterclockwise into the Archipelago with easterly winds that bring cool moist weather to the Port Lions area throughout the year. These systems are periodically disrupted by high-pressure systems that develop over mainland Alaska. The resultant winds from those systems are from the northwest and they typically bring drier weather with more extreme temperatures. Whenever especially strong systems collide, the resultant storms can bring hurricane force winds with heavy rains. Fog is common, especially on the rare days when winds are calm.

Historical weather data from the archipelago is only available from Kodiak city, located 18 miles (29 km) east of Port Lions. Average February temperatures (the coldest month) range from 26.1 to 35.5°F (-3.3 to 1.9°C) and average August temperatures (the warmest month) range from 49.0 to 61.0°F (9.4 to 16.1°C). The highest temperature ever recorded was 86 °F (30.0°C) and the lowest was -16 °F (-26.7°C). Average annual precipitation is 75.4 in (191.5 cm). Winds were common throughout the year with an average annual wind speed of 11 mph (4.9 mps); velocities over 50 mph (22.4 mps) have been recorded in every month. Most of the eastern side of Kodiak Island, including Port Lions, has weather patterns similar to those recorded at Kodiak city.

The sea surrounding Kodiak Island remains ice-free throughout the year, including Kizhuyak and Marmot Bays and Whale Pass near Port Lions. Narrow bays with substantial freshwater influence and protection from most storms, such as Antone Larsen Bay between Kodiak and Port Lions, often freeze during several months in winter. Nearshore ocean temperatures typically vary from 32.9°F (0.5°C) in January to 55.4°F (13.0°C) in August. The daily tides on the east side of the archipelago, including Kizhuyak Bay, average 7.9 ft (2.4 m) while those on the west side of Whale Pass average 16.0 ft (4.9 m), with 2 sets of tides being the daily norm. The maximum daily variation on the east side is 13.8 ft (4.2 m) and on the west side the maximum is 23.6 ft (7.2 m). This dramatic tidal difference between each side of the archipelago creates substantial tide rips within Whale Pass.

VEGETATION

Sitka spruce (*Picea sitchensis*) are the only native conifer trees on the Kodiak archipelago, and are common on Shuyak, Afognak and the northeastern end of Kodiak Island, with Port Lions being near the southern fringe of their range. They are a relatively new inhabitants to the archipelago, expanding southward from the Kenai Peninsula within the last 800 years. Devil's club (*Echinopanax horridum*), high-bush blueberry (*Vaccinium ovalifolium*), and Northwest lady fern (*Athyrium filix-femina*) are the principle understory vegetation in forested areas.

A diversity of habitats occur in non-forested areas of Kodiak Island near Port Lions, with shrub-grass-forb complexes predominant throughout lowland and mid-slope areas (<1,500 ft; <457 m). Representative species are Sitka alder (*Alnus crispa sinuata*), Kenai birch (*Betula kenaica*), salmonberry (*Rubus spectabilis*), red-topped grass (*Calamagrostis canadensis*), European red elder (*Sambucus racemosa*), willows (*Salix* spp.), fireweed (*Epilobium angustifolium*), and cow parsnip (*Heracleum lanatum*). Cottonwood (*Populus balsamifera*), and willow communities are common along stream bottoms.

The PLAWSA is principally a gentle south-facing slope with a flat plateau where the current runway is located. It encompasses approximately 263 acres (106 ha) with elevations ranging from sea level to 250 ft (76.2 m). Based on an analysis of a vegetative cover map created in 2000 by Fleming and Paige (2004), the PLAWSA is primarily characterized by alder (39.3%), spruce (38.1%), gravel (11.1%), and meadow (7.6%) (Table 1)(Appendix 2). Only 3.9% of the area is classified as wetland. These topographic and vegetative features provide rich and varied habitats for birds and mammals in a relatively small area.

An on-site survey of the flora and fauna of the PLAWSA was conducted by air and walking on 14 May 2018 (Appendix 3). During that survey, direct evidence of 21 bird species and 7 mammal species was observed. These observations represent a minimal snap-shot of fauna within and adjacent to the area during spring. Vegetative cover was generally confirmed to be as described in Fleming and Paige (2004) with the exception of several acres of spruce forest at either end of the runway that had been cut after the cover map was created.

MAMMALS

Only six land mammals are considered indigenous to Kodiak Island. These original inhabitants were brown bear (*Ursus arctos middendorffi*), red fox (*Vulpes vulpes*), river otter (*Lontra canadensis*), short-tailed weasel (*Mustela erminea*), little brown bat (*Myotis lucifugus*), and tundra vole (*Microtus oeconomus*) (Rausch 1969)(Table 2). Confirmation of original inhabitants is, however, impossible due to the geologic history of the islands. The constant uplifting and erosion of the terrain is not conducive for development of a useable fossil record.

Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) were introduced from southeastern Alaska in the late 1800s. By the 1960s deer had dispersed throughout the Archipelago. Winter mortality is the most significant limiting factor for the deer population, with estimated population

sizes ranging from <50,000 to >100,000 from 1982-2014 (Svoboda and Crye 2015). Deer are an important hunting resource for the residents of and visitors to the Kodiak islands.

Mountain goats (*Oreamnos americanus*) were translocated to northern Kodiak Island from the Kenai Peninsula in 1952 and 1953. The first hunting season was authorized in 1968, as the population expanded in number and range. In 2012, the estimated goat population was 2,390 and they occupied all suitable habitats on Kodiak Island (Svoboda and Crye 2014). Other successful translocations to Kodiak included red squirrels (*Tamiasciurus hudsonicus*) (1952), Arctic ground squirrels (*Citellus undulatus*) (prehistoric), reindeer (*Rangifer tarandus*) (1924); muskrat (*Ondatra zibethica*) (1925); beaver (*Castor canadensis*) (1925); and snowshoe hares (*Lepus americanus*) (1934) (Paul 2009). Roosevelt elk (*Cervus canadensis roosevelti*) were introduced to nearby Afognak Island in 1929, and although they have never become established on Kodiak Island, small bands occasionally cross Raspberry Straits and come onto the north end of Kodiak. Norway rats (*Rattus norvegicus*), house mice (*Mus musculus*), feral cats (*Felis catus*) and feral dogs (*Canis familiaris*) have also been accidentally introduced into the wild since western explorers and settlers first came to the island.

Brown Bear

Kodiak brown bears are the most common large mammal using the PLAWSA. Although no studies have been conducted within the PLAWSA, Alaska Department of Fish and Game (ADF&G) conducted extensive research in the Terror Lake hydroelectric project area immediately south of Port Lions village (Smith and Van Daele 1990, 1991). Results of those investigations and supplemental intensive aerial surveys, suggested the population density of independent bears (not including cubs) in the Terror Lake area was 222/1,000 km² (0.58/mi²) in 2011 (SE = 7.81). This estimate was not significantly different ($P > 0.05$) than estimates derived from surveys conducted in 1987 (228/1,000 km²; SE = 25.29) (0.59/mi²) and in 1997 (273/1,000 km²; SE = 31.70) (0.71/mi²), and it suggests the population is healthy and productive (memorandum from L. Van Daele-ADF&G to G. Wheeler-Kodiak National Wildlife Refuge, 21 June 2011).

It is unlikely any bears den within the PLAWSA (Van Daele et al 1990), but the low elevation south-facing habitat offered by the site is very good spring bear habitat (Van Daele 2007) with intertidal detritus, invertebrates and carrion on the beaches, as well as some of the first emerging forbs as bears come out of their dens in the spring. There are no salmon spawning streams within the study area, but many nearby streams, including an artificially enhanced run in Settler's Cove, are important feeding areas for bears during the summer (Van Daele et al 2013). Salmonberries, elderberries and blueberries, all of which are important bear foods, are readily available in the late summer and early fall within and adjacent to the PLAWSA (Van Daele et al 2012).

Bears are commonly seen by local residents both in person and on remote game cameras passing through the PLAWSA. Prior to improving the local landfill to make it more bear resistant with electric fencing and routine incineration in 2009, several bears would routinely feed in the dump and rest in dense spruce and alder thickets within the PLAWSA and along the road to the village. According to local residents, such occurrences are rare nowadays, but it serves as a reminder to

maintain a clean camp with no bear attractants during any construction activities associated with airport expansion.

Brown bear hunting is popular and important to Kodiak's economy. Nonresident hunters are required to have a registered guide, costing \$20-35,000 per hunt, or be guided by an Alaskan resident relative. Most resident hunters must enter into a lottery for a chance to hunt, and the odds of success are less than 1% in many of the 32 separate hunt areas on the archipelago. Consequently, bear hunting is closely regulated and managed by ADF&G to assure the population is sustained in a robust and healthy manner (Van Daele and Barnes 2010). Bear hunting periods are divided into spring (01 April – 15 May) and fall (25 October – 30 November) seasons with a limited number of permits available to resident and non-resident hunters in each area. The hunt area that includes the PLAWSA extends from northern Kizhuyak Bay to Viekoda Bay and has 17 bear hunting permits available annually, 6 fall resident (DB226), 6 spring residents (DB256), 2 fall non-residents (DB126), and 3 spring non-residents (DB156). From 2006-2016, an annual average of 4.7 bears were harvested in this hunt area (ADFG 2018a), with the vast majority of the hunting activity occurring south and west of the airport. Only one bear has ever been reported as being legally harvested within the PLAWSA (1966).

Bears may also be legally shot whenever they are considered a threat to a person's life or certain types of property (5AAC 92.410 – Defense of Life or Property). As noted earlier, for many years bears routinely used the Port Lions dump, located about 0.5 mi (0.8 km) southwest of the PLAWSA, resting within and adjacent to the area between feeding forays. During that time, several bears were killed, both legally and illegally, because they were perceived as real or potential threats. No bears are known to have been killed in defense of life or property within the PLAWSA since the landfill was improved.

Sitka Black-tailed Deer

Deer are the most important source of wild red meat for the people of Port Lions and the Kodiak Archipelago. When the village was moved from Afognak Island to its current location at Settlers Cove, deer were just beginning to become established in the area. By the early 1980s, populations peaked resulting in liberal hunting seasons and bag limits (up to 7 deer) and a commensurate increase in hunting activities by both local and non-local hunters. To limit the impacts on resident deer and reduce safety concerns, a special hunt area was established around the village and the airport in 1981, in which hunters were restricted to only 1 deer per year.

ADF&G has never conducted comprehensive deer population surveys on northern Kodiak Island. Anecdotal and harvest data indicate that current deer populations are lower than they were 30 years ago, but they are still common in the area and provide a great deal of food and recreation for a variety of hunters.

The PLAWSA provides excellent winter and spring habitat for deer with a mosaic of cover and vegetation types. Wind-firm mature spruce forests offer shelter during wind storms and intercept snow during the winter. Adjacent alder thickets which include willow and elder bushes provide important winter forage, and the low elevation south-facing slope is a source for some of the first green vegetation in the spring. During harsh winters with deep snow, deer forage along the

beach below the airstrip and may use the plowed surface of the airstrip and roads to travel and rest.

The hunting season for deer in the area including the PLAWSA is open from 01 August – 31 October (1 buck) for all hunters, and from 01-14 November (1 deer – either sex) for hunters using archery or muzzleloader weapons. An additional season is available for youth hunters (ages 10-18) from 15 November – 31 December (1 deer – either sex). If a hunter takes a deer in any other hunt area, or if they take their first deer within this area, they are ineligible to take another deer from the area (Svoboda and Crye 2015). Deer are occasionally taken from the PLAWSA, but the restrictive regulations and limited size of the area result in a very small annual harvest (estimated to be <5 annually).

Red Fox

Red fox are commonly seen and trapped in the Port Lions area, and they live within and adjacent to the PLAWSA year round. No fox dens have been identified within the area, but based on available habitat denning could be possible. Red foxes are considered to be endemic to the Kodiak archipelago, but the current fox population may have been supplemented by genetics from feral silver (a color phase of the red fox) and blue/arctic foxes (*Vulpes lagopus*) that either escaped or were released from fox farms in the 1930s, a few of which were within 20 mi (32 km) of Port Lions. There have been no ADF&G population surveys for this species, but anecdotal reports suggest the population is stable.

Fox trapping season is open from 10 November – 31 March and there is no annual bag limit. There is also a fox hunting season from 01 September – 15 February with a bag limit of 2 foxes. ADF&G does not keep track of the number of foxes harvested nor the locations they are taken from. Fox snares have occasionally be set within the PLAWSA, but local knowledge suggests that effort is sporadic and opportunistic.

Other Terrestrial Mammals (elk, squirrel, hare, vole, bat, otter, beaver, weasel, rat, mouse)

Roosevelt elk are rare visitors to the northern part of Kodiak Island, with small bands (<10 animals) observed about once each decade. ADF&G do not manage for establishment of a viable herd on Kodiak, so hunters are allowed to harvest these elk from 25 September – 22 October (drawing permit DE715/717) and from 23 October – 30 November (registration permit RE755). These regulations typically result in all of the elk being harvested within a year of coming onto Kodiak. The last reported sighting of elk within and near the PLAWSA was in 2004 and no elk have been reported as killed from within the area.

Red squirrels occur in the spruce forests, and snowshoe hares and voles occupy the shrub/meadow areas of the PLAWSA. Population densities of these species are variable, but there has been no effort at monitoring abundance or harvest. Hunting seasons are open year-round and there is no limit to the number of these animals that can be taken.

Little brown bats, otters, beaver, weasels, rats and mice have been observed transiting through the PLAWSA, but sightings and harvest of any of these species is uncommon. Feral dogs and

cats are occasionally reported from the area, but they are typically captured and repatriated or shot within a short time of being seen.

Mountain goats occupy the mountainous habitats south of the study area and seasonally move down into low elevation areas, but there have never been any reports within 10 mi (16 km) of PLAWSA. Reindeer, arctic ground squirrels, and muskrats have never been reported within 25 mi (40 km) of the PLAWSA.

Marine Mammals

The nearshore waters adjacent to the PLAWSA in Kizhuyak Bay are used by resident harbor seals, northern sea otters and Dall's porpoise. Pacific white-sided and harbor porpoises are less common, but also present. Steller's sea lions are prevalent around the Kodiak Archipelago and transit near the study area. Common whales that seasonally use northern Kizhuyak Bay, Whale Pass and Marmot Bay include killer (orca), humpback, gray, sei, minke and fin whales.

BIRDS

USFWS has identified 247 bird species that have been observed on the Kodiak Archipelago. Ninety-nine of these were known to nest in the archipelago (USFWS 2009a)(Appendix 4). There have been no comprehensive bird surveys conducted within or near the PLAWSA, so estimates of species present and anticipated frequency of occurrence must be extrapolated from information gleaned from similar habitats on northeast Kodiak Island.

While any of the 247 species could potentially overfly or temporarily roost in or near the PLAWSA, 41 species have been identified as likely to be seasonal or year-round residents of the area (Table 2). An additional 40 species, primarily shorebirds, waterfowl and seabirds, likely use intertidal and nearshore waters adjacent to the PLAWSA in Kizhuyak Bay (Table 3). Three species that regularly use the PLAWSA have been given special designation by resource agencies – marbled murrelet, peregrine falcon, and bald eagle.

The marbled murrelet, a species that is likely a seasonal resident to the PLAWSA, is a seabird that nests on moss-covered spruce branches in mature spruce forests around Kodiak and feeds and spends most of its non-nesting time at sea. Internationally, the marbled murrelet is listed by the IUCN as endangered. In the United States, the species was listed as "threatened" in 1993 in Washington and Oregon and "endangered" in California. In Canada, it is "red-listed" nationally, a status comparable to "threatened" (ADF&G 2018b). Its population status in Alaska is currently under review and has not been listed as either threatened or endangered, but it has been listed as a species impacted by the *Exxon Valdez* oil spill that has not yet fully recovered from that incident (EVOS 2018) and it is included on the USFWS list of Birds of Special Concern (USFWS 2008).

Peregrine falcons have been observed feeding and roosting within PLAWSA. While many subspecies of peregrines are migratory, the Peale's subspecies that is most common on the

Kodiak Archipelago remains in the area year-round and is the largest subspecies of peregrine. These birds prefer cliffs for nesting areas, none of which occur in the PLAWSA. Peregrines were listed as “endangered” in Canada from 1978 to 2017, but the three subspecies that are found in Alaska have never been designated as such. They are, however, included on the USFWS list of Birds of Special Concern (USFWS 2008). ADF&G allows a carefully restricted take of peregrines by licensed falconers.

Bald eagles are common year-round residents of the entire Kodiak Archipelago, including the PLAWSA. The statewide population is estimated at 30,000 and has never been considered for threatened or endangered status. From 1917 to 1953, there was a Territorial bounty on eagles because of the perception that they were jeopardizing salmon stocks (ADFG 2018c). In the Kodiak area, eagles nest on rocky capes or in large mature spruce or cottonwood trees, typically near the ocean or large lakes. The eagles living in the archipelago utilize a wide variety of foods, both living (waterfowl and fish) and dead (beached marine mammals, winter-killed deer and elk, hunter-killed bears, and spawned-out salmon). The Bald Eagle Protection Act of 1940 made it illegal to kill, disturb, or possess any part of a bald eagle, although there are special exemptions for the use of eagle parts for Native American traditional practices (USFWS 2009b).

REPTILES AND AMPHIBIANS

There are no reptiles or amphibians endemic or successfully introduced to the Kodiak Archipelago. Consequently, none are expected to be within the PLAWSA.

INTERTIDAL FLORA AND FAUNA

The intertidal habitat (between tidal stages of +12.3' (+3.7 m) and +1.1'(+0.3 m)) immediately adjacent to the existing runway was surveyed on 10 May 2019. The area included a range of habitats from large boulders to cobbles to sand. Extensive mussel beds were present in the northern part of the area, including along an intertidal spit that extends to a small island. Freshwater streams flow into the sea at both the north and south ends of the runway, and there was one area of artificial rip-rap along the bank about mid-way below the existing runway. The habitats support a rich array of plants and animals typical of intertidal areas throughout the Kodiak Archipelago (Appendix 5). We did not encounter any indication of “threatened” or “endangered” species during the survey, although we did note a sea otter swimming nearby.

Based on the results of this survey, no significant detrimental change in habitat or flora/fauna are anticipated due to the addition of fill or rip-rap along the shoreline adjacent to the runway. If properly designed and installed to minimize erosion, it may instead serve to create additional habitat and increase species diversity.

THREATENED AND ENDANGERED SPECIES

US Fish and Wildlife Service listed species

USFWS currently lists the following species as “endangered” or “threatened” in Alaska (USFWS 2014):

- 1) Short-tailed albatross (*Phoebastria albatrus*) (endangered)
- 2) Eskimo curlew (*Numenius borealis*) (endangered)
- 3) Aleutian shield fern (*Polystichum aleuticum*) (endangered)
- 4) Steller’s eider (*Polysticta stelleri*) (threatened)
- 5) Northern sea otter (*Enhydra lutris kenyoni*) (threatened) Southwest distinct population
- 6) Spectacled eider (*Somateria fischeri*) (threatened)
- 7) Polar bear (*Ursus maritimus*) (threatened)
- 8) Wood bison (*Bison bison athabascaae*) (threatened)

None of these species occur within the PLAWSA, but two (Steller’s eider and northern sea otter) regularly use nearby marine habitat in Kizhuyak Bay.

Steller’s Eider

Steller’s eiders molt and winter in near shore waters throughout the Alaska Peninsula and Kodiak Island. They nest along the Yukon Kuskokwim Delta in western Alaska and the North Slope in northern Alaska, and are winter visitors to Kizhuyak Bay. USFWS has designated 5 units of critical habitat, including the breeding habitat on the Yukon Kuskokwim Delta and four units in marine waters of southwest Alaska (including Kodiak) that are important for molting, resting, feeding, and wintering. Approximately 2,800 mi² (7,252 km²) and 850 mi (1,368 km) of coastline are included in critical habitat (USFWS 2014). The conservation goals within these critical habitat areas are to: 1) protect adults and increase the number of young produced; 2) re-establish a healthy and stable population on the Yukon-Kuskokwim Delta; 3) monitor the population through aerial and ground surveys; and to 4) continue research to better understand the biology and needs of this species (USFWS 2014). Steller’s Eiders are illegal to hunt under both State of Alaska and Federal Subsistence hunting regulations.

Northern Sea Otter

Sea otters occur around the Kodiak Archipelago and they are commonly observed year-round in Kizhuyak Bay, Whale Pass and Marmot Bay near the PLAWSA. They are almost exclusively a marine mammal and only rarely haul-out on land, so it is very unlikely they would utilize any portion of the study area. USFWS has designated all of the Aleutian Islands, Bristol Bay, Kodiak Archipelago, the Alaska Peninsula, and western Cook Inlet (5,855 mi²; 15,164 km²) as critical habitat for the threatened southwest distinct population segment (USFWS 2014). Sea otters are protected from hunting by the Marine Mammal Protection Act (MMPA), although both the MMPA and the Endangered Species Act include an exemption specifically allowing Alaska Natives the right to harvest marine mammals for subsistence purposes.

National Marine Fisheries Service listed species

National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) currently lists the following species as "endangered" or "threatened" in Alaska (NMFS 2018):

- 1) Bowhead whale (*Balaena mysticetus*) (endangered)
- 2) Sei whale (*Balaenoptera borealis*) (endangered)
- 3) Blue whale (*Balaenoptera musculus*) (endangered)
- 4) Fin whale (*Balaenoptera physalus*) (endangered)
- 5) Cook Inlet beluga whale (*Delphinapterus leucas*)
- 6) Western North Pacific gray whale (*Eschrichtius robustus*) (endangered)
- 7) North Pacific right whale (*Eubalaena japonica*) (endangered)
- 8) Mexico humpback whale (*Megaptera novaeangliae*) (threatened)
- 9) Western North Pacific humpback whale (*Megaptera novaeangliae*) (endangered)
- 10) Sperm whale (*Physeter microcephalus*) (endangered)
- 11) Beringia bearded seal (*Erignathus barbatus nauticus*) (threatened)
- 12) Western Steller sea lion (*Eumetopias jubatus*) (endangered)

None of these species occur within the PLAWSA, but four whales (sei, fin, western North Pacific gray whale, and Western North Pacific humpback) regularly use nearby marine habitat in Marmot Bay, Whale Pass and northern Kizhuyak Bay during the summer season. Western Steller Sea Lions are also present in the area and on extremely rare occasions may haul-out on intertidal areas adjacent to the PLAWSA.

Western Steller Sea Lion

Steller sea lions reside year-round in near shore waters around the Kodiak Archipelago and much of the Gulf of Alaska. They are generalist marine predators, utilizing a wide variety of fish and octopi species, hauling-out on rocky beaches to rest between feeding forays. Remote rocky beaches are also used as communal rookeries where pups are born and reared. Sea lions living west of Cape Suckling (144° W) have been listed as "endangered" since 1997 (NMFS 2018). All of the near shore (20 nm; 37 km) marine waters around Kodiak have been determined to be critical habitat, and marine access and fishing is prohibited within 3 nm (5.6 km) of the rookery on southern Marmot Island (43 mi; 69 km northeast of the PLAWSA). Sea lions are protected from hunting by the Marine Mammal Protection Act (MMPA), although both the MMPA and the Endangered Species Act include an exemption specifically allowing Alaska Natives the right to harvest marine mammals for subsistence purposes.

USFWS BIRDS OF CONSERVATION CONCERN

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional

conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973.” Birds included on the “Birds of Conservation Concern” list fulfill that directive by including nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species (USFWS 2008). The list is intended to spur collaborative actions between Federal, State, Tribal, and private entities to develop research, monitoring, and management initiatives that will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities (USFWS 2008).

In Western Alaska, including Kodiak Island and the PLAWSA, the list includes:

- 1) Red-throated loon
- 2) Yellow-billed loon
- 3) Red-faced cormorant
- 4) Pelagic cormorant
- 5) Peregrine falcon
- 6) Black oystercatcher
- 7) Solitary sandpiper
- 8) Lesser yellowlegs
- 9) Whimbrel
- 10) Bristle-thighed curlew
- 11) Hudsonian godwit
- 12) Bar-tailed godwit
- 13) Marbled godwit
- 14) Red knot (*roselaari* subspecies)
- 15) Rock sandpiper (*ptilocnemis* subspecies)
- 16) Dunlin (*arctica* subspecies)
- 17) Short-billed dowitcher
- 18) Aleutian tern
- 19) Arctic tern
- 20) Marbled murrelet
- 21) Kittlitz's murrelet
- 22) McKay's bunting

Two of the birds included on this list (peregrine falcon and marbled murrelet) are seasonal residents of the PLAWSA, and four (red-throated loon, black oystercatcher, lesser yellowlegs, and rock sandpiper) probably use adjacent intertidal and nearshore marine waters.

BALD EAGLE PROTECTION ACT

The Bald Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for

persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." (USFWS 2009b).

The USFWS website (USFWS 2009b) offers the following information on disturbing eagle nests that may be found within the project area:

Federal regulations, 50 CFR 22.26 and 22.27 published in November 2009, established the authority to issue permits allowing eagle take and eagle nest take, as follows:

50 CFR 22.26 governs the issuance of permits to take bald eagles and golden eagles where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided. Most take authorized under this section will be in the form of disturbance, however permits may authorize non-purposeful take that may result in mortality.

50 CFR 22.27 has established authority to issue permits for removing eagle nests where:

- 1. necessary to alleviate a safety emergency to people or eagles*
- 2. necessary to ensure public health and safety*
- 3. the nest prevents the use of a human-engineered structure, or*
- 4. the activity or mitigation for the activity will provide a net benefit to eagles*

Your first responsibility is to avoid disturbance/impact of eagles and their nests. Note: Only inactive nests may be taken, except in the case of safety emergencies. To use this website most effectively, we recommend that you read the Bald Eagle Natural History and Sensitivity document and the National Bald Eagle Management Guidelines.

From 1982 – 2007, USFWS conducted eagle nest surveys throughout the Kodiak National Wildlife Refuge every five years. Data from those surveys indicated a stable population with 439 nests identified during the last year of their surveys. These surveys did not include PLAWSA, but a survey in 1989 that was conducted in conjunction with the *Exxon Valdez* oil spill recovery effort discovered a nest on the peninsula at the northeast tip of Settler's Cove, about 1.0 mi (1.6 km) southeast of the PLAWSA.

An aerial bald eagle nest survey was flown over the PLAWSA and adjacent areas with a helicopter on 14 May 2018. No nests, old or active, were observed. A single adult bald eagle was observed on the lakeshore adjacent to the northeast boundary of the study area (Appendix 6).

EXXON VALDEZ OIL SPILL TRUSTEES COUNCIL

In November 1994, the *Exxon Valdez* Oil Spill Trustee Council adopted an official list of resources and services injured by the *Exxon Valdez* Oil Spill (EVOS) as part of its Restoration Plan. The main purposes were to identify natural resource and human service injuries caused by

the oil spill, guide expenditure of restoration funds, and to provide an objective to monitor recovery of ecological functions and human services that depend on those resources. The Council recognized that other agencies and entities have responsibility and legal authority for long-term management of these species and resources, but the Council works to support natural restoration and encourages management consistent with long-term restoration. The Council has directed funds toward research that provides information that is critical to monitor and support the healthy functioning of the spill ecosystem (EVOS 2018).

The PLAWSA is within the area impacted by EVOS and is covered by the Restoration Plan. The Plan identifies marbled murrelets, Pacific herring, pigeon guillemots and the AT1 population of killer whales as “not recovering”. This designation indicates that these resources continue to show little or no clear improvement from injuries stemming from the oil spill and recovery objectives have not been met. The Plan identifies designated wilderness areas, intertidal communities, sediments, and the AB pod of killer whales as “recovering”. This designation indicates substantial progress toward recovery objectives, but there are still lingering adverse residual impacts caused by the oil spill (EVOS 2018).

Marbled murrelets are the only resource that is probably a seasonal resident of the PLAWSA that has been identified by the Restoration Plan as “not recovered” or “recovering”. Pigeon guillemots, Pacific herring, intertidal communities, and sediments are identified in the Plan as “not recovered” or “recovering” and occur in intertidal and nearshore waters adjacent to the PLAWSA.

PORT LIONS COMMUNITY LANDFILL

The Port Lions landfill is located 3500’ (1.1 km) south of the current runway (Figure 3). This Class III Community Landfill encompasses approximately 5.7 acres (2.3 ha) and is permitted by the Alaska Department of Environmental Conservation (ADEC). It is managed to reduce attractants to scavenging animals such as bears, foxes, gulls, eagles, ravens, crows and magpies by fencing, sorting, and containing waste until it can be incinerated. During the most recent inspection by ADEC (July 12, 2018), the landfill received an inspection score of 86% for the way it was managed (memorandum from S. Price, ADEC to D. Patterson dated September 14, 2018). Local pilots have experienced occasional bird strikes and close calls, but these instances have been greatly reduced since landfill management has been improved and more closely monitored.

Runway expansion being considered in this project will not bring the end of the runway any closer to the landfill, however, realignment will bring southern approach and departure flight paths closer to it. The primary concern with these flight paths is an increased possibility of bird-strikes during the most vulnerable time of flight (take-off and landing). These concerns can be mitigated by closely adhering to the conditions of the most recent permit (ADEC SW3A169-20; August 7, 2015 - August 7, 2020) and the recommendations for improvement cited after the July 12, 2018 inspection, with special attention given to minimizing attractants to avian scavengers.

ANTICIPATED IMPACTS ON WILDLIFE

Based on the proposed footprint of the expanded and realigned Port Lions runway, taxiway and apron (Figure 4), it appears that the Runway Object Free Area will affect about 52.8 acres (216.0 km²) of wildlife habitat changing it all to gravel. Based on data from Fleming and Paige (2004), in 2000 that area was 38.8% gravel, 28.4% spruce, 21.6% alder, 6.2% meadow, and 5.1% wetland (Table 4)(Appendix 2). Additional habitat alteration will likely occur at either end of the runway as large spruce trees are felled within the “Runway Protection Area”, some of which appears to have already been cut since 2000. All of these altered habitats will remain available to wildlife unless the runway, taxiway and apron are fenced.

Gravel habitat provides little feeding, cover or protection for birds and mammals that use the PLAWSA, but it may offer some resting habitat for deer in deep-snow winters when the runway is the cleared (if it is not fenced). Cleared spruce forests will eliminate nesting, cover, and protection habitat for forest birds, but may improve hunting opportunities for goshawks, merlins, peregrine falcons and sharp-shinned hawks. The project is not anticipated to alter any intertidal areas or near shore waters, so there will likely be no impact on species that use those areas adjacent to the PLAWSA.

The species most likely to be impacted by the project are Sitka black-tailed deer, brown bears, marbled murrelets, and bald eagles.

Sitka Black-tailed Deer

Dense spruce habitat near sea-level provides important winter habitat for deer, especially on abnormally cold, windy and/or snowy winters. Archipelago-wide, winter-mortality is the primary driver of deer population densities because of the lack of natural predators. Wind-firm stands of low elevation mature spruce intercept snow, block wind, and understory vegetation that includes blueberry, willow and devil’s club provides winter browse. These areas are enhanced when situated near meadows and beaches, creating an ideal mosaic of habitats during the spring and fall. The PLAWSA provides such a mosaic and the proposed airport expansion will convert about 32.3 acres (13.1 ha) of preferred deer habitat to gravel, a much less preferable habitat.

This habitat alteration is expected to impact a relatively small number of deer and will only be noticeable during times of high deer population densities and adverse winter weather conditions. The existence of suitable, unaltered deer habitat adjacent to the project area and throughout most of northern Kodiak Island is anticipated to maintain the overall deer population at a level commensurate to what would be expected if the project was not built.

Deer will be more vulnerable to harvest in areas cleared for the project, especially because of the easy access to the area along the Port Lions road system. Deer hunting regulations are already more restrictive in this area than on other parts of the archipelago and the impact of potential increased vulnerability on the deer population is expected to be minimal.

Brown Bear

Kodiak brown bears use the habitats impacted by airport expansion and realignment for cover (forest and alder) and spring-feeding (meadow and wetland). Gravel areas offer no benefits for bears. Bears, however, are opportunists and can readily adapt to relatively small habitat alterations when most of the adjoining areas are left intact. Overall, there are few anticipated adverse impacts on bears that will be caused by the project's habitat alteration.

The greatest potential impact on bears will be associated with construction of the project if appropriate bear safety measures are not taken. Bears living in the immediate vicinity of the project, especially subadult bears, will be attracted to any human food or garbage that is not secured properly. They may also be attracted to rubber or oil products associated with construction equipment and they could cause damage. While such attractants are rarely directly detrimental to bears, anything that brings bears in proximity to people can habituate them in a manner that they become dangerous or a nuisance and are killed in defense of life or property either by construction crew or villagers.

Marbled Murrelet

Deforestation of mature spruce stands within the Runway Object Free Area and on either end of the runway could potentially destroy murrelet nest sites or nesting habitat. Identifying specific nest sites is extremely difficult because the birds do not build nests, *per se*, laying their eggs on thick mats of moss on large spruce branches. Discovery is further complicated because they usually only come and go from the nest at dawn and dusk.

Extensive commercial timber harvest on Afognak Island, to the north of the PLASWA, has presumably had significant impact on murrelet nesting habitat. There has, however, been very little timber harvest on northern Kodiak Island (except along the Kodiak city road system), so there may be alternate nesting sites available to any murrelets displaced by this project. The majority of spruce remaining within the Runway Object Free Area are unlikely to be large enough or old enough to support murrelet nests. Potential impact to nesting murrelets could be minimized by restricting spruce-cutting to the non-nesting period (August – April). Murrelet feeding and resting habitat in the near-shore waters adjacent to the PLAWSA will not be impacted by the project.

Bald Eagle

Removing mature spruce trees from the Runway Object Free Area and on either end of the runway could destroy potential eagle nest sites. No eagle nests were found within the PLAWSA during an aerial nest survey on 14 May 2018, and several stands of large spruce will remain in the area after the project is completed, along with extensive virgin stands in adjacent areas. Removal of potential nest trees at either end of the new runway and within the Runway Object Free Area could ultimately prove beneficial to both eagles and aircraft because it will reduce the likelihood of collisions.

LITERATURE CITED

- ALASKA DEPARTMENT OF FISH AND GAME. 2018a. Brown/Grizzly Bear Hunting in Alaska, Harvest Statistics.
<http://www.adfg.alaska.gov/index.cfm?adfg=brownbearhunting.harvest> Accessed May 2018
- _____. 2018b. Marbled Murrelet species profile.
<http://www.adfg.alaska.gov/index.cfm?adfg=marbledmurrelet.main> Accessed May 2018.
- _____. 2018c. Bald Eagle species profile.
<http://www.adfg.alaska.gov/index.cfm?adfg=baldeagle.main> Accessed May 2018.
- EXXON VALDEZ OIL SPILL TRUSTEES COUNCIL. 2014. Status of injured resources and services.
<http://www.evostc.state.ak.us/index.cfm?FA=status.injured> Accessed May 2018.
- FLEMING, M. D. AND P. SPENCER. 2004. A vegetative cover map for the Kodiak Archipelago, Alaska. U.S. Geological Service, Alaska Science Center, Anchorage, Alaska, USA.
- ____ AND _____. 2007. Kodiak Archipelago Land Cover Classification User Guide. U.S. Geological Service, Alaska Science Center, Anchorage, Alaska, USA. 77 pp.
- NATIONAL MARINE FISHERIES SERVICE. 2018. Endangered, Threatened, and Candidate Species under NMFS' Authority in Alaska. <https://alaskafisheries.noaa.gov/pr/esa-species-list> Accessed May 2018.
- PAUL, T. W. 2009. Game transplants in Alaska. Technical bulletin No. 4, second edition. Alaska Department of Fish and Game. Juneau, Alaska. 150pp.
- RAUSCH, R. L. 1969. Origin of the terrestrial mammalian fauna of the Kodiak Archipelago. *in* Karlstrom, T. N. V., and G. R. Ball, editors. The Kodiak Island Refugium: Its geology, flora, fauna, and history. The Boreal Institute, University of Alberta. Ryerson Press, Toronto, Canada.
- SMITH, R. B., AND L. J. VAN DAELE. 1990. Impacts of hydroelectric development on brown bears, Kodiak Island, Alaska. International Conference on Bear Research and Management 8:93–103.
- ____ AND _____. 1991. Terror Lake hydroelectric project, Kodiak Island, Alaska—Final report on brown bear studies (1982–1986). Alaska Department of Fish and Game, Kodiak, Alaska, USA.
- SVOBODA, N. J., AND J. R. CRYE. 2015. Unit 8 deer management report. Pages 9-1 through 9-16 [In] P. Harper and L. A. McCarthy, editors. Deer management report of survey and inventory activities 1 July 2012–30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-3, Juneau.

- _____. AND _____. 2014. Unit 8 mountain goat management report. Pages 122–147 [In] P. Harper, editor, Mountain goat management report of survey and inventory activities 1 July 2011–30 June 2013, Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR 2014-3, Juneau.
- U. S. FISH AND WILDLIFE SERVICE. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <<http://www.fws.gov/migratorybirds/>>]
- _____. 2009a. Kodiak National Wildlife Refuge and the Kodiak Archipelago Birds. Kodiak National Wildlife Refuge, Kodiak, Alaska. 12 pp.
- _____. 2009b. US Fish and Wildlife Service Bald Eagle Permit Program. <https://www.fws.gov/alaska/eaglepermit/index.htm>. Accessed May 2018.
- _____. 2014. U.S. Fish and Wildlife Service Endangered Species – Alaska Region. <https://www.fws.gov/alaska/fisheries/endangered/listing.htm>. Accessed May 2018.
- VAN DAELE, L. J. 2003. The History of Bears on the Kodiak Archipelago. Alaska Natural History Association. Anchorage, Alaska, USA.
- _____. 2007b. Population dynamics and management of brown bears on Kodiak Island, Alaska. Doctoral dissertation. University of Idaho, Moscow, USA.
- _____ AND V. G. BARNES JR. 2010. Management of brown bear hunting on Kodiak Island, Alaska. Scandinavian Bear Conference. Rovdjurscentrum Orsa Gronklitt. Orsa, Sweden. January 2010.
- _____, _____, AND R. B. SMITH. 1990. Denning characteristics of brown bears on Kodiak Island, Alaska. International Conference on Bear Research and Management 8:257–267.
- _____, _____, AND J. L. BELANT. 2012. Ecological flexibility of brown bears on Kodiak Island, Alaska. *Ursus* 23(1):21-29
- VAN DAELE, M. B, C. T. ROBBINS, B. X. SEMMENS, E. J. WARD, L. J. VAN DAELE, AND W. B. LEACOCK. 2013. Salmon consumption by Kodiak brown bears (*Ursus arctos middendorffi*) with ecosystem management implications. *Canadian Journal of Zoology* 91:3, 164-174.

FIGURES

Figure 1. Port Lions Airport Wildlife Study Area land ownership.

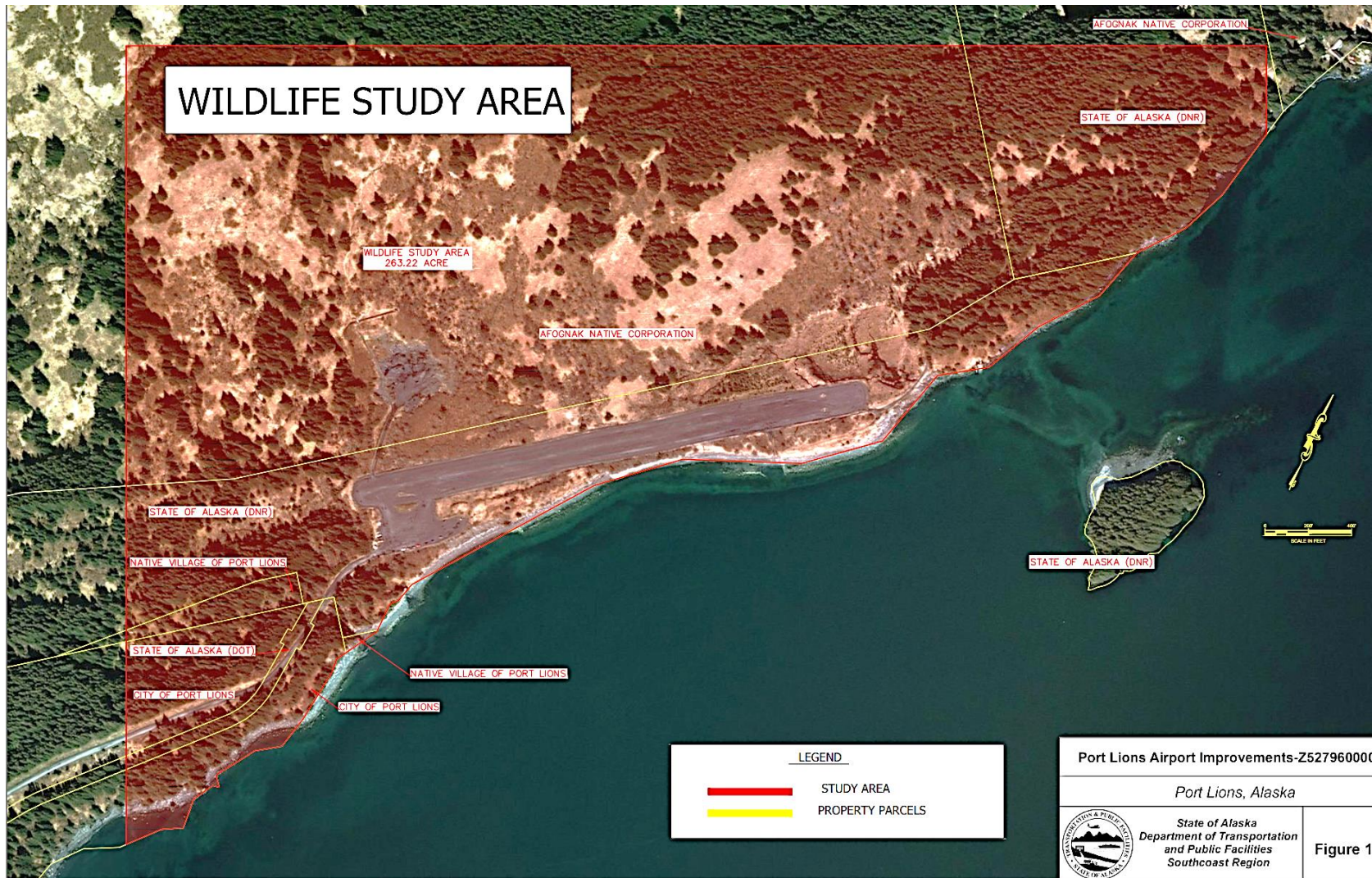
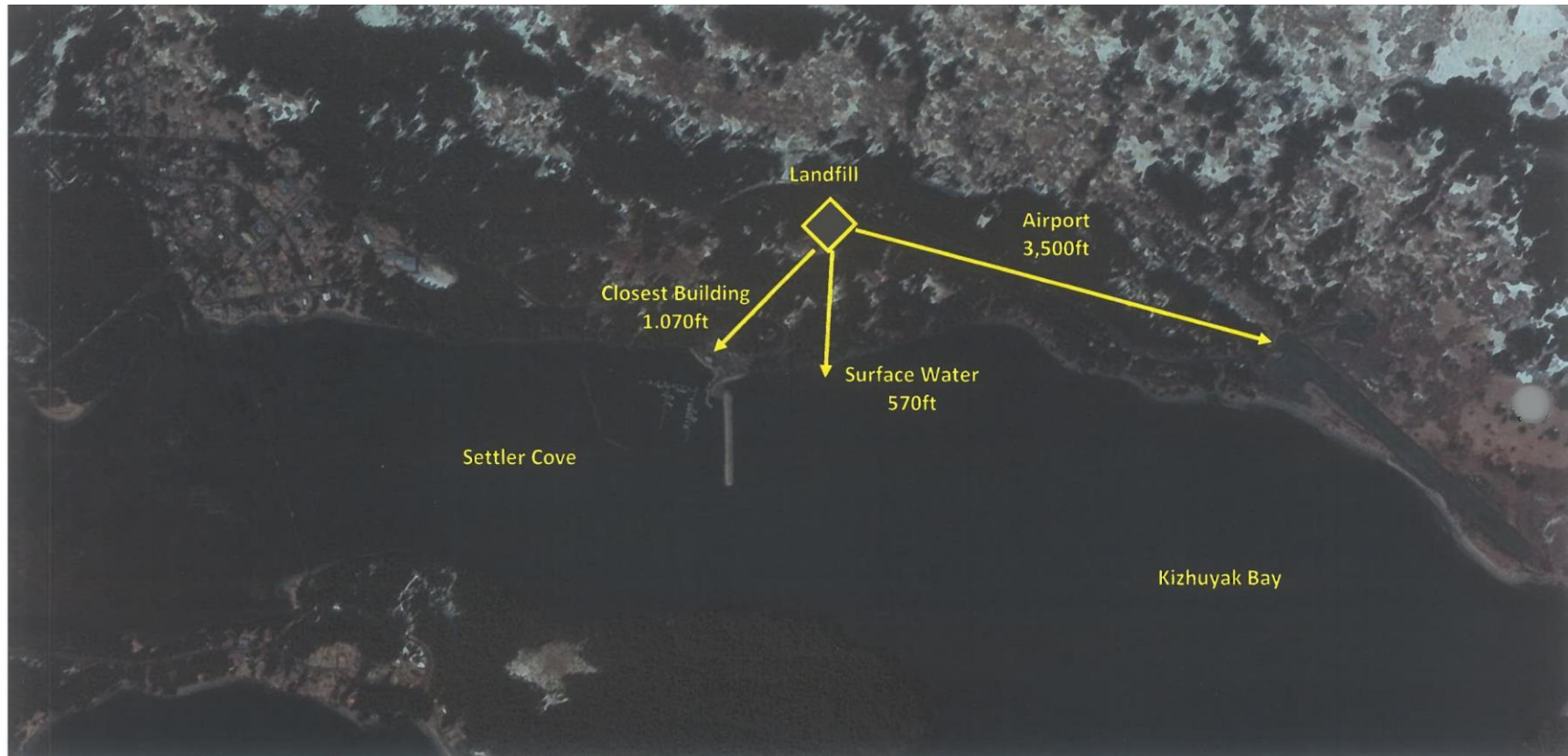


Figure 2. Port Lions Airport Wildlife Study Area vegetative cover types (Fleming and Spencer 2004).

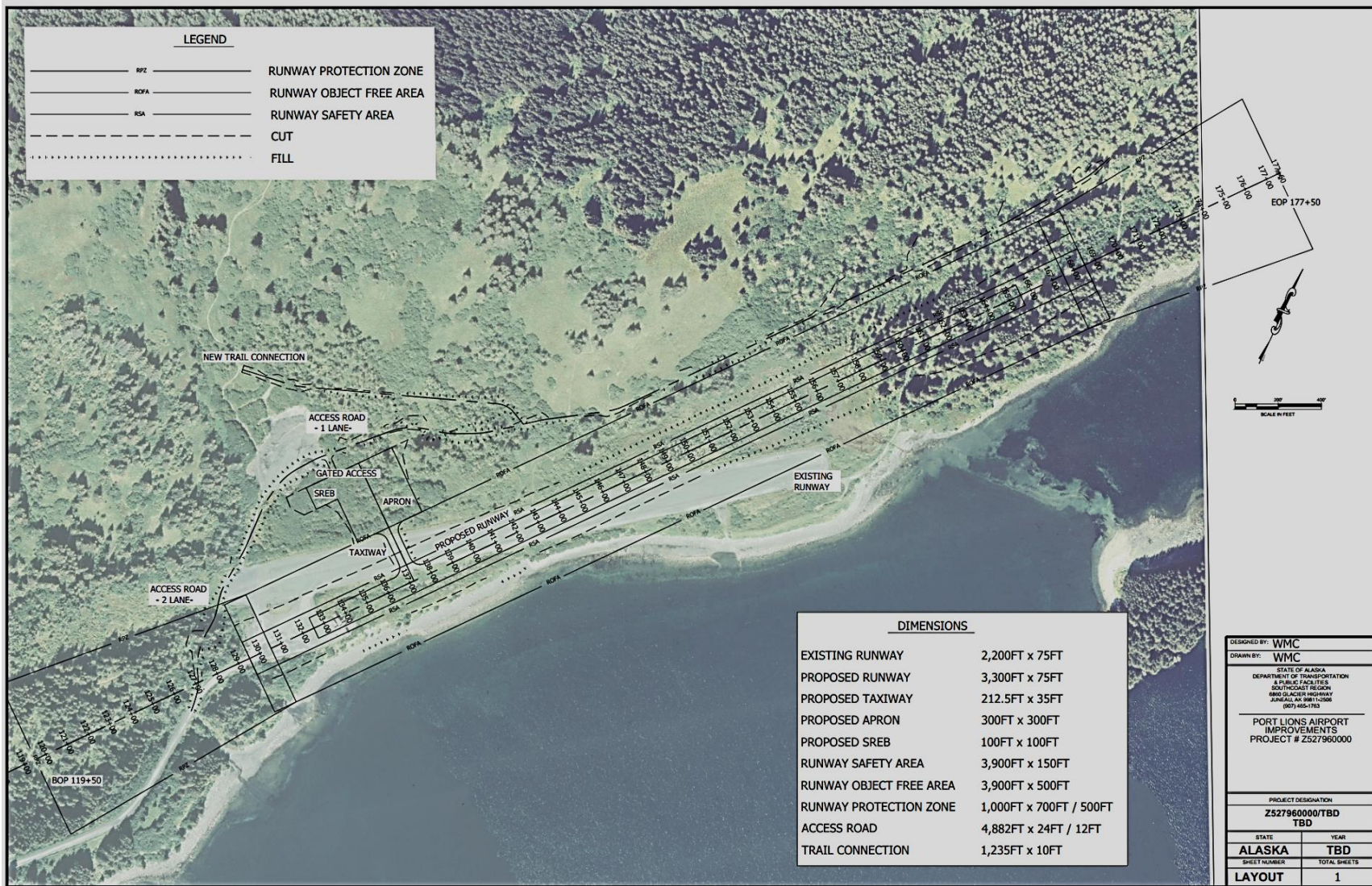


Figure 3. Port Lions Community Landfill proximity to airport (ADEC permit application SW3A169-20, 2015).



2015 Port Lions Class III Community Landfill Permit Application Map 

Figure 4. Port Lions airport proposed expansion footprint (ADOT 2018).



TABLES

Table 1. Analysis of vegetative cover types¹ within the Port Lions Airport Wildlife Study Area (excluding marine and intertidal areas), based on Fleming and Page (2004).

Description of cover type	Acres	Km ²	Percent
Alder-forb meadow (includes scattered elder, cottonwood and birch) ²	90.2	369.0	31.5%
Dense Sitka spruce ¹	63.4	259.2	22.1%
Open Sitka spruce ¹	46.0	188.1	16.1%
Sand and gravel – roads ³	31.5	128.7	11.0%
Open alder- scattered spruce ²	22.4	91.8	7.8%
Fern-forb meadow ⁴	9.7	39.6	3.4%
Myrica gale-dwarf birch wetlands ⁵	4.8	19.8	1.7%
Sedge/moss wetland ⁵	4.8	19.8	1.7%
Grass-forb meadow ⁴	4.4	18.0	1.5%
Salmonberry meadow (includes devils club and elder) ⁴	4.2	17.1	1.5%
Mixed grasslands ⁴	3.5	14.4	1.2%
Ericaceous/Lichen Bog ⁵	0.9	3.6	0.3%
Sedge marsh ⁵	0.7	2.7	0.2%
Talus	0.2	0.9	0.1%
TOTAL	286.7	1,171.8	100.0%

1 – Fleming and Spencer (2004) types 12 and 41; listed as “spruce” in text.

2 – Fleming and Spencer (2004) types 9, 36, 37, 38, and 39; listed as “alder” in text.

3 – Fleming and Spencer (2004) types 48 and 57; listed as “gravel” in text.

4 – Fleming and Spencer (2004) types 18, 22, 32, 43, 44, and 45; listed as “meadow” in text.

5 – Fleming and Spencer (2004) types 17, 35, 49 and 50; listed as “wetland” in text.

Table 2. Common mammals within and adjacent to the Port Lions Airport Wildlife Study Area (PLAWSA), Alaska.

Mammals within PLAWSA¹		Mammals adjacent to PLAWSA²	
Endemic	Brown bear	Otter	Northern sea otter
	Red fox		Seal/Sea Lion
	River (land) otter	Steller's sea lion	
	Short-tailed weasel	Porpoises	
	Tundra vole		Harbor porpoise
	Little brown bat		White-sided porpoise
Introduced	Sitka black-tailed deer	Whales	Killer (Orca) whale
	Roosevelt elk		Pacific gray whale
	Snowshoe hare		Humpback whale
	Red squirrel		Fin whale
	Beaver		Minke whale
Feral	Norway rat		Sei whale
	House mouse		
	Domestic dog		
	Domestic cat		

1 - Mammals likely to be seasonal or year-round residents of the PLAWSA

2 - Mammals that use intertidal or near-shore waters adjacent to the PLAWSA

Table 3. Common birds within and adjacent to the Port Lions Airport Wildlife Study Area (PLAWSA), Alaska.

Birds within PLAWSA¹		Birds adjacent to PLAWSA²	
Raptors	Bald eagle Sharp-shinned hawk Northern goshawk Merlin Peregrine falcon Boreal owl	Shorebirds	Semipalmated plover Black oystercatcher Wandering tattler Greater yellowlegs Lesser yellowlegs Western sandpiper Least sandpiper Rock sandpiper Whimbrel
Forest birds	Northwestern crow Common raven Marbled murrelet Downy woodpecker American three-toed woodpecker Black-capped chickadee Red-breasted nuthatch Brown creeper Winter wren Hermit thrush Varied thrush	Sea & water birds	Red-throated loon Pacific loon Common loon Black-legged kittiwake Mew gull Glaucous-winged gull Belted kingfisher Emperor goose Canada goose Gadwall American wigeon Mallard Northern shoveler Northern pintail Green-winged teal Greater scaup Lesser scaup Steller's eider Harlequin duck Surf scoter White-winged scoter Black scoter Long-tailed duck Bufflehead Common goldeneye Barrow's goldeneye Common merganser Red-breasted merganser Double-crested cormorant Common murre Pigeon guillemot Tufted puffin Horned puffin
Meadow/shrub birds	Dark-eyed junco Wilson's snipe Northern shrike Black-billed magpie Tree swallow Violet-green swallow Savannah sparrow Fox sparrow Song sparrow Golden-crowned sparrow American dipper Golden-crowned kinglet Ruby-crowned kinglet Bohemian waxwing Orange-crowned warbler Yellow warbler Yellow-rumped warbler Wilson's warbler Snow bunting Pine grosbeak Red crossbill White-winged crossbill Common redpoll Pine siskin		

1 - Birds likely to be seasonal or year-round residents of the PLAWSA

2 - Birds that use intertidal or near-shore waters adjacent to the PLAWSA

Table 4. Analysis of vegetative cover types¹ within proposed footprint of the expanded and realigned Port Lions airport (Runway Object Free Area), based on Fleming and Page (2004).

Description of cover type	Acres	Km²	Percent
Sand and gravel – roads ³	20.5	83.7	20.5%
Alder-forb meadow (includes scattered elder, cottonwood and birch) ²	9.2	37.8	17.5%
Open Sitka spruce ¹	7.7	31.5	14.6%
Dense Sitka spruce ¹	7.3	29.7	13.8%
Open alder- scattered spruce ²	2.2	9.0	4.2%
Mixed grasslands ⁴	2.0	8.1	3.8%
Sedge/moss wetland ⁵	1.8	7.2	3.3%
Fern-forb meadow ⁴	1.1	4.5	2.1%
Myrica gale-dwarf birch wetlands ⁵	0.7	2.7	1.3%
Salmonberry meadow (includes devils club and elder) ⁴	0.2	0.9	0.4%
Sedge marsh ⁵	0.2	0.9	0.4%
TOTAL	52.8	216.0	100.0%

1 – Fleming and Spencer (2004) types 12 and 41; listed as “spruce” in text.

2 – Fleming and Spencer (2004) types 9, 36, 37, 38, and 39; listed as “alder” in text.

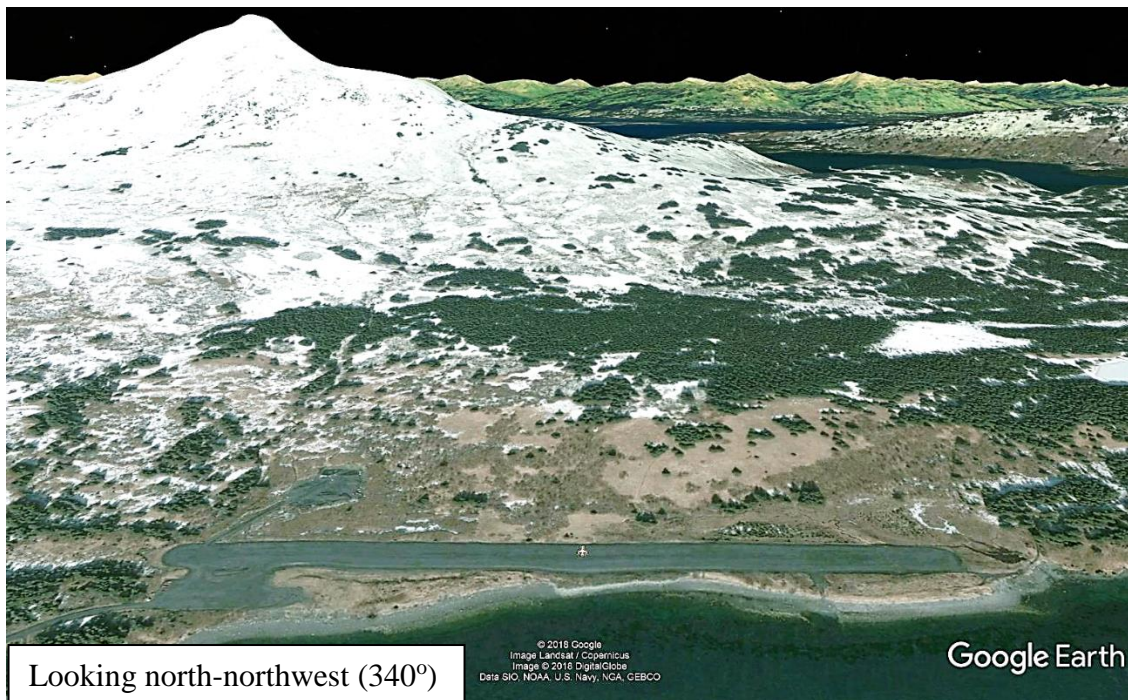
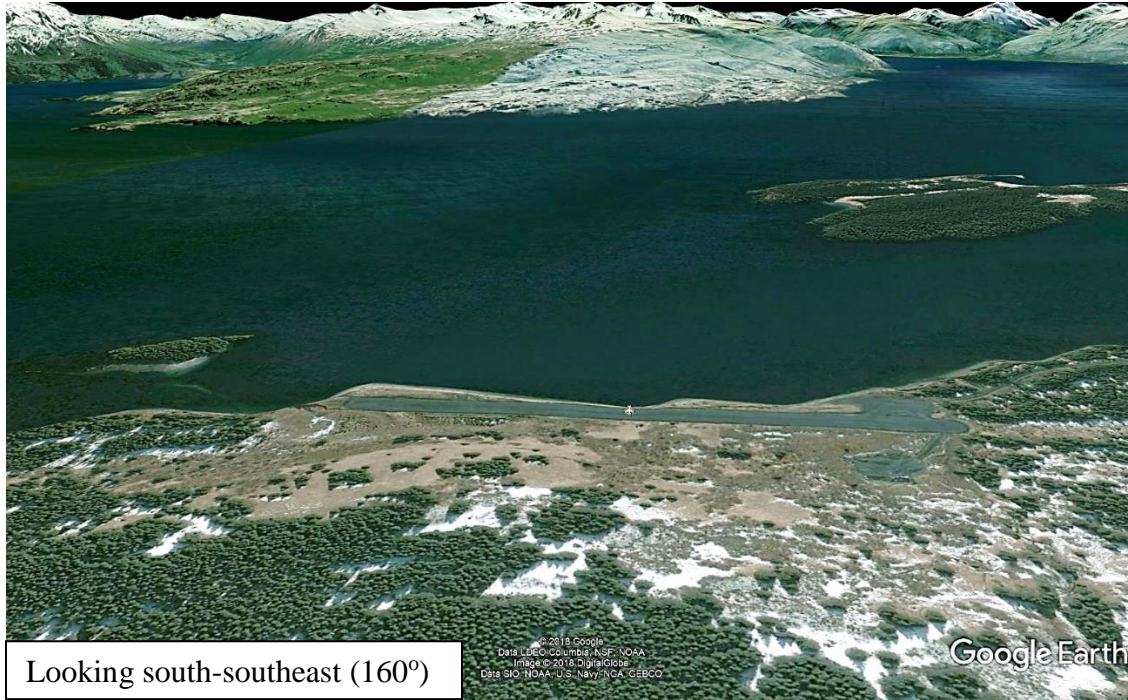
3 – Fleming and Spencer (2004) types 48; listed as “gravel” in text.

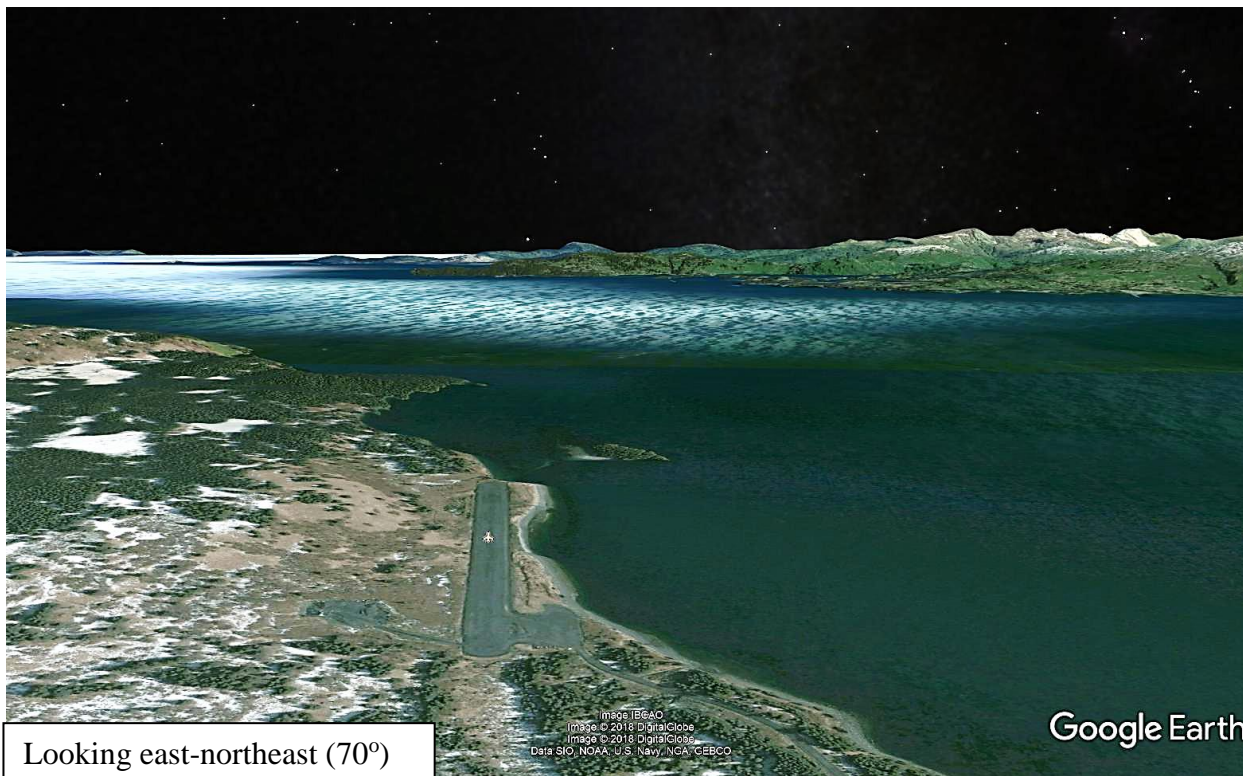
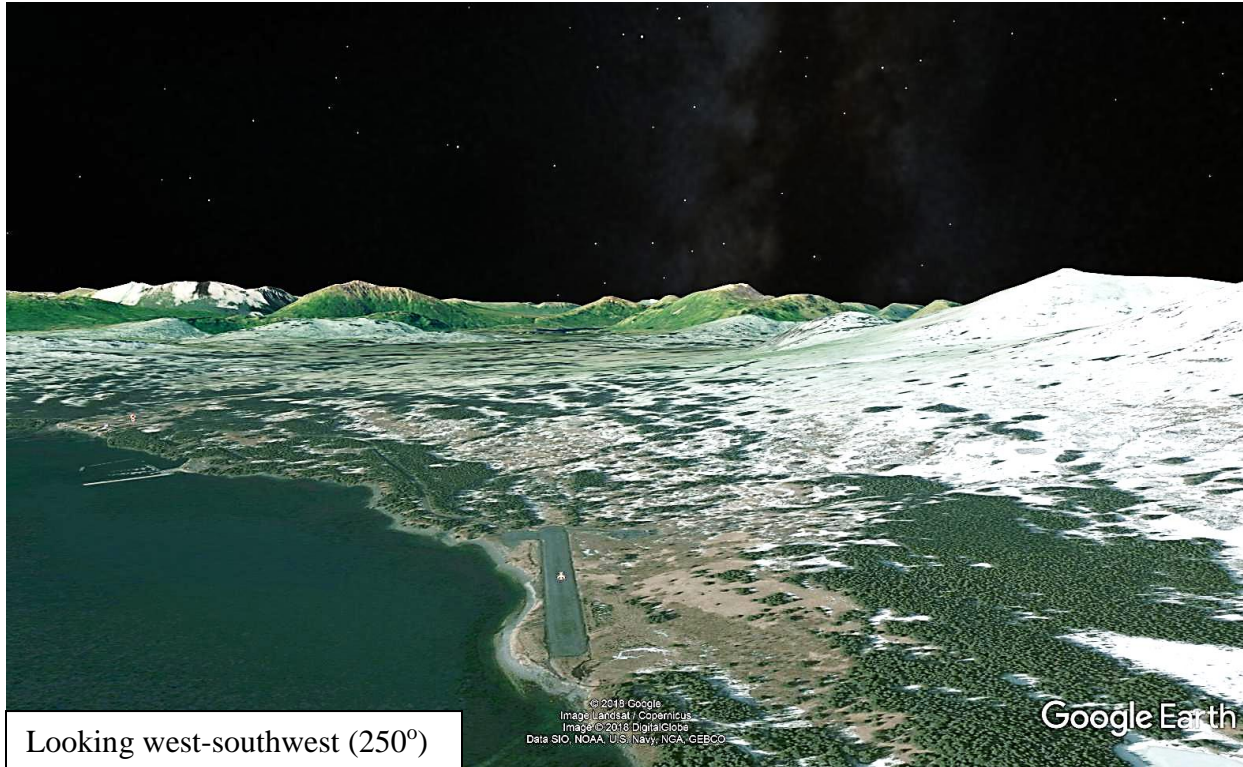
4 – Fleming and Spencer (2004) types 18, 22, 32, 43, 44, and 45; listed as “meadow” in text.

5 – Fleming and Spencer (2004) types 17, 35, 49 and 50; listed as “wetland” in text.

APPENDICES

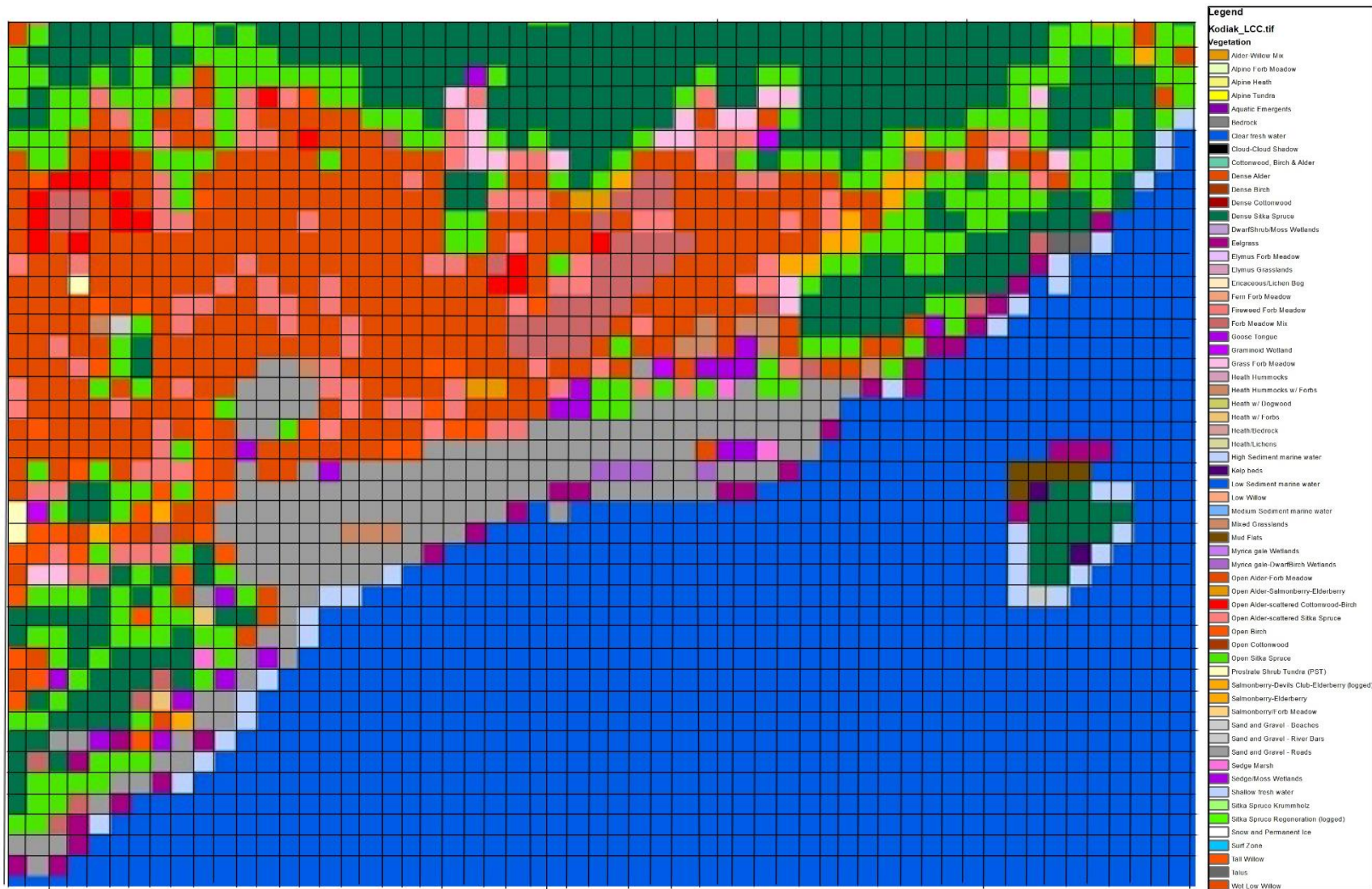
Appendix 1. Google Earth views of the Port Lions airport area.





Appendix 2. Analysis of vegetative cover types within the Port Lions Airport Wildlife Study Area.

Cover type grid (color coded)



Vegetation code analysis – Port Lions Airport Wildlife Study Area

Raw data						Terrestrial only (above MHT - delete cells along beach)					
type	cells	sq meters	acres	percent	descriptive	type	cells	sq meters	acres	percent	descriptive
12	289	260,100	63.58	21.1%	Dense Sitka spruce	12	288	259,200	63.36	22.1%	Dense Sitka spruce
14	26	23,400	5.72	1.9%	Eelgrass	17	4	3,600	0.88	0.3%	Ericaceous/Lichen Bog
17	4	3,600	0.88	0.3%	Ericaceous/Lichen Bog	18	44	39,600	9.68	3.4%	Fern-forb meadow
18	44	39,600	9.68	3.2%	Fern-forb meadow	22	20	18,000	4.4	1.5%	Grass-forb meadow
22	20	18,000	4.4	1.5%	Grass-forb meadow	32	16	14,400	3.52	1.2%	Mixed grasslands
31	21	18,900	4.62	1.5%	High sediment marine water	35	22	19,800	4.84	1.7%	Myrica gale-dwarf birch wetlands
32	16	14,400	3.52	1.2%	Mixed grasslands	36	410	369,000	90.2	31.5%	Alder-forb meadow (includes scattered elderberry, cottonwood and birch)
35	22	19,800	4.84	1.6%	Myrica gale-dwarf birch wetlands	39	102	91,800	22.44	7.8%	Open alder- scattered spruce
36	410	369,000	90.2	29.9%	Alder-forb meadow	41	209	188,100	45.98	16.1%	Open Sitka spruce
39	102	91,800	22.44	7.4%	Open alder- scattered spruce	43	19	17,100	4.18	1.5%	Salmonberry meadow (includes devils club and elderberry)
41	209	188,100	45.98	15.2%	Open Sitka spruce	48	143	128,700	31.46	11.0%	Sand and gravel - roads
43	19	17,100	4.18	1.4%	Salmonberry meadow	49	3	2,700	0.66	0.2%	Sedge marsh
48	162	145,800	35.64	11.8%	Sand and gravel - roads	50	22	19,800	4.84	1.7%	Sedge/moss wetland
49	3	2,700	0.66	0.2%	Sedge marsh	57	1	900	0.22	0.1%	Talus
50	22	19,800	4.84	1.6%	Sedge/moss wetland	TOTAL	1,302	1,171,800	286.66	100.0%	
57	3	2,700	0.66	0.2%	Talus						
TOTAL	1,372	1,234,800	301.84	100.0%							

descriptive	acres	percent	types
Spruce	109.34	38.14%	12 and 41
Meadow	21.78	7.60%	18,22,32, and 43
Alder	112.64	39.29%	36 and 39
Gravel	31.68	11.05%	48 and 57
Wetlands	11.22	3.91%	17,35,49 and 50
TOTAL	286.66		

Note: For this analysis, cover type 43 (salmonberry forb meadow) also includes type 44 (salmonberry, elderberry and devils club, logged) and type 45 (salmonberry and elderberry).

Cover type 36 (open alder forb meadow) also includes types 9 (dense alder), 37 (open alder, salmonberry, elderberry) and 38 (open alder, scattered cottonwood and birch).

A comprehensive description of each cover type can be found in Fleming and Spencer 2007 (http://akevt.gina.alaska.edu/data/Kodiak_UsersGuide_v1.1.pdf).

Appendix 3: Results of on-site survey of Port Lions Airport Wildlife Study Area, 14 May 2018.**PORT LIONS AIRPORT WILDLIFE STUDY AREA ON-SITE SURVEY
14 May 2018****Method:** R-44 helicopter/walking**Survey time:** 10:23-16:30**Pilot:** K. Wattum, Deckload Aviation**Survey time:** 6.1 hrs**Observers:** L. Van Daele, M. Van Daele**Weather:** CAVU*; winds SE@10 kts; 42°F

Survey Route: Aerial survey started at the lake on the northeast corner of the Port Lions Airport Wildlife Study Area (PLAWSA) and proceeded to transect the area in a serpentine pattern supplemented by bisecting passes. Mean altitude was ~300' above ground level. The primary reason for the aerial survey was to look for bald eagle nests, but we were also looking for all birds or mammals and we were getting an overview of the flora and terrain.

The on-ground survey included walking the entire perimeter of the PLAWSA, bisecting the middle of the area, and spending time in each major habitat type to look and listen for birds and mammals and ground-truth vegetative profiles. Permits were obtained to access Afognak Native Corporation lands (Permits #12428 and #12429).

Vegetative Phenology: Snow was gone from all of the area. Lakes were open. All vegetation was just starting to develop with no leaves obscuring observation and a hint of green in the meadows. Devils club and roses had swollen buds but no other development. Alders, cottonwoods, birch and willows were all budding, but leaves were not completely developed. Salmonberry and blueberry bushes had blossoms and some leaf development. Forbs such as angelica, cow parsnip, iris, chocolate lily, and false hellebore were emerged about 6" above the ground. Yellow violets were blooming. Beach rye and sedges were about 12" tall.

Human Activity: Scheduled Andrews Air Cherokee aircraft flights came into the runway three times during the survey. A few people associated with those flights were periodically on the ramp. The only other activity noted was a front-loader working in the gravel pit for about a half hour.

Mammal Observations:

Bear: beds and scat in 3 locations in spruce forest (Location "1A-C"). No bears or tracks observed.

Deer: well established trails throughout area, fresh tracks and scat in lower elevation meadows and spruce forest. Three piles of deer hair (probably winter kill) found in spruce forest (Location "2A-C"), one skull (at least a year old) found in recently cut timber at end of runway (Location

“2D”), four skeletons (probable winter-kill) found on beach below southwest end of runway (Location “2E”). No deer observed.

Fox: scat found in spruce forest along northwest border of study area (Location “3”). Old fox snare found in spruce near beach at northwest corner of study area. No fox observed.

Snowshoe hare: scat and trails common in meadow areas. Dead hare found in small meadow surrounded by spruce along northwest border of area (probably raptor-kill) (Location “4A”). One hare observed in alders above the gravel pit (completely brown except for white hind feet and ear tips) (Location “4B”).

Beaver: old beaver-chewed cottonwood and birch trees near lake adjacent to northwest corner of study area (Location “5”). No beavers observed.

Red squirrel: heard in spruce forest habitats in northwest portions of study area (Location “6”).

Vole: several well-established vole winter-runs in meadows near lake adjacent to northwest corner of study area (Location “7”). No voles observed.

Bird Observations:

Bald eagle: observed on the shoreline of the lake adjacent to the northwest corner of the PLAWSA. It took off when we passed near the area and flew to a large spruce tree at the edge of the recently cut spruce northeast of the runway (Location “8”).

Tundra swan: observed on the lake adjacent to the northwest corner of the PLAWSA, tipping-up and feeding along shoreline (Location “9”).

Barrow’s goldeneye: male and female swimming and feeding in the lake adjacent to the northeast corner of the PLAWSA (Location “10”).

Common raven: calling and flying in various locations around study area (Location “11”).

Varied thrush: calling and flying throughout spruce forest habitats (Location “12”).

Hermit thrush: calling and flying throughout spruce forest habitats (Location “13”).

Red-breasted nuthatch: calling and flying throughout spruce forest habitats (Location “14”).

Black-capped chickadee: calling and flying throughout spruce forest habitats (Location “15”).

American three-toed woodpecker: several individuals observed calling, flying and seeking food in spruce forest along northwest side of study area (Location “16”).

Winter wren: calling and flying in spruce forest habitats (Location “17”).

Fox sparrow: calling and flying throughout interfaces between meadow and spruce forest habitats (Location “18”).

Song sparrow: calling and flying throughout interfaces between meadow and spruce forest habitats (Location “19”).

Northern goshawk: one individual observed calling and flying in spruce forest on northwest edge of area (Location “20”).

Savannah sparrow: one individual observed calling and perching in wetland area at northeast end of runway (Location “21”).

Golden-crowned sparrow: heard in gravel/clearcut area at northeast end of runway (Location “22”).

Ruby-crowned kinglet: heard in gravel/clearcut area at northeast end of runway (Location “23”).

Black oystercatcher: two calling and flying along saltwater adjacent to runway (Location “24”).

Glaucous-winged gull: one calling and flying along saltwater adjacent to runway (Location “25”).

Double-crested cormorant: one flying along saltwater adjacent to runway (Location “26”).

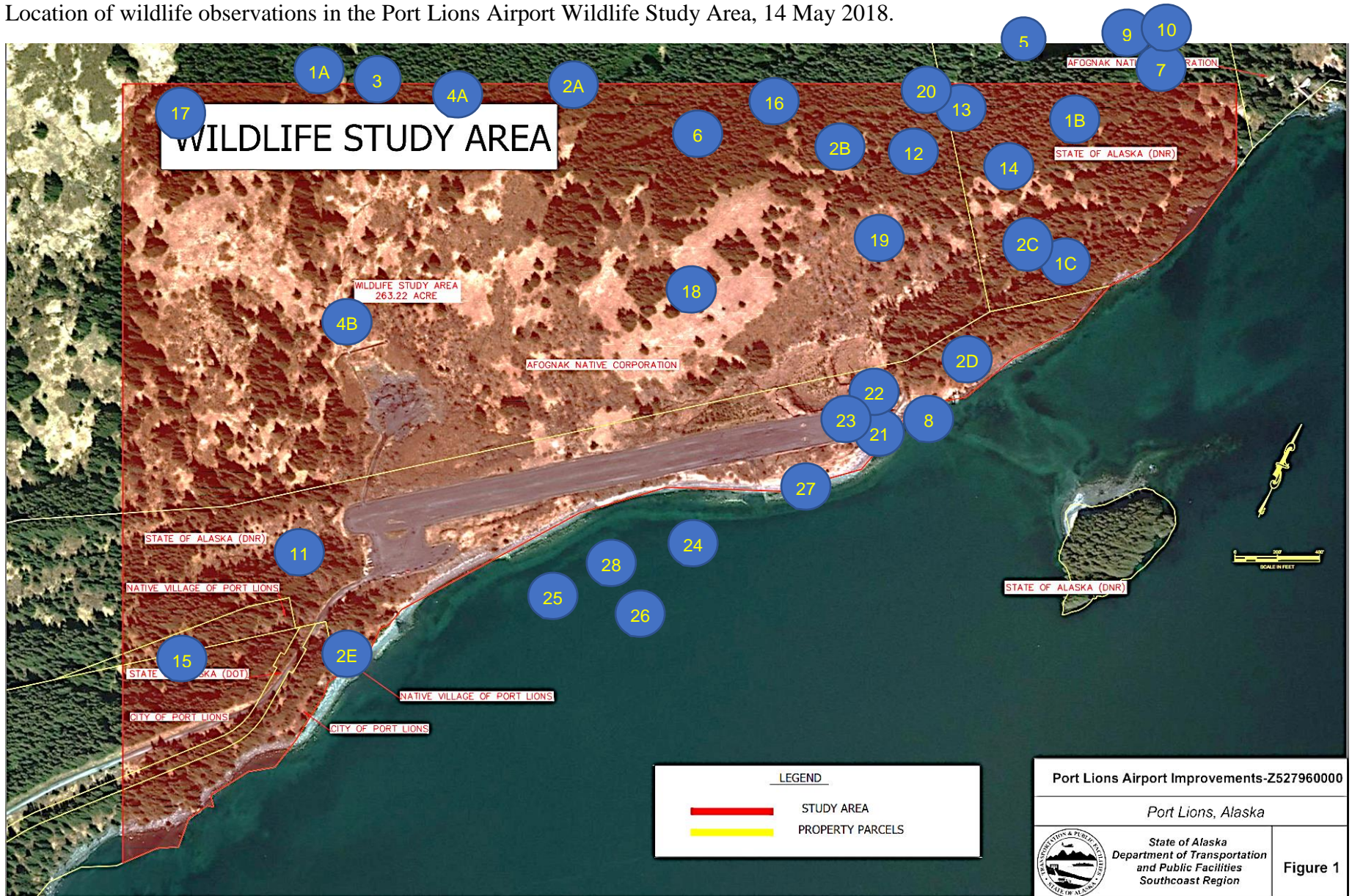
Greater yellowlegs: small flock (~12) calling, flying and eventually landing on the intertidal area adjacent to the runway (Location “27”).

Harlequin duck: male and female flying along saltwater adjacent to runway (Location “28”).

Other Observations: The spruce trees remaining within the area slated to be included in the Runway Object Free Area appear to be marginal to inadequate for marbled murrelet nesting habitat. Several 4-wheeler trails, including some primitive log bridges, traverse the PLAWSA providing access to areas to the north and west.

*CAVU – ceiling and visibility unlimited

Location of wildlife observations in the Port Lions Airport Wildlife Study Area, 14 May 2018.



Images of Port Lions Airport Wildlife Study Area, 14 May 2018.



Wet meadow (N57.89350 x W152.83950)



Spruce forest (N57.89028 x W152.83342)



Lake adjacent to northwest corner of study area (N57.89188 x W152.83650)



Wetland at northeast end of runway (N57.88585 x W152.83956)



Clearcut at northeast end of runway (N57.88722 x W152.83658)



Gravel habitat along runway (N57.88456 x W152.84886)



Salmonberry meadow habitat (N57.89350 x W152.85456)



Alder habitat (N57.88764 x W152.85414)

Appendix 4: Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009a

Species	Nest	Spring	Summer	Autumn	Winter
Greater white-fronted goose		U	+	R	
Emperor goose		C	+	U	C
Snow goose		+		+	+
Brant		C	R	+	+
Cackling goose		U	R	R	+
Canada goose	*	U	U	U	U
Trumpeter swan		R	+	R	+
Tundra swan	*	U	U	U	R
Wood duck				+	
Gadwall	*	C	U	C	C
Eurasian wigeon		U	+	R	R
American wigeon	*	C	C	C	U
Mallard	*	A	C	A	A
Eastern spot-billed duck				+	
Blue-winged teal		+	+		
Cinnamon teal		+	+		
Northern shoveler		C	R	R	+
Northern pintail	*	A	C	A	A
Green-winged teal	*	C	C	C	U
Canvasback		R		R	R
Redhead		R	+	R	R
Ring-necked duck		R			R
Tufted duck		R	+	+	R
Greater scaup	*	A	C	A	A
Lesser scaup	*	U	R	U	U
Steller's eider		C	+	U	C
Spectacled eider		+			+
King eider		C	R	U	C
Common eider	*	U	U	U	U
Harlequin duck	*	C	C	C	C
Surf scoter		C	U	C	C
White-winged scoter		A	C	A	A
Black scoter	*	A	U	A	A
Long-tailed duck (oldsquaw)		A	R	A	A
Bufflehead		C	+	C	C
Common goldeneye		U	R	U	U
Barrow's goldeneye	*	C	U	C	C
Smew		+			+
Hooded merganser		+	+	+	+
Common merganser	*	C	C	C	C
Red-breasted merganser	*	C	C	C	C
Willow ptarmigan	*	C	C	C	C
Rock ptarmigan	*	C	C	C	C

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
Red-throated loon	*	U	U	U	R
Pacific loon		R	+	C	U
Common loon	*	C	C	C	C
Yellow-billed loon		R	+	R	R
Pied-billed grebe					+
Horned grebe		C	R	C	C
Red-necked grebe	*	U	R	U	U
Laysan albatross		U	U	U	+
Black-footed albatross		C	C	C	+
Short-tailed albatross		+	R	R	+
Norther fulmar		A	A	A	C
Mottled petrel		U	U	U	
Pink-footed shearwater		+	+	+	
Flesh-footed shearwater		+	+		
Buller's shearwater		+	R	R	
Sooty shearwater		A	A	C	R
Short-tailed shearwater		A	A	C	R
Fork-tailed storm petrel	*	C	C	C	U
Leach's storm petrel	*	U	U	U	
Double-crested cormorant	*	U	U	U	U
Red-faced cormorant	*	U	U	U	R
Pelagic cormorant	*	C	C	C	C
Great blue heron		R	+	R	R
Great egret		+	+		
Osprey		+	+	+	
Bald eagle	*	C	C	C	C
Steller's sea eagle			+		
Northern harrier		U	R	U	R
Sharp-shinned hawk		R	U	U	R
Northern goshawk	*	U	U	U	U
Red-tailed hawk		+			
Rough-legged hawk	*	U	U	U	+
Golden eagle	*	U	U	U	U
American kestrel		+	+	+	+
Merlin	*	R	U	U	R
Gyrfalcon	*	R	R	R	R
Peregrine falcon	*	U	R	U	U
American coot				+	+

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
Sandhill crane		+	+	+	
Black-bellied plover		U	U	U	
American golden plover		+		+	
Pacific golden plover		U	R	U	
Lesser sand plover			+		
Semipalmated plover	*	C	C	R	
Killdeer			+		+
Black oystercatcher	*	C	C	C	C
Spotted sandpiper	*	R	U	R	
Solitary sandpiper	*		R		
Gray-tailed tattler		+			
Wandering tattler		C	C	U	
Greater yellowlegs	*	U	C	U	
Common greenshank			+		
Lesser yellowlegs		R	C	R	
Upland sandpiper			+		
Whimbrel		U	R	R	
Bristle-thighed curlew		+	+	+	
Black-tailed godwit			+		
Hudsonian godwit		+	+		
Bar-tailed godwit		R	+	+	+
Marbled godwit		R	+		
Ruddy turnstone		R	R	R	
Black turnstone		U	U	U	U
Surfbird	*	U	U	U	U
Red knot		+	+	+	
Sanderling		R	R	R	+
Semipalmated plover		+	R	+	
Western sandpiper		U	C	U	
Temminck's stint			+		
Least sandpiper	*	C	C	R	
Baird's sandpiper			U	R	
Pectoral sandpiper		R	U	U	
Sharp-tailed sandpiper			+	U	+
Rock sandpiper	*	C	U	C	C
Dunlin		U	R	U	U
Curlew sandpiper			+		
Stilt sandpiper			R	+	
Buff-breasted sandpiper			R	R	
Ruff		+	+	+	
Short-billed dowitcher	*	U	U	R	
Long-billed dowitcher		+	+	R	+
Wilson's snipe	*	C	C	C	R

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
Wilson's phalarope			+		
Red-necked phalarope	*	U	A	U	
Red phalarope		U	U	U	
Black-legged kittiwake	*	A	A	A	U
Red-legged kittiwake		+	+	+	+
Sabine's gull		U	U	U	
Bonaparte's gull		U	U	U	+
Black-headed gull		+	+		
Franklin's gull		+	+		
Black-tailed gull				+	
Mew gull	*	C	C	A	A
Ring-billed gull		+	+	+	
Western gull		+			
California gull		+	+	+	
Herring gull		U	R	U	R
Iceland (Thayer's) gull		R		R	R
Lesser Black-backed gull		+	+		
Slaty-backed gull		+	+	R	+
Glaucous-winged gull	*	A	A	A	A
Glaucous gull		U	+	U	U
Great Black-backed gull		+		+	
Aleutian tern	*	U	U	+	
Caspian tern			+		
Arctic tern	*	C	C	R	
South polar skua			+	+	
Pomarine jaeger		U	C	C	
Parasitic jaeger	*	U	C	C	
Long-tailed jaeger	*	U	U	U	
Dovekie			+		
Common murre	*	C	C	A	A
Thick-billed murre	*	R	R	R	R
Pigeon guillemot	*	C	C	C	C
Long-billed murrelet					+
Marbled murrelet	*	C	C	C	C
Kittlitz's murrelet	*	R	U	R	R
Ancient murrelet	*	R	U	U	R
Cassin's auklet		R	U	U	+
Parakeet auklet	*	R	R	R	+
Least auklet		+	+	+	+
Crested auklet		+	+	C	C
Rhinoceros auklet	*	R	U	R	R
Horned puffin	*	C	C	C	R
Tufted puffin	*	A	A	A	R

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
Mourning dove			+	+	
Snowy owl		+	+	+	+
Northern hawk owl	*	R	R	R	R
Great gray owl					+
Short-eared owl	*	U	U	U	R
Boreal owl	*	U	U	U	U
Northern saw-whet owl		+			
Common nighthawk				+	
Costa's hummingbird			+	+	
Rufous hummingbird		+	R	R	
Belted kingfisher	*	C	C	C	C
Yellow-bellied sapsucker				+	
Red-breasted sapsucker		+	+	+	+
Downy woodpecker	*	U	U	U	U
Hairy woodpecker			+	+	+
American three-toed woodpecker	*	U	U	U	U
Norther flicker				+	
Olive-sided flycatcher		+	+		
Say's phoebe			+		
Eastern kingbird			+		
Northern shrike	*	U	U	U	U
Black-billed magpie	*	C	C	C	C
Northwestern crow	*	C	C	C	C
Common raven	*	C	C	C	C
Horned lark		+	+	+	
Tree swallow	*	C	C	R	
Violet-green swallow	*	C	C	R	
Bank swallow	*	U	C	R	
Cliff swallow		R	+		
Barn swallow		+	R		
Black-capped chickadee	*	C	C	C	C
Red-breasted nuthatch	*	C	C	C	C
Brown creeper	*	U	U	U	U
Winter wren	*	C	C	C	C

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
American dipper	*	C	C	C	C
Golden-crowned kinglet	*	C	C	C	C
Ruby-crowned kinglet		R	+	R	R
Mountain bluebird					+
Gray-cheeked thrush	*	R	C	+	
Swainson's thrush			+		
Hermit thrush	*	A	A	C	+
American robin		R	R	R	R
Varied thrush	*	C	C	C	U
European starling		R		R	R
Eastern yellow wagtail			+		
American pipit	*	C	C	C	R
Bohemian waxwing		+		R	R
Cedar waxwing			+	R	+
Orange-crowned warbler	*	C	C	R	+
Yellow warbler	*	U	A	U	
Yellow-rumped warbler	*	C	C	R	+
Townsend's warbler			+	+	+
Palm warbler				+	
Blackpoll warbler			+		
Wilson's warbler	*	C	A	U	+
American tree sparrow		U		U	U
Savannah sparrow	*	A	A	C	+
Fox sparrow	*	A			+
Song sparrow	*	U	U	U	U
Lincoln's sparrow		+			+
White-throated sparrow				+	+
Harris's sparrow		+		+	+
White-crowned sparrow		R	+	R	R
Golden-crowned sparrow	*	A	A	C	R
Dark-eyed junco		U	+	U	U
Lapland longspur	*	A	A	C	+
Rustic bunting					+
Snow bunting	*	U	U	U	U
McKay's bunting		+			+
Black-headed grosbeak				+	

Birds of the Kodiak Archipelago (247 species grouped by family) – USFWS 2009 (continued)

Species	Nest	Spring	Summer	Autumn	Winter
Red-winged blackbird				+	
Rusty blackbird		R		R	R
Brambling		+		+	+
Gray-crowned rosy finch	*	U	U	U	U
Pine grosbeak	*	C	C	C	C
Red crossbill	*	U	U	U	U
White-winged crossbill	*	U	U	U	U
Common redpoll	*	C	C	C	C
Hoary redpoll		+			+
Pine siskin	*	C	C	C	C

A – Abundant, species is very numerous in all proper habitat; the region regularly hosts great numbers of the species; sighting likelihood excellent

C – Common, species occurs regularly in most proper habitat; sighting likelihood good

U – Uncommon, species usually present in relatively small numbers, or higher numbers unevenly distributed; sighting likelihood fair

R – Rare, species occurs regularly in region but in very small numbers; sighting likelihood fair to poor

+ - Species has been recorded no more than a few times in a season; sighting likelihood very poor

* - Species known to have nested on Kodiak Archipelago

Spring – March, April, May

Summer – June, July, August

Autumn – September, October, November

Winter – December, January, February

Appendix 5. Intertidal survey, Port Lions Wildlife Study Area, 10 May 2019.**PORT LIONS AIRPORT WILDLIFE STUDY AREA ON-SITE SURVEY
14 May 2019****Method:** R-44 helicopter/walking**Survey time:** 11:40-14:40**Pilot:** K. Wattum, Deckload Aviation**Survey time:** 3.0 hrs**Observers:** L. Van Daele, M. Van Daele**Weather:** light drizzle; winds SE@5 kts; 42°F

Survey Route: Walking survey started at the northeast section of the Intertidal Study Area (ISA), and proceeded to the northernmost boundary of the ISA, before returning to the south to survey the complete high- to low-tide extent of the ISA. Low tide occurred at 13:10, and was a -0.5' (-0.2 m). The primary reason for the survey was to find and identify intertidal flora and fauna before riprap is placed for airport stabilization.

Intertidal characteristics:

The north end was a higher activity beach, with large angular slate boulders (Zone A).

Observations included:

rockweed (*Fucus* sp.)sea lettuce (*Ulva* sp.)blue mussel (*Mytilus trossulus*)steamer clam (*Protothaca staminea*)butter clam (*Saxidomus giganteus*)heart cockle (*Clinocardium nuttallii*)northern rock barnacle (*Semibalanus balanoides*)hermit crabs (*Pagurus* sp.)

At about 200' (61.0 m) farther to the south, it began to transition to a lower-activity beach, with flatter, smoother, and more rounded slate slabs (Zone B).

Observations included:

eelgrass (*Zostera marina*)

rockweed

blue mussel

steamer clam

butter clam

heart cockle

thatched barnacle (*Semibalanus cariosus*)helmet crab (*Telmessus cheirogonus*)black-clawed crab (*Lophopanopeus bellus*)hermit crabs (*Pagurus* sp.)song sparrow (*Melospiza melodia*)

In the immediate vicinity of the low-tide spit that links the Kodiak to a small island about 500' (152 m) offshore, the beach changed to a low-profile sandy beach without cobbles. A prominent feature of this area was an expansive mussel bed, the largest including a 30' x 100' (9 m x 30m) at the base of the spit, with smaller ones scattered throughout the area. This low profile sandy beach continued until the freshwater stream (Zone C).

Observations included:

eelgrass
rockweed
blue mussel
steamer clam
butter clam
heart cockle
thatched barnacle
northern rock barnacle
black katy chiton (*Katherina tunicata*)
six-armed sea star (*Leptasterias alaskensis*)
rockweed isopod (*Pentidotea wosnessenskii*)
common beach hopper (*Traskorchestia traskiana*)
intertidal pill bug (*Gnorimosphaeroma oregonense*)
helmet crab
black-clawed crab
Dungeness crab (*Metacarcinus magister*)
hermit crabs (*Pagurus* sp.)
tidepool sculpin (*Oligocottus maculosus*)
rock prickleback (*Xiphister mucosus*)
crescent gunnel (*Pholis laeta*)
starry flounder (*Platichthys stellatus*)
whimbrel (*Numenius phaeopus*)

After this freshwater stream, the intertidal area again changes to a higher-activity and steeper profile beach as it arcs to the south, with large, rounded granite boulders interspersed with angular slate (Zone D).

Observations included:

rockweed
Christmas anemone (*Urticina grebelnyi*)
moon glow anemone (*Anthopleura artemisia*)
blue mussel
thatched barnacle
northern rock barnacle
common flatworm (*Notoplana* sp.)
periwinkles (*Littorina* sp.)
Baer's whelk (*Buccinum baeri*)
calcareous tube worm (*Serpula columbiana*)

red-lined chiton (*Tonicella lineata*)
black katy chiton
ochre star (*Piaster ochraceosus*)
purple sea urchin (*Strongylocentrotus purpuratus*)
tidepool sculpin
rock prickleback
black oystercatcher (*Haematopsis bachmani*)

Finally, in the final several hundred yards of the ISA, the beach gradually retransitions to a lower-activity area and seemingly of low productivity, ranging from fist-sized slate cobbles, down to pea gravel and broken, smoothed clam shells at the end of the ISA (Zone E).

Observations included:

rockweed
northern rock barnacle
bull kelp (*Nereocystis luetkeana*)

Human Activity: No scheduled air taxi flights came or went during the survey. Aside from a barge anchored offshore, and one lone skiff departing to the north, no human activity was noted during the survey.

Mammal Observations: The only mammal observed during the survey was a solitary sea otter (*Enhydra lutris*) on the north end of the spit. However, the extent of the intertidal area would offer good Kodiak brown bear (*Ursus arctos middendorffi*), red fox (*Vulpes vulpes*), river otter (*Lontra canadensis*) Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), short-tailed weasel (*Mustela ermina*), and tundra vole (*Microtus oeconomus*) foraging habitat.

Bird Observations: Whimbrels, black oystercatchers, and song sparrows were observed within the ISA. Adjacent to the ISA, fox sparrows (*Passerella iliaca*), black-billed magpies (*Pica hudsonia*), northwestern crows (*Corvus caurinus*), and common ravens (*C. corax*) were frequently observed.

Vegetation Observations: Sitka alder (*Alnus crispa*), cottonwood (*Populus balsamifera*), common dandelion (*Taraxicum officinale*), beach senecio (*Senecio pseudoarnica*), red-berried elder (*Sambucus racemosa*), willow (*Salix* sp.) beach rye (*Elymus mollis*), Sitka spruce (*Picea sitchensis*), sea coast angelica (*Angelica lucida*), cow parsnip (*Heracleum lanatum*) goosetongue (*Plantago maritima*), beach greens (*Honckenya peploides*), and sea lungwort (*Mertensia maritima*) were observed adjacent to the ISA. As noted before, eelgrass was observed within the ISA.

Other Observations: Based on the results of this survey, no significant detrimental change in habitat or flora/fauna are anticipated due to the addition of riprap, and may instead serve to create additional habitat and increase species diversity.



Port Lions Airport intertidal survey area, including habitat zones, 14 May 2019.



Port Lions Airport intertidal survey area, looking to the north, 14 May 2019.



Port Lions Airport intertidal survey area, Zone E, looking to the north, 14 May 2019.



Port Lions Airport intertidal survey area, Zone D, looking to the north, 14 May 2019.



Port Lions Airport intertidal survey area, Zone C, looking to the west, 14 May 2019.



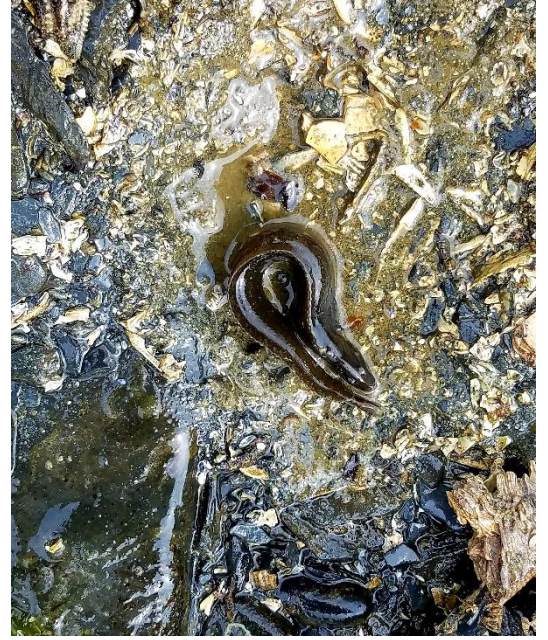
Port Lions Airport intertidal survey area, Zones A and B, looking northwest, 14 May 2019.



Mussel beds in Zone C, Port Lions Airport intertidal survey, 14 May 2019.



Intertidal flora and fauna in Zone D, Port Lions intertidal survey, 14 May 2019.



Images of flora and fauna observed during Port Lions airport intertidal survey, 14 May 2019.

Appendix 6. Bald Eagle nest aerial survey, Port Lions Wildlife Study Area, 14 May 2018.**BALD EAGLE NEST SURVEY FLIGHT
14 May 2018****Aircraft:** R-44 helicopter**Flight time:** 10:23-10:52**Pilot:** K. Wattum**Survey time:** 0.5 hrs**Observers:** L. Van Daele, M. Van Daele**Weather:** CAVU*; winds SE@10 kts; 42°F

Survey Route: started at the lake on the northwest corner of the Port Lions Airport Wildlife Study Area (PLAWSA) and proceeded to transect the area to in a serpentine pattern supplemented by bisecting passes. Mean altitude was ~300' (~90 m) above ground level.

Vegetative Phenology: Snow is gone from all of the area. Lakes are open. All vegetation is just starting to develop with no leaves obscuring observation and a hint of green in the meadows.

Human Activity: One scheduled Andrews Air Cherokee aircraft came into the runway during the latter half of the survey. A few people associated with that flight were on the ramp. No other activity noted.

Eagle Observations: One adult bald eagle was observed on the shoreline of the lake adjacent to the northwest corner of the PLAWSA (57.89185°N x 152.83415°W). It took off when we passed near the area and flew to a large spruce tree at the edge of the recently cut spruce northeast of the runway.

Eagle Nest Observations: No active or inactive nests were observed during this survey. The only nearby active eagle nest observed was on a sea-stack rock near Kekur Point on the other side of Kizhuyak Bay. That nest was observed incidentally during the transit back to base at Kodiak.

Other Wildlife Observations: An adult tundra swan and a pair of Barrow's goldeneye ducks were on the same lake the adult eagle was on. No other animals were observed during the survey flight, but four brown bears, one of which was a large dark male, were observed in Elbow Creek during the transit flight from Kodiak to the survey area.

*CAVU – ceiling and visibility unlimited



Bald eagle nest aerial survey route, 14 May 2018.