Appendix I
Preliminary Wildlife Hazards Assessment

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Proposed Akutan Airport Project
Akutan, Alaska

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I. Background:

The Federal Aviation Administration (FAA), State of Alaska, Department of Transportation and Public Facilities, and the Aleutians East Borough propose to construct a hard-surface airport to support the City of Akutan and the Trident Seafood's processing plant adjacent to the city. Currently, access options to reach Akutan are limited to sea plane and boat travel. Two sites are being considered for the new airport location. Mountainous terrain provides one of the biggest challenges in locating a runway. The preferred site is located on the island of Akun. Currently there are no facilities or inhabitants on the island. The airport would be accessed by hovercraft from the community of Akutan through the Akutan Harbor, across Akun Strait and into Surf Bay. The alternate site is on the island of Akutan at Fish Banks, and would also be accessed by hovercraft crossing Akutan Harbor. Planners have been working to find a suitable site and to complete required environmental documents for the past three years. An extensive site selection process has determined that the Akun site is preferred over the Akutan site for a variety of reasons. A thorough preliminary review of supporting documents was conducted by Russell DeFusco and Donna DeFusco. Ms. DeFusco, President of BASH Incorporated, visited the proposed sites on October 11 – 18, 2007 to provide on-site evaluation of potential wildlife hazards at both alternate sites.

II. Survey Process:

The Federal Aviation Administration considers wildlife hazards when permitting new airport sites. Depending on its classification, a Wildlife Hazard Assessment (WHA) is required for some airports and recommended for others as part of the FAA certification process. Based on the results of the WHA, the FAA may further mandate a full Wildlife Hazard Management Plan (WHMP) as the airport becomes operational. Many of the recommendations from this initial assessment may be incorporated into a WHMP.

This preliminary assessment was conducted, in part, to determine if a long-range study is necessary, to assess the alternatives identified during the National Environmental Policy Act (NEPA) process, and to provide recommendations that may mitigate conditions determined during the initial investigation. Direct observations of the sites, interviews

with local experts, and data from government and private sources, were used as important backup information to supplement the period of on-site surveys conducted as part of this assessment. Walking transects were conducted at the proposed and alternate sites during which all species observed or heard were recorded along with estimates of numbers of individuals. Evidence of nesting, roosting, and predation events and locations were also recorded, and fecal material obtained near fox dens and carcasses or remains of birds found near the sites were examined. During the October 2007 assessment, full access was granted to the proposed and alternative sites.

III. Habitat Features of the Proposed Sites:

Virtually the entire Akun Island site is rolling hills with tundra vegetation, natural grasses, wetland areas, and small streams. The soils are volcanic sand. Vegetation averages about six inches in height due to grazing activities. The proposed airport site is currently used for cattle grazing. There are three shallow lakes in or near the proposed airport operating area (AOA). The lakes do not have names, however they are numbered for identification purposes. All of the lakes appear to be naturally filled by runoff. Lake 1 is abeam to the proposed runway, 2,500 feet to the northeast and is the largest of the three lakes. Lake 1 is just outside the AOA border. Lakes 2 and 3 are located 2,500 – 3,000 feet southwest of the departure end of Runway 29 and are smaller in size. All of the lakes eventually drain into Surf Bay. Lake 1 supports fish populations. All of the lakes are surrounded by grassy vegetation and are shallow with sandy or rocky bottoms. There are no trees in the AOA. The proposed runway runs in a NW to SE (oriented 11/29) direction. The NW end is approximately 800 feet from the banks of Surf Bay. Elevation of the proposed runway is approximately 200 feet above sea level.

The Fish Banks site is located on Akutan Island, at the tip of Green Bight. The Akun Strait separates the two proposed airport sites. Fish Banks has more mountainous terrain with natural grasses, wetland areas, and small streams. The soils are volcanic and rocky. Vegetation averages three to four feet in height. Fish Banks Lake is a fresh water lake abeam the proposed runway at less than 200 feet. There are no trees in the AOA. The north end of the runway is approximately 100 feet from the head of Akutan Harbor and the south end of the runway is approximately 1200 feet from the Pacific Ocean. The west side of the runway is approximately 2,000 feet from Akutan Harbor, and the east side of the runway is bordered by Fish Banks Lake and the Akun Strait at approximately 2,000 feet. Elevation of the proposed runway is approximately 25 feet above sea level.

IV. Habitat and Potential Wildlife Attractants in the Surrounding Area:

1. <u>Akun Island</u>. Habitat features in the immediate surrounding area of Akun Island are nearly identical to those within the proposed airport boundaries. The runway area is located near saltwater shores to the northwest (approximately 800 feet at its closest point) and to the southwest at approximately 5,000 feet. There are other fresh water lakes and Trident Bay is located further southeast of the proposed runway.

The only known terrestrial mammals on Akun Island are cattle and red foxes; both were observed each day of the evaluation. There are approximately 1,200 head of cattle that freely graze anywhere on the island. Currently there is a fencing project being undertaken by the Akutan Corporation to build a livestock fence on the island to control the free ranging cattle. Part of the fencing project is in the proposed AOA. Fox dens were observed on the west side of Lake 1 and in the proposed roadway approaching the airfield. Two to six foxes were observed during each of the three evaluation days in the AOA along the Surf Bay shorelines and near Lakes 2 and 3. No evidence of rodents or other small mammals was obtained during visual observations or in the examination of fox feces collected at the site. Foxes appear to be feeding on birds, fish, and marine invertebrates based on these data.

Considering the size of the area and time of year, there were actually very few birds observed on the island of Akun. Of these, Bald Eagles, Common Ravens, Tundra Swans, gulls, kittiwakes, cormorants, and a variety of geese, ducks, and seabirds are considered most hazardous to aircraft operations. Bald Eagles were observed each day of the evaluation. Up to six per day were observed along the shore of Lake 1 and along the rocky coast line of Surf Bay. The eagles regularly perch on elevated sites for observation of potential prey and seem to prefer the rocky coast line. A small number (1 – 2) of ravens were observed each day transiting the AOA. Two Tundra Swans were observed on Lake 3. Observations indicate that waterfowl preferred Lake 1 and Lake 3 over Lake 2. Typically 12 – 24 birds could be found on these two lakes with six or less observed on Lake 2. When startled, the birds on the lakes would typically flock and head toward the saltwater area of Surf Bay. A small flock (10 individuals) of Grey-crowned Rosy-Finches was observed at the airport site. Other small song birds and an occasional shorebird were found inland.

2. Fish Banks. The Race Rocks and Swirl Rock areas are located to the northeast of the Fish Banks site. These rocky areas consistently attracted approximately 100 seabirds during the observation process. Fish Banks Lake, at this site, held an average of 40 gulls at any time bathing in the fresh water lake and then transiting to the rocky shoreline abeam the lake to the Akun Strait. The low elevation, fresh water lake, and close proximity to open seas make this area very attractive to birds.

Known terrestrial mammals on Akutan Island are domestic cats, domestic dogs, cattle, and foxes. Evidence of foxes was found on the shoreline at the Fish Banks site. The cattle on Akutan Island can be found in the Hot Springs Bay area, several rugged miles from the site. The domestic cats and dogs were found only in the Akutan community area where there are also presumably feral rodents.

3. Surrounding Marine Areas. There was an abundance of seabirds observed during the daily boat trip to Akun. The boat ride from the City of Akutan to the hovercraft landing site on Akun is 6-7 miles and takes about 20 minutes by open

skiff. Throughout Akutan Harbor, gulls, kittiwakes, ducks, and cormorants were observed at approximately 25 individual birds per acre. Akun Strait, where the Bering Sea and Pacific Ocean meet, commonly has rough water, yet seabirds were regularly sighted floating in the sea and loafing on the rocks in the Race Rocks and Swirl Rock areas.

Seabirds (35 individuals) were observed on or near Green Island that is in the southwest section of Surf Bay and is west of the Akun proposed AOA (approx 5,000 feet). A flock of approximately 1,000 Fork-tailed Storm-Petrels was observed on one occasion in the northwest area of Surf Bay. Other loose flocks of seabirds including shearwaters, guillemots, murres, and seaducks, as well as cormorants, gulls, and kittiwakes were observed in the harbor and straits during most times.

Commercial fishing boats in the area attract gulls and seabirds. Typically 30 – 75 seabirds were observed flying and swimming in the area close to operating vessels.

V. Lists of Potentially Hazardous Birds and Other Wildlife Observed:

Including those described above, over 20 species of birds were observed during the October 2007 surveys. Clearly these are only a sample of those that occur in the area throughout the year. Many of the observed species are not considered hazardous to aircraft operations and do not require analysis in a Wildlife Hazard Management Plan. Conversely, several species should be addressed and actively managed or avoided. These species are shown in red and are listed in Table 1 below. Species in the list are included because they are of a size or occur in numbers that may cause damage to aircraft. Some species listed are common occupants of airfields in the region; others may not be expected on the airfield itself, but resident or migrant populations in the area may be encountered by aircraft in off-airfield environments such as on approach or departure to the airport. In addition to birds, there are mammals that should also be addressed. Direct observations of cattle and foxes were noted in the immediate vicinity of the preferred site. Potentially hazardous mammals are listed in Table 2.

TABLE 1. Order and Species of Birds in the Vicinity of the Proposed Akutan/Akun Airport (Hazardous Birds Shown in Red). This list was compiled based on environmental documents prepared by HDR, Inc, species listed in the US Geological Survey Northern Prairie Wildlife Research Center, regional field guides, and field observations conducted by BASH, Inc as part of this Wildlife Hazard Assessment. For brevity, accidental species are not included.

Gaviiformes – Loons	
Common Loon	*Gavia immer*
Yellow-billed Loon	*Gavia adamsii*
Red-throated Loon	*Gavia stellata*
Pacific Loon	*Gavia pacifica*

Podicipediformes – Grebes

Red-necked Grebe	*Podiceps grisegena*
Horned Grebe	*Podiceps auritus*

Procellariiformes – Tubenoses, Fulmars, Shearwaters, and Storm-petrels

Black-footed Albatross	*Phoebastria nigripes*
Northern Fulmar	*Fulmarus glacialis*
Short-tailed Shearwater	*Puffinus tenuirostris*
Sooty Shearwater	*Puffinus griseus*
Fork-tailed Storm-Petrel	*Oceanodroma furcata*
Leach's Storm-Petrel	*Oceanodroma leucorhoa*

Pelicaniformes – Cormorants

Double-crested Cormorant	*Phalacrocorax auritus*
Pelagic Cormorant	*Phalacrocorax pelagicus*
Red-faced Cormorant	*Phalacrocorax urile*

Anseriformes – Waterfowl

Tundra Swan	*Cygnus columbianus*
Whooper Swan	*Cygnus cygnus*
Canada Goose	*Branta canadensis*
Brant	*Branta bernicla*
Emperor Goose	*Chen canagica*
Snow Goose	*Chen caerulescens*
Greater White-fronted Goose	*Anser albifrons*
Mallard	*Anas platyrhynchos*
Northern Pintail	*Anas acuta*
Gadwall	*Anas strepera*
Green-winged Teal	*Anas crecca*
Greater Scaup	*Aythya marila*
Common Goldeneye	*Bucephala clangula*
Barrow's Goldeneye	*Bucephala islandica*
Bufflehead	*Bucephala albeola*
Harlequin Duck	*Histrionicus histrionicus*
Common Eider	*Somateria mollissima*
King Eider	*Somateria spectabilis*
Spectacled Eider	*Somateria fischeri*
Steller's Eider	*Polysticta stelleri*
Long-tailed Duck	*Clangula hyemalis*
Black Scoter	*Melanitta nigra*
White-winged Scoter	*Melanitta fusca*
Surf Scoter	*Melanitta perspicillata*
Red-breasted Merganser	*Mergus serrator*
Common Merganser	*Mergus merganser*

Falconiformes – Vultures, Hawks, and Falcons

Northern Goshawk	*Accipiter gentilis*
Sharp-shinned Hawk	*Accipiter striatus*
Northern Harrier	*Circus cyaneus*
Bald Eagle	*Haliaeetus leucocephalus*
Osprey	*Pandion haliaetus*
Peregrine Falcon	*Falco peregrinus*
Merlin	*Falco columbarius*

Galliformes – Grouse and Ptarmigan

Spruce Grouse	*Falcipennis canadensis*
Willow Ptarmigan	*Lagopus lagopus*
Rock Ptarmigan	*Lagopus mutus*

Ciconiiformes – Herons

Great Blue Heron	*Ardea herodias*

Charadriiformes – Shorebirds, Gulls and Alcids

Black Oystercatcher	*Haematopus bachmani*
American Golden-Plover	*Pluvialis dominica*
Black-bellied Plover	*Pluvialis squatarola*
Semipalmated Plover	*Charadrius semipalmatus*
Whimbrel	*Numenius phaeopus*
Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Short-billed Dowitcher	*Limnodromus griseus*
Red Phalarope	*Phalaropus fulicaria*
Red-necked Phalarope	*Phalaropus lobatus*
Common Snipe	*Gallinago gallinago*
Ruddy Turnstone	*Arenaria interpres*
Rock Sandpiper	*Calidris ptilocnemis*
Parasitic Jaeger	*Stercorarius parasiticus*
Long-tailed Jaeger	*Stercorarius longicaudus*
Glaucous Gull	*Larus hyperboreus*
Glaucous-winged Gull	*Larus glaucescens*
Mew Gull	*Larus canus*
Black-legged Kittiwake	*Rissa tridactyla*
Sabine's Gull	*Xema sabini*
Arctic Tern	*Sterna paradisaea*
Common Murre	*Uria aalge*
Thick-billed Murre	*Uria lomvia*
Pigeon Guillemot	*Cepphus columba*
Horned Puffin	*Fratercula corniculata*
Tufted Puffin	*Fratercula cirrhata*
Crested Auklet	*Aethia cristatella*

Whiskered Auklet	*Aethia pygmaea*
Parakeet Auklet	*Aethia psittacula*
Marbled Murrelet	*Brachyramphus marmoratus*
Ancient Murrelet	*Synthliboramphus antiquus*

Strigiformes – Owls

Great Horned Owl	*Bubo virginianus*
Short-eared Owl	*Asio flammeus*
Snowy Owl	*Nyctea scandiaca*
Great Gray Owl	*Strix nebulosa*
Northern Hawk Owl	*Surnia ulula*
Boreal Owl	*Aegolius furnereus*

Piciformes – Woodpeckers

Hairy Woodpecker	*Picoides villosus*

Passeriformes – Perching Birds

Bank Swallow	*Riparia riparia*
Common Raven	*Corvus corax*
Black-capped Chickadee	*Poecile atricapilla*
American Dipper	*Cinclus mexicanus*
Winter Wren	*Troglodytes troglodytes*
American Robin	*Turdus migratorius*
Varied Thrush	*Ixoreus naevius*
Gray-cheeked Thrush	*Catharus minimum*
Ruby-crowned Kinglet	*Regulus calendula*
Yellow Wagtail	*Motacilla flava*
American Pipit	*Anthus rubescens*
Northern Shrike	*Lanius excubitor*
Yellow Warbler	*Dendroica petechia*
Wilson's Warbler	*Wilsonia pusilla*
Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*
Hoary Redpoll	*Carduelis hornemanni*
Savannah Sparrow	*Passerculus sandwichensis*
Dark-eyed Junco	*Junco hyemalis*
American Tree Sparrow	*Spizella arborea*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lapland Longspur	*Calcarius lapponicus*
Snow Bunting	*Plectrophenax nivalis*
McKay's Bunting	*Plectrophenax hyperboreus*

TABLE 2. Species of Potentially Hazardous Mammals Identified in the Vicinity of the Proposed Akutan Airport:

Red Fox	*Vulpes vulpes*
Domestic Cattle	*Bos taurus*
Domestic Dog	*Canis familiaris*
Domestic Cat	*Felis catus*

VI. Recommendations:

There are a number of mitigating measures that could be used to reduce the potential for bird and other wildlife hazards once the airport becomes operational. However, it is not certain at this point the infrastructure, budgetary, and personnel constraints that may limit full implementation of these options. Future work at the airport and consultation with FAA, DOT&PF Maintenance and Operations, and the local airport manager will determine measures needed or feasible given the local conditions and local capacity for completing the work. Below is a preliminary list of measures that should be considered for implementation at the Akutan Airport to address potential hazards.

1. <u>Bird Population and Distribution Studies</u>. This preliminary assessment indicates relatively low wildlife hazards at the Akun Island location, though more long-term data may be needed as the project develops. Relatively higher wildlife hazards existed at the Fish Banks location. As this preliminary assessment does not give a complete picture of how they move seasonally through the area, further study may be required to determine such patterns. However, it is not deemed necessary at this time to delay the progress on this project while awaiting any further studies. If requested by the FAA, options would be to place ground-based observers such as students, contractors, or government personnel, in the area to systematically count birds and determine movement patterns as per standard ornithological protocols (these protocols may be discussed at a later date if this option is exercised). Alternately, a mobile bird detection radar may be used to gather significantly more data from the site. This option is considerably more expensive, but would provide quantifiable data around the clock during its operation (further details on this option may also be determined at a later date, if necessary). Consultation with the FAA should take place to determine their recommendations for such a study, if required. They should also be queried to determine if they can fund such a study. If further data is to be gathered, a full annual cycle is best, but as a minimum, birds must be studied at their peak population levels during migration and summer nesting periods. All other recommendations to follow may be contingent on the findings of these studies.

2. <u>Drainage and Wetlands</u>. One of the most significant habitat preparation procedures to minimize potential wildlife conflicts is to ensure the entire airport site is adequately drained. The site should be prepared such that there is no standing water present if at all possible. Low areas should be filled and drainage ditches should be created to quickly remove water from the airfield wherever it

may occur. As there are jurisdictional wetlands on site, filling these areas may cause engineering and legal issues. It is imperative that mitigation for impacts to jurisdictional wetlands be conducted off-site (see memo of agreement between federal agencies at http://wildlife-mitigation.tc.faa.gov/public_html/moa.pdf for exemptions to on-site wetlands mitigation requirements), if needed. Removing water is essential to limit the attractiveness to wildlife at the completed facility.

3. Turf Management. Equally important to removal of water on the field is proper turf development and maintenance. Ideally, the entire infield area of the airfield should be established in a thick, uniform stand of grass without openings or weedy vegetation present. Turf should be maintained to the edges of all the runways, taxiways, and operating surfaces with no bare areas exposed. Climate and soil conditions should allow for this provision with proper site preparation. The airfield should be maintained in native grass species and kept between 6 and 12 inches over the entire area to limit bird numbers and reduce maintenance costs. Depending on Alaska Department of Environmental Conservation approval, selective application of herbicides may initially be necessary to eliminate broad-leaved vegetation as grass is becoming established. Taller grass excludes many birds due to limited visibility for flocking species, difficulty for birds to locate invertebrate food sources, and difficulty in predator detection. If regular maintenance is possible, grass should not be allowed to exceed 12 inches and to go to seed, as it may attract some birds and predators. Regular mowing is recommended during the growing season. Tall grass, once established, will out-compete and thus reduce broad-leaved species. This will enable a reduction in the amount of herbicide applied to the field, if applicable.

4. Security Fencing. Proper fencing can deter access to the airfield by mammals such as foxes and cattle. Foxes will frequently breech fences by digging under them or will access any small openings such as gates that are not tightly secured. Installed properly, fencing can significantly limit wildlife breeches and the requirement for routine monitoring and maintenance. Ideally, the fence should contain at least six feet of chain link topped by angled strands of barbed wire up to eight feet. The angled top assists by causing animals to not only clear the height, but also the width of the fence. Additionally, a section of at least six feet of chain link, buried and attached to the base of the fence prevents burrowing animals from breeching the bottom of the fence. This section should be sloped away from the outside of the fence to be most effective. Stiff brushes should be added to the bottom of gates where gaps may be exploited by foxes. The completed fence line must be checked regularly for breeches by wildlife, to ensure all gates are closed, and for security reasons.

5. Commercial Fishing Vessels. Commercial fishing boats attract a large number of gulls and a variety of seabirds. Any such vessels should be restricted from waters at the NW approach end of the runway and low flying aircraft should avoid overflying fishing and processing vessels.

6. Ornamental Landscaping. Areas around terminal buildings and other airport structures are often landscaped for aesthetic reasons. If ornamental landscaping is considered, ensure trees and shrubs are specifically selected to limit attractiveness to wildlife. Plants that provide cover or produce seeds, fruits, or berries should not be used.

7. Agriculture. While the airport operators will likely have direct control over the land use practices in the AOA, they must never grant agricultural outleases on lands they control for crop or cattle production.

8. Airport Buildings and Hangars. Buildings and hangars can be designed to significantly limit access by nuisance birds, some of which can also become hazards to safe flight operations. Buildings with entirely enclosed superstructures are best. I-beams on the interior of hangars and other buildings can be covered with false ceilings that eliminate roosting and nesting sites. Entry points such as holes and windows should be screened or netted to limit access to closed facilities. Suspended strips of plastic or netting can be hung from doorways to limit access. Anti-perching devices such as spike strips can be applied to limited areas where birds routinely land. Active dispersal techniques may also be used in and around buildings to manage birds that may habituate to structural deterrents. Sloped versus flat roofs are more effective in reducing roosting or nesting gulls and other birds. Anti-perching devices can be placed on the crowns of roofs.

9. Trash Removal. Waste attracts many species of birds and foxes. Trash should be removed from the airport daily and never stored in open containers. Any trash that is landfilled must be moved off-site and at least 10,000 feet from the active runways or other operating surfaces (also see FAA Advisory Circular 150/5200.33).

10. Lighting and Runway Markers. Airport lights and markers are often used as perch sites by birds but can be designed to limit such behaviors. Anti-perching devices such as spike strips can be applied to markers and lights to prevent access. Broad, flat surfaces should be avoided or treated to deter birds. Runway lights should also be elevated or preferably installed on paved shoulders, so that turf may be maintained as described above.

11. Active Dispersal Equipment. Even the most carefully managed airfield habitat will occasionally attract birds for a variety of reasons. In those cases where birds visit the field despite the best efforts, it is imperative that the airport staff have active harassment or dispersal equipment available on immediate notice. A variety of diverse techniques is most effective and can include:

a. Pyrotechnics. These devices should form the basis of any airport bird and wildlife dispersal program. Pyrotechnic devices can be fired from 15mm "starter" pistols, standard 12-gauge shotguns, or modified flare pistols. These launchers project pyrotechnics many meters over flocks of birds that present

hazards. Skillful use of the devices can disperse birds from the field in desired directions. The devices produce a variety of loud sounds and explosions, bright flashes of light, and/or trailing smoke. Pyrotechnic devices can be extremely effective in dispersing waterfowl, gulls, raptors, ravens, shorebirds, and can also be used for foxes and cattle. All personnel participating in pyrotechnic dispersal efforts should be trained for proper and safe use of these devices. Injury from burns, damage to hearing or eyes, and minor potential for fires can occur if not properly employed.

b. Bioacoustics. Bioacoustics are recorded distress or alarm calls of actual birds. These need only be considered if long-term, persistent problems develop that cannot be managed with pyrotechnics alone. The equipment required to adequately project these calls includes a cassette tape deck or CD player mounted in a vehicle and a speaker mounted on its roof. Special care must be taken to play the recording in short intervals to prevent habituation by the birds. Play the recording for 20-30 seconds and then pause briefly. Repeat the procedures several times if necessary. The birds should respond by taking flight or becoming alert. These calls are effective for gulls, ravens, and some shorebirds. Only bioacoustics for the species to be dispersed should be used, as calls are species-specific. Calls for all species of concern may not be commercially available and other methods must be used in such instances. Pyrotechnics should be used in conjunction with bioacoustics to enhance complete dispersal.

c. Gas Cannons. Gas cannons may also be used. These devices should be operated, especially at dawn and dusk, as birds come in to feed or loaf. Cannons must be relocated frequently to avoid habituation problems. Remotely triggered models, fired only when necessary, are preferred to models on timers. These devices are very effective when used in conjunction with other harassment techniques on waterfowl, gulls, and waders. Maintenance issues in the Aleutian environment will necessitate that these devices be used sparingly and stored indoors during times when not active.

d. Depredation. Birds and other wildlife must be killed occasionally as a reinforcement of other methods. Federal and state permits are required. Contact the US Fish and Wildlife Service, US Department of Agriculture, and/or the state wildlife agency for permits and assistance in this area. Depredation is a last resort measure, but may be required to remove individual animals that do not respond to other techniques on a persistent basis.

e. Ineffective Methods. Ultrasound, rubber snakes, stuffed owls, rotating/flashing lights, loud music, and other such devices have not proven effective and should not be used.

12. Off-Airport Bird Control and Avoidance. Refuges, wetlands, roost sites, nesting areas, seabird rookeries, landfills, migratory concentrations, and any other

known wildlife attractants in the immediate and surrounding areas should be identified and communicated to pilots using the airport on a routine basis. Pilot Reports (PIREPS), Notices to Airmen (NOTAMS), Automatic Terminal Information System (ATIS), Automated Weather Observing System (AWOS), Air Traffic Control (ATC), Ground Control, or other communication networks, if available should be used to communicate real-time or seasonal bird populations that may pose potential hazards to aviation. Education and awareness are keys to successful bird avoidance procedures in the airport's operating areas.

13. Operational Considerations. The most significant potential hazards at the proposed airport site are associated with concentrations of gulls and seabirds that will primarily be found along the coastline or over the inshore waters, especially during summer nesting periods. Fortunately, with the exception of the nesting periods, seabirds tend to fly at low altitudes near or over the water surface and thus do not pose significant hazards during most of the year. However, during the summer breeding season, seabirds may be found in concentrations at higher altitudes near cliffsides and upland rookery sites and may therefore occur in areas where they can pose significant hazards to nearby aircraft operations. When possible and winds allow, consider takeoffs to the southeast (Runway 11) versus to the northwest (Runway 29) from the preferred site to minimize exposure during the most vulnerable phase of flight, especially during the breeding season. When necessary to take off to the northwest, a steep climbout is recommended whenever possible. Monitoring bird numbers and daily activity over time is recommended to determine times of year and times of day when birds are most likely to adversely affect operations. Scheduling flights to avoid these periods is recommended whenever possible once these patterns emerge over time.

14. Communications and Documentation. Important aspects of any airport wildlife management program are the communication and documentation of efforts. Maintaining awareness for all pilots operating from the airport in and of itself can reduce potential hazards, particularly in avoiding off-airfield hazards beyond the control of the airport staff. Communication of observed hazards between pilots and ground staff can activate wildlife control and avoidance efforts. Coordination of dispersal programs is essential to ensure hazards are not inadvertently increased by scaring wildlife into the path of approaching aircraft. Ensure all bird or wildlife strikes are thoroughly reported to the airport staff and FAA as recommended. Lastly, documentation of bird and other wildlife incidents and all control program efforts is important for monitoring trends. Modification of mitigation efforts can effectively be made based on data that specifically tracks progress of the program. Ensure also that all wildlife strikes are reported through the FAA bird/wildlife strike database reporting system (see http://www.faa.gov/arp/birdstrike/).

VII. Conclusion:

Akun Island lies in the Aleutian chain of islands in Southwest Alaska. The Aleutian Islands are very remote and sparsely populated by human inhabitants. The wildlife found in the area is unique and the area is home to many species of birds at different times of the year (such as during migratory events, nesting periods, and winter). It is therefore impossible to site any airport in the state of Alaska and not be exposed to some degree of potential background bird hazards. Fortunately, Akun is not in the area of highest local bird concentrations and attractants can be identified and possibly mitigated.

It appears at this time that some major areas of concern deal with man-made attractions (cattle production, previous fox farming, and commercial fishing) in the immediate vicinity of the proposed airport site. If these practices can be managed or, better yet, eliminated on or near the airport, the site should be suitable for development as proposed. The FAA generally recommends a separation distance of at least 10,000 feet for such known attractants and those distances are applicable in this case.

This preliminary analysis indicates that the proposed Akun Island location can be effectively managed to minimize identified potential wildlife hazards through active habitat management and wildlife dispersal techniques as outlined in this report. Follow up coordination with the FAA will be essential in the process. Together with the developers, solutions to the issues raised are possible. If ultimately approved, monitoring of potential wildlife hazards as the site is developed and becomes operational may be necessary to allow the hazard reduction program to evolve over time. A comprehensive Wildlife Hazard Management Plan could be developed and implemented as the Akutan Airport is placed into operation.

In conclusion, the results of this initial Wildlife Hazard Assessment indicate that the project should not be delayed for the relatively few potential hazards identified at the proposed site when compared to the regional baseline, or for any follow-up study that may be recommended as the project proceeds.