APPENDIX G

WILDLIFE HAZARD ASSESSMENT

USDA United States Department of Agriculture | Animal and Plant Health Inspection Service | Wildlife Services

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September 5, 2003

Gabriel Mahns
Federal Aviation Administration
Airports Division
222 West 7th Ave.
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Dear Gabriel,

Wildlife Services (WS) has recently completed a review of the Ekwok Airport Rehabilitation Wildlife Survey Report conducted by MACTEC in May 2003. This report summarizes field observations, which document wildlife activity at the Ekwok landfill, the current airport runway location, and the proposed relocation site for the airport runway. The proposed relocation of the airport runway at Ekwok would bring the runway closer to the landfill, possibly bringing aircraft into greater conflict with wildlife attracted to the landfill. *Both* the current and proposed runway sites violate the separation distance of 5,000 ft. recommended in the FAA's Advisory Circular (AC 150-5200/33), Hazardous Wildlife Attractants On or Near Airports. The existing runway is approximately 2,100 feet from the landfill, while the proposed runway would be approximately 1,500 feet from the landfill, a decrease in separation distance of 600 feet.

A review of the FAA's National Wildlife Strike Database shows that no wildlife strikes have been reported at Ekwok. However, many wildlife strikes go unreported, as pilots are often unaware of the need to report strikes. Therefore, a lack of reported wildlife strikes is not necessarily an indication of a lack of wildlife hazards at an airport. Small piston-powered aircraft routinely experience damaging strikes in Alaska, and several fatal accidents resulting from wildlife strikes in the lower 48 in recent months highlight the very real threat posed by birds to smaller aircraft. All three species of birds (ravens, magpies, and robins) which were observed feeding at the landfill and flying over the proposed and existing runway locations on a regular basis, have been documented in the National Wildlife Strike Database as causing damage to aircraft.

The Wildlife Survey Results showed low bird activity at both the existing landfill and the existing and proposed runway sites. The low numbers of birds observed using the landfill and airport area are comparable to WS observations at similar villages throughout western Alaska at that time of year. Typically, villages with small populations such as Ekwok do not generate a large enough volume of garbage to sustain large populations of scavenging wildlife. However, small numbers of resident birds are common around such landfills. Such is the case at Ekwok, as shown by the survey results. As indicated in the Wildlife Survey Report, residents report that animal carcass deposition at the landfill during the fall tends to attract more ravens and also bears. Smaller flock sizes present a lesser wildlife hazard than do larger flocks of birds. It should be noted that short-term assessments of wildlife activity at a site give only a 'snapshot' in time of wildlife activity and may not be indicative of wildlife use and/or abundance outside the survey time period.

Some of the observations presented in the Wildlife Survey Report by MACTEC may not be an accurate reflection of wildlife activity year-round at Ekwok. The absence of observed bear trails may be a factor of seasonal abundance, as residents indicated in interviews that bears are normally present in the fall. Trails that may become established during the fall by bears may not be prominent at other times of the year due to lack of use and vegetation growth. As residents indicate that bears are present in the fall and have been observed at the airport, it can be assumed that some trails become established at that time. Additionally, the transect that was walked to establish the presence of bear trails was located off the end of the runway. Even if trails had been found it would not have established that bears necessarily crossed the runway to access the landfill. A transect located parallel to the runway may have revealed bear trails crossing the runway, a sign that bears are a hazard to aircraft. The absence of obvious bear sign at the time of the site visit indicates that bear hazards are probably seasonal. Although moose are typically not associated with landfills, some possible moose sign was noted around the Ekwok landfill. However, the observer could not easily distinguish between possible moose browse sign and snow-machine damage. Moose presence might have been better determined by looking for moose scat, tracks, or neatly clipped buds.

Bald eagles are common at many landfills around Alaska and are responsible for causing damage to small aircraft. Although no eagle activity was noted during the site visit, an eagle nest was reported to exist just south of town. It was not established during the site visit whether this nest is or has been active in the past. The presence of nesting eagles may be a hazard if they utilize the landfill during the year.

The Wildlife Survey Report presented by MACTEC indicates that while there do not appear to be significant wildlife hazards associated with the landfill, some birds hazardous to aircraft appear to be drawn across the proposed runway site towards the landfill. This presents a limited hazard to aircraft. Additionally, the Wildlife Survey Report indicates that other wildlife hazards, such as bears, may be present at other times of the year. However, the relative hazard that the landfill creates is not necessarily increased by moving the runway closer to the landfill. Wildlife that move across the runway towards the landfill would not be expected to alter their movement patterns in response to the new runway. Aircraft would not be any more likely to encounter wildlife hazards, as the new runway would not change the arrival and departure patterns currently being used in an appreciable manner. Moving the runway further away from the Nushagak River may actually lessen the wildlife hazards at the airport, as the river appears to be a regular corridor for bird movement.

The Ekwok landfill at its current location relative to both the existing and proposed runways, violates the FAA's separation criteria for landfills and an airport serving piston-powered aircraft. The existence of even a limited wildlife hazard associated with this landfill is a cause for concern. Most of these wildlife hazards can be mitigated with the use of some basic waste management practices at the landfill. In the future, land use planning efforts by local authorities should consider the permanent relocation of the landfill to a site that complies with the 5,000-foot separation distance. Should FAA decide to allow this project to move forward, the following recommendations should be followed in the mean time to help minimize the landfill's attractiveness to hazardous wildlife.

Recommendations

- *Burn all animal carcasses and food waste frequently*– All animal carcasses and food waste should be burned in either an incinerator or some other safely contained device. This may require the assignment of a local person to supervise the burning, and/or a device constructed in a manner that residents could safely operate themselves. The device should not be accessible to either birds or bears at any time. A safely constructed device or facility may allow waste to be burned even when an open burning ban is in effect, as the fire danger could be adequately neutralized. If waste is to be deposited in an open trench, as is currently being done, it should be covered or buried on a daily basis when burning is not allowed.

- *Consider the installation of a complete perimeter fence around the landfill* – The construction of a complete perimeter fence around the landfill to exclude mammals should be considered. An 8-foot tall chain-link fence with 3-strand barbed wire at the top and a skirt buried at least 3 feet deep to prevent digging, is the recommended structure to prevent mammal access to landfills. It would also be necessary to have a gate through which the public could access the landfill. It would be extremely important to keep this gate securely fastened when the landfill is not in use.

- *Consider the construction of a wire grid or exclusionary netting connected to a perimeter fence* – A wire grid or large netting to exclude birds from accessing the landfill could be attached to the top of a perimeter fence. Grid wires should be spaced only several feet apart, as the target species, ravens and magpies, can easily navigate between even small openings. Such a structure would need to be constructed with possible equipment operation in mind.

These recommendations should help minimize the attractiveness of the landfill to hazardous wildlife. The conclusions about the existing wildlife hazards at Ekwok are based primarily on the wildlife observations presented in the Wildlife Survey Report by MACTEC. While it was indicated in this report that wildlife hazards associated with the landfill may be more significant at other times of the year, we do not believe that another site visit to document these hazards is necessary at this time. Should the landfill operations or location change, another site visit may be warranted. If you have any questions regarding our discussion and recommendations for the Ekwok Airport Rehabilitation, please contact us at the Wildlife Services, Alaska District Office at (907) 745-0871.

Sincerely,

Corey Rossi
District Supervisor
Alaska District

Cc: Don Baxter, Alaska DOT & PF

EKWOK AIRPORT REHABILITATION

ADOT&PF Project No. 55377

WILDLIFE SURVEY REPORT

June 2003

Prepared by:

MACTEC
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Anchorage, Alaska 99518

Prepared for:
Alaska Department of Transportation and Public Facilities

Ekwok Airport Rehabilitation
Wildlife Survey
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1.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) and the Federal Aviation Administration (FAA) are proposing to improve the existing airport in the City of Ekwok, Alaska (Figure 1). The U.S. Department of Agriculture (USDA), Wildlife Services Program, is investigating the likelihood of increased wildlife hazards if the airport at Ekwok is moved closer to the existing landfill. From May 27 to May 30, 2003, MACTEC Engineering and Consulting (MACTEC) conducted a field survey to assess wildlife movement around the existing Ekwok Airport and the preferred alternative for relocating the airport to supplement the USDA's office investigation. This report presents the results of the wildlife survey.

2.0 WILDLIFE SURVEY AREA

The survey area is in the City of Ekwok, Alaska, in the Bristol Bay area, approximately 43 miles northeast of Dillingham and 285 miles southwest of Anchorage (Figure 1). Ekwok is a Yup'ik Eskimo community adjacent to the Nushagak River.

The proposed construction at the airport includes construction of a new runway northeast of the existing runway and rotated approximately 6 degrees counterclockwise. The new runway would be gravel surfaced and 3,300 feet long; the existing runway is 2,720 feet long. The apron would remain on the east side of the runway.

3.0 METHODS

Because of the limited amount of time to make as many observations as possible and the need to have flexibility during the field survey, data were not collected systematically for statistical analysis. Data were collected objectively to address only the issue of potential wildlife hazards associated with the existing runway and the preferred alternative for relocating the runway. Observations were made at various locations throughout the day to capture diurnal movement patterns of birds. Observations of birds were made at the existing and proposed runway sites, landfill, sewage lagoon, Nushagak River, gravel pit, and at the pond northeast of the existing runway during the wildlife survey conducted from May 27 to May 30, 2003 (Tables 1 to 4). Particular attention was paid to the presence and movements of large-bodied birds such as gulls, ravens, and waterfowl, as these groups present the greatest potential hazard to airport traffic. Residents of the village were interviewed to obtain information about wildlife use of the area around the village, the landfill, and the Nushagak River. Photographs of selected areas are included in Appendix A. Interviews with local residents are included in Appendix B. Figure 2 is a site map and a representation of bird flight over the airport area during the observation times from May 27 to May 30, 2003.

The USDA identified the following possible wildlife hazard issues to investigate during the field survey:

- Gull and raven movements within the runway approach associated with the sewage lagoon southwest of the existing runway

- Possible movements between nesting areas and the existing landfill of gulls that may nest on the islands in the Nushagak River adjacent to Ekwok

- Possible movements between nesting/roosting areas and the existing landfill of ravens that may nest or roost along the Nushagak River adjacent to Ekwok
- Historical movements of bears between the Nushagak River and the existing landfill
- Other wildlife attractants in town that have not yet been identified

4.0 WILDLIFE SURVEY RESULTS AND DISCUSSION

4.1 Birds

4.1.1 Sewage Lagoons

The Ekwok sewage lagoons are located just to the southwest of 5th Street, west of the town (Appendix A). The lagoon area was surrounded by a chain-link fence and little open water was present (approximately a 25-foot by 25-foot pond). Most of the vegetation in the lagoon area consisted of shrub-sized birch (*Betula papyrifera*), alder (*Alnus* sp.), and willow (*Salix* sp.), with bluejoint grass (*Calamagrostis canadensis*) and other herbs scattered throughout. Ravens and gulls did not appear to be using the sewage lagoons for foraging. One common raven (*Corvus corax*) was observed at the area on May 27, 2003 (Table 1), but no other ravens, gulls, or waterfowl were observed in the area during the field survey. Several sparrows and tree swallows (*Tachycineta bicolor*) were observed in the forested areas adjacent to the lagoons.

4.1.2 Landfill

Observations were made at the landfill at various times throughout the 4-day observation period (Figure 2; Table 2). Several common ravens, black-billed magpies (*Pica pica*), and American robins (*Turdus migratorius*) were observed using the landfill for foraging. Only one or two common ravens were observed at the landfill at any one time. Black-billed magpies were more numerous, and from one to three individuals were observed foraging at various times and days. In addition, one American robin was observed foraging at various times.

Considering the low densities, the landfill did not appear particularly attractive to foraging birds. Interviews with Ekwok residents (Appendix B) indicated that ravens are more numerous in the

fall when carcasses are present in the landfill. No caribou or moose carcasses were observed in the landfill during the field survey. The landfill consists of a trench that is used for depositing waste materials that are then apparently burned at irregular intervals. Waste in the landfill included cardboard boxes, metal and plastic containers, aluminum cans, plastic bags, asphalt shingles, tar paper, a space heater, wood products, and various other household waste (Appendix A). Several empty 55-gallon drums and old appliances were present at the northeast end. The landfill was very full and trash was spilling out onto the roadway during the site visit. Luki Akelkok said that the landfill was very full because the residents had not been allowed to burn it because of an enforced burn ban. The landfill did not appear to be closely attended or controlled.

4.1.3 Pond Northeast of Runway

No birds were observed at the pond northeast of the existing runway (Figure 2; Table 3; Appendix A). It appeared that the pond could potentially provide waterfowl habitat, but no waterfowl, ravens, or gulls were observed in the area.

4.1.4 Airport

Of the areas examined, the most observation time was spent at the airport area, and the most birds were seen in this area (Figure 2; Table 4). Generally, birds crossing the runway consisted of one or two individuals at a time. Observations were taken from the northeast end of the existing and proposed runways, the middle of the existing and proposed runways, and the southwest end of the existing and proposed runways. Although large-bodied birds including ravens, gulls, ducks, and one arctic tern (*Sterna paradisaea*) crossed the runway at all times of the day, no large numbers or frequent flights of these birds were observed between the Nushagak

River and the landfill, and no distinct flight paths for birds was detected. Several-smaller bodied birds such as tree swallows, American robins, and black-billed magpies were observed crossing the runway, but were also never numerous. Most of the large-bodied birds in the area appeared to be flying up and down the Nushagak River corridor, not over the runway area toward the landfill. Interviews with local residents did not indicate that birds posed any chronic aviation hazards.

4.1.5 Nushagak River

Water levels were low enough that the observer was able to reach the large island in the Nushagak River southeast of the existing airport runway by foot (Figure 2; Appendix A). On May 27, 2003, the observer walked around the perimeter of the island to observe any nesting birds. No nesting gulls or waterfowl were seen. Bald eagles (*Haliaeetus leucocephalus*) and gulls were seen flying up and down the river corridor, and various shorebirds were observed in the shallow water areas. The island was again visited on May 30, 2003, and the same observations were noted as on May 27.

4.1.6 Gravel Pit

The gravel pit northwest of the existing runway (Figure 2) did not appear to be used by gulls, ravens, or waterfowl, and none of these groups were observed in the area. Observations were made each day when driving by the gravel pit area en route to the landfill. A few scattered small shallow ponds (approximately 15 feet by feet) were present in the area, and vegetation was sparse.

4.2 Bears

MACTEC looked for bear trails around the landfill area and by walking a transect off of the northeast end of the existing runway (Figure 2).

The area around the landfill was examined on May 27, 2003. No bear scat or obvious trails were observed. The area was obviously disturbed by trash blown into the vegetation and all-terrain vehicle (ATV) use. Tree cover consisted of shrubby (less that 20-foot-tall) black spruce (*Picea mariana*) and birch, with scattered willows. Ground cover was dominated by crowberry (*Empetrum nigrum*) and Labrador tea (*Ledum palustre*), with scattered low-bush cranberry (*Vaccinium vitis-idaea*). Interviews with local residents indicated that some bears are seen at the landfill in the fall when caribou carcasses are present, but they are rarely seen otherwise (Appendix B). Many of the birch trees in the area were broken off, indicating browsing by moose in the winter or possible damage from snowmobiles.

To investigate movement of bears between the Nushagak River and the landfill, the observer walked a transect northeast from the end of the existing runway on May 28, 2003, and looked for bear sign along trails that crossed the transect. An ATV trail crossed the transect, but no bear tracks or scat were observed on the trail. No bear trails or sign were identified along the transect.

4.3 Other Wildlife Attractants

MACTEC personnel used an ATV to investigate any other wildlife attractants that may have been present in Ekwok and the vicinity. Several burn barrels at residences and at the airport were observed to attract a few magpies. One common raven was also seen foraging several times in the burn barrel outside the residence where MACTEC personnel stayed in Ekwok.

Overall, the barrels did not appear to be a significant wildlife attractant. In an interview, airport manager James Brandon (Appendix B) indicated that occasionally in the fall bears knock over the burn barrel at the airport. Luki Akelkok indicated that a few people still use fish racks in town during the peak salmon run, but that birds are not much of a problem around them.

5.0 SUMMARY

Gull, raven, and waterfowl use of the sewage lagoons, gravel pit area, and the pond northeast of the landfill were minimal during the May 27 to May 30, 2003, period in which MACTEC conducted the wildlife survey. A few common ravens, black-billed magpies, and American robins were observed foraging at the landfill at various times, but were never numerous. Birds were seen crossing the airport runway at all times of the day, but usually only one or two scattered individuals were observed, and no distinct flight paths were discernable. No nesting birds were observed at the island in the Nushagak River south of the airport. Numerous bald eagles and gulls were seen flying in the river corridor, but did not pose an airport hazard.

During the "snapshot" in time when observations were made, birds flying to the landfill from the Nushagak River did not appear to pose an unusual or unique airport hazard, but interviews with local residents indicated that ravens and bears are more numerous at the landfill in the fall when caribou carcasses are present.

TABLES

Table 1. Birds Observed at the Sewage Lagoons

Date/Time	Species Observed	Time
5/27/03		
18:30-1955	1 common raven flew over the lagoons from the southwest	18:45
5/28/03		
7:25-7:30	None	
13:10-13:20	None	
20:15-20:20	None	
5/29/03		
8:15	None	
5/30/03		
7:55-8:00	None	

Table 2. Birds Observed at the Landfill

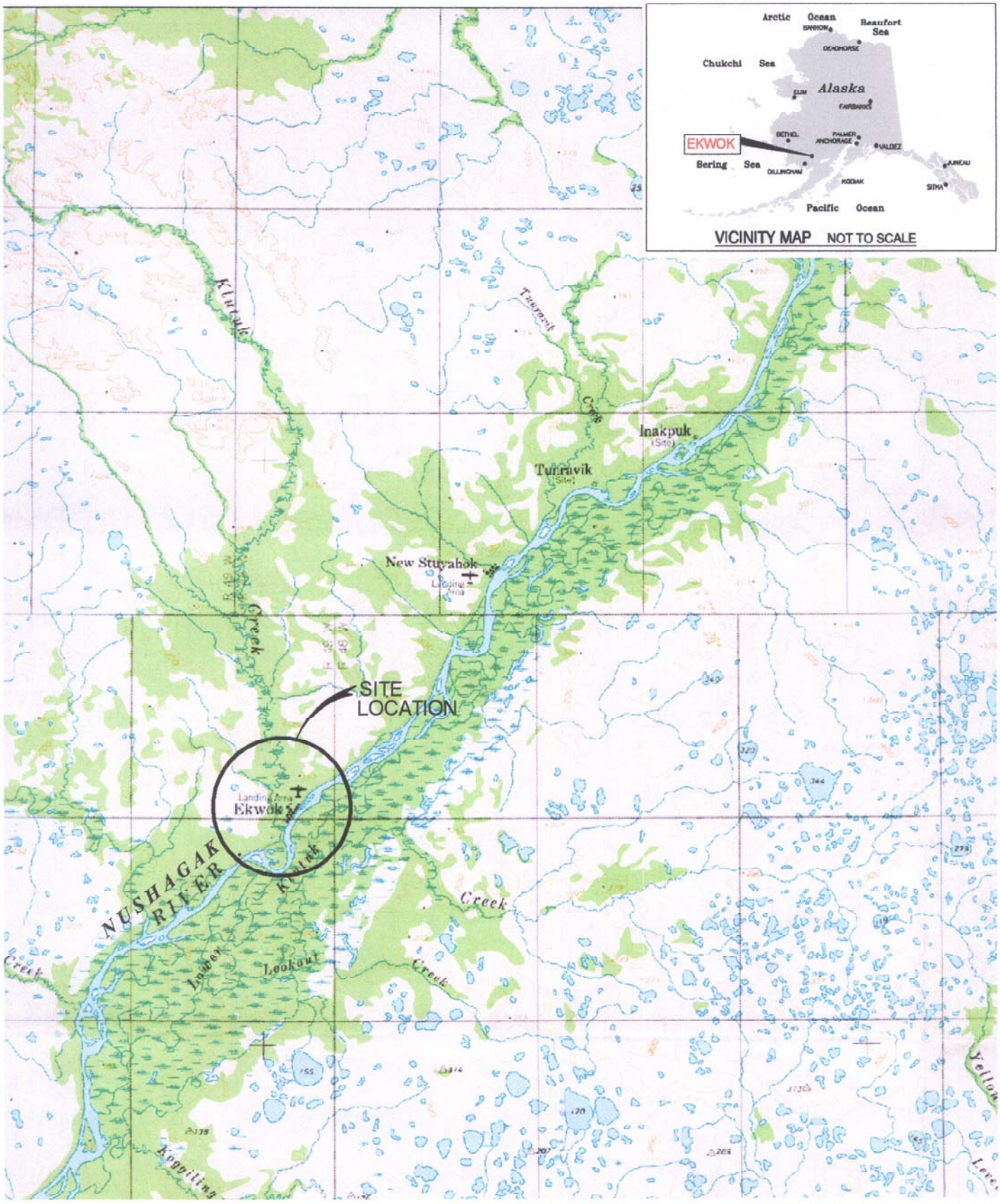
Date/Time	Species Observed	Time
5/27/03		
19:00-19:40	2 common ravens flew into the landfill from the east	19:15
21:05-21:06	2 black-billed magpies foraging	21:06
5/28/03		
6:30-6:45	1 common raven foraging	6:30
	1 black-billed magpie flew into the landfill area	6:35
7:15-7:18	None	
8:40-8:50	None	
13:40-14:22	1 common raven flew from the south toward the sewage lagoons	13:50
	1 black-billed magpie flew into the landfill from the southeast to forage	14:00
	1 American robin foraging	14:15
	2 trumpeter swans flew overhead to the southwest	14:21
16:48-16:53	1 black-billed magpie flew into the landfill from the north to forage	16:51
17:50-17:55	1 American robin foraging	17:50
20:03-20:10	None	
5/29/03		
6:00-6:07	1 American robin foraging	6:00
8:05-8:10	None	
14:25-14:30	None	
17:20-17:25	None	
20:33-20:35	1 black-billed magpie foraging	20:33
5/30/03		
6:50-6:55	1 common raven foraging	6:50
7:52-7:55	none	
9:35-9:40	1 black-billed magpie foraging	9:35
12:40-12:45	3 black-billed magpies foraging	12:40
14:03-14:05	2 black-billed magpies foraging	14:03

Table 3. Birds Observed at the Pond Northeast of the Landfill

Date/Time	Species Observed	Time
5/28/03		
14:26-14:40	None	
5/29/03		
14:33-14:38	None	
17:28-17:30	None	
5/29/03		
6:58-7:05	None	

Table 4. Birds Observed at the Airport Area

Date/Time	Observation Point	Species Observed	Time
5/27/03			
19:45-20:20	NE end of existing runway	1 arctic tern flew from SE to NW over the NE end of the existing runway	19:55
		2 glaucous-winged gulls flew from SE to NW over the NE end of the existing runway	20:03
		2 unidentified ducks flew west 100 to 150 m off the NE end of the existing runway	20:10
5/28/03			
6:50-7:15	NE end of existing runway	1 American robin flew toward the west over the NE end of the existing runway	6:55
8:50-10:05	Middle of existing runway	2 tree swallows flew from west to east over the SW end of the existing runway	9:55
10:05-11:00	SW end of existing runway	1 unidentified duck flew from east to west over the SW end of the existing runway	10:15
11:00-12:55	NE end of proposed runway	2 magpies flew from west to east over the NE end of the proposed runway	11:40
		1 common raven flew from west to east over the NE end of the proposed runway	12:10
14:45-16:40	NE end of existing Runway	1 common raven flew from west to east over the NE end of the proposed runway	15:00
		1 black-billed magpie flew from east to west over the NE end of the existing runway	15:05
18:05-18:30	Middle of existing runway	3 unidentified gulls flew from south to north over the NE end of the proposed runway	18:25
18:30-19:10	SW end of existing runway	1 tree swallow crossed the SW end of the existing runway	19:00
19:10-20:00	NE end of existing runway	1 mew gull flew from east to west over NE end of the existing runway	19:03
5/29/03			
6:10-8:00	NE end of existing runway	1 magpie flew from north to south over the NE edge of the existing runway	7:20
		2 unidentified ducks flew from SE to NW over the NE edge of the proposed runway	7:25
		1 unidentified gull flew from east to west over the middle of the existing runway	7:45
		2 mallards flew from SE to NW over the NE edge of the existing runway	7:51
		1 black-billed magpie flew from SE to NW over the NE edge of the existing runway	7:52
14:55-16:30	SW end of existing runway	1 American robin flew from west to east over the SW end of existing runway	14:58
		2 common ravens flew from south to north over the SW end of the proposed runway	15:30
		1 tree swallow flew from SE to NW over the SW end of the existing runway	15:35
		1 American robin flew across the airport apron toward the NW	16:00
17:35-19:50	Middle of existing runway	1 American robin flew from SE to NW over the NE end of the existing runway	17:50
		1 black-billed magpie flew from NW to SE across NE end of the existing runway	18:40
		1 common raven flew from south to north over the NE end of the proposed runway	19:10
19:50-20:30	NE end of existing runway	None	
5/30/03			
7:08-7:25	NE end of existing runway	1 black-billed magpie flew from south to north across the NE end of the existing runway	7:20
9:50-11:00	NE end of proposed runway	None	
12:55-14:00	Middle of proposed runway	None	



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NORTH

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Ekwok Airport
Ekwok, Alaska

SITE LOCATION AND VICINITY MAP

FIGURE 1

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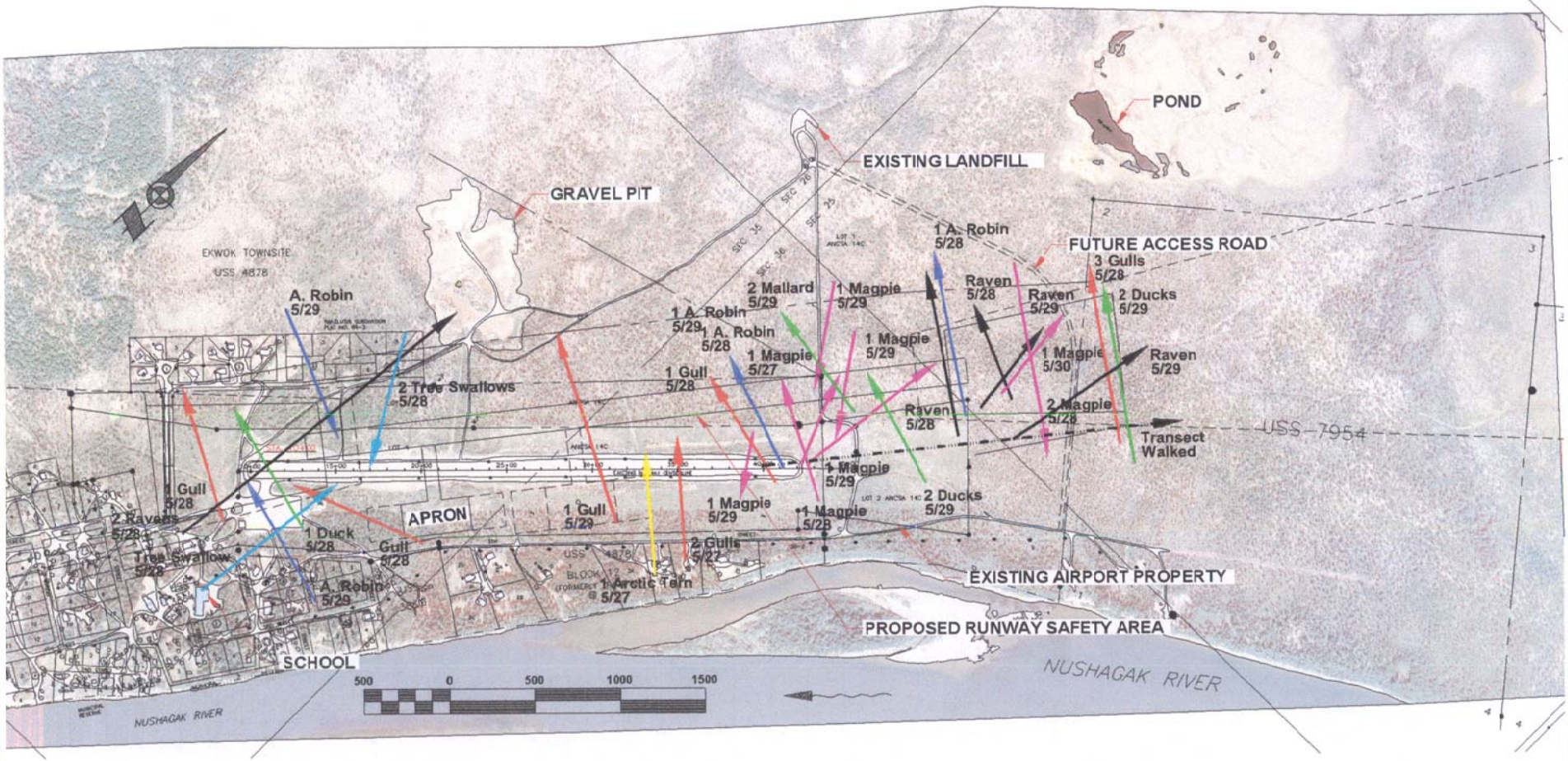

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Date_Time: 06/26/03 10:51:46

Ekwok Airport
Ekwok, Alaska

BIRD CROSSINGS
MAY 27, 2003 to MAY 30, 2003
FIGURE 2

FIGURES

APPENDIX A

PHOTOGRAPHS

Sewage Lagoon

Landfill

Landfill

Landfill - northeast end

Pond northeast of runway

Nushagak River

APPENDIX B

INTERVIEWS

Interviews by Brandon Miner, MACTEC Engineering and Consulting

5/27/03:

Charlie Nelson (Ekwok resident) – I asked Charlie about bears and birds using the landfill. He responded that he doesn't think many bears ever use the landfill and he was unsure about birds.

Luki Akelkok (Long-time resident and Ekwok Lodge owner) – I asked Luki about birds at the landfill. He said he sees a few ravens at times and mentioned a bald eagle nest past the creek south of town.

5/28/03

Luki Akelkok – I asked Luki about bears using the landfill. He said that there are some bears at the landfill in the fall when people are putting caribou carcasses in the dump, otherwise he hardly sees any. He mentioned again that he occasionally sees a few ravens.

5/29/03

Luki Akelkok – I told Luki that I hadn't been seeing many ravens at the landfill. He said that there are usually more ravens than I've been seeing. He mentioned little food for them at the landfill as a possible cause.

James (Billy) Brandon (Airport Manager) – I asked James about wildlife using the landfill. He said that there are not many ravens using the landfill this time of year because they are nesting, but there are many that use the landfill in the fall. He said that there are a few bears around in the fall, but they're not much of a problem. He mentioned that sometimes in the fall bears knock over the burn barrel at the airport. He said that he doesn't see any gulls using the landfill.

5/30/03

Luki Akelkok – I asked Luki about fish racks in town during salmon season. He said that some people still use them during the peak salmon run, but that not as many people use them as in the past because not many people have dogs anymore. I asked him about birds around the fish racks. He said that there are birds, but doesn't think that it's a problem and that there are always birds on the river when the salmon are running.

DISTRIBUTION

Ekwok Airport Rehabilitation
ADOT&PF Project No. 55377
Wildlife Survey Report

MACTEC Project No. 55343

June 2003

1 Original and 2 Copies:	Ms. Royce Conlon PDC Inc. Consulting Engineers 1028 Aurora Drive Fairbanks, Alaska 99709
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1 Copy	Brandon Miner, MACTEC
1 Copy:	Project File
1 Copy:	Bound Report File

Quality Control Reviewer

William T. Hawley, P.E.
Civil Engineer - 7248

TE/jm/A0132R