# AERIAL SURVEYS OF TREE-NESTING RAPTORS ALONG THE PROPOSED NORTHWEST ALASKAN PIPELINE COMPANY PIPELINE ROUTE: U.S. - CANADA BORDER TO THE CHANDALAR SHELF,

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TABLE OF CONTENTS


| | PAGE |
|---|---|
| INTRODUCTION | 1 |
| OBJECTIVES | 3 |
| METHODS | 4 |
| RESULTS AND DISCUSSION | 8 |
| Yukon River North to the Chandalar Shelf | 8 |
| Right-of-Way 0.25 mile either side of centerline | 8 |
| Proposed material sites and facility sites | 8 |
| Other nearby areas | 9 |
| U.S. - Canada Border North to the Yukon River | 10 |
| Right-of-way 0.25 mile either side of centerline | 10 |
| Proposed material sites and facility sites | 12 |
| Other nearby areas | 12 |
| Bald Eagles | 13 |
| Goshawks | 20 |
| Red-tailed Hawks | 21 |
| Great-Horned Owls | 22 |
| Ospreys | 23 |
| Sharp-shinned Hawks | 24 |
| Common Ravens | 24 |
| LITERATURE CITED | 25 |
| APPENDIX I | 26 |

# LIST OF TABLES


| TABLE | | PAGE |
|---|---|---|
| 1 | Raptor tree-nesting locations located within 0.25 miles either side of the proposed NWA gas pipeline right-of-way centerline between the U.S. - Canada border and the Yukon River, Alaska, 1979 and 1980. | 11 |
| 2 | Raptor and Raven tree-nesting locations located in areas near the proposed NWA gas pipeline alignment between the U.S. - Canada border and the Yukon River, Alaska, 1979 and 1980. | 14 |
| 3 | Raptor and Raven tree-nesting locations known to occur within 0.5 miles of the proposed NWA gas pipeline right-of-way centerline, material sites and facility sites. | 19 |

# INTRODUCTION

This interim document reports some of the results obtained during a series of aerial surveys conducted in early spring 1980 to evaluate tree-nesting raptor habitat and to locate nests of tree-nesting raptor species along the proposed Northwest Alaskan (NWA) gas pipeline route in Alaska. Emphasis was placed on locating nests of the following raptor species during those surveys: Bald Eagles (*Haliaeetus leucocephalus*), Ospreys (*Pandion haliaetus*), Goshawks (*Accipiter gentilis*), Great Horned Owls (*Bubo virginianus*) and Red-tailed Hawks (*Buteo jamaicensis*). One non-raptor species, the Common Raven (*Corvus corax*), was also included because of its importance in providing nests for some of the aforementioned species. The nests of other raptor species including Sharp-shinned Hawks (*Accipiter striatus*), American Kestrels (*Falco sparverius*), Great Gray Owls (*Strix nebulosa*), Hawk Owls (*Surnia ulula*), Boreal Owls (*Aegolius funereus*), Marsh Hawks (*Circus cyaneus*) and Short-eared Owls (*Asio flammeus*) cannot be located effectively from the air because of their nesting habits. Therefore emphasis was placed on locating areas of potential nesting habitat that could be important to those species, rather than on actual nest locations or nest sites.

Information presented here is preliminary. Basic data concerning the number of species and the number of nesting locations of each of the species found during the survey effort have been tabulated. These data will be integrated with other data concerning areas of potential nesting habitat and will be presented and discussed in greater detail in the final report. Nest locations have been mapped and numbered on a draft set of USGS 1:63,360 scale topographic maps. That numbering system is fully intergrated with that used by us in 1979 (Roseneau and Bente 1979). Potential areas of nesting habitat will also be delineated on the final copy of the maps that are submitted with the final report. In the interim, a separate and preliminary set of 13 maps is provided to show the locations where raptor nests, including those occupied by raptors during the 1980 breeding season, were discovered within one-

quarter mile either side of the proposed gas pipeline right-of-way (ROW) centerline and within the boundaries of proposed material or facility sites.

The objectives of the aerial surveys conducted in early spring 1980 in the proposed NWA gas pipeline corridor were

1. to evaluate the habitat within 0.25 mile either side of the proposed pipeline ROW centerline between the south slope of the Brooks Range and the U.S. - Canada border for the presence or absence of tree-nesting raptor habitat, and to locate raptor nests that have been constructed in trees within those boundaries.

2. to evaluate the land within a selected number of the proposed material sites and facility sites along the proposed pipeline ROW between the south slope of the Brooks Range and the U.S. - Canada border for the presence or absence of tree-nesting raptor habitat, and to locate raptor nests constructed in trees within those boundaries.

3. to evaluate habitat adjacent to the proposed pipeline ROW and material/facility sites for tree-nesting raptor habitat and the nests of tree-nesting raptors.

4. to search for and determine the presence of additional Bald Eagle and Osprey nests in the Tanana River drainage upstream of Fairbanks and adjacent to the proposed pipeline corridor.

## METHODS

Sixteen separate aerial surveys were conducted on 18 through 20, 23 through 25 and 27 through 30 April, and on 2 through 4 and 8 through 10 May 1980. A total of 94 survey hours were flown by one experienced observer and an experienced pilot in a PA-18 Super Cub aircraft. The survey pilot was provided a set of Sectional Aeronautical Charts (1: 500,000 scale) pre-marked with the proposed pipeline alignment. As a guide, the observer used USGS 1:63,360 scale topographic maps pre-marked with (1) the proposed ROW centerline, (2) boundary lines 0.25 miles either side of the ROW centerline, (3) all proposed material and facility site locations and (4) all raptor tree-nests located in 1979. All data were recorded in flight on USGS 1:63,360 scale topographic maps, and by use of a small hand-held cassette tape recorder (for later transcription).

Timing was a factor critical to the success of the surveys. Bald Eagle nests and Osprey nests are relatively easy to find from the air because of their conspicious size and because of the type of structures upon which those nests are usually built. Most nests built by those two species tend to be exposed and are usually only partially shielded by surrounding trees or canopy cover. As a consequence, aerial surveys designed to locate Bald Eagle and Osprey nests can be relatively effective during much of the year. In contrast, the nests of Goshawks, Red-tailed Hawks and Common Ravens are built in deciduous trees and are usually well-shielded by the tree canopy. Those nests become, for all practical purposes, impossible to detect from the air after leaf emergence. However, during certain times in late fall-early winter after leaf-drop and during late winter-early spring previous to leaf emergence those nests are often visible from the air; early spring low-level aerial surveys of specific types of habitat have aided in successfully locating Goshawk nests in interior Alaska (McGowan 1975).

The 1980 spring aerial surveys were flown during a period just previous to the leaf-out of the broad-leafed dicideous trees, Paper Birch (*Betula papyrifera*), Quaking Aspen (*Populus tremuloides*) and Balsam Poplar (*Populus balsamifera*) that commonly occur along the pipeline corridor. On 10 May, the day the surveys were completed, leaf-out of some aspen and birch stands in some locales south of Fairbanks had progressed to a point where effective observations in those areas could no longer be made.

To increase survey effectiveness, old aerial photographs of known nesting habitat and the nests of some species were reviewed. Prior to the first actual survey flight, approximately 1.5 hours were spent searching for several old known Goshawk nests near Fairbanks. That practice flight was used to develop a fresh search image. It also provided a means to check effective survey altitudes and angles of observation in some types of habitat.

Survey ground-speeds ranged from approximately 45 to 70 mph dependent on terrain and tree-cover. Survey altitudes also varied between approximately 75 and 200 feet above tree-top level dependent on terrain, tree-cover density, tree-type, and light conditions. The average survey altitude most effective for most species in most conditions was about 100 feet above tree-top level. That altitude provided the best average angle of observation down and into the tree canopy during transects along the ROW. In stands of Paper Birch, observational capabilities appeared better when the angle was increased toward 45°. Most nest structures in birch trees were discovered under those conditions. Conversely, in stands of Quaking Aspen and Balsam Poplar, lower observational angles provided better visibility at farther distances. Most nest structures in aspen stands were found under those conditions. In areas of mixed birch and spruce or mixed aspen and spruce, observational angles of 45° and greater appeared to provide the best results.

The 1980 aerial surveys were divided into the following three seperate catagories: (1) the area within 0.25 mile either side of the proposed ROW centerline, (2) the proposed material and facility sites, and (3) other adjacent areas. Those divisions helped minimize distractions to the observer and allowed slightly modified methods to be employed for each of those tasks. Along the ROW, continuous transects were flown parallel to the centerline. Transect width was regulated by altitude and a series of colored tape markers on the wing-struts. The positions of those markers were pre-determined during a series of test-flights at varying altitudes over known pre-measured distances on the ground. Enough flight time was available to allow three of transects to be flown along each side of the ROW between the U.S. - Canada border and the Yukon River. North of the Yukon River as far as the Chandalar Shelf, two transects were flown along each side of the ROW. South of the Yukon River transects were located immediately adjacent to the proposed centerline, at a distance of about 650 feet either side of the centerline and at a distance of about 1300 feet either side of the centerline. When flying a transect directly over the centerline, the observer searched one side of the alignment out to a distance of about 650 feet from the aircraft. When flying a transect positioned about 650 feet to one side of the centerline, the observer searched, at his descretion, both to the right and to the left out to about 650 feet either side of the aircraft. When flying a transect positioned about 1300 feet to one side of the centerline, the observer searched toward the centerline out to a distance of about 650 feet from the aircraft. North of the Yukon River transects were positioned immediately adjacent to the centerline and at a distance of about 1300 feet either side of the centerline. The observer looked away from the alignment out to a distance of about 650 feet from the aircraft when over or near the centerline and back toward the alignment out to a distance of about 650 feet from the aircraft when flying about 1300 feet away from the centerline.

Proposed material sites, facility sites and their access routes were searched separately. All proposed material sites and facility sites that were checked between the Tolovana River and the U.S. - Canada border were surveyed on at least two separate occassions. Between the Tolovana River and the Chandalar Shelf each area was searched at least once.

The material and facility sites that were searched were given complete coverage. Depending on their size and the type of vegetation present on them, the aircraft circled them, flew over them or passed by them at various altitude and distances several times -- enough times to give the observer, based on his judgement, clear views of all vegetative cover within their boundaries. At each of those locations and before leaving the area, the observer also scanned nearby potential habitat for nests outside the boundaries.

In areas adjacent to the proposed pipeline alignment, but beyond 0.25 miles of the ROW centerline, only those areas that appeared to contain potential nesting habitat were searched. Whenever such an area (e.g. a stand of large birch trees) was encountered a few low-level passes were made over and around it in order to search for nests. Search effort was not as intense in those areas as it was in either material/facility site areas or within the ROW; those latter two catagories were given priority.

In the Tanana River drainage all previously known Bald Eagle and Osprey nest locations were re-checked. As many other areas as possible that afforded similar nesting habitat in the general vicinity of the proposed alignment and in the Tanana River drainage were also searched for the nests of those species. Surveys for Bald Eagle and Osprey nest locations are estimated to have covered about twice as much area in and near the proposed pipeline corridor as did the initial surveys performed by us in 1979 (Roseneau and Bente 1979).

## RESULTS AND DISCUSSION

The results of the survey for tree-nesting raptor nests and nesting habitat in the proposed NWA gas pipeline corridor are being compiled in Appendices that will be submitted with the final report. The results also will be shown on a set of accompanying USGS 1:63,360 scale topographic maps. Applicable data also are being transfered to the Master Guide Alignment Sheet series provided by Fluor Northwest, Inc. For interim reporting purposes, the results have been organized into the following two major divisions: (1) the proposed pipeline corridor from the Yukon River north to the Chandalar Shelf; and (2) the proposed pipeline corridor from the U.S. - Canada border north to the Yukon River. Within those two major divisions, findings are reported in the following three categories: (1) The results obtained within that area 0.25 mile either side of the proposed ROW centerline (2) the results obtained within the specific proposed material sites and facility sites (compressor stations, campsites, airstrips) and along access routes to them and (3) the results obtained in other nearby areas that fall outside of boundaries established for catagories (1) and (2) above.

### Yukon River North to the Chandalar Shelf

#### Right-of-way 0.25 mile either side of centerline

No nests of tree-nesting raptor species were discovered within 0.25 mile either side of the proposed aligment ROW centerline between the Yukon River and the Chandalar Shelf.

#### Proposed material sites and facility sites

No nests of any tree-nesting raptor species were discovered on lands within any of the proposed material and facility sites or along access routes to them between the Yukon River and the Chandalar Shelf.

Other nearby areas

Other areas adjacent to the proposed gas pipeline ROW between the Yukon River and the Chandalar Shelf that were judged as potential nesting habitat for various tree-nesting raptor species were also surveyed. Those areas include (1) obvious stands of medium to large aspen, poplar and birch trees, and areas of mixed aspen-spruce and birch-spruce trees within one to two miles either side of the ROW, (2) the Ray River flood plain riperian communities between 66°03'30" N. and its confluence with the Yukon River (3) the Kunuti River, Fish Creek, Bonanza Creek Prospect Creek and South Fork of the Koyukuk River flood plain riparian communities about two miles either side of the ROW crossing points (4) the Jim River between a point commencing two miles upriver at about 66°55' N and the entrance to the Canyon of the Jim River below its confluence with Propect Creek and (5) the riparian flood plain communities of the Middle Fork of the Koyukuk River and Dietrich River upstream of the Twelve Mile Mountain vicinity (67°09'N.). In those areas only one location containing a single stick nest was discovered. That unoccupied nest was in a Balsam Poplar tree along the Ray River (Site 98.1, Map 35), and obviously had been constructed by Common Ravens. The only nest location found occupied by a tree-nesting raptor species was also located along the Ray River. That location, Site 98, a small rock out-crop with a well-protected stick nest on it, was previously described by Roseneau and Bente (1979). In 1979 that nest was occupied by Great Horned Owls, and an incubating Great Horned Owl was present again on 23 April 1980.

Information on two other possible nest locations was obtained. A TAPS surveillance pilot reported seeing two Bald Eagles in the vicinity of Linda Creek on 4 May 1980. A few hours later we reached that area and were unable to locate perched birds, however it is possible that Bald Eagles are nesting somewhere in that area. Goshawks probably nest in the larger trees of the Coldfoot Creek delta. In 1976 a just-fledged Goshawk was found in those woods by members of an Alyeska construction

crew (W. Tilton pers. comms. 1977, 1980). The stands of trees along that creek stand out as some of the best potential Goshawk nesting habitat near the alignment north of the Yukon River. Efforts to locate nests in them during these surveys were, however, unsuccessful.

## U.S. - Canada Border North to the Yukon River

### Right-of-way 0.25 mile either side of centerline

A total of 22 nest locations of six tree-nesting raptor species have been documented or reported to be on lands within 0.25 mile either side of the proposed gas pipeline ROW centerline between the U.S. - Canada border and Yukon River. Seven of those locations were reported by us in 1979 (Roseneau and Bente 1979). The remaining 15 locations were discovered during the 1980 spring surveys. All 22 nest locations are listed in Table 1.

At least 16 of the 22 total locations included nests that had been constructed by Goshawks. Seven of those locations were occupied by Goshawks in 1980. The nests contained incubating adults (Sites 8.2, 8.6, 13.1, 19.1, 53.3, 59.1, 82.1, Map Nos. 4, 5, 10, 15, 19, 24). A seventh old Goshawk location (Site 35.1, Map No. 12) was occupied by Great Grey Owls in 1980.

Eleven of the 22 total locations appeared unoccupied by raptors in 1980 and the status of two are unknown. One location included an empty nest that had been constructed by either Common Ravens or Goshawks and two other locations included nests that had been constructed by Red-tailed Hawks. Three locations were specific locales where evidence obtained in 1979 strongly suggested that Merlins, Great Horned Owls and Sharp-shinned Hawks, respectively, had nested (Sites 3.3, 11.1 and 40.1, Map Nos. 2, 5, 13). Nests could not be located at Site 40.1; Great Horned Owls had been reported with just-fledged young at this location

Table 1. Raptor tree-nesting locations located within 0.25 miles either side of the proposed NWA gas pipeline right-of-way centerline between the U.S. - Canada border and the Yukon River, Alaska, 1979 and 1980.

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section | N. Alig Shee |
|---|---|---|---|---|---|---|---|
| 3.1 | Red-tailed Hawk | none | Red-tailed Hawk | 2 | Nabesna D-1 | T11N,R22E,Sec.2 | |
| 3.3 | Merlin(?) | ? | Merlin | 2 | Nabesna D-1 | T12N,R21E,Sec.3 | |
| 8.2 | Goshawk | Goshawk | ?(New location) | 4 | Tanacross A-2 | T14N,R20E,Sec.12 | |
| 8.6 | Goshawk | Goshawk | ?(New location) | 4 | Tanacross A-2 | T15N,R18E,Sec.11 | |
| 9.2 | Goshawk | none | ?(New location) | 5 | Tanacross A-3 | T15N,R18E,Sec.4 | |
| 11.1 | Sharp-shinned Hawk | ? | Sharp-shinned Hawk | 5 | Tanacross A-3 | T16N,R17E,Sec.13-14 | |
| 11.2* | (Bald Eagles) | (possibly Bald Eagles) | (probably none) | 5 | Tanacross A-3 | T16N,R17E,Sec.13 | |
| 13.1 | Goshawk | Goshawk | ?(New location) | 5 | Tanacross A-3 | T17N,R16E,Sec.24 | |
| 16.1 | Goshawk | none | ?(New location) | 9 | Tanacross B-5 | T18N,R12E,Sec.7 | |
| 19.1 | Goshawk | Goshawk | ?(New location) | 10 | Tanacross B-6 | T19N,R9E,Sec.31 | |
| 20.1 | Goshawk | none | none | 10 | Tanacross B-6 | T19N,R8E,Sec.14 | |
| 35.1 | Goshawk | Great Grey Owl | ?(New location) | 12 | Mt. Hayes C-1 | T22N,R6E,Sec.14 | |
| 20.2 | Goshawk | none (Active Goshawk nearby) | ?(New location) | 10 | Tanacross B-6 | T19N,R8E,Sec.3 | |
| 40.1 | ? | none | Great Horned Owl | 13 | Mt. Hayes C-2 | T22N,R16E,Sec.3 | |
| 40.2 | Goshawk | none | ?(New location) | 13 | Mt. Hayes C-2 | T22N,R16E,Sec.24 | |
| 40.3 | Goshawk | none | ?(New location) | 13 | Mt. Hayes C-2 | T22N,R16E,Sec.24 | |
| 53.3 | Goshawk | Goshawk | ?(New location) | 15 | Mt. Hayes D-3 | T12S,R13E,Sec.13 | |
| 59.1 | Goshawk | Goshawk | ?(New location) | 19 | Big Delta A-4 | T10S,R11E,Sec.29 | |
| 81 | Red-tailed Hawk | none | none | 22 | Big Delta B-6 | T5S,R6E,Sec.22 | |
| 81.1 | Common Raven or Goshawk | none | ?(New location) | 22.1 | Big Delta C-6 | T4S,R5E,Sec.29 | |
| 81.2 | Goshawk | none | ?(New location) | 22.1 | Big Delta C-6 | T4S,R5E,Sec.18 | |
| 82.1 | Goshawk | Goshawk | Goshawk | 24 | Fairbanks C-1 | T2S,R3E,Sec.19 | |
| 89.1 | Goshawk | none | ?(New location) | 28 | Livengood B-3 | | |

* Bald Eagles may have been initiating nest construction in this vicinity.
** Information to be presented in draft final report.

in mid-June 1979. The likelihood of finding either Merlin nests or Sharp-shinned Hawk nests from the air is very low. As a consequence, we made no attempt during these surveys to check locations where they may have nested. In addition, our surveys in these areas occurred while both Merlins and Sharp-shinned Hawks were still migrating to interior Alaska -- it is doubtful that any returning birds had established nests at those locations during the period of our survey.

One additional locale must also be mentioned. That location (Site 11.2, Map No. 5) may contain a Bald Eagle nest. A pair of Bald Eagles was observed perched in the trees in that vicinity. The birds may have just initiated nest construction. We immediately departed the area to prevent possible disturbance.

Proposed material sites and facility sites

A total of only one proposed material site between the U.S. - Canada border and the Yukon River contained a nest of a tree-nesting raptor species within its boundaries. That material site, EMS-5P-1, is located about three miles northwest of the Gerstle River crossing along the Alaska Highway and is vegetated predominently by a stand of medium-sized aspen trees. The single nest at that location contained an incubating Goshawk. The nest tree was located about 30-50 feet east of the test drill hole location. Drilling had occurred on 5 March 1980 (R. Post pers. comm. 1980). That date is about two weeks earlier than the date those Goshawks probably commenced nesting activities. No tree-nesting raptor nests were found on lands within proposed facility sites nor along access routes to material or facility sites between the U.S. - Canada border and the Yukon River.

Other nearby areas

We also surveyed some areas adjacent to the proposed gas pipeline ROW between the U.S. - Canada border and the Yukon River that were

judged potentially acceptable as nesting habitat for various tree-nesting raptor species. During these surveys we concentrated on locating additional, undiscovered Bald Eagle nesting locations. Areas that received some survey coverage included (1) obvious stands of medium sized to large aspen, poplar and birch trees, and areas of mixed aspen-spruce and birch-spruce trees within one to two miles either side of the ROW, (2) the riparian flood plain communities along streams and creeks both one to two miles upstream and downstream of ROW crossing points, (3) the riparian flood plain communities of the Tanana River course upstream of Fairbanks, (4) the Chisana River downstream of its confluence with Scottie Creek, (5) the lower Nebesna River from Northway downstream to its confluence with the Tanana River, (6) the wetland areas of those drainages south of Tetlin Junction up to 10 miles west of the Alaska Highway and (7) Shaw Creek Flats up to 10 miles northeast of the Tanana River course.

In areas outside the boundaries established for the ROW surveys and outside of lands included in the proposed material sites and facility sites, a total of 58 new nest locations of at least four tree-nesting raptor species and Common Ravens were discovered. In addition, 47 known nest locations of tree-nesting raptor species and Common Ravens were documented by us in 1979 (Roseneau and Bente 1979). The 47 locations were re-checked. Data for all 105 locations are summarized in Table 2.

Some nest locations are judged to be near enough to the proposed ROW, material sites or facility sites to warrant attention during pre-construction and construction activities. These nest locations are re-listed in Table 3.

## Bald Eagles

Fifty of the total 105 nest locations reported in Table 2 are locations where Bald Eagles have constructed nests or are locations

Table 2. Raptor and Raven tree-nesting locations located in areas near the proposed NWA gas pipeline alignment between the U.S. - Canada border and the Yukon River, Alaska, 1979 and 1980.

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 1 | Bald Eagle | Bald Eagle | Bald Eagle | 1 | Nabesna C-1 | T10N,R23E,Sec.24 |
| 2 | Bald Eagle | Bald Eagle | Bald Eagle | 1 | Nabesna C-1 | T10N,R23E,Sec.18 |
| 3 | Bald Eagle | none | Bald Eagle | 1 | Nabesna C-1 | T10N,R22E,Sec.1 |
| 3.2 | ? | none(?) | Great Horned Owl | 2 | Nabesna D-1 | T12N,R21E,Sec 3 |
| 3.4 | probably Red-tailed Hawk | none(?) | Red-tailed Hawk | 2 | Nabesna D-1 | T13N,R21E,Sec.32/ |
| 3.5 | Goshawk | Goshawk and Great Horned Owl | ?(New location) | 1 | Nabesna C-1 | T11N,R22E,Sec.12 |
| 3.6 | Goshawk | Great Horned Owl | ?(New location) | 2 | Nabesna D-1 | T12N,R22E,Sec.23 |
| 3.7 | Goshawk | none | ?(New location) | 2 | Nabesna D-1 | T12N,R22E,Sec.27 |
| 3.8 | Red-tailed Hawk | none(?) | ?(New location) | 2 | Nabesna D-1 | T12N,R21E,Sec.3 |
| 3.9 | Common Raven | Common Raven | ?(New location) | 3 | Nabesna D-2 | T12N,R20E,Sec.11 |
| 4.0 | Bald Eagle | none (fallen down) | none | 3 | Nabesna D-2 | T13N,R20E,Sec.21 |
| 4.1 | Bald Eagle | Bald Eagle | ?(New location) | 3 | Nabesna D-2 | T12N,R20E,Sec.5 |
| 4.2 | Bald Eagle | Bald Eagle | ?(New location) | 3 | Nabesna D-2 | T13N,R20E,Sec.18 |
| 4.3 | Bald Eagle | Bald Eagle | ?(New location) | 3 | Nabesna D-2 | T14N,R19E,Sec.35 |
| 4.4 | Goshawk | none | ?(New location) | 3 | Nabesna D-2 | T14N,R20E,Sec.28 |
| 4.5 | Goshawk | Goshawk | ?(New location) | 3 | Nabesna D-2 | T14N,R20E,Sec.21/ |
| 5 | Bald Eagle | none | Bald Eagle | 3 | Nabesna D-2 | T14N,R19E,Sec.25 |
| 6 | Bald Eagle | Bald Eagle | Bald Eagle | 3 | Nabesna D-2 | T14N,R19E,Sec.34 |
| 7 | Bald Eagle | (reported - not located) | (reported - not located | 3 | Nabesna D-2 | T14N,R19E,Sec.28 |
| 7.1 | Bald Eagle | Bald Eagle | ?(New location) | 3 | Nabesna D-2 | T14N,R20E,Sec.19 |
| 8 | Bald Eagle | (not located) | Bald Eagle | 3 | Nabesna D-2 | T14N,R19E,Sec.24 |
| 8.1 | Red-tailed Hawk | none | ?(New location) | 3 | Nabesna D-2 | T14,R19E,Sec.14 |

Table 2 (cont.)

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 8.3 | Goshawk | none | ?(New location) | 4 | Tanacross A-2 | T14N,R18E,Sec.11 |
| 8.4 | Bald Eagle | Bald Eagle | ?(New location) | 4 | Tanacross A-2 | T15N,R18E,Sec. |
| 8.5 | Goshawk | none | ?(New location) | 4 | Tanacross A-2 | T15N,R18E,Sec. |
| 9 | Bald Eagle | none | none | 5 | Tanacross A-3 | T15N,R18E,Sec.8 |
| 10 | Bald Eagle | Bald Eagle | Bald Eagle | 5 | Tanacross A-3 | T15N,R18E,Sec.8 |
| 11 | Bald Eagle | (reported - not located) | (reported - not located) | 5 | Tanacross A-3 | T16N,R18E,Sec.18 |
| 12 | Osprey | none (fallen down) | Osprey | 5 | Tanacross A-3 | T16N,R17E,Sec.20 |
| 13 | Bald Eagle | none | Bald Eagle | 5 | Tanacross A-3 | T16N,R17E,Sec.18 |
| 14 | Bald Eagle | Bald Eagle | Bald Eagle | 7 | Tanacross A-4 | T17N,R15E,Sec.29 |
| 17 | Bald Eagle | Bald Eagle | Bald Eagle | 9 | Tanacross B-5 | T19N,R10E,Sec.36 |
| 18.1 | Goshawk | none | ?(New location) | 10 | Tanacross B-6 | T19N,R9E,Sec.27 |
| 28 | Bald Eagle | none | Bald Eagle | 11 | Tanacross C-6 | T21N,R8E,Sec.16 |
| 30 | Bald Eagle | none | none | 11 | Tanacross C-6 | T22N,R7E,Sec.24 |
| 33 | Bald Eagle | (reported - not located) | (reported - not located) | 12 | Mt. Hayes C-1 | T22N,R7E,Sec.3 |
| 37 | Osprey | none | Great Horned Owl | 12 | Mt. Hayes C-1 | T22N,R6E,Sec.7 |
| 39 | Osprey | none (fallen down) | Osprey | 12 | Mt. Hayes C-1 | T22N,R5E,Sec. |
| 40 | Red-tailed Hawk | none(?) | none | 12 | Mt. Hayes C-1 | T23N,R5E,Sec.32 |
| 40.1 | ? | none apparent | Great Horned Owl | 13 | Mt. Hayes C-2 | T14S,R16E,Sec.23 |
| 43 | Osprey | Osprey | Osprey | 14 | Mt. Hayes D-2 | T13S,R16E,Sec.29 |
| 51 | Bald Eagle | (reported - not located) | (reported - not located) | 14 | Mt. Hayes D-2 | T12S,R15E,Sec.14 |
| 53 | Bald Eagle | (not located) | Bald Eagle | 14 | Mt. Hayes D-2 | T11S,R15E,Sec.7 |
| 53.1 | Common Raven | none | ?(New location) | 14 | Mt. Hayes D-2 | T11S,R15E,Sec.7 |
| 53.4 | Bald Eagle | Bald Eagle | ?(New location) | 17 | Big Delta A-2 | T10S,R15E,Sec.30 |

Table 2 (cont.)

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 53.5 | Bald Eagle | Bald Eagle | ?(New location) | 17 | Big Delta A-2 | T10S,R14E,Sec.22 |
| 54 | Bald Eagle | none | none | 18 | Big Delta A-3 | T10S,R14E,Sec /21 |
| 54.1 | Bald Eagle | none | ?(New location) | 18 | Big Delta A-3 | T10S,R14E,Sec.16 |
| 54.2 | Bald Eagle | Bald Eagle | ?(New location) | 18 | Big Delta A-3 | T10S,R14E,Sec.8 |
| 55.1 | Red-tailed Hawk | none(?) | ?(New location) | 18 | Big Delta A-3 | T10S,R13E,Sec.16 |
| 56 | Bald Eagle | (reported - not located) | (reported - not located) | 18 | Big Delta A-3 | T10S,R13E,Sec.16 |
| 56.1 | Common Raven | Common Raven | ?(New location) | 18 | Big Delta A-3 | T10S,R13E,Sec.8 |
| 56.2 | Common Raven | Great Horned Owl | ?(New location) | 18 | Big Delta A-3 | T10S,R13E,Sec.6 |
| 56.3 | Common Raven | Common Raven | ?(New location) | 18 | Big Delta A-3 | T10S,R13E,Sec.6 |
| 57 | Bald Eagle | Bald Eagle | none | 18 | Big Delta A-3 | T10S,R12E,Sec.1 |
| 57.1 | Common Raven | Great Horned Owl | ?(New location) | 18 | Big Delta A-3 | T10S,R12E,Sec.3 |
| 57.2 | Bald Eagle | Bald Eagle | ?(New location) | 18 | Big Delta A-3 | T9S,R11E,Sec.36 |
| 58 | Bald Eagle | Bald Eagle | none | 19 | Big Delta A-4 | T9S,R11E,Sec.27 |
| 59 | Bald Eagle | Bald Eagle | Bald Eagle | 19 | Big Delta A-4 | T9S,R11E,Sec.27 |
| 63.2 | Bald Eagle | Bald Eagle | ?(New location) | 19 | Big Delta A-4 | T8S,R9E,Sec.24 |
| 63.3 | Red-tailed Hawk | none(?) | ?(New location) | 19 | Big Delta A-4 | T8S,R9E,Sec.24 |
| 64 | Bald Eagle | none | Bald Eagle | 21 | Big Delta B-5 | T8S,R8E,Sec.2 |
| 64.1 | Bald Eagle | Bald Eagle | none (new location) | 21 | Big Delta B-5 | T8S,R8E,Sec.2 |
| 64.2 | Common Raven | Common Raven | ?(New location) | 21 | Big Delta B-5 | T8S,R8E,Sec.3 |
| 65 | Bald Eagle | Bald Eagle | none | 20 | Big Delta A-5 | T8S,R8E,Sec.8 |
| 66 | Bald Eagle | Bald Eagle | Bald Eagle | 20 | Big Delta A-5 | T8S,R8E,Sec.5 |
| 69.1 | Sharp-shinned Hawk | Sharp-shinned Hawk | Sharp-shinned Hawk | 21 | Big Delta B-5 | T7S,R7E,Sec.21 |
| 69.2 | Goshawk | (not located) | ?(status undetermined) | 21 | Big Delta B-5 | T7S,R6E,Sec.24 |
| 69.3 | Goshawk | Goshawk | Goshawk (new information) | 21 | Big Delta B-5 | T7S,R7E,Sec.20 |
| 70.1 | ? | (reported - not located) | (reported - not located) | 22 | Big Delta B-6 | T7S,R6E,Sec.5/6 |
| 71 | Bald Eagle | none | none | 22 | Big Delta B-6 | T7S,R6E,Sec.31 |

Table 2 (cont.)

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 74.1 | ? | none (fallen down) | ?(New location) | 22 | Big Delta B-6 | T7S,R5E,Sec.10 |
| 74.2 | ? | none | ?(New location) | 22 | Big Delta B-6 | T7S,R5E,Sec.1[illegible] |
| 74.3 | Goshawk | none | ?(New location) | 22 | Big Delta B-6 | T7S,R5E,Sec.5 |
| 75 | Bald Eagle | Bald Eagle | Bald Eagle | 22 | Big Delta B-6 | T7S,R4E,Sec.12 |
| 75.1 | Goshawk | none | Great Horned Owl (new information) | 22 | Big Delta B-6 | T6S,R5E,Sec.32 |
| 75.2 | Goshawk | none | none (new information) | 22 | Big Delta B-6 | T6S,R5E,Sec.31 |
| 75.3 | Goshawk | none | Great Horned Owl (new information) | 22 | Big Delta B-6 | T6S,R5E,Sec.31 |
| 75.4 | Common Raven | Common Raven | ?(New location) | 22 | Big Delta B-6 | T6S,R4E,Sec.23 |
| 75.5 | Bald Eagle | none | ?(New location) | 22 | Big Delta B-6 | T6S,R4E,Sec.15 |
| 76.1 | Goshawk | none | (status undetermined) | 22 | Big Delta B-6 | T6S,R4E,Sec.9 |
| 76.2 | Red-tailed Hawk | Red-tailed Hawk | ?(New location) | 22 | Big Delta B-6 | T6S,R4E,Sec.5 |
| 76.3 | Common Raven | none | ?(New location) | 22 | Big Delta B-6 | T5S,R4E,Sec.1[illegible] |
| 77 | Bald Eagle | Bald Eagle (cut down by beavers after initiation of incubation) | (status undetermined) | 23 | Fairbanks B-1 | T6N,R4E,Sec.[illegible] |
| 77.1 | Goshawk | none | none (new information) | 22 | Big Delta B-6 | T5S,R4E,Sec.10/11/1[illegible] |
| 77.2 | Goshawk | Goshawk | Goshawk | 22 | Big Delta B-6 | T5S,R4E,Sec.16 |
| 81.3 | Common Raven | none | ?(New location) | 24 | Fairbanks C-1 | T5S,R4E,Sec.5 |
| 81.4 | Common Raven | none | ?(New location) | 24 | Fairbanks C-1 | T4S,R4E,Sec.32 |
| 81.5 | Red-tailed Hawk | Red-tailed Hawk | ?(New location) | 24 | Fairbanks C-1 | T4S,R3E,Sec.26 |

Table 2 (cont.)

| Nesting Location Number | Species Reponsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 81.6 | ? | none | ?(New location) | 24 | Fairbanks C-1 | T4S,R3E,Sec.10 |
| 82 | Bald Eagle | none | Bald Eagle | 24 | Fairbanks C-1 | T4S,R3E,Sec.4 |
| 82.2 | Bald Eagle | none | ?(New location) | 24 | Fairbanks C-1 | T3S,R3E,Sec.3 |
| 82.3 | Bald Eagle | Bald Eagle | ?(New location) | 24 | Fairbanks C-1 | T3S,R3E,Sec.33 |
| 82.4 | Common Raven | none | ?(New location) | 24 | Fairbanks C-1 | T3S,R2E,Sec.12 |
| 82.5 | Bald Eagle | Bald Eagle | ?(New location) | 24 | Fairbanks C-1 | T3S,R2E,Sec.12 |
| 83 | Bald Eagle | none | Bald Eagle | 24 | Fairbanks C-1 | T2S,R2E,Sec.20 |
| 83.1 | Common Raven | none | ?(New location) | 24 | Fairbanks C-1 | T2S,R2E,Sec.17 |
| 85 | Bald Eagle | (reported - not located) | (reported - not located) | 26 | Livengood A-2 | T3N,R1W,Sec.35 |
| 85.1 | Bald Eagle | Bald Eagle | ?(New location) | 26 | Livengood A-2 | T3N,R1W,Sec.30 |
| 85.2 | Goshawk | none | ?(New location) | 26 | Livengood A-2 | T3N,R1W,Sec.18 |
| 85.3 | Goshawk | Red-tailed Hawk | ?(New location) | 26 | Livengood A-2 | T3N,R1W,Sec.18 |
| 89 | ? | (reported - not located) | (reported - not located) | 28 | Livengood B-3 | - |
| 89.2 | Red-tailed Hawk | Red-tailed Hawk | ?(New location) | 29 | Livengood B-4 | T7N,R5W,Sec.15 |
| 91.1 | Common Raven | none | ?(New location) | 31 | Livengood C-5 | T10N,R8W,Sec.26 |
| 94.1 | ? | Great Horned Owl | ?(New location) | 33 | Livengood D-6 | T12N,R10W,Sec.16 |

Table 3. Raptor and Raven tree-nesting locations known to occur within 0.5 miles of the proposed NWA gas pipeline right-of-way centerline, material sites and facility sites.

| Nesting Location Number | Species Responsible for nest Construction | Species Occupying Nest(s) in 1980 | Species Occupying Nest(s) in 1979 | Map Number | Map Name | Township, Range, Section |
|---|---|---|---|---|---|---|
| 1 | Bald Eagle | Bald Eagle | Bald Eagle | 1 | Nabesna C-1 | T10N,R23E,Sec.24 |
| 3.2 | ? | none(?) | Great Horned Owl | 2 | Nabesna D-1 | T12N,R21E,Sec.3 |
| 3.5 | Goshawk | Goshawk and Great Horned Owl | ?(New location) | 1 | Nabesna C-1 | T11N,R22E,Sec.12 |
| 4.4 | Goshawk | none | ?(New location) | 3 | Nabesna D-2 | T14N,R20E,Sec.28 |
| 8.5 | Goshawk | none | ?(New location) | 4 | Tanacross A-2 | T15N,R18E,Sec.13 |
| 11 | Bald Eagle | (reported - not located) | (reported - not located) | 5 | Tanacross A-3 | T16N,R18E,Sec.18 |
| 85.1 | Bald Eagle | Bald Eagle | ?(New location) | 26 | Livengood A-2 | T3N,R1W,Sec.30 |
| 89.2 | Red-tailed Hawk | Red-tailed Hawk | ?(New location) | 29 | Livengood B-4 | T7N,R5W,Sec.15 |

where Bald Eagles reportedly nested. These 50 locations include 33 that were described by us in 1979 (Roseneau and Bente 1979). The other 17 locations were discovered during these more extensive 1980 spring surveys.

Six of the 50 locations were reported by agency personnel to contain Bald Eagle nests, but searches of these areas in both 1979 and 1980 failed to confirm the presence of either nests or eagles at these sites (Sites 7, 11, 33, 51, 56 and 85; Maps No. 3, 5, 12, 14, 18, 26). The presence of nests has been confirmed at 44 of the 50 locations in either 1979 or 1980. At one location the nest tree was leaning at an angle that was too great to allow the nest to be used in 1979. During these 1980 surveys, it was discovered that the nest tree had fallen to the ground (Site 4, Map No. 3). Two other nest locations contained single Bald Eagle nests in 1979, but those nests could not be relocated during the 1980 spring surveys (Sites 8 and 53, Map Nos. 3, 14).

Twenty-six of the remaining 41 locations where the presence of nests was confirmed in 1979-1980 were found occupied by pairs of Bald Eagles during the 1980 spring survey; nests at those locations contained incubating adults. One location contained an occupied Bald Eagle nest in a Balsam Poplar tree on 19 April 1980 (Site 77, Map No. 23); however, on 10 May 1980 it was discovered that the nest tree had been fallen by beavers (*Castor canadensis*). The nest was destroyed and adult eagles were not evident in the area on that date. Unoccupied nests were recorded at the remaining 14 locations.

Goshawks

Nineteen of the total 105 nest locations reported in Table 2 are locations where Goshawks have constructed nests. Those 19 locations include four that were documented by us in 1979 (Roseneau and Bente 1979). The other 15 locations were discovered or reported to us during these 1980 spring surveys.

Three of the 19 Goshawk nesting locations (Sites 4.5, 69.3, 77.2, Map Nos. 3, 21, 22) were found occupied by Goshawks during the 1980 spring surveys; nests at those locations contained incubating adults. A fourth location (Site 3.5, Map No. 1) was especially unusual. Of the several closely associated Goshawk nests in that nesting territory, one nest contained an incubating Goshawk, and approximately 200 feet away and in full view of the first nest, an incubating Great Horned Owl occupied a second nest. A fifth location was occupied by Red-tailed Hawks (Site 85.3, Map No. 26). Those birds were still adding fresh nesting material to the top of the old nest structure they had selected. One other Goshawk location was occupied by Great Horned Owls (Site 3.6, Map No. 2). Unoccupied and empty Goshawk nests were recorded at twelve locations, and one reported location (Site 69.2, Map No. 21) could not be located.

Red-tailed Hawks

Ten of the total 105 nest locations reported in Table 2 were locations where Red-tailed Hawks constructed nests. Those 10 locations include two that were documented by us in 1979 (Roseneau and Bente 1979). The other eight locations were discovered during these 1980 spring surveys.

Four of the 10 Red-tailed Hawk nesting locations were found occupied by Red-tailed Hawks during the 1980 spring surveys and nests were being constructed at two of those locations, including one that was being constructed on top of an old Goshawk nest in habitat not usually associated with this species (Site 85.3, Map No. 26). The other two nests contained incubating adults. During surveys along the Tanana River between Fairbanks and Delta Junction, we located only one active Red-tailed Hawk nest before 1 May. On 10 May a new Red-tailed Hawk nest was noted in an area where we were confident none had existed in late April. That nest had been constructed during the preceding 10 days. Had surveys continued past 10 May it is certain that several new nests would have been discovered

in stands of poplar along rivers. It is also likely that some of the unoccupied nests discovered in April, would have been occupied by 10-15 May. Thus, 1980 occupancy data reported here for Red-tailed Hawks must be considered incomplete.

Great Horned Owls

Ten of the total 105 nest locations reported in Table 2 are locations where Great Horned Owls have nested in trees. Those 10 locations include three that were documented by us in 1979 (Roseneau and Bente 1979). Five of the other locations were discovered during these 1980 spring surveys. The other two locations reported on in 1980 represent additional new information (Sites 75.1, 75.3; Map No. 22). Those locations had breeding Great Horned Owls at them in 1979 (W. Tilton pers. comm. 1980). Active nests with incubating or brooding adults were found at all five of the new Great Horned Owl nest locations that were discovered during the 1980 spring aerial surveys (Sites 3.5, 3.6, 56.2, 57.1, 94.1; Map Nos. 1, 2, 18, 33). All five of those active nests originally had been constructed by Goshawks. One of the five active nests (Site 3.5, Map No. 1), mentioned previously in the section on Goshawks, was very unusual because of its close proximity to an active Goshawk nest at that same location.

None of the five remaining locations appeared to be occupied by Great Horned Owls in 1980. At one of the five locations (Site 37, Map No. 12) Great Horned Owls had used an old Osprey nest in 1979 (Roseneau and Bente 1979); that nest was empty. During 1979, evidence obtained at two other locations (Sites 3.2, 40.1; Map Nos. 1, 13) indicated Great Horned Owls had nested at or near them, however, the nest structures and nest types could not be determined (Roseneau and Bente 1979). Great Horned Owls did not appear to be present at those two locations in 1980, however habitat available at them suggests that old Goshawk nests may have been present nearby. The two remaining locations were recently

in stands of poplar along rivers. It is also likely that some of the unoccupied nests discovered in April, would have been occupied by 10-15 May. Thus, 1980 occupancy data reported here for Red-tailed Hawks must be considered incomplete.

Great Horned Owls

Ten of the total 105 nest locations reported in Table 2 are locations where Great Horned Owls have nested in trees. Those 10 locations include three that were documented by us in 1979 (Roseneau and Bente 1979). Five of the other locations were discovered during these 1980 spring surveys. The other two locations reported on in 1980 represent additional new information (Sites 75.1, 75.3; Map No. 22). Those locations had breeding Great Horned Owls at them in 1979 (W. Tilton pers. comm. 1980). Active nests with incubating or brooding adults were found at all five of the new Great Horned Owl nest locations that were discovered during the 1980 spring aerial surveys (Sites 3.5, 3.6, 56.2, 57.1, 94.1; Map Nos. 1, 2, 18, 33). All five of those active nests originally had been constructed by Goshawks. One of the five active nests (Site 3.5, Map No. 1), mentioned previously in the section on Goshawks, was very unusual because of its close proximity to an active Goshawk nest at that same location.

None of the five remaining locations appeared to be occupied by Great Horned Owls in 1980. At one of the five locations (Site 37, Map No. 12) Great Horned Owls had used an old Osprey nest in 1979 (Roseneau and Bente 1979); that nest was empty. During 1979, evidence obtained at two other locations (Sites 3.2, 40.1; Map Nos. 1, 13) indicated Great Horned Owls had nested at or near them, however, the nest structures and nest types could not be determined (Roseneau and Bente 1979). Great Horned Owls did not appear to be present at those two locations in 1980, however habitat available at them suggests that old Goshawk nests may have been present nearby. The two remaining locations were recently

reported to us (Sites 75.1, 75.3; Map No. 22). They had been found occupied by Great Horned in 1979, unoccupied by any species in 1980, and may have originally been constructed by either Goshawks or Common Ravens (W. Tilton pers. comm. 1980).

We found three other locations in 1979 where Great Horned Owls nested. All of those locations were cliff rather than tree nests, and have not been included in Table 3. One of those locations (Site 98, Map No. 35) was occupied by Great Horned Owls again during the 1980 spring surveys. One other location (Site 67, Map No. 21) was also checked and was unoccupied by any species this year. The last of those three locations (Site 141a, Map No. 46) was not checked in 1980.

Ospreys

Four of the total 105 nest locations reported in Table 2 are locations where Ospreys have constructed single nests in trees. The Osprey nest at one of those locations has also been used by Great Horned Owls and is mentioned in that section (Site 37, Map No. 12). All four Osprey nest locations were documented by us in 1979 (Roseneau and Bente 1979). No new Osprey nests were discovered during the 1980 spring survey.

Two of the four known Osprey nests no longer exist. At one location the spruce tree that supported the nest had been topped approximately two-thirds of the way above its base (Site 12, Map No. 5). At the other location, the entire spruce tree that had contained the nest during spring 1979 had fallen into the Tanana River as a result of the natural erosion of the river bank (Site 39, Map No. 12).

One of the two remaining locations where Osprey nests continue to exist was found unoccupied by any species (Site 37, Map No. 12). The other of those locations was occupied by a pair of Ospreys (Site 43, Map No. 14). When observed on 8 May 1980, that pair was re-lining the old nest.

Sharp-shinned Hawks

One of the total 105 nesting locations reported in Table 2 contained a Sharp-shinned Hawk nesting territory where that species has constructed several nests during the past several years (Site 69.1, Map No. 21). That location was reported by us in 1979 (Roseneau and Bente 1979). A pair of Sharp-shinned Hawks was present at one of those nests again in June 1980 (R. Clarke pers. comm. 1980).

Common Ravens

Fourteen of the total 105 nest locations reported in Table 2 are locations where Common Ravens have constructed nests in trees. None of those tree-nests were known or reported by us in 1979 (Roseneau and Bente 1979). Five of those 14 nest locations contained active Raven nests in 1980. Two of the other raven nest locations were being used by Great Horned Owls in 1980 (Sites 56.2, 57.1; Map No. 18). The remaining seven locations contained Raven nests that were unoccupied by any species in 1980.

Three of the total 105 nest loctions reported in Table 2 contained empty, unoccupied stick nests in trees (Sites 74.1, 74.2, 81.6; Map Nos. 22, 24). We were unable to determine if Common Ravens, Goshawks or Red-tailed Hawks had constructed them. One other location represents a reported, unassigned stick nest that could not be located either in 1979 or 1980 (Site 70.1, Map No. 22).

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Roseneau, D.G. and P.J. Bente. 1979. A raptor survey of the proposed Northwest Alaskan Pipeline Company gas pipeline route: The U.S. - Canada border to Prudhoe Bay, Alaska, 31 May to 7 June and 7 July 1979. Report prepared for Northwest Alaskan Pipeline Company, Salt Lake City, Utah (administered by Fluor Northwest, Inc., Contract No. 468075-9-K010, WO No. 2).

# APPENDIX I

Evaluations of proposed NWA gas pipeline materials sites, facility sites and access roads between the U.S. - Canada border and the Chandalar Shelf, Alaska, for tree-nesting raptors and potential nesting habitat.

Northwest Alaskan Pipeline Company

Material Site Exploration Program Site No.

EMS-32 P-1

Facility Site No. Compressor Station 16

USGS 1:63,360 Map Name: Nabesna C-1 T11N, R23E, Sections 18,19

Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub

Survey Date(s): 19 & 23 April 1980 Observer: D.G. Roseneau

General Vegetative Type(s): medium dense to dense spruce with some aspen.

Survey Results:

No nests of tree-nesting raptors were observed within the boundaries of this material site, nor along the proposed access route to it. Nests were also not observed in the immediate surrounding area.

This location is vegetated primarily by small spruce. The location itself does not appear to contain any potential nesting habitat for raptors and the potential for conflicts between nesting raptors and proposed activities appears minimal. However, it should be noted that vegetative cover transitions to small birch and spruce along the location's northeastern edge. That tree-cover may offer some poor potential nesting habitat occassionally interspersed by limited areas of fair and good potential nesting habitat for Sharp-shinned Hawks. The best potential raptor nesting habitat is found up-slope of the location in the various small side drainages and on the upper shoulders of hills 2734 and 2906 to the northeast. Some of those areas offer good potential Goshawk nesting habitat and good to fair Sharp-shinned Hawk nesting habitat.

Recommendations:

Proceed with use, however attempt to limit activities to designated area.

Northwest Alaskan Pipeline Company

Material Site Exploration Program Site No.

EMS-32 P-2

USGS 1:63,360 Map Name: Nabesna C-1 T1ON, R23E, Section 3

Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub

Survey Date(s): 19 & 23 April 1980 Observer: D.G. Roseneau

General Vegetative Type(s): dense spruce and alder.

Survey Results:

No nests of tree-nesting raptors were observed within the boundaries of this material site, nor along the proposed access route to it. Nests were also not observed in the immediate surrounding area.

A pre-existing materials site surrounded by dense spruce and alder occurs at this location. The location itself does not appear to contain any potential nesting habitat for raptors. Some habitat (mixed birch-spruce) with marginal potential for Goshawks and Sharp-shinned Hawks does occassionally occur along the south slopes of Hill 2584, primarily just up-slope of BM 2157 on the Alaska Highway. Some habitat (mixed birch-spruce) with fair potential for Sharp-shinned Hawks occurs along the northeast side of the ridge that leads southeast to the proposed material site. The potential for conflicts to occur between nesting raptors and proposed activities within the immediate vicinity of EMS-32 P-2 is considered to be low.

Recommendations:

Proceed with use.

Northwest Alaskan Pipeline Company

Material Site Exploration Program Site No.

EMS-33 P-1A

USGS 1:63,360 Map Name: Nabesna C-1 T1ON, R23E, Section 3

Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub

Survey Date(s): 19 & 23 April 1980 Observer: D.G. Roseneau

General Vegetative Type(s): scattered spruce and willow.

Survey Results:

No nests of tree-nesting raptors were observed within the boundaries of this material site, nor along the proposed access route to it. Nests were also not observed in the immediate surrounding area.

Much of this area consists of an old pre-existing materials site and dump surrounded by small scattered spruce and willow trees. It does not appear to contain any potential nesting habitat for raptors and conflicts between nesting raptors and proposed activities are unlikely to occur.

Recommendations:

Proceed with use.

Northwest Alaskan Pipeline Company

Material Site Exploration Program Site No.

EMS-33 P-1B

USGS 1:63,360 Map Name: Nabesna C-1 T1ON, R23E, Section 36

Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub

Survey Date(s): 19 & 23 April 1980 Observer: D.G. Roseneau

General Vegetative Type(s): scattered spruce with medium sized birch trees.

Survey Results:

No nests of tree-nesting raptors were observed within the boundaries of this material site, nor along the proposed access route to it. Nests were also not observed in the immediate surrounding area.

The hillside in the immediate vicinity of this material site is vegetated with mixed medium-sized spruce and birch trees that are judged to offer fair to good potential nesting habitat for both Goshawks and Sharp-shinned Hawks.

Recommendations:

Proceed with use, however, it is recommended that activities occur primarily in the lower portions of the hillside within this area since the best potential nesting habitat appears up-slope.

Northwest Alaskan Pipeline Company
Material Site Exploration Program Site No.
EMS-33 P-2

USGS 1:63,360 Map Name: Nabesna C-1 T11N, R22E, Section 12
Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub
Survey Date(s): 19, 23 & 28 April 1980 Observer: D.G. Roseneau
General Vegetative Type(s): medium dense spruce with aspen.
Survey Results:

No nests of tree-nesting raptors were found within the boundaries of this materials site, nor along the access route to it, however important habitat and nests occur nearby.

Part of this location contains a pre-existing materials site area. The proposed material site a portion of the excellent Goshawk and Sharp-shinned Hawk nesting habitat (mixed large birch and spruce) that lies immediately to the east on the small hill above the pre-existing materials site. That potential habitat was surveyed and three goshawk nests were found several hundred yards to the east of the proposed area. One nest was confirmed empty, one contained an incubating Goshawk and one contained an incubating or brooding Great Horned Owl (see Site 3.5, Map No. 1). Several other older and empty nests also were found in the immediate vicinity. The area shows long term use by Goshawks. The area could also provide nesting sites for Great Grey Owls in addition to Great Horned Owls in some years.

Recommendation:

It is recommended that any materials extraction activities, if they occur, be contained to areas along the base of the hill facing the Alaska Highway to avoid removal of the larger birch trees where raptor nests occur. Use of alternative materials sites should be investigated in this area.

Northwest Alaskan Pipeline Company
Material Site Exploration Program Site No.
EMS-5 P-1

USGS 1:63,360 Map Name: Mt. Hayes D-3 T12S, R14E, Section 28
Survey Method: Fixed-wing aerial Aircraft Type: PA-18 Super Cub
Survey Date(s): 24 April, 8 May 1980 Observer: D.G. Roseneau
General Vegetative Type(s): old burn area with dense willow and aspen stand.
Survey Results:

An active Goshawk nest was discovered in this proposed materials site. The nest, constructed in an aspen tree near the center of the aspen stand, contained an incubating adult. The nest was located only about 50 feet southeast of a test drill-hole location (drilled 5 March 1980, R. Post pers. comm. 1980).

Potential nesting habitat for tree-nesting raptors in this general region (i.e. Delta Junction to Tetlin Junction) long the proposed pipeline corridor consists primarily of aspen stands. Those stands of trees provide fair to good nesting habitat for Goshawks. The Goshawk nests, in turn, may also provide nest sites for Great Horned Owls and Great Grey Owls in some years. The aspen stands that have been left as a buffer strip between the State of Alaska Delta Barley Project and the Alaska Highway seem particularly important because of the edge effect that has been created.

Recommendations:

It is recommended that, if materials extraction proceeds at this location, those activities should be limited to that area northwest of the aspen stand to avoid removing them. Use of alternate materials sites should be investigated in this area, particularly southwest of the Alaska Highway.

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1 July 1980

Please note that these preliminary maps are numbered to follow the order being used for the final, complete set, and to follow the order established by U.S. in 1979 (last years report).

As a consequence the numbers on these maps appear to skip around. That is not an error and should be ignored.

Jim R Rowan