



ENVIRONMENTAL BASELINE STUDIES

PRELIMINARY SUMMARY STUDIES PERFORMED BY ABR, INC. RAPTOR SURVEYS

1. MINE STUDY AREA

Aerial surveys for raptors in the mine study area were conducted to enumerate the numbers of nesting pairs and to establish a baseline (predevelopment) level of reproductive success for the species occurring in the vicinity of the proposed Pebble Mine. The primary goal of these surveys is to provide baseline data on the distribution and abundance of raptor species in the area. In addition to the field surveys, a review of the published literature and unpublished agency file reports has been conducted to compile historical information on nesting raptors in the region.

Several raptor species have been included in baseline studies in Alaska in the past because of their legal or conservation status. Bald Eagles and Golden Eagles are emphasized because they are afforded special protection under the Bald and Golden Eagle Protection Act. The American Peregrine Falcon subspecies, whose range may include the Lake Clark/Iliamna region, was delisted as an endangered species in 1999. The subspecies is included in our baseline studies, along with other cliff-nesting raptors, because of continued agency interest in its populations and sensitivity to disturbance. A subspecies of the Northern Goshawk is a State of Alaska Species of Special Concern in southeast Alaska, and there is often agency concern over goshawks throughout Alaska.

Field surveys were conducted in 2004 and 2005 (Figure ABR-4). All suitable woodland and cliff habitats available for raptors in the mine study area were surveyed. Aerial surveys were conducted by helicopter and fixed-wing aircraft. A single aerial survey each in suitable habitats for tree- and cliff-nesting raptors was conducted by helicopter in the mine study area in 2004 to identify and assess the occupancy of raptor nests (Occupancy Survey). In 2005, two aerial surveys each were conducted for tree- and cliff-nesting raptors to assess both occupancy and productivity (Productivity Survey). Suitable nesting habitats include cliffs for Peregrine Falcons, Gyrfalcons, and Golden Eagles, and forested areas for Bald Eagles and other woodland raptors, including Osprey, Northern Goshawks, Buteo Hawks, and Great-horned Owls. Common Raven nests also were recorded during the nesting-raptor surveys. Two separate surveys were

undertaken in mid-winter 2005 to assess the use of the area by wintering Bald Eagles (one using fixed-wing aircraft and one using a helicopter). Specific tasks and methods in this work were as follows:

- Occupancy Surveys were conducted during the arrival and early-to-mid-incubation stages for raptors in the region (late April through late May). The first surveys occurred before deciduous tree leaf-out (April 22, 2004, and May 6 and 7, 2005) and were used to identify the nests of tree-nesting species, particularly the Northern Goshawk and Bald Eagle. The second surveys occurred at least two weeks later (May 24 and 26, 2004, and May 21 and 25, 2005) and were used to identify cliff-nesting raptors, particularly Gyrfalcons, Peregrine Falcons, and Golden Eagles.
- Productivity Surveys were undertaken during the mid-to-late-nestling period for raptors in the region (early July, mid-July, and mid-August 2005). These surveys allowed researchers to identify active nests missed during occupancy surveys and to determine the status of nests for which occupancy was uncertain.
- Low-level (approximately 50 meters above ground level) helicopter surveys of suitable forest stands, cliffs, banks, and islets were undertaken with two observers seated on the same side of the aircraft searching woodlands and cliffs for signs of use by nesting raptors (stick nests, ledges, aggressive or perched birds). Multiple passes of some cliff habitats were sometimes necessary to adequately search the available nesting ledges. These surveys included flying shorelines of lakes and streams, and areas of substantial topographical relief in search of raptor nests.
- Surveys for Northern Goshawks, Bald Eagles, and other tree-nesting raptors included flying to promising woodland stands, along creeks, on hillsides, and along lake edges. All islets and islands also were searched. Survey flights employed appropriate angles to look into stick nests.
- Habitat searches for cliff-nesting species included angling toward the cliff or bank area at least 0.8 kilometer from the site and slowly approaching the cliff area. Observers searched for all whitewash, stick nests, and perched and flying birds. When a nest or suggestions of nesting (aggressive pair) occurred, observers collected a GPS location and recorded digital photographs of the site.
- All observations of raptors were recorded on U.S. Geological Survey topographic maps (1:63,360 scale) or hard copies of aerial photos. Locations also were recorded using an onboard GPS receiver.
- Two surveys (February 22 and November 10, 2005) were conducted to determine if Bald Eagles overwinter in the region in suitable open-water habitats. Two observers, one seated on each side of the aircraft, surveyed the area. Flights were oriented along the centerline of drainages, often within 50 meters of one shoreline, allowing for unimpeded views of both shorelines. In 2006, an additional survey for overwintering Bald Eagles is planned for November.
- In 2005, information on minimizing impacts to raptors and other sensitive wildlife was synthesized from the available literature, and guidelines were presented in a notice distributed to pilots and camp managers working on the Pebble Project. Maps of nest locations and other sensitive wildlife habitats also were distributed to pilots and camp managers so known locations could be avoided.

2. TRANSPORTATION CORRIDOR

The objectives and methods for the raptor surveys in the transportation corridor are identical to those described for the mine study area (above). The study area for the raptor surveys in the transportation corridor was designed to encompass all suitable habitats for tree- and cliff-nesting raptors in a broad area surrounding the centerline of the proposed linear features (access road, powerline, etc.). This included the prominent river and stream drainages, river outlet areas on Iliamna Lake, the southern shore and islands of Iliamna Lake, and marine environments near the proposed port site and near the submarine power transmission line landfall area. For presentation in the environmental baseline document, raptor survey data for the transportation corridor will be reported separately for those areas that ultimately drain into Bristol Bay (Figure ABR-11) and those that drain into Cook Inlet (Figure ABR-12).

The field effort for raptor surveys in the transportation corridor comprised the following activities:

- Occupancy Surveys in late April through early May 2004 and 2005 for tree-nesting species (particularly Northern Goshawk and Bald Eagle) and in late May 2004 and 2005 for cliff-nesting raptors (particularly Gyrfalcon, Peregrine Falcon, and Golden Eagle).
- Productivity Surveys in early July, mid-July, and mid-August 2005 to identify additional active nests missed during occupancy surveys and to determine the status of nests for which occupancy was uncertain.
- Surveys for overwintering Bald Eagles in February and November 2005 (an additional survey is planned for November 2006).