Amendment to Bradley Lake Hydroelectric Project (FERC No. 8221)
Bradley Lake Expansion Project

Raptor Nesting Study
Draft Report

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

A

ABR	ABR, Inc.—Environmental Research & Services
AEA	Alaska Energy Authority (formerly Alaska Power Authority)

D

DLAA	Draft License Amendment Application

E

Eagle Act	Bald and Golden Eagle Protection Act

I

IFSAR	Interferometric Synthetic Aperture Radar

K

Kleinschmidt	Kleinschmidt Associates

M

mph	miles per hour

P

PM&E	protection, mitigation, and enhancement

U

USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

1.1 Background

The Alaska Energy Authority (AEA), licensee and owner of the 120-megawatt Bradley Lake Hydroelectric Project (Federal Energy Regulatory Commission [FERC] No. 8221; Bradley Lake Project), is pursuing a FERC license amendment. The purpose of the proposed amendment is to gain authorization to divert seasonal meltwater and runoff coming from the Dixon Glacier, located at the headwaters of the Martin River, to Bradley Lake and to raise the Bradley Lake dam/spillway to increase storage capacity and power production.

AEA filed an Initial Consultation Document (ICD) (Kleinschmidt Associates 2022a) with FERC on April 27, 2022. The ICD describes existing facilities and current Bradley Lake Project operations; characterizes the affected environment; and describes two proposed project alternatives for producing energy from Dixon Glacier meltwater. Following the ICD filing, AEA hosted Joint Agency and Public Meetings in Homer, Alaska, on June 14, 2022, to discuss the ICD and receive stakeholder input. In November 2022, AEA filed a Draft Study Plan (DSP) (Kleinschmidt Associates 2022b) with FERC, based on the two alternatives, outlining 10 studies, including the Raptor Nesting and Migration Study. Stakeholders filed comments to the DSP in December 2022; AEA briefly paused the FERC amendment process while it conducted additional feasibility studies and narrowed down the proposed Project alternatives.

Based on further investigations, AEA decided to move forward with the proposed alternative diverting Dixon Glacier meltwater to Bradley Lake (Bradley Lake Expansion Project or Project). AEA re-initiated the amendment process in 2024 by hosting public meetings in March and April 2024 and January 2025 to review the selected Project alternative, stakeholder comments to the DSP, and AEA's proposed modifications to the DSP. As discussed in Section 1.3 below, in 2024 the raptor study was simplified and renamed to the Raptor Nesting Study. AEA implemented several studies in 2025 including this one. This report describes the results of the Raptor Nesting Study completed by ABR, Inc.—Environmental Research & Services (ABR) during 2025.

1.2 Project Description

The proposed Project is composed of two major elements, the Dixon Diversion and the Bradley Lake Pool Raise, and would include construction of: a diversion dam near the toe of the Dixon Glacier; an approximately 4.6-mile-long diversion tunnel bored through the

mountain extending from Dixon Glacier to Bradley Lake, diverting water from the Martin River basin to Bradley Lake; approximately 1 mile of new, 16-foot-wide, gravel-surfaced access road from the existing Upper Battle Creek Diversion access road to the outlet of the proposed diversion tunnel; and modification of the existing Bradley Lake Dam to raise the maximum normal pool elevation currently at Elevation (El.) 1,180 feet Bradley Lake Vertical Datum (BLVD) by 16 feet (to El. 1,196 feet BLVD).

A new access road leading to the Dixon Diversion facility is no longer proposed; the site would be accessed by helicopter. No new transmission line is proposed; additional power would be generated by the existing powerhouse and transmitted along existing powerlines originating from the powerhouse. With increased storage capacity in Bradley Lake, the Project is expected to increase output of the existing facility by approximately 38 percent.

1.3 Modifications to the Draft Study Plan

To address the single DSP comment from the U.S. Fish and Wildlife Service (USFWS), the original Raptor Nesting and Migration Study DSP (Kleinschmidt Associates 2022b, Section 4.9) indicated that, in addition to surveys for nesting raptors, a migration study would be conducted to assess the movements of raptors and other migrating birds through the project area. The proposed migration surveys were planned to be conducted in areas where overhead transmission lines were envisioned in the original Project design to evaluate the likelihood of in-flight collisions of migrating birds with new power lines and the electrocution hazard for birds, especially raptors, perching on power poles. However, because the selected Project alternative does not include the construction of any new overhead transmission lines, the potential for the Project to increase in-flight collision and electrocution hazard for raptors and other birds has been eliminated. For these reasons, the avian migration component of the raptor study was removed, and the study now includes only surveys for nesting raptors.

Consultation on the Raptor Nesting Study with state and federal management agencies and interested stakeholders was initiated at the March 19, 2024 Terrestrial Resources Meeting (Bradley Lake Expansion Project March 19, 2024 Meeting Summary) and the study was discussed again at the January 30, 2025 meeting (Bradley Lake Expansion Project January 30, 2025 Meeting) regarding terrestrial resources. No comments or recommendations for changes were made or received afterwards regarding the Raptor Nesting Study.

One DSP study objective was to survey forest, riparian, and cliff habitats suitable for nesting by Bald Eagles (*Haliaeetus leucocephalus*) and other raptors to locate and map active and inactive nests of raptor species (as well as Common Ravens [*Corvus corax*]). As presented during the March 19, 2024 meeting, AEA modified the DSP to conduct these surveys, as a protection, mitigation, and enhancement (PM&E) measure, closer to the initiation of construction because the nest locations of Bald Eagles can change over time and it is already known that Bald Eagles nest at the lower elevations in the Project area. The results of the 2025 field surveys described in this report primarily discuss the nesting of Golden Eagles (*Aquila chrysaetos*) in rocky cliff habitats at higher elevations; these areas were not previously surveyed for nesting raptors.

1.4 Project Nexus

The proposed construction and operation activities for the Bradley Lake Expansion Project have the potential to disturb nesting raptors. This necessitates conducting the Raptor Nesting Study to address the number and distribution of raptor nests relative to locations of proposed construction activity and areas where habitats will be altered. The study is designed to assess the occurrence of cliff-nesting raptors in 2025, primarily Golden Eagles. AEA will conduct a survey for tree-nesting Bald Eagles just prior to construction as a PM&E measure, in a year to be determined.

Golden Eagles are a widely distributed apex predator found throughout the Northern Hemisphere and are considered to be a species of conservation concern in North America (Katzner et al. 2020). Under federal law, projects that may affect Bald Eagles or Golden Eagles are required to assess potential impacts and pursue PM&E measures to comply with the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668c) (Eagle Act) and the Migratory Bird Treaty Act (16 U.S.C. 703–712). The USFWS often recommends that large-scale industrial projects within known or potential ranges of breeding eagles conduct thorough eagle nest surveys to assess project-related risk to nesting eagles; this is particularly the case when projects are located in undeveloped or mountainous regions with suitable nesting habitat for Golden Eagles (Pagel et al. 2010; USFWS 2024).

Eagles are sensitive to disturbance during the breeding season, and construction-related activities such as blasting, helicopter overflights, road construction, and increased human presence have been associated with decreased productivity and nest abandonment (Grubb and King 1991; Pagel et al. 2010; USFWS 2016). Because of this, pre-construction nest surveys are a critical tool for identifying breeding territories and providing site-

specific data to inform protective measures designed to avoid take as defined under the Eagle Act (USFWS 2024).

The Project is located on the Kenai Peninsula in Southcentral Alaska within the nesting range of Golden Eagles. For hydropower projects, in particular, the need for helicopter support and construction in remote terrain often overlaps with prime Golden Eagle nesting habitat. The topographic complexity and remoteness of these landscapes in Alaska typically necessitates aerial survey methods to ensure comprehensive coverage. Therefore, projects are often required to conduct systematic aerial surveys for eagle nests within the project footprint and surrounding buffer areas during the breeding season to ensure regulatory compliance and support environmental planning to minimize potential impacts (USFWS 2024).

2.0 GOALS AND OBJECTIVES

The specific goals of the survey were as follows:

- Survey potentially suitable cliff habitat for nesting Golden Eagles in a broad buffer zone surrounding areas where habitats will be altered because of infrastructure development or lake level rise, and/or where disturbance from blasting is expected during construction.
- Systematically evaluate eagle cliff-nesting habitat in the survey area using a categorical ranking system (high, medium, and low quality).

This information will be used to assess the potential impacts of the proposed Project on nesting Golden Eagles and to develop appropriate PM&E measures to be included in AEA's Bradley Lake License Amendment Application for the Project to be prepared in 2026.

3.0 STUDY AREA

The Bradley Lake Hydroelectric Project is located on the Kenai Peninsula approximately 25 miles east-northeast of Homer, Alaska, bounded on the north and south by the Kenai National Wildlife Refuge and on the east by Kenai Fjords National Park. Operational since the mid-1990s, the existing project includes a 125-foot-high concrete-faced, rock-filled dam, four stream diversion structures, a 3.5-mile-long power tunnel and vertical shaft, generating plant, interior substation, 20 miles of transmission lines, and associated infrastructure.

The study area for nesting Golden Eagles encompasses a 2-mile buffer around planned infrastructure components of the proposed Project, including the elevated high-water mark of Bradley Lake, the existing Bradley Lake dam that would be expanded, the proposed Dixon Diversion site, and the East Fork Martin River canyon where potentially suitable nesting cliff habitat occurs (Figure 3-1). The USFWS has recommended a 2-mile buffer survey area to provide sufficient data on regional eagle populations to evaluate potential Project impacts (USFWS 2020). The study area is in a temperate coastal ecosystem characterized by montane forests with stunted trees, open rock and cliff faces, recently glaciated shrubland and meadow complexes, and riparian plant communities. Suitable cliff-nesting habitat for Golden Eagles within the study area ranges from rugged mountainous and river canyon cliffs to smaller outcrops and cliffs on rolling bedrock hills. These landscape features support a mosaic of potential nesting sites and foraging habitats essential for sustaining local Golden Eagle populations.

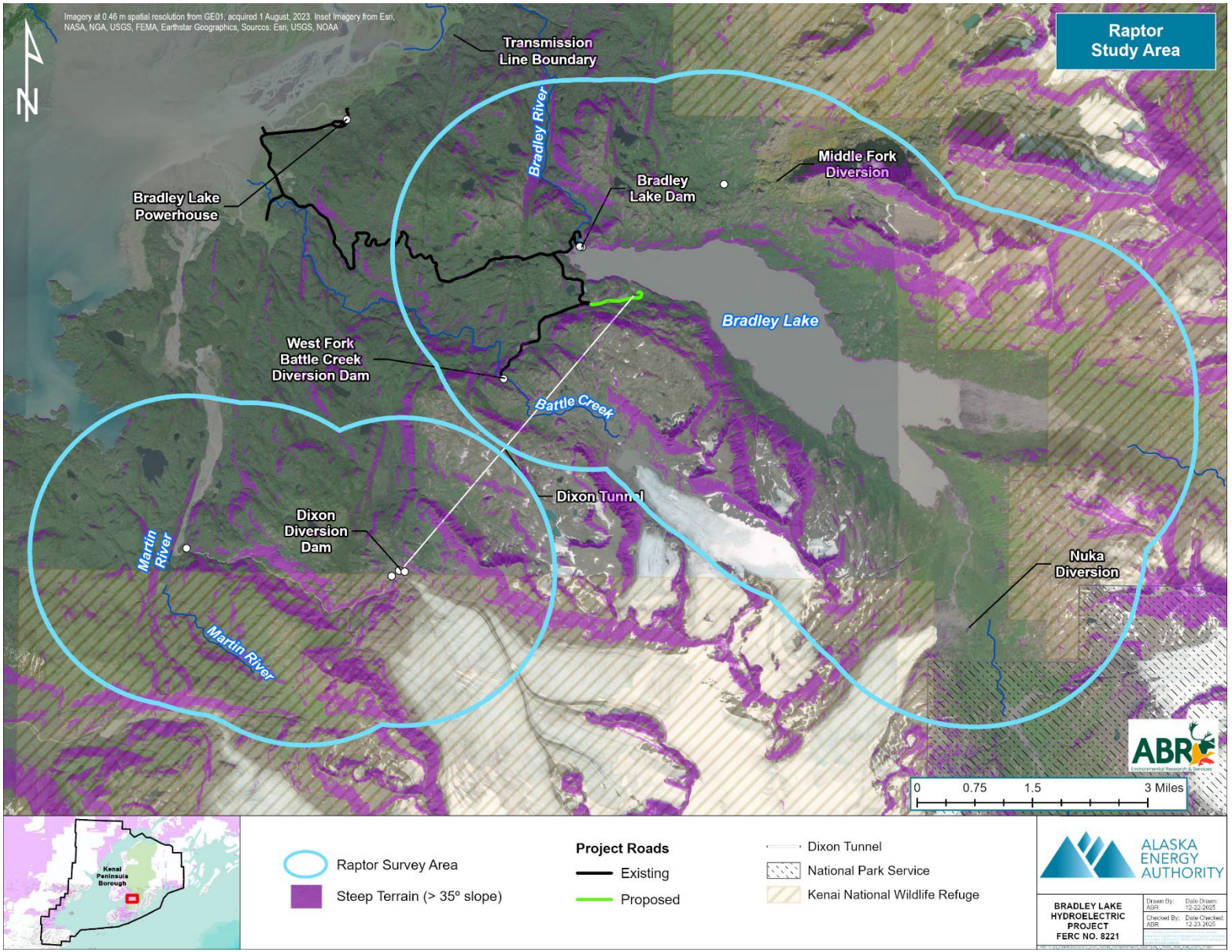

Figure 3-1 Raptor aerial survey study area for the Bradley Lake Expansion Project, Kenai Peninsula, Alaska, 2025.

4.0 METHODS

ABR flew aerial surveys for Golden Eagles and other cliff-nesting raptor nests in the study area using two observers (Joe Welch, Senior Scientist, and Robert McNown, Research Biologist) seated on the same side of a Robinson R-44 helicopter. The survey was expected to take a single day based on satellite imagery interpretation of suitable nesting habitat in the study area. However, during the first survey in May 2025, suitable habitat was found to be much more extensive than initially expected (see Section 5.0, Discussion), which resulted in the need for a second survey that was conducted in July. ABR chartered Alpine Air Alaska (Girdwood, Alaska) for the May survey and Pollux Aviation (Palmer, Alaska) for the July survey. Team members traveled from Anchorage to the study area by helicopter in approximately 1 hour and then began surveying.

Survey methods followed established protocols for inventory and monitoring of eagle nests using helicopters (USFWS 2007; Pagel et al. 2010). The primary observer met the criteria of a Golden Eagle specialist with 13 years of raptor research and survey experience, while the secondary observer met the criteria of a qualified observer with three seasons of raptor aerial survey experience. When searching for nests, the observers approached all suitable cliff habitats directly to minimize surprising any nesting bird and then flew slow passes within approximately 30–100 meters (98–328 feet) of cliffs to search for nests. Smaller cliffs and bluffs (<50 meters [164 feet] in height) might be searched with a single pass, but larger cliffs required additional passes to check all available habitat. Additionally, cliff complexity and high winds often necessitated additional passes. Once the team located a nest, they collected information on nest attributes including nest-building species, occupying species, status, and condition following a format similar to USFWS nest-record cards. The observers recorded the coordinates of all nests with a handheld GPS unit by hovering directly above nest sites. If birds were present, the aircraft hovered at least 75 meters (246 feet) above the nest to reduce disturbance. Track logs were saved on the GPS unit (Attachment A). Observers also took wide-angle and close-up digital photos of all nests (Attachment B).

Observers determined the nest-building species based on nest size, stick size, construction characteristics, and habitat. Golden Eagles build the largest nests on cliffs and use larger sticks than any other species within the study area. For nests where the observers could not determine which species built the nest, they assigned "unknown raptor" as the nest-building species.

Nest status was determined using the following criteria:

- **Successful nest:** Presence of fledglings or signs of recent hatching, such as remnants of eggs or fresh whitewash from juveniles.
- **Confirmed nesting:** Incubating adult or eggs present.
- **Occupied nests:** Territorial adults within 1 kilometer (0.62 miles), indications of spring nest refurbishment or decoration, or adult feathers present. Territorial behavior includes flights back and forth in front of the cliff/nesting area, stooping/aggressive flights (power-dives), and aggressive flights toward the aircraft.
- **Nests of unknown occupancy:** Ambiguous signs of use, including potential spring refurbishment or nearby adults not showing territorial behavior.
- **Unoccupied nests:** No evidence of recent use.

Golden Eagles often maintain several nests within a breeding territory, even in years when they lay eggs in a single location. Therefore, there could be more than one occupied nest within a territory, but only one nest could be classified as confirmed nesting. To define the number of individual breeding territories in the study area, we used a 1-kilometer inter-nest threshold for all Golden Eagle nests in good or fair condition (McGahan 1968; Kochert and Steenhof 2012; Shook et al. 2013; ABR 2014, 2015; Katzner et al. 2020).

Nest condition was categorized in the following classes:

- **Good:** Suitable for a nesting raptor with no or minimal repairs.
- **Fair:** Usable after moderate enhancements, such as additional sticks for a flat platform.
- **Poor:** Needing significant improvements for usability.
- **Remnant:** Containing only a few remains after significant weathering. Requires complete reconstruction.
- **Unknown:** Condition undetermined.

Prior to the field surveys, observers mapped all slopes >35 degrees in ArcGIS Pro as measured by 5-meter (16.4-foot) resolution Interferometric Synthetic Aperture Radar (IFSAR; U.S. Geological Survey 2019) slope data aggregated to 30-meter pixels. The 35-degree IFSAR threshold was the slope above which 99 percent of all nests occurred in the Brooks Range (Welch 2024). This topographic dataset represents a wide range for potential cliff habitat on the landscape, as accurately measuring vertical surfaces (approximately 90-degree slopes) is challenging with satellite-derived data. While flying,

observers noted on paper maps the regions where cliffs were present and ranked the general quality of the cliffs within each region for Golden Eagle nesting suitability using experience and expert opinion.

Regional cliff quality was ranked as follows:

- **High-quality:** Numerous large, flat ledges, often with overhangs, predominantly inaccessible to mammalian predators.
- **Medium-quality:** Fewer large ledges or ledges that do not have good overhangs. Many ledges with moderate accessibility to predators.
- **Low-quality:** Limited large ledges, with most or all easily accessible to predators.

5.0 RESULTS

5.1 Survey 1

On May 13, 2025, after determining there was more suitable habitat in the study area than could be surveyed in 1 day, the team prioritized surveying the extensive low- and mid-elevation terrain around Bradley Lake and east of the lake, and in the immediate vicinity of the proposed Dixon Diversion site at the base of Dixon Glacier (Figure 5-1). Observers were unable to survey the upper elevations south of Bradley Lake, the Bradley River Valley, and glaciated terrain near Dixon Glacier, which was considered low-probability nesting habitat (Figure 5-1).

On Survey 1, observers detected two nests with incubating Golden Eagles (confirmed nesting) near Bradley Lake (BL001GOEA and BL005GOEA; Figure 5-1, Table 5-1). They also located one nest (BL002GOEA) with recently added nesting material, classified as occupied and likely associated with an existing territory, and two additional unoccupied alternate nests (BL003GOEA and BL004GOEA; Figure 5-1, Table 5-1). The occupied nest with new material was located 0.98 kilometers (0.61 miles) from the nearest incubating bird (BL001GOEA) and possibly within the same breeding territory. All nests were 1.4 mi or further from proposed blasting activity. The team observed single or pairs of Golden Eagles flying in several locations throughout the Bradley Lake portion of the study area, as well as at a single location in the Dixon Diversion portion of the study area where up to nine Bald Eagles and Golden Eagles were observed kettling (circling or spiraling upwards in a thermal updraft; Figure 5-1).

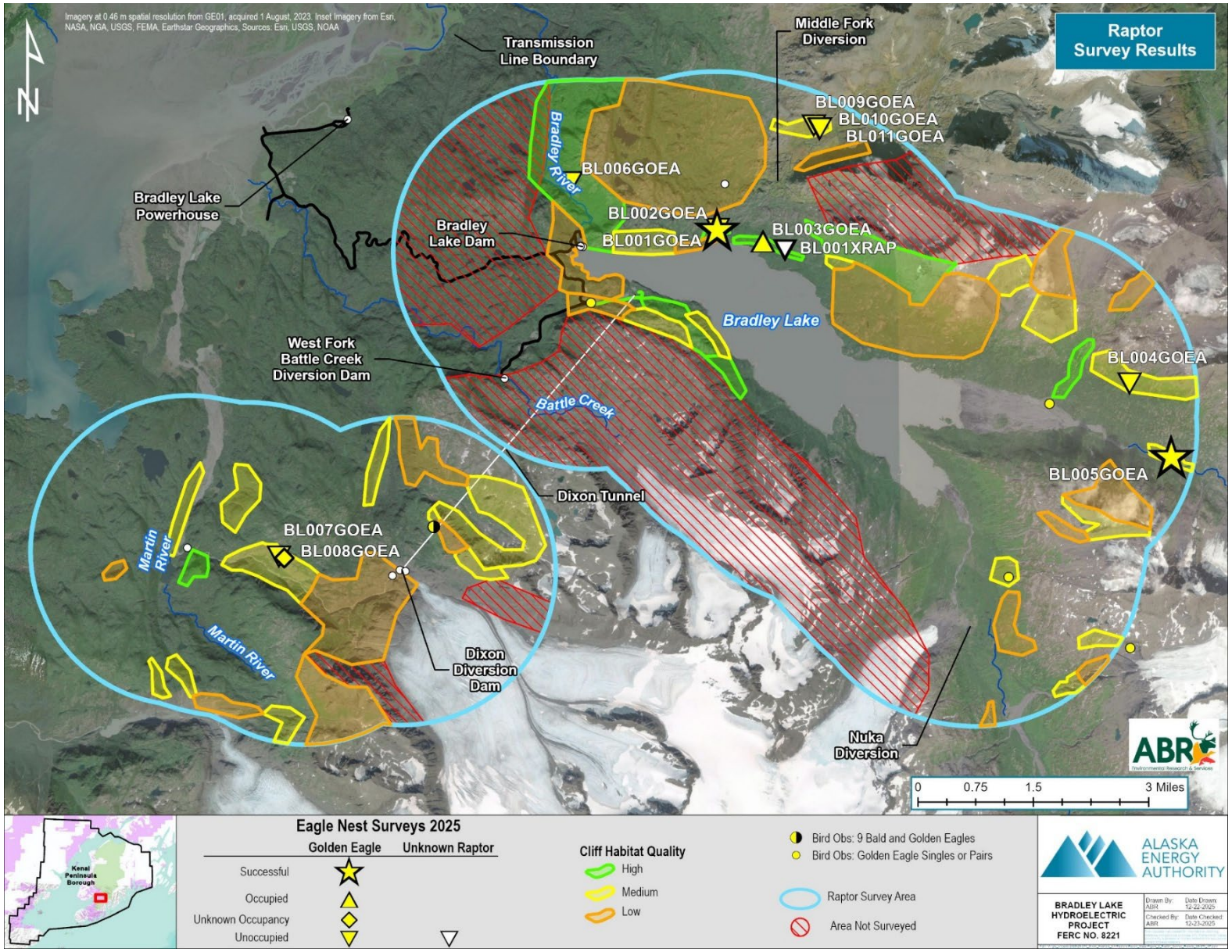

Figure 5-1 Survey results for the raptor aerial survey for the Bradley Lake Expansion Project, Kenai Peninsula, Alaska, 2025.

Table 5-1 Status and condition of raptor nests located in the Golden Eagle nesting study area for the Bradley Lake Expansion Project, Southcentral Alaska, May 13 and July 1, 2025.

Nest ID	Species	May 13 Status	July 1 Status	Nest Condition	Nearest Blasting Activity
BL001GOEA	Golden Eagle	Confirmed Nesting	Successful	Good	Tunnel Outflow (1.4 mi)
BL002GOEA	Golden Eagle	Unoccupied	-	Poor	Tunnel Outflow (1.4 mi)
BL003GOEA	Golden Eagle	Occupied	-	Good	Tunnel Outflow (1.8 mi)
BL004GOEA	Golden Eagle	Unoccupied	Unoccupied	Fair	Tunnel Outflow (6.5 mi)
BL005GOEA	Golden Eagle	Confirmed Nesting	Successful	Good	Tunnel Outflow (7.3 mi)
BL006GOEA	Golden Eagle	-	Unoccupied	Good	Bradley Lake Dam (0.8 mi)
BL007GOEA	Golden Eagle	-	Unoccupied	Fair	Dixon Diversion Dam (1.5 mi)
BL008GOEA	Golden Eagle	-	Uknown Occupancy	Good	Dixon Diversion Dam (1.4 mi)
BL009GOEA	Golden Eagle	-	Unoccupied	Fair	Bradley Lake Dam (3.4 mi)
BL010GOEA	Golden Eagle	-	Unoccupied	Fair	Bradley Lake Dam (3.5 mi)
BL011GOEA	Golden Eagle	-	Unoccupied	Good	Bradley Lake Dam (3.5 mi)
BL001XRAP	Unknown Raptor	Unoccupied	-	Poor	Tunnel Outflow (2.0 mi)

Due to forecasted poor weather conditions for the next few days and high helicopter standby costs (4-hour minimum fees on helicopters), further surveying was postponed, and the team returned to Anchorage to plan a second survey effort. Based on the extent and complexity of the terrain not surveyed, the team estimated that 1–2 days of additional field work would be required to survey all the remaining suitable habitat. Following guidance on survey timing from the Alaska Department of Fish and Game (personal communication with Jason Herreman, Assistant Area Wildlife Biologist, 28 May 2025) to minimize disturbance to neonate mountain goats (*Oreamnos americanus*) that are

common within the Golden Eagle study area, the team scheduled the subsequent survey for July 1–2 based on observer and helicopter availability.

5.2 Survey 2

On July 1, 2025, strong winds exceeding 30 knots (34 miles per hour [mph]), with gusts over 45 knots (52 mph), and low cloud ceilings restricted survey operations. Severe air turbulence in the Bradley River Valley prevented observers from completing the survey in that area and in the higher elevations south and northeast of Bradley Lake (Figure 5-1). See Section 6.0 below for more details on the survey conditions in the Project area. Observers also did not survey the mountains adjacent to the Dixon Glacier (Figure 5-1) due to time constraints and because Golden Eagles are not likely to nest adjacent to a glacier with little hunting habitat nearby. The portion of the study area west of Bradly Lake dam was also not surveyed because a cursory view of the region while transiting to the study area indicated there was likely not much, if any, highly suitable nesting habitat present, so the team focused the survey effort elsewhere.

ABR located no new occupied nests during the second survey. However, observers documented several new nest clusters, each with nests in good condition indicative of maintenance or use in recent years (BL006GOEA through BL011GOEA; Figure 5-1, Table 5-1). BL006GOEA is located 0.8 mi from proposed blasting activity at the existing Bradley Lake Dam and BL007GOEA and BL008GOEA are 1.5 mi and 1.4 mi, respectively, from the proposed Dixon Diversion Dam site. The team also re-visited the two nests that had previously had incubating birds. Both nests were still active with a single adult and two young present (Figure 5-1, Table 5-1).

5.3 Cliff Suitability Evaluations

ABR found suitable Golden Eagle nesting cliffs throughout much of the study area (Figure 5-1). Medium- and low-quality cliffs were scattered throughout much of the study area, whereas high-quality cliffs were located primarily on the slopes above Bradley Lake, in the Bradley River Valley, in the East Fork Martin River Canyon, and along a tributary to Bradley Lake. Besides the Bradley River Valley, which contains suitable nesting habitat in the remaining unsurveyed portions and possibly additional alternate Golden Eagle nests, cursory views into the additional unsurveyed, higher elevation areas indicated that some suitable habitat was present; however, the lower elevation cliffs that have already been surveyed are more likely to support nesting Golden Eagles (Welch 2024).

6.0 DISCUSSION

The ABR surveys confirmed abundant suitable Golden Eagle nesting habitat within the study area and revealed at least two currently occupied territories, with successfully nesting pairs, and possibly a third occupied territory. Because aerial surveys are inherently imperfect and the detection of every active nest in a single survey is difficult (Welch and Shook 2015), and because Golden Eagles do not occupy their territories every year (McIntyre 1995), additional effort may be required to locate all nests and active territories.

On May 13, 2025, the team attempted to survey the entire study area in 1 day, timing the effort for the incubation period when territorial adults or fresh signs of occupancy are most evident. However, the team encountered far more extensive cliff-nesting habitat than was evident on satellite imagery. The most recent high-resolution Google Earth imagery available for planning was partially snow-covered, heavily shadowed, and poorly three-dimensionally rendered, so exposed bedrock and slopes appeared rounded, which is not unexpected in recently glaciated landscapes.

When observers returned on July 1, 2025, high winds and low cloud ceilings restricted access to several portions of the study area and forced the team to fly only into the wind for safety, which limited visibility from the pilot's side of the aircraft. Because forecasts called for several consecutive days of similar or worse conditions, additional days of surveying were not possible. The combination of mountainous, glaciated topography and a coastal climate makes the Project area inherently challenging for scheduling and conducting aerial surveys.

Despite these obstacles, the team achieved broad coverage and documented 10 nests in a region that likely has never been systematically surveyed for Golden Eagles. After two survey flights, the team confirmed nests in the Bradley River Valley, the East Fork Martin River canyon south of the Dixon Diversion site, on the slopes above the north shore and west end of Bradley Lake, and on the lower mountain slopes north of the lake (Figure 5-1). These included a successful nest with young on the slopes above the northwest corner of Bradley Lake and another nest with young in a stream valley at the east end of the lake. Due to the challenging survey conditions, it is possible additional nests are present in the Bradley River Canyon and East Fork Martin River Canyon. Applying a 1-kilometer inter-nest distance threshold to delimit Golden Eagle breeding territories, the 10 nests could represent 6 separate territories currently or historically occupied. One unidentified raptor nest (BL001XRAP) was smaller and in poor condition but is likely an old Golden

Eagle nest. The neighboring occupied nest BL003GOEA is located 0.98 kilometers from the nearest successful nest (BL001GOEA), and therefore the cluster of BL001XRAP and BL003GOEA could constitute a seventh territory.

The closest nest to proposed blasting activities was BL006GOEA at 0.8 mi from Bradley Lake Dam, followed by BL007GOEA and BL008GOEA at 1.4 mi from the Dixon Diversion Dam site. As previously noted, conditions while surveying the Bradley River Canyon and East Fork Martin River Canyon were challenging, and it is possible additional alternate nests are located nearby.

Alternate suitable ledges for nesting do not appear to be limiting in the study area. Although high-quality cliffs are uncommon, Golden Eagles need only a single suitable ledge for nesting, and potential ledges also occur on medium- and low-quality cliffs. While lower quality cliffs offer fewer individual ledges, those cliffs are more numerous in the landscape and therefore often host a large share of nests.

Some areas remain unsurveyed, including upper elevations south of Bradley Lake, parts of the Bradley River Valley, and higher terrain adjacent to the Dixon Glacier. The survey team does not expect Golden Eagles to nest immediately adjacent to glaciers because such microclimates are cold, snowy, and far from hunting habitat. Golden Eagles can nest at high elevations but generally prefer lower mountain slopes when suitable cliffs are available (Welch 2024). Because of this, Golden Eagles are less likely to use shaded, north-facing slopes at higher elevations south of Bradley Lake. Although the observers did not survey the western portion of the 2-mile buffer surrounding Bradley Lake, cursory views during transit suggested a lack of cliffs interspersed in the rolling glaciated terrain. In the ABR team's judgment, the only remaining high-probability habitat not surveyed is the mountain valley north of Bradley Lake, which was obscured by clouds in July.

Newborn mountain goats, a potential prey item for Golden Eagles, were not observed during the May survey, although adult goats were abundant and several females appeared near parturition, underscoring the area's importance for kidding. By July, the team observed only a few goats and fewer kids, suggesting that females disperse after giving birth and that the period of greatest sensitivity to aerial disturbance to kids is brief in the study area.

The relative abundance of Bald and Golden eagles flying, perching, and potentially hunting on the first survey could indicate that the birds were waiting for the goats to give birth. Golden Eagles are known predators of ungulates, particularly newborns (Carnie

1954; Reynolds 1969; Hewson 1984; Deblinger and Alldredge 1996; Russell and McNeil 2002; Watson and Davies 2009). Marmots, another common prey item for Golden Eagles (McIntyre and Adams 1999; Watson and Davies 2009), were also commonly observed in the study area.

7.0 STUDY STATUS AND SCHEDULE

AEA plans to consult with USFWS regarding potential additional aerial surveys in 2026 pursuant to complete the Raptor Nesting Study and to maintain compliance with the Eagle Act during construction and operations. Consultation with USFWS would be needed to determine disturbance buffer distances for construction activities and to identify specific areas to survey in 2026.

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ATTACHMENT A

GPS TRACK LOG OF SURVEY FLIGHT PATHS FOR SURVEYS OF CLIFF-NESTING GOLDEN EAGLE AND OTHER RAPTORS FOR THE BRADLEY LAKE EXPANSION PROJECT, SOUTHCENTRAL ALASKA, MAY 13 AND JULY 1, 2025

The associated file is provided separately due to its size and format.

ATTACHMENT B

PHOTOS OF GOLDEN EAGLE AND OTHER RAPTOR NESTS LOCATED DURING AERIAL SURVEYS FOR THE BRADLEY LAKE EXPANSION PROJECT, SOUTHCENTRAL ALASKA, MAY 13 AND JULY 1, 2025

The associated file is provided separately due to its size and format.