Eagle Conservation Plan
Rim Rock Wind Energy Project
Kevin, Montana

NaturEner USA, LLC

February 2022

Prepared by NaturEner USA, LLC

NaturEner

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LIST OF ACRONYMS

AGL	Above Ground Level
APLIC	Avian Power Line Interaction Committee
BLM	Bureau of Land Management
COD	Commercial Operation Date
DoD	Department of Defense
ECP	Eagle Conservation Plan
EITP	Eagle Incidental Take Permit
EMU	Eagle Management Unit
EPC	Eagle Point Count
ESA	Endangered Species Act
ESFO	Ecological Services Field Office
FAA	Federal Aviation Administration
GPS	Global Positioning System
IRAC	Interdepartment Radio Advisory Committee
MET	Meteorological
MATL	Montana Alberta Tie Line
MFWP	Montana Fish, Wildlife and Parks
MNHP	Montana Natural Heritage Program
NEPA	National Environmental Policy Act
NTIA	National Telecommunications and Information Administration
O&M	Operations and Maintenance
PCM	Post-Construction Mortality Monitoring
SCADA	Supervisory Control and Data Acquisition
SPCC	Spill Prevention, Control, and Countermeasure
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

NaturEner Rim Rock Wind Energy, LLC (NaturEner), a subsidiary of NaturEner USA, LLC, is committed to the design, siting, construction, and operation of renewable energy projects in an environmentally sustainable manner. NaturEner has developed this Eagle Conservation Plan (ECP) in support of an application to the U.S. Fish and Wildlife Service (USFWS) for a 30-year Eagle Incidental Take Permit (EITP), and the associated National Environmental Policy Act (NEPA) process, for the currently operational Rim Rock Wind Energy Project (Project). NaturEner is the owner/operator of the Project and the applicant for this 30-year EITP. The main purpose of the ECP is to specifically address potential risks to golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) and present avoidance and minimization measures aimed to reduce golden and bald eagle take to the maximum extent practicable. This ECP was developed based on the guidance provided in the *U.S. Fish and Wildlife Service, Region 6, Migratory Bird Management Office, Recommended Approach for Development and Submission of Eagle Conservation Plans in support of an Eagle Incidental Take Permit Application for Wind Energy Projects* (USFWS 2021a).

2.0 ENDANGERED SPECIES ACT

Pre-construction characterization of the Project site and surrounding vicinity involved a review of existing literature and databases, coordination with agencies and stakeholders which included USFWS, Bureau of Land Management (BLM), Montana Fish, Wildlife and Parks (MFWP), and Montana Audubon, as well as reconnaissance-level site visits. AMEC Earth and Environmental (AMEC) was retained by NaturEner to determine potential impacts to wildlife, fish, plants, and other natural resources resulting from the development of the Project, potential presence of listed species or critical habitat pursuant to the Endangered Species Act (ESA), and assist in regulatory agency consultation. Table 1 provides the updated federally listed wildlife, fish, and plant species, and designated or proposed critical habitat for listed species, in Glacier and Toole counties (USFWS 2021b).

Table 1. Federally Listed Species and Habitat.

County/Scientific Name	Common Name	Species Group	Federal Listing Status
Glacier County			
Ursus arctos horribilis	Grizzly Bear	Mammal	Listed Threatened
Lynx canadensis	Canada Lynx	Mammal	Listed Threatened, Designated Critical Habitat
Salvelinus confluentus	Bull Trout	Fish	Listed Threatened, Designated Critical Habitat
Toole County			
Calidris canutus rufa	Red Knot	Bird	Listed Threatened
Ursus arctos horribilis	Grizzly Bear	Mammal	Listed Threatened

Suitable habitat does not exist within the Project or adjacent vicinity for the Canada lynx (*Lynx canadensis*) or bull trout (*Salvelinus confluentus*) (USFWS 2022a and USFWS 2022b). The red knot (*Calidris canutus rufa*) and grizzly bear (*Ursus arctos horribilis*) have potential to occur at the Project, based on adequate habitat that exists for the two species (USFWS 2022c and USFWS 2022d). According to the Montana Natural Heritage Program (MNHP), red knot sightings have occurred most recently in 2012 at Freezeout Lake in Teton County, approximately 75 miles south of the Project, and in 2003 at Benton Lake National Wildlife Refuge in Cascade County, approximately 86 miles south of the Project (MNHP 2022a). According to MNHP, the Project is located within the species range of the grizzly bear. The most recent (May 11, 2018) and closest reported grizzly bear sighting occurred in Pondera County, approximately 30 miles south of the Project (MNHP 2022b). There have also been reports of unconfirmed grizzly bear sightings near the vicinity of the Project in recent years. As grizzly bears expand their range and seasonal movements eastward from the Rocky Mountains, and may occur in the general Project vicinity as transients, NaturEner will continue to implement proper food and refuse storage/management in order to minimize the potential for grizzly bear/human conflicts. No food storage exists outside of the operations and maintenance (O&M) building, and all refuse is discarded into a 6.5-foot-high commercial dumpster (34 cubic yards) equipped with a steel-caged lid, which is located adjacent to the O&M building.

There is no designated or proposed critical habitat for listed species located within the Project. In Glacier County, there is no designated or proposed critical habitat for grizzly bear (USFWS 2022d); designated critical habitat does exist for Canada lynx in Glacier National Park, approximately 50 miles west of the Project; and designated critical habitat also exists for bull trout in Glacier National Park, and along the St. Mary River Basin, approximately 50 miles west of the Project (USFWS 2022a and USFWS 2022b). In Toole County, there is no designated or proposed critical habitat for grizzly bear or red knot (USFWS 2022d and USFWS 2022c).

No wildlife, fish, or plant species listed as threatened or endangered, or critical habitat (designated or proposed) for listed species, have been observed within the Project boundary during pre-construction surveys or during post-construction operations of the Project, nor are any listed species or critical habitat known to historically occur on the Project site. Available data, literature searches, and on-site surveys and biological monitoring indicate that the Project has not resulted in take of, nor is anticipated to result in future adverse effects to, listed wildlife, fish, or plants, or designated or proposed critical habitat for listed species, pursuant to the ESA.

3.0 DEPARTMENT OF DEFENSE AND FEDERAL AVIATION ADMINISTRATION

Prior to construction of the Project, NaturEner consulted with the Department of Defense (DoD) and the Federal Aviation Administration (FAA) to ensure that the proposed wind energy facility would not result in wind turbine interference with radar systems at regional DoD installations or civil and commercial airports. The closest DoD installation to the

Project is Malmstrom Air Force Base in Great Falls, Montana, located approximately 100 miles southeast of the Project. The closest commercial airport to the Project is also in Great Falls (Great Falls International Airport). In addition, there are three small civil airports within approximately 22 miles of the Project.

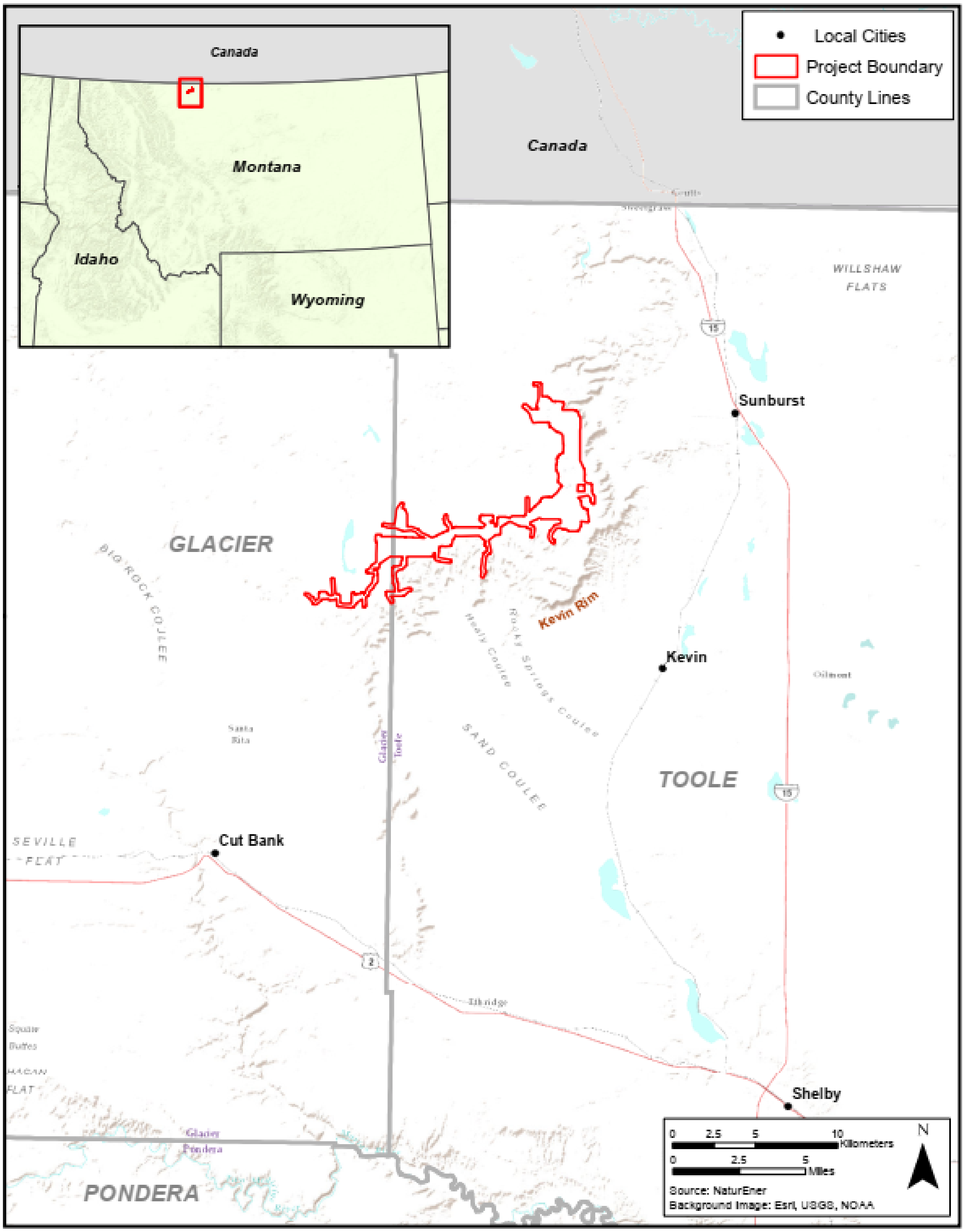
In July 2008, NaturEner submitted a notification to the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA) that construction of a wind energy facility was being proposed and provided a map of the proposed facility boundaries and dimensions of the wind turbines. In a letter dated September 11, 2008, NTIA responded that the nineteen federal agencies and departments, which include DoD and FAA, represented in the Interdepartment Radio Advisory Committee (IRAC) did not identify any concerns regarding blockage of their radio frequency transmissions. A copy of the NTIA letter is provided in Appendix A. Additionally, NaturEner submitted Forms 7460-1 and 7460-2 to FAA in 2011 and 2012 for all proposed applicable infrastructure at the Project, and subsequently received determinations of no hazard to air navigation from FAA in 2012.

4.0 PROJECT DESCRIPTION

The Project is located approximately 6 miles northwest of the town of Kevin, Montana; approximately 11 miles northeast of the town of Cut Bank, Montana; and approximately 7 miles south of the U.S.-Canada border (Figure 1). The Project is located entirely on privately-owned land in both Toole and Glacier Counties and is located entirely within Township 35 North, Ranges 3, 4, and 5 West, and Township 36 North, Ranges 3 and 4 West. The Project boundary encompasses approximately 7,726 acres and is located adjacent to the Kevin Rim, an isolated geological feature consisting of a roughly linear cliff complex (Figure 1). The Project boundary is between 0.02 and 3.05 miles back from the edge of Kevin Rim which is at an elevation of approximately 4,000 feet above sea level. The surrounding area is primarily devoted to agriculture crops (i.e., barley and wheat) and cattle grazing. The Project is located on or near approximately 14 scattered ranch sites, ranging from abandoned homesteads to extensive ranch operations. Oil and gas exploration and development have occurred within the Project vicinity for decades, and a network of both abandoned and active natural gas-associated wells, pipelines, and compressor stations, and oil-associated jacks, pipelines, and pumping stations exist throughout the general area.

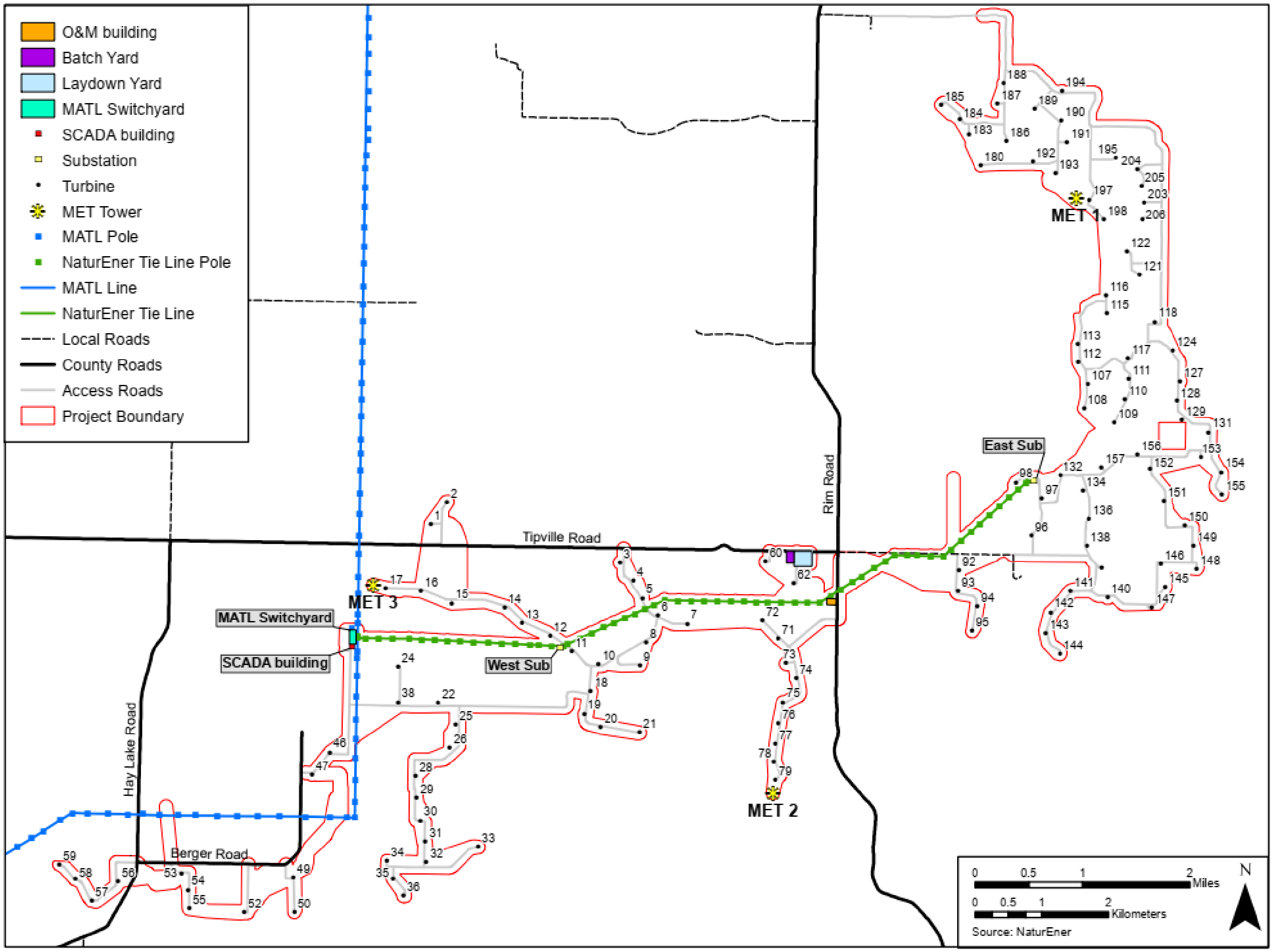
NaturEner is currently operating the 189-megawatt (MW) Project located on the high plains of north-central Montana, approximately 100 miles east of the Rocky Mountains. The Project includes 126 Acciona AW-77 1.5-MW wind turbine generators (turbines), with a hub height of approximately 80 meters, a 77-meter rotor diameter, and a blade-tip height of approximately 118.5 m above ground level (AGL). The Project includes approximately 45 miles of turbine access roads, approximately 50 miles of underground 34.5 kilovolt (kV) electrical collectors (including supervisory control and data acquisition [SCADA] cable), and 6.85 miles of a 230 kV overhead generation interconnection tie line (tie line) that was

Figure 1. Project Location and Vicinity



constructed in accordance with the recommendations of the Avian Power Line Interaction Committee (APLIC) (APLIC 2006). In addition, the Project includes three permanent meteorological (MET) towers, two substations, one SCADA building, and one O&M building and yard. Although the Hay Lake Switchyard is depicted as being within the Project boundary, it is owned, operated, and maintained by the Montana Alberta Tie Line (MATL). During construction, a temporary laydown/staging area and concrete batch yard were also utilized (Figure 2). Construction on the Project began in Fall 2011, and the commercial operation date (COD) was achieved on December 28, 2012.

Figure 2. Project Infrastructure



5.0 EAGLE DATA

5.1 Eagle Use Surveys

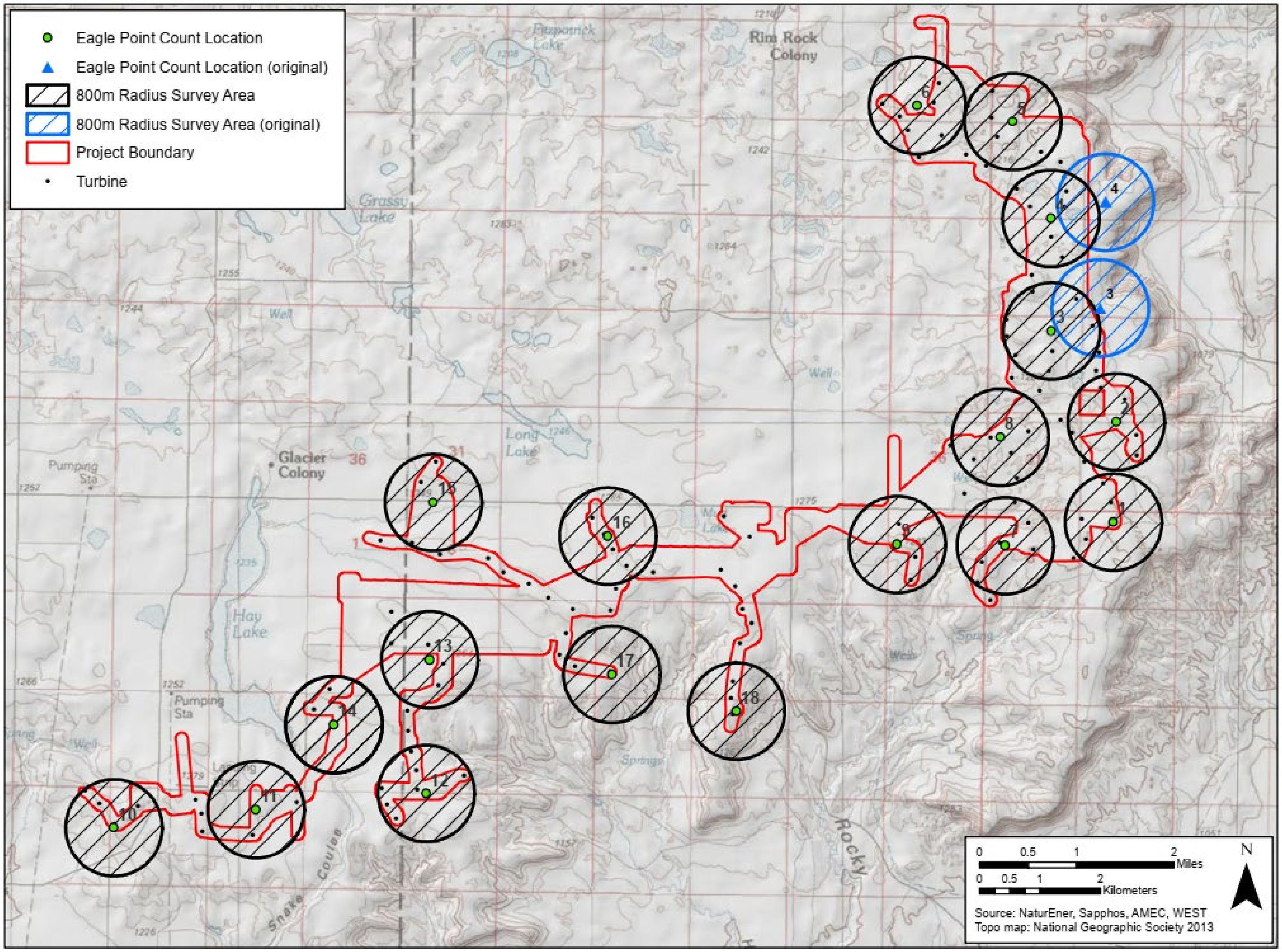
Eagle Point Counts

Eagle point count (EPC) surveys were conducted at the Project for 2 years, from April 4, 2012 through March 29, 2014. While the surveys generally followed the methods for Point Count Surveys in the Eagle Conservation Plan Guidance (ECPG) (USFWS 2011; USFWS 2013), the surveys were conducted during construction (April through December 2012) and post-construction (January 2013 through March 2014), as opposed to pre-construction. Although these surveys did not occur prior to commencement of construction activities at the Project and construction activities may have negatively influenced survey results, the surveys provide valuable data on site-specific eagle use and eagle species abundance and composition.

From April 4, 2012 through March 21, 2013 (Year 1), 20-minute-long EPC surveys were conducted at 18 locations throughout the Rim Rock Project area (USFWS 2011). Point count locations were initially selected for their close proximity to planned turbine locations (Figure 3). However, as an avoidance and minimization measure to achieve greater setback distances between proposed turbines and raptor/eagle nests, NaturEner modified the proposed layout of the Project in 2012 after construction had begun. Several of the planned turbine locations were removed or relocated, and as a result, two EPC survey locations (numbers 3 and 4) were moved in June 2012 to ensure all EPC locations remained within close proximity to planned turbines (Figure 3). Additional details regarding the turbine layout modifications are provided in Section 6.0, Avoidance and Minimization Measures. Based on the revised EPC survey plots, and in accordance with the recommendations in the ECPG (USFWS 2013), coverage within 1 kilometer (km) of the Project turbines was 37.5 percent during the Year 1 EPC surveys.

EPC survey plots were non-overlapping and situated in locations with good visual coverage of the landscape. The three-dimensional plot formed a cylinder with a radius of 800 meters and a height of 200 meters, roughly corresponding to a conservative approximation of the maximum blade tip height of the tallest turbine, as specified in the ECPG (USFWS 2013). Each EPC location was surveyed twice per month during Year 1; however, due to a deep snowpack, inclement weather, and poor visibility, two survey visits were not conducted (one in early November 2012 and one in early January 2013). Therefore, a total of 22 surveys at each of the 18 EPC locations, or 396 total EPC surveys, were used for EPC analyses. Sampling periods were 20 minutes long, resulting in 132 survey hours (7,920 total survey minutes). EPC surveys were conducted between 8:00 a.m. and 6:00 p.m., and plot survey order was varied so that surveys at specific EPC locations were conducted at varying times of day.

Figure 3. Eagle Point Count Locations



From April 1, 2013 to March 29, 2014 (Year 2), 60-minute-long EPC surveys were conducted at nine survey EPC locations: 2, 4, 6, 7, 10, 12, 14, 15, and 18 (Figure 3). Survey length was increased from 20 minutes to 60 minutes as recommended in the ECPG revised by USFWS in 2013 to increase the probability of golden eagle detection (USFWS 2013). EPC locations were reduced from 18 to nine, as recommended in the revised ECPG; fewer total EPCs reduced time spent traveling to and accessing points, and increased observation hours at those nine points, which may result in increased probability of detecting eagles (USFWS 2013). Of the nine chosen EPC locations, four were locations where GOEA were seen in Year 1 (2, 12, 14, and 18); these were surveyed once per week. Note that these locations were not inclusive of all points in Year 1 where GOEA were observed, as they did not include point 17. The remaining five EPC locations were locations where GOEA were not observed in Year 1 (4, 6, 7, 10, and 15); these were surveyed twice per month. Coverage within 1 km of the Project turbines from these nine locations was 18.7 percent during the Year 2 EPC surveys. A total of 313 60-minute-long EPC surveys (approximately 18,780 observation minutes, or 313 hours) were conducted in Year 2. A total of 26,700 minutes (445 hours) of EPC survey observations (including the 20-minute and 60-minute EPC surveys) were conducted during Years 1 and 2 combined. For the purposes of data analysis, seasons were defined as follows:

- Spring Migration: March 1–April 30
- Breeding (Summer): May 1–August 31
- Fall Migration: September 1–November 30
- Winter: December 1–February 28

Biologists focused on recording eagles and other raptor species, with other birds or notable wildlife species documented incidentally. For eagle species, the following data were collected during each minute that an eagle was present within the survey plot: species, number of individuals, age and sex (when distinguishable), prevalent behavior, horizontal distance from observer, and height. Prevalent behavior was classified as soaring, flapping-gliding, hunting and kiting (hovering), stooping (diving for prey), stooping (agonistic interaction), perched, mobbed by other birds, undulating/territorial flight, or auditory detection only. The minimum time recorded for eagle exposure was 1 minute, regardless if the individual only entered the plot for 1 second. Weather data collected included temperature, wind direction and speed, cloud cover, and precipitation.

Results

During Year 1, one bald eagle was recorded within a survey plot (within 800 meters and below 200 meters) for a total of 3 minutes during the EPC surveys in mid-April of 2012. No bald eagles were documented during Year 2. The standardized bald eagle use calculated for the Project based on these data is approximately 0.01 bald eagles per survey hour for Year 1, and zero bald eagles per survey hour in Year 2 (Tables 2 and 3).

Table 2. Year 1 Bald Eagle Observations during EPC Surveys.

Season	Number of Surveys	Survey Duration (hours)	Eagle Observations	Eagle Minutes	Eagle Observations per Survey Hour
Spring	72	24.00	1	3	0.04
Breeding	144	47.92	0	0	0.00
Fall	90	30.00	0	0	0.00
Winter	90	30.00	0	0	0.00
Total	396	131.92	1	3	0.01

*Table results do not include incidental minutes/observations.

Table 3. Year 2 Bald Eagle Observations during EPC Surveys.

Season	Number of Surveys	Survey Duration (hours)	Eagle Observations	Eagle Minutes	Eagle Observations per Survey Hour
Spring	52	52	0	0	0.00
Breeding	103	103	0	0	0.00
Fall	76	76	0	0	0.00
Winter	82	82	0	0	0.00
Total	313	313	0	0	0.00

*Table results do not include incidental minutes/observations.

A total of 24 golden eagles were observed in survey plots during Years 1 and 2 combined, with 12 observations each year.

In Year 1, golden eagle use was highest in the spring and fall (~0.21 and ~0.13 eagle observations per survey hour, respectively). Overall, approximately 0.09 golden eagle observations per survey hour were documented during Year 1 surveys (Table 4).

Table 4. Year 1 Golden Eagle Observations during EPC Surveys.

Season	Number of Surveys	Survey Duration (hours)	Eagle Observations	Eagle Minutes	Eagle Observations per Survey Hour
Spring	72	24.00	5	8	0.21
Breeding	144	47.92	3	5	0.06
Fall	90	30.00	4	20	0.13
Winter	90	30.00	0	0	0
Total	396	131.92	12	33	0.09

*Table results do not include incidental minutes/observations.

In Year 2, golden eagle use was again highest in the fall (~0.12 eagle observations per survey hour), and spring and winter were the same at approximately 0.02 eagle observations per survey hour. Overall, approximately 0.04 golden eagle observations per survey hour were documented during Year 2 surveys (Table 5).

Table 5. Year 2 Golden Eagle Observations during EPC Surveys.

Season	Number of Surveys	Survey Duration (hours)	Eagle Observations	Eagle Minutes	Eagle Observations per Survey Hour
Spring	52	52	1	1	0.02
Breeding	103	103	0	0	0.00
Fall	76	76	9	48	0.12
Winter	82	82	2	7	0.02
Total	313	313	12	56	0.04

*Table results do not include incidental minutes/observations.

In Year 1, 47.2 percent of all eagle minutes occurred at point 12, with points 2 and 17 following at 13.9 percent of the total eagle minutes (Table 6). The most eagle observations occurred at point 2 (30.8 percent), followed by 23.1 percent at point 12. Note that points with the highest number of eagle minutes do not always correlate to the points with the highest number of eagle observations.

Table 6. Year 1 Eagle Minutes and Observations during EPC Surveys.

EPC #	GOEA min	GOEA obs	BAEA min	BAEA obs	UNEA min	UNEA obs	% total of min	% total of obs
1	0	0	0	0	0	0	0.0	0.0
2	5	4	0	0	0	0	13.9	30.8
3	0	0	0	0	0	0	0.0	0.0
4	0	0	0	0	0	0	0.0	0.0
5	0	0	0	0	0	0	0.0	0.0
6	0	0	0	0	0	0	0.0	0.0
7	0	0	0	0	0	0	0.0	0.0
8	0	0	0	0	0	0	0.0	0.0
9	0	0	0	0	0	0	0.0	0.0
10	0	0	0	0	0	0	0.0	0.0
11	0	0	0	0	0	0	0.0	0.0
12	17	3	0	0	0	0	47.2	23.1
13	0	0	0	0	0	0	0.0	0.0
14	2	1	0	0	0	0	5.6	7.7
15	0	0	3	1	0	0	8.3	7.7
16	0	0	0	0	0	0	0.0	0.0
17	5	2	0	0	0	0	13.9	15.4
18	4	2	0	0	0	0	11.1	15.4
Totals	33	12	3	1	0	0	100.0	100.0

*Table results do not include incidental minutes/observations.

In Year 2, 75 percent of all eagle minutes occurred at point 18. Point 18 was also the location in Year 2 with the highest percentage of total eagle observations, at 66.7 percent. Point 14 followed with 14.3 percent of total eagle minutes and 16.7 percent of total eagle observations (Table 7).

Table 7. Year 2 Eagle Minutes and Observations during EPC Surveys.

EPC #	GOEA min	GOEA obs	BAEA min	BAEA obs	UNEA min	UNEA obs	% total of min	% total of obs
2	3	1	0	0	0	0	5.4	8.3
4	3	1	0	0	0	0	5.4	8.3
6	0	0	0	0	0	0	0.0	0.0
7	0	0	0	0	0	0	0.0	0.0
10	0	0	0	0	0	0	0.0	0.0
12	0	0	0	0	0	0	0.0	0.0
14	8	2	0	0	0	0	14.3	16.7
15	0	0	0	0	0	0	0.0	0.0
18	42	8	0	0	0	0	75.0	66.7
Totals	56	12	0	0	0	0	100.0	100.0

Incidental Golden Eagle Observations

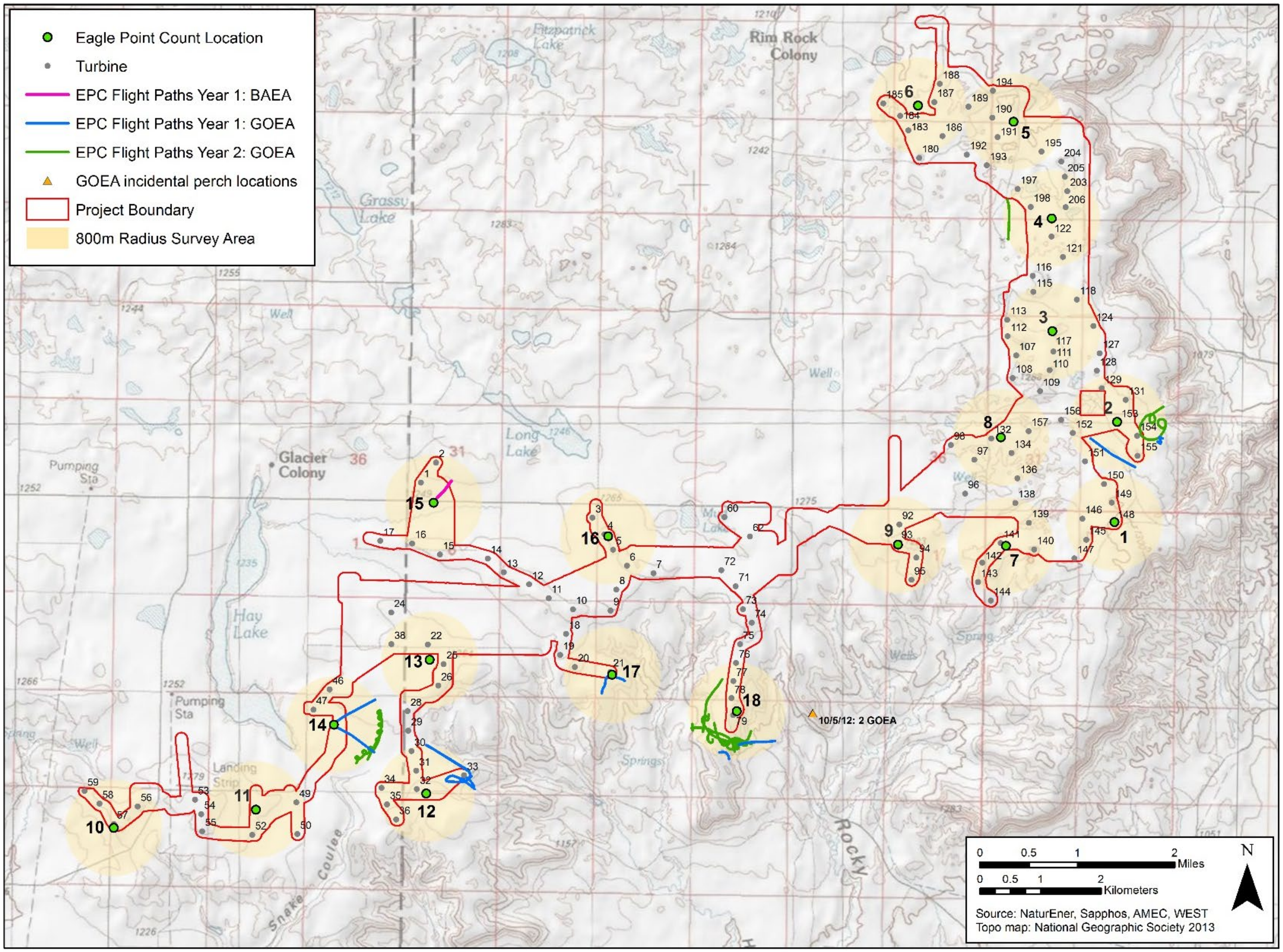
Incidental golden eagle observations were noted during EPC surveys when individual(s) were observed outside of a designated EPC survey area (outside of 800 meters and/or above 200 meters), but within the timeframe of a scheduled EPC survey. In Year 1, seven golden eagles were observed incidentally for a total of 17 minutes. In Year 2, 17 golden eagles were observed incidentally for a total of 113 minutes. Note that survey periods were 60 minutes long in Year 2, versus 20 minutes long in Year 1, which may explain the higher number of observations and minutes overall, although this was only observed in fall migration. There were no incidental bald eagle observations in Years 1 or 2.

All EPC data collected from the Years 1 and 2 surveys were provided to USFWS in December 2019, utilizing the USFWS' eagle use data reporting spreadsheet. The eagle flight paths are depicted in Figure 4 (note that Figure 4 does not include incidental eagle observation flight paths). A general overview summary of the EPC dates, survey points, plot dimensions, and eagle observations and minutes are provided in Table 8.

Table 8. Summary of Eagle Point Count Surveys.

	Year 1	Year 2
Start and End Dates	04/04/2012 - 03/29/2013	04/01/2013 - 03/29/2014
Number of Survey Points	18	9
Survey Plot Dimensions	800m x 200m	800m x 200m
Total Bald Eagles observed (in survey plot)	1	0
Total Bald Eagles observed (out of survey plot)	0	0
Total Bald Eagle minutes (in survey plot)	3	0
Total Golden Eagles observed (in survey plot)	12	12
Total Golden Eagles observed (out of survey plot)	7	17
Total Golden Eagle minutes (in survey plot)	33	56

Figure 4. Eagle Point Count Flight Paths



5.2 Eagle Roost Evaluation

The particular habitat types present within the Project boundary (e.g., cropland, pasture, and native rangeland) are common and abundant throughout the Great Plains region and are therefore not likely to attract large groups of congregating eagles at the Project. Eagle roost sites are areas where non-breeding eagles gather repeatedly in the course of a season and perch overnight, and sometimes during the day in the event of inclement weather. They are typically found in areas generally sheltered from wind and precipitation and are associated with good food sources (USFWS 2013). Roosts are an important part of an eagle's life cycle because they can be used daily throughout a season as well as year after year (USFWS 2007). Both bald and golden eagles may roost communally and both species may include individuals of all ages (USFWS 2013). Bald eagles are more social than golden eagles, and as such are more likely to be found in communal roosting groups. Golden eagles do so much less frequently in smaller groups and have been observed roosting with bald eagles (USFWS 2013). Eagles are known to move daily from foraging to roost sites and between regional roosts (Watts and Mojica 2015). The risk of eagle mortality may increase if individuals move through a string of turbines to and from roosting areas (USFWS 2013).

The area surrounding the Kevin Rim is primarily devoted to agriculture and grazing and is dominated by low grassy cover interspersed with shrubs. Although not widespread, available perches for roosting in the Project vicinity include power lines (primarily along county roads), fence posts, occasional rock outcrops, and scattered trees. These geophysical properties provide more favorable habitat for golden eagles compared to bald eagles. Eagle point counts conducted between 2012 and 2014 concluded that there was a higher concentration of golden eagles in the Project vicinity than bald eagles. The results of these surveys along with the lack of reported golden eagle roost sites in Montana suggest that the presence of a roost in the Project area would be rare.

In Montana, the closest known and studied bald eagle roost site was along Lower McDonald Creek on the west side of Glacier National Park in Flathead County, approximately 81 miles from the Project (Yates 1989). There are no known documented golden eagle communal roost sites in Montana. One golden eagle roost site surveyed in southern Idaho showed golden eagles roosting communally on power poles in open sagebrush habitat. Although this is atypical of a roost site, it was determined the area was in fact sheltered from prevailing westerly winds by a nearby mountain range and provided favorable morning thermals from the east (Craig and Craig 1983). This study identifies what golden eagles may use for a roost site, but also supports the importance of roosts to be sheltered from weather.

The majority of the terrain within the Project area is exposed to consistent high winds and lacks shelter from harsh winter weather, which makes the area unfavorable for communal roosting. During the 2012-2014 EPC surveys, no evidence of non-breeding communal eagle roost sites was observed within or in the vicinity of the Project. This finding has been further corroborated in subsequent years by NaturEner biologists, who observed eagle activity at the Project and surrounding area while biomonitoring from 2014 through 2021 which included dawn-to-dusk monitoring durations from 2014 through 2016.

5.3 Eagle Nest Surveys

Methods and Protocols

Eagle nest surveys have been completed at the Project in 7 different years (2012, 2013, 2014, 2016, 2019, 2020, and 2021). Nest surveys commenced in 2012 during the construction phase of the Project and were conducted by Sapphos Environmental, Inc (Sapphos), covering a 10-mile radius from the Project boundary (Survey Area). The effort included two rounds of aerial surveys, the first one from April 17-18 during the early breeding season, and the second survey from June 20-21 when nestlings were anticipated to still be on the nest. Surveys were conducted according to the methods and protocols outlined in the 2010 Interim Golden Eagle Technical Guidance (Pagel et al. 2010) and the 2011 Draft Eagle Conservation Guidance (USFWS 2011). The 2012 surveys pre-dated the 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a) and therefore did not comply with the protocol.

Sapphos conducted a second year of aerial nest surveys in 2013, the first one from April 16-18 and the second survey from June 18-20. The 2013 surveys again had a Survey Area covering a 10-mile radius from the Project boundary, and the surveys also followed the same methods and protocols as the 2012 aerial surveys. The 2013 surveys pre-dated the 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a) and therefore did not comply with the protocol.

In 2014, two aerial nest surveys were conducted by POWER Engineers, Inc. (POWER) from April 21-23 and June 10-12, marking the third consecutive year of aerial nest surveys within the 10-mile-radius Survey Area. Survey methods and protocols employed by POWER were based on the ECPG (USFWS 2013). The 2014 surveys pre-dated the 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a) and therefore did not comply with the protocol.

Nest surveys were not conducted in 2015; however, the effort resumed in 2016 with two aerial nest surveys completed by NaturEner. The two 2016 surveys were completed from April 18-20 and May 31-June 1, covering a 10-mile-radius Survey Area, and they also followed the ECPG (USFWS 2013) and similar protocols, methods, and timing of surveys as those implemented in the 2012, 2013, and 2014 aerial nest surveys. The 2016 surveys pre-dated the 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a) and therefore did not comply with the protocol.

In 2019, NaturEner contracted Western EcoSystems Technology, Inc. (WEST) to complete two rounds of aerial eagle nest surveys for the Project, which were conducted on March 18 and April 29. After completion of the aerial surveys, which covered the same 10-mile-radius Survey Area as the previous years, two rounds of ground-based nest surveys were completed by WEST, on June 20 and July 8/9, at all 2019 observed occupied eagle nests within the Survey Area. Survey protocols were based on the 2010 Interim Golden Eagle Technical Guidance (Pagel et al. 2010), the ECPG (USFWS 2013), and recommendations from USFWS Region 6 personnel regarding timing of surveys. The 2019 surveys pre-dated the 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a) and therefore did not comply with the protocol.

NaturEner biologists completed ground-based eagle nest surveys in 2020 within a 2-mile radius of the Project boundary, which were designed to specifically target nesting golden eagles that were recorded in previous years' nest surveys. Other potential nesting habitat between and within known eagle territories was also inspected during all nest visits. Surveys were designed and conducted according to the new 2020 USFWS Region 6 recommended nest survey protocol (USFWS 2020a). Ground-based surveys by vehicle are the preferred method of nest monitoring at the Project, therefore aerial helicopter surveys, as suggested during Visits 2 and 4 in the 2020 USFWS Region 6 recommended nest survey protocol, were not conducted. Ground-based surveys are an acceptable method for nest monitoring to increase efficiency, and where territories are well-established with consistent and accessible observation points (Pagel et al. 2010). In addition, ground-based surveys are safer and more cost-effective than helicopter surveys. In 2020, USFWS also updated the size of eagle nest survey areas (USFWS 2020b), deviating from the guidance provided in the ECPG (USFWS 2013); this change was based on recent research that shows golden eagles typically stay within 3 km of the center of their territory (USFWS 2020c). As a result, the Project's Survey Area was reduced from a 10-mile radius around the Project boundary to a 2-mile radius around the boundary (107 square miles versus the previously used 314 square miles).

In 2021, NaturEner again completed ground-based eagle nest surveys within a 2-mile radius of the Project boundary. The surveys were conducted according to the updated 2021 USFWS Region 6 recommended nest survey protocol (USFWS 2021c), although with similar protocol deviations (no aerial survey component) as the 2020 nest surveys.

Nest Status Classifications

Categories used to describe nest status for each of the survey years were consistent with the definitions contained in the ECPG (USFWS 2013). Nests were classified as occupied if any of the following were observed at the nest structure: 1) an adult on the nest structure; 2) eggs; 3) nestlings or fledglings; 4) occurrence of a pair of adults or sub-adults; 5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed early in the breeding season; or 6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as occupied-active if one or more eggs had been laid or chicks were observed, or occupied-inactive if no eggs or chicks were present. A nest that did not meet the above criteria for occupied during at least two surveys was classified as unoccupied.

The majority of the nest surveys completed at the Project pre-dated the 2020 USFWS Region 6 recommended nest survey protocol, which included new recommended nest status classifications and definitions, most notably “in-use nest” and “alternate nest” (USFWS 2020a). Although an in-use nest is similar to an occupied-active nest, and an alternate nest is similar to an unoccupied nest, the associated terms are not synonymous. Consequently, modifying the nest classifications that were used in survey years prior to the release of the 2020 USFWS Region 6 recommended nest survey protocol, to the new classifications, would jeopardize the accuracy of those historical nest classifications. Furthermore, utilizing the new 2020 nest classifications for the Project’s 2020 and 2021 survey years would introduce inconsistencies with the cumulative nest survey data (2012-2021) for the Project, particularly when conveying a comprehensive data summary (Table 9). For these reasons, NaturEner has elected to maintain the use of the nest status classifications as defined in the 2013 ECPG versus those provided in the 2020 USFWS Region 6 recommended nest survey protocol document.

For additional detailed information regarding the nest survey protocols and methods, a report for each survey year is provided in Appendix B.

Results: Nest Occupancy and Productivity

No bald eagle nests were discovered in the Survey Area during any of the 7 survey years; therefore, all of the results presented here are for golden eagle nests.

No golden eagle nests were found within the Project boundary during any of the nest surveys. In 2012, five occupied golden eagle nests were observed within the 10-mile-radius Survey Area, resulting in the presence of eight chicks observed during the second aerial nest survey. There were again five occupied nests observed within the 10-mile-radius Survey Area in 2013, with six eagle chicks produced. In 2014, five occupied eagle nests were observed within the 10-mile-radius Survey Area, which produced 10 chicks. Observed occupied nests within the 10-mile-radius Survey Area in 2016 increased to seven, with one nest failing to successfully rear any offspring, while the remaining six nests produced 12 chicks. In 2019, observed occupied nests within the 10-mile-radius Survey Area decreased to four, with three nests producing four chicks total and the remaining nest failing to produce confirmed offspring. A total of seven occupied golden eagle nests were observed within the 2-mile-radius Survey Area in 2020; five of the occupied nests produced a total of nine chicks, while the remaining two occupied nests failed to produce any offspring. In 2021, there were a total of five observed occupied golden eagle nests within the 2-mile-radius Survey Area; four of the occupied nests produced seven chicks while the remaining occupied nest failed to produce any offspring. Throughout the 7 different years of nest surveys conducted at the Project, the local eagle pairs have produced a total of 56 offspring. This reproduction success provides evidence that the

Table 9. Golden Eagle Nest Occupancy and Productivity – All Years.

NEST ID	2012 Classification/ Productivity (chicks)	2013 Classification/ Productivity (chicks)	2014 Classification/P roductivity (chicks)	2016 Classification/ Productivity (chicks)	2019 Classification/ Productivity (chicks)	2020 Classification/ Productivity (chicks)	2021 Classification/ Productivity (chicks)
GE01	Occupied: 2	Unoccupied	Unoccupied	Avoided	Occupied: 1	Occupied: 2	Unoccupied
GE02	Occupied:2	Unoccupied	Occupied: 0	Avoided	Unoccupied	Unoccupied	Occupied: 2
GE03	Occupied:1	Unoccupied	Occupied: 2	Occupied:2	Unoccupied	Occupied: 2	Unoccupied
GE04	Occupied:1	Occupied: 2	Occupied: 0	Occupied: 0	Unoccupied	Unoccupied	Unoccupied
GE05	Occupied: 2	Unoccupied	Unoccupied	Occupied: 2	Occupied: 2	Unoccupied	Unoccupied
GE08	Unoccupied	Unoccupied	Unoccupied	Avoided	Unoccupied	OSA	OSA
GE09	Unoccupied	Unoccupied	Occupied: 2	Occupied: 3	Unoccupied	Occupied: 2	Unoccupied
GE10	Unoccupied	Unoccupied	Unoccupied	Avoided	Not Observed	Unoccupied	Unoccupied
GE11	Unoccupied	Unoccupied	Unoccupied	Avoided	Occupied: 1	Occupied: 2	Unoccupied
GE12	Unoccupied	Occupied:1	Occupied: 2	Unoccupied	Unoccupied	Unoccupied	Occupied: 2
GE16	N/A	Occupied: 1	Occupied: 2	Avoided	Unoccupied	Unoccupied	Occupied: 1
GE17	N/A	Occupied: 2	Unoccupied	Avoided	Unoccupied	Not Observed	Absent
GE19	N/A	Occupied: 0	Unoccupied	Avoided	Unoccupied	Unoccupied	Unoccupied
GE21	N/A	N/A	Occupied: 2	Occupied: 1	Not Observed	Occupied: 0	Unoccupied
GE25	N/A	N/A	N/A	Occupied: 3	Unoccupied	Unoccupied	Unoccupied
GE27	N/A	N/A	N/A	Occupied: 1	Unoccupied	Unoccupied	Unoccupied
GE32	N/A	N/A	N/A	N/A	Occupied: 0	Unoccupied	Unoccupied
GE33	N/A	N/A	N/A	N/A	N/A	Occupied: 0	Unoccupied
GE34	N/A	N/A	N/A	N/A	N/A	Occupied: 1	Unoccupied
GE35	N/A	N/A	N/A	N/A	N/A	N/A	Occupied: 2
GE36	N/A	N/A	N/A	N/A	N/A	N/A	Occupied: 0
	Total chicks: 8	Total chicks: 6	Total chicks: 10	Total chicks: 12	Total chicks: 4	Total chicks: 9	Total chicks: 7

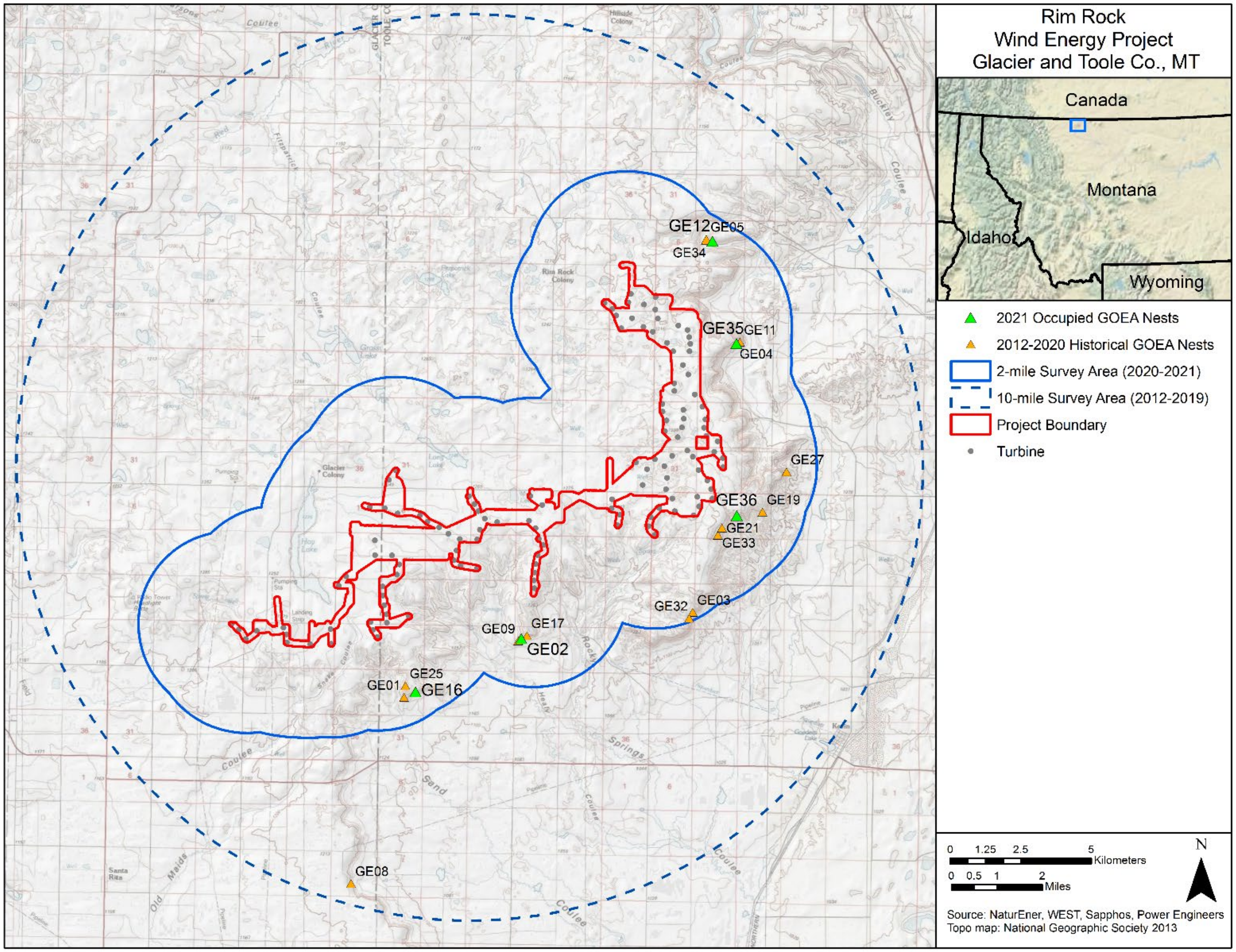
Numbers following “Occupied” indicate number of chicks observed in nest.
N/A: Nest did not exist.
OSA (Outside Survey Area): Survey Area size changed from 10-mile radius to 2-mile radius in 2020.

local golden eagles, during Project operations, have contributed to maintaining stable or increasing golden eagle populations. Figure 5 provides a map depicting the Survey Areas and the locations of eagle nests observed during all survey years. Additional survey year-specific golden eagle nest maps can be found in the applicable reports provided in Appendix B.

Table 9 provides a summary of golden eagle nest occupancy and productivity for the 7 survey years. An “Avoided” classification in Table 9 means that locating the nest was not attempted due to ECPG protocol, whereby sufficient clearance was given to areas within close proximity to an occupied nest, to prevent occupied nest disturbance; therefore, some historical nest sites within 1,500 feet of occupied nests were not searched closely. A “Not Observed” classification in the table means that searchers attempted to locate a historical nest, but it was not found. An “Absent” classification in the table means that it was confirmed that a historical nest was no longer present.

It is important to note that nest productivity observed during the 2019, 2020, and 2021 surveys is not directly comparable to the previous 4 years of surveys, due to differing methods. The 4 previous years used the presence of large chicks during the second aerial survey (ranging from May 31 to June 21) as the measure of productivity. However, nestling age or feather development was not provided in the first 4 years of nest surveys. The ECPG (USFWS 2013) suggests a fledge age of 56 days for golden eagles. Exact lay dates for the 2019-2021 surveys were not known, so nestling age was conservatively estimated by relative feather growth and nestling activity on the nest (Driscoll 2010). The 2019-2021 surveys used the 56-day nestling age benchmark to determine productivity, and a conservative age estimate was used on those surveys. The previous years’ surveys (2012, 2013, 2014, and 2016) measured productivity as much as 4-6 weeks earlier in the year than the 2019-2021 surveys.

Figure 5. Eagle Nest Survey Area and Nest Locations – All Years



Discussion

All of the historical golden nests depicted in Figure 5 and Table 9 (with the exception of nest GE08) are located within 2 miles or less of the nearest turbine. During construction of the Project, coordination between NaturEner and USFWS resulted in the elimination or relocation of proposed turbines in order to achieve at least a 1-mile setback from occupied golden eagle nests. During the following years, three new eagle nests (GE21, GE33, and GE36) have been constructed within 1 mile of the nearest turbine.

Based on the proximity of nests to the eastern and southern Project boundaries (Figure 5), NaturEner voluntarily implemented a biomonitoring and turbine curtailment program in 2013. The objective of the program was to acquire knowledge of local eagles' activities and flight patterns, and to provide an effective conservation measure, via informed curtailments, to avoid/minimize risk of potential eagle/turbine collisions (see Section 6.0 for a detailed description of the biomonitoring and curtailment program). In addition to the biomonitoring and curtailment program, NaturEner has completed 7 years of eagle nest surveys in order to monitor the breeding activity and reproductive success of the local eagle pairs. Knowledge of local eagles' breeding and productivity also allows NaturEner's on-site biologists to prioritize biomonitoring/curtailment efforts on eagle territories that are known to have occupied nests or fledglings in a given year.

NaturEner has chosen to continue its voluntary biomonitoring program and maintain a high frequency of annual eagle nest surveys because the combination of these two efforts has enabled NaturEner to understand the spatial and temporal use of the Project vicinity by local eagles, migrant eagles, and their interactions during Spring and Fall migration seasons. More importantly, year-round and real-time informed turbine curtailments provide an ongoing conservation measure that mitigates the risk of potential eagle/turbine collisions.

5.4 Eagle Migration Evaluation

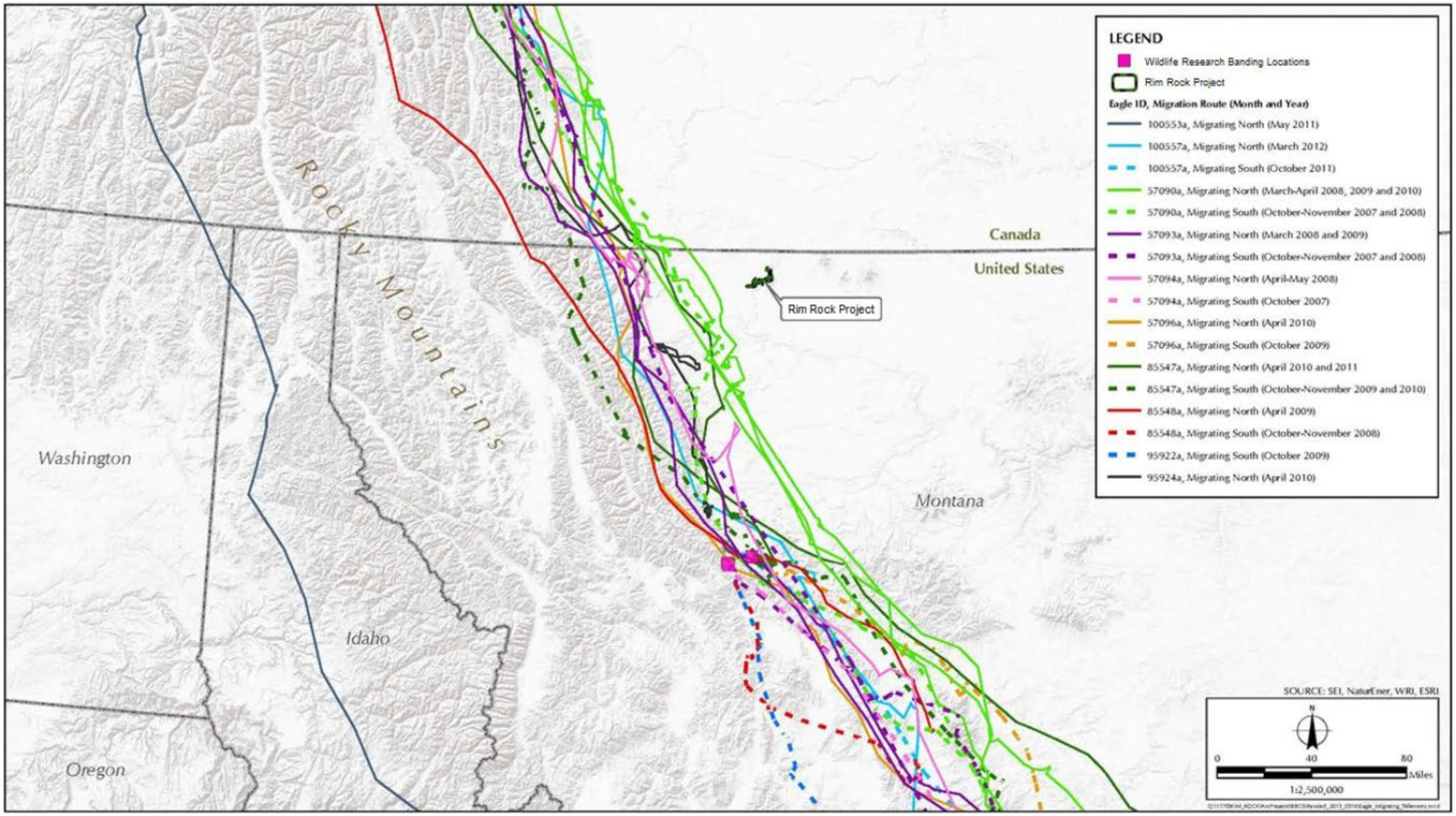
The area surrounding the Project is not known to be a primary migration corridor for eagles. In Montana, eagles migrate along valleys and foothills during the spring to their breeding grounds, while they tend to utilize high ridgetops during their return to wintering grounds in the fall. The major migration corridors in western Montana are concentrated in the mountains, valleys, and foothills of the Rocky Mountains. The closest major spring/fall migration route is located approximately 50 miles west of the Project, along the eastern edge of the Rocky Mountains (Bedrosian et al. 2018). Although abrupt topography exists at the Kevin Rim, which is an isolated set of cliffs, and not connected to a larger cliff system or mountain chain, the topography may provide consistent updrafts and may serve as local pathways for eagles. Observations and data collected during pre-construction assessments indicate that the Project is not located within a known major migratory corridor.

Bald eagles exhibit complex migration ecology that is typically driven by the availability of their preferred prey, fish; therefore, major bald eagle migratory routes are typically associated with water (Goodrich and Smith 2008). For example, in western Canada, radio-tracked bald eagles traveled between large lakes and along large river corridors regularly and moved in response to seasonal availability of prey (Goodrich and Smith 2008). The small ephemeral wetlands present within the Project are unlikely to attract bald eagles during migration. Furthermore, several larger lakes are located less than 1 mile north and west of the Project, and the regional proximity of relatively large water bodies such as Benton Lake, Lake Frances, Lake Elwell, Freezeout Lake, and Pakowki Lake (in Alberta, Canada), which are all more than 30 miles from the Project, suggest that large groups of bald eagles are unlikely to migrate or stop-over in the Project, as these large wetland/lake complexes would likely draw bald eagles to locations outside of the Project boundary.

Existing satellite telemetry data from golden eagles in northwestern Montana were examined to assess the potential use of the Project by migrating golden eagles. The data were obtained from the Wildlife Research Institute (WRI) of Ramona, California; WRI captured and tagged golden eagles near Wolf Creek, Montana, 120 miles south of the Project, during fall migrations of 2007 through 2011. Each bird was fitted with a satellite transmitter. Thirteen of these individuals passed through northwestern Montana, in the regional vicinity of the Project and were tracked as they migrated between Montana and Canada or Alaska, similar to previous studies (WRI 2013; McIntyre et al. 2008). Eagles tracked during the study ranged in age from fledglings of the year to adults older than 8 years, at the time of capture. Seven of the 13 individuals were of breeding age. Of the 13 golden eagles, 11 passed through the Project latitude, 10 of which were completing long-distance migratory flights. Among the 10 migratory golden eagles, seven were recorded in both spring and fall, two were recorded only during spring migration, and one was recorded only during fall migration (Figure 6). All of the migrating eagles traveled along a southeast to northwest trajectory in the spring and along a northwest to southeast trajectory in the fall, paralleling the Rocky Mountains well to the west of the Project. Within the map depicted in Figure 6, golden eagles passed through northwestern Montana between March and May in the spring migrations of 2008 through 2012 and between October and November in the fall migrations of 2007 through 2011, similar to other studies and observations in this region (Yates et al. 2001; Omland and Hoffman 1996; Davis and Hoffman 2016). Of the 10 migrating birds, nine flew along the east face of the Rocky Mountains and one followed a more westerly route through Idaho. Flight paths during migration ranged from a distance of 13 to 88 miles from the Project for the nine eagles east of the Rocky Mountains, and approximately 202 miles for the one eagle west of the Rocky Mountains (Figure 6).

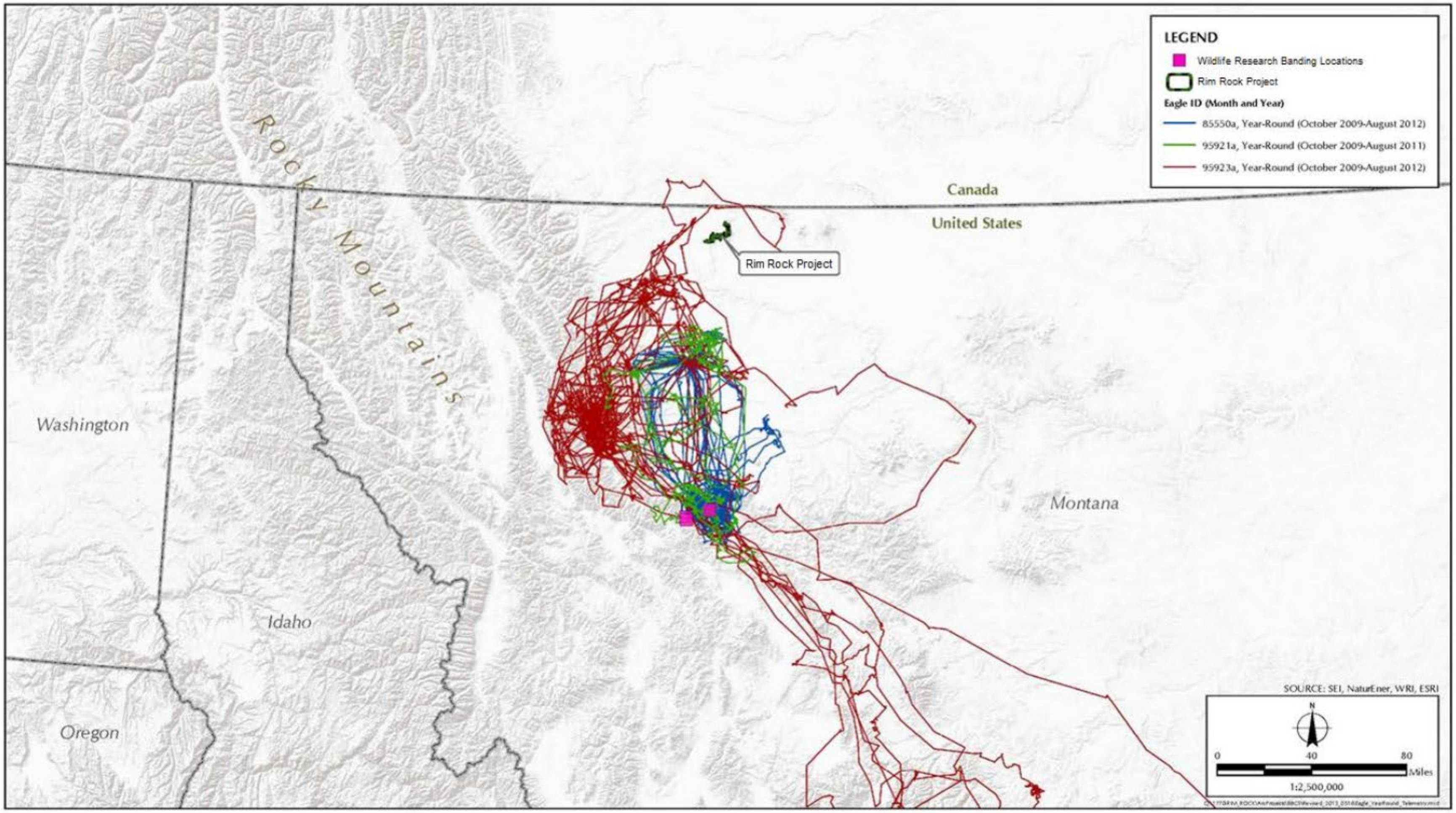
The other three non-migratory golden eagles remained mainly in Montana within approximately 150 miles of the Project (Figure 7). Two of these individuals were tracked from October 2009 through August 2012 (ID nos. 85550a and 95923a), while the third was tracked from October 2009 through August 2011 (ID no. 95921a). The individual recorded closest to the Project boundary was an adult (ID no. 95923a) that wandered hundreds of

Figure 6. Flight Paths of Migrating Golden Eagles along the Rocky Mountain Front



Source: WRI 2013. (Map from Sapphos)

Figure 7. Flight Paths of Three Non-Migratory Golden Eagles in Western Montana



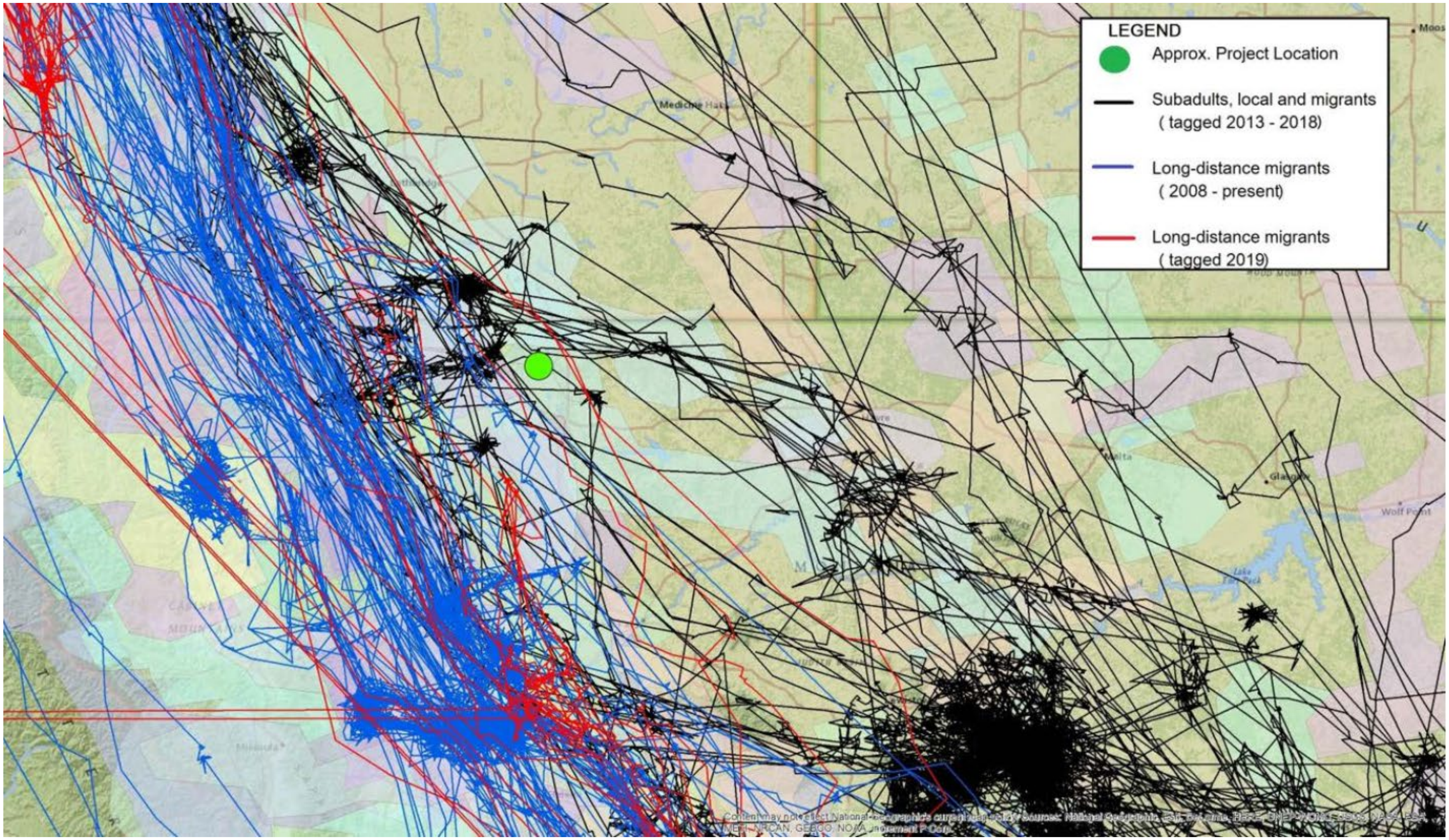
Source: WRI 2013. (Map from Sapphos)

miles during the summer of 2010 and passed east and north of the Project, while remaining at least 6 miles from the Project boundary. The other two non-migratory eagles remained entirely south of the Project, traveling no closer than approximately 35 miles of the Project boundary throughout the tracking period.

During consultation between NaturEner and USFWS in May 2019, USFWS provided updated golden eagle satellite telemetry data to supplement the telemetry data collected by WRI between 2007 and 2011. The new telemetry data were collected through a collaborative effort between the Teton Raptor Center (TRC) of Wilson, Wyoming and the Raptor View Research Institute (RVRI) of Missoula, Montana. TRC captured and tagged 13 sub-adult golden eagle migrants from 2013 to 2015 in central and southeast Montana at various sites approximately 285 to 480 miles southeast of the Project (TRC 2019; RVRI 2019). Of these 13 sub-adults, two eagles passed through or above the Project, two eagles flew within approximately 10 miles of the Project, and the remaining nine tagged sub-adults moved through the region at distances greater than 10 miles from the Project (Figure 8). In 2018, TRC tagged an additional 10 golden eagle adult migrants in the Big Belt Mountains in central Montana, approximately 170 miles south of the Project. Two of these 10 migrant adults passed through the region within approximately 10 miles of the Project, and the remaining eight eagles traveled through at distances greater than 10 miles from the Project (Figure 8).

In May 2019, NaturEner also coordinated with USFWS to determine if any of USFWS' tagged golden eagles, which includes approximately 700 tagged eagles in the western U.S., had documented flight tracks in the vicinity of the Rim Rock Project. USFWS stated that the most recent data indicated that none of their tagged golden eagles had been recorded within 35 miles of the Project (USFWS 2019). The results of these studies indicate that the Project is not located within the primary migratory corridor for regional migrating golden eagles.

Figure 8. Flight Paths of Migrating and Local Golden Eagles in Montana and Canada



Map from Teton Raptor Center 2019.

5.5 Eagle Prey Base Evaluation

The typical prey base differs for bald and golden eagles (Table 10). Diet information was based on local studies conducted prior to the inception of the Project and on published general information regarding bald and golden eagle diets.

Table 10. Typical Prey Base of Bald and Golden Eagles.

Species	Prey Base	Land Use Classes Where Foraging Habitat May Occur
Bald eagle	Fish, waterfowl, carrion	Open water/wetland, riparian systems
Golden eagle	Rabbits*, ground squirrels*, hares, yellow-bellied marmots, prairie dogs, carrion	Grassland systems; human-dominated land uses; sparse and barren systems

*Composed more than 20 percent of prey items at the Kevin Rim based on Harmata's 1991 diet study.
Sources: Buehler 2000; Katzner et al. 2020; Baglien 1975

Pre-construction studies completed at the Kevin Rim provided additional site-specific detail on the diet of golden eagles in the vicinity of the Project (Harmata 1991; Zelenak 1996). Primary prey items for golden eagles were desert cottontail (*Sylvilagus audubonii*) and ground squirrels, and secondary prey were yellow-bellied marmots (*Marmota flaviventris*), white-tailed jackrabbits (*Lepus townsendii*), and carrion. Overall, historical studies conducted at the Kevin Rim suggest that the density of nesting golden eagles are due to the proximity of a healthy prey base, including Richardson's ground squirrels (*Urocitellus richardsonii*) and white-tailed jackrabbits (Harmata and Jaffe 2003; Harmata and Jaffee 2001; Dubois 1988). Together, the data from local and regional sources all strongly support the importance of mammals as the dominant prey source for golden eagles (Table 11). Mammals, specifically mid-sized mammals, are the most important food resource for golden eagles, thus habitats with abundant mammals likely attract golden eagles.

Table 11. Golden Eagle Prey Species with Potential to Occur at the Project.

Family	Species	Habitat Description
Sciuridae: Squirrels	Black-tailed prairie dog *Cynomys ludovicianus*	Grasslands
	Richardson's ground squirrel *Urocitellus richardsonii*	Lowland prairie grassland
	Thirteen-lined ground squirrel *Ictidomys tridecemlineatus*	Grasslands, agricultural areas, and shrublands
	Yellow-bellied marmot *Marmota flaviventris*	Cliff, canyon and talus
Leporidae: Rabbits	Desert cottontail *Sylvilagus audubonii*	Grasslands and sagebrush areas
	Mountain cottontail *Sylvilagus nuttallii*	Shrub-steppes and riparian areas
	White-tailed jackrabbit *Lepus townsendii*	Sagebrush and grasslands

Bald eagles consume mostly fish and waterfowl but will readily consume carrion when it is available. While studies of the diet of local bald eagle populations are lacking, it is well documented that fish account for more than 90 percent of bald eagle diets (Retfalvi 1970; Dunstan and Harper 1975; Todd et al. 1982; Cash et al. 1985; Jackman et al. 1999; Kozie and Anderson 1991; Mabie et al. 1995), including by studies that assessed bald eagle diet through direct observation (Watson et al. 1991; Stalmaster and Plettner 1992; Mersmann et al. 1992). While bald eagles occasionally hunt by soaring high over foraging areas, hunting typically occurs from a perched location. Bald eagles commonly inhabit areas near rivers, lakes, and marshes with adjacent perching substrates to facilitate access to their preferred prey.

Potential Sources of Golden Eagle Prey at the Project

Prairie Dog

Two prairie dog species are known to occur in Montana, including the black-tailed prairie dog and white-tailed prairie dog. During the aerial nest surveys for the Project between 2012 and 2019, biologists did not observe prairie dog colonies on the Project or within the vicinity. Furthermore, no observations of prairie dogs have occurred from the ground during other Project surveys and site operations.

In Glacier County, there are no known current records for either of Montana's prairie-dog species (MNHP 2022c; MNHP 2022d). In Toole County, known records for black-tailed prairie dog extend south from Shelby, MT and continue east and south into the species' current known range in the eastern two-thirds of the state (MNHP 2022c). The records near Shelby, MT are from 1996-1998 (near the Shelby Sewage Lagoons), and do not represent active colonies at the present time. Colonies south and east of Shelby, MT along the Marias River in both Pondera and Toole counties were last known to be active in 2010. The closest record to the Project of a known active colony (in 2018) occurred in Liberty County along the Marias River, just east of Tiber Dam, over 90 miles to the southeast of the Project area (MNHP 2022c).

White-tailed prairie-dogs occur only in a small portion of Yellowstone, Carbon, and Bighorn counties in south-central Montana (MNHP 2022d) and are therefore not present within the Project site.

Ground Squirrel

There are two species of ground squirrels with ranges that overlap the Project area: Richardson's ground squirrel and thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*). The more common Richardson's ground squirrel inhabits arid prairies and pastures and open agricultural land in non-forested areas of Montana, excluding the southeastern quarter of the state (MNHP 2022e; MDA 2019). They are primarily herbivorous, eating various plant parts and seeds, but occasionally consume insects and carrion (MNHP 2022e). In Montana, they hibernate from approximately October through April (MDA 2019). Although no formal ground squirrel colony surveys/mapping have been completed at the Project, Richardson's ground squirrels are known to occur throughout the Project vicinity and surrounding areas. Observations of this species within the Project and surrounding areas were recorded opportunistically during AMEC's pre-construction reconnaissance-level survey efforts and they continue to be observed incidentally by site personnel within the Project area.

The less common thirteen-lined ground squirrel most often occurs in areas encompassing dense but low grassy/shrubby cover, or grazed grasslands and sagebrush. They eat seeds, grasses, insects, and small vertebrates (MNHP 2022f). They hibernate from approximately September through March (Cleary and Craven 1994). The closest known records of this species occur to the east in Liberty County (2019) and to the south in Pondera County (early 2000's) (MNHP 2022f). Thirteen-lined ground squirrels have not been observed within the Project area or surrounding vicinity.

Yellow-Bellied Marmot

Yellow-bellied marmots (*Marmota flaviventris*) inhabit talus slopes or rocky outcrops and prefer to be in proximity to vegetation (MNHP 2022g). Although they can be found in moderately grazed pastures, research suggests that they may avoid heavily grazed areas. Their diet consists of grasses, flowers, forbs, and seeds. They are active from early March through September, and hibernate outside of this period (USFWS 2022e). Due to their habitat preferences, yellow-bellied marmot observations within the Project area are uncommon, whereas the Kevin Rim and areas in close proximity to the rocky edge of the escarpment are the most likely areas for them to occur.

Desert and Mountain Cottontails

Desert cottontails (*Sylvilagus audubonii*) inhabit arid grasslands and sagebrush (MNHP 2022h). Mountain cottontails (*Sylvilagus nuttallii*) prefer dense shrubs in proximity to riparian areas (MNHP 2022i). Sagebrush and grasses are the primary food source for both cottontail species (Chapman 1975). The Project is within the known range of both species. Cottontails have been observed on Project, but have not been identified to species.

White-Tailed Jackrabbit

White-tailed jackrabbits are found in open grassland and sagebrush habitats, but can also be found in cropland (MNHP 2022j; Simes et al. 2015). During severe winter conditions, they prefer woodlots and riparian areas, as their diet shifts to shrubs, versus grasses and forbs (Simes et al. 2015). Breeding season of white-tailed jackrabbits extends from February through July or August, and can be longer in milder winters. White-tailed jackrabbits are known to occur on Project.

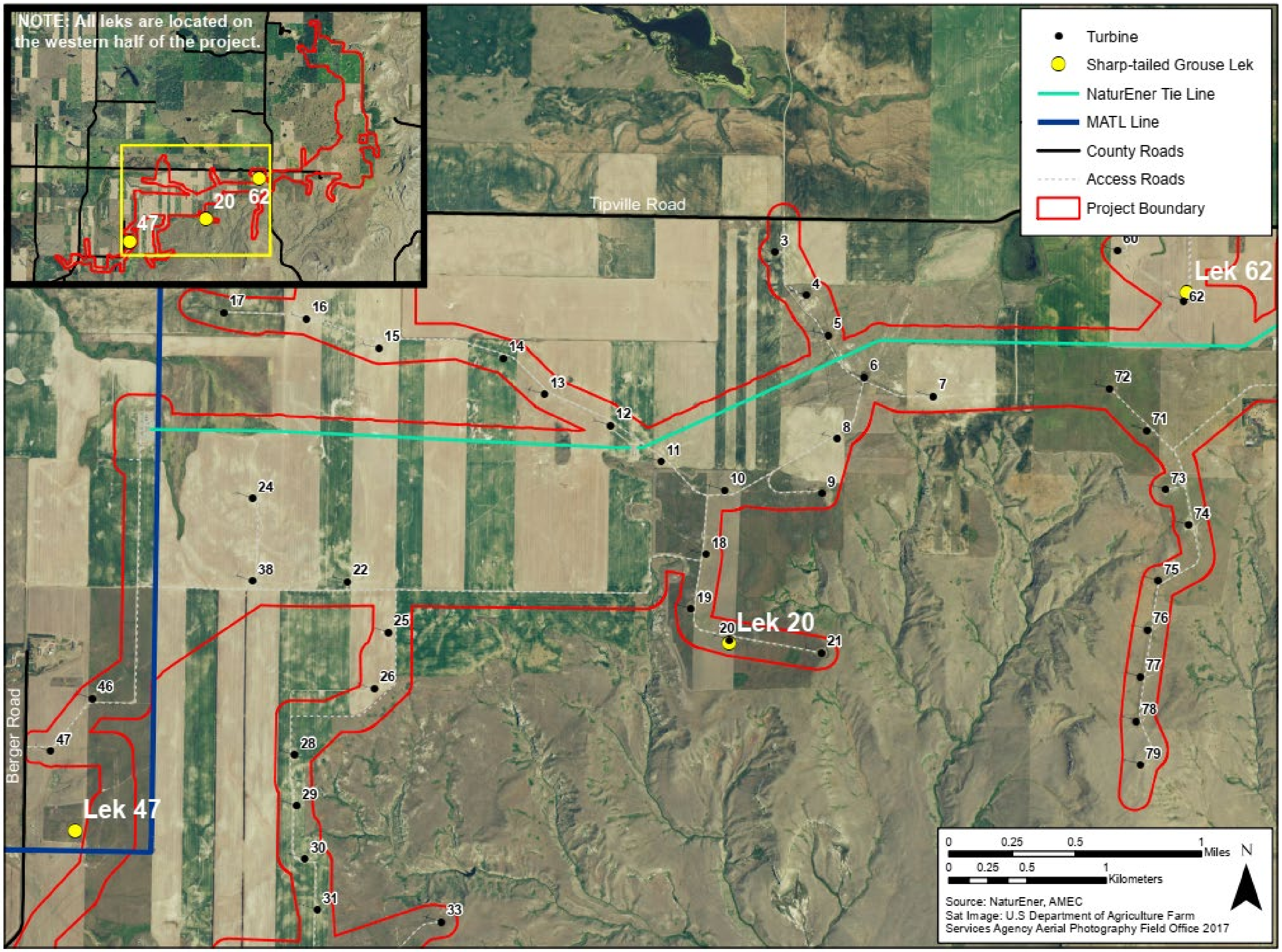
Sharp-tailed Grouse

Sharp-tailed grouse inhabit brushy grasslands in large open areas, often with rolling hills. The feed primarily on seeds, forbs, grasses, and insects. They gather on leks (breeding areas) in spring for courtship displays and in areas of low and sparse vegetation (NRCS 2007).

A total of three sharp-tailed grouse (STGR) leks have been documented within the Project vicinity (two within the Project boundary and one approximately 60 meters outside of the boundary). All leks are located on the southwestern half of the Project (Figure 9). During AMEC's initial site assessments and reconnaissance bird migration surveys conducted in 2011, activity at a STGR lek was discovered with three birds observed on the lek (identified as Lek 47); lek 47 remained active in the Spring of 2013. Additionally, NaturEner biologists incidentally recorded two active STGR leks within the Project boundary during other Project surveys in March and April of 2013 (Leks 20 and 62). These two leks were both located at the interface between the bare ground of turbine pads and adjacent Conservation Reserve Program (CRP) grasslands.

Sharp-tailed grouse lek surveys were conducted by NaturEner biologists in 2015 from February 7 to July 18 and again in 2016 from February 17 to June 17, following a standard survey protocol.

Figure 9. Sharp-tailed Grouse Lek Locations



Sharp-tailed Grouse Lek Survey Protocols

Sharp-tailed grouse lek surveys were completed at the three previously mentioned identified leks. One lek was observed within 50 meters of turbine RR020 (Lek 20), another within 50 meters of turbine RR062 (Lek 62), and the third was located approximately 639 meters from turbine RR047 (Lek 47). Lek 47 was approximately 60 meters west of the Project boundary but was included in the surveys due its proximity to the Project. These leks were visited once per week during the morning hours in 2015, and both in the mornings and evenings in 2016. Weekly visits continued until lek activity had ceased for at least 3 weeks. Weekly visits occurred every 5 to 7 days, as was feasible. Morning monitoring visits occurred no later than 1.5 hours after sunrise, as leks tend to be most active during this period. Evening monitoring visits occurred no earlier than 1.5 hours before sunset. Biologists observed each lek from ≥200 meters for a maximum of 15 minutes and counted the total number of individuals and total number of displaying males observed at the lek. Any observed eagles or other raptors hunting the leks or hunting near the leks were recorded. Other data were recorded including time and date of visit, as well as weather conditions (e.g., cloud cover, temperature, wind speed/direction, precipitation, etc.). Biologists continued to monitor the Project for any signs of additional leks, but none were located.

Results of Sharp-tailed Grouse Lek Surveys

All three STGR leks showed consistent lekking activity during the 2015/2016 survey period. The highest numbers of individuals and displaying males were observed during the months of April and May, with some counts over 20 individuals and over 20 displaying males.

The STGR leks nearest to RR047 and RR020 showed the highest number of grouse. The lek nearest to RR047 averaged 16 individuals and 10 displaying males in 2015. In 2016, the same lek averaged 13 individuals and 6 displaying males. The lek nearest to RR020 averaged 10 individuals and 4 displaying males in 2015. In 2016, the same lek averaged 12 individuals and 4 displaying males. The lek at RR062 showed less activity, averaging 8 individuals and 5 displaying males in 2015. In 2016, the same lek averaged 3 individuals and 1 displaying male.

Evening surveys were not conducted in 2015. The morning lek surveys in 2016 showed an increase of 55 percent observed individuals and 40 percent displaying males compared to evening surveys.

During the 2-year-long survey period, no eagles were observed hunting the leks or near the leks, however ferruginous hawks were observed hunting leks in 2015, short-eared owls were observed hunting near leks in 2016, and northern harriers were observed hunting near leks in both 2015 and 2016. All STGR survey data are available in Appendix C.

Waterfowl

Stopover habitat for migrating waterfowl, in the form of ephemeral ponds and prairie potholes, is available within the Project. Furthermore, several larger lakes are located less than 1 mile north and west of the Project. Small ephemeral and/or seasonal wetlands provide suitable habitat, but are not likely to attract large numbers of waterfowl given the regional proximity of relatively large water bodies such as Benton Lake, Lake Frances, Lake Elwell, Freezeout Lake, and Pakowki Lake (in Alberta, Canada), which are 83 miles southeast, 32 miles south, 41 miles southeast, 74 miles south, and 57 miles northeast of the Project, respectively. These large wetland/lake complexes would likely draw the majority of migrating waterfowl to locations outside of the Project vicinity.

Big Game Parturition Areas

Golden eagles are known to target pronghorn antelope and mule deer fawn as prey (Tigner 1973; Marr and Knight 1983). While both mule deer and pronghorn have been observed incidentally on Project, there are no known parturition (birthing) areas or concentrated big game areas within the Project boundary.

Calving Areas

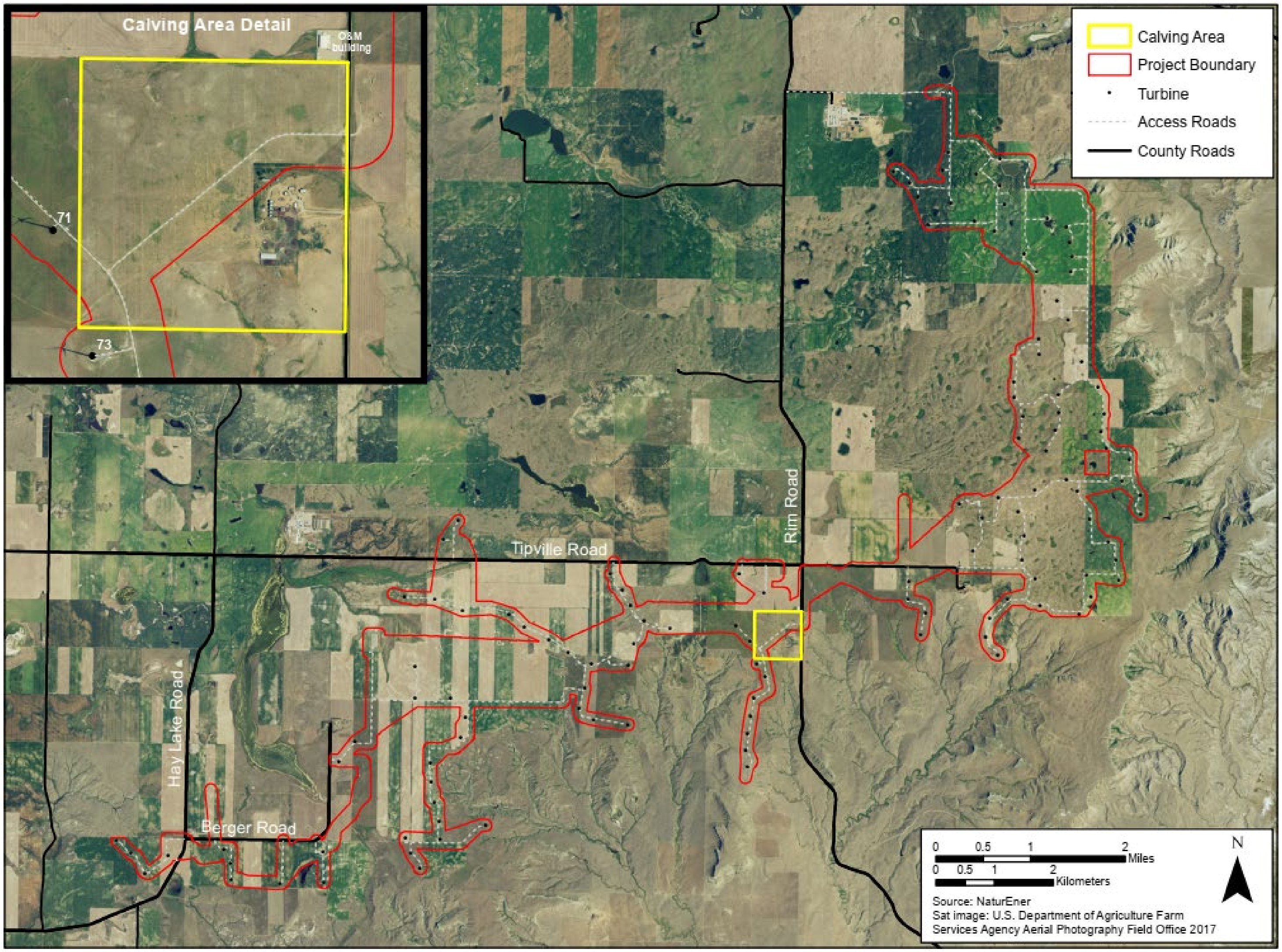
Both bald and golden eagles are occasionally known to scavenge livestock afterbirth. Both eagle species can depredate calves, but most cases involve golden eagles instead of bald eagles (Phillips and Blom 1988). Most complaints of livestock depredation by eagles focuses on lambs and goats versus calves (Avery and Cummings 2004).

One calving area exists within the Project boundary. It is located just south of the O&M building, bordering Rim Road. It is approximately 159 acres in size and closest to turbines RR071 and RR073 (Figure 10). NaturEner has and will continue to monitor conditions during calving operations, in order to determine if calving afterbirth is attracting eagles, and if so, coordinate with landowners for the removal of afterbirth or carrion. Since construction activities began, Project biologists have not observed any eagles targeting afterbirth within the calving area.

Carrion

The use of carrion by both bald and golden eagles is well known (McGahan 1968; BLM 1986). Both eagle species are known to scavenge road-killed cattle, deer, and other wild ungulates. They can also feed on animals that may die as a result of hunting injuries or natural causes, or discarded offal (gut) piles left by hunters. Eagles are often seen on roadsides in the winter feeding on carrion, but recent studies indicate that they also scavenge during the breeding season (Sanchez et al. 2010). Beginning in 2013, all identified carcasses of mid-sized to large animals (wild game and livestock) have been and will continue to be removed when discovered within the Project boundary. If a carcass

Figure 10. Calving Area Location



is located outside of the Project, experience and professional judgement is used to determine if the carcass increases risk to eagles and warrants removal.

5.6 Post-Construction Eagle Mortality Monitoring

2013-2016 Post-Construction Mortality Monitoring Surveys

Following consultation with the USFWS Montana Ecological Services Field Office (ESFO) in Helena, Montana, avian and bat post-construction mortality monitoring (PCM) commenced at the Project in February 2013. The primary objective of the PCM study was to develop an estimate of fatalities attributable to the Project during the first 3 years of operation. For the purposes of supporting this ECP and the EITP process, this section provides only the results for eagle and other raptor fatalities, and likewise the results for only large bird carcasses that were used in searcher efficiency and carcass persistence trials. The PCM study consisted of three main elements:

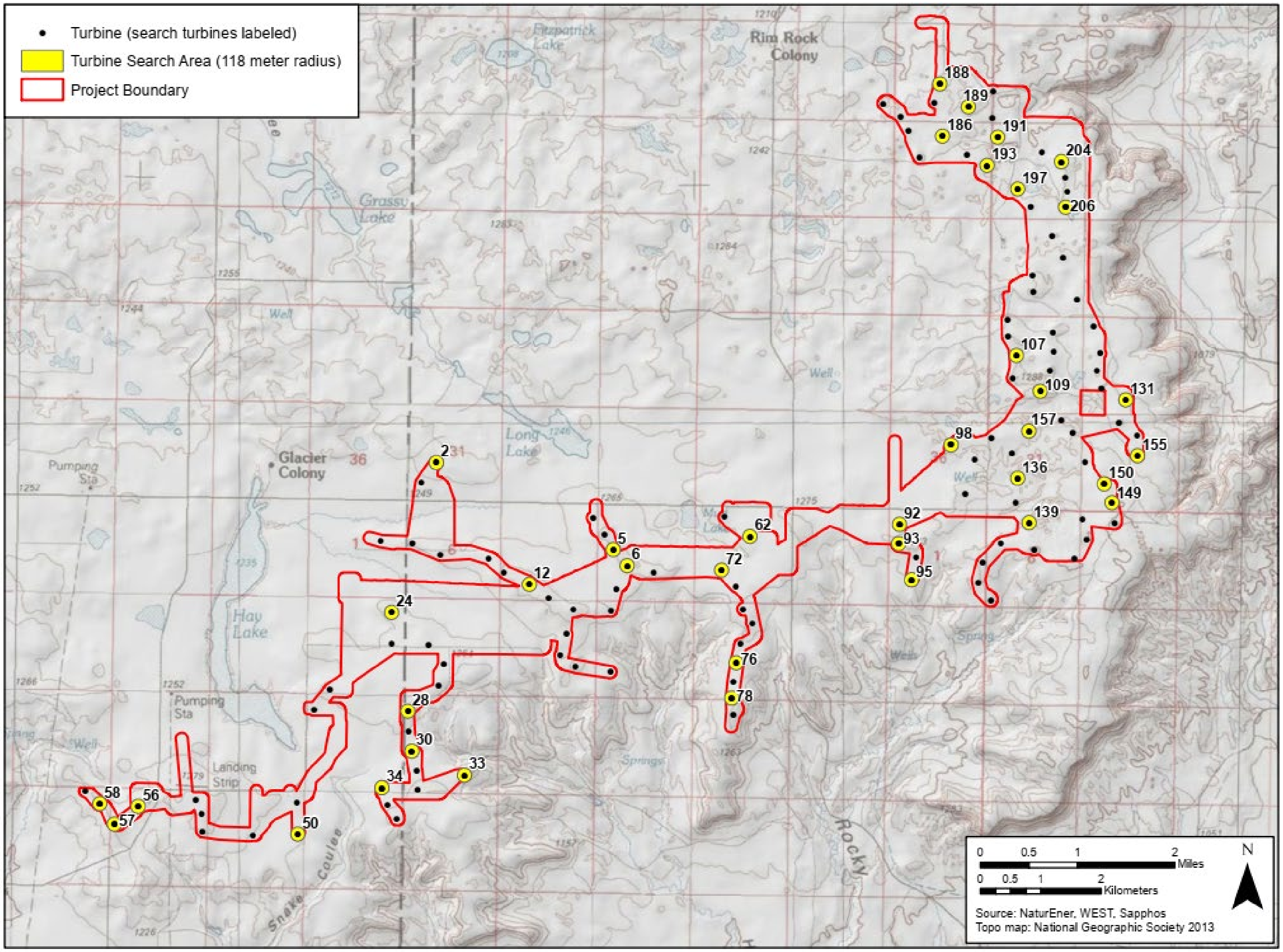
1) Standardized turbine searches of 30 percent of the Project turbines;
2) Searcher efficiency trials to assess observer efficiency in finding carcasses; and
3) Carcass persistence trials to estimate the length of time that test carcasses persist and are available for possible detection.

Turbine searches and bias trials were conducted during all 3 years using survey methods and protocols according to USFWS' Land-Based Wind Energy Guidelines (USFWS 2012) and ECPG (USFWS 2013), and based on consultation with USFWS. Turbine searches were conducted at the same set of 38 turbines each study-year (Figure 11). Descriptive methods and protocols are provided in the Rim Rock Wind Energy Project Post-Construction Bird Mortality Monitoring Report 2013-2016 (Years 1, 2, and 3) (2013-2016 Rim Rock PCM Report) (Appendix D). A general overview summary of the post-construction turbine searches is provided in Table 12.

Table 12. Summary of Post-Construction Turbine Searches.

	Year 1	Year 2	Year 3
Start and End Dates	02/07/2013 - 01/27/2014	03/01/2014 - 02/28/2015	03/01/2015 - 02/29/2016
Date of Clearing Search	02/07/2013 - 02/25/2013	N/A	N/A
Number of Turbines Searched	38	38	38
Search Interval	2 weeks	2 weeks	2 weeks
Search Plot Type (Square, Circle)	Circle	Circle	Circle
Search Plot Dimension	118-meter radius	118-meter radius	118-meter radius
Transect Spacing	6-10 meters	6-10 meters	6-10 meters
Turbine Pad Dimensions (if doing pad scans)	N/A	N/A	N/A

Figure 11. Post Construction Mortality Monitoring Survey Locations



From February 7, 2013 to February 29, 2016, a total of six raptor fatalities (three identified during scheduled turbine searches and three recorded incidentally within the Project boundary) were documented. A total of five different species were among the raptor fatalities recorded on the Project. In addition, no bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) fatalities were identified in search plots or incidentally in 3 study years of PCM surveys. No raptor species listed as threatened, endangered, or candidate under the federal Endangered Species Act were identified as fatalities.

All data from the 3 years of PCM surveys were submitted to USFWS in December 2019, utilizing the USFWS' eagle use data reporting spreadsheet. Detailed information regarding turbine searches, bias trials, survey seasons, survey locations, and raptor and eagle fatalities is provided in the 2013-2016 Rim Rock PCM Report (Appendix D).

If an EITP is issued for the Project, additional PCM surveys (compliance monitoring) will be conducted in association with the conditions of the permit. Eagle mortality compliance monitoring methodologies and schedules will be developed in coordination with USFWS.

2019 Incidental Golden Eagle Fatality

One eagle fatality has been discovered on the Project since operations commenced in December 2012. In May 2019, two NaturEner O&M Technicians were completing NaturEner's monthly Spill Prevention, Control, and Countermeasure (SPCC) Plan inspections and discovered a large bird carcass, presumed to be a golden eagle, in the vicinity of a turbine. Following the confirmation of a golden eagle fatality within the Project boundary, NaturEner followed the USFWS' protocol for notifying USFWS of an eagle take within 24 hours of discovery and not handling or moving the carcass.

At the time the golden eagle fatality was discovered, NaturEner was actively involved with USFWS in the permitting process to obtain a 30-year EITP. Additionally, NaturEner's voluntary biomonitoring and turbine curtailment program, initiated in late 2013, was ongoing. Since the fatality discovery, NaturEner has continued to implement its biomonitoring and curtailment program. (A detailed description of the biomonitoring and curtailment program is provided in Section 6 of this ECP.)

Eagle Carcass Discovery Summary:

1. Date: May 13, 2019
2. Species: Golden eagle (*Aquila chrysaetos*)
3. Fatality confirmed
4. Carcass discovered incidentally (during O&M SPCC monthly inspections)

Discussion of Eagle Fatality Potential Cause

With the desire to avoid additional eagle fatalities at the Project, NaturEner attempted to identify potential causes of or contributing risk factors to the 2019 eagle take, which could then possibly be mitigated by implementing appropriate conservation measure(s). NaturEner reviewed weather and eagle flight path data for the week prior to the eagle fatality event. No inclement or extreme weather conditions occurred around the time of the fatality, which suggests that weather did not contribute to the eagle/turbine collision. Additionally, flight path data from the biomonitoring and curtailment program indicated that the local golden eagle pair occupying the territory were not concentrating their flight patterns in the vicinity of the turbine where the fatality occurred.

NaturEner also investigated the potential presence of a concentrated prey resource in the vicinity of the turbine where the fatality occurred. While there was evidence of some ground squirrel burrows/activity, the quantity of burrows did not suggest a large colony was present or that an abundance of prey was concentrated in the area to attract golden eagles. Furthermore, a review of the flight path data throughout the previous years did not reveal any documentation of golden eagles targeting prey in the vicinity of the turbine where the fatality occurred.

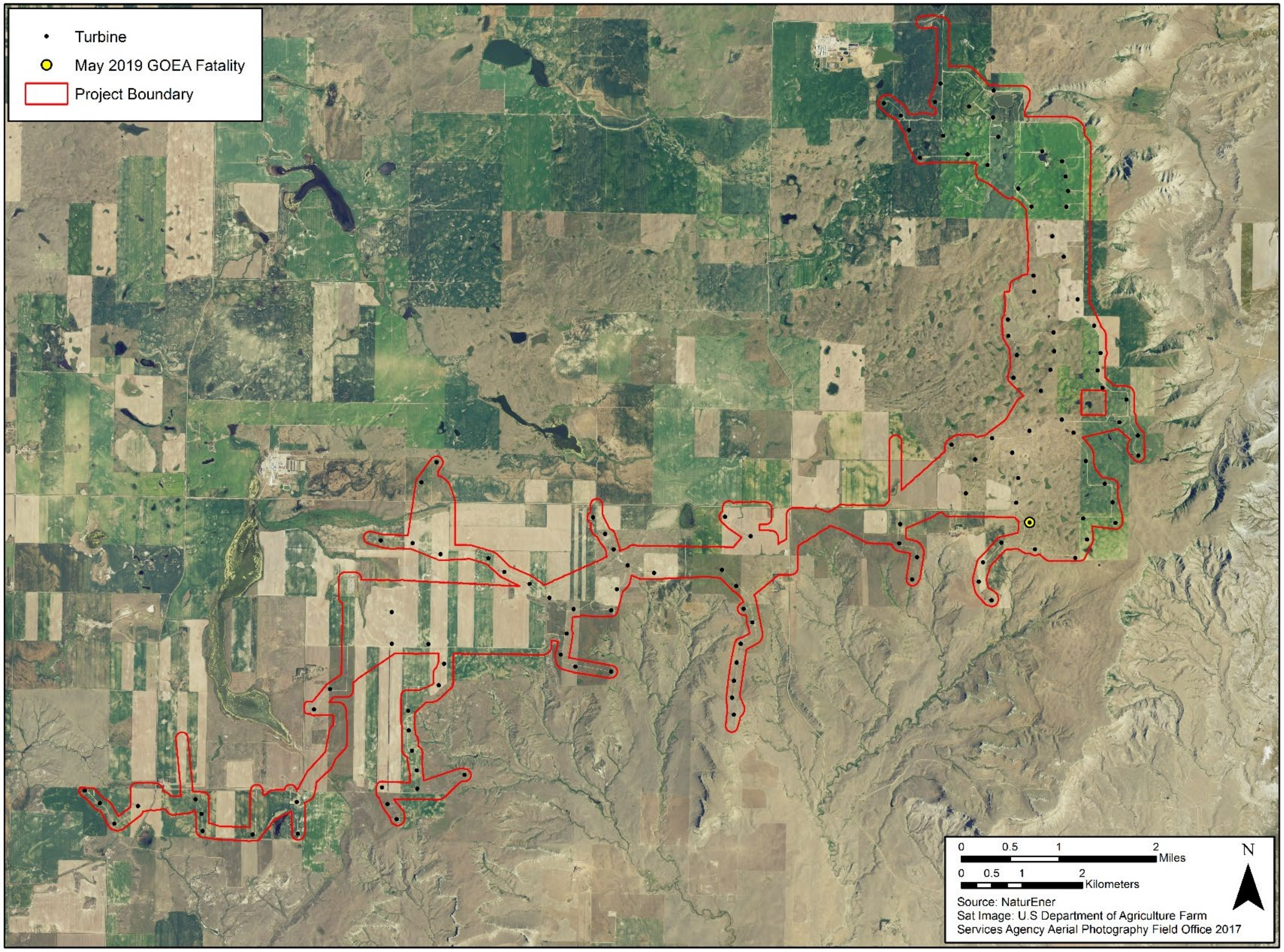
Two historical golden eagle nests were in proximity to the turbine where the fatality occurred, as described in Section 5.3 of this ECP. However, the same is true of other eagle nests (historical and active) located in the cliffs of the Kevin Rim. Because this was the first documented eagle fatality at the Project since COD in 2012, and each of the six golden eagle territories have been occupied consistently since construction of the Project, there is no conclusive evidence that nest proximity to the turbine contributed to the fatality. Further, although the nearest territory was occupied by an eagle pair, there was no evidence of an occupied nest in 2019 in this territory during two aerial nest surveys in March and April (Appendix B). In addition, no fledglings or juveniles were regularly observed by NaturEner biologists in the following months (July through September) in this area, further confirming the absence of nesting in the territory.

NaturEner also attempted to determine if the eagle fatality was that of a local or a migrant. Results from the necropsy indicated that the deceased eagle was an adult. Because of the year-round data collection efforts by NaturEner biologists implementing informed curtailments and recording eagle activity (see Section 6.0), the biologists know that the eagle pair occupying the nearest territory were both adults; these adults were continually observed in their typical flight patterns following the eagle fatality. Furthermore, in the months following the eagle take, NaturEner biologists successfully observed all six local golden eagle pairs in the vicinity of the Project. While these observations may suggest that the eagle fatality was that of a migrant eagle, this conclusion is only speculative because none of the local golden eagles are fitted with satellite transmitters or wing tags. And if the fatality was a local eagle, it is also possible that a new eagle quickly replaced the individual. In addition, while the main spring eagle migration period had concluded by the time of the fatality, it is not uncommon for late migrants or transient eagles to pass through the Project vicinity during the month of May.

Following the eagle fatality, NaturEner biologists increased the typical monitoring time at the nearest observation station in an attempt to identify any conditions or eagle patterns to suggest a cause of or contributing risk factors to the fatality event. However, there were no conclusive indications that the fatality was a local eagle versus a migrant, or that it was a result of weather, concentrated prey, nest proximity, or flight path patterns or trends. NaturEner concluded that the most effective conservation measure moving forward would be the continued implementation of the existing biomonitoring and informed curtailment program (see Section 6.0), with increased focus on the area of the fatality.

No additional eagle fatalities have been identified at the Project to date. A map showing the location of the incidental golden eagle fatality is provided in Figure 12.

Figure 12. Incidental Golden Eagle Fatality Location



6.0 AVOIDANCE AND MINIMIZATION MEASURES

Avoidance and minimization discussions between NaturEner and USFWS (Region 6 Migratory Bird Management Office and Helena, Montana ESFO) began prior to the commencement of Project construction activities, resulting in the development and implementation of several avoidance and minimization measures (AMMs). All of the AMM recommendations provided by USFWS were adopted at the Project, with the exception of the targeted setback distance from historical non-eagle raptor nest locations for 10 of the Project turbines (detailed below). The following list describes the AMMs that have been and/or continue to be implemented at the Project and identifies when they occurred (i.e., pre- or post-construction).

- NaturEner had several meetings with agencies and stakeholders early in the development process. These stakeholder and agency discussions served as a screening process for eagle issues at the Project to help identify appropriate site-specific pre-construction studies as well as to gather feedback on potential infrastructure siting decisions and nesting setback recommendations. Coordination was initiated in February of 2009 and agencies contacted included MFWP, BLM, USFWS, and Montana Audubon. (pre-construction)

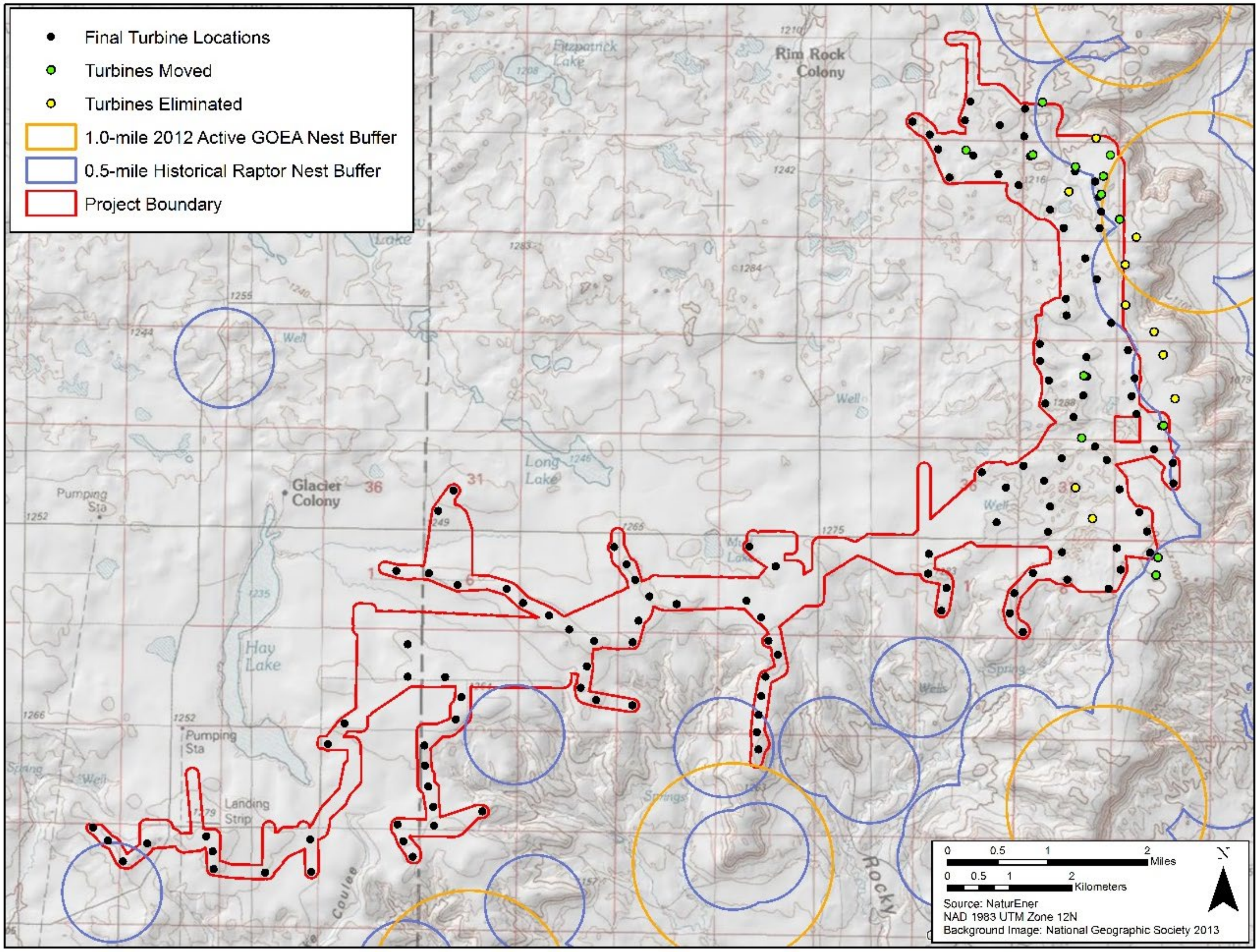
- NaturEner removed proposed turbine sites from the Project boundary located closest to Hay Lake. With the exception of one turbine location, turbines were re-sited a minimum of 0.5 mile from the edge of Hay Lake. (pre-construction)

- NaturEner considered proximity to both active and historical golden eagle nests in siting decisions. NaturEner consequently eliminated two turbines and moved one turbine in order to achieve a minimum setback distance of 1.0 mile from each 2012 occupied golden eagle nest within the Project vicinity (Figure 13). (pre-construction)

- Prior to finalization of the Project design and following consultation with USFWS, NaturEner modified the turbine layout in order to achieve a 0.25-mile setback distance from historical raptor and eagle nests. Upon further communications with representatives from Montana Audubon and USFWS, and after the Project design and financing were completed, NaturEner eliminated an additional five turbines and moved nine other turbines to achieve a 0.5-mile setback from historical raptor and eagle nests (Figure 13). Following these turbine layout modifications with the goal of achieving a 0.5-mile setback from the nests, final design included 10 turbines that remained within 0.5 mile of historical non-eagle raptor nests. (pre-construction)

- The Project was designed to incorporate an underground electrical collection system between turbines and the Project's substations. The implementation of an underground electrical collection system reduced potential electrocution and

Figure 13. Turbine Layout Modifications for Eagle and Raptor Nest Setbacks



collision risk to eagles from overhead above-ground collector system lines, as well as reduced perching opportunities. Reducing eagle perching locations will potentially reduce the risk of turbine collisions. (pre-construction)

- NaturEner implemented feathering of turbine blades below the minimum turbine blade cut-in speed of 3.5 meters per second to prevent “free-wheeling,” which could potentially create a collision hazard during periods of low wind speeds. (post-construction)

- Three non-operational MET towers were dismantled and removed in February 2016 in order to remove potential sources of eagle collision. (post-construction)

- Transmission lines, poles, and cabling of the approximately 6.85 miles of overhead gen-tie line within the Project boundary, and guy wires on all new MET towers, incorporated APLIC guidelines for conductor spacing and strike diverters during both design and installation to minimize potential eagle electrocution and impacts. (construction, and post-construction)

- All Project turbine towers are tubular rather than latticework, with no external ladders or platforms, thereby avoiding the creation of new perching locations for eagles, thus reducing their potential risk for collision. (post-construction)

- In late 2013, a voluntary biomonitoring and turbine curtailment program was developed and implemented at the Project by NaturEner and is planned to be implemented throughout the duration of the eagle incidental take permitting process and the life of the Project. (post-construction) A detailed description of the program follows.

Biomonitoring and Curtailment Program

In late 2013, NaturEner voluntarily initiated a biomonitoring program in order to gain additional information about post-construction eagle activity within and around the Rim Rock Project, and to avoid the potential risk of eagle/turbine collisions. Informed (“reactive”) turbine curtailments (both individual turbines and established turbine zones) were implemented by calls from biologists in the field via cell phone to system operators in the NaturEner Operations Center, who immediately initiated curtailments when called. In 2014, four permanent elevated observation stations were constructed and installed within the Project boundary which enabled all turbines to be observed simultaneously (i.e., there was comprehensive Project visual coverage from the four stations). By September 2014, biomonitoring computer tablets with software that permitted the biomonitors to directly curtail turbine operation by the press of a button, and included data collection, reporting, and SCADA interface features, were integrated into the evolving biomonitoring program. Biomonitoring and turbine curtailment protocols were developed and continuously refined based on data collected. Once the biomonitors had the tools to directly curtail the turbines from the tablets in the field, instantly upon observation of eagle activity, the time required to implement a curtailment after observation of eagle activity was typically reduced from an average of 45 seconds using cell phones, to 20-25 seconds using the tablets. When biomonitors initiate the stop command button on their computer tablets in the field, it takes approximately 15 seconds for the blades to complete feathering/pitching, and another 5-10 seconds for the blades to fully stop spinning (depending on wind speed).

Because the level of eagle use within and in the vicinity of the Project was not yet fully understood in 2014, an aggressive curtailment regime was implemented. A conservative informed curtailment protocol was adopted in 2014 because biologists were not yet familiar with the behavior, flight patterns, or tendencies of the eagles being observed in the area. In fact, initially NaturEner implemented a large number of “proactive” turbine curtailments in two different capacities. First, a “Daily Strategy” was created whereby an average of seven turbines were curtailed daily from sunrise to sunset; these turbines were typically assigned on a weekly basis and were based on their proximity to recent, current, or anticipated eagle activity and flight patterns. Second, a “Strategy C” proactive curtailment was used which consisted of an additional six or seven turbines around each of the permanent biomonitoring stations. Twenty-five to 27 Strategy C turbines were proactively curtailed whenever biomonitors were unable to staff the observation stations (primarily due to poor visibility caused by fog or heavy snow, or safety stand-downs caused by lightning or ice on turbine blades).

Throughout the biomonitoring program in 2015, NaturEner biologists improved efficiencies with biomonitoring/curtailment processes after acquiring additional knowledge regarding eagle use/activity within and in the vicinity of the Project. Changes in the biomonitoring program were supported by the data from ongoing PCM efforts that had commenced in 2013 at the Project.

The biomonitoring program in 2016 remained similar to that of 2015; however, additional data-driven modifications and improvements were implemented. Based on eagle activity observed during a 15 to 18-hour day (depending on the season), it was determined that eagle activity was so low (in fact, mostly non-existent) that biomonitoring was not necessary before sunrise or after sunset. With the elimination of biomonitoring during the twilight time periods, two separate daily biomonitoring shifts were reduced to one long shift (sunrise to sunset) which permitted the biomonitoring staff of 24 individuals at its peak to be reduced to approximately 12 people. Biomonitors’ efficiencies for implementing informed curtailments continued to improve, and new turbine zones and subset zones were created to more accurately curtail specific groups of turbines based on spatial and temporal eagle activity observed. In late 2016, as a result of eagle observations and use of the improved curtailment tools from the previous 3 years, biomonitors determined they could effectively curtail turbines when eagles were observed, and that the daily proactive curtailment of turbines could safely be eliminated.

After 3 years (2014-2016) of implementing site-specific biomonitoring and curtailment protocols, and 2 years (2015 and 2016) of comprehensive eagle use data collection and analyses at the Project, NaturEner determined that a further reduced biomonitoring schedule was warranted. In February 2017, NaturEner's Rim Rock biomonitoring schedule changed from a sunrise-to-sunset, four-station monitoring program to an 8.5-hour per day, reduced-station program. During low eagle activity periods of the year in winter, typically one to two stations were staffed; two to three stations during seasonal periods of moderate eagle activity; and three to four stations during spring and fall eagle migration when the highest levels of eagle activity occurred. The structure of this reduced program was determined based on the analysis of annual/seasonal/daily/hourly eagle activity at the Project, and historical informed curtailment frequency and distribution.

Biomonitors continued to collect and analyze eagle use data throughout 2017, and historical eagle activity data were utilized to determine station selection (when four stations were not staffed) and optimal daily biomonitoring durations throughout the year and the different seasons. After years of observations and extensive research that indicated a relatively low likelihood of eagle activity during the types of events which triggered the use of the proactive Strategy C curtailments during periods of low visibility or when safety concerns prevented biomonitors from going to the observation stations, protocols mandating the Strategy C curtailments automatically were revised, after which proactive curtailments were very rarely initiated. The ongoing research, including eagle use data and biomonitors' observations, indicated that implementing the extensive proactive curtailments during the previous 3 years was largely a precautionary conservation measure and was not necessary to effectively manage risk to eagles on the Project.

A more robust turbine inspection schedule was also implemented in 2017, associated with NaturEner's SPCC Plan. The new schedule required O&M Technicians to inspect all 126 turbines and pad-mount transformers on site for oil leaks once per month. While not quite as thorough as a methodical standardized PCM study, O&M Technicians were instructed to scan turbine pads and the surrounding landscape for eagle (and other avian and bat) carcasses coincident with the SPCC inspections. Consequently, NaturEner biologists and Management were confident that potential adverse ramifications (i.e., eagle fatalities) of the reduced biomonitoring schedule and reduced proactive curtailments could be identified via the monthly visits to all of the Project's turbines. As O&M Technicians found no evidence of fatalities during monthly turbine inspections over the following 9 months, NaturEner biologists and Management considered this sufficient evidence that the 2017 reduced biomonitoring program did not pose an increased fatality risk to eagles.

Based on the successful implementation of the 2017 reduced biomonitoring program at the Project, and the continued absence of any known eagle fatalities since Project operations commenced in late 2012, after 5 years of operations, NaturEner Management concluded it was prudent to optimize the biomonitoring program further. It was decided that two biologists would typically biomonitor during the lower eagle activity periods of the year, and an additional one or two temporarily contracted biologists would be hired to increase biomonitoring coverage during the spring and fall eagle migrations. In March 2018, the biomonitoring schedule was modified from 8.5-hours per day to 6-8 hours per day, depending on eagle activity. During low eagle activity periods of the year, two observation stations were typically staffed, and during higher activity periods (primarily spring and fall migration), three to four stations were staffed. Additionally, the year-round biomonitoring schedule of 7 days per week was modified to be more flexible depending on the season and corresponding level of eagle activity. Biomonitors continued to collect and analyze eagle use data, and historical eagle activity data were utilized for station selection and identification of optimal biomonitoring time periods. While informed curtailments were again implemented throughout the year, proactive curtailments were largely eliminated in 2018. Monthly SPCC inspections, which facilitated the opportunity to scan areas around turbines for eagle carcasses, continued throughout 2018 at 100 percent of the turbines.

After an internal review and assessment of the modified biomonitoring program that was implemented in 2018, NaturEner concluded that the 2019 biomonitoring program would remain unchanged. Following the incidental golden eagle fatality at the Project in May 2019, and subsequent consultation with USFWS, it was concluded that the biomonitoring program would continue without further significant modifications in 2020, 2021, and 2022 while NaturEner was engaged in the eagle take permitting process.

7.0 EAGLE CONSERVATION MEASURES

Numerous eagle conservation measures have been and will continue to be implemented at the Project. These conservation measures were developed based on early consultation with USFWS and the various USFWS guidance for the construction and operation of wind energy facilities. The following list describes the eagle conservation measures that have been and/or continue to be implemented at the Project and identifies their associated timing (i.e., pre-construction, construction, or post-construction).

- NaturEner used existing roads and transmission corridors, where feasible, to develop site plans that minimize habitat disturbance. (pre-construction and construction)

- NaturEner minimized the siting of turbines in native prairie where possible, to minimize disturbance of this important habitat type. (pre-construction)

- Prior to construction, sensitive habitats (i.e., wetlands and sharp-tailed grouse lek sites) located near construction activity were flagged, and construction personnel were instructed to stay out of such designated areas. (pre-construction and construction)

- NaturEner has and will continue to train construction and operations personnel regarding eagles, including compliance with BGEPA and MBTA, the consequences of non-compliance with these acts, familiarity with existing eagle conservation measures, identification of eagles and their habitats, and to stay away from any areas outside of the Project with eagle nests. (pre-construction, construction, and post-construction)

- NaturEner posted prominent speed limit signs (20 mph) throughout the Project during construction to minimize wildlife and avian fatalities caused by vehicle collisions. Reduced speed limits have remained in place during operations and will continue to be monitored and enforced. (pre-construction, construction, post-construction)

- Project personnel have been and will continue to be trained on the proper procedures for reporting any eagle fatalities. (construction and post-construction)

- A qualified wildlife biologist monitored construction activities to ensure that disturbance was minimized to the greatest extent practicable. (construction)

- Parts and equipment were not and will not be stored in the vicinity of wind turbines in the long term, where they could become potential cover for eagle prey species. (construction and post-construction)

- Turbine foundations were designed and constructed to prevent under-burrowing by small mammals (eagle prey) through the placement of gravel to a distance of at least 5 feet around the turbine foundation. (pre-construction, construction, and post-construction)

- Cutting into hill slopes was minimized during Project construction to achieve smooth, rounded terrain, rather than sudden berms or cuts that could have attracted burrowing small mammals, i.e., eagle prey species. (construction)

- At the completion of all construction activities, road edges were prepared by clearing excess gravel and soil from the shoulder, feathering road edges for runoff control, and replacing topsoil to the same grade as the roadway or adjacent drainage channels. In areas where topography prevented this measure, the road edges were smoothed and compacted. These measures help to minimize opportunities for burrowing mammals to become established, and thereby prevent creation of a prey base that could attract foraging eagles. (construction and post-construction)

- Since 2013, all identified carcasses of mid-sized to large animals (wild game and livestock) have been and will continue to be removed when discovered within the Project boundary. If a carcass is located outside of the Project, experience and professional judgement is used to determine if the carcass increases risk to eagles and warrants removal. (construction and post-construction)

- NaturEner has and will continue to monitor conditions during calving operations, in order to determine if calving is attracting eagles, and if so, coordinate with landowners for the removal of afterbirth or carrion. (construction and post-construction)

- PCM was conducted at the Project for 3 survey years between 2013 and early 2016. Searcher efficiency and carcass persistence bias trials were also conducted during all 3 years of PCM monitoring. Incidental fatality discoveries outside of the PCM search plots but within the Project boundary were also documented during the 3 survey years. Additionally, incidental fatalities discovered on the Project have been documented during the years following completion of the PCM survey effort in 2016. (post-construction)

- If an EITP is issued for the Project, additional PCM surveys (compliance monitoring) will be conducted in association with the conditions of the permit. Eagle mortality compliance monitoring methodologies and schedules will be developed in coordination with USFWS. (post-construction)

- Two different avian radar systems were deployed at the Project on an experimental basis, which were evaluated and subsequently determined to be ineffective for early eagle detection at the Project site. (post-construction)

  An informal ground-truthing study of flying raptors was conducted from May to August 2014 to evaluate the performance of the Accipiter Radar System. The SR Hawk Radar System was then evaluated from August to October 2015. Detection rates for golden eagles and other large raptors failed to meet FAA performance requirements for both systems. Landscape features, precipitation, and other unknown factors generated large areas of clutter on the radar displays, which significantly reduced radar coverage and target detectability. Other shortcomings of these radar systems included 1) inability to track targets during precipitation events; 2) inability to differentiate between eagles and other similar-sized raptors; 3) inflated measures of raptor activity due to multiple track ID's generated for the same target; 4) failure of the dish antenna to detect avian targets; and 5) frequent system failures during harsh winter conditions.

- An avian detection/deterrent system was deployed and tested at two locations within the Project from October 2014 through March 2016. The system was evaluated for its efficacy to detect eagles from cameras affixed to turbines and issue an auditory alarm to dissuade eagles from flying into the Project area. This system was determined to be ineffective at the Project site. (post-construction)

  The DT Bird Detection and Deterrent System was evaluated as an autonomous wildlife deterrent system designed to reduce fatalities resulting from avian-turbine collisions at wind facilities. The system had capabilities to detect, warn, and deter large avian targets from entering hazardous areas around wind turbines. It consisted of four cameras and two pairs of speakers mounted on the exterior of the turbine monopole. There were a large number of false positives that sounded an alarm by the system; these included airplanes flying over the Project, snow, fast-moving clouds, and in some cases the turbine blades spinning at a particular speed.

- NaturEner employs full-time, on-site qualified biologists to ensure ongoing compliance with the Project's eagle avoidance and minimization measures and conservation measures. Biologists were employed full-time beginning in late 2013 to help implement an environmental and conservation program that included responsibilities such as 1) study the efficacy of eagle detection and deterrent radar and camera systems, 2) implement post-construction monitoring surveys, 3) monitor the area for eagles from permanent observation stations within the Project and implement turbine curtailments, 4) collect information and data to improve the efficiency and effectiveness of monitoring activities from an eagle conservation and Project operational perspective, and 5) implement the carcass removal program. The number of employed biologists has varied between three and 24 during the 7 years since the Project's COD in December 2012. (construction and post-construction)

- Following NaturEner's investigation of potential causes of the eagle take in 2019, there were no conclusive indications that the fatality was a result of weather, concentrated prey, nest proximity, local eagle versus migrant, or eagle flight path patterns or trends. As a result, NaturEner concluded that the most effective conservation measure moving forward would be the continued implementation of the biomonitoring and informed curtailment program, with increased focus on the area of the fatality. (post-construction)

- At the end of the Project's operational life, an approved Decommissioning Plan will be implemented whereby all above-surface infrastructure, roads, and equipment will be removed and all disturbed land will be restored to its original condition. (post-construction)

8.0 COMPENSATORY MITIGATION

Even with the implementation of the avoidance, minimization, and conservation measures at the Project, some unavoidable eagle fatalities may still occur. Compensatory mitigation will be necessary to ensure that the standard of no net loss to the population is achieved whenever golden eagles are taken. At the time of preparation of this ECP, the only compensatory mitigation method for which USFWS has developed a Resource Equivalency Analysis (REA) to establish mitigation credits is power pole retrofits. NaturEner has the option of either working independently with a utility company to develop and implement a Power Pole Retrofit Plan (Retrofit Plan), or using a USFWS-endorsed in-lieu fee mitigation bank, which completes the power pole retrofits and assumes all responsibilities for pole retrofit effectiveness monitoring.

It is anticipated that NaturEner will work independently with a utility to develop and implement a Retrofit Plan for the Rim Rock Project. The Retrofit Plan will include a statement providing a clear commitment to implement the power pole retrofits and complete the necessary effectiveness monitoring of the pole retrofits. NaturEner will retrofit, to meet or exceed current APLIC guidance (APLIC 2006), enough electric utility poles to provide full compensatory mitigation for all golden eagle take that would be authorized by USFWS under an EITP, if a permit is issued for the Project.

All power pole retrofits will occur within the same USFWS Eagle Management Unit (EMU) for golden eagles in which the Project occurs. The required mitigation ratio is 1.2 to 1 per the USFWS 2016 Eagle Rule. The power poles that are retrofitted to meet the required compensatory mitigation to offset the golden eagle take authorized in an EITP must be in addition to other power pole retrofits that the company receiving the EITP (if issued) was already completing under an existing Retrofit Plan, per the 50 CFR § 22.26 permit regulations which require that the compensatory mitigation be additional and improve upon the baseline conditions of the affected eagle species in a manner that is demonstrably new and would not have occurred without the compensatory mitigation. USFWS will use information provided by NaturEner, and USFWS' REA tool, to calculate the number of power pole retrofits required under an EITP to offset the authorized golden eagle take in the permit. The Retrofit Plan will also include a commitment to monitor the retrofits that are completed to both ensure they were implemented and that they remain effective (implementation and effectiveness monitoring).

Following USFWS' determination of predicted eagle take estimates and implementation of other measures related to the incidental eagle take permitting process, NaturEner will either utilize an in-lieu fee program to implement the retrofits or will work independently with a utility to develop and implement a Retrofit Plan that meets the compensatory mitigation requirements and provides all necessary data needed as inputs to the REA spreadsheet (Appendix G of USFWS 2013). If other compensatory mitigation options, including but not limited to carcass removal, lead abatement, or eagle habitat enhancement/protection, are approved in the future as an accepted form of compensatory mitigation by USFWS, NaturEner will have the option to implement a different form of compensatory mitigation.

9.0 ADAPTIVE MANAGEMENT

Adaptive management focuses on actions or conservation measures that will be implemented by the permittee in the event various eagle take thresholds are reached after an EITP is issued by USFWS. As previously mentioned, eagle data analyses and predicted eagle take estimates are in the process of being completed for the Project.

Following final determination of eagle take predictions, NaturEner and USFWS Region 6 will continue discussions regarding the appropriate adaptive management measures to be implemented for the Project. These measures are typically provided in an adaptive management table, which would be included as a condition of issuing an EITP for the Project. Table 13 provides a summary of potential conservation measures, using a step-wise approach, to be implemented at the Project if an eagle fatality threshold is reached.

Table 13. Eagle Fatality Adaptive Management Table.

Step	Conservation Measures	Threshold or Trigger
Step I	Assess eagle fatalities to determine if cause or contributing risk factors can be determined (e.g., nest proximity, weather, presence of prey/carrion) and if management response is warranted and feasible. Consult with USFWS about findings from assessment.	Any eagle is taken
Step II	Implement observational/behavioral review to further evaluate risk and inform potential conservation measures. Consult with USFWS about: 1) findings from evaluation; and 2) development and implementation of conservation measures, if warranted.	To be determined based on authorized take levels. Take is within the authorized limit. Trigger will be determined based on a rate of take that could exceed the authorized take over a 5-year period if take continues at the rate identified.
Step III	If threshold is exceeded, NaturEner will consult with USFWS regarding information gained with respect to eagle take experienced to date, in an attempt to identify causal factors and conservation measures to be implemented as soon as feasible in order to avoid and minimize further take. Additionally, NaturEner's overall take avoidance and minimization program for the subsequent 5-year permit review period would be re-evaluated, based on actual results as compared with permitted levels of take, and this step-wise approach will start over with Step I. Examples of conservation measures that may be implemented in consultation with USFWS include, but are not limited to: • Modify Rim Rock's ongoing biomonitoring and informed curtailment program (e.g., staffing levels or coverage periods) based on data associated with areas or time periods of highest collision risk. • Other measures agreed upon in consultation with USFWS	To be determined based on authorized take levels. Take is within the authorized limit. An additional take would meet the authorized amount under the permit.

10.0 OTHER USFWS PERMITS

NaturEner does not intend to apply for any other permits to USFWS, Region 6, Migratory Bird Management Office for Project authorizations. However, if a 30-year EITP is issued for the Project and permit conditions include eagle mortality compliance monitoring requirements, NaturEner will be required to apply for a MBTA 21.27 Special Purpose Utility (SPUT) permit in order to legally collect, possess, and/or utilize migratory bird carcasses during the compliance monitoring effort. It is also expected that NaturEner will be required to apply for a Montana Terrestrial Scientific Collector's Permit with MFWP in order to legally collect, possess, and/or utilize migratory bird carcasses during the compliance monitoring.

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