2009 NorthMet Mine/Forest Service Additional Parcel Northern Goshawk and Owl Survey – Final Report

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2008 NorthMet Mine/Forest Service Additional Parcel Northern Goshawk and Owl Survey

Final Report

AECOM Environment
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Executive Summary

PolyMet Mining, Inc. (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (mine project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Mine Site). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to operate a processing facility using the nearby and refurbished former LTV Steel Mining Company taconite processing facility near Hoyt Lakes, Minnesota, that would produce copper cathode, and separate platinum/palladium group metals sulfide and nickel/cobalt hydroxide concentrates, for off-site shipment and treatment.

The Mine Site would impact about 3,105 acres of habitat used by wildlife, including species of concern to federal and state agencies. These include the northern goshawk and several species of owls. Approximately 2,755 acres within the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,704 acres adjacent to the Mine Site are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring the approximately 6,459 acres they administer on the Mine Site and Additional Parcel to PolyMet in exchange for lands of similar value that have been purchased by PolyMet, or for financial compensation that is approximately equivalent to the value of the lands. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties, including the mineral estate.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, and 2006, and on the Additional Parcel in 2008, and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement for the mine project. However, the Forest Service has requested that a survey for northern goshawks, a federal species of concern and Superior National Forest Management Indicator Species, be conducted for the Additional Parcel to provide information that would be useful in the land exchange appraisal. The Mine Site and Additional Parcel are in a region known to be used by northern goshawks and a northern goshawk territory was found on the Mine Site in 2000.

Calling surveys for northern goshawk were conducted on the Additional Parcel during April 12 to 19, 2009. In addition, calling surveys were conducted for owls on the Additional Parcel to supplement information on wildlife use of the Additional Parcel collected during 2008. One goshawk nest territory with a pair of hawks at the nest was found in the Additional Parcel, and we heard a goshawk call at a second location near the boundary of the Mine Site and Additional Parcel. A nest was also found at the second location, but was not occupied, and it may have been an old or alternate goshawk nest or nest of another raptor or common raven. The calls of at least three northern saw-whet owls were heard, and a great gray owl and two other owls, most likely great-horned owls, were seen during owl surveys.

Information collected during the survey will support land exchange and environmental review and permitting efforts, and help to identify additional data collection requirements.

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1.1. Study Overview

PolyMet Mining, Inc. (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (mine project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Figure 1; Mine Site). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to operate a processing facility at the Cliffs Erie (former LTV) mill near Hoyt Lakes, Minnesota, that would produce copper cathode, and separate platinum/palladium group metals sulfide and nickel/cobalt hydroxide concentrates, for off-site shipment and treatment.

The Mine Site would impact about 3,105 acres of habitat used by wildlife, including species of concern to federal and state agencies. These include the northern goshawk and several species of owls. Approximately 2,755 acres within the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,704 acres adjacent to the Mine Site are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring the approximately 6,459 acres they administer on the Mine Site and Additional Parcel to PolyMet in exchange for lands of similar value that have been purchased by PolyMet, or for financial compensation that is approximately equivalent to the value of the lands. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties, including the mineral estate.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, and 2006, and on the Additional Parcel in 2008, and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement for the mine project. However, the Forest Service has requested that a survey for northern goshawk[1], a federal species of concern and Superior National Forest Management Indicator Species, be conducted for the Additional Parcel to provide information that would be useful in the land exchange appraisal. The Mine Site and Additional Parcel are in a region known to be used by northern goshawks and a northern goshawk territory was found on the Mine Site in 2000.

In addition to goshawk surveys, a survey of for owls was conducted during the study to supplement information collected during 2008 wildlife studies on the Additional Parcel. Owls of interest included the boreal owl (federal species of concern and Superior National Forest Regional Forester Sensitive Species), great gray owl (federal species of concern and Superior National Forest Regional Forester Sensitive Species), and short-eared owl (Minnesota species of concern). Loss of habitat for these species was identified as an important issue by state (Berg 2000) and federal (Vora 2000) agencies during meetings regarding the proposed project.

Several wildlife studies have been conducted in the area. Terrestrial and aquatic ecosystems in the vicinity of the NorthMet Mine Site were studied as part of the Minnesota Environmental Quality Board Regional Copper-Nickel Study (Johnson and Lieberman 1979, Sather et al. 1979) in the late 1970s; this study included the NorthMet Mine Site. In July and August of 1999, Foth and Van Dyke (1999) conducted general surveys for plant and animal species of concern that may be found on the NorthMet Mine Site. The Forest Service prepared an Environmental Assessment (EA) for the Reservoir Analysis Area in 1999 (Forest Service 1999). The analysis area included portions of the proposed NorthMet Mine Site, primarily near Dunka Road. ENSR conducted studies of wildlife and their habitats on the Mine Site during winter 2000 and 2006, and summer 2004, and on the Additional Parcel during summer 2008 (ENSR 2000, 2005, 2006, 2009a). ENSR also conducted surveys of wildlife and their

[1] [1] Common and scientific names for plants and animals given in this report are in Appendix A.

habitats during 2002 to 2008 on lands immediately to the east of the NorthMet Mine Site, for several proposed mine projects (ENSR 2007a, b: 2008a, b, c; 2009b). AECOM Environment (AECOM; formerly ENSR) conducted surveys of wildlife and their habitats during August 2008 on the Additional Parcel.

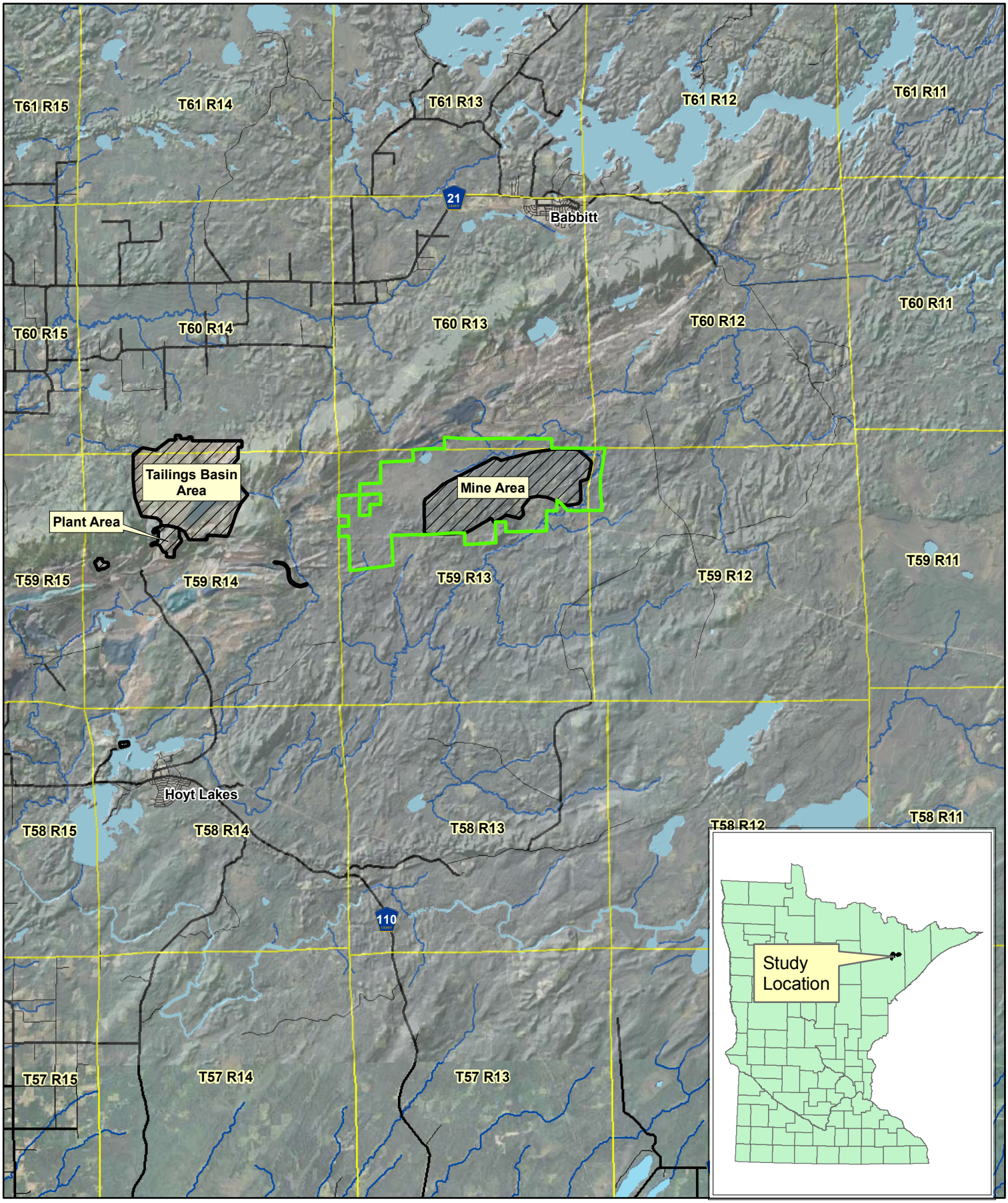
To supplement information gathered earlier, and to provide information needed for the land exchange, AECOM conducted surveys for northern goshawks and owls during April 2009 on the Additional Parcel. The objectives of the study were to:

- Determine northern goshawk and owl use of the study area;
- Identify important habitats used by northern goshawks and owls; and
- Locate northern goshawk and owl nest sites.

Information collected during the surveys will support land exchange and environmental review and permitting efforts, and help to identify additional data collection requirements.

1.2. Acknowledgements

AECOM appreciates the assistance of Kevin Pylka (PolyMet) in setting up the project and coordinating activities with other PolyMet personnel. Susan Catton and Daniel Ryan (Forest Service) provided wildlife and habitat information for the site. Krista Larson and Lisa Joyal (Minnesota Department of Natural Resources; MnDNR) provided information on rare animal species that could be found in the area. Aaron Mielke (Barr Engineering) prepared maps and provided Geographic Information System (GIS) analysis.



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Land owned or to be obtained by PolyMet

PolyMet Project Areas

Townships

N

0 1.5 3 6

Miles

Figure 1

EXCHANGE PARCEL
STUDY LOCATION
PolyMet Mining Corporation
Hoyt Lakes, Minnesota

2.0 STUDY AREA

The Mine Site is 6 miles south of the village of Babbitt, Minnesota. It is 1.5 to 2 miles south of the active Northshore Mining Company open-pit taconite mine and 8.3 miles east of Cliffs Erie's former open-pit taconite mine and processing operations (Figure 1). The Mine Site is connected to the Plant Site by a private railroad and a segment of the private Dunka Road. PolyMet has acquired ownership or the right to use additional lands, trackage, and other railroad assets to secure the access between the Mine Site and the Plant Site. The Mine Site encompasses approximately 3,015 acres in all or portions of Township 59 North, Range 13 West, Sections 1, 2, 3, 9, 10, 11, and 12 in St. Louis County, Minnesota. About 2,755 acres within the Mine Site are administered by the Forest Service. The property is zoned for mining, and PolyMet has a 100 percent leasehold interest in the property. The mineral rights are owned by RGGS Inc., and the majority of the surface is managed by the Forest Service with smaller portions owned by PolyMet, Allete, Cliffs Erie (Cleveland-Cliffs, Inc.) and the State of Minnesota. The Mine Site, which is in a previously logged forest area, is located in the Partridge River drainage, about 3 miles south of Iron Lake and the Laurentian Divide. The Partridge River is in the watershed of the East St. Louis River, which discharges into Lake Superior.

The Additional Parcel is approximately 3,888 acres and is east, west, and north of the Mine Site (Figure 1). The Additional Parcel includes all or portions of Township 59 North, Range 12 West, Section 6; Township 59 North, Range 13 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 12, 17, and 18, and Township 60 North, Range 13 West, Sections 33, 34, 35, and 36. Approximately 3,704 acres are administered by the Forest Service; the remainder are privately owned or administered by the State of Minnesota. Much of the Additional Parcel consists of wetlands and One Hundred Mile Swamp is the dominant feature on the Additional Parcel north of the Mine Site.

3.0 METHODS – WILDLIFE HABITAT ASSESSMENT

The evaluation of northern goshawk and owl use of the Additional Parcel was based on a review of the literature, personal communications with biologists familiar with wildlife and their habitats in the area, natural resource database queries, and from field studies.

3.1. Literature Review and Personal Communications

AECOM reviewed the *Supplemental Site Specific Resource Information, August 1999*, report prepared by Foth and Van Dyke (1999). This report provided information on sensitive plants and animals, cultural resources, and wetlands likely to be found in the study area. AECOM reviewed the Forest Service *Biological Evaluation (BE) for the Reservoir Analysis Area, Laurentian Ranger District, Superior National Forest* and *Environmental Assessment for the Reservoir Analysis Area, Superior National Forest, Laurentian Ranger District* (Forest Service 1999). This evaluation was attached to the District Ranger's initial review of PolyMet's June 2, 1999, Plan of Operation.

AECOM reviewed wildlife assessments conducted between 2000 and 2008 for the NorthMet Mine Project (ENSR 2000, 2005, 2006, 2009a). AECOM reviewed surveys of wildlife and their habitats on other lands near the NorthMet Mine Project in the Mesabi Iron Range, including the Duluth Metals Corporation Dunka Property and Maturi Extension Properties (ENSR 2008a), and Franconia Minerals Corporation Birch Lake, Maturi, and Site 1 Projects (ENSR 2007a, b; 2008b, c; 2009b).

AECOM conducted telephone and in-person interviews with agency staff, (MnDNR regional biologist, U.S. Fish and Wildlife Service regional biologist, Forest Service Superior National Forest biologist, and International Wolf Center wildlife biologist; Appendix B). The information received from these contacts was used to gain information on plants and animals likely to be found in the Additional Parcel and species of interest to state and federal agencies. Survey methods were selected to maximize our ability to characterize use of the site by northern goshawk and owls. A list of contacts, which includes telephone numbers and addresses, is provided in Appendix B.

3.2. Database Queries

A database search request was made to the Minnesota Natural Heritage Program in March 2008. The results of that search showed that one rare wildlife species (wood turtle) has been reported in the area. In addition, one wildlife species (northern goshawk) was identified that has been or is found in the area and is tracked by the Program, but is not given special status by the State of Minnesota.

AECOM obtained a copy of the 2006 Superior National Forest Regional Forester Sensitive Species Conservation Assessments list of species of concern for the Superior National Forest (Appendix C). AECOM reviewed the Superior National Forest Land and Resource Management Plans (LRMP; Forest Service 1986, 2004) for Viability Indicator Species and Management Indicator Species. AECOM also reviewed the MnDNR species of concern list on the MnDNR website (http://www.dnr.state.mn.us/ets/index.html). The northern goshawk, boreal owl, great grey owl, and short-eared owl were identified as species of interest.

3.3. Field Surveys

Field surveys were conducted on the Additional Parcel on April 12 to 19, 2009. Studies were conducted by vehicle and on foot.

3.3.1 General Survey Methodology

Northern goshawk and owl surveys were conducted along transects located on primary (site access roads, drill pad access roads, logging roads) and secondary (skid trails, stream corridors, wetlands, other natural corridors) access routes to maximize the amount of area covered during the survey period. Additional surveys were conducted off of the primary and secondary access routes. Most effort was focused on upland habitat with young mature and mature forest habitat that could be used by nesting and foraging northern goshawks and owls.

In addition, general observations were made of other wildlife, and their sign, during transect surveys. The species and number of animals making the sign, habitat associated with the sign, and general activity of the animal were recorded, where possible. Most observations were of wildlife sightings, and tracks, scat, and foraging sign. The surveys were conducted during day and night to increase the number of species encountered. Recognizable animal tracks observed during surveys were noted. Where feasible, all tracks observed during transect surveys were identified, and this information was used to determine habitat use. Tracks of interest included those of grouse, pine marten, Canada lynx, gray wolf, white-tailed deer, and moose. The track surveys focused on locating fresh tracks in snow, soft soil, or mud, which were new enough that they were clearly identifiable. Generally, these tracks were less than 4 days old. The direction of travel, species and number of animals making the tracks, and habitat use was noted. Techniques used for identifying tracks are given in Rezendes (1992), Halfpenny et al. (1995), and Foresman and Pearson (1998). Recognizable animal calls and visual signs, and evidence of habitat use (foraging sign, bedding sites, etc.), were recorded.

Wildlife habitats used by northern goshawk, owls, and other wildlife were primarily characterized based on whether the area was wetland or upland (based on guidance provided in Cowardin et al. 1979), plant types (forbs/grassland, shrubland, forestland), and percent aerial plant coverage. Areas with >30 percent tree cover were coded as forested. Areas with <30 percent tree cover, but >30 percent shrub cover, were coded as shrubland. Areas with <30 percent shrub cover and <30 percent tree cover were coded as emergent/bog (for wetlands), or disturbed or grassland/forb (for uplands). Forest stands were further characterized based on the percent cover of deciduous and coniferous trees within the stand. Stands with >70 percent cover of deciduous or coniferous trees were coded as forest deciduous or forest coniferous, respectively. Stands with a mixture of coniferous and deciduous trees (30 to 70 percent cover of each tree type) were classified as mixed.

In addition, stands were characterized by predominant tree size. Stands with trees <4 inches dbh were classified as sapling. Sapling trees are generally less than 10 years old (Forest Service 2004). Stands with trees mostly 5 to 11 inches dbh were classified as pole/young mature forest. Pole/young mature stands are usually from 10 to 60 years in age. Stands dominated by trees 12 inches or greater dbh were classified as mature. These stands are generally 60 years or older. This wildlife habitat classification system is similar to that developed by the MnDNR (1993) Natural Heritage Program, in that it separates plant communities into upland and wetland habitat types based on vegetation characteristics, but differs in that it further divides forest communities based on tree size and evaluates grassland/forb and shrub successional stages associated with recently-logged or disturbed forests.

Most wildlife observations were conducted near primary and secondary survey routes, but other sites of interest were also visited. Binoculars were used to locate and identify wildlife and their habitats. The locations of wildlife, their sign, and their habitats used were recorded using Global Positioning System (GPS) and aerial photographs. Time of day and weather conditions were also recorded during surveys.

3.3.2 Species of Concern Surveys

Calling surveys for northern goshawk were conducted during the day, and for owls during the night, at calling stations. A 25-watt amplifier, with a range of up to 1 mile, was used to broadcast the calls. Professionally

recorded northern goshawk and owl calls were played into the amplifier. Visual and auditory observations of all wildlife that responded to calls during these surveys were recorded.

3.3.2.1 Northern Goshawk

Adult goshawk warning calls were broadcast at calling stations during the day. We followed protocol for the broadcast acoustical survey given in the *Northern Goshawk Inventory and Monitoring Guide* (Forest Service 2006) and guidance from biologists familiar with northern goshawk surveys in the Superior National Forest (Catton 2009). A biologist with experience surveying for goshawks faced in a pre-determined direction, broadcast a series of calls for a minimum of 20 seconds, rotated 60 degrees, and played another 20-second series of calls. This call/rotate method was repeated every 60 degrees until the biologist faced the original broadcast direction (after a total of eight series of calls). The biologist listened for at least 30 seconds before initiating the next set of calls. Two call replications were conducted at each calling location, with each replication lasting approximately 2 minutes. Before leaving the survey site, the biologist waited several minutes, looking and listening for responses to the broadcasted calls. This procedure was repeated at each calling station.

If a hawk responded to the calls, the species was determined based on visual and auditory observations. Since several species of hawks in the area are likely to respond to northern goshawk warning calls if they have a nest nearby, we also tried to locate the nests of hawks that responded to broadcasted calls.

3.3.2.3 Owls

Recordings of owls that could be found in the area, including barred owl, boreal owl, eastern screech-owl, great gray owl, great horned owl, long-eared owl, short-eared owl, and northern saw-whet owl were broadcasted at night at calling stations.

Two call replications were conducted at each calling location, with each replication lasting approximately 2 minutes. The male owl territorial calls were broadcast in six directions during each replication. To start, the recording was played for a minimum of 20 seconds while facing a pre-determined direction, followed by a rotation of 60 degrees. The recording was then played for another 20 seconds in the new direction. This call/rotate method was repeated four more times, until the original broadcasting direction was reached. If an owl responded to the calls, the species was determined based on visual and auditory observations.

3.3.3 Data Recording

Observations of wildlife, their sign, and habitats were recorded on tape recorder and field maps. Photographic records were taken as necessary to record wildlife, their sign, and habitats.

4.0 SURVEY RESULTS AND DISCUSSION

4.1. Introduction

Field surveys were conducted on the Additional Parcel during April 12 to 19, 2009. The weather was generally favorable during the study period. Temperatures ranged from the low 30s degree Fahrenheit (°F) at night to the low 70s °F during the afternoon. Snow was still on the ground over much of the parcel, especially in shrublands and areas with deciduous or mixed deciduous and coniferous forest cover. Weather conditions were optimal for calling surveys, as there was little wind during day or night and no insect or amphibian calling activity to interfere with hearing of northern goshawk and owl calls. In addition, the Northshore Mine was not operating at the time of surveys, so there was no interference from nearby mining activity with the call survey. The survey was conducted mostly on foot, although the Dunka Road and site exploration roads were used to access portions of the site. Generally, a circular route was taken on foot each day, with the intent of surveying most forest stands in the survey area.

4.2. Northern Goshawk Calling Surveys and Observations

Calling surveys were conducted at 37 stations during the day; 34 stations were in the Additional Parcel, and 3 stations were on the Mine Site. Survey stations on the Mine Site were located in the vicinity of historic northern goshawk and broad-winged hawk nest sites (Figure 2).

A nest site and a pair of northern goshawks were found at location GOS-1 on April 9, but the nest site was not found on that day. The nest was located in the fork of a 12-inch diameter at breast height (dbh) quaking aspen tree on April 10. The nest site area was characterized a mixed deciduous and coniferous forest habitat, with numerous mature quaking aspen trees found in the forest stand. The nest site was in close proximity to a large bog wetland. The pair did not respond to calls that were given at a calling station about 0.2 miles (0.3 kilometers [km]) from the nest site on April 9, but were aggressive in their defense of the nest at the approach of the biologist on both April 9 and 10.

A goshawk responded to a call given at a calling station on the boundary of the Mine Site and western portion of the Additional Parcel on April 11. The bird was not observed, but a nest was found in the general area of the call. The nest site was observed for an hour on April 11, but no northern goshawk was seen at the nest. The nest was similar in size and structure to that of a goshawk nest (although it lacked large sticks typically seen at goshawk nests), but did not appear to be actively used and may have been an alternate goshawk nest, or the nest of another raptor or common raven. The nest site was visited the following day, and calls were made near the nest site; there was no response to the calls. In addition, large aspen trees within 0.2 miles (0.3 km) of the nest site were surveyed for nests, but none were found.

A northern goshawk nest was found on the Mine Site in 2000 (Gos-2; Figure 2), but the nest was abandoned that year and has not been used by northern goshawks in recent years (Ryan 2009a). We surveyed the nest and conducted calls at the historic nest site, but did not hear or observe northern goshawks at or near the site and there was no evidence of recent use of the nest site. The nest was still in a quaking aspen, but somewhat diminished in size compared to its size in 2000.

Several other goshawk nests have been found near the Mine Site/Additional Parcel, including a site about 4 miles to the northwest, and several sites to the southwest to northeast that are about 11 to 16 miles away from the Mine Site/Additional Parcel (Ryan 2009b).

Northern goshawks are widely distributed across the northern half of eastern North America and in many parts of western North America (Squires and Reynolds 1997), but are generally rare over most portions of their range.

Population productivity and nesting densities are related to snowshoe hare and grouse populations. Goshawks in Minnesota favor forest stands with large canopy trees and a brushy understory (Phillips 1999). Territory sizes can range up to 6,000 acres, and logging and other human-related activities can discourage goshawks from using an area.

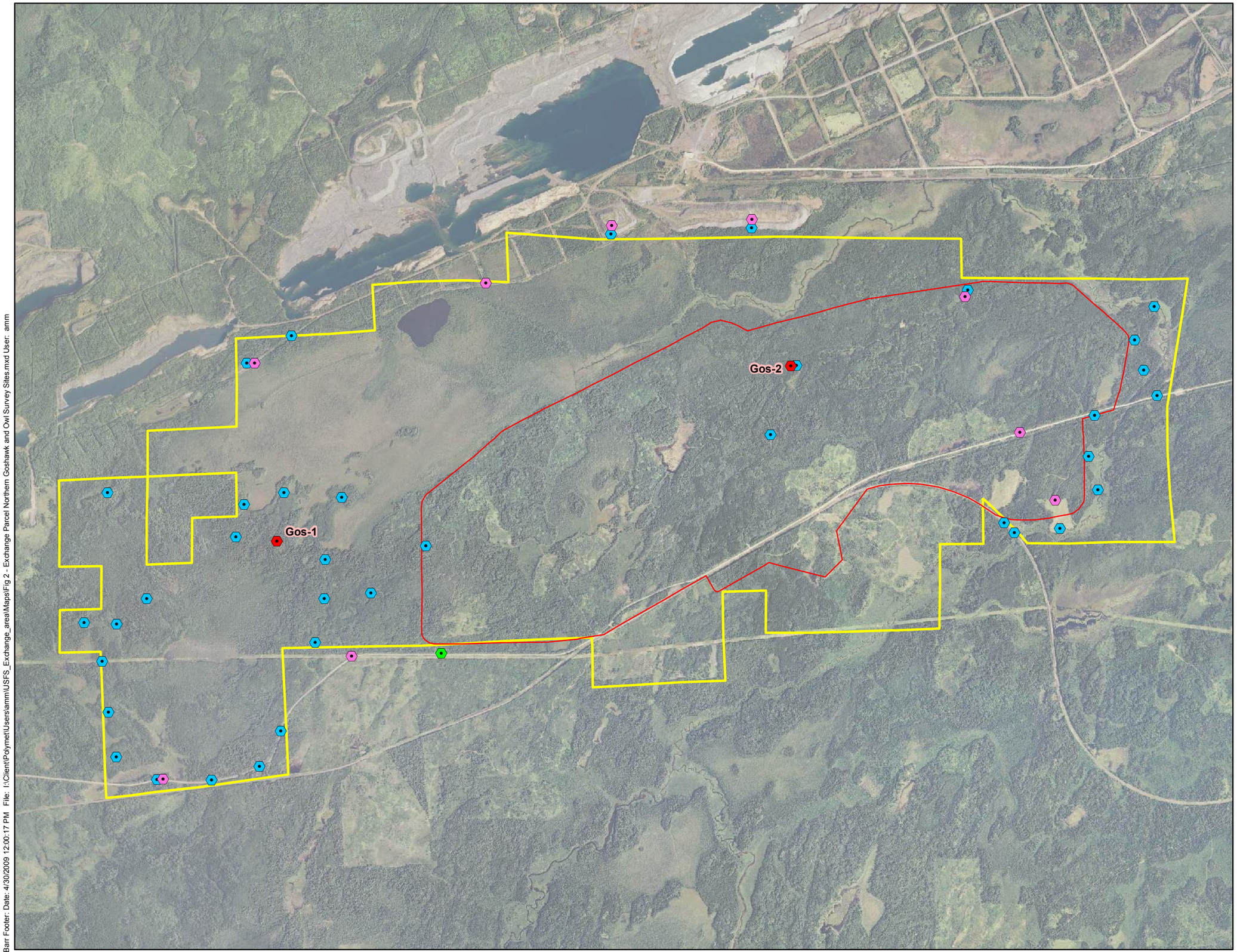
Goshawk breeding habitat in Superior National Forest is typically older forest with sufficient open space between the bottom live tree branches and the understory for the birds to easily fly (Phillips 1999). Aspen are favored as nest trees. The goshawk pair observed on the Additional Parcel used a large, 12-inch dbh aspen tree as a nest, while the pair that nested on the Mine Site used a large, 14-inch dbh aspen tree as a nest. The midstory canopy was mostly open in the vicinity of the nests. The surrounding forest stand was a mixture of deciduous and coniferous trees, and the nests were near wetlands

4.3.4. Owl Calling Surveys and Observations

Owl calling surveys were conducted at night at nine calling stations (Figure 2). Two, and perhaps three, northern saw-whet owls were heard in the southeastern portion of the Additional Parcel. One northern saw-whet owl was heard near the Dunka Road and another was heard just south of the Partridge River. Another saw-whet owl was heard between the Dunka Road and Partridge River, but it was not certain if this was the same owl that was heard near the Dunka Road. In addition, a saw-whet owl was heard in the Mine Site area. Two other owls were seen flying overhead and near the observer while conducting calls for great-horned owls. One owl was seen in the northeastern portion of the Additional Parcel, while the other was seen along the Dunka Road in the western portion of the Additional Parcel. Presumably, these were great-horned owls as they were large owls, however positive identification was not possible due to darkness.

A great gray owl was seen hunting in a small wetland along the Dunka Road and near the Mine Site (Figure 2). Upon being disturbed by the observer, it flew into a nearby tree and perched for several minutes before flying to the east. The observer did not make an effort to find a nest, as great gray owl territories can encompass several square miles. However, large trees suitable as nest sites were found north and south of the foraging site. A great gray owl apparently used the historic goshawk nest site at the Mine Site in the past (see Figure 2; Ryan 2009b).

The great gray owl primarily nests at high elevations in the Sierra Nevada and Northern Rocky Mountains, and in pine and spruce forests of western and north central Canada. Great gray owls use stick nests built in tamarack and spruce trees. Great gray owls are very rare in the Superior National Forest (Green 2003). Only three great gray owl nests have been found in the Superior National Forest in recent years (Ryan 2009b). As noted above, a great gray owl used the historic goshawk nest on the Mine Site, but there was no evidence of use in 2009. The nest is in a quacking aspen. A great gray owl stick nest is approximately 17 miles northeast of the Additional Parcel, and an adult owl was observed brooding two young at the nest in 2007 (Catton 2008). The owls were observed near the nest site during winter 2007-2008, but the nest did not appear to be used during spring 2008.



PolyMet Project Area

Land owned or to be obtained by PolyMet

Goshawk call stations

Great gray owl observations

Owl cal stations

Current or Historic Goshawk Nest Sites

N

0 0.25 0.5 1

Miles

0 0.5 1 2

Kilometers

Figure 2

EXCHANGE PARCEL NORTHERN GOSHAWK AND OWL SURVEY SITES
PolyMet Mining Corporation
Hoyt Lakes, Minnesota

Barr Footer: Date: 4/30/2009 12:00:17 PM File: I:\Client\Polymet\Users\amm\USFS_Exchange_area\Maps\Fig 2 - Exchange Parcel Northern Goshawk and Owl Survey Sites.mxd User: amm

4.3. General Wildlife Observations

We observed or found evidence of 1 amphibian, 31 bird, and 7 mammal species on the Additional Parcel during the 2009 surveys. American toads were heard in several wetlands on the Additional Parcel. Birds observed near wetlands and ponds during the study included mallard, lesser scaup, hooded merganser, northern harrier, great gray owl, American woodcock, common snipe, belted kingfisher, and red-winged blackbird. American woodcock and common snipe were actively courting during the study period. Northern flicker, American robin, dark-eyed junco, and song sparrow were seen in disturbed areas and grassland/shrubland habitats. The remaining species were primarily associated with forests, including ruffed grouse, spruce grouse, northern saw-whet owl, great horned owl, gray and blue jays, and winter wren. Woodpecker cavities and foraging signs were common on larger snags (>6 in dbh) and on stumps. Cavity-nesting species seen in forests included three species of woodpeckers (hairy, downy and pileated woodpeckers), black-capped chickadee, and red-breasted nuthatch. Canada goose, sandhill crane, red–tailed hawk, bald eagle, American crow, and common raven were seen flying overhead. Few migratory birds were seen during the survey, as migratory birds were just beginning to arrive in the area.

Common mammals seen or identified based on sign included snowshoe hare, gray wolf, red fox, pine marten, red squirrel, beaver, white-tailed deer, and moose. Snowshoe hare and their sign were seen in shrublands and forests near wetlands and in jack pine forests with a shrub understory. Gray wolf and red fox tracks were seen along Dunka Road and other roads on the site. A red fox was seen in the Additional Parcel along a right-of-way. Gray wolf tracks were found around two recent deer kills on the Additional Parcel. Pine marten and red squirrel sign was common in spruce forests. Beaver dams and cuttings were found at several sites and beaver dams created several ponds on the Additional Parcel. White-tailed deer and moose sign was observed over much of the Additional Parcel, but especially in forests near wetlands and in shrublands.

Most species observed during the 2009 survey were also seen during the summer 2008 Additional Parcel survey.

3.3.4 Species of Concern

Several species of concern, in addition to the northern goshawk and great gray owl discussed above, may be found on the Additional Parcel, although most species listed below are rare visitors to the area or migrate through the area during spring or fall. Background information on species of concern was obtained for reptiles and amphibians (Behler and King 1995, Tekiela 2003); birds (Terres 1982; Robbins et al. 1983; Benyus 1989); and mammals (Burt and Grossenheider 1965, Chapman and Feldhamer 1982).

5.5.1. Federally Listed Threatened and Endangered Species

Gray wolf (threatened; Superior National Forest Management Indicator Species). Gray wolf was recorded on the site during the survey. Wolf tracks were seen on the Dunka Road, on a service road along the boundary between the Northshore Mine and Mesaba Mine Site, and on several Mine Site exploration roads. Carcasses of two deer were found on Additional Parcel lands that may have been killed by wolves.

Radio-collared wolves have been observed traveling within a few miles of the Mine Site (International Wolf Center 2009). Territory size for wolves in northern Minnesota ranges from 20 to 150 square miles (mi^2) and wolf packs tend to avoid areas used by other wolf packs. Wolf tracks were also seen along Dunka Road during Mine Site studies in 2000 and 2004 and Additional Parcel studies in 2008. Interestingly, wolf tracks were not observed on the study area during January 2000, when an exploration drill rig was operating at the Mine Site. No active dens are known to occur on the Additional Parcel.

An estimated 2,900 wolves resided in Minnesota in 2008, similar to numbers recorded in 2004 (MnDNR 2008). The average size of a wolf pack in Minnesota is 5.3 individuals, and average territory size is 40 mi^2 (Erb and Benson 2004).

The number of wolves in Minnesota has increased nearly five-fold since the early 1970s (Berg and Benson 1999, Erb and Benson 2004, MnDNR 2008). Wolves typically prey on ungulates (hoofed animals), such as deer and moose in northeastern Minnesota (MnDNR 1999). Until recently, wolves have been primarily confined to areas with little human disturbance. During the past 20 years, they have been observed using areas with higher levels of human activity (Mech 1995; Thiel et al. 1998). Wolves also appear to avoid areas with a high density of roads, especially those accessible to two-wheeled (versus four-wheeled and all-terrain) vehicles, although more wolves have moved into areas with higher road densities in recent years (Mech 1998, MnDNR 1999).

In 1978, critical habitat was designated for the Eastern Distinct Population Segment of gray wolf (Federal Register 1978). That rule identified critical habitat at Isle Royale National Park, Michigan, and Minnesota wolf management zones 1, 2, and 3. Wolf management zones 1, 2, and 3 comprise approximately 9,800 $miles^2$ in northeastern and north central Minnesota and include all of the Superior National Forest and portions of the Chippewa National Forest. The Additional Parcel is within Zone 2.

5.5.2. State Species of Concern

Bald eagle (Superior National Forest Management Indicator Species). A bald eagle was seen flying overhead during the survey. Bald eagles tend to be associated with larger lakes surrounded by mature forest, where eagles can perch while searching for fish, birds, and other prey items, and where large trees provide suitable structure for nests. Mud Lake is on the Additional Parcel, but lacks large trees that could be used by eagles as perches or for nests. No other large lakes, or large nesting trees, are on the Mine Site and it is unlikely that bald eagles would use the Additional Parcel or Mine Site. The nearest bald eagle nest is located 7.5 miles to the north on Birch Lake. Bald eagles tend to be associated with larger lakes surrounded by mature forest, where they can perch while searching for fish, birds, and other prey items, and where large trees provide suitable structure for nests. Lindquist (1990 *in* Forest Service 2005a) found that 85 percent of nest trees selected by bald eagles in the Superior National Forest were large diameter white pine. Roosting and foraging habitat for an eagle may include an area up to 1.5 miles from its nest (Forest Service 2005b).

5.5.3. Other Species of Concern

Several animal species were identified in the 1986 LRMP for the Superior National Forest as Superior National Forest Viability and Management Indicator Species (Forest Service 1986). In 2004, the plan was updated to include only three Viability/Management Indicator Species: bald eagle, gray wolf, and northern goshawk (Forest Service 2004). These three species are discussed above. In addition, this report includes information on those species listed in the 1986 LRMP.

Red-tailed hawk. A red-tailed hawk was observed during the survey, and a red-tailed hawk was seen at the Mine Site during the spring 2004 Mine Site survey and on the Additional Parcel during 2008. Red-tailed hawks are found throughout North America. They nest in woodlands and feed in open country on rabbits, rodents, and snakes. They are rare in the Superior National Forest (Green 2003).

Ruffed grouse. Ruffed grouse were seen or heard during the survey, especially in mixed and deciduous forest habitats. Drumming counts indicate that ruffed grouse populations fluctuate cyclically over 10-year intervals in Minnesota, and northeast Minnesota has greater ruffed grouse density than other portions of the state (MnDNR 2007). Ruffed grouse favor young aspen/birch forests less than 25 years in age. Most forest stands on the project site are more than 25 years old.

Spruce grouse. A spruce grouse was seen during the survey in a jack pine forest. Approximately half of the spruce grouse in Minnesota are found in the northeastern portion of the state. Spruce grouse primarily use mature jack pine and spruce forests, which are common in the Additional Parcel.

American woodcock. Several American woodcocks were seen during the surveys, primarily in a speckled alder shrublands. The American woodcock is a rare breeder in the Superior National Forest (Green 2003). Woodcock are mostly found in the eastern and southern U.S. American woodcock live in moist woods and thickets. Woodcock have also been seen on the Mesaba Mine Site and other lands east of the Additional Parcel.

Belted kingfisher. The belted kingfisher is uncommon in the Superior National Forest (Green 2003), but was seen using open water habitat associated with streams and wetlands on the Additional Parcel. The belted kingfisher is the most common kingfisher in North America. It is commonly seen singly or in pairs along streams and ponds, often perching at the edge of the pond and then diving into the water for fish.

Pileated woodpecker. Pileated woodpecker and their sign were often observed or heard on the Additional Parcel in older pole and mature mixed forests with snags and stumps. Pileated woodpeckers are found in the Pacific Northwest, throughout much of Canada, into Minnesota, and throughout much of the eastern U.S. Pileated woodpeckers favor large expanses of deciduous or mixed forests with mature trees and down woody material, snags, and large stumps.

Beaver. Beaver dams were found in several ponds and wetlands on the Additional Parcel, with recent cuttings found at several locations. Several large open water bodies on the site were created by beaver dams, and beaver lodges were also seen on large water bodies. Beavers are found near aquatic habitats in the Superior National Forest, including rivers, streams, lakes, ponds, and marshes.

White-tailed deer. White-tailed deer were common on the Additional Parcel and Mine Site. Deer tracks and droppings were commonly found in the study area in virtually all habitat types, and several deer were seen along roads within the site. Deer tracks were primarily observed in the western and southern portions of the Mine Site during 2000 and 2004 surveys, especially in recently logged areas and shrublands near mixed and conifer pole/young mature and mature forest habitats. Deer tracks appeared to be more common in the western portion of the Additional Parcel during 2008 surveys. During winter, deer favor mature forest stands with large conifer trees or dense pole-size spruce and balsam fir stands for cover, and foraged in nearby wetlands and shrublands. Snow depth in areas with large conifer trees or dense stands of fir or spruce was usually less than in areas with deciduous or more widely-spaced trees, and the snow often had a firm crust. Deer trails in forests often followed the edge of wetlands, about 20 feet from the wetland edge. An estimated 15 to 28 deer are found per square mile in the study area (MnDNR 2006a). Based on population surveys and hunter kill rates, deer population densities in Minnesota are lower in northeastern Minnesota than in central and southeastern Minnesota (MnDNR 2005, 2006).

Moose. Moose sign (droppings, tracks, and evidence of browsing) were observed during surveys in areas with abundant shrubs and in speckled alder wetlands. Moose were more likely than deer to move through wetlands. Moose populations in the Superior National Forest have fluctuated considerably since the early 1900s and have shown their greatest increases during periods of intense timber harvest (Huempfner 1978). A 2007 aerial survey by the MnDNR produced a population estimate of 6,460 moose in northeast Minnesota. The moose population in the region has been in decline since 2004, when the estimated population size was 13,137 (Lenarz 2007).

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APPENDIX A

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants	
Black Spruce	*Picea mariana*
Jack Pine	*Pinus banksiana*
Paper Birch	*Betula paypyrifra*
Quaking Aspen	*Populus tremuloides*
Speckled Alder	*Alnus rugosa*
Quaking Aspen	*Populus tremuloides*
Amphibians and Reptiles	
American Toad	*Bufo americanus*
Birds	
American Crow	*Corvus brachyrhynchos*
American Robin	*Turdus americanus*
American Woodcock	*Scolopax minor*
Bald Eagle	*Haliaeetus leucocephalus*
Barred Owl	*Strix varia*
Belted Kingfisher	*Megaceryle alcyon*
Black-capped Chickadee	*Poecile atricapillus*
Blue Jay	*Cyanocitta cristata*
Boreal Owl	*Aegolius funereus*
Broad-winged Hawk	*Buteo platypterus*
Canada Goose	*Branta canadensis*
Common Raven	*Corvus corax*
Dark-eyed Junco	*Junco hyemalis*
Downy Woodpecker	*Picoides pubescens*
Eastern Screech Owl	*Megascops asio*
Gray Jay	*Perisoreus canadensis*
Great Gray Owl	*Strix nebulosa*
Great Horned Owl	*Bubo virginianus*
Hairy Woodpecker	*Picoides villosus*
Hooded Merganser	*Lophodytes cucullatus*
Lesser Scaup	*Aythya affinis*
Long-eared Owl	*Asio otus*
Mallard	*Anas platyrhynchos*
Northern Flicker	*Colaptes auratus*
Northern Goshawk	*Accipiter gentilis*
Northern Harrier	*Circus cyaneus*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Birds (Cont.)	
Northern Saw-whet Owl	*Aegolius acadicus*
Pileated Woodpecker	*Dryocopus pileatus*
Red-breasted Nuthatch	*Sitta canadensis*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Sturnella agelaius*
Ruffed Grouse	*Bonasa umbellus*
Sandhill Crane	*Grus canadensis*
Short-eared Owl	*Asio flammeus*
Song Sparrow	*Melospiza melodia*
Spruce Grouse	*Falcipennis canadensis*
Winter Wren	*Troglodytes troglodytes*
Mammals	
Beaver	*Castor canadensis*
Gray Wolf	*Canis lupus*
Moose	*Alces alces*
Pine Marten	*Martes americana*
Red Fox	*Vulpes vulpes*
Red Squirrel	*Tamiasciurus hudsonicus*
Snowshoe Hare	*Lepus canadensis*
White-tailed Deer	*Odocoileus virginianus*

AECOM

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APPENDIX C
Superior National Forest
Regional Forester Sensitive Species

Tuesday, October 5, 2006

Scientific Name	Common Name
MAMMALS	
Phenacomys intermedius	Heather Vole
BIRDS	
Accipiter gentilis	Northern Goshawk
Aegolius funereus	Boreal Owl
Ammodramus leconteii	Le Conte's Sparrow
Contopus cooperi	Olive-sided Flycatcher
Coturnicops noveboracensis	Yellow Rail
Dendroica caerulescens	Black-throated Blue Warbler
Dendroica castanea	Bay-breasted Warbler
Falco peregrinus anatum	American Peregrine Falcon
Oporornis agilis	Connecticut Warbler
Picoides tridactylus	Three-toed Woodpecker
Strix nebulosa	Great Gray Owl
Tympanuchus phasianellus	Sharp-tailed Grouse
REPTILES	
Clemmys insculpta (Glyptemys)	Wood Turtle
FISH	
Acipenser fulvescens	Lake Sturgeon
Coregonus zenithicus	Cisco or Lake Herring
Ichthyomyzon fossor	Northern Brook Lamprey
MOLLUSKS	
Lasmigona compressa	Creek Heelsplitter
Ligumia recta	Black Sandshell