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Environmental Assessment

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Addition of Terms and Conditions for Renewal of Hardrock Leases, MNES 001352 and MNES 001353

Date: December 2018

Type of Action: Hardrock Mineral Lease Renewal

Serial Number: MNES 001352 and MNES 001353

Location: Superior National Forest, Lake and St. Louis Counties, Minnesota

Project Acreage: Approximately 4,864.78 acres

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Contents

List of Tables	3
List of Figures	3
Acronyms	3
CHAPTER 1 – INTRODUCTION	4
Background	4
Purpose and Need of the Proposed Action	6
Decision to be Made	6
Relationship to Plans, Statutes, Regulations, and Other Analyses	6
Public Participation	7
CHAPTER 2 – PROPOSED ACTION	9
Proposed Action	9
No-Action Alternative	9
CHAPTER 3 – ENVIRONMENTAL EFFECTS	13
Introduction	13
Water Resources	13
Cultural Resources	14
Noise	15
Recreation	16
Vegetation	16
Soils	18
Air Quality	18
Wildlife	20
CHAPTER 4 – CUMULATIVE IMPACTS	21
Mineral Actions	22
Various Forest Management Projects	24
Other Projects	24
Cumulative Effects Analysis	24
CHAPTER 5 – TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED	25
	2

CHAPTER 6 – LIST OF PREPARERS	30
CHAPTER 7 - REFERENCES	31
APPENDIX A – STIPULATIONS	32

List of Tables

Table 1: Comparison Between the No Action Stipulations and Proposed Action Stipulations ..	10
Table 2: Count of AQI Days- Ozone and PM2.5	19
Table 3: Projects Analyzed for Cumulative Effects	23

List of Figures

Figure 1: Approximate Location of Leases to be Renewed	5
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Acronyms

- AQI - Air Quality Index
- BWCAW - Boundary Waters Canoe Area Wilderness
- BLM - Bureau of Land Management
- EA - environmental assessment
- OHV - off-highway vehicle
- PRLA - preference-right lease application
- SKA - South Kawishiwi Association, LLC
- SNF - Superior National Forest
- TMM- Twin Metals Minnesota, LLC

CHAPTER 1 – INTRODUCTION

Background

The Bureau of Land Management (BLM) first issued hardrock mineral leases MNES 001352 and MNES 001353 to the International Nickel Company in 1966. These leases encompass approximately 4,865 acres of Federal minerals in the Superior National Forest (SNF) in Lake and St. Louis Counties, Minnesota (Figure 1). The leases are under Federal surface managed by the SNF, except for approximately 250 acres of private surface, which was acquired in 2010 by the South Kawishiwi Association, LLC (SKA) through a land exchange with the Forest Service. The SKA acquired the land subject to the terms and conditions of the existing lease MNES 001352.

The leases are currently held by Franconia Minerals (US) LLC, a wholly owned subsidiary of Twin Metals Minnesota LLC (collectively TMM or lessee). Leases MNES 001352 and MNES 001353 contain identical terms and conditions, including a preferential right of the lessee to renew the leases for successive ten-year periods under such terms and conditions as the Secretary of the Interior, acting through the BLM, may prescribe. The Forest Service, as the surface management agency, may also propose new or adjusted stipulations at each renewal for purposes including the protection of surface resources.

TMM's predecessors in interest timely filed for two previous renewals of leases MNES 001352 and MNES 001353, and the BLM renewed the leases in 1989 and 2004. The lessee submitted its application to renew leases MNES 001352 and MNES 001353, in 2012. Renewal of two separate hardrock mineral leases is governed by the relevant statutes, the BLM's regulations at 43 C.F.R. Subpart 3511, and the relevant prior lease terms. The lessee is currently in good standing and has applied for a third renewal of the leases. In December 2017, the United States Department of the Interior's Office of the Solicitor issued a legal opinion (M-37049) concluding that, while the United States maintains discretion to impose reasonable new or readjusted terms, conditions, and stipulations in the lease renewal agreements, TMM has a non-discretionary right to a third renewal. In this third renewal, BLM proposes to modify the terms and conditions of the leases by modernizing several of the lease terms and by including additional stipulations to further protect the environment and surface resources.

Purpose and Need of the Proposed Action

In accordance with the Federal Lands Management Policy Act of 1976, as amended, the BLM as a multiple use and sustained yield agency is required to accept and review applications for the development of federal mineral resources. To facilitate environmentally responsible minerals development and to meet all applicable environmental laws and regulations, the BLM considers operational and surface use stipulations to protect natural and cultural resources that may be affected by mineral exploration activities. As a non-discretionary action in accordance with the prior lease terms, the BLM will grant the lessee a third renewal. However, the BLM retains the authority to add reasonable new stipulations to the leases, as well as to adjust existing terms and conditions to meet all regulatory requirements.

Decision to be Made

Due to the prior lease terms, the lessee has a non-discretionary right to renewal of the mineral leases. The BLM's decision analyzed here is whether to issue the renewed leases with the same terms and conditions as the 2004 lease, under the No-Action Alternative, or whether to renew the leases with added and adjusted terms and conditions that the BLM and the Forest Service deem appropriate for the conservation and protection of natural and cultural resources.

The lessee has submitted and the BLM has approved exploration plans of operations for exploration of minerals on the leased lands. However, this BLM decision does not include a reauthorization of or change to any prior-approved plan of operations or future plans of operations for exploration and development of minerals on the leased lands.

Relationship to Plans, Statutes, Regulations, and Other Analyses

The Proposed Action is in conformance with the *Superior National Forest Land and Resource Management Plan*, as amended (Forest Plan) (USDA Forest Service, 2004), to which the BLM was a cooperating agency. The Forest Plan provides for exploration and development of minerals in an environmentally sound manner. The Proposed Action's lease renewal terms and conditions take into consideration the resource management goals and objectives established through the Forest Plan.

The Proposed Action and No-Action Alternative are in conformance with the BLM's *Minnesota Management Framework Plan* (MMFP), approved September 1982, available

at <https://go.usa.gov/xPWUB>. The MMFP, which was developed in coordination with State and local governments and with public participation, provides the land use plan foundation for making federally managed subsurface mineral resources available for development, working in collaboration with the surface management agency, the Forest Service.

Mineral development on Federal lands in Minnesota is governed by multiple statutes and policies, including the following:

- Act of June 30, 1950, which authorizes the BLM to permit prospecting and development of hardrock minerals on the public domain lands within the national forests of Minnesota with the consent of the Forest Service (16 U.S.C. § 508b);
- 16 U.S.C. § 520 and the Reorganization Plan No. 3 of 1946, Section 402, which collectively authorize the BLM to permit prospecting and development of mineral resources on acquired lands within the national forests of the United States with the consent of the Forest Service; and
- Federal Land Policy and Management Act of 1976, as amended.
- Title 43 Code of Federal Regulations §3500 et seq - Leasing of Solid Minerals other than Coal and Oil Shale.

The current BLM regulations that govern the process for renewing the leases are set forth in 43 C.F.R. § 3511. These regulations establish that the BLM may issue additional ten-year renewals beyond this third renewal.

Public Participation

This environmental assessment (EA) has been posted for a 30-day comment period. The following describes prior periods of public comment and participation for similar or related agency actions.

In 1987 at the time of the first renewal, the Forest Service sought public involvement and considered new stipulations as part of a NEPA process. The action in 1987 is the very similar to the current Proposed Action. The Forest Service solicited comments through notices published in local newspapers, radio interviews, and by directly contacting people. A total of five members of the public responded. Four members of the public asked for additional information and after it was sent, did not comment

further. One member of the public claimed tribal ownership of the minerals in the leased area. Because the Scope of Analysis was not for renewal but for the determination as to if new stipulations should be added, the Forest Service provided a copy of the lease and other relevant information to the respondent. After providing the information the respondent provided no additional comments.

The Forest Service also conducted public outreach in 2016 and collected public comments regarding its proposed consent to the lease renewals. The Forest Service held two listening sessions between June 20 and July 20, 2016, in Duluth and Ely, Minnesota. Members of the public submitted approximately 30,000 responses, which included about 29,000 form letters and 1,600 unique responses, such as original letters and spoken comments. The BLM elected to adopt the comments to inform the analysis within this EA.

Most of the comments focused on economics, ecology, and the connections between the two. Topics of concern in economics included employment and income produced by mining and potential threats to the jobs and income produced by nature-based tourism. Ecological concerns included the sensitivity of the pristine and valuable waters, ecosystems, and scenic beauty of the area, especially of the Boundary Waters Canoe Area Wilderness (BWCAW) and the potential threats posed by mining to those resources. Threats included impacts to water quality such as the potential for acid mine drainage, damages to wetlands, and additional concerns regarding past and potential pollution. These ecological issues help to focus the areas of analysis of this EA, as the scope of the Proposed Action does not affect economics.

CHAPTER 2 – PROPOSED ACTION

Proposed Action

The BLM proposes to readjust some of the terms of leases MNES 001352 and MNES 001353 and to add stipulations, applicable to exploration, drilling, and other surface use activities to protect the environment and surface resources. This document analyzes stipulations that have the potential to affect the human environment. A complete list of proposed stipulations are provided in Appendix A. Table 1 provides a summary comparison between the Proposed Action and the No-Action Alternative. Under both the Proposed Action and the No-Action Alternative, the leases will be renewed. As such, the scope of this EA is to provide analysis of the impacts the BLM expects to occur as a result of the new stipulations, and a comparison of those impacts to the impacts expected under the No-Action Alternative. Impacts from other activities, including forest management and mineral development (including mining), are analyzed in the cumulative effects section in Chapter 4.

No-Action Alternative

Under the No-Action Alternative, the BLM would renew leases MNES 001352 and MNES 001353 under the same terms and conditions as approved in 2004. Table 1 compares the original standard terms and stipulations that pertain to surface use to those being newly proposed in the Proposed Action.

Table 1: Comparison Between the No Action Stipulations and Proposed Action Stipulations

Original (No-Action Alternative)	New (Proposed Action)
Restrictions on siting	
<ul style="list-style-type: none"> ● No use within 400 of shorelines without written approval ● No land disturbance within 200 feet of any building 	<ul style="list-style-type: none"> ● Limit occupancy to that which is necessary for safe operations; ● Obtain Forest Service permission for proposed sites; ● No surface occupancy of more than 20 acres at any one time
Operating Plan Requirements	
<p>No operations are authorized without a written, approved plan that describes the following:</p> <ul style="list-style-type: none"> ● location of areas to be occupied or cleared of vegetation, ● methods, ● description of equipment, ● description of construction, ● soil conservation practices, ● water pollution prevention practices, ● fire/explosives safety plan, and ● reclamation plan. 	<p>Have approved plan of operations, which is described in 43 CFR §3592.1 and includes the following:</p> <ul style="list-style-type: none"> ● location and general conditions, ● maps showing topography, drainage, major cultural features, ● methods, ● quantity of water to be used, ● contaminants that may enter waters, ● design of necessary impoundment to control runoff, reduce erosion and prevent water contamination, ● description of measures taken to prevent fire, soil erosion, subsidence, pollution of surface and groundwater, pollution of air, damage to fish or wildlife or other natural resources and hazards to public health and safety, and ● reclamation plan
General Resource Protection	
<ul style="list-style-type: none"> ● Protect timber, crops, livestock, and improvements 	<ul style="list-style-type: none"> ● Exercise reasonable diligence to protect life, health, property, mineral or water resources;

Original (No-Action Alternative)	New (Proposed Action)
	<ul style="list-style-type: none"> ● Conduct all operations to minimize impacts to land, air, water and to cultural, biological, visual, mineral, and other resources and other uses and users; ● Conduct all operations to minimize impacts to land, air, water and to cultural, biological, visual, mineral, and other resources and other uses and users; ● Comply with requirements of the SNF Land and Resource Management Plan and any additional terms and conditions prescribed by the Forest Service; ● No caving or subsidence of NFS lands
Watershed Protection	
<ul style="list-style-type: none"> ● Do everything reasonably necessary to prevent or reduce erosion, water pollution 	<ul style="list-style-type: none"> ● Comply with the Clean Water Act on any action that requires Forest Service authorization; ● Obtain Forest Service authorization and comply with all other applicable Federal, state, and local laws and regulatory requirements to use or disrupt surface water or groundwater;
Reclamation	
<ul style="list-style-type: none"> ● Fence or fill sumps, ditches, or other excavations ● Reclaim land to a condition approved by Authorized Officer and bury pipelines ● Remove all equipment from lease within a year a termination 	<ul style="list-style-type: none"> ● Reclaim all lands, remove debris, repair onsite and offsite damage caused by lease activities, repair roads and trails; ● Remove all equipment within 180 days

Original (No-Action Alternative)	New (Proposed Action)
Prohibited Practices	
<ul style="list-style-type: none"> ● No strip-mining, rim-cutting, or open-pit mining with prior written approval and agreement to conditions ● Smoking or building cooking fires during times of high fire danger ● No smelting 	
Tribal Historic Preservation	
	<ul style="list-style-type: none"> ● The leased lands are located within the 1854 ceded territory where the Bois Forte Band of Chippewa, the Grand Portage Band of Lake Superior Chippewa and The Fond du Lac Band of Lake Superior Chippewa retain rights to hunt, fish, and gather. To augment findings of archaeological and historical inventories conducted by researchers for the BLM or the U.S. Forest Service, Tribes retaining usufructuary rights and those with historic ties to the area, at their discretion may conduct cultural surveys from a Native American perspective prior to any proposed ground disturbance.

CHAPTER 3 – ENVIRONMENTAL EFFECTS

Introduction

Most of the leased area falls within the *General Forest* Management Area, as described in the Forest Plan, while the shores of Birch Lake are in the *Recreation Use in a Scenic Landscape* Management Area. This portion of the national forest and some of the non-Federal lands therein have been used for mineral exploration for the past several decades.

Because renewing the leases is a nondiscretionary action, both the proposed lease readjustment and the No-Action Alternative may result in continued mineral exploration. Additional mineral exploration operations would require an updated plan of operations for BLM approval and would be subject to additional environmental review. Neither alternative would result in commercial mining without additional substantial environmental review.

Water Resources

The leases contain wetlands, rivers, and lakes. The leases are within the Rainy River watershed and adjacent to Birch Lake and the BWCAW, which is the most heavily visited Federal wilderness area in the United States. This watershed contains pristine surface water and groundwater, and these resources support the fisheries, wildlife, and scenic qualities that attract visitors to the BWCAW and create a vibrant tourist economic sector. The water quality within the BWCAW is pristine and subject to influence by the wetlands and waterways that empty into it (USDA USFS 2012). A limited number of impairments do occur and persist throughout the watershed. They are limited to the lower reaches of the watershed where stressors from land use practices accumulate. Of the assessed streams, 97% fully supported aquatic life and 92% fully supported aquatic recreation. There were impairments for total suspended solids, *Escherichia coli* (bacteria), and mercury in fish. All but one lake assessed met eutrophication standards and had good water quality that indicated oligotrophic to mesotrophic conditions. A number of lakes deep within the BWCAW fully supported aquatic recreation based on Secchi transparency standards. One hundred and eighty-eight lakes had existing aquatic consumption impairments due to an exceedance of standards for mercury in fish tissue. The Minnesota Department of Health has issued

numerous fish consumption advisories for specific lakes throughout this watershed (MPCA 2017).

Protections for water resources are very similar under both the Proposed Action and the No-Action Alternative. Some of the differences between the original and proposed stipulations have no practical impact on water resource conservation because various laws, regulations, and policies are in effect regardless of the stipulations applied. For example, the original stipulation prohibited surface use within 400 feet of shorelines, as required under the Shipstead-Newton-Nolan Act of 1930. This law is still in effect, and the prohibition on use near shorelines still applies to proposed mineral activities, even though the prohibition is not specified in the proposed stipulation.

Similarly, the proposed stipulations specify compliance with the Clean Water Act which has been in effect and relevant to minerals activities since 1972. The BLM expects no measurable difference in any potential impacts to water quality or water resources as a result of the Proposed Action versus potential impacts under the No-Action Alternative, primarily because the state and federal laws, regulations, and policies that protect water resources have been and are in effect under both alternatives. They, in addition to any conditions of approval on future plans of operations, will continue to guide site-specific practices that prevent contamination and protect aquatic habitats.

Cultural Resources

The leased lands are located within the 1854 ceded territory where the Bois Forte Band of Chippewa, the Grand Portage Band of Lake Superior Chippewa and The Fond du Lac Band of Lake Superior Chippewa retain rights to hunt, fish, and gather. Most of the leased area has had some form of cultural survey, but very little of the area has been intensively surveyed with shovel testing occurring at five- to 15-meter intervals. Six known archaeological sites are located within or adjacent to the boundaries of leases MNES 001352 and MNES 001353.

The Proposed Action is expected to enhance the quality and thoroughness of cultural resource protection over the No-Action Alternative. This is due primarily to the special stipulation that enables associated tribes to conduct surveys of areas that are proposed for use. Under either the Proposed Action or the No-Action Alternative, project activities must also abide by section S-HR-9 of the Forest Plan, which places a

buffer around cultural resources. The Proposed Action will enhance the likelihood that cultural resources will be identified before operations commence.

Noise

There are multiple types of sounds in the SNF, they range from rustling leaves to drilling, timbering (chainsaws), helicopters and off highway vehicles (OHV). The ability of noises to become a nuisance is dependent upon duration, frequency, type of noise, and if the noise occurs during the day or night. In wilderness or protected areas sounds are more audible. Sound from project activities may be audible even if the sound level is lower than the background ambient level. This is because motorized sound generated from drilling and associated activities may be of a different quality (i.e. a motor versus a bird call) than natural ambient sound.

Trees with leaves on them muffle sounds, and tree cover reduces sound propagation by acting as a barrier to sound waves. Sound propagation may also be affected by topography. The SNF includes minor to moderate topographic variations, but does not include many dramatic features such as mountains, tall cliffs, or canyons. Hills and topographic features may present barriers to sound propagation, while on hilltops sound transmission may depend more on atmospheric absorption and geometric spreading (USDA 2012). Conversely, sound can travel faster over water than over land, due to the lack of barriers.

The areas surrounding the leased lands, include a variety of deciduous and coniferous forests, open habitats, and waterways, have ongoing prospecting activities that include drilling, vehicle movement, clearing, and other sources of mechanical noise, except to the north of lease 1353, which is wilderness where such activities are prohibited. The areas of the SNF that are not designated wilderness have active logging and vegetation removal, OHV use, and other common forest noises.

The conditions under which lessee must manage noise on the leases are no different under the Proposed Action than under the No-Action Alternative. This is because both the original lease conditions and the proposed new stipulations require lessees to operate under plans that are approved by the Forest Service. Regulations in 43 C.F.R. §3592.1 specify that these operations minimize impacts to other uses and users of the land, which would include people using trails, watching wildlife, or engaging in other

activities that require quiet locations. Approvals of specific plans of operations may contain additional noise management conditions under either alternative.

Recreation

The leases fall within the *semi-primitive, motorized and roaded-natural* recreation opportunity spectrum areas. The South Kawishiwi recreational residences line the north edge of lease MNES001352. Other developed recreation sites within the leases include a campground and Birch Lake access on the east side of Highway 1 and a campground, Birch Lake access, and hiking trail on the west side of Birch Lake.

Neither the original lease conditions of the No-Action Alternative nor the Proposed Action special stipulations refer directly to the protection of recreational resources, such as trails or campsites. Operations that have been permitted under either the 2004 Forest Plan or the 2012 Prospecting Environmental Impact Statement (EIS) are required to abide by various practices designed to minimize impacts to developed recreational sites, trails, and recreational experiences. Because of these requirements, which are in effect regardless of stipulations in the lease, recreational resource protections under either the Proposed Action or the No-Action Alternative are virtually the same.

For both alternatives, indirect effects may occur should a plan of operations for continued exploration be submitted and approved. The Forest Service is able to manage the property to prevent and resolve potential conflicts with users actively using the property.

Vegetation

The Forest Plan lays out the desired forest composition, which is a mix of different types of vegetation, including young and old forests, even-aged and mixed stands, and open and shrubby habitat. The overall forest conditions are the result of many decades of various types of forest management, notably commercial logging in the 18th and 19th centuries. More recently, wildfire suppression and timber management. Mineral exploration, including the creation of temporary roads and drill pads, has been ongoing throughout the duration of the two leases and under prospecting permits on other portions of the SNF. These activities have affected the forest composition far less than the habitat management of the forest as a whole, since these small, temporary clearings amount to just a small percentage of the total forest cover. In addition,

mineral permittees and lessees revegetate the cleared areas once the exploration activities are completed.

Stipulations under both the Proposed Action and the No-Action Alternative require lessees to protect timber resources, operate under approved plans, and reclaim disturbed areas. The original leases required lessees to protect timber and crops and to minimize watershed damage, which includes maintaining ground vegetation to the extent practicable. The proposed stipulations require the lessee to protect biological resources, which would include any vegetation. These differences between the original lease and the stipulations in the Proposed Action are not expected to result in changes to vegetation management, primarily because plans of operation, whether under the Proposed Action or the No-Action Alternative, would be subject to Forest Service approval and would have to comply with the practices prescribed in the Forest Plan.

Neither the total amount of disturbance nor the small, individual clearings is expected to pose a threat to this desired mix of vegetation communities across the entire forest or within a particular management area. Similarly, the Proposed Action stipulated of 20-acre maximum of surface use at a given time is not expected to affect vegetation under the lease, since potential continued exploration would use drill pads that are typically less than a tenth of an acre. The Proposed Action stipulated 20-acre maximum of surface use could foreseeably lead to less ground clearance during the mineral development stages of a project on the leased lands than the No-Action Alternative, which does not include a 20-acre maximum of surface use.

Under either alternative, should the lessee propose ground disturbance for exploration, some effects could entail the removal of existing vegetation. Disturbed areas, especially those exposed to sunlight after forest canopy has been removed, are susceptible to colonization by non-native, invasive plant species. As required in the Forest Plan, the lessee is required to remove only the minimum necessary amount of forested cover for its needs. By preserving some shade in disturbed areas, the lessee will reduce the susceptibility of cleared areas to invasion by plants that thrive in sunny locations. Any ground disturbance would require site specific analysis, consistent with the requirements for plan approval under both the old lease and the proposed new lease terms.

Soils

The sites host a wide variety of different soil types. Soil types range from mucky soils to boulders and rock outcrops. Slopes range from level ground to 70 percent. Some of the soils are flood-prone, typically those next to waterways (USDA, 2018).

The Proposed Action provides slightly more stringent requirements for the protection of soils than the No-Action Alternative original lease conditions, due to the limitation of surface occupancy to 20 acres at any time. For exploration, since most drill pads are well under one-tenth of an acre and are reclaimed upon completion of drilling, this limitation is not expected to be a limiting factor in continued exploration activities on the leases. However, the Proposed Action stipulation of 20-acre maximum of surface use could foreseeably lead to less disturbance of and impact to soils during the mineral development stages of a project on the leased lands than the No-Action Alternative, which does not include a 20-acre maximum of surface use.

Under the No-Action Alternative, lessees would be required to address soils in their operating plans, take measures to prevent erosion or watershed degradation, and reclaim the land upon completion. These requirements are essentially the same as those under the Proposed Action. Under either alternative, if the lessee would submit a plan of operations, it would require site-specific analysis to minimize erosion and soil degradation. The potential impacts would include loss of soil productivity from clearing and compaction. These impacts would be temporary and would be reversed upon site reclamation. The Forest Plan restricts construction and drilling on most portions of the leases to frozen conditions or, in some cases, dry summer conditions to protect soils, and these restrictions protect sensitive soils from excessive compaction and reduce erosion.

Air Quality

The Air Quality Index (AQI) was developed by the United States Environmental Protection Agency to provide a simple, uniform way to report daily air quality conditions. The AQI is calculated by converting measured pollutant concentrations to a uniform index which is based upon peer reviewed scientific evidence of the health effects associated with a pollutant. The AQI categories are the following:

- *Good (0-50)*: Current air quality is considered satisfactory and poses little or no health risk

- *Moderate* (51-100): Air quality is acceptable; however individuals who are very sensitive to air pollution may experience adverse health effects
- *Unhealthy for Sensitive Groups* (101-150): People with lung or heart disease, older adults, children, and people participating in activities that require heavy or extended exertion may experience adverse health effects.
- *Unhealthy* (151-200): Everyone may begin to experience adverse health effects and members of sensitive groups may experience more serious health effects.

The nearest air quality monitor is the Ely monitoring station. Air quality at the project site is generally listed as “good”. Between the years of 2001 to 2017 only 14 days of “bad air days” were recorded (MPCA, 2018). Currently the project site hosts mineral prospecting activities, which include the use of diesel emissions engines. The neighboring BWCAW is specially designated a Class I air quality area.

Table 2: Count of AQI Days- Ozone and PM2.5

AQI Region	Year	Good	Moderate	Unhealthy for Sensitive Groups
Ely	2017	350	7	
	2016	337	8	
	2015	349	14	1
	2014	345	11	
	2013	338	23	
	2012	321	33	1
	2011	316	33	3
	2010	313	29	
	2009	303	42	
	2008	323	36	
	2007	318	32	3
	2006	328	30	1
	2005	241	27	1
	2004	172	7	
	2003	163	14	
	2002	164	12	3
	2001	163	5	1

The Proposed Action is not expected to result in measurable changes in air quality as compared to the No-Action Alternative. This is because the lessee is required to comply with the current laws, regulations, and policies. The requirement under 43

C.F.R. §3592.1 for plans of operations to address air impacts would apply to proposed exploration activities under either the Proposed Action or the No-Action Alternative.

Neither the Proposed Action nor the No-Action Alternative would result in a direct increase in the amount of air pollutants emitted, as lessees would need to submit further plans of operations for approval before conducting further operations that would emit pollutants. The Proposed Action would not increase the likelihood of bad air days nor introduce additional haze or pollutants into the BWCAW.

Indirectly, through the potential approval and implementation of new operating plans, some diesel emissions from mobile sources and particulate matter from dust disturbance would be anticipated under either alternative. A site specific analysis would be required prior to approval of any new operating plans.

Wildlife

The Proposed Action would result in no direct effects to listed species in the SNF. However, there might be some beneficial indirect impacts from the more restrictive stipulations of the Proposed Action that would prevent large clearing of habitats versus the conditions under the No-Action Alternative.

The stipulations under the Proposed Action address biological resources more expressly than the original leases' requirements to protect timber, the watershed, and other resources that comprise wildlife habitat. However, the references to wildlife under the Proposed Action are not expected to result in any measurable difference in impact to wildlife habitat or populations than the No-Action Alternative for exploration activities for two main reasons. First, operations under the No-Action Alternative would still be required to be conducted under plans of operations that meet the Forest Service's approval. Second, the 20-acre limit on surface use at any time is not expected to limit continued exploration activities, since these have, in recent years, occupied acreages well within that limit.

Either alternative may have indirect effects from continued mineral exploration. These impacts could include loss of woody cover and ground vegetation on pads that are cleared. Pads that are constructed on frozen wetlands would experience less vegetation clearing than those that are constructed on cleared upland soils. During clearing and operations wildlife would have to disperse into neighboring habitats and competition for food and territory would increase. Impacts attributable to clearing are

not expected to cause or contribute meaningfully to the downward trend of any Regional Forest Sensitive Species or species listed under the Endangered Species Act, since prospecting activities require only small amounts of land. However, the Proposed Action stipulation of 20-acre maximum of surface use could foreseeably lead to less disturbance of and impact to wildlife during the mineral development stages of a project on the leased lands than the No-Action Alternative, which does not include a 20-acre maximum of surface use.

CHAPTER 4 – CUMULATIVE IMPACTS

The Council of Environmental Quality regulations define cumulative impacts as follows:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 CFR § 1508.7)

Cumulative effects are analyzed according to boundaries that make sense for each resource, as follows:

- water quality and water resources - Rainy River watershed
- recreation - SNF, with emphasis on the BWCAW
- vegetation - entire SNF
- air quality - air basin
- noise - localized to the project site, with emphasis on audibility in BWCAW
- soils - project site
- wildlife - SNF and, in the case of endangered species, other lands that are affected by Federal actions

Identifiable effects of other past, present, and reasonably foreseeable future actions are analyzed and evaluated to the extent they may be additive to impacts of the Proposed Action. As part of the evaluation of cumulative impacts, a review of other projects within this project’s cumulative impacts boundary was conducted. Projects that caused impacts and were older than 5 years have been considered within the affected environment of this analysis (refer to Chapter 3) and are not considered

below. Projects that are considered reasonably foreseeable future actions are projects that would occur by or in 2023. Projects that would occur after 2023 are highly uncertain and thus do not meet the criteria of being reasonably foreseeable.

Projects that are not ripe for decision but are reasonably foreseeable are included within this analysis. The BLM has analyzed a total of 18 projects (Table 2), with geographic overlap that have the potential to affect the human environment. Resources carried forth for analysis within this EA have been considered. Other resource areas have not been considered as they will have no potential additive effect to the human environment.

Currently, mining in the SNF is not economically feasible, however if a Preference Right by Lease Application (PRLA) project is approved it may become economically feasible. The combination of the current leases, the Lessee's private leases, and the new proposed lease that has been requested (PRLA) would be sufficient for the lessee to construct and operate an economically viable mine. Due to the potential cumulative effect should all of these things occur, the mining plan of operation is included within this cumulative effects analysis.

Mineral Actions

There are multiple mineral actions proposed in the general area of the SNF, as contemplated and allowed by the Forest Service's 2004 Forest Plan. Each action could have an effect on the shared resources of varying degrees. Negative environmental effects to resource areas relevant to this analysis include forest and vegetation removal, loss of wildlife habitat, potential impacts to water quality, additional air emissions, loss of recreational ability within the project footprint, and additional noise to the project area and its surroundings. The future mineral actions will be subject to project specific National Environmental Policy Act analyses, during which the necessary consultations, would be required to disclose and mitigate impacts to fish, wildlife, and cultural resources. Should any wetlands and/or other Waters of the United States be impacted, the appropriate permits would be necessary. Additionally, for any mining, the State must provide approval of any mining plan of operation.

Table 3: Projects Analyzed for Cumulative Effects

Project Name	Type of NEPA	Timing	Shared Potentially Affected Resources
Mineral Actions			
Prospecting Permit EIS	EIS	Present	Water Quality, Cultural Resources, Noise, Recreation, Air Quality, Vegetation, Wildlife
TMM Mining Plan of Operation NEPA	TBD	Future	
TMM Preference Rights Lease by Application NEPA	TBD	Future	
TMM Minnesota Hydrogeologic Study Special Use Permit	EA	Future	
Northmet Mining Project and Land Exchange	EIS	Present	
Mineral Actions			
Kimball, Jeanette, and Beaver River projects - hazard fuels reduction, vegetation management, wildlife habitat improvement	EA	Future	Water Quality, Noise, Recreation, Vegetation, Wildlife
HiLo Project - hazard fuels reduction, vegetation management, wildlife habitat improvement	EIS	Future	
Tomalnga Project - hazardous fuels reduction, vegetation management, wildlife habitat improvement	EA	Present	
Shokoshoe Project - vegetation and road management	EA	Present	
Barker, Mesabi, North Shore, and Pearl Restoration projects - hazardous fuels reduction, vegetation management, wildlife habitat improvement	EA	Past (2014-2017)	
Mixed Use Motorized Use Project - allowing mixed use of passenger vehicles and ATVs on 5.25 miles of forest roads	EA	Past (2015)	
Prospector Loop Trail - add linkages to existing roads and trails to create a 75-mile OHV loop and connect areas	EA	Past (2016)	
Other Projects			
Lake County Fiber Optic Network	EA	Past (2014)	Vegetation, Wildlife
https://www.fs.fed.us/sopa/components/reports/sopa-110909-2018-10.pdf			

Various Forest Management Projects

The Forest management projects are likely to have some negative effects such as minor sedimentation, minor temporary vegetation loss, and potential effects to listed species. Beneficial impacts such as increased recreation and habitat management would be gained.

Other Projects

The other projects considered within this analysis might also result in temporary negative effects to wildlife, vegetation, soils, water quality, air quality, and recreation. The temporary loss would be followed with habitat restoration which would resolve the environmental impacts within a few years.

Cumulative Effects Analysis

The Proposed Action and the No-Action Alternative of the lease renewals share affected resources with other past, present and reasonably foreseeable actions (Table 2). These shared, effected resources are described within Table 2. The Proposed Action's incorporation of some additional protective stipulations, when considering other projects in the area, does not cumulatively create any greater negative effect on shared resources than would the No-Action Alternative. The Proposed Action may have a slightly more beneficial effect on shared resources than the No-Action Alternative, as is described in Chapter 3 above. The agencies recognize, though, that the cumulative effects of the ongoing actions and potential future actions in Table 2 could result in a greater overall impact to the environment, both positive and negative, in all shared resource areas and should be cumulatively assessed when more detail is available in the preparation of more site-specific analyses.

**CHAPTER 5 – TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES
CONSULTED**

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
<p>Cathy Chavers Chairperson Bois Forte Band of Lake Superior Chippewa Nett Lake, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>Response by Bill Latady, Bois Forte Tribal Historic Preservation Officer, received 10/31/2018, proposed conducting additional cultural surveys before any ground-disturbing activities.</p>
<p>Kevin Dupuis Chair Fond du Lac Band of Lake Superior Chippewa Cloquet, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>Contacted by Nancy Schuldt, Water Projects Coordinator for the Fond du Lac Environmental Program on 12/7/2018. BLM will be scheduling a meeting with the Reservation Business Committee and Chairman.</p>
<p>Norman Deschampe Chairman Grand Portage Reservation Grand Portage, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>
<p>Melanie Benjamin Mille Lacs Band Chief Executive Onamia, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
<p>Gary Frazer Executive Director Minnesota Chippewa Tribe Cass Lake, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>
<p>Derrell G. Seki, Sr. Chairman Red Lake Band of Chippewa Red Lake, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>Deferred to Bois Forte Band of Chippewa.</p>
<p>Steven "Punky" Clark Vice Chairman White Earth Band of Chippewa White Earth, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>
<p>Robert Larson President Lower Sioux Indian Community Morton, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
<p>Charlie Vig Chairman Shakopee Mdewakanton Sioux Community Prior Lake, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>Deferred to Bois Forte Band of Chippewa.</p>
<p>Kevin Jensvold Chairman Upper Sioux Community Granite Falls, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>
<p>Shelly Buck President Prairie Island Indian Community Welch, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>
<p>Carri Jones Chairman Leech Lake Band of Ojibwe Cass Lake, MN</p>	<p>The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.</p>	<p>No response received.</p>

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Sarah Beimers Environmental Review Program Manager Minnesota State Historic Preservation Office St. Paul, MN	National Historic Preservation Act, 36 CFR 800	Letter received on July, 31, 2018 stating under 36 CFR 800.3 (a)(1) a concurrence determination is not required.
Karen R. Diver Chairwoman Fond du Lac Band of Lake Superior Chippewa Cloquet, MN	The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received.
Norman Deschampe Chairman Grand Portage Band of Lake Superior Chippewa Portage, MN	The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received.
Mary Ann Heidermann Manager of Government Programs and Compliance Minnesota State Historic Preservation St. Paul, MN	The National Historic Preservation Act, 36 CFR 800.	Letter sent on October 21, 2013. BLM received a reply letter from the Minnesota State Historic Preservation Officer dated November 27, 2013 stating Proposed Action would have no adverse effects to historic properties. Subsequent coring and development activities will be subject to Section 106 review, and Minnesota State Historic Preservation Officer requested they be consulted per Federal regulations.

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Field Office Supervisor, U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 consultation	No-effect concurrence received June 13, 2018.

CHAPTER 6 – LIST OF PREPARERS

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CHAPTER 7 - REFERENCES

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APPENDIX A – STIPULATIONS

Tribal Stipulation

The leased lands are located within the 1854 ceded territory where the Bois Forte Band of Chippewa, the Grand Portage Band of Lake Superior Chippewa and The Fond du Lac Band of Lake Superior Chippewa retain rights to hunt, fish, and gather. To augment findings of archaeological and historical inventories conducted by researchers for the BLM or the U.S. Forest Service, Tribes retaining usufructuary rights and those with historic ties to the area, at their discretion may conduct cultural surveys from a Native American perspective prior to any proposed ground disturbance.

Forest Service

The lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of National Forest System (NFS) lands when not inconsistent with the rights granted by the Secretary of Interior in this lease. Subject to the terms and conditions of Paragraphs 1-8 below, the Secretary of Agriculture's rules and regulations must be complied with for all use and occupancy of NFS lands and use of all existing improvements, such as Forest development roads. All matters related to this stipulation are to be addressed to Superior National Forest, Forest Supervisor at 8901 Grand Ave. Place, Duluth, MN 55808-1122, and telephone number (218) 626-4300.

1. OCCUPANCY AND USE OF NFS LAND & WATER IN THE LEASE AREA

With respect to exercising rights under this lease, the lessee shall not occupy or use NFS land and waters within the lease area, except for that occupancy and use deemed necessary by the Government to protect the health and safety of the employees of the lessee or those of the lessee's contractors; provided, that such occupancy and use shall: 1) not exceed a total of 20 acres of NFS land, at any one time; 2) be placed on the surface at locations acceptable to the Forest Service; and 3) comply with applicable requirements of the Superior National Forest's Land and Resource Management Plan, then in effect, as well as any other terms and conditions, including, but not limited to, those related to reclamation, as prescribed by the Forest Service, for such occupancy and use, in order to protect Superior National Forest (SNF) resources and uses. Occupancy and use as addressed by this paragraph, includes, but is not limited to, access within the lease area via roads or otherwise. As determined by the Forest Service, areas of occupancy and use may be considered exclusive, in whole or in part, so as to protect the health and safety of Forest Service employees, permittees, and contractors as well

as members of the public using NFS land and waters. In such a case, the Forest Service may also prescribe terms and conditions, with which the lessee must comply, in order to specifically address such health and safety concerns. Outside of areas of exclusive use the Forest Service may exercise its authorities under Federal law, to manage and use NFS land and waters located within the lease area, for National Forest purposes, including but not limited to, allowing public use.

2. TECHNICAL INVESTIGATION

Within the lease area, the lessee may conduct technical investigations, including, but not limited to geophysical surveys, resource surveys, geotechnical investigations, and resource monitoring, consistent with rights granted under this lease, to collect information and data needed for the development of an operating plan or mine design or to conduct resource monitoring activity during operations. Such activities may temporarily occupy and use NFS land and must be placed at locations acceptable to the Forest Service. The Forest Service may prescribe terms and conditions for the temporary occupancy and use, including, but not limited to, those related to reclamation.

3. GENERAL PROTECTIONS FOR FOREST RESOURCES AND USES

In addition to any terms and conditions prescribed under Paragraph 1, in exercising rights under this lease including the implementation of any approved operating plan, without regard to the location of the lessee's operation or activity, the lessee shall comply with all terms and conditions prescribed by the Forest Service. The Forest Service terms and conditions shall ensure the adequate protection and utilization of NFS lands and waters, consistent with applicable management direction of the Superior National Forest's Land and Resource Management Plan, then in effect. The use of NFS land located outside of the lease area, if any, including but not limited to, access to the lease area by the lessee, shall be governed by and subject to independent approval of the Forest Service pursuant to Forest Service decision-making authorities, under applicable Federal law and regulations.

4. WATER USES

The United States retains its land ownership rights, including riparian and littoral rights, to groundwater and surface water resources. This lease does not give the lessee any right to use, or otherwise disrupt the natural flow or presence of, surface water or groundwater flowing through, present upon, or contained within, NFS land. Such use, or disruption, may only be made with prior authorization of the Forest Service, in accord with its applicable decision-making procedures. All activities conducted pursuant to such an authorization, shall comply with all applicable Federal, state and local laws and regulatory requirements respecting the use.

5. WATER QUALITY

Any Forest Service authorization or approval under this lease, necessary for the implementation of any operating plan, shall not be granted before the lessee presents the authorized officer with either a copy of a certification issued pursuant Section 401 of the Clean Water Act (33 USC 1341) or acceptable evidence that the appropriate entity waived this certification requirement.

6. SURFACE PROTECTION

Caving or subsidence of the surface on NFS lands is prohibited. This lease does not authorize the mining or removal of the mineral deposits by stripping, rim cutting, or open pit methods.

7. BONDING

The lessee shall comply with operation, surface, and reclamation bond requirements, as may be prescribed by the Forest Service or BLM in order to ensure adequate protection and utilization of NFS land and waters.

8. FOREST SERVICE CONSENT ON RENEWAL

Notwithstanding any other provision, any renewal of this lease is subject to, and may only be issued after, the prior consent of the Forest Service. As a condition of such consent, if any, the Forest Service may prescribe terms and stipulations, for the protection of NFS resources and uses, and such terms and stipulations shall become requirements of any renewed lease.