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Ministry of Northern Development and Mines  
Mines and Minerals Division, Mineral Development and Lands Branch  
Mineral Development Office  
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27 May 2017

**Re: Application to issue an exploration permit under section 78.3 of the Mining Act. - Mining Act s.78  
(3) (EBR Registry Number 013-0421)**

Dear Ms. Eva:

Thank you for the opportunity to comment on the application by Noront Muketei Minerals Ltd. for early exploration activities (mechanized drilling > 20 pads) within 49 claims in the McFauld's Lake area.

We are submitting this letter in our respective capacities as Wildlife Conservation Society (WCS) Canada scientists. A national organization, our research and conservation priorities in Ontario are focused mainly on Ontario's Far North. As such, we have developed considerable collective experience as some of the only scientists that have been continuously engaged in this remote region since 2003. Dr. Justina Ray has conducted wolverine and caribou surveys across the Far North for over a decade, including caribou recruitment surveys, and is a co-author of the Wolverine Recovery Strategy and a former member of the former Provincial Caribou Technical Committee and Far North Science Advisory Panel. Dr. Cheryl Chetkiewicz leads our conservation science program in the Far North and focuses on cumulative effects modeling and scenario planning for caribou, wolverine, moose, and freshwater fish, including the Ring of Fire to address environmental assessment and land use planning. Dr. Brie Edwards conducted freshwater sampling in the Ring of Fire and studies the impact of climate change and land use on benthics and freshwater fish. Meg Southee manages the spatial data for our wildlife analyses and has developed a technical tool<sup>1</sup> to track mineral exploration permits posted on the Environmental Registry and support assessment of mineral exploration activities on caribou ranges.

We have been monitoring mineral exploration permits as they appear on the Environmental Registry. While we are pleased this information is available to the public through this tool, it was difficult for us to consider the permits on a case-by-case basis given their cumulative impacts, lack of detail on effects in the application, the short time frame for comments, and the length of time permits are approved for (e.g., 3 years) without follow-up or monitoring. The assumption that mineral exploration activities are low impact activities and pose low risk to the environment remains untested. We have raised concerns about the cumulative impacts of development together with climate change given the sensitive nature

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<sup>1</sup> <https://www.wcscanada.org/Resources/Mineral-Exploration-Permits-Tool.aspx>

of Far North ecosystems and species-at-risk, combined with the low levels of inventory and monitoring of biodiversity by the Ontario government<sup>2</sup>. We are also concerned about the permitting process because it is not clear from the application, the extent to which relevant biologists within government are reviewing permit applications and providing content. Finally, there are no indications within the permitting process that either the proponent or the government are keeping track of the broader context in which permit approval is occurring.

It is against this backdrop of concern, that we reviewed this exploration permit. Given the 30-day time limit for public comment, we have limited our comments to large mammals and some freshwater resources for which we had information. However, we are aware that other data have been collected (e.g., Far North Biodiversity Program) but are still not publicly available. We provide four recommendations.

**Recommendation 1. Further screening of proposed exploration activities for impacts on caribou and wolverine.**

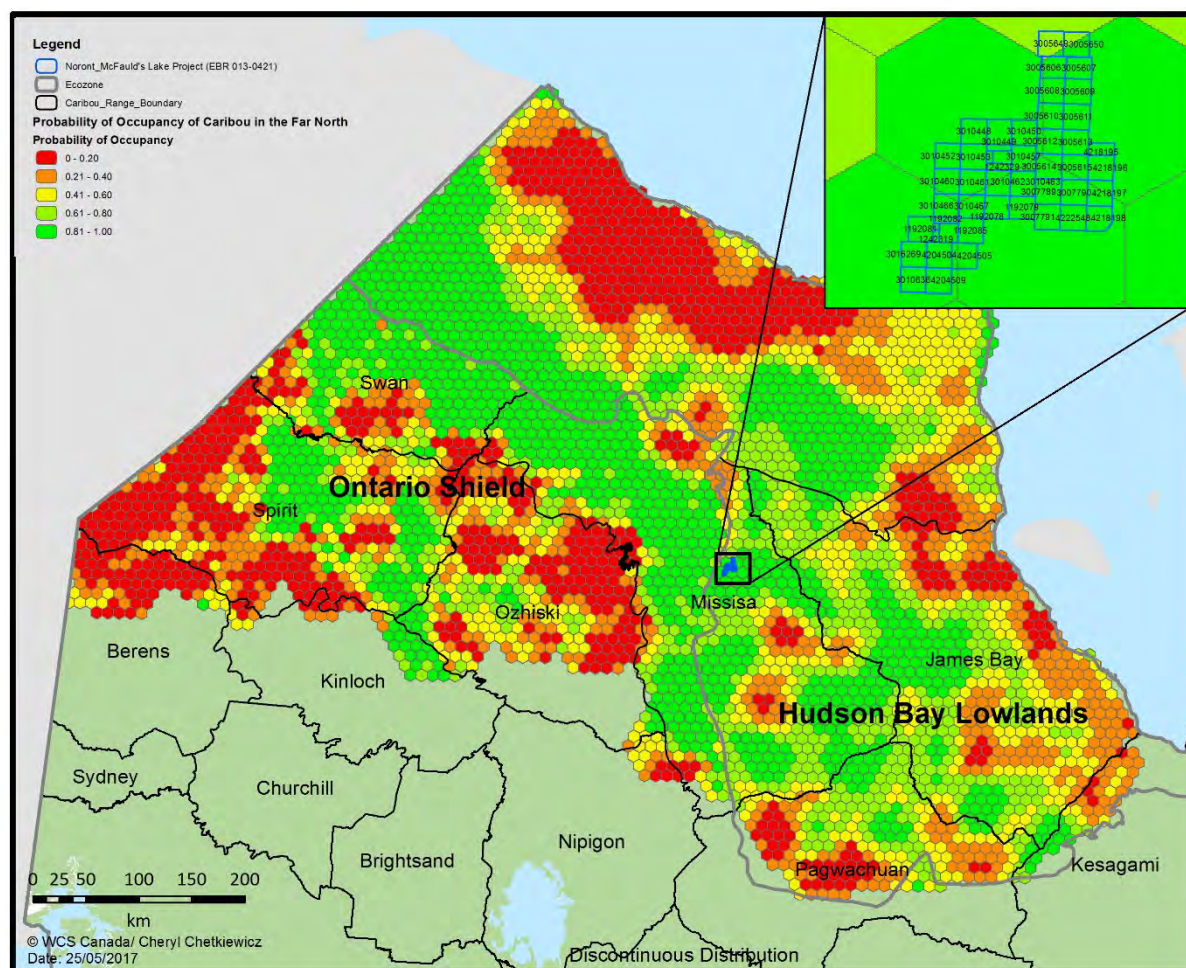
Boreal caribou and wolverine are both threatened species in Ontario creating legal obligations for the Government of Ontario to address their recovery and maintain sustainable populations (MNR 2009, Wolverine Recovery Team 2013).

It is well known that boreal caribou require large areas of undisturbed forest and are sensitive to land use changes that can be exacerbated by climate change. The last time the particular range (Missisa) that intersects with this permit application was subject to monitoring attention (2013), concerns were already raised and documented by MNRF about the low calf recruitment and adult female survival, which were suggestive of a declining trend (MNRF 2014). Available knowledge of important areas for caribou in the range on calving and wintering areas has been assembled, although it is now somewhat out of date. No further surveys have been conducted, and the Ministry relies on companies to follow best management practices (MNRF 2015) to minimize impacts on boreal caribou from mineral exploration activities. Yet, there is no evidence in the current application that Noront Muketei Minerals Ltd. have acquired and/or are applying available caribou information.

Published models for caribou occupancy (Poley et al. 2014) indicate that the claims associated with the exploration activities fall within high occupancy areas for caribou in the Missisa Range (Figure 1).

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<sup>2</sup> [https://www.wcscanada.org/Portals/96/Documents/RSEA\\_Report\\_WCSCanada\\_Ecojustice\\_FINAL.pdf](https://www.wcscanada.org/Portals/96/Documents/RSEA_Report_WCSCanada_Ecojustice_FINAL.pdf)

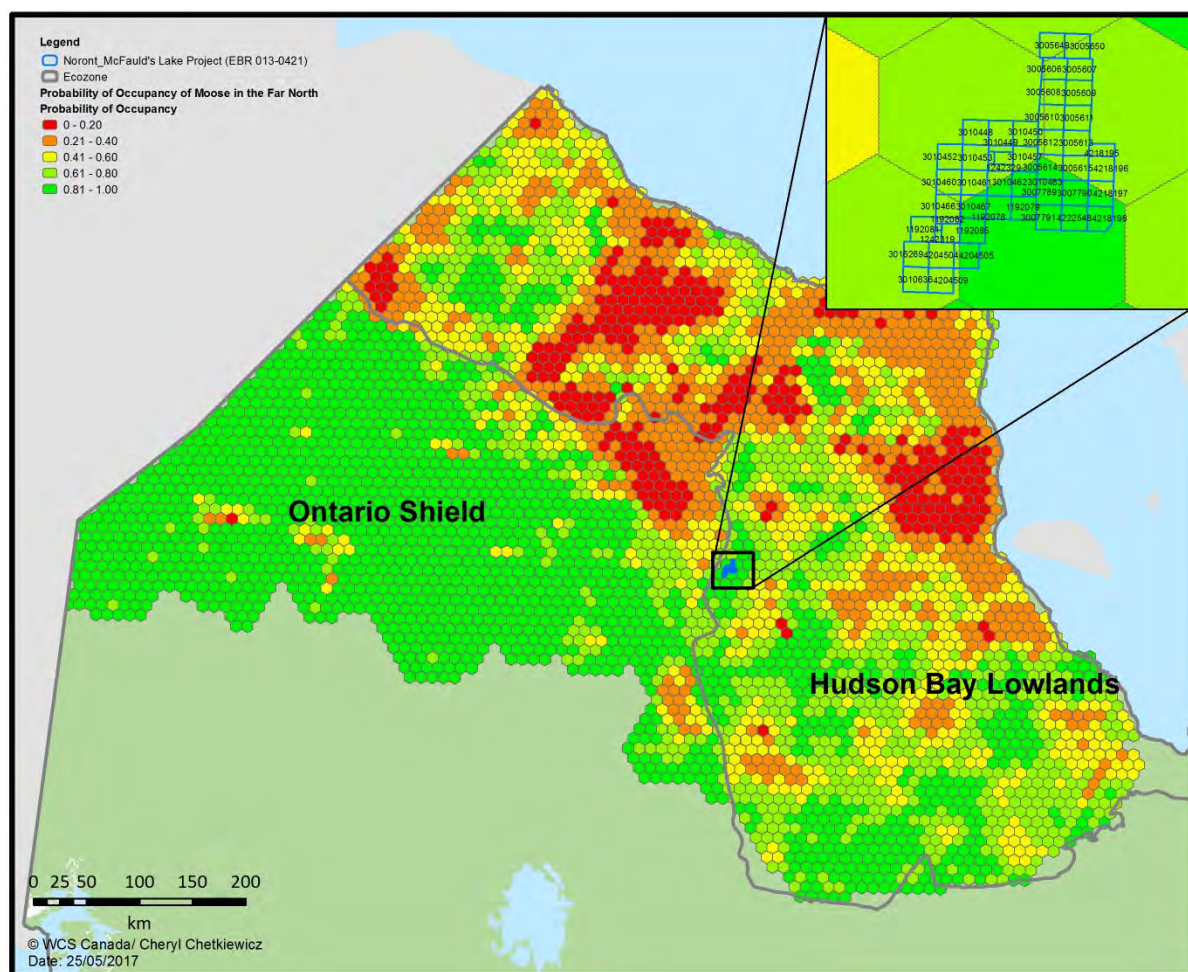


**Figure 1. Caribou winter occupancy (February-March) in Ontario's Far North based on Poley et al. 2014 and the location of the claims associated with proposed activities. Note: Greener shades represent higher probability of caribou occupancy.**

Developed with abundant survey information, the most important areas for caribou occupancy in winter lie near the boundary between the Ontario Shield and the Hudson Bay Lowlands ecozones, and is lowest along the coasts of Hudson and James Bays and in areas with relatively recent fire disturbance (< 40 years) (Poley et al. 2014, Berglund et al. 2014).

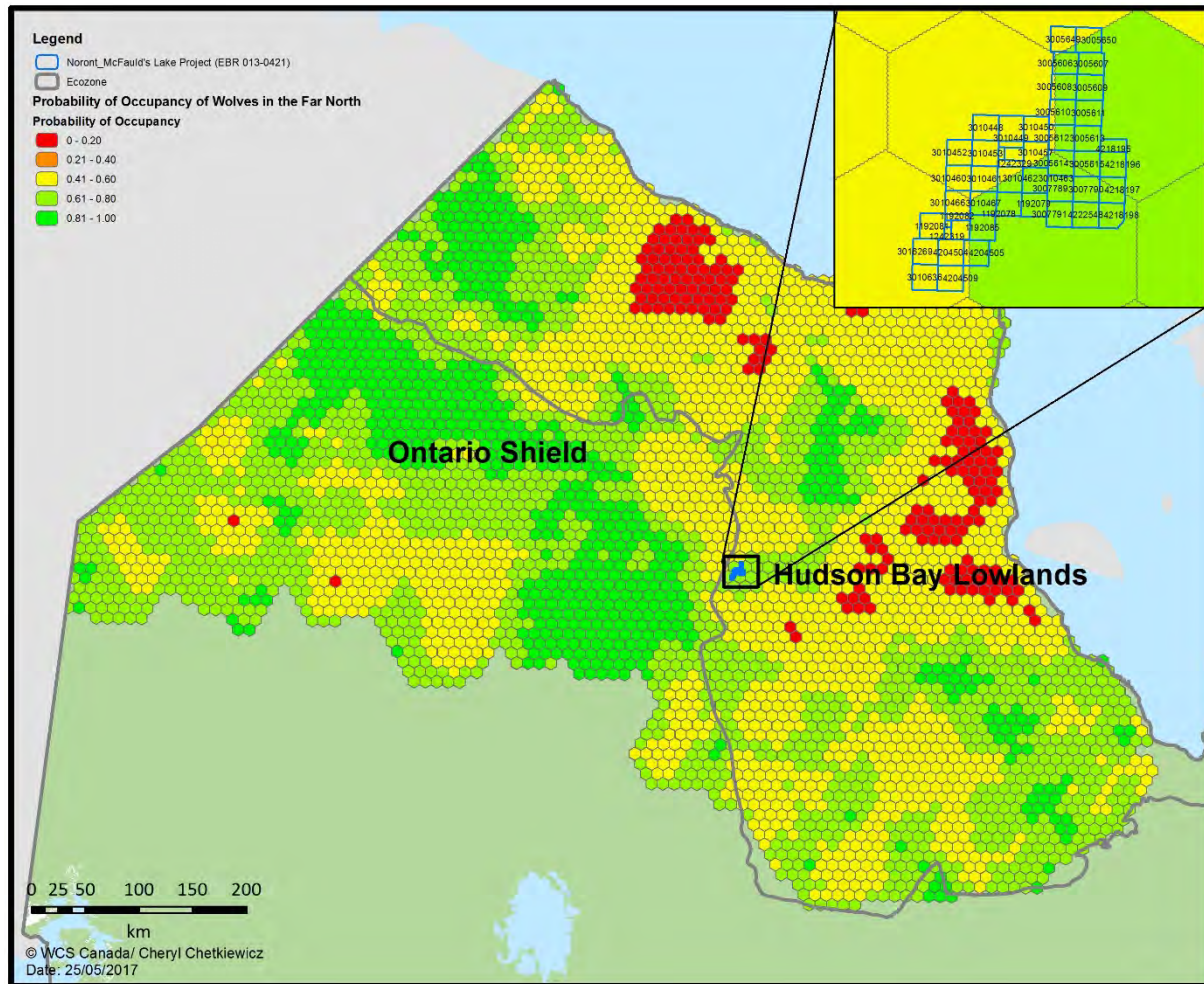
The Missisa Range represents a broad ecozonal transition between the Hudson Bay Lowlands and the Ontario Shield and the claims associated with the exploration activities are within 5-8 km of the ecozonal transition, or ecotone (Figure 1). All evidence suggests strongly that this ecotone has ecological significance for caribou as both winter and summer habitat, calving and nursery functions and may be important as a conduit for travel.

The claims associated with the exploration activities also fall within relatively high occupancy areas for moose (Figure 2) and relatively lower occupancy areas for wolves (Figure 3).



**Figure 2. Moose winter occupancy (February-March) in Ontario's Far North based on Poley et al. 2014 and the location of the claims associated with proposed activities. Note: Greener shades represent higher probability of moose occupancy.**



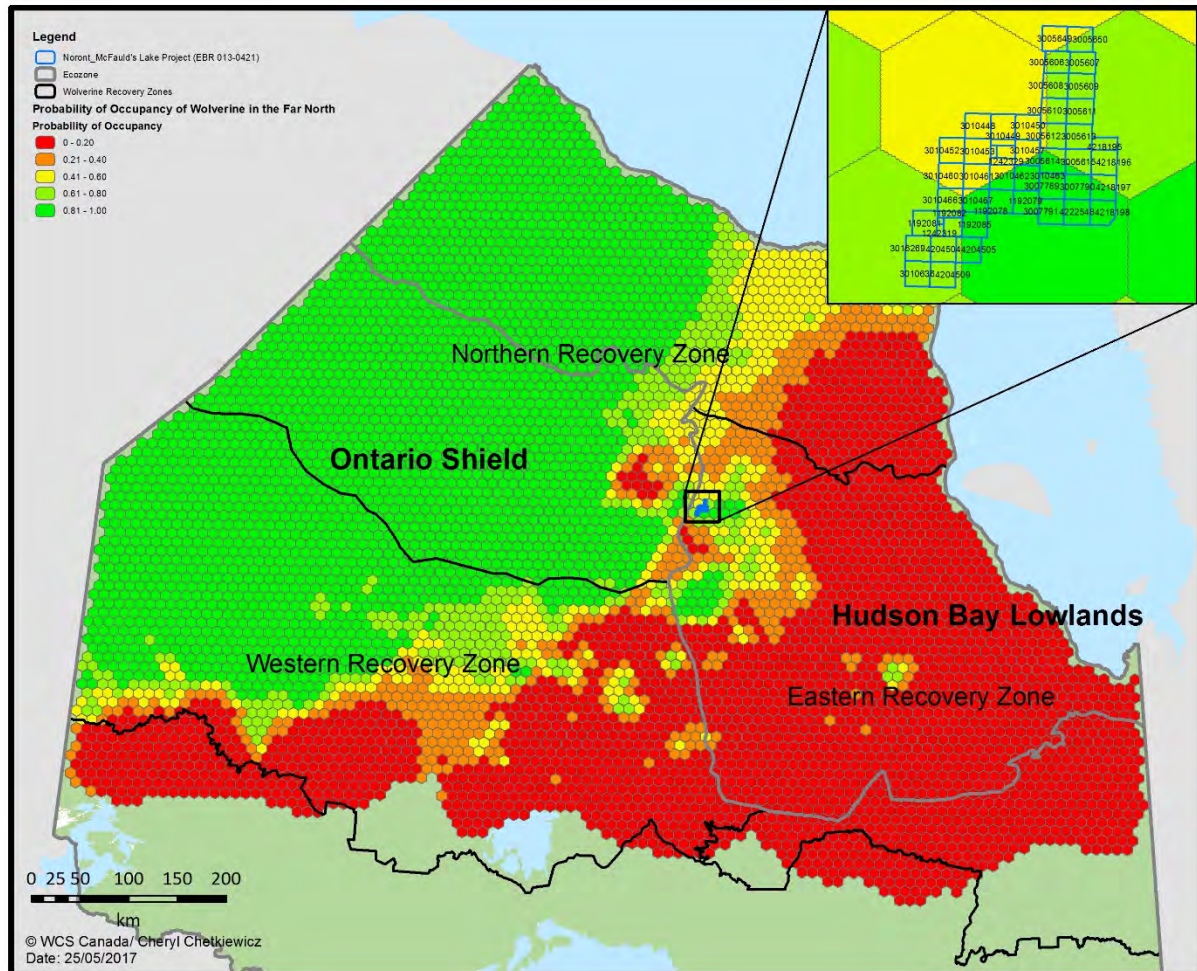


**Figure 3. Wolf winter occupancy (February-March) in Ontario's Far North based on Poley et al. 2014 and the location of the claims associated with proposed activities. Note: Greener shades represent higher probability of wolf occupancy.**

Because both moose and wolf occupancy likely reflects stressors on the caribou population, we suggest these claims require considerably more thorough screening for the extent to which they are further contributing to disturbance (in addition to natural disturbance) on the Missisa Range.

Given the lack of commitment by Ontario to follow-up monitoring (reassessment) for caribou in the Far North, the current population and habitat elements of the Missisa Range demand a precautionary approach to permitting new anthropogenic disturbance anticipated with mineral exploration activities. Ontario's Ministry of Natural Resources and Forestry (MNRF) has indicated publicly that conservation of caribou in the Far North requires minimizing cumulative impacts arising from permitted uses (i.e., mineral exploration) (Berglund et al. 2014). They state that minimizing cumulative impacts is achieved by "managing the intensity, extent, and location of human activities and their interactions" and that this "may be particularly important along the ecotone of the Ontario Shield and Hudson Bay Lowlands ecozones" (Berglund et al. 2014). The current permit proposal is an important opportunity to consider the impacts of additional anthropogenic disturbance along the ecotone.

The ecotone in which the application is proposed is likewise an important area for wolverine. The Wolverine Recovery Team pointed to this region (which it referred to as the “Eastern Recovery Zone”) as an area where wolverine are potentially expanding their range (recovering since the 1950s). This area is, moreover, “essential for providing a long-term link to Quebec,” where wolverine have not been recorded since the 1970s. Our 10 years of survey data indicate that the claims associated with the exploration activities fall within relatively high occupancy areas for wolverine (Justina Ray in preparation, Ontario Wolverine Recovery Team 2013; Figure 4).



**Figure 4. Wolverine occupancy in Ontario's Far North, based on Ray et al. (in preparation), and the location of the claims associated with proposed activities. Note: Greener shades represent higher probability of wolverine occupancy.**

The significance of this area to wolverine distribution and abundance in Ontario and Eastern Canada, likewise demands a precautionary approach to inviting new anthropogenic disturbance in this region. This may be particularly relevant given the availability of prey such as caribou and predators such as wolves.

**Recommendation 2. Proponent should make clear how they will apply best management practices for caribou and wolverine during all phases (planning, development, operations, rehabilitation) of mineral exploration activities on the Missisa Range.**



MNRF's best management practices for mineral exploration (MNRF 2015) identifies five principles proponents should follow during planning, development, operations, and rehabilitation of any mineral exploration and development activity including:

- Minimize the disturbance footprint of the activity, and its overall contribution to cumulative disturbance and loss of habitat within the range.
- Minimize habitat changes and fragmentation to maintain the function and connectivity of sub-range habitat features.
- Minimize the density of linear features to avoid increases in predator efficiency (i.e. distribution, ease of travel).
- Minimize habitat disturbance and sensory disturbance near High Use Areas.
- Minimize activities that increase the risk of caribou mortality (i.e. hunting).

Mineral exploration activities can negatively affect caribou and caribou habitat (MNRF 2015). Impacts may include increased cumulative disturbance and loss of habitat, habitat changes and fragmentation, increased sensory disturbance and direct or indirect mortality. These impacts can result in increased predators (e.g., wolves) and loss of connectivity between sub-range habitat features and caribou avoidance of high use areas (e.g. nursery areas). As described above the proposed exploration activities are near the ecotone which appears to have ecological significance as both winter and summer habitat, supports calving and nursery functions and may be important as a conduit for travel.

The Wolverine Recovery Team (2013) also identified a number of potential impacts of mineral exploration in the so called "Ring of Fire" on wolverine including:

- displacement of individuals in areas with sustained disturbance from helicopters during exploration activity;
- habitat loss and fragmentation as a result of linear features; and,
- enhanced potential for conflicts when wolverine are attracted to the human domestic waste at human developments.

These principles are highly relevant to wolverine and most terrestrial wildlife yet there is no evidence in the application that the proponent is considering these.

The current proposal calls for mechanized drilling of > 20 pads. Although the proponent provides no information on the scope and extent of these activities, we assume they are similar to information provided by Ontario's Ministry of Northern Development and Mines (MNMD)<sup>3</sup>.

The only way the potential impacts to sensitive species like caribou and wolverine can be adequately assessed and mitigated, is for the proponent to provide more detail in their application including:

- Area of individual (e.g., pad) and cumulative disturbance within the claims blocks being explored
- Habitat types being disturbed.
- Length of linear features (e.g., trails) created and density within the claims blocks being explored.
- Timing and duration of sensory disturbance associated with helicopters and other heavy equipment on site (e.g., drill rigs).

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<sup>3</sup> <http://www.mndm.gov.on.ca/sites/default/files/drilling-activity-e.pdf>

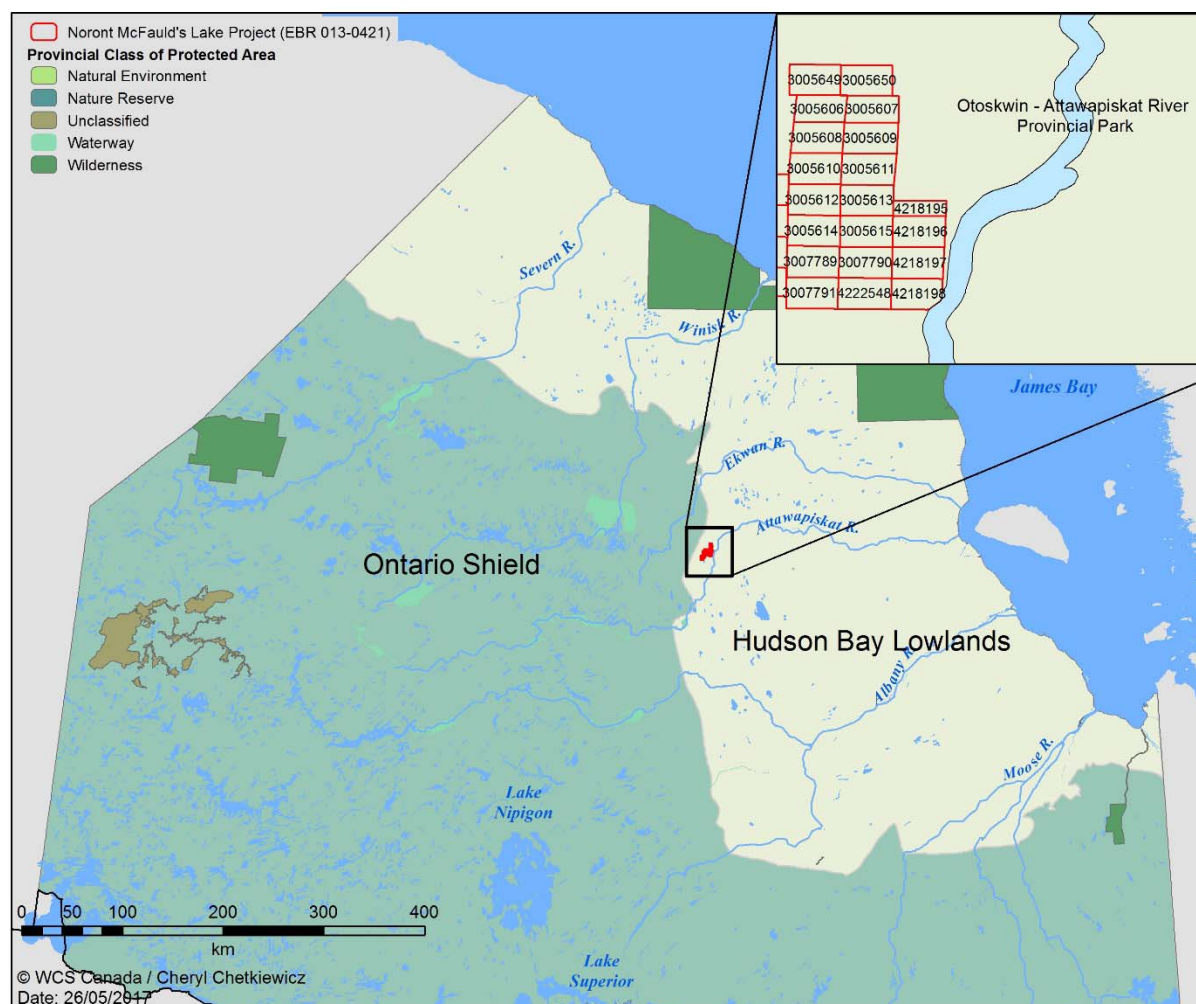
- Provide number of persons and persondays in camp.
- Identify how the proponent will minimize activities that increase risk of wildlife and fish mortality (e.g., hunting, fishing, garbage, contaminants).
- Describe plans for rehabilitation of wetland/peatland habitats where these activities are occurring.
- Describe boring procedures for hole abandonment (e.g., temporary, permanent).
- Identify where the fill is being placed and managed given the wetland environment and proximity to McFauld's Lake, other waterbodies, streams and waterways within the provincial park.

**Recommendation 3. Proponent withdraw exploration activities on claims within 1 km of major water bodies such as the Attawapiskat River, the Otokwin-Attawapiskat River Provincial Park (waterway class), and McFauld's Lake. In addition, we suggest the proponent conduct relevant sampling (e.g., benthic, zooplankton, fish) in waterbodies associated with drill holes to support impact assessment.**

We have significant concerns that together with other permit applications besides this one, drilling is occurring in a piecemeal fashion within one of the most intact wetland and peatland complexes in North America with little or no attention to the direct and cumulative impacts to freshwater resources. Sampling and drilling activities may disrupt groundwater flow pathways if they come in contact with subsurface aquifers, and can release underground water sources to the surface (Webster et al. 2014). Exploratory drilling can also increase ambient noise levels in lakes and streams affecting fish and sensitive life stages (Cott et al. 2015). However, in the absence of any regulations regarding number, timing, and depth of drilling operations or buffers with respect to waterbodies, it is impossible to understand how they will be assessed and impacts monitored and addressed as they grow over time in this region.

The Otokwin-Attawapiskat Provincial Park is a waterway class park (Figure 5). Under Ontario's *Provincial Park and Conservation Reserve Act, 2006*, waterway class parks are designated to protect recreational water routes as well as representative and significant terrestrial and aquatic ecosystems and associated natural and cultural features and to provide high quality recreational and educational experiences. Ideally, activities that are prohibited in provincial parks and conservation reserves such as mineral exploration would not be allowed within some distance to a waterway class park to protect terrestrial and aquatic ecosystems. Forestry practices, for example, mitigate the impacts of harvesting on freshwater ecosystems by applying a riparian (shoreline) buffer or reserve. There is some evidence that these approaches have been effective in reducing adverse effects on some aquatic organisms and their habitats (see review in Kreutzweiser et al. 2013). Although we could not find any public information on the terrestrial and freshwater features associated with this park, we suggest further review of proposed activities on freshwater ecosystems is necessary given their proximity to a waterway class provincial park.





**Figure 5. Proximity of claims to Otonkwin – Attawapiskat River Provincial Park (waterway class).**

Surveys of freshwater lakes including a range of physical, chemical, and biological characteristics (zooplankton and phytoplankton) are important for determining pre-development baselines in freshwater systems and enable regional comparisons of these communities across northern Ontario for the purposes of monitoring impacts from development and climate change. This work has largely been conducted by scientists at Laurentian University and Ontario's Ministry of the Environment and Climate Change (MOECC). The current application intersects with a number of lakes, the largest of which is McFauld's Lake.

Lake zooplankton were sampled in McFauld's Lake by Laurentian University and MOECC scientists at the Cooperative Freshwater Ecology Unit in 2013 and 2014. They report common species such as *Bosmina freyi*, *Chydorus sphaericus*, *Daphnia galeata mendotae*, *Holopedium glacialis*, *Leptodiptomus minutus*, *Diacyclops bicuspidatus thomasi*, and *Epischura lacustris*. Laurentian University and MOECC scientists found fewer species in McFauld's compared to other lowland lakes<sup>4</sup>. In general, lowland lakes have fewer species compared to Shield lakes. There appears to be no benthic data for McFauld's Lake.

<sup>4</sup> <http://www3.laurentian.ca/livingwithlakes/wp-content/uploads/2014/04/Progress-Report-Lake-and-Stream-Surveys-in-Northwestern-Ontario-2012-and-2013.pdf>

Freshwater fish are another important element necessary for monitoring impacts of development and climate change in the Ring of Fire. Most of the freshwater fish sampling in Ontario's Far North lakes is conducted by MNRF through the Broad-scale Monitoring Program and McFauld's Lake was surveyed in 2011. At a minimum, these programs offer some scientific information for waterbodies within the claims area that are not evident in the permit application. We strongly support the collection of additional baseline aquatic data by the proponent following standardized protocols and contribution to existing MOECC and MNRF databases.

**Recommendation 4. Information needed to review these permits must be current and readily available to the public.**

Information about mineral exploration activities is made available by posting individual permit applications on the Environmental Registry. The brief window of time in which to comment (30 days) on each individual application, absent any ecological or social context, makes the exercise challenging for interested parties such as WCS Canada to comment. In addition, the applications on the registry offer no description of the actual work or the potential impacts of activities on fish, wildlife, and ecosystems and their services. Nor is the information provided spatially on a map, challenging anyone's ability to determine the overall effects of these developments on fish, wildlife, ecosystems and the services they provide.

We have struggled to use the different Ontario Ministry of Northern Development and Mines (MNDM) products available to the public in order to consider mineral exploration permits and provide public comments. We can only conclude that other publics and interested parties as well as First Nations face similar challenges in trying to respond to these applications. We remain concerned about the extent to which government are tracking these requests and how they are assessing the cumulative impact of approvals on fish, wildlife, water, and air. The lack of information on fish, wildlife, water air, and ecosystems in the application has contributed to a lack of feedback from WCS Canada to date and a lack of commentary on permit applications on the Environmental Registry.

As such, we have placed considerable effort in developing a tool (<https://www.wcscanada.org/Resources/Mineral-Exploration-Permits-Tool.aspx>) to help us, as well as the public, to consider mineral exploration permit applications with respect to caribou ranges in Ontario. This tool draws on available MNDM datasets that need to be current to be useful for public comment. For example, the spatial data available in the Drill Hole Database<sup>5</sup> has not been updated since **November 2016**, which makes it impossible to consider the potential cumulative impacts associated with individual and multiple drill holes, including this proposal.

It is well known that mineral exploration activities as they accumulate on the landscape can negatively impact terrestrial and freshwater species and their habitats as well as the services provided by intact, functioning ecosystems. Impacts may include increased cumulative disturbance and loss of habitat, changes in habitat, and fragmentation, increased sensory disturbance and direct or indirect mortality.

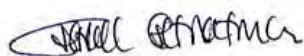
Our comments are intended to highlight the lack of attention of regulating authorities to these impacts. Our focus on a few species-at-risk and freshwater systems is meant to be illustrative of the challenges of providing public comments on mineral exploration permits in Ontario's Far North, even when the public

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<sup>5</sup> <https://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearch/drill-holes>

are made aware of the applications through the Environmental Registry. As always, we would be pleased to engage in any discussions regarding our recommendations and comments and you may contact Cheryl Chetkiewicz at 807-285-9125 or [cchetkiewicz@wcs.org](mailto:cchetkiewicz@wcs.org) to do so. Thank you for this opportunity to provide feedback.

Yours sincerely,




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Justina C. Ray, Ph.D.  
President & Senior Scientist



Brie Edwards, Ph.D.  
Freshwater Research Associate



Meg Southee, M.Sc.  
GIS Analyst and Spatial Data Manager

cc: Environmental Commissioner of Ontario  
cc: Matawa First Nations Chiefs

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