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Status of the Rusty Blackbird and Bank Swallow Habitat and Presence in the DSO Project Area

TATA

Tata Steel Minerals of Canada

Preliminary technical report

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1 CONTEXT

Since the completion of a bird survey in 2009, including the Rusty Blackbird, for the DSO project, several physical changes have been made to the environment, which were approved by regulatory bodies and done in an environmentally-conscious manner, but may none the less have resulted in wetland disturbance, such as road construction and changes to mining operations. As a result, TSMC would like an assessment of the current status of the Rusty Blackbird's habitat in the DSO project area (with a focus on DSO3, the Howse property, the hauling road and parts of DSO4). Further, TSMC would like to understand how this protected species may be affected by future mining activities and would like to develop a detailed protection plan for the Rusty Blackbird for this area.

In 2015, the Bank Swallow – a threatened species (COSEWIC, 2014) - was found nesting on artificial vertical structures in the DSO3 area by Groupe Hémisphères. TSMC would like to understand how to manage the presence of the Bank Swallow in the Timmins 4 and Howse areas. TSMC needs to know what is the implication of the presence of this species, as well as the best management strategy related to the species' presence, during mining activities and during its closure plans. The objective is to determine if TSMC needs to maintain this artificial habitat and to evaluate what measures should be taken for the closure of Timmins 4 area and Howse Project in order to develop the best management strategy related to this species.

2 LITERATURE REVIEW

2.1 Rusty Blackbird

2.1.1 Status

The Canadian population of Rusty Blackbirds represents approximately 70% of the global breeding population and numbers between 110,400 and 1.4 million individuals. Analyses of the long-term trend based on the Christmas Bird Count indicated that the population has declined by about 85% since the 1960s, with a drop of 18% over the last decade (COSEWIC, 2006). There is also evidence of long-term historical declines (Greenberg and Droege, 1999).

The species is listed under the *Species at Risk Act* (SARA) and is considered of Special Concern while it is designated Vulnerable under the *Endangered Species Act* of Newfoundland and Labrador (where sections of the DSO3 and DSO4 project occur).

2.1.2 Ecology

The breeding range of the Rusty Blackbird corresponds closely to the boreal forest and the taiga (COSEWIC, 2006). During the breeding season, which extends from mid-May to the end of July in the northernmost part of its range (Sinclair et al., 2003), this bird is invariably found close to water (Gauthier et Aubry, 1995). Its preferred habitat is characterized by forest wetlands, such as streams, peat bogs, sedge meadows (fens), marshes, swamps, beaver ponds and pasture edges (COSEWIC, 2006). In northern regions, it can be observed close to water bodies, and it frequents, among other habitats, open areas interspersed with shrubs and spruce (DesGranges, 1989). It is usually absent from wetlands above the tree line in the tundra (DesGranges et Houde, 1989).

2.1.3 Distribution

The Rusty blackbird has a breeding range of 7.6 million km^2, including most Canadian provinces and territories, the State of Alaska, several Great Lakes states and most New England states (COSEWIC, 2006). In Québec and Labrador, the highest frequency of observations was recorded in the black spruce stands of the hinterland of the North Shore (Gauthier et Aubry, 1995).

2.1.3.1 Distribution in the DSO Area

A pair of adult birds carrying food was reported in July 2009 on the Howse Property (AECOM, 2009). Before 2016, this was the only known confirmed breeding sighting from the study zone. Other past regional sightings are of birds outside the study area. The species was found near Inukshuk Lake and near Big Star Lake in 2009 (Groupe Hémisphères, 2009) while it was also reported south of Schefferville on James Property, Redmond Property and Knob Lake in 2009 (AECOM, 2009).

2.2 Bank Swallow

2.2.1 Status

This species has shown a severe long-term decline amounting to 98% of its Canadian population over the last 40 years. The cause of this decline remains to be clarified but widespread use of pesticides, which could cause a reduction in prey abundance and destruction of nests during aggregate excavation, are presumably important threats (COSEWIC, 2013). The species was designated Threatened in May 2013 by the COSEWIC but has not been protected by the *Species at Risk Act* (SARA) to date. However, most of the COSEWIC Assessment and status report are eventually considered to update the list of species designated by the

SARA and it is therefore, highly likely that this species will be designated within the next years. Also, this species is already protected by the *Migration Bird Convention Act, 1994*.

2.2.2 Ecology

The Bank Swallow is well known for nesting in the streamside (riparian) banks and bluffs of rivers and streams. This species is a highly social land bird with a Holarctic breeding distribution. It nests in colonies ranging from 10 to almost 2,000 active nests (Garrisson and Barret, 1999). As the species is widespread, its calendar of nesting chronology varies considerably. In Canada, it is usually the last species of swallow to arrive in spring and has therefore, a later calendar of nesting chronology (AONQ, 2016). Egg laying is known to have occurred as late as July 19th in British Columbia

Initiation of egg-laying of Bank Swallow in Swedish Lapland is related to emergence dates and abundance of flying insects, which are in turn affected by amount of snow-free ground and by temperatures in May and June (Svensson, 1986).

2.2.3 Distribution

Widespread in Europe, Asia and North America, the species breeds from central Alaska to Newfoundland on our continent and can be found as far south as Texas and California. Bank Swallows winter primarily in South America and is usually the last species of swallow to arrive in spring in Canada and has therefore, a later calendar of nesting chronology (AONQ, 2016)

2.2.3.1 Distribution in the DSO Area

Before 2015, there were no known records of the Bank Swallow presence in the Schefferville region nor near the Howse Property. However, the species was known to occur near Labrador City and Kuujjuaq (ebird, 2015) and was not completely unexpected regionally. On June 25th 2015, a small colony (approximatively 10 nests) was found on a vertical bank of the mining pit Timmins 4 south (DSO Mines). Further, Bank Swallows were also seen in this area in June 2016, and the area was isolated by the Proponent until the conclusion of the breeding season.

3 METHODOLOGY

3.1 Classification

The English and Latin names of birds are based on the 7th edition and 57th supplement to the list of birds North America (AOU, 2016).

3.2 Study Area

The Rusty Blackbird survey protocol used the existing route system. If other wetlands or streams are expected to be affected by the future mining activities, they were reached and surveyed by foot from the nearest road. The area surveyed included the hauling road, parts of DSO4, the Howse Project and DSO3.

3.3 Survey Technique

3.3.1 Rusty Blackbird

Wetlands types that are considered as potential breeding habitat were identified with the Terrestrial ecosystem mapping carried out by Groupe Hémisphères in the area (Groupe Hémisphères, 2011a and 2014). Point counts were positioned in these habitat prior to the survey.

Rusty Blackbird surveys were conducted in the mornings of July 19th and July 20th, 2016, starting at sunrise and ending at 9:30 am. In total, 21 survey stations were strategically chosen to provide an unobstructed view of as much of the wetland, lake or stream as possible, and were positioned at least 500 m apart. Six stations were located along the hauling road while five others were in Kivivic area. The remaining eight survey stations were all located in the Howse area. Location of survey stations are presented in the figure in Appendix I.

Point counts used the short protocol proposed by the International Rusty Blackbird working group which consists of 1-minute passive-listening intervals, followed by a 30 seconds Rusty Blackbird broadcast call playback then a 1-minute post broadcast listening period (Powell et *al.*, 2008). The items that were used to conduct these surveys are: a mp3 player and a speaker Pignose Legendary 7-100 model. Total time at each point count were a minimum of 2.5 minutes. Each stop was written down in Bird Survey Loadform with the following information:

- Temperature
- Wind velocity
- Cloud cover
- Starting time and date
- Presence or absence of Rusty Blackbird
- Presence or absence of potential habitat for Rusty Blackbird

3.3.2 Bank Swallow

During the afternoon, a survey of the banks of Timmins 4 and other old waste rock or banks from past mining activities was conducted to verify the presence of Bank Swallow colonies. This survey consisted solely of visiting pits and scrutinizing the cliffs for existing nests and the surrounding environment for foraging birds flying around.

3.3.3 Other Observations

In order to add complementary information on locally-breeding species, other observations were also compiled.

4 RESULTS AND DISCUSSION

4.1 Survey Conditions

Observation conditions varied from good to excellent, with temperature variation between 6°C and 19°C. Cloud cover was variable during the rest of the survey period. Periods of showers were encountered but no surveys were conducted during these conditions.

4.2 Effort

Surveys took place before on July 19th 2016 and 20 July 20th 2016. Two mornings were needed to complete this specific survey, which represents approximatively 8 hours of effort. Effort includes travel time on site, as an active search was also carried out during this period.

4.3 Species at Risk Presence

4.3.1 Rusty Blackbird

Surveys with playback have revealed two new breeding sites for Rusty Blackbird on Howse Property (Table 1). Breeding was confirmed at both places. Locations of the two breeding sites can be seen in Appendix I, figure 1. Habitat potential was classified in three categories:

- Confirmed: The presence of Rusty Blackbird was confirmed during the surveys
- Potential: No Rusty Blackbird were seen or heard during the surveys but the habitat could be potentially used by the species
- No potential: The habitat does not fit the ecological requirements for this species.

Classification of habitat potential can be seen in Appendix I, figure 2.

Breeding was confirmed at two different locations with direct observations of recently fledged young Rusty Blackbirds. Rusty Blackbird abundance may vary considerably from years to year. Studies show that numbers were positively correlated to the annual and winter North Atlantic Oscillation (NAO) indices and negatively to the combined precipitation for June, July, and August, suggesting that environmental factors may contribute both directly and indirectly (through food web processes) to the cyclic variations in abundance observed (Savard et al, 2011). In other words, some sites with potential in the study zone that were not used in 2016 could potentially be used in the future by the species. Photos of habitat can be seen in Appendix IV.

Table 1. Rusty Blackbird Survey Results

Survey Station numbers	Number of Rusty Blackbird detected	Breeding status	Habitat potential for Rusty Blackbird	Comments
Q1	-	-	No potential	
Q2	-		Potential	
Q3	4	Confirmed	Confirmed	Adults with fledged youngs
Q4	-	-	Potential	
Q5	-	-	Potential	
Q6	-	-	Potential	
Q7	1	Confirmed	Confirmed	Fledged young
Q8	-	-	Potential	
Q9	-	-	No potential	

Q10	-	-	No potential	
Q11	-	-	No potential	
Q12	-	-	No potential	
Q13	-	-	No potential	
Q14	-	-	No potential	
Q15	-	-	Potential	
Q16	-	-	No potential	
Q17	-	-	Potential	
Q18	-	-	No potential	
Q19	-	-	Potential	
Q20	-	-	Potential	
Q21	-	-	Potential	

4.3.2 Bank Swallow

The Bank Swallow colony discovered in the Timmins 4 pit in July 2015 was still active during summer 2016. Approximately 20 nests were active this year, which represent a population increase compared to 2015. Their location is shown in Appendix I. Photos of the habitat can be seen in Appendix IV.

4.4 Implications

On a national level, the species designated Threatened or Endangered under the SARA are listed in Schedule 1 of the Species at Risk Public Registry and subjet to the law's restrictions. However, as neither the Rusty Blackbird nor the Bank Swallow are designated Threatened or Endangered, **their habitat is not protected under the law and restrictions only occur during the breeding season**. A calendar of nesting chronology of both species (built with the help of the Nesting Calendar Query tool from Bird Studies Canada) can be seen in Appendix II. This calendar was built according to climatic and geographic data from the ecodistrict of Smallwood Reservoir. In DSO area, Rusty Blackbird may start breeding as early as May 17th and young birds will have fledged by July 16th. The Bank Swallow may start breeding as early as May 30th (depending of the snow cover left) and young birds will have departed the nest by August 3rd.

4.4.1 Rusty Blackbird

Numerous studies support the view that a 30-m riparian strip is required to preserve the biodiversity of the invertebrates and amphibians on which the Rusty Blackbird feeds (Newbold *et al.,* 1980; Gregory *et al.,* 1987; Rudolph and Dickson, 1990; Castelle *et al.,* 1992; Parkyn, 2004;) as well as a variety of forest types and geomorphological formations, from short-term effects of habitat disturbance (Parkyn, 2004). Another study shows that the Rusty Blackbird prefers to nest within 30 m of wetlands and suggests an unlogged buffer of 75 m around nests to minimize predation pressure (Powell *et al*., 2010). Because the nests are very close to water, and often above water (Gauthier et Aubry, 1995), and because the wetland delineation for the Project includes the totality of the aquatic ecosystem, a 75-m protection buffer strip drawn around the wetlands should protect both the nesting and the feeding sites for these species as well as reduce predation risk, as it has been shown that predation rates are highest within 50 m of wood edges (Paton, 1994). Hence, the Proponent should continue to apply the TSMC/NML Plan for the Protection of the Rusty Blackbird (Groupe Hémisphères, 2011b), which includes the protection of a riparian strip of at least 75 m wide adjacent to riparian and non-riparian wetlands for the protection of the Rusty blackbird.

Only two breeding sites were located during summer 2016, Q3 and Q7 (Appendix I). However, proper habitats were identified at Q2, Q4, Q5, Q6, Q8, Q15 and Q17. Surveys should be conducted if any

construction or vegetation removal are planned on these sites within the nesting calendar of this species (between May 15th and July 15th, where young birds are still likely to be found in nests). No restriction according to the SARA are effective in other locations in the study zone but the Migratory Bird Convention Act, 1994 is likely to forbid vegetation removal between late April and August 20th to avoid destroying active nests at any location. The 75-m buffer is only needed where the Rusty Blackbird presence was confirmed. Projected infrastructure construction already respects the proposed buffer zone in order to ensure protection to the two Rusty Blackbird new breeding sites discovered in 2016.

4.4.2 Bank Swallow

The proponent should survey the Howse Pit vertical walls in early and mid-summer every year that the mine is in the operations phase. Should the Bank Swallow be detected, deterrence measures should be taken to render the site inhospitable outside of the breeding season, which, in northern latitudes, could go from mid-June to mid-August.

Groupe Hémisphères suggests that a TSMC environmental technician should survey the pits once every two weeks at the end of May and in June to detect the Bank Swallow's arrival before nesting begins.

The first birds to arrive spend the first 2–3 weeks mostly foraging, and probably do not begin pair formation immediately; later-arriving birds visit colonies and start forming pairs immediately upon arrival (Garrisson and Barret, 1999). Thus, if Swallow surveys are carried out during their early arrival, it allows the proponent to install deterrence measures before the birds start to nest. No deterrence measures will be taken if the swallows have already started breeding.

If deterrence measures are needed, the use of Irri-tape is strongly suggested as a deterrent. Recommended by Pierre Brousseau from Environment Canada (pers. comm), Irri-tape is a holographic bird tape that flashes blinding light and makes noise when it flaps in the wind. It is also known as Flash Tape, Foil Tape, Bird Tape, Repeller Ribbon, Mirror Tape, Reflective Tape, Mylar Tape and Holographic Tape and can be bought online or at Home-Depot. Irri-tape should be attached on wooded poles as close as possible from the locations where deterrence measures are needed

Any nest found will be protected with a buffer zone determined by a setback distance appropriate to the species, the level of the disturbance and the landscape context, until the young have permanently left the vicinity of the nest. Setback distance suggested by Environment Canada (Environment Canada, 2015) is up to 50 m or more for swallow colonies.

Regular blasting should naturally deter the swallow to use the pit as a breeding site. If not, additional measures can be taken to deter the birds from using the large piles of unattended/unvegetated soil or the vertical banks in the mining pits if none of the previous mitigation measures can be provided. Propane bangers could be used prior to the Bank Swallow's arrival in Spring. but is prohibited during the nesting season as per the Canadian Environmental Assessment Agency (CEAA). Further, the efficiency of this method on Swallows remains to be clarified as there is a lack of case studies on this specific issue. However, the use of Irri-tape has proven to be cheap and efficient if properly used and would only consist of planting a wooden pole with the holographic bird tape attached to it near the entrance of cavities of Bank Swallow a week or two before Bank Swallow arrival.

The proponent should be committed not to install physical deterrents for Bank Swallow colonies in years during which work is not expected. This is already the case in one of the DSO4 pits and the Proponent has installed a set-back fence to prevent any human disturbance to the colony.

If the Timmins 4 pits are not backer-occupied by Bank Swallows on certain years during the Howse project existence, they could be filled in (if needed) as part of the rehabilitation of those deposits. As Bank Swallow habitat is not protected by the Species at Risk Act, the Timmins 4 pit could also be filled after the breeding

season (after August 10th). However, in consideration that the Species at Risk Act could be updated in the near future, the Proponent should consult environmental professionals and/or bird specialists before doing so to ensure the legality of their action.

4.4.3 Other Observations

The complete list of bird species observed during July 2016 can be found in Appendix III. A total of 35 species were observed, which include four species of aquatic birds (including two species of ducks), two species of raptors and 31 species of land birds.

5 CONCLUSION

Rusty Blackbird breeding was confirmed again this year in the vicinity of the Howse project. However, both sites were located outside the planned construction facilities. Proper habitats for the species were also identified in order to maintain a conservation and survey strategy for the future. The continued protection of a riparian strip of at least 75-m wide (when possible) adjacent to riparian and non-riparian wetlands, a practice that is currently applied by the Proponent, would ensure the protection of the Rusty Blackbird.

The Bank Swallow was back in Timmins 4 pit this year, with approximatively 20 pairs. A survey strategy should be developed in pits where activities are planned and deterrence measures should be installed in order to respect the Migratory Bird Convention Act, 1994. Bank Swallows should be able to use old pits when no activities are planned.

6 QUALITY ASSURANCE

Groupe Hémisphères possesses an internal quality control program which is derived from ISO 9001 standards. This is based on a review and approval of all concepts and document production by a senior professional. The program considers the management, the control of documentation, the personnel's continuous training, as well as the quality assurance of the deliverables. The system also includes a tight control of the field work and the prevention and safety measures specific to the project.

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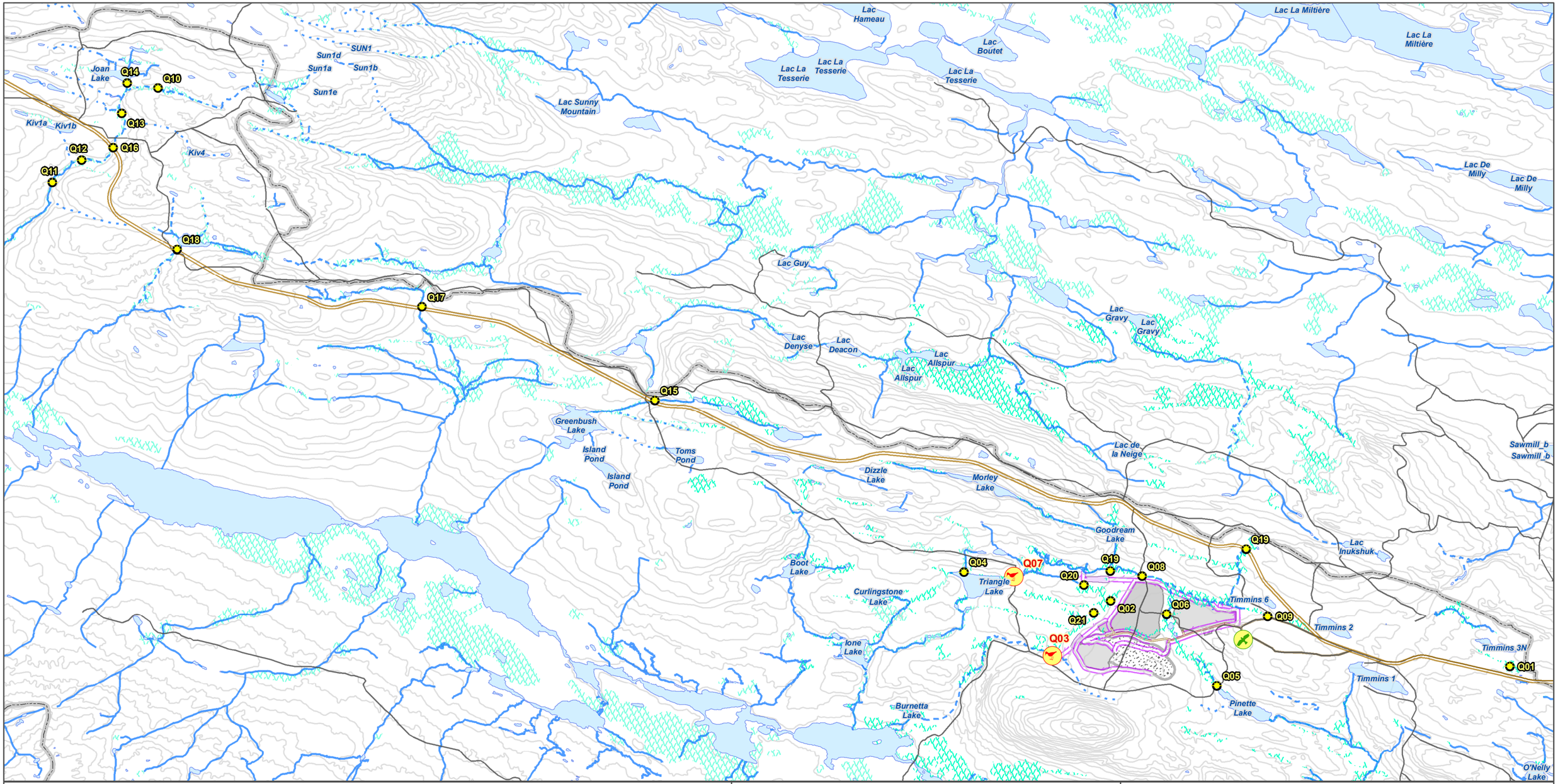
APPENDICES

Appendix I

Figure



Species at Risk

Confirmed

Rusty Blackbird Point Counts

Bank Swallow Colony

Survey Stations

Rusty Blackbird Point Counts

Howse Proposed Infrastructures

Proposed Howse Pit

Proposed Topsoil/Overburden Stockpile

Proposed Waste Dump/In-Pit Dump

Proposed Site Infrastructure

Proposed Sedimentation Pond

Proposed Ditch and Outlet

Hydrography

Permanent Watercourse

Intermittent Watercourse

Storm Runoff

Disappearing Stream

Wetland

Water Body

Basemap

Existing Road

Road to DSO Area 4

Contour Line (50 ft)

Provincial Border

FILE, PROJECT, DATE, AUTHOR:
GH-0759 , PR185-27-16, 2016-09-23, edickoum

0 2 4
Kilometers

UTM 19N NAD 83 SCALE: 1:65 000

SOURCES:
Basemap
Government of Canada, NTDB, 1:50,000, 1979 Government of NL and government of Quebec, Boundary used for claims
SNC Lavalin, Groupe Hémisphères, Hydrology update, 2013

Infrastructure and Mining Components
New Millennium Capital Corp., Mining sites and roads
Howse Minerals Limited/ MET-CHEM Howse Deposit Design for General Layout, 2015

TATA

PROTECTION PLAN FOR RUSTY BLACKBIRD
MANAGEMENT PLAN FOR BANK SWALLOW

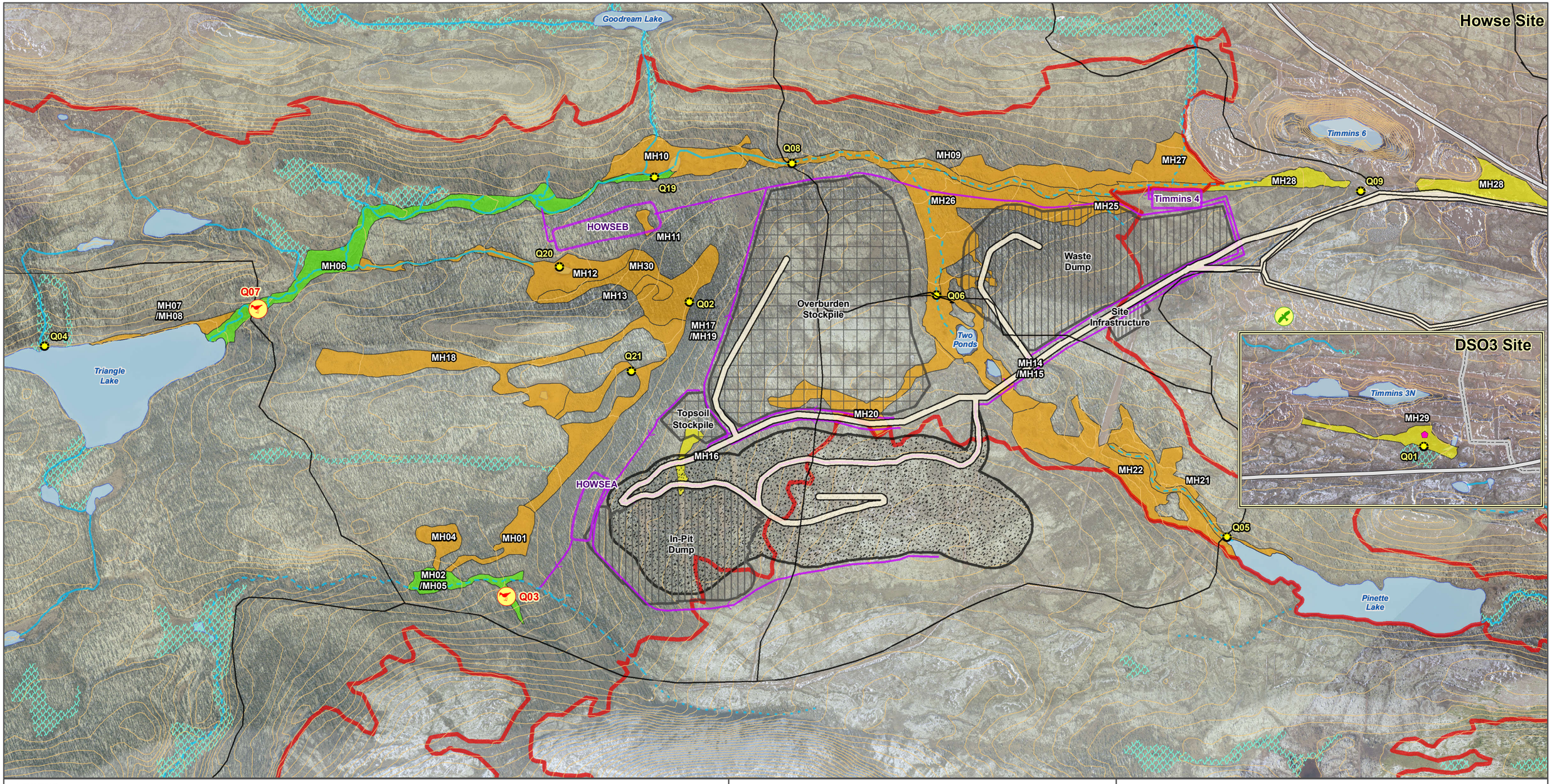
Species at Risk

GroupeHemispheres

5731, rue Saint-Louis,
Bureau 201, Lévis (QC)
Canada, G6V 4E2

1453, rue Beaubien est,
Bureau 301, Montréal (QC)
Canada, H2G 3C6

Figure 1



LEGEND

- Rusty Blackbird Point Counts

Sepcies at Risk

- Bank Swallow Colony
- Rusty Blackbird Point Counts

Basemap

- Contour Line (5m)
- Ecoregion Boundary
- Existing Road

Howse Proposed Infrastructures

- Proposed Howse Pit
- Proposed Topsoil/Overburden Stockpile
- Proposed Waste Dump/In-Pit Dump
- Proposed Site Infrastructure
- Proposed Sedimentation Pond
- Haul Road
- Proposed Ditch and Outlet

Hydrography

- Permanent Watercourse
- Intermittent Watercourse
- Storm Runoff

Potentially Wetland

- Confirmed
- Potential
- No Potential
- Water Body
- Other Wetland

FILE, PROJECT, DATE, AUTHOR:
GH-0762 , PR185-27-16, 2016-09-23, edickoum

0 150 300 450 600
Meters

UTM 19N NAD 83 SCALE: 1:15 000

SOURCES:
Basemap
Government of Canada, NTDB, 1:50,000, 1979 Government of NL and government of Quebec, Boundary used for claims
SNC Lavalin, Groupe Hémisphères, Hydrology update, 2013

Infrastructure and Mining Components
New Millennium Capital Corp., Mining sites and roads
Howse Minerals Limited/ MET-CHEM Howse Deposit Design for General Layout, 2015

TATA

PROTECTION PLAN FOR RUSTY BLACKBIRD
MANAGAEMENTPLAN FOR BANK SWALLOW

Potentially Wetland for Rusty Blackbird

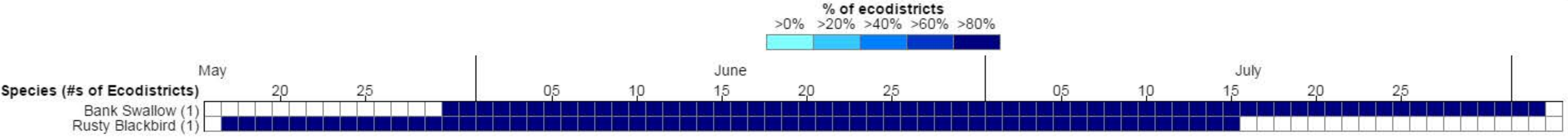
GroupeHemispheres
5731, rue Saint-Louis, Bureau 201, Lévis (QC) Canada, G6V 4E2
1453, rue Beaubien est, Bureau 301, Montréal (QC) Canada, H2G 3C6

Figure 2

Appendix II

Calendar of Nesting Chronology

Calendar of nesting chronology in Howse area



Appendix III

List of Birds Observed During Site Visit

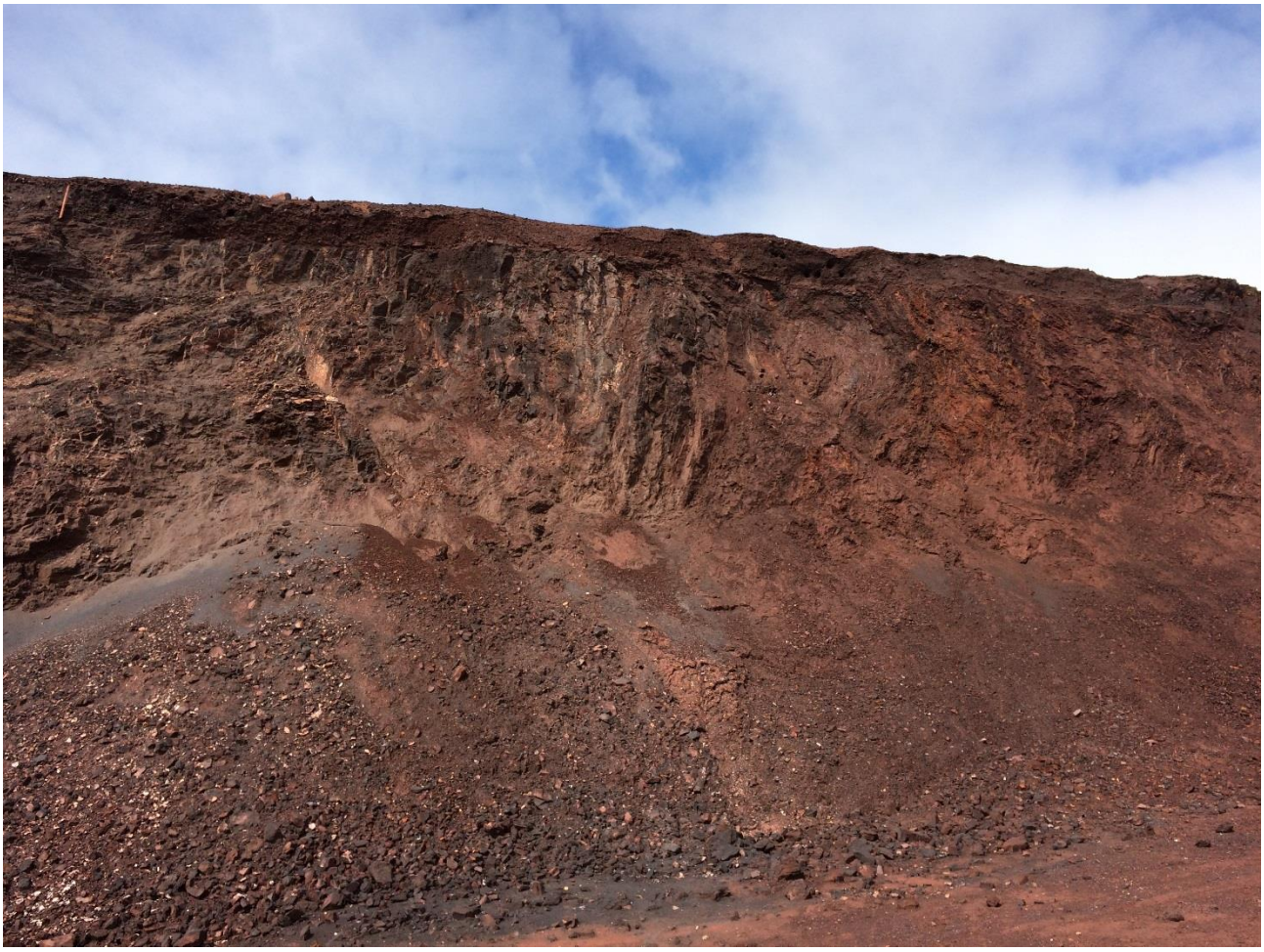
List of birds observed during site visit to DSO3 and DSO4 on July 18-20, 2016

Common name	Scientific name
Canada Goose	*Branta canadensis*
Green-winged Teal	*Anas crecca*
Spruce Grouse	*Falcipennis canadensis*
Willow Ptarmigan	*Lagopus lagopus*
Osprey	*Pandion haliaetus*
Sharp-shinned Hawk	*Accipiter striatus*
Spotted Sandpiper	*Actitis macularius*
Solitary Sandpiper	*Tringa solitaria*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Gray Jay	*Perisoreus canadensis*
Common Raven	*Corvus corax*
Bank Swallow	*Riparia riparia*
Boreal Chickadee	*Poecile hudsonicus*
Red-breasted Nuthatch	*Sitta canadensis*
Ruby-crowned Kinglet	*Regulus calendula*
Gray-cheeked Thrush	*Catharus minimus*
American Robin	*Turdus migratorius*
American Pipit	*Anthus rubescens*
Northern Waterthrush	*Parkesia noveboracensis*
Tennessee Warbler	*Oreothlypis peregrina*
Blackpoll Warbler	*Setophaga striata*
Yellow-rumped Warbler	*Setophaga coronata*
Wilson's Warbler	*Cardellina pusilla*
American Tree Sparrow	*Spîzelloides arborea*
Fox Sparrow	*Passerella iliaca*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-throated Sparrow	*Zonotrichia albicolis*
Savannah Sparrow	*Passerculus sandwichensis*
Lincoln's Sparrow	*Melospiza lincolnii*
Rusty Blackbird	*Euphagus carolinus*
Pine Grosbeak	*Pinicola enucleator*
White-winged Crossbill	*Loxia curvirostra*
Common Redpoll	*Acanthis flammea*
Pine Siskin	*Spinus pinus*

Appendix IV

Photos

Rusty Blackbird breeding habitat in 2016. Adults feeding recently fledged young were observed.



Bank Swallow colony near Timmins 4. Nest consists of excavated holes on the cliff.