



**2020 Annual Report — Project 2a (Goodwood)
Québec**



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REVISION ET PUBLICATION		
No	Date	Modification/ Publication
00	2020-03-31	Final Report

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1 PERMITS AND AUTHORIZATION

1.1 Project 2a

Project 2a was subject to the impact assessment process; a project authorization was delivered in 2013 and modified in 2017.

In spring 2017, Tata Steel Minerals Canada (TSMC) obtained an authorization certificate for a period of 1 year, with the condition that no effluent was to be produced from the project. In February 2018, a request for a certificate was submitted for long-term operations in the Goodwood pit. Approval was granted in April 2018.

In August 2019, TSMC filed a request for modification to the existing infrastructure with the MELCC. This request presents the repair work required to the Goodwood accumulation basin. Since this is maintenance work on existing infrastructure, the certificate of authorization does not have to be modified.

In Fall 2019, TSMC submitted documents for the Attestation d'Assainissement for the project: *Exploitation d'un établissement industriel d'extraction minier Fosse Goodwood à Schefferville*. In December 2020, the draft final Attestation d'Assainissement document was received for the project from the Ministère de l'Environnement et de la Lutte Contre les Changements Climatiques.

1.2 Waste rock Extraction from Fleming 7 Pit

For safety reasons, a volume of waste rock located in Quebec will have to be extracted once mining of the Fleming 7 orebody (located in NL) resumes. TSMC has a certificate of authorization (no. 92031100000) for this activity and there is no change since the previous year.

1.3 CQEK Feedback

On December 21st, 2020, TSMC received comments and questions from the Commission de la qualité de l'environnement Kativik (CQEK) pertaining to TSMC's report on 2019 activities.

CQEK requested that the promoter must present a compilation of all the results of environmental and social monitoring in tabular form, which would allow for exhaustive verification of follow-up compliance activities carried out (parameters analyzed, frequency of monitoring and results of analyzes obtained). If the promoter does not already have a compilation system for this data, it was suggested that they prepare an Excel spreadsheet that they will complete with all the parameters, stations and frequencies established in the document "Program de environmental monitoring (January 2017)" authorized on August 14, 2017.

The requested table is provided in Appendix I.

2 OPERATION

2.1 Waste rock Extraction from Flemming 7 Pit

Since 2015, operations at the Flemming 7 pit have ceased and the waste rock located in Quebec has still not been extracted.

2.2 Project 2a

TSMC has decided to delay the start of the Sunny project; however, the environmental monitoring activities are ongoing.

There is no ore storage in the province of Quebec. All the ore is transported by haul truck to the DSO3 site (Newfoundland and Labrador) for crushing, screening, processing and shipment. The ore is then transported by train in the form of a concentrate to the port of Sept-Iles for maritime transshipment.

Construction of the Water Treatment Plant was completed in October 2019. In addition, design of the repair plans for the Goodwood basin are ready to be implemented. The repairs were scheduled for the operational season of 2020 but were unfortunately delayed due to difficulties in bringing materials and personnel to site as a result of the COVID-19 pandemic.

2.3 Blasting Summary

Table 1 presents the blasts conducted in Quebec in 2019. Data are collected using a microphone (UM12242 V 10-87 Micromate ISEE).

Table 1. Summary of blasting done in Goodwood in 2020

Report Event	Date	Time	Pressure dB (L)	Vibration peak (mm/s)	ZC Frequency (Hz)
GD-743-19	22-Jul-20	12:00	129.93	5.114	31.0
GD-743-22	25-Jul-20	14:15	137.74	3.256	19.7
GD-743-21	27-Jul-20	12:10	143.82	3.155	14.8
GD-763-05	30-Jul-20	15:00	133.30	1.962	11.0
GD-763-05 Re-fire	30-Jul-20	18:22	121.80	0.403	10.4
GD-763-07	1-Aug-20	12:00	126.40	0.352	7.4
GD-743-20	4-Aug-20	12:00	117.70	0.589	6.1
GD-753-21	12-Aug-20	11:50	117.20	0.356	2.0
GD-753-22	14-Aug-20	11:45	114.50	0.362	8.1
GD-738-03	16-Aug-20	11:45	130.10	0.364	6.6
GD-753-23	20-Aug-20	12:00	N/A	N/A	N/A
GD-763-11	21-Aug-20	13:00	125.94	0.243	5.3
GD-753-38	30-Aug-20	13:20	132.60	1.358	39.0
GD-743-23	4-Sep-20	15:15	141.50	3.328	12.8
GD-753-24	14-Sep-20	18:42	121.80	14.44	10.4
GD-743-24	19-Sep-20	12:00	139.60	6.652	12.6
GD-733-17	23-Sep-20	12:00	144.80	2.31	4.8
GD-743-26	3-Oct-20	15:30	92.90	11.43	45.0
GD-743-25	7-Oct-20	17:00	140.05	3.481	27.0

Report Event	Date	Time	Pressure dB (L)	Vibration peak (mm/s)	ZC Frequency (Hz)
GD-743-27	18-Oct-20	13:40	N/A	3.736	4.3
GD-743-29	23-Oct-20	16:00	130.90	1.128	9.1
GD-743-28	26-Oct-20	12:05	144.39	3.264	8.4
GD-753-25	31-Oct-20	12:05	143.84	0.579	17.7
GD-738-04	14-Nov-20	12:00	139.10	20.630	26.0
GD-743-32	20-Nov-20	12:00	N/A	4.552	14.8
GD-733-19	24-Nov-20	12:15	121.70	30.700	6.4
GD-733-20	27-Nov-20	11:55	127.20	27.550	7.8
GD-743-34	1-Dec-20	12:10	142.50	68.86	17.4
GD-743-30	17-Dec-20	13:23	141.54	32.94	39.0
GD-743-31	17-Dec-20	13:23	141.54	32.94	39.0
GD-733-24	20-Dec-20	13:32	142.64	0.774	14.4

2.4 Impact of the COVID-19 Pandemic on Operations

The onset of the COVID-19 pandemic has severely impacted TSMC’s 2020 operational season at Goodwood in several ways. The proximity to Indigenous communities and the isolated geography of the site have intensified the effects of the pandemic on TSMC’s operations. First, due to provincial bubbling, mandatory health and safety measures on site and a drastic decrease in the availability of flights (sometimes cancelling commercial flights altogether) and other logistical dependencies, far fewer workers were able to access the site for the first half of the year, and thus the operational season could not begin until late July.

Second, local workers were not permitted access to the mine site, and conversely, mine workers were not permitted to be in the town of Schefferville, thus further limiting manpower on site. Notably, TSMC was unable to complete its regular springtime snow sampling requirement for Project 2a as the sampling site is quite remote and, given the conditions at that time of year and the hazards of the terrain, reaching it requires the help of local indigenous guides.

The use of external support was also limited. It was not possible for consultants to access the site until Fall 2020. The inability to access accommodations in the town of Schefferville and the need to reserve many rooms in TSMC’s camp for emergency quarantine severely limited available space for workers. Thus, Goodwood Pond repairs and management of the overburden pile were kept in planning phase throughout the year. Their respective plans and timelines were honed such that the work can be completed, should the pandemic situation begin to alleviate, in 2021.

The cancellation of commercial flights from Schefferville to Montreal impeded the use of Quebec laboratories for samples analyses. As such, the government of Quebec authorized TSMC to have samples analyzed at a laboratory in the Maritimes. Confirmation that samples from project 2A could be analyzed by a laboratory in Atlantic Canada was received via email from an environmental inspector from the *Direction régionale du Centre de contrôle environnemental de la Côte-Nord* Ministère de l’Environnement et de la Lutte contre les changements climatiques on June 30th, 2020. The letter of permission for this can be found in Appendix II. TSMC has also been granted leniency with regards to the validity of samples due to exceeded holding times, as the lack of commercial flights makes it impossible to move samples from the mine site to the lab in a timely manner.

3 INCIDENTS

The only incident to occur at Goodwood in the reporting year was the springtime exfiltration at the base of the dike for which mitigation measures were already put in place. TSMC took special measures to prevent any incidents related to effluent reaching the natural environment, which are described below. In both cases, TSMC provided regular updates (weekly, or more, as needed by the circumstance), to federal and provincial ministries on the status of the Spring thaw at the Goodwood site.

3.1 2020 Incidents

During the Spring 2020 snowmelt, groundwater exfiltration from the unlined portion of the basin was observed. In anticipation of this issue, TSMC implemented mitigation measures at this known exfiltration point in the form of flocculant blocks, filtration socks and flocculant impregnated geojute. These appeared to have positive effects on clarification of any exfiltration water. The basin repairs were delayed due to the onset of the COVID-19 pandemic. Completion of the repairs is anticipated for 2021.

Environmental technicians at TSMC performed water quality monitoring at the exfiltration point while the flow was present. Initial Spring melt events could not be sampled for quantitative analysis as laboratory equipment could not be shipped to the site while commercial flights to Schefferville were all cancelled. However, frequent detailed observations and pictures were taken at the final discharge point during the major springtime exfiltration, as well as at various points throughout the summer months in which flow was observed. Note that the spring melt is the only period in which any exfiltration was able flow past the containment structures built in 2018. All observations were compiled and sent to the government of Quebec and Environment Canada authorities in lieu of the expected annual inspections. Critical observations and photos are included in Appendix III.

Table 2 presents the results of the water analyses from the exfiltration. No threshold was exceeded in 2020. For two parameters, the detection limit is higher than the quality criterion for the protection of aquatic life (chronic effect), which does not allow to interpret if there is contamination.

The certificates of analysis are presented in Appendix IV.

No other incidents occurred in 2020 in the Goodwood area.

Table 2. Results of the water exfiltration analysis

Parameters	Unit	MAC (Protection of Aquatic Life- Chronic)	MAC (Protection of Aquatic Life - Acute)	July 23, 2020	August 26, 2020
Arsenic	ug/L	0.15	0.34	<1.0	<1.0
Copper	ug/L	1.3	1.6	<1.0	<1.0
Iron	ug/L	1300	3400	630	920
Lead	ug/L	0.17	4.4	<0.50	<0.50
Nickel	ug/L	7.4	67	<2.0	<2.0
Zinc	ug/L	17	17	<7.0	9.2
Nitrogen Ammonia (N-NH4+ and N-NH3)	mg/L	0.10	0.68	<0.020	0.038
Total Kjeldahl Nitrogen	mg/L	-	-	<0.40	<0.40
Total Suspended Solids (TSS)	mg/L	*Max 5mg/L above natural conditions	*Max 25mg/L above natural conditions	4.0	4.0

Parameters	Unit	MAC (Protection of Aquatic Life- Chronic)	MAC (Protection of Aquatic Life - Acute)	July 23, 2020	August 26, 2020
pH	pH	6.5 - 9.0	6.5 - 9.0	6.21	6.27
Radium	Bq/L	-	-	<0.005	<0.005

Orange. Exceeding the CALG (chronic aquatic life guideline, MELCC (2019)); **Red.** Exceeding the AALG (acute aquatic life guideline, MELCC (2019)) or acute toxicity; **Unknown.** The reported limit of detection does not allow a ruling on the level on toxicity of the contaminant (LOD > CALG);

Note that the laboratory did not analyze the hardness of the water with the analysis of metals. For the evaluation of the criteria, the lowest hardness value was used (10 mg/L), which is representative of the values of the region.

3.1.1 Management of Spring Thaw

Without a functional basin and WTU, in the fall of 2018, a management plan was developed to prevent red water from the spring 2019 thaw from being discharged into the natural environment. The plan is presented in Appendix V and consisted of the construction of three additional ditches around the basin and one temporary dyke, and a system of pumps to divert water away from the area, and out of the natural environment. As this plan was successful, it was repeated in Spring 2020 in its same form. The implementation of the meltwater management plan made it possible to avoid the runoff of mine waters from entering the natural environment.

- The plan is described below:
- Snow management before the melt, including clearing snow from the ditches in order to allow for proper water circulation;
- Pumping system between the Goodwood basin and the Kivivik 1C pit;
- Water level management in the temporary section of the basin;
- Pumping system at the location of the exfiltration downstream of the basin, in case of red water being released to the environment.

3.1.2 Monitoring in Spring 2021

Visual monitoring will be conducted during snow melt. Should exfiltration occur, samples will be taken for analysis to ensure that any effluents meet MELCC criteria for water quality. The winterization plan and the meltwater management plan will also be implemented for the thaw in spring 2021.

3.2 Community Complaints

No community complaints were received regarding the Goodwood project in 2020.

4 SURFACE WATER QUALITY MONITORING

TSMC has monitored surface water quality for the Goodwood project since 2015. With the exception of extremely rare, isolated events that have typically not been related to Goodwood mining operations, surface water quality results around the Goodwood project have never exceeded MELCC criteria.

The location of the water quality monitoring stations is presented in Figure 1. Two stations are monitored: EE-GW, which corresponds to the station that is located at the outlet of Fra Lake; and ER-GW, the reference station, which is located at the outlet of Migration Lake.

- The monitoring plan includes sampling at the 2 stations 4 times annually for the following parameters:
- Conventional: alkalinity; DOC, TOC, conductivity, chloride, BOD5, DOC, hardness, TSS, pH
- Ions and nutrients: ammonium nitrate, TKN, cyanide, fluoride, nitrates, nitrites, reactive silica, hydrogen sulfur, sulfates
- Hydrocarbons: C10-C50
- Metals and metalloids: Al, Sb, Ag, As, Ba, Bo, Cd, Cr, Co, Cu, Sn, Fe, Mn, Mo, Ni, PT, Pb, Se, Th, U, V, Zn, Ca, Cr (VI), Hg, K, Mg, Ra226, Na, T

And once annually for the following parameters:

- Trace metals: Al, Sb, Ag, As, Ba, Bo, Cd, Cr, Co, Cu, Sn, Fe, Mn, Mo, Ni, PT, Pb, Se, Th, U, V, Zn

Following review of the 2018 and 2019 annual reports, the following requests were made to TSMC regarding surface water monitoring:

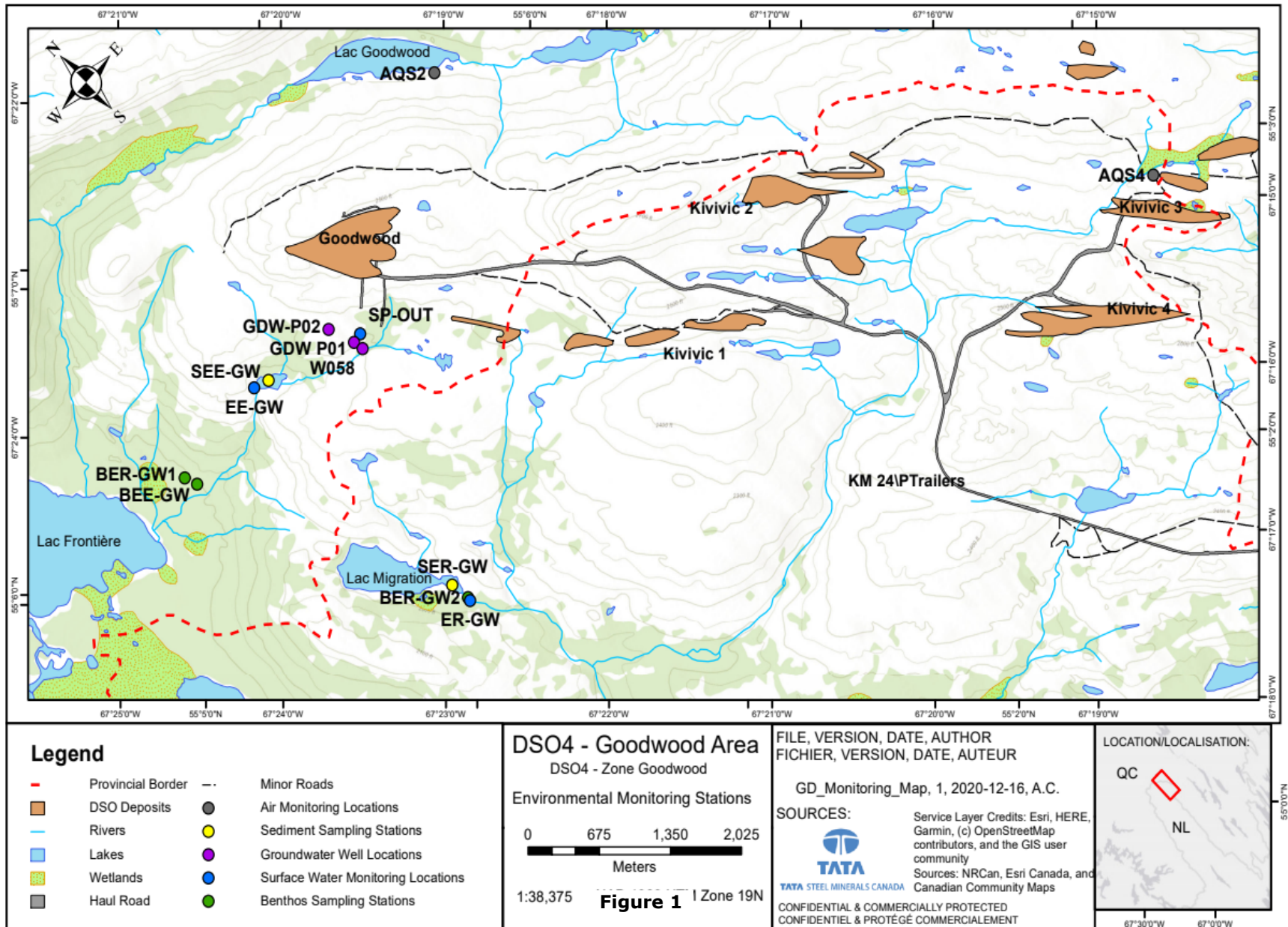
QC9: The sponsor must confirm that the trace method was used. The latter must also indicate which methodology was used during its campaigns sampling in order to characterize the initial state of the medium at the heart of its report.

Until 2020, TSMC completed the surface water sampling program as presented to the Ministry, to gather initial state data. Upon further investigations and discussions with the Ministry, TSMC has uncovered some confusion between initial state sampling requirements versus sampling requirements during the exploitation phase of the project. Despite having received all authorizations and OERs for the project, the number of samples for trace metals to be collected during the initial state must be adjusted.

As a result of this clarification, TSMC will discuss with the ministry on how to proceed with Goodwood, since exploitation of this pit started in 2018.

QC10: The promoter must present his comparative table of the data from the initial state of the surface water quality from 2015 to 2018, add the years 2019 and 2020 as well as the analysis and interpretation of these results in the heart of the annual report in addition to place the reports from the laboratory as an appendix.

In response to QC10, TSMC has included the requested table in Appendix I to this report. The analytical results in the table are compared to all applicable criteria.



4.1 Sampling Schedule

Certificates of analysis for 2020 results are presented in Appendix IV.

Monthly sampling was conducted in the natural environment (EE and ER) during the ice-free period for conventional parameters, ions, nutrients, hydrocarbons, metals and metalloids, all 2020 samples were analyzed for trace metals.

The two stations and all the parameters were sampled on the same dates in 2020:

- Quarter 1 – July 13
- Quarter 2 – August 13
- Quarter 3 – September 15
- Quarter 4 – October 15

4.1.1 2020 Sampling Results

In 2020, Petroleum Hydrocarbons C10-C50 was detected at Fra Lake (EE-GW) for the first quarter of sampling were detected at a concentration of 0.25 mg/L, thereby exceeding the MELCC criteria for acute effects on aquatic life (0.011 mg/L). Further sampling throughout the season did not show concentrations above the method detection limit, confirming the high likelihood the hydrocarbon contamination in the sample was due to contamination from insect repellent, and not present in the lake itself. No visual evidence of hydrocarbon contamination was ever observed on the lake’s surface either.

The pH was lower than the MELCC’s aquatic life guidelines during the inventories from July to October. In comparison, Migration Lake (ER-GW) only exceed the aquatic life criterion in September and October. Surface water pH is naturally low in this area, so this is not a result of mining activities at Goodwood.

It was not possible to determine if the amount of silver exceeded the aquatic life criterion since its detection level was higher than the exceedance criterion (Table 3). No other parameter analyzed exceeded the criteria for aquatic life.

Table 3. MELCC Criteria exceedance for aquatic life – 2020 annual monitoring

Date	pH	Petroleum Hydrocarbons (C10 – C50)	Ag (mg/L)
EE-GW			
MELCC (Acute)	6.5 - 8.5	0.11	0.0001
MELCC (Chronic)	6.5 – 8.5	0.011	0.000039
2020/07/13	5.76	0.250	<0.0030
2020/08/13	5.67	<0.1	<0.0030
2020/09/15	6.01	<0.1	<0.0030
2020/10/15	5.98	<0.1	<0.0030
ER-GW			
2020/07/13	6.96	<0.1	<0.0030
2020/08/13	6.53	<0.1	<0.0030
2020/09/15	6.10	<0.1	<0.0030
2020/10/15	6.13	<0.1	<0.0030

Orange. Exceeding the CALG (chronic aquatic life guideline, MELCC (2019)); **Red.** Exceeding the AALG (acute aquatic life guideline, MELCC (2019)) or acute toxicity; **Unknown.** The reported limit of detection does not allow a ruling on the level on toxicity of the contaminant (LOD > CALG)

4.2 Surface Water Quality Monitoring Update

There was no update for this program in 2020.

5 SEDIMENT AND BENTHOS QUALITY MONITORING

Benthos community monitoring was carried out in 2020. Sediment monitoring was not done in 2020, as it was completed in 2019 and is not scheduled to be done again until 2024.

The following questions regarding the sediment sampling campaign were received by TSMC after review of the 2019 annual report:

QC11: Although the location of the sampling station and the results of the initial characterization of sediment quality carried out in 2019 are presented, the analysis of all the parameters for which EDOs have been calculated is incomplete: measurements of aluminum, iron, manganese, selenium, C10-C50 hydrocarbons and hydrogen sulfide are missing. The promoter must provide this analysis and include in its monitoring program all parameters for which EDOs have been calculated.

Upon reviewing the results in question, TSMC notes that only selenium, C10-C50 hydrocarbons and hydrogen sulfide are missing from the analysis. This is likely due to an administrative error, and this will be rectified for sediment sampling in 2024 and beyond.

QC12: The sponsor indicated in its January 2017 update that a series of sediment samples would be sampled before the start of operation in order to characterize the initial condition. It appears that a series of samples were taken in 2019, only at the Lac Fra station and no characterization of the initial state has been performed at Migration Lake station. The promoter must justify this situation and explain what he plans to do to fix it, if any.

In response to QC12, TSMC notes that both Migration Lake and Fra Lake were sampled in 2019. It appears their respective sample IDs were not properly reported on the results table, with the sample from Migration Lake being reported as "Migration-EEGW" instead of "Migration-ERGW" as it should have been. This is confirmed by observation of the COC for this sampling event.

QC13: The proponent must present an assessment of the quality of the sediments sampled in 2019 based on the limits presented in the Criteria document for the evaluation of the quality of sediments in Quebec and framework of application: prevention, dredging and restoration.

In response to QC13, TSMC conducted a thorough comparison between the results received from 2019's sediment campaign and the criteria set forth by the document "Critères pour l'évaluation de la qualité des sédiments au Québec et cadres d'application: prévention, dragage et restauration" provided by Environment Canada and the Ministère du Développement durable, de l'Environnement et des Parcs du Québec. The following criteria comparisons were established for the thresholds dictated by CER (concentration causing rare effects); CSE (threshold concentration causing effects); CEO (occasional effects); CEP (probable effects) and CEF (frequent effects):

Arsenic:

Lac Fra (Exposure Station) exceeded the CEO

Lac Migration exceeded the CER.

Note that Lac Migration is never exposed to any industrial activities, and thus the exceedance here is likely a natural baseline concentration. The guidance document provided notes that Arsenic is typically associate with Iron and Manganese Oxide particles, which are very common in all areas of the DSO4 project. As such, it is naturally expected that Arsenic would be found in higher concentrations throughout surface water bodies in the area.

Cadmium:

Lac Fra and Lac Migration exceed the CSE.

The concentration is higher at Lac Migration, so this is likely a natural baseline level.

Chromium:

Lac Fra exceeded the CSE and Lac Migration exceeded the CER

The guidance document provided notes that Chromium is typically associate with Iron and Manganese Oxide particles, which are very common in all areas of the DSO4 project. As such, it is naturally expected that chromium would be found in higher concentrations throughout surface water bodies in the area.

Copper:

Lac Fra and Lac Migration exceed the CER.

The concentration is higher at Lac Migration, so this is likely a natural baseline level.

Mercury:

Lac Fra and Lac Migration exceed the CER.

The concentration is equal at both stations, so this is likely a natural baseline level.

Nickel:

No exceedances

Lead:

No exceedances

Zinc:

Lac Fra exceeded the CER and Lac Migration exceeded the CSE.

The concentration is higher at Lac Migration, so this is likely a natural baseline level.

The guidance document provided notes that Zinc is typically associated with Iron and Manganese Oxide particles, which are very common in all areas of the DSO4 project. As such, it is naturally expected that this would be found in higher concentrations throughout surface water bodies in the area.

For concentrations above CER but below CSE, the guidance document provided recommends follow-up and, if increases are noted, the implementation of precautionary measures. For concentrations in exceedance of the CSE, contaminant sources must be identified, and mitigation measures must be implemented. However, the guidance document also suggests weighing exceedances against the natural background concentrations of the sampling sites. The exceedances measured appear to be of natural origin. TSMC will carefully assess the results from its second round of sediment detect any increase possibly caused by its mining activities.

5.1 Sediment Quality

Sediment monitoring will be conducted once every 5 years at the lakes associated with the water quality monitoring stations, and for the following parameters:

- Metals (Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Zn)
- Phosphorous
- Nitrogen ammonia
- Petroleum hydrocarbons C10-C50
- Total organic carbon

- Sulfur

A visual description of the samples (cohesion, colour, smell) and a grain size analysis is conducted for each sample.

5.2 Benthic Community

The monitoring program also includes annual sampling for benthic communities monitoring. The sampling stations are in permanent streams, as close as possible to the sediment sampling stations. Sampling is to be done in at the end of summer. The descriptors are:

- Total invertebrates' density
- Richness (Number of taxa)
- Simpson diversity index
- Evenness (Piéluou's index)
- Density of each taxon
- Relative taxa abundance
- Absence/presence of taxa
- Bray-Curtis coefficient

5.2.1 2020 sampling

The benthic community was monitored on October 4 at the exposed station and on October 5 at the reference station.

The report on benthic community analysis is presented in Appendix VI.

5.3 Sediment Quality Monitoring Program Update

The next sediment sampling will be carried out in 2024. The same two stations will be sampled in winter, while the lakes are frozen.

Benthic communities will be monitored in the summer of 2021.

6 MINING EFFLUENTS MONITORING

From May to December 2017, TSMC completed construction of the water management infrastructure; this includes clean water derivation ditches, runoff collection ditches and an accumulation pond. For quality control, TSMC mandated WSP to conduct construction surveillance.

The construction of the Goodwood Water Treatment plant was completed in Fall 2019 and commissioning was planned for spring 2020. Unfortunately, the onset of the COVID-19 pandemic halted the transportation of materials and technical personnel to the mine site, thus delaying the commissioning of the water treatment plant. TSMC intends to carry out the commissioning in spring of 2021.

Due to the availability of K1c pit where runoff resulting from the spring melt and rain as well as water from dewatering operations is pumped, Goodwood has not had any effluent outflow thus far during its operations. Therefore, no effluent sampling was conducted in 2020.

Following comments from the CPEK (QC2) about the monitoring of mine effluent, TSMC wishes to confirm that there has been no effluent to date at the Goodwood project and that no effluent is expected until the WTU is fully commissioned in the later stages of 2021.

6.1 Metal and Diamond Mining Effluent Regulations Monitoring

Since the treatment plant will only be operational in 2021, there was no effluent monitoring done in 2020. The planned monitoring program is nonetheless described in the following sections.

6.1.1 Effluent Components

Table 4 shows sampling frequency and the parameters used for effluent monitoring. The monitoring program will be implemented as soon as the plant is operational.

Table 4. Effluent Monitoring Parameters

Continuous	Weekly	Monthly	Quarterly
Conductivity, pH	TSS, As, Cu, Fe, Ni, Pb and Zn, pH	Acute Toxicity (<i>O. mykiss</i> and <i>D. magna</i>)	Alkalinity, hardness, Al, Cd, Fe, Hg, Mo, NH ₃ , NO ₃ , dissolved oxygen, temperature

6.1.1.1 Acute Lethality Test

Two monthly trials on six effluent concentrations are planned: 0%, 6.25%, 12.5%, 25%, 50% and 100%.

- *Daphnia magna*, based on the SPE 1/RM/14 method
- *Oncorhynchus mykiss*, based on the SPE 1/RM/13 method

If the mining effluent results indicate a toxic lethality, a physico-analysis sample will be taken immediately. The toxic lethality tests will continue to be conducted twice monthly. If three consecutive samples are not lethally toxic, the monthly sampling frequency will resume (Section 15 of MDMMER).

6.1.2 Environmental Effect Monitoring

The Goodwood project will be subjected to environmental effects monitoring studies (EEM) once the effluent volume output reaches 50 m³/day. There was no effluent output in 2020.

Once the process is implemented, monitoring will comply with the requirements outlined in Schedule 5 of the MDMER. Results will be communicated in the annual report. The following sections presents studies to be conducted.

6.1.2.1 Effluent Monitoring

Effluent characterization will be conducted four times annually, with a minimum of one-month interval between sampling dates. The parameters that will be measured in addition to the weekly analyses are:

- Conventional: hardness, alkalinity, conductivity and temperature
- Metals: Al, Cd, Fe, Mo, Se, NH₄, NO₃ et Hg

6.1.2.2 Sublethal Toxicity Test

Sublethal toxicity trials will be conducted on a species of fish, invertebrate, plant and algae, when the effluent is discharged into freshwater, which is the case for project 2a. These trials will be conducted twice per year during the first three years that the project is subject to EEM, and then once annually if the effluent is non-toxic during 6 consecutive trials. The trials will be:

- Fish: test of Larval Growth and survival using *Pimephales promelas* (Rapport SPE 1/RM/22) or at the initial stages of the biological cycle of *Oncorhynchus mykiss* (Rapport SPE 1/RM/28).
- Invertebrate: test of reproduction and survival on the cladocera *Ceriodaphnia dubia* (Rapport SPE 1/RM/21)
- Plant: test for measuring the inhibition of growth using the freshwater macrophyte *Lemna minor* (Rapport SPE 1/RM/37)
- Algae: test for measuring the inhibition of growth of the algae *Selenastrum capricornutum* (Rapport SPE 1/RM/25)

6.1.3 Biological Monitoring

Pursuant to article 9, part 2 of the EEM (Schedule 5 of the MDMMER), a study on the fish population will be conducted if the effluent concentration in the exposed zone is superior to 1% at less than 250m downstream of the final discharge point. It has been therefore required to measure effluent concentration 250m downstream of the final discharge point as soon as effluent is produced by the WTU. In addition, a study on fish tissue will be conducted if a mercury concentration equal or more than 0.10 µg/L is noted during the characterization.

6.2 Monitoring according to Directive 019

Monitoring of the final effluent is required under the *Directive 019 sur l'industrie minière* (MDDEP, 2012), and the requirements are described in section 2.1.1.1.1 of Directive 019, by virtue of article 22 of the *Loi sur la qualité de l'environnement* (LQE), and according to the *Objectifs environnementaux de rejet* (OER) which were calculated by the MELCC specifically for the project 2a. Once the project is subject to the EEM process, TSMC will be subject to two types of monitoring, one regular and one annual.

Regular monitoring of the mining effluent includes continuous automated pH and flow rate measurements, along with sampling and analysis of certain parameters according to the frequencies indicated in Table 5. These frequencies must be maintained until the final cessation of mining activities.

Table 5. Directive 019 Monitoring

Continuous	3 / week	Weekly	Monthly	Annually
pH, flow rate	TSS	As, Cu, Fe, Ni, Pb, Zn	Acute toxicity (<i>O. mykiss</i> and <i>D. magna</i>)	Alcalinity, Cl ⁻ , conductivity, BOD ₅ , COD, flow rate, hardness, F ⁻ , C ₁₀ -C ₅₀ , dissolved solids, total solids, phenolic substances, SO ₄ ²⁻ , turbidity, NH ₃ , TKN, NO ₂ , NO ₃ , TP, Al, Cd, Ca, Cr, Co, Mg, Mn, Hg, Mo, K, Si, Na, S ²⁻ , S ₂ O ₃ ²⁻

The annual monitoring is conducted once a year, during the summer period. It includes the analysis and measurement of several parameters (Table 5). Sampling and yearly monitoring methods should be conducted on the same day and are completed in addition to the regular weekly monitoring for that week.

In order to evaluate the global toxicity of the mining effluents according to Directive 019, this monitoring also includes lethal toxicity tests, which are developed by the MDDEFP, including:

- lethal toxicity in the crustacean *Daphnia magna*. Method MA 500 – D.mag. 1.0. 4th Revision;
- acute lethality in *Onchorynchus mykiss*, method SPE1/RM/13, 2nd edition.

6.3 Environmental Objectives of Rejection (EOR) Monitoring

Monitoring of the contaminants to which EOR were determined is required for the mining effluent in order to ensure that they are respected. This monitoring will be conducted at the same frequency as that planned under Directive 019 (MDDEP, 2012).

The MELCC provided TSMC with EOR for project 2a. This document outlines the concentrations and loads towards which the final effluent at Goodwood must trend.

Additional requested parameters (barium, chrome, manganese, selenium, nitrites and hydrogen sulfide) will be analyzed under the quarterly monitoring plan. In addition, dissolved solids will be analyzed four times annually, rather than once as recommended by the Directive 019.

6.4 Summary of Effluent Monitoring

Table 6 presents the overall monitoring that will be conducted in relation to the mining effluent at Goodwood. The monitoring required under Directive 019 will be in place as soon as the treatment plant is operational, while the monitoring required under the MDMER will begin when the volume of effluent reaches 50 m³/day.

Table 6. Summary of Effluent Monitoring

Continuous	3 / week	Weekly	Monthly	Quarterly	Annually
pH, conductivity, flow rate	TSS	As, Cu, Fe, Ni, Pb, Zn	Acute toxicity (<i>O. mykiss</i> and <i>D. magna</i>)	Alkalinity, total hardness, Al, Ba, Cd, Cr, Fe, Hg, Mn, Mo, Se, H ₂ S, NH ₃ , NO ₂ , NO ₃ , dissolved oxygen, temperature	Cl ⁻ , BOD ₅ , COD, hardness, F ⁻ , C ₁₀ -C ₅₀ , dissolved solids, total solids, phenolic substances, SO ₄ ²⁻ , turbidity, NH ₃ , TKN, NO ₂ , NO ₃ , TP, Al, Cd, Ca, Cr, Co, Mg, Mn, Hg, Mo, K, Si, Na, S ²⁻ , S ₂ O ₃ ²⁻

7 GROUNDWATER MONITORING

Drilling work was done in Fall 2016 to determine the presence of groundwater downstream of the infrastructure at the lowest topographical point. The two wells, GDW-P01 and GDW-P02, drilled at 65m and 80m respectively, did not detect any groundwater.

In addition, more wells were installed along the crest and toe of the Goodwood Pond dike for the purpose of geotechnical investigations needed for pond repairs. Though water was detected in two of these wells, the relative proportion of dry wells, distribution of the wet wells and well depth indicate that this is likely vadose zone saturation and does not constitute a groundwater regime. Further, the water was only detected on one of the two measurement dates, indicating that it is likely transient. These wells were not drilled for nor intended as part of the monitoring program. Regardless, TSMC logs level measurements of the wells to confirm and assess the presence of groundwater on an ongoing basis. This data may be found in Appendix VII.

7.1 Water Table Monitoring

Well water levels must be measured twice annually: in spring and in summer. In 2020, measurements were conducted twice, on June 4th and July 13th. Water was not present on either occasion.

7.2 Groundwater Sampling

Should water be detected in the wells, a sample will be taken and analyzed for the following parameters:

- C10-C50
- pH, ORP
- Dissolved oxygen
- Conductivity
- Nitrites/nitrates
- Total Phosphorus
- Sulfides
- Total cyanides
- Dissolved metals (Al, Ag, Ba, B, As, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Hg, Mo, Ni, Pb, Sb, Se, K, Na, Zn)
- Carbonates/bicarbonates
- Chlorides
- Sulfates
- Fluorides
- Total dissolved solids

No ground water was detected in the monitoring wells on any of the sampling dates.

7.3 Groundwater Monitoring Program Update

No updates are planned. The wells will be monitored in 2021 to verify the presence of a water table and, if required, sampling will be conducted.

8 AIR QUALITY MONITORING

Since 2015, TSMC implemented air quality monitoring for the DSO project. Monitoring was completely operational for the first time in 2018. Certificates of Analysis for 2020 are included in Appendix VII. Location of the monitoring stations is shown on Figure 1.

In 2017, TSMC started the development of a data management system allowing the comparison of results by month and year for each station. Since the inception of this monitoring program, air quality at project 2a has always been below criteria for total and dust, as well as NO₂. Punctual PM_{2.5} exceedances were noted once at stations AQS6 and AQS9 on June 15 and June 16, 2018 respectively. The standard was only exceeded by 3 ug/m³ on these occasions, which is within the error margin of the analytical method's detection limit. No new exceedances were noted thereafter.

The questions below were received following review of the 2019 annual report:

QC3: The promoter must, as soon as possible, propose an update of his sampling schedule which will detail the new equipment chosen for the station AQS-5.

Following a meeting between TSMC and the Ministry on March 16th, 2021, TSMC will propose this new equipment shortly.

QC4: The promoter must present, in the next annual report, a table summarizing the results of each parameter monitored by comparing it to provincial standards not to be exceed. Monitoring should include AQS-5 station and established frequencies for the parameters TPM, PM_{2.5} and NO₂ must be respected. The results of the calculation of dust and metal deposition rate should be expressed in µg / m³ / year.

The requested table is included in Appendix VIII.

AQS-5 station was not monitored in 2020. The request above was received in December, after the monitoring season was over. At the time monitoring started, TSMC was still under the impression that air monitoring was not required in this area since the Sunny project has never been in operation.

Dustfall results cannot be expressed in ug/m³/year since this type of monitoring only measures deposition on a surface area. As such, the results cannot be expressed as a volumetric concentration. Results are therefore expressed in g/m²/30d, as per the applicable standard from the Province of Newfoundland and Labrador.

8.1 2020 Sampling

The sampling periods and results are presented in the following sections. The certificates of analysis are presented in Appendix IX. The calculation tables for comparison with the standards (24h, 30 days, annual according to the criteria) are presented in Appendix IX.

8.1.1 NO₂

The 2020 monitoring of the NO₂ concentration took place during every operational month at the AQS2 and AQS4 stations, with some exceptions due to material and logistics limitations as a result of the COVID-19 pandemic.

Analysis results are available for the following sampling periods:

- July 4, 2020 to August 8, 2020
- August 8 to September 8
- September 8 to October 23

- October 23 to November 28
- November 28 2020 to January 10 2021

No exceedances of provincial standards (QC and NL) were recorded in 2020. The highest value was measured at AQS9 station for the periods from July to August and September to October, with a value of $0.94 \mu\text{g}/\text{m}^3$ (value measured from 0.5 ppbv converted by considering that $1 \text{ ppb NO}_2 = 1.88 \mu\text{g}/\text{m}^3$) for a period of 30 days, well below the provincial standard of $103 \mu\text{g}/\text{m}^3/\text{year}$.

8.1.2 Dustfall and Metals

Following review of the 2019 report, the following question was raised:

During its monitoring of dust jars, carried out in 2018, the promoter mentions that the threshold of $7 \text{ g} / \text{m}^2$ over 30 days, according to a standard implemented in Newfoundland and Labrador, was exceeded for the sample from July 1 to August 5, 2018 at station AQS2 with a dust mass of $18.1 \text{ g} / \text{m}^2$ over 30 days. The situation does not appear to have happened again in 2019.

QC5: The promoter must explain the reasons for exceeding the standards for filing dust and metals for samples from July 1 to August 5, 2018. He must also indicate the actions that have been put in place so that this situation is not repeated.

In response to QC5, TSMC has noted that while a dust mass of $18.1 \text{ g}/\text{m}^2$ was calculated by one independent firm, for the period between July 1 and August 5 of 2018, which provided the final value for the 2019 report, this value is in contention. Calculations with the same data set done internally yield a dust mass of $15.5 \text{ g}/\text{m}^2$. This aligns with yet another re-calculation of this metric performed by one of TSMC's air quality consultants, who placed the dust mass at $15.3 \text{ g}/\text{m}^2$. Whether 18.1 or 15.3, this measurement is clearly an outlier relative to the remainder of TSMC's data at this location - the next highest dust mass attained here is $3.5 \text{ g}/\text{m}^2$ over 30 days, between September 8 and September 29th of 2018. Furthermore, the vast majority of dust mass at AQS2 is likely comprised of organic matter such as pollen and plant debris, as it is at the base of heavily vegetated and wind-swept hill. It is likely that the dust fraction derived from mineralogic and anthropogenic sources is quite low, and this is not differentiated in the analytical results.

For the same sampling period in which these high dust values were registered at AQS2, nearby stations AQS3 and AQS4 registered much lower values for dustfall at 4.2 and $1.4 \text{ g}/\text{m}^2/30$ days respectively, despite being situated much closer to active mining operations. AQS3 and AQS4 registered much higher concentrations of Manganese in their dustfall analysis than AQS2. Manganese is typically associated with iron ore dust, so we can conclude based on the low concentrations of manganese for AQS2 dustfall that the dust at this location is of a different origin.

Considering the above, no measures were implemented to mitigate the results at AQS2 as no dust generation episode was identified. However, the dustfall analysis portion of the monitoring program was modified for 2020 to better differentiate between sources of dust. Iron was added to the analysis, rather than reporting heavy/toxic metals exclusively. In addition, soluble and insoluble dust portions are now reported separately. Though iron is detected on occasion at AQS3 and AQS4, it is always below detection limit at AQS2.

Soluble/insoluble portions vary considerably between stations and sampling events, but the soluble portion of dust measured at AQS2 tends to be between 48% and 88%. The large soluble portion and lack of iron detected, again, indicated a source of dust that is not mining related. Due to an error in communication with the laboratory, manganese was not analyzed in 2020, but will be analyzed in 2021.

8.1.2.1

8.1.2.2 Snow sampling

Due to the onset of the COVID-19 pandemic, materials and personnel was not available to conduct snow sampling during 2020. Notably, TSMC technicians require the guided assistance of local community members to travel to the sample sites on snowmobiles. COVID restrictions precluded any interaction between the groups, and so the sampling campaign was not possible. The snow sampling campaign is scheduled to resume in 2021.

There is no standard in Quebec for dust fallout. The Newfoundland and Labrador standard is 7.0 g/m²/30 days. The results obtained at the various stations are well below this standard. Appendix VIII presents the deposition calculations for dust on previous years.

8.1.2.3 Summer Period

For the summer period, results are available for the months of July to October. Table 7 shows the sampling dates and results for the dust fallout. Appendix IX presents the deposition calculations for dust and metals.

The measured values are well below the standard of 7.0 g/m²/30 days for Newfoundland and Labrador.

Table 7. Results of Dust Fallout – Summer 2020

Quarter	Station	Start Date (YYYY-MM-DD)	End Date (YYYY-MM-DD)	Dust Fallout (g/m ² /30d)
Q1	AQS 1	2020-07-09	2020-08-08	1.15560
	AQS 2	2020-07-09	2020-08-08	1.52198
	AQS 3	2020-07-09	2020-08-08	0.97887
	AQS 4	2020-07-09	2020-08-08	2.62329
Q2	AQS 1	2020-08-08	2020-09-08	0.93469
	AQS 2	2020-08-08	2020-09-08	0.62505
	AQS 3	2020-08-08	2020-09-08	0.64550
	AQS 4	2020-08-08	2020-09-08	0.79680
Q3	AQS 1	2020-09-08	2020-10-07	2.29025
	AQS 2	2020-09-08	2020-10-07	0.72422
	AQS 3	2020-09-08	2020-10-07	0.91118
	AQS 4	2020-09-08	2020-10-07	1.08592

8.1.3 PM2.5 Particles and Total Particulate Matter (TPM)

Of the two PQ200 air monitors that TSMC has available for PM2.5 and TPM monitoring, one was sent out for repair towards the end of 2019, while the other was at site but malfunctioning and awaiting a technician to perform the needed repairs. As a result of the onset of the COVID-19 pandemic, neither monitor could be made operational for the 2020 sampling season, and thus PM2.5 and TPM were not collected. As of November 2020, both air monitors have been made operational again and this portion of air monitoring campaign will continue as intended for 2021.

8.2 Meteorological Station

The meteorological station was installed in August 2019 (Figure 2). The Kivivic station was installed on a flat and not too rocky area behind the trailers at KM24 (in Newfoundland and Labrador), at a prescribed distance of more than 10X the height of the surrounding buildings. The station is able to capture data on snowpack, precipitation, wind speed and direction, ambient temperature and relative humidity. Data may be output in various frequency ranging from daily to every 2 minutes.



Figure 2. Kivivic Meteorological Station

9 WASTE ROCK GEOCHEMICAL CHARACTERISTICS MONITORING

The waste rock monitoring program provides for sampling of two composites a month, at a frequency of about 24 samplings per million tons of waste rock for the following parameters:

- Sulfur percentage
- MABA static test
- TCLP, SPLP and CTEU-9 lixiviation tests
- Metals (Ag, As, Ba, Cd, Co, Cr, Cu, Fe, Sn, Mn, Hg, Mo, Ni, Pb, Se, Zn), analyzed in the rock sample and the lixivate
- Parameters outlined in Directive 019 (B, U, Total fluorides, Nitrites and Nitrates)

QC6: It is important to remember that the leaching tests must be carried out with the TCLP, SPLP and CTEU-9 methods.

This is noted. Please refer to Appendix IV for the certificates of analysis for ARD sampling.

QC7: The sponsor indicates that there was no "real deposit" of waste rock so far to justify the lack of monitoring of the geochemical characteristics of the waste rock in 2017 and in 2018. The promoter must specify what he means by "real deposit". He will have to present the quantity of waste rock deposited on the pile as well as the results of the characterization of waste rock in tabular form in the body of the report, including data for 2019. Finally, the promoter must explain why he did not carry out the analyzes required for waste rock.

Please see section 9.1 for a description of waste rock excavation against sampling in 2020. Although TSMC has made improvements with respect to compliance with this condition, TSMC also recognizes that it must increase ARD sampling at the Goodwood site. Previous exploitation at the Goodwood pit was targeted at areas where the ore body was accessible directly after overburden stripping.

9.1 2020 Monitoring

Waste rock sampling events occurred 3 times in 2020. Each sampling event was comprised of 2 composite samples taken from the excavation waste pile totaling 1.5kg each. Certificates of analysis are presented in Appendix IV.

Samples were collected September 28th, October 26-29, 2020. Between July 16 2020 and September 28th TSMC excavated 401,609 tons of waste from Goodwood and between September 28th and October 26-29, 147,440 tons of waste were excavated.

Analytical results for the metal concentrations in the waste rock samples were interpreted according to the requirements under Directive 019 which stipulates that the criteria from the "Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés" from the MELCC must be used for the interpretation. The only metals for which criteria exceedances have been recorded are arsenic and manganese. Of the 11 samples analyzed, 4 exceeded the "A" criterion for arsenic with levels in the "A-B" range. Exceedances of the "B" criterion for manganese were recorded on two samples; and the "C" criterion for this same metal was exceeded on two other samples. It should be noted that the two samples showing the highest concentration of arsenic (10 mg/kg) were also those showing the highest concentrations of manganese (3500 and 4500 mg/kg).

9.2 Waste Rock Monitoring Program Update

No updates are planned. The monitoring program for the waste piles will be carried out in 2021 to ensure that the conditions of the certificate are met.

10 GEOTECHNICAL MONITORING

As per the monitoring plan for project 2A, TSMC has to provide a hydrological and hydrogeological study which will determine the number of years that will be necessary to fill up the pit. The study is presented in Appendix IX.

As per its certificate of operations for the project 2A, TSMC must verify the physical stability of the infrastructure at Goodwood on a regular basis. (*Projet 2A – Exploitation Du Gisement Goodwood : Demande De Certificat D’Autorisation pour L’Exploitation Minière en Vertu des Articles 22 et 32 de la LQE, Section 4.4*). This is done at all times during operations at Goodwood, and if personnel on site observe any problems related to the physical stability of the infrastructure at Goodwood, this is reported to managers.

The major infrastructure, the dike of the Goodwood basin and the waste piles will be inspected by external experts yearly. WSP came to site in 2020 to conduct a geotechnical investigation of existing infrastructure. The results of this investigation are included on Appendix IX. TSMC plans to continue these inspections in 2021.

Their observation for 2020 and recommendations are presented in the report in Appendix IX.

11 AVIFAUNA SURVEY

In the environmental impact study, TSMC committed to conducting a quinquennial monitoring of avifauna. This plan aims to determine whether the mining activities have an effect on nesting populations.

Baseline surveys were conducted by Groupe Hémisphères in 2008-2009. A first monitoring was done in 2017. The next avifauna monitoring survey is scheduled for 2022.

12 CLOSURE PLAN AND REHABILITATION

Due to the Covid-19 pandemic, consultants associated with the revegetation and rehabilitation research project could not travel to site. Local helpers who would have provided labor for this project were also barred from entering site for the same reason.

Several hundred willow cuttings were harvested in the fall of 2019 in prevision for experimental plantations on different types of ground preparation and with various intrants that were to be directed by our research consultants. Due to the restricted availability of personnel on site at the start of summer, ground preparation and intrants mixing on waste rock piles would not have been possible. TSMC's Environment team therefore decided on a rapid way of planting the cuttings that would provide environmental benefits while preventing them from going to waste.

Well pads that were used for hydrogeological studies in the Howse project area were first targeted as this was the first available area that became free of snow. Two well pads were successfully revegetated in this area. As snow melted away in the Goodwood area, the well pad located near the base of the dike was also planted with willow cuttings. Areas on the sides of the pads that seemed more susceptible to erosion were targeted as a priority and with higher plantation density to promote soil stabilization.

The cuttings were observed throughout the summer and showed rapid rooting and growth. At the end of the summer, the survival rate appeared to be over 90%. The survival rate will be evaluated again this Spring to determine the merits of this approach.

In 2021, an updated version of TSMC's closure and rehabilitation plan will be provided to the MERN. Specifications concerning the waste rock rocks berm that will secure the pit as well as the stability analysis for the pit in post-restoration will be presented in the next revision of the restoration plan.

TSMC has obtained feedback from Indigenous groups on the 2016 2A Mine Closure and Rehabilitation Plan, which will be taken into account in the next version of the Mine Closure and Rehabilitation Plan in 2021, which includes progressive restoration.

QC-19 (2018), QC-25 (2019). "In order to meet condition 15 of the January 11, 2013 Certificate of Authorization, the proponent is required to consult with the communities of Kawawachikamach, Matimekosh-Lac John and the KRG in the development of the next restoration plan update. The results of this consultation may be presented in a separate report from the restoration plan."

As TSMC updates its Mine Closure and Rehabilitation Plan in 2021, it will consult the Naskapi Nation of Kawawachikamach, the Nation Innu Matimekush-Lac John, Kativik Regional Government, Makivik Corp. and Innu Takuaihan Uashat mak Mani-utenam on the draft document, prior to finalization. TSMC will report to the Administrator on the outcome of consultation efforts.

13 COMMUNITIES

13.1 Citizens' Information Program

Communication efforts in 2020 consisted in large part of information sharing with the population at large and consultation with leadership on Coronavirus prevention measures to protect communities and mine site workers. Information on TSMC's environmental mitigation measures were also shared with the community at-large via periodic newsletters (two in 2020) (see Appendix X). As detailed in the *Community Engagement and Consultation Log* (Appendix XI), TSMC regularly shared information, engaged and consulted with Indigenous and local communities regarding its activities and measures taken to protect people and the environment.

TSMC communication efforts consist of both broad communications to the population (via paper newsletters, on Facebook, and on local radio), through its Community environment committees comprised of representatives mandated by each group to represent them, as well as directly with community leadership and environmental/employment/economic development representatives.

TSMC shares, with community leadership and their representatives, the responsibility of disseminating information on mining and mine-related activities to the citizens of the communities. Efforts included:

- Public announcements on local Naskapi and Innu community radio stations and on Facebook pages providing updates on mining activities and measures taken by TSMC to protect the communities and workers while continuing to operate. (Appendix XII)
- Newsletters distributed electronically to leadership and environmental representatives as well as to all Post Office boxes in Schefferville, Matimekush-Lac John and Kawawachikamach on the progress of TSMC's activities, environmental mitigation measures, as well as TSMC contact information. The email address provided was not used by community members to raise any environmental or other issues.
- Project 2A Environmental and Social Monitoring Committee meeting in April 2020, in which Naskapi and Inuit representatives participated along with TSMC. An extensive presentation on mining activities, as well environmental and social matters, is provided at each meeting.
- Community Health, Safety & Environment (HSE) Committee Meetings were held in July and October 2020 with representatives from the NNK, NIMLJ, Innu Takuaihan Uashat mak Mani-utenam (ITUM), Innu Nation, NunatuKavut Community Council. An extensive presentation on mining activities, as well as Health & Safety and Environmental matters is provided at each meeting.
- Blasting notices distributed to the offices of the Naskapi Nation of Kawawachikamach (NNK), Nation Innu Matimekush-Lac John (NIMLJ), and the Town of Schefferville advising the population of mining and blasting activities at Goodwood, along with TSMC contact information. (see Appendix XIII for a sample notice)
- Numerous other communications and engagement between TSMC and Indigenous group leadership/representatives as detailed in the Community Engagement & Consultation Log attached (Appendix XI). Citizens can communicate with TSMC directly through its representatives in Environment and Community Affairs by telephone, email, and social media (Facebook Messenger), and through the intermediary of representatives of the Community Health, Safety and Environment Committee, and anytime by visiting TSMC's mine site. 1

¹ QC-15 (2019): "The 2018 annual report does not address the blocking of the mine access road by Innu in July 2018. This blockage was allegedly caused by a breach of an agreement Innu community and business and for environmental reasons, including the problem of releasing red water to the environment. This is an event which should be addressed in the "community" section.

It should be noted that the 2018 Schefferville Blockade of the road to the TSMC mines was a significant event, which, due to an oversight, had not been included in the communication log in the 2018 annual report to the Administrator. The blockade had been erected by the Council of the NIMLJ on 26 July 2018 and following which members from both the NIMLJ and NNK maintained, until negotiations successfully came to a close on 1 August, 2018 and the road blockade was lifted.

QC-16 (2019). “The Promoter is required to submit an annual notice to Innuvelle and Nunatsiaq News.”

At the time of drafting of this report, TSMC was in the process of procuring ad space in the Innuvelle and Nunatsiaq News publications. The ad will include general information on TSMC operations, environmental monitoring as well as contact information. A copy of both ads, once published, will be provided in the 2021 Annual Report.

13.2 Evaluation program of the perceptions of the Project by land users

Condition 20 of TSMC’s Certificate of Authorization requires that it conduct an evaluation program of land users’ perceptions of Project 2A, as well as the efficiency of TSMC’s methods of communication of the results of the various monitoring programs.

Lands users concerned in Project 2a are primarily the citizens of Matimekush-Lac John, Schefferville and Kawawachikamach, residing in close proximity to the Project 2A (Goodwood), now in operations.

QC-14 (2018), QC-19 (2019). “The Proponent is required to conduct an evaluation of the Perceptions of Project 2A and report the results to the Administrator, unless this information has been incorporated into the 2019 annual report, as required in its Certificate of Authorization. This information will also be included in the next annual report. Once these results are achieved, it will be assessed whether or not it is appropriate for the proponent to review it every five years, as planned.”

The survey was conducted by Sikumiut Environmental Management Ltd. (SEM).

A total of 21 surveys were conducted in October & November 2020, through a telephone and online process, in English and French among land users from Matimekush-Lac John, Schefferville & Kawawachikamach.

The following summarizes the findings. Please see Appendix XIV for complete report.

- Impacts of TSMC’s activities in Goodwood were considered moderately negative and focused on environmental and economic aspects.
- Land users indicated that they had a moderate degree of knowledge about the Project.
- Project-related complaints are received but the land users are mainly unsatisfied by the resolution process.
- Relational variables such as trust and procedural fairness were rated low for TSMC.

At the time of drafting of this report, TSMC senior leadership, along with concerned departments, were in the process of reviewing and analyzing the results of the Survey with a view to plan next steps and opportunities for improvement. The Survey has allowed for the articulation of issues identified by land users, enabling TSMC to better understand these views. Its results will serve as a guidance mechanism for the development of improved community engagement strategies and the implementation of more effective tactics and initiatives.

The following matters were raised by the NIMLJ, some of which also represented issues of concern to the NNK: Impact and Benefit Agreement payments; emission of contracts for services provided to TSMC by NIMLJ; employment of Innu and Naskapi in heavy equipment operations; environmental concerns at Goodwood basin and along haul road; site landfill management; dust & vehicle cleanliness in Town; Bypass Road; Infrastructure projects. TSMC rectified several of the causes for discontentment (contracts, payments, landfill management, reduction of pick-up truck traffic in Town, support to infrastructure projects) and continues to work on other more long-term in scope (bypass road repairs and maintenance; water management on the mine site). TSMC continues to focus its efforts to reinforce environmental mitigation on its mine site while keeping communities informed of these efforts.

QC-15 (2018). “However, this information is not presented in the 2018 Annual Report. It states that the 2019 annual report will contain a feedback and complaint management plan. The proponent should have included this complaints management plan in its 2018 annual report. It will have to pass it on to the Administrator now, unless it has been included in the 2019 annual report. This information will also be included in the next annual report.”

QC-20 (2019). This information is not presented in either the 2018 Annual Report or the 2019 Annual Report 2019. The 2019 Annual Report indicates that the 2020 report will contain a management of feedback and complaints. It was reiterated that the Proponent should include this complaint management plan in its 2018 annual report. Therefore, the Proponent will have to submit it to the Administrator as soon as available. This information will also have to be included in the next annual report.

The *TSMC Feedback & Complaint Management Process* is presented in Appendix XV.

13.3 Community Health, Safety and Environment Committee

An Environmental and Social Monitoring Committee was established in 2015, comprised of KRG, Makivik and TSMC representatives. Two Committee meetings were scheduled in 2020 (April and December), however the December meeting had to be rescheduled and was held in February 2021.

Additionally, as part of TSMC’s overall commitment to community involvement, a Community Health, Safety and Environment Committee was established in 2013 and meets three to four times per year. It is comprised of environmental representatives from the NNK, NIMLJ, ITUM, Innu Nation, Nunatukavut Community Council, and TSMC.

QC-17 (2019). “The Proponent indicated that the Health, Safety and Environment Committee, set up in 2013 and made up of representatives of the Naskapi Nation of Kawawachikamach, Nation Innu Matimekush-Lac John, Innu Takuaikan Uashat mak Mani-utenam, NunatuKavut Community Council, met on 20 February and 4 December 2019. It is important to remember that the minutes of the meetings of the environmental and social monitoring must be transmitted no later than four months after each meeting, in accordance with Condition 21 of the certificate of authorization January 11, 2013.”

TSMC submitted to the Administrator in August 2020 the minutes of the 22 April, 2020 Project 2A Environmental and Social Monitoring Committee meeting. TSMC will maintain the practice of providing a copy of meeting minutes within the required timeframe.

QC-18 (2018). “In Appendix VIII of the (2018) Annual Report, the Proponent indicates all consultations it has done with all stakeholders. However, Appendixes E and G do not provide a clear understanding of who the individuals are and which communities have been consulted and how. It is important for the Proponent to remember that the annual report should also be used to determine whether citizens of the communities of Kawawachikamach, Matimekosh-Lake John and the Kativik Regional Government (KRG) have been well informed. It is recommended that the promoter present this information clearly and well-structured in its annual report.

TSMC acknowledges the comment and has made changes to the way the information is provided in the “Community Engagement & Consultation Log” in order to provide greater clarity.

Community environment representatives play a key role in receiving from community members feedback and complaints pertaining to the Project and transmitting them to TSMC.

pertaining to the Project and transmitting them to TSMC.

13.4 Report Presentation/Language

QC-16 (2018), QC-26 (2019). Some passages in the appendices of the French version are not translated, for example [...] Appendix VIII (Community Relations) of the 2019 Annual Report. It is recommended that the promoter present all the information in French in the French versions of the annual report.

The majority of the documentation submitted in the present report (main text and appendices), have been translated into French.²

² Presentations and minutes for the Project 2A Environmental & Social Monitoring Committee meetings are prepared in English as all members function in English.

14 2020 OPERATIONS AND CONCLUSION

In 2020, TSMC continued the operations at the Goodwood pit, as well as preparation for the work to be done at the accumulation basin, despite numerous challenges imposed by the COVID-19 pandemic.

TSMC will start 2021 with a Spring plan to capture all of the meltwater from the spring thaw and redirect it to K1c pit which is located in Labrador. Operations at Goodwood are expected to be continuous, carrying on from the winter of 2020 into the spring and summer of 2021.

At the same time, preparations are ongoing for the commissioning of the water treatment unit as well as the repairs to the Goodwood basin. They should be done during summer 2021.

15 REFERENCES

- TSMC [Tata Steel Minerals Canada Ltd.]. (2018) *Rapport annuel 2017 – Projet 2a (Goodwood) – Québec*. Rapport annuel présenté au ministère de l'Environnement et de la Lutte contre les changements climatiques, direction générale de l'évaluation environnementale et stratégique.
- TSMC [Tata Steel Minerals Canada Ltd.]. (2018) *Plan de suivi de la qualité de l'air du Projet DSO*. Tata Steel Minerals Canada Ltd, 22 p. et 3 Appendices.
- Beaulieu, M. (2019) *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés*. Québec, ministère de l'Environnement et de la Lutte contre les changements climatiques, 219 p. + annexes
- Ministère de l'Environnement et Lutte contre les changements climatiques [MELCC] (2019). *Critères de la qualité de l'eau de surface*. En ligne:
http://www.environnement.gouv.qc.ca/eau/criteres_eau/index.as

APPENDICES

Appendix I: Recap Table

Monitoring Program	Monitoring type	Location
Surface water	Grab sample	EE-GW
		ER-GW
Groundwater	Verify presence of groundwater in wells	GDW-P01
		GDW-P02
Effluent	Grab sample	WTU effluent
Air quality (TPM and PM2.5)	PQ-200 sampling	AQS1 to 9
Air quality (NO2)	Passive sampling	AQS2
		AQS4
		AQS6
		AQS7
		AQS8
		AQS9
Dust deposition (summer)	Dustfall jars	AQS1
		AQS2
		AQS3
		AQS4
		AQS6
		AQS7
		AQS8
AQS9		
Dust deposition (winter)	Snow cores	AQS 1 to 9
Waste rock (ARD monitoring)	grab samples	GW waste rock
Invertebrates	composite samples with Surber sampler	BEE (Lac Fra outflow)
		BER (Lac Migration outflow)
Sediments	Grab sample	Lac Fra
		Lac Migration
Site inspection	Visual inspection	Goodwood infrastructures
Geotechnical inspection	Inspection by consultant	Goodwood infrastructures
Wildlife Habitat	Habitat encroachment survey	Goodwood footprint
Bird population	Field survey	Goodwood surrounding habitats

Date(s) performed	Observations / Comments
Jul 13, Aug 13, Sep 15, Oct 15	
June 4, July 13	Wells were dry on both occasions
n/a	No effluent produced in 2020
n/a	The PQ-200 samplers could not be repaired due to COVID
Jan 22-25, Feb 21-24, Mar 22 (AQS 6 to 9 only); Jul 5, Aug 9, Sep 28, Oct 21, Nov 28 (all stations)	Goodwood area inaccessible in winter 2020 (no mining activity)
	Sampling interrupted from March to July due to COVID
Aug 8-9, Sep 8-9, Oct 7-8	Sampling started between July 5 and July 12
	AQS6, August 8, no sample; jar fell down
n/a	Local guides and snowmobiles were not available due to COVID
Sep 28, Oct 26, Oct 29	
05-Oct	Results of the invertebrate count and ID not received yet
06-Oct	
n/a	Sampling was done in 2019; next sampling in 2024
Daily	Conducted daily by Mining personel
01-Oct	Conducted by WSP
n/a	Performed in 2017, next survey in 2022

Appendix II: Letter of Permission for Analysis at a Laboratory in the Maritimes

From: [Trindade, Mariana](#)
To: [Calvert, Adam](#)
Subject: FW: Echantillonnage Printemps 2020
Date: November 17, 2020 10:54:34 AM

From: Arsenault, Mariepier <Mariepier.Arsenault@environnement.gouv.qc.ca>
Sent: June 30, 2020 9:23 AM
To: Trindade, Mariana <mariana.trindade@tatasteelcanada.com>
Cc: Sinha, Pallav <pallav.sinha@tatasteelcanada.com>; Dion, Jean-Francois <jeanfrancois.dion@tatasteelcanada.com>; Deshaies, Jean-François <Jean-Francois.Deshaies@environnement.gouv.qc.ca>; Ablain, Maud <Maud.Ablain@environnement.gouv.qc.ca>; Lauzon, Edith (EC) <edith.lauzon@canada.ca>
Subject: Re: Echantillonnage Printemps 2020

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bonjour Mariana,

Après vérification à l'interne, nous acceptons que l'analyse des échantillons prélevés dans le cadre du projet Goodwood soit effectuée dans un laboratoire d'une province des Maritimes. En effet, puisqu'il n'apparaît pas y avoir d'autre option permettant l'analyse de ces échantillons à l'intérieur des délais d'analyses prévus, la solution proposée semble la plus judicieuse. Toutefois, nous vous rappelons qu'il s'agit d'une mesure temporaire. Lorsque les vols d'Air Inuit redeviendront plus régulier, Tata Steel devra faire parvenir ces échantillons dans un laboratoire accrédité du Québec.

Enfin, lors de la rédaction du rapport annuel 2020, il serait apprécié qu'une mention des échantillons analysés à l'extérieur du Québec soit inscrite (laboratoire retenu, période où cette mesure temporaire est mise oeuvre et les échantillons visés).

Bonne journée !

Mariepier Arsenault

Inspectrice en environnement

Direction régionale du Centre de contrôle environnemental de la Côte-Nord
Ministère de l'Environnement et de la Lutte contre les changements climatiques
818, boulevard Laure, r.c.
Sept-Îles (Québec)
G4R 1Y8
Téléphone : 418 964-8888, #233
Cellulaire : 418-409-1562
Télécopieur : 418 964-8023

Appendix III: Spring Melt Observations/Photos



Pumping setup from repair section of pond to temporary containment section



Exfiltration from repair section passing through filtration sock



Exfiltration containment structures with filtration socks implemented



Exfiltration flow looking downstream from toe of dyke; flocculant blocks implemented for clarification



Inflow channel – Exfiltration upstream, Lac Fra downstream – showing no visual influence from exfiltration water

Appendix IV: Certificates of Analysis



Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Your P.O. #: 2200002147
Your Project #: GOODWOOD
Site#: GOODWOOD EXF
Site Location: DS04 QC
Your C.O.C. #: N/A

Report Date: 2020/08/19
Report #: R2593677
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C033978

Received: 2020/07/31, 10:00

Sample Matrix: Surface Water
Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Suspended Solids	1	2020/08/06	2020/08/07	STL SOP-00015	MA.104-S.S. 2.0 m
Total Extractable Metals by ICP	1	2020/08/11	2020/08/13	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Ammonia Nitrogen	1	N/A	2020/08/12	STL SOP-00040	MA.300-N 2.0 R2 m
pH	1	N/A	2020/08/06	STL SOP-00038	MA.100-pH 1.1 R3 m
Total Nitrogen	1	2020/08/06	2020/08/06	STL SOP-00043	MA.300-NTPT 2.0 R2 m
Radium-226 Low Level (1, 2)	1	N/A	2020/08/19	BQL SOP-00006 BQL SOP-00017 BQL SOP-00032	Alpha Spectrometry

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by BV Radiological via Montreal

(2) Radium-226 results have not been corrected for blanks.



Your P.O. #: 2200002147
Your Project #: GOODWOOD
Site#: GOODWOOD EXF
Site Location: DS04 QC
Your C.O.C. #: N/A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Report Date: 2020/08/19
Report #: R2593677
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C033978

Received: 2020/07/31, 10:00

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Stephane Gagnon
Cheminet
21-Aug-2020 07:22:40

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Martine Lepage, Project Manager and Account Manager
Email: Martine.LEPAGE@bvlab.com
Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Lab BV Job #: C033978
 Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD
 Site Location: DS04 QC
 Your P.O. #: 2200002147
 Sampler Initials: JFD

RESULTS OF ANALYSES OF SURFACE WATER

Lab BV ID		IC7170		
Sampling Date		2020/07/23 11:35		
	Units	GW-EXF	RDL	QC Batch
RADIONUCLIDE				
Radium-226	Bq/L	<0.005	0.005	2116601
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



Lab BV Job #: C033978
Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: DS04 QC
Your P.O. #: 2200002147
Sampler Initials: JFD

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		IC7170		
Sampling Date		2020/07/23 11:35		
	Units	GW-EXF	RDL	QC Batch
METALS				
Arsenic (As)	ug/L	<1.0	1.0	2114264
Copper (Cu)	ug/L	<1.0	1.0	2114264
Iron (Fe)	ug/L	630	60	2114264
Nickel (Ni)	ug/L	<2.0	2.0	2114264
Lead (Pb)	ug/L	<0.50	0.50	2114264
Zinc (Zn)	ug/L	<7.0	7.0	2114264
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



Lab BV Job #: C033978
Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: DS04 QC
Your P.O. #: 2200002147
Sampler Initials: JFD

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IC7170		
Sampling Date		2020/07/23 11:35		
	Units	GW-EXF	RDL	QC Batch
CONVENTIONALS				
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	<0.020	0.020	2114389
pH	pH	6.21	N/A	2112554
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	0.40	2112605
Total suspended solids (TSS)	mg/L	4.0	2.0	2112942
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable				



Lab BV Job #: C033978
Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: DS04 QC
Your P.O. #: 2200002147
Sampler Initials: JFD

GENERAL COMMENTS

Total Suspended Solids: Holding time already past upon reception.: IC7170
Radium-226 Low Level: Inadequate preservative, wrong preservative or not preserved at all.: IC7170
pH: Holding time already past upon reception.: IC7170
Radium-226: Cette analyse est accréditée par le MELCC.

Results relate only to the items tested.



Lab BV Job #: C033978
Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: DS04 QC
Your P.O. #: 2200002147
Sampler Initials: JFD

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2112554	VPA	Spiked Blank	pH	2020/08/06		101	%
2112605	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/08/06		105	%
2112605	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/08/06	<0.40		mg/L
2112942	SCG	Spiked Blank	Total suspended solids (TSS)	2020/08/07		94	%
2112942	SCG	Method Blank	Total suspended solids (TSS)	2020/08/07	<2.0		mg/L
2114264	JGZ	Spiked Blank	Arsenic (As)	2020/08/13		106	%
			Copper (Cu)	2020/08/13		102	%
			Iron (Fe)	2020/08/13		105	%
			Nickel (Ni)	2020/08/13		101	%
			Lead (Pb)	2020/08/13		102	%
			Zinc (Zn)	2020/08/13		97	%
2114264	JGZ	Method Blank	Arsenic (As)	2020/08/13	<1.0		ug/L
			Copper (Cu)	2020/08/13	<1.0		ug/L
			Iron (Fe)	2020/08/13	<60		ug/L
			Nickel (Ni)	2020/08/13	<2.0		ug/L
			Lead (Pb)	2020/08/13	<0.50		ug/L
			Zinc (Zn)	2020/08/13	<7.0		ug/L
2114389	AHK	QC Standard	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/08/12		109	%
2114389	AHK	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/08/12		113	%
2114389	AHK	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/08/12	<0.020		mg/L
2116601	éBP	Spiked Blank	Radium-226	2020/08/19		89	%
			Radium-226	2020/08/19		89	%
			Radium-226	2020/08/19	<0.005		Bq/L
2116601	éBP	Method Blank	Radium-226	2020/08/19	<0.005		Bq/L
			Radium-226	2020/08/19	<0.005		Bq/L

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





Lab BV Job #: C033978
Report Date: 2020/08/19

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: DS04 QC
Your P.O. #: 2200002147
Sampler Initials: JFD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Steven Simpson, Lab Director



Michelina Cinquino, Analyste II



Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

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August 26, 2020:



Your P.O. #: 3000000730
Your Project #: GOODWOOD E. FILTRATION
Site#: DSO4
Your C.O.C. #: C#782108-04-01

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/09/23
Report #: R2602439
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C040122

Received: 2020/09/03, 09:00

Sample Matrix: Surface Water
Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analysis		
Total Suspended Solids	1	2020/09/04	2020/09/09	STL SOP-00015	MA.104–S.S. 2.0 m
Total Extractable Metals by ICP	1	2020/09/11	2020/09/11	STL SOP-00062	MA.200–Mét. 1.2 R5 m
Ammonia Nitrogen	1	N/A	2020/09/10	STL SOP-00040	MA.300–N 2.0 R2 m
pH	1	N/A	2020/09/03	STL SOP-00038	MA.100–pH 1.1 R3 m
Total Nitrogen	1	2020/09/14	2020/09/15	STL SOP-00077	MOE:TOTNUT-E3516v1.3
Radium-226 Low Level (1, 2)	1	N/A	2020/09/18	BQL SOP-00006 BQL SOP-00017 BQL SOP-00032	Alpha Spectrometry

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by BV Radiological via Montreal

(2) Radium-226 results have not been corrected for blanks.



Your P.O. #: 3000000730
Your Project #: GOODWOOD E. FILTRATION
Site#: DSO4
Your C.O.C. #: C#782108-04-01

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/09/23
Report #: R2602439
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C040122

Received: 2020/09/03, 09:00

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Martine Lepage
Project Manager and Account
Manager
23 Sep 2020 11:21:35

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Martine Lepage, Project Manager and Account Manager

Email: Martine.LEPAGE@bvlab.com

Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Lab BV Job #: C040122
 Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD E. FILTRATION
 Your P.O. #: 3000000730
 Sampler Initials: AC

RESULTS OF ANALYSES OF SURFACE WATER

Lab BV ID		IG0830		
Sampling Date		2020/08/26 15:30		
COC Number		C#782108-04-01		
	Units	GW-EXFIL	RDL	QC Batch
RADIONUCLIDE				
Radium-226	Bq/L	<0.005	0.005	2126103
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



Lab BV Job #: C040122
Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD E. FILTRATION
Your P.O. #: 3000000730
Sampler Initials: AC

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		IG0830		
Sampling Date		2020/08/26 15:30		
COC Number		C#782108-04-01		
	Units	GW-EXFIL	RDL	QC Batch
METALS				
Arsenic (As)	ug/L	<1.0	1.0	2123460
Copper (Cu)	ug/L	<1.0	1.0	2123460
Iron (Fe)	ug/L	920	60	2123460
Nickel (Ni)	ug/L	<2.0	2.0	2123460
Lead (Pb)	ug/L	<0.50	0.50	2123460
Zinc (Zn)	ug/L	9.2	7.0	2123460
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



Lab BV Job #: C040122
Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD E. FILTRATION
Your P.O. #: 3000000730
Sampler Initials: AC

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IG0830	IG0830		
Sampling Date		2020/08/26 15:30	2020/08/26 15:30		
COC Number		C#782108-04-01	C#782108-04-01		
	Units	GW-EXFIL	GW-EXFIL Lab-Dup	RDL	QC Batch
CONVENTIONALS					
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	0.038	N/A	0.020	2123244
pH	pH	6.27	N/A	N/A	2121598
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	<0.40	0.40	2124129
Total suspended solids (TSS)	mg/L	4.0	N/A	2.0	2122016
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Lab BV Job #: C040122
Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD E. FILTRATION
Your P.O. #: 3000000730
Sampler Initials: AC

GENERAL COMMENTS

Total Suspended Solids: Holding time already past upon reception.: IG0830
pH: Holding time already past upon reception.: IG0830
Radium-226: Cette analyse est accréditée par le MELCC.

Results relate only to the items tested.



Lab BV Job #: C040122
Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD E. FILTRATION
Your P.O. #: 3000000730
Sampler Initials: AC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2121598	MPO	Spiked Blank	pH	2020/09/03		99	%
2122016	EXS	Spiked Blank	Total suspended solids (TSS)	2020/09/09		96	%
2122016	EXS	Method Blank	Total suspended solids (TSS)	2020/09/09	<2.0		mg/L
2123244	AHK	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/09/10		107	%
2123244	AHK	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/09/10	<0.020		mg/L
2123460	AT7	QC Standard	Arsenic (As)	2020/09/11		92	%
			Copper (Cu)	2020/09/11		96	%
			Iron (Fe)	2020/09/11		98	%
			Nickel (Ni)	2020/09/11		97	%
			Lead (Pb)	2020/09/11		93	%
			Zinc (Zn)	2020/09/11		95	%
			2123460	AT7	Spiked Blank	Arsenic (As)	2020/09/11
			Copper (Cu)	2020/09/11		95	%
			Iron (Fe)	2020/09/11		99	%
			Nickel (Ni)	2020/09/11		95	%
			Lead (Pb)	2020/09/11		98	%
			Zinc (Zn)	2020/09/11		97	%
2123460	AT7	Method Blank	Arsenic (As)	2020/09/11	<1.0		ug/L
			Copper (Cu)	2020/09/11	<1.0		ug/L
			Iron (Fe)	2020/09/11	<60		ug/L
			Nickel (Ni)	2020/09/11	<2.0		ug/L
			Lead (Pb)	2020/09/11	<0.50		ug/L
			Zinc (Zn)	2020/09/11	<7.0		ug/L
2124129	HEM	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/09/15		93	%
2124129	HEM	Method Blank	TKN Total Kjeldahl Nitrogen	2020/09/15	<0.40		mg/L
2126103	éBP	Spiked Blank	Radium-226	2020/09/17		98	%
			Radium-226	2020/09/17		98	%
			Radium-226	2020/09/17		98	%
			Radium-226	2020/09/17	<0.005		Bq/L
2126103	éBP	Method Blank	Radium-226	2020/09/17	<0.005		Bq/L
			Radium-226	2020/09/17	<0.005		Bq/L
			Radium-226	2020/09/17	<0.005		Bq/L

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





Lab BV Job #: C040122
Report Date: 2020/09/23

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD E. FILTRATION
Your P.O. #: 3000000730
Sampler Initials: AC

VALIDATION SIGNATURE PAGE



The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



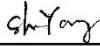


Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator




Steven Simpson, Lab Director

Faouzi Sarsi, B.Sc. Chemist, SR Analyst

Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

C. Water Quality

Quarter 1:



Attention: Mariana Trindade

TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Your P.O. #: 2200002147
Your Project #: GOODWOOD
Site#: DS04
Site Location: QC SURFACE WATER
Your C.O.C. #: C#770957-01-01

Report Date: 2020/08/10

Report #: R2591118

Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C030795

Received: 2020/07/20, 09:50

Sample Matrix: Surface Water
Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Alkalinity (pH end point 4.5)	2	N/A	2020/07/20	STL SOP-00038	SM 23 2320-B m
Anions	2	N/A	2020/07/23	STL SOP-00014	MA.300-Ions 1.3 R3 m
Non-Typical Bacteria (1)	2	N/A	N/A	STL SOP-00188	MA. 700-COL 1.0 R4
Biochemical Oxygen Demand (5 days) (4)	2	2020/07/29	2020/08/03	STL SOP-00008	MA315-DBO 1.1 R3 m
Petroleum Hydrocarbons (C10-C50)	2	2020/07/24	2020/07/27	STL SOP-00173	MA.400-HYD. 1.1 R3 m
Total Cyanide	2	2020/07/27	2020/07/27	STL SOP-00035	MA300-CN 1.2 R4 m
Chemical Oxygen Demand	1	2020/07/22	2020/07/22	STL SOP-00009	MA315-DCO 1.1 R4 m
Chemical Oxygen Demand	1	2020/07/27	2020/07/27	STL SOP-00009	MA315-DCO 1.1 R4 m
Fecal coliforms (1)	2	N/A	N/A	STL SOP-00189	MA700-FEC.EC 1.0 R5m
Total coliforms (1)	2	N/A	N/A	STL SOP-00188	MA. 700-COL 1.0 R4
Conductivity	2	N/A	2020/07/20	STL SOP-00038	SM 23 2510-B m
Hexavalent Chromium (Cr 6+)	2	N/A	2020/07/27	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Organic Carbon (5)	2	2020/07/24	2020/07/24	STL SOP-00243	SM 23 5310-B m
Fluoride	2	N/A	2020/07/23	STL SOP-00038	SM 23 4500-F m
Total Suspended Solids	2	2020/07/20	2020/07/23	STL SOP-00015	MA.104-S.S. 2.0 m
Total Extractable Metals by ICP	2	2020/07/24	2020/07/25	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Total Extractable Trace Metals by ICP-MS	2	2020/08/03	2020/08/04	STL SOP-00006	MA203-Mét Tra1.1 R1m
Ammonia Nitrogen	2	N/A	2020/07/24	STL SOP-00040	MA.300-N 2.0 R2 m
Nitrate and/or Nitrite	2	N/A	2020/07/23	STL SOP-00014	MA.300-Ions 1.3 R3 m
Dissolved Oxygen	2	N/A	2020/07/21	STL SOP-00008	MA.315-DBO 1.1 R3 m
pH	2	N/A	2020/07/20	STL SOP-00038	MA.100-pH 1.1 R3 m
Total Phenols by 4-AAP	2	2020/07/27	2020/07/27	STL SOP-00033	MA404-I.Phé 2.2 R2 m
Total Phosphorus	2	N/A	2020/07/21	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Sulfides (as S ²⁻) (2)	2	2020/07/24	2020/07/24	QUE SOP-00107	MA. 300 - S 1.2 R3 m
Sulfides (H ₂ S) (2)	2	N/A	2020/07/27	QUE SOP-00107	MA. 300 - S 1.2m R3
Reactive Silica (SiO ₂) (3)	2	N/A	N/A		
Total Dissolved Solids	2	2020/07/20	2020/07/22	STL SOP-00050	MA.115-S.D. 1.0 R4 m
Total Nitrogen	2	2020/07/28	2020/07/28	STL SOP-00043	MA.300-NTP 2.0 R2 m
Total Organic Carbon (6)	2	N/A	2020/07/25	STL SOP-00243	SM 23 5310-B m



Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Your P.O. #: 2200002147
Your Project #: GOODWOOD
Site#: DSO4
Site Location: QC SURFACE WATER
Your C.O.C. #: C#770957-01-01

Report Date: 2020/08/10
Report #: R2591118
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C030795
Received: 2020/07/20, 09:50
Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by AGAT Laboratoires - Montréal
- (2) This test was performed by Lab BV - Québec
- (3) This test was performed by Laboratoires Bureau Veritas - Bedford
- (4) Please note that in the event a biochemical oxygen demand analysis cannot begin within the 48-hours holding time required (for a sample preserved at 4°C), sample will be frozen, unless otherwise specified by a regulation, to maintain its integrity.
- (5) DOC present in the sample should be considered as non-purgeable DOC
- (6) TOC present in the sample should be considered as non-purgeable TOC

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.



Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Your P.O. #: 2200002147
Your Project #: GOODWOOD
Site#: DSO4
Site Location: QC SURFACE WATER
Your C.O.C. #: C#770957-01-01

Report Date: 2020/08/10
Report #: R2591118
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C030795
Received: 2020/07/20, 09:50

Encryption Key

Stephane Gagnon
Chemist
12 Aug 2020 16:34:36

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Martine Lepage, Project Manager and Account Manager
Email: Martine.LEPAGE@bvlab.com
Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Lab BV Job #: C030795
 Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD
 Site Location: QC SURFACE WATER
 Your P.O. #: 2200002147
 Sampler Initials: AC

HYDROCARBONS BY GCFID (SURFACE WATER)

Lab BV ID		IA4211	IA4212		
Sampling Date		2020/07/13 08:57	2020/07/13 09:51		
COC Number		C#770957-01-01	C#770957-01-01		
	Units	DS04-ER-GW-Q1-2020	DS04-EE-GW-Q1-2020	RDL	QC Batch
PETROLEUM HYDROCARBONS					
Petroleum Hydrocarbons (C10-C50)	ug/L	<100	250	100	2108930
Surrogate Recovery (%)					
1-Chlorooctadecane	%	118	114	N/A	2108930
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 2200002147
Sampler Initials: AC

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		IA4211	IA4212		
Sampling Date		2020/07/13 08:57	2020/07/13 09:51		
COC Number		C#770957-01-01	C#770957-01-01		
	Units	DS04-ER-GW-Q1-2020	DS04-EE-GW-Q1-2020	RDL	QC Batch
METALS					
Aluminum (Al) †	ug/L	<5.0	21	5.0	2111274
Antimony (Sb) †	ug/L	<0.015 (1)	<0.015 (1)	0.015	2111274
Silver (Ag) †	ug/L	<0.0030	<0.0030	0.0030	2111274
Arsenic (As) †	ug/L	<0.080	<0.080	0.080	2111274
Barium (Ba) †	ug/L	0.25	1.8	0.030	2111274
Boron (B) †	ug/L	<0.30	1.8	0.30	2111274
Cadmium (Cd) †	ug/L	<0.0060	0.0087	0.0060	2111274
Calcium (Ca) †	ug/L	55	150	20	2111274
Chromium (Cr) †	ug/L	<0.040	<0.040	0.040	2111274
Cobalt (Co) †	ug/L	<0.0080	0.034	0.0080	2111274
Copper (Cu) †	ug/L	<0.050	0.21	0.050	2111274
Tin (Sn) †	ug/L	<0.050	<0.050	0.050	2111274
Iron (Fe) †	ug/L	7.1 (1)	290 (1)	1.2	2111274
Magnesium (Mg) †	ug/L	39	100	10	2111274
Manganese (Mn) †	ug/L	13	24	0.030	2111274
Mercury (Hg) †	ug/L	<0.0020	<0.0020	0.0020	2111274
Molybdenum (Mo) †	ug/L	<0.010	<0.010	0.010	2111274
Nickel (Ni) †	ug/L	<0.030	0.18	0.030	2111274
Total phosphorous	ug/L	<10	<10	10	2108625
Lead (Pb) †	ug/L	<0.010	<0.010	0.010	2111274
Potassium (K) †	ug/L	50	84	10	2111274
Selenium (Se) †	ug/L	<0.050	<0.050	0.050	2111274
Sodium (Na) †	ug/L	68	170	10	2111274
Thallium (Tl) †	ug/L	<0.010	<0.010	0.010	2111274
Titanium (Ti) †	ug/L	<0.40	<0.40	0.40	2111274
Uranium (U) †	ug/L	0.0011	0.0042	0.0010	2111274
Vanadium (V) †	ug/L	<0.050	<0.050	0.050	2111274
Zinc (Zn) †	ug/L	<0.50	1.6	0.50	2111274
Total Hardness (CaCO ₃) †	ug/L	300	810	40	2111274
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
† Parameter is not accreditable					
(1) La limite de détection a été augmentée dû à l'instrumentation.					



Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 220002147
Sampler Initials: AC

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IA4211		IA4212		
Sampling Date		2020/07/13 08:57		2020/07/13 09:51		
COC Number		C#770957-01-01		C#770957-01-01		
	Units	DS04-ER-GW-Q1-2020	QC Batch	DS04-EE-GW-Q1-2020	RDL	QC Batch
CONVENTIONALS						
BOD5	mg/L	<5.3	2109808	<5.3	5.3	2109808
COD	mg/L	<5.0	2109158	<5.0	5.0	2107698
Conductivity	mS/cm	0.0022	2106903	0.0023	0.0010	2106903
Dissolved organic carbon †	mg/L	0.93	2108642	1.4	0.20	2108642
Dissolved oxygen †	mg/L	10	2107007	9.9	1.0	2107007
Fluoride (F)	mg/L	<0.10	2108233	<0.10	0.10	2108233
Hexavalent Chromium (Cr 6+)	mg/L	<0.0080	2109073	<0.0080	0.0080	2109073
Nitrates (N-NO3-)	mg/L	0.11	2107934	0.045	0.020	2107934
Nitrites (N-NO2-)	mg/L	<0.020	2107934	<0.020	0.020	2107934
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	0.081	2108753	0.26	0.020	2108753
pH	pH	6.96	2106900	5.76	N/A	2106900
Phenols-4AAP	mg/L	<0.0020	2109258	<0.0020	0.0020	2109258
Sulfides (H2S) †	mg/L	<0.021	2109248	<0.021	0.021	2109248
Sulfides (S2-)	mg/L	<0.020	2108545	<0.020	0.020	2108545
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	2109561	<0.40	0.40	2109561
Total Cyanide (CN)	mg/L	<0.0030	2109098	<0.0030	0.0030	2109098
Total Organic Carbon	mg/L	0.85	2108689	1.7	0.20	2108689
Alkalinity Total (as CaCO3) pH 4.5 †	mg/L	1.5	2106902	<1.0	1.0	2106902
Chloride (Cl)	mg/L	0.16	2107937	0.33	0.050	2107937
Sulfates (SO4)	mg/L	<0.50	2107937	<0.50	0.50	2107937
Total Dissolved Solids	mg/L	11	2106883	24	10	2106883
Total suspended solids (TSS)	mg/L	2.0	2106882	5.0	2.0	2106882
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable N/A = Not Applicable						



Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 2200002147
Sampler Initials: AC

GENERAL COMMENTS

Samples temperature is above 10°C.: IA4211
Dissolved Oxygen: Holding time already past upon reception.: IA4211
Samples temperature is above 10°C.: IA4211, IA4211
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: IA4211
Samples temperature is above 10°C.: IA4211
Dissolved Organic Carbon: Holding time already past upon reception.: IA4211
Samples temperature is above 10°C.: IA4211, IA4211
pH: Holding time already past upon reception.: IA4211
Samples temperature is above 10°C.: IA4211
Nitrate and/or Nitrite: Holding time already past upon reception.: IA4211
Samples temperature is above 10°C.: IA4211, IA4211, IA4211, IA4211, IA4211, IA4211, IA4211, IA4211, IA4211, IA4212
Dissolved Oxygen: Holding time already past upon reception.: IA4212
Samples temperature is above 10°C.: IA4212, IA4212
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: IA4212
Samples temperature is above 10°C.: IA4212
Dissolved Organic Carbon: Holding time already past upon reception.: IA4212
Samples temperature is above 10°C.: IA4212, IA4212
pH: Holding time already past upon reception.: IA4212
Samples temperature is above 10°C.: IA4212
Nitrate and/or Nitrite: Holding time already past upon reception.: IA4212
Samples temperature is above 10°C.: IA4212, IA4212, IA4212, IA4212, IA4212, IA4212, IA4212, IA4212

CONVENTIONAL PARAMETERS (SURFACE WATER)

Oxygène dissous: Présence d'un espace d'air.

Results relate only to the items tested.



Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 2200002147
Sampler Initials: AC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2106882	SCG	Spiked Blank	Total suspended solids (TSS)	2020/07/23		95	%
2106882	SCG	Method Blank	Total suspended solids (TSS)	2020/07/23	<2.0		mg/L
2106883	SCG	Spiked Blank	Total Dissolved Solids	2020/07/22		103	%
2106883	SCG	Method Blank	Total Dissolved Solids	2020/07/22	<10		mg/L
2106900	SBD	Spiked Blank	pH	2020/07/20		101	%
2106902	SBD	Spiked Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/07/20		102	%
2106902	SBD	Method Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/07/20	<1.0		mg/L
2106903	SBD	Spiked Blank	Conductivity	2020/07/20		100	%
2106903	SBD	Method Blank	Conductivity	2020/07/20	<0.0010		mS/cm
2107698	DY3	Spiked Blank	COD	2020/07/22		94	%
2107698	DY3	Spiked Blank DUP	COD	2020/07/22		92	%
2107698	DY3	Method Blank	COD	2020/07/22	<5.0		mg/L
2107934	FS	Spiked Blank	Nitrates (N-NO3-)	2020/07/23		105	%
			Nitrites (N-NO2-)	2020/07/23		102	%
2107934	FS	Method Blank	Nitrates (N-NO3-)	2020/07/23	<0.020		mg/L
			Nitrites (N-NO2-)	2020/07/23	<0.020		mg/L
2107937	FS	Spiked Blank	Chloride (Cl)	2020/07/23		102	%
			Sulfates (SO4)	2020/07/23		103	%
2107937	FS	Method Blank	Chloride (Cl)	2020/07/23	<0.050		mg/L
			Sulfates (SO4)	2020/07/23	<0.50		mg/L
2108233	JGZ	Spiked Blank	Fluoride (F)	2020/07/23		102	%
2108233	JGZ	Method Blank	Fluoride (F)	2020/07/23	<0.10		mg/L
2108545	MCC	QC Standard	Sulfides (S2-)	2020/07/24		86	%
2108545	MCC	Method Blank	Sulfides (S2-)	2020/07/24	<0.020		mg/L
2108625	JGZ	Spiked Blank	Total phosphorous	2020/07/25		95	%
2108625	JGZ	Method Blank	Total phosphorous	2020/07/25	<10		ug/L
2108642	DZE	Spiked Blank	Dissolved organic carbon	2020/07/24		92	%
2108642	DZE	Method Blank	Dissolved organic carbon	2020/07/24	<0.20		mg/L
2108689	DZE	Spiked Blank	Total Organic Carbon	2020/07/25		94	%
2108689	DZE	Method Blank	Total Organic Carbon	2020/07/25	<0.20		mg/L
2108753	MSU	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/07/24		106	%
2108753	MSU	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/07/24	<0.020		mg/L
2108930	CG2	Spiked Blank	1-Chlorooctadecane	2020/07/27		109	%
			Petroleum Hydrocarbons (C10-C50)	2020/07/27		105	%
2108930	CG2	Spiked Blank DUP	1-Chlorooctadecane	2020/07/27		109	%
			Petroleum Hydrocarbons (C10-C50)	2020/07/27		104	%
2108930	CG2	Method Blank	1-Chlorooctadecane	2020/07/27		111	%
			Petroleum Hydrocarbons (C10-C50)	2020/07/27	<100		ug/L
2109073	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/07/27		101	%
2109073	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/07/27		104	%
2109073	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/07/27	<0.0080		mg/L
2109098	AJ1	Spiked Blank	Total Cyanide (CN)	2020/07/27		102	%
2109098	AJ1	Method Blank	Total Cyanide (CN)	2020/07/27	<0.0030		mg/L
2109158	DY3	Spiked Blank	COD	2020/07/27		106	%
2109158	DY3	Spiked Blank DUP	COD	2020/07/27		110	%
2109158	DY3	Method Blank	COD	2020/07/27	<5.0		mg/L
2109258	AJ1	Spiked Blank	Phenols-4AAP	2020/07/27		102	%
2109258	AJ1	Method Blank	Phenols-4AAP	2020/07/27	<0.0020		mg/L
2109561	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/07/28		98	%
2109561	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/07/28	<0.40		mg/L





Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 220002147
Sampler Initials: AC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2109808	BPH	QC Standard	BOD5	2020/08/03		103	%
2109808	BPH	Spiked Blank	BOD5	2020/08/03		98	%
2109808	BPH	Spiked Blank DUP	BOD5	2020/08/03		97	%
2109808	BPH	Method Blank	BOD5	2020/08/03	<2.0		mg/L
2109808	BPH	Method Blank DUP	BOD5	2020/08/03	<2.0		mg/L
2111274	FA	Spiked Blank	Aluminum (Al)	2020/08/03		93	%
			Antimony (Sb)	2020/08/03		99	%
			Silver (Ag)	2020/08/03		90	%
			Arsenic (As)	2020/08/03		100	%
			Barium (Ba)	2020/08/03		101	%
			Boron (B)	2020/08/03		98	%
			Cadmium (Cd)	2020/08/03		101	%
			Calcium (Ca)	2020/08/03		92	%
			Chromium (Cr)	2020/08/03		95	%
			Cobalt (Co)	2020/08/03		103	%
			Copper (Cu)	2020/08/03		103	%
			Tin (Sn)	2020/08/03		98	%
			Iron (Fe)	2020/08/03		101	%
			Magnesium (Mg)	2020/08/03		99	%
			Manganese (Mn)	2020/08/03		99	%
			Mercury (Hg)	2020/08/03		102	%
			Molybdenum (Mo)	2020/08/03		99	%
			Nickel (Ni)	2020/08/03		97	%
			Lead (Pb)	2020/08/03		98	%
			Potassium (K)	2020/08/03		96	%
			Selenium (Se)	2020/08/03		99	%
			Sodium (Na)	2020/08/03		106	%
			Thallium (Tl)	2020/08/03		102	%
			Titanium (Ti)	2020/08/03		98	%
			Uranium (U)	2020/08/03		104	%
			Vanadium (V)	2020/08/03		102	%
			Zinc (Zn)	2020/08/03		96	%
2111274	FA	Method Blank	Aluminum (Al)	2020/08/03	<5.0		ug/L
			Antimony (Sb)	2020/08/03	<0.015 (1)		ug/L
			Silver (Ag)	2020/08/03	<0.0030		ug/L
			Arsenic (As)	2020/08/03	<0.080		ug/L
			Barium (Ba)	2020/08/03	<0.030		ug/L
			Boron (B)	2020/08/03	<0.30		ug/L
			Cadmium (Cd)	2020/08/03	<0.0060		ug/L
			Calcium (Ca)	2020/08/03	<20		ug/L
			Chromium (Cr)	2020/08/03	<0.040		ug/L
			Cobalt (Co)	2020/08/03	<0.0080		ug/L
			Copper (Cu)	2020/08/03	<0.050		ug/L
			Tin (Sn)	2020/08/03	<0.050		ug/L
			Iron (Fe)	2020/08/03	<1.2 (1)		ug/L
			Magnesium (Mg)	2020/08/03	<10		ug/L
			Manganese (Mn)	2020/08/03	<0.030		ug/L
			Mercury (Hg)	2020/08/03	<0.0020		ug/L
			Molybdenum (Mo)	2020/08/03	<0.010		ug/L
			Nickel (Ni)	2020/08/03	<0.030		ug/L





Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 2200002147
Sampler Initials: AC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Lead (Pb)	2020/08/03	<0.010		ug/L
			Potassium (K)	2020/08/03	<10		ug/L
			Selenium (Se)	2020/08/03	<0.050		ug/L
			Sodium (Na)	2020/08/03	<10		ug/L
			Thallium (Tl)	2020/08/03	<0.010		ug/L
			Titanium (Ti)	2020/08/03	0.42, RDL=0.40		ug/L
			Uranium (U)	2020/08/03	<0.0010		ug/L
			Vanadium (V)	2020/08/03	<0.050		ug/L
			Zinc (Zn)	2020/08/03	<0.50		ug/L
			Total Hardness (CaCO3)	2020/08/03	<40		ug/L

RDL = Reportable Detection Limit

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) La limite de détection a été augmentée dû à l'instrumentation.



Lab BV Job #: C030795
Report Date: 2020/08/10

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Site Location: QC SURFACE WATER
Your P.O. #: 2200002147
Sampler Initials: AC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alex Thibert
Membre OCQ #2020-05

Alex Thibert, B.Sc., Chemist, Analyste 2



Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator



Corina Tue, B.Sc., Chemist, Montreal



Faouzi Sarsi, B.Sc. Chemist, SR Analyst



Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Quarter 2:



Your Project #: GOODWOOD
Site#: DS04
Your C.O.C. #: N/A

Attention: Mariana Trindade

TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Report Date: 2020/09/04

Report #: R2597867

Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BY JOB #: C037436

Received: 2020/08/20, 08:45

Sample Matrix: Surface Water
Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Alkalinity (pH end point 4.5)	2	N/A	2020/08/21	STL SOP-00038	SM 23 2320-B m
Anions	2	N/A	2020/08/21	STL SOP-00014	MA.300-Ions 1.3 R3 m
Biochemical Oxygen Demand (5 days) (5)	2	2020/08/21	2020/08/26	STL SOP-00008	MA315-DBO 1.1 R3 m
Total Cyanide	2	2020/08/24	2020/08/24	STL SOP-00035	MA300-CN 1.2 R4 m
Chemical Oxygen Demand	1	2020/08/27	2020/08/27	STL SOP-00009	MA315-DCO 1.1 R4 m
Chemical Oxygen Demand	1	2020/08/28	2020/08/28	STL SOP-00009	MA315-DCO 1.1 R4 m
Fecal coliforms (1)	2	N/A	2020/08/22	STL SOP-00189	MA700-FEC.EC 1.0 R5m
Total coliforms (1)	2	N/A	2020/08/22	STL SOP-00188	MA. 700-COL 1.0 R4
Conductivity	2	N/A	2020/08/21	STL SOP-00038	SM 23 2510-B m
Hexavalent Chromium (Cr 6+)	2	N/A	2020/08/24	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Hexavalent Chromium (Cr 6+)	2	N/A	2020/08/26	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Organic Carbon (6)	2	2020/08/26	2020/08/26	STL SOP-00243	SM 23 5310-B m
Fluoride	2	N/A	2020/08/20	STL SOP-00038	SM 23 4500-F m
FILTRATION	2	N/A	2020/08/21	STL SOP-00006	MA.200- Mét 1.2 R5 m
Total Suspended Solids	2	2020/08/20	2020/08/25	STL SOP-00015	MA.104-S.S. 2.0 m
Total Extractable Metals by ICP	2	2020/08/25	2020/08/26	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Total Extractable Trace Metals by ICP-MS	2	2020/08/27	2020/09/01	STL SOP-00006	MA203-Mét Tra1.1 R1m
Ammonia Nitrogen	2	N/A	2020/08/25	STL SOP-00040	MA.300-N 2.0 R2 m
Nitrate and/or Nitrite	2	N/A	2020/08/21	STL SOP-00014	MA.300-Ions 1.3 R3 m
Dissolved Oxygen	2	N/A	2020/08/21	STL SOP-00008	MA.315-DBO 1.1 R3 m
pH	2	N/A	2020/08/21	STL SOP-00038	MA.100-pH 1.1 R3 m
Total Phenols by 4-AAP	2	2020/08/26	2020/08/26	STL SOP-00033	MA404-I.Phé 2.2 R2 m
Total Phosphorus	2	N/A	2020/08/21	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Sulfides (as S2-) (2)	2	2020/08/21	2020/08/21	QUE SOP-00107	MA. 300 – S 1.2 R3 m
Sulfides (H2S) (2)	2	N/A	2020/08/24	QUE SOP-00107	MA. 300 – S 1.2m R3
Reactive Silica (SiO2) (3)	2	N/A	N/A		
Total Dissolved Solids	2	2020/08/21	2020/08/25	STL SOP-00050	MA.115-S.D. 1.0 R4 m
Total Nitrogen	2	2020/08/28	2020/08/28	STL SOP-00077	MOE:TOTNUT-E3516v1.3
Total Organic Carbon (7)	2	N/A	2020/08/27	STL SOP-00243	SM 23 5310-B m





Your Project #: GOODWOOD
Site#: DS04
Your C.O.C. #: N/A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Report Date: 2020/09/04
Report #: R2597867
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C037436
Received: 2020/08/20, 08:45
Sample Matrix: Surface Water
Samples Received: 2

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Analyzed		
Radium-226 Low Level (4, 8)	2	N/A	BQL SOP-00006 BQL SOP-00017 BQL SOP-00032	Alpha Spectrometry

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Lab BV Microbiologie-Montréal
- (2) This test was performed by Lab BV - Québec
- (3) This test was performed by Laboratoires Bureau Veritas - Bedford
- (4) This test was performed by BV Radiological via Montreal
- (5) Please note that in the event a biochemical oxygen demand analysis cannot begin within the 48-hours holding time required (for a sample preserved at 4°C), sample will be frozen, unless otherwise specified by a regulation, to maintain its integrity.
- (6) DOC present in the sample should be considered as non-purgeable DOC
- (7) TOC present in the sample should be considered as non-purgeable TOC
- (8) Radium-226 results have not been corrected for blanks.





Your Project #: GOODWOOD
Site#: DS04
Your C.O.C. #: N/A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Report Date: 2020/09/04
Report #: R2597867
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C037436

Received: 2020/08/20, 08:45

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Martine Lepage
Project Manager and Account
Manager
14 Sep 2020 10:39:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Martine Lepage, Project Manager and Account Manager

Email: Martine.LEPAGE@bvlab.com

Phone# (418)543-3788 Ext:7066201

=====

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Lab BV Job #: C037436
 Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD
 Sampler Initials: AD

RESULTS OF ANALYSES OF SURFACE WATER

Lab BV ID		IE4391	IE4392		
Sampling Date		2020/08/13 09:00	2020/08/13 14:45		
	Units	DSO4-ER-GW-Q2-2020	DSO4-EE-GW-Q2-2020	RDL	QC Batch
RADIONUCLIDE					
Radium-226	Bq/L	<0.005	<0.005	0.005	2121920
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					



Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		IE4391	IE4392		
Sampling Date		2020/08/13 09:00	2020/08/13 14:45		
	Units	DSO4-ER-GW-Q2-2020	DSO4-EE-GW-Q2-2020	RDL	QC Batch
METALS					
Aluminum (Al) †	ug/L	<5.0	<5.0	5.0	2119229
Antimony (Sb) †	ug/L	<0.0050	<0.0050	0.0050	2119229
Silver (Ag) †	ug/L	<0.0030	<0.0030	0.0030	2119229
Arsenic (As) †	ug/L	<0.080	<0.080	0.080	2119229
Barium (Ba) †	ug/L	0.21	1.3	0.030	2119229
Boron (B) †	ug/L	<0.30	1.5	0.30	2119229
Cadmium (Cd) †	ug/L	<0.0060	<0.0060	0.0060	2119229
Calcium (Ca) †	ug/L	57	150	20	2119229
Chromium (Cr) †	ug/L	<0.040	<0.040	0.040	2119229
Cobalt (Co) †	ug/L	<0.0080	<0.0080	0.0080	2119229
Copper (Cu) †	ug/L	<0.050	0.15	0.050	2119229
Tin (Sn) †	ug/L	<0.050	<0.050	0.050	2119229
Iron (Fe) †	ug/L	5.9	27	0.50	2119229
Magnesium (Mg) †	ug/L	35	85	10	2119229
Manganese (Mn) †	ug/L	7.6	12	0.030	2119229
Mercury (Hg) †	ug/L	<0.0020	<0.0020	0.0020	2119229
Molybdenum (Mo) †	ug/L	<0.010	<0.010	0.010	2119229
Nickel (Ni) †	ug/L	<0.030	0.071	0.030	2119229
Total phosphorous	ug/L	<10	<10	10	2118516
Lead (Pb) †	ug/L	<0.010	<0.010	0.010	2119229
Potassium (K) †	ug/L	59	87	10	2119229
Selenium (Se) †	ug/L	<0.050	<0.050	0.050	2119229
Sodium (Na) †	ug/L	66	160	10	2119229
Thallium (Tl) †	ug/L	<0.010	<0.010	0.010	2119229
Titanium (Ti) †	ug/L	<0.40	<0.40	0.40	2119229
Uranium (U) †	ug/L	<0.0010	0.0021	0.0010	2119229
Vanadium (V) †	ug/L	<0.050	<0.050	0.050	2119229
Zinc (Zn) †	ug/L	<0.50	<0.50	0.50	2119229
Total Hardness (CaCO3) †	ug/L	290	720	40	2119229
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable					



Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IE4391		IE4392		
Sampling Date		2020/08/13 09:00		2020/08/13 14:45		
	Units	DSO4-ER-GW-Q2-2020	QC Batch	DSO4-EE-GW-Q2-2020	RDL	QC Batch
CONVENTIONALS						
BOD5	mg/L	<4.0	2117431	<4.0	4.0	2117431
COD	mg/L	<5.0	2119518	8.0	5.0	2119166
Conductivity	mS/cm	<0.0010	2117285	0.0011	0.0010	2117285
Dissolved organic carbon †	mg/L	0.81	2118920	1.0	0.20	2118920
Dissolved oxygen †	mg/L	9.9	2117614	9.6	1.0	2117614
Fluoride (F)	mg/L	<0.10	2117255	<0.10	0.10	2117255
Hexavalent Chromium (Cr 6+)	mg/L	<0.0080	2118019	<0.0080	0.0080	2118019
Hexavalent Chromium (Cr 6+) †	mg/L	<0.0080	2118455	<0.0080	0.0080	2118455
Nitrates (N-NO3-)	mg/L	<0.020	2117558	<0.020	0.020	2117558
Nitrites (N-NO2-)	mg/L	<0.020	2117558	<0.020	0.020	2117558
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	0.21	2118251	<0.020	0.020	2118251
pH	pH	6.53	2117283	5.67	N/A	2117283
Phenols-4AAP	mg/L	<0.0020	2118671	<0.0020	0.0020	2118671
Sulfides (H2S) †	mg/L	<0.021	2117977	<0.021	0.021	2117977
Sulfides (S2-)	mg/L	<0.020	2117476	<0.020	0.020	2117476
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	2119471	<0.40	0.40	2119471
Total Cyanide (CN)	mg/L	<0.0030	2117975	<0.0030	0.0030	2117975
Total Organic Carbon	mg/L	1.1	2118884	1.5	0.20	2118884
Alkalinity Total (as CaCO3) pH 4.5 †	mg/L	1.8	2117284	<1.0	1.0	2117284
Chloride (Cl)	mg/L	0.11	2117562	0.37	0.050	2117562
Sulfates (SO4)	mg/L	<0.50	2117562	<0.50	0.50	2117562
Total Dissolved Solids	mg/L	<10	2117535	<10	10	2117535
Total suspended solids (TSS)	mg/L	<2.0	2117247	2.0	2.0	2117247
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable N/A = Not Applicable						





Lab BV Job #: C037436
 Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD
 Sampler Initials: AD

MICROBIOLOGY (SURFACE WATER)

Lab BV ID		IE4391	IE4392	
Sampling Date		2020/08/13 09:00	2020/08/13 14:45	
	Units	DSO4-ER-GW-Q2-2020	DSO4-EE-GW-Q2-2020	QC Batch
MICROBIOLOGICAL TESTS				
Total coliforms	UFC/100ml	NA	NA	2117809
Non-typical bacteria	UFC/100ml	>200	>200	2117809
Fecal coliforms	UFC/100ml	5.0	0	2117808
QC Batch = Quality Control Batch				



Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

GENERAL COMMENTS

Dissolved Oxygen: Holding time already past upon reception.: IE4391
Dissolved Organic Carbon: Holding time already past upon reception.: IE4391
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: IE4391
Fecal coliforms: Holding time already past upon reception.: IE4391
Total coliforms: Holding time already past upon reception.: IE4391
Nitrate and/or Nitrite: Holding time already past upon reception.: IE4391
pH: Holding time already past upon reception.: IE4391
Total Organic Carbon: Arrived unpreserved, preserved upon reception at the laboratory.: IE4391
Dissolved Hexavalent Chromium (Cr 6+): Holding time already past upon reception.: IE4391
Dissolved Oxygen: Holding time already past upon reception.: IE4392
Dissolved Organic Carbon: Holding time already past upon reception.: IE4392
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: IE4392
Fecal coliforms: Holding time already past upon reception.: IE4392
Total coliforms: Holding time already past upon reception.: IE4392
Nitrate and/or Nitrite: Holding time already past upon reception.: IE4392
pH: Holding time already past upon reception.: IE4392
Total Organic Carbon: Arrived unpreserved, preserved upon reception at the laboratory.: IE4392
Dissolved Hexavalent Chromium (Cr 6+): Holding time already past upon reception.: IE4392

CONVENTIONAL PARAMETERS (SURFACE WATER)

Total dissolved solids : Samples analyzed after hold time.

Dissolved oxygen: Presence of an air space. Radium-226: Cette analyse est accréditée par le MELCC.

MICROBIOLOGY (SURFACE WATER)

NA - Total coliforms are not reportable because non-typical bacteria are exceeding the acceptable limit (200 per membrane).

Results relate only to the items tested.



Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2117247	SCG	Spiked Blank	Total suspended solids (TSS)	2020/08/25		97	%
2117247	SCG	Method Blank	Total suspended solids (TSS)	2020/08/25	<2.0		mg/L
2117255	MPO	Spiked Blank	Fluoride (F)	2020/08/20		98	%
2117255	MPO	Method Blank	Fluoride (F)	2020/08/20	<0.10		mg/L
2117283	VPA	Spiked Blank	pH	2020/08/20		103	%
2117284	VPA	Spiked Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/08/20		108	%
2117284	VPA	Method Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/08/20	<1.0		mg/L
2117285	VPA	Spiked Blank	Conductivity	2020/08/20		104	%
2117285	VPA	Method Blank	Conductivity	2020/08/20	<0.0010		mS/cm
2117431	BPH	QC Standard	BOD5	2020/08/26		101	%
2117431	BPH	Spiked Blank	BOD5	2020/08/26		98	%
2117431	BPH	Spiked Blank DUP	BOD5	2020/08/26		94	%
2117431	BPH	Method Blank	BOD5	2020/08/26	<2.0		mg/L
2117431	BPH	Method Blank DUP	BOD5	2020/08/26	<2.0		mg/L
2117476	VRO	QC Standard	Sulfides (S2-)	2020/08/21		94	%
2117476	VRO	Method Blank	Sulfides (S2-)	2020/08/21	<0.020		mg/L
2117535	SCG	Spiked Blank	Total Dissolved Solids	2020/08/25		101	%
2117535	SCG	Method Blank	Total Dissolved Solids	2020/08/25	<10		mg/L
2117558	MSU	Spiked Blank	Nitrates (N-NO3-)	2020/08/21		107	%
			Nitrites (N-NO2-)	2020/08/21		105	%
2117558	MSU	Method Blank	Nitrates (N-NO3-)	2020/08/21	<0.020		mg/L
			Nitrites (N-NO2-)	2020/08/21	<0.020		mg/L
2117562	MSU	Spiked Blank	Chloride (Cl)	2020/08/21		104	%
			Sulfates (SO4)	2020/08/21		103	%
2117562	MSU	Method Blank	Chloride (Cl)	2020/08/21	<0.050		mg/L
			Sulfates (SO4)	2020/08/21	<0.50		mg/L
2117975	AJ1	Spiked Blank	Total Cyanide (CN)	2020/08/24		103	%
2117975	AJ1	Method Blank	Total Cyanide (CN)	2020/08/24	<0.0030		mg/L
2118019	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/08/24		102	%
2118019	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/08/24		105	%
2118019	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/08/24	<0.0080		mg/L
2118251	AHK	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/08/25		114	%
2118251	AHK	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/08/25	<0.020		mg/L
2118455	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/08/26		102	%
2118455	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/08/26		105	%
2118455	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/08/26	<0.0080		mg/L
2118516	AT7	Spiked Blank	Total phosphorous	2020/08/26		87	%
2118516	AT7	Method Blank	Total phosphorous	2020/08/26	<10		ug/L
2118671	AJ1	QC Standard	Phenols-4AAP	2020/08/26		100	%
2118671	AJ1	Spiked Blank	Phenols-4AAP	2020/08/26		103	%
2118671	AJ1	Method Blank	Phenols-4AAP	2020/08/26	<0.0020		mg/L
2118884	MSU	Spiked Blank	Total Organic Carbon	2020/08/27		100	%
2118884	MSU	Method Blank	Total Organic Carbon	2020/08/27	<0.20		mg/L
2118920	MPO	Spiked Blank	Dissolved organic carbon	2020/08/26		99	%
2118920	MPO	Method Blank	Dissolved organic carbon	2020/08/26	<0.20		mg/L
2119166	DY3	Spiked Blank	COD	2020/08/27		92	%
2119166	DY3	Spiked Blank DUP	COD	2020/08/27		92	%
2119166	DY3	Method Blank	COD	2020/08/27	<5.0		mg/L
2119229	FA	Spiked Blank	Aluminum (Al)	2020/09/01		82	%
			Antimony (Sb)	2020/09/01		105	%
			Silver (Ag)	2020/09/01		100	%
			Arsenic (As)	2020/09/01		99	%





Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Barium (Ba)	2020/09/01		104	%
			Boron (B)	2020/09/01		85	%
			Cadmium (Cd)	2020/09/01		100	%
			Calcium (Ca)	2020/09/01		91	%
			Chromium (Cr)	2020/09/01		88	%
			Cobalt (Co)	2020/09/01		94	%
			Copper (Cu)	2020/09/01		96	%
			Tin (Sn)	2020/09/01		99	%
			Iron (Fe)	2020/09/01		86	%
			Magnesium (Mg)	2020/09/01		81	%
			Manganese (Mn)	2020/09/01		94	%
			Mercury (Hg)	2020/09/01		95	%
			Molybdenum (Mo)	2020/09/01		98	%
			Nickel (Ni)	2020/09/01		96	%
			Lead (Pb)	2020/09/01		96	%
			Potassium (K)	2020/09/01		85	%
			Selenium (Se)	2020/09/01		83	%
			Sodium (Na)	2020/09/01		92	%
			Thallium (Tl)	2020/09/01		95	%
			Titanium (Ti)	2020/09/01		103	%
			Uranium (U)	2020/09/01		91	%
			Vanadium (V)	2020/09/01		88	%
			Zinc (Zn)	2020/09/01		92	%
2119229	FA	Method Blank	Aluminum (Al)	2020/09/01	<5.0		ug/L
			Antimony (Sb)	2020/09/01	<0.0050		ug/L
			Silver (Ag)	2020/09/01	<0.0030		ug/L
			Arsenic (As)	2020/09/01	<0.080		ug/L
			Barium (Ba)	2020/09/01	<0.30		ug/L
			Boron (B)	2020/09/01	<0.30		ug/L
			Cadmium (Cd)	2020/09/01	<0.0060		ug/L
			Calcium (Ca)	2020/09/01	<20		ug/L
			Chromium (Cr)	2020/09/01	<0.040		ug/L
			Cobalt (Co)	2020/09/01	<0.0080		ug/L
			Copper (Cu)	2020/09/01	<0.050		ug/L
			Tin (Sn)	2020/09/01	<0.050		ug/L
			Iron (Fe)	2020/09/01	<0.50		ug/L
			Magnesium (Mg)	2020/09/01	<10		ug/L
			Manganese (Mn)	2020/09/01	<0.030		ug/L
			Mercury (Hg)	2020/09/01	<0.0020		ug/L
			Molybdenum (Mo)	2020/09/01	<0.010		ug/L
			Nickel (Ni)	2020/09/01	<0.030		ug/L
			Lead (Pb)	2020/09/01	<0.010		ug/L
			Potassium (K)	2020/09/01	<10		ug/L
			Selenium (Se)	2020/09/01	<0.050		ug/L
			Sodium (Na)	2020/09/01	<10		ug/L
			Thallium (Tl)	2020/09/01	<0.010		ug/L
			Titanium (Ti)	2020/09/01	<0.40		ug/L
			Uranium (U)	2020/09/01	<0.0010		ug/L
			Vanadium (V)	2020/09/01	<0.050		ug/L
			Zinc (Zn)	2020/09/01	<0.50		ug/L
			Total Hardness (CaCO3)	2020/09/01	<40		ug/L
2119471	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/08/28		100	%





Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2119471	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/08/28	<0.40		mg/L
2119518	DY3	Spiked Blank	COD	2020/08/28		94	%
2119518	DY3	Spiked Blank DUP	COD	2020/08/28		88	%
2119518	DY3	Method Blank	COD	2020/08/28	<5.0		mg/L
2121920	éBP	Spiked Blank	Radium-226	2020/09/02		108	%
			Radium-226	2020/09/02		108	%
2121920	éBP	Method Blank	Radium-226	2020/09/02	<0.005		Bq/L
			Radium-226	2020/09/02	<0.005		Bq/L

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



Lab BV Job #: C037436
Report Date: 2020/09/04



TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

VALIDATION SIGNATURE PAGE


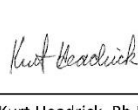
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator



Faouzi Sarsi, B.Sc. Chemist, SR Analyst



Kurt Headrick, Ph.D., C. Chem., Laboratory Manager




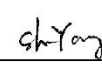
Michelina Cinquino, Analyste II



Mathieu Letourneau, B. Sc., Chemist, Ste-Foy, Scientific Service Specialist



Pouya Salehi, Microbiologist, Montreal, Analyst



Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

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**BUREAU
VERITAS**
Lab BV Job #: C037436
Report Date: 2020/09/04

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AD

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

For Service Group specific validation please refer to the Validation Signature Page.

Quarter 3:



Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Your P.O. #: 300000730
Your Project #: DSO4 QUEBEC PARAMETER
Site#: GOODWOOD
Site Location: GOODWOOD SURFACE WATER
Your C.O.C. #: C#212019-01-02

Report Date: 2020/10/15
Report #: R2608809
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C044965
Received: 2020/09/24, 10:25
Sample Matrix: Surface Water
Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Alkalinity (pH end point 4.5)	2	N/A	2020/09/25	STL SOP-00038	SM 23 2320-B m
Anions	2	N/A	2020/09/25	STL SOP-00014	MA.300-Ions 1.3 R3 m
Biochemical Oxygen Demand (5 days) (4)	2	2020/09/24	2020/09/29	STL SOP-00008	MA315-DBO 1.1 R3 m
Petroleum Hydrocarbons (C10-C50)	2	2020/10/02	2020/10/03	STL SOP-00173	MA.400-HYD. 1.1 R3 m
Total Cyanide	2	2020/09/28	2020/09/29	STL SOP-00035	MA300-CN 1.2 R4 m
Chemical Oxygen Demand	2	2020/10/01	2020/10/01	STL SOP-00009	MA315-DCO 1.1 R4 m
Fecal coliforms (1)	2	N/A	2020/09/24	QUE SOP-00303	MA.700-Fec.Ec 1.0
Total coliforms (1)	2	N/A	2020/09/24	QUE SOP-00304	MA.700-Col 1.0
Conductivity	2	N/A	2020/09/25	STL SOP-00038	SM 23 2510-B m
Hexavalent Chromium (Cr 6+)	2	N/A	2020/09/30	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Hexavalent Chromium (Cr 6+)	2	N/A	2020/09/28	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Organic Carbon (5)	2	2020/10/01	2020/10/02	STL SOP-00243	SM 23 5310-B m
Fluoride	2	N/A	2020/09/25	STL SOP-00038	SM 23 4500-F m
FILTRATION	2	N/A	2020/09/24	STL SOP-00006	MA.200- Mét 1.2 R5 m
Total Suspended Solids	2	2020/09/30	2020/10/01	STL SOP-00015	MA.104-S.S. 2.0 m
Total Extractable Metals by ICP	2	2020/10/01	2020/10/02	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Total Extractable Trace Metals by ICP-MS	2	2020/10/09	2020/10/10	STL SOP-00006	MA203-Mét Tra1.1 R1m
Ammonia Nitrogen	2	N/A	2020/10/01	STL SOP-00040	MA.300-N 2.0 R2 m
Nitrate and/or Nitrite	2	N/A	2020/09/25	STL SOP-00014	MA.300-Ions 1.3 R3 m
Dissolved Oxygen	2	N/A	2020/09/24	STL SOP-00008	MA.315-DBO 1.1 R3 m
pH	2	N/A	2020/09/25	STL SOP-00038	MA.100-pH 1.1 R3 m
Total Phenols by 4-AAP	2	2020/10/01	2020/10/02	STL SOP-00033	MA404-I.Phé 2.2 R2 m
Total Phosphorus	2	N/A	2020/09/24	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Sulfides (as S2-) (1)	2	2020/09/29	2020/09/29	QUE SOP-00107	MA. 300 - S 1.2 R3 m
Sulfides (H2S) (1)	2	N/A	2020/09/29	QUE SOP-00107	MA. 300 - S 1.2m R3
Reactive Silica (SiO2) (2)	2	N/A	N/A		
Total Dissolved Solids	2	2020/09/25	2020/09/28	STL SOP-00050	MA.115-S.D. 1.0 R4 m
Total Nitrogen	1	2020/10/02	2020/10/02	STL SOP-00077	MOE:TOTNUT-E3516v1.3
Total Nitrogen	1	2020/09/30	2020/09/30	STL SOP-00077	MOE:TOTNUT-E3516v1.3
Total Organic Carbon (6)	2	N/A	2020/09/30	STL SOP-00243	SM 23 5310-B m





Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Your P.O. #: 300000730
Your Project #: DSO4 QUEBEC PARAMETER
Site#: GOODWOOD
Site Location: GOODWOOD SURFACE WATER
Your C.O.C. #: C#212019-01-02

Report Date: 2020/10/15
Report #: R2608809
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C044965
Received: 2020/09/24, 10:25
Sample Matrix: Surface Water
Samples Received: 2

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Radium-226 Low Level (3, 7)	2	N/A	2020/10/06 BQL SOP-00006 BQL SOP-00017 BQL SOP-00032	Alpha Spectrometry

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Lab BV - Québec
- (2) This test was performed by Laboratoires Bureau Veritas - Bedford
- (3) This test was performed by BV Radiological via Montreal
- (4) Please note that in the event a biochemical oxygen demand analysis cannot begin within the 48-hours holding time required (for a sample preserved at 4°C), sample will be frozen, unless otherwise specified by a regulation, to maintain its integrity.
- (5) DOC present in the sample should be considered as non-purgeable DOC
- (6) TOC present in the sample should be considered as non-purgeable TOC
- (7) Radium-226 results have not been corrected for blanks.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.





Your P.O. #: 300000730
Your Project #: DSO4 QUEBEC PARAMETER
Site#: GOODWOOD
Site Location: GOODWOOD SURFACE WATER
Your C.O.C. #: C#212019-01-02

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/10/15
Report #: R2608809
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C044965
Received: 2020/09/24, 10:25

Encryption Key

Martine Lepage
Project Manager and Account
Manager
02 Nov 2020 14:19:04

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Martine Lepage, Project Manager and Account Manager
Email: Martine.LEPAGE@bvlab.com
Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Lab BV Job #: C044965
 Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
 Client Project #: DSO4 QUEBEC PARAMETER
 Site Location: GOODWOOD SURFACE WATER
 Your P.O. #: 3000000730
 Sampler Initials: DH

RESULTS OF ANALYSES OF SURFACE WATER

Lab BV ID		I14235	I14236		
Sampling Date		2020/09/15 15:50	2020/09/15 16:50		
COC Number		C#212019-01-02	C#212019-01-02		
	Units	DSO4-ER-GW-Q3-2020	DSO4-EE-GW-Q3-2020	RDL	QC Batch
RADIONUCLIDE					
Radium-226	Bq/L	<0.005	<0.005	0.005	2131845
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					



BUREAU
VERITAS
Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 3000000730
Sampler Initials: DH

HYDROCARBONS BY GCFID (SURFACE WATER)

Lab BV ID		114235	114236		
Sampling Date		2020/09/15 15:50	2020/09/15 16:50		
COC Number		C#212019-01-02	C#212019-01-02		
	Units	DSO4-ER-GW-Q3-2020	DSO4-EE-GW-Q3-2020	RDL	QC Batch
PETROLEUM HYDROCARBONS					
Petroleum Hydrocarbons (C10-C50)	ug/L	<100	<100	100	2130623
Surrogate Recovery (%)					
1-Chlorooctadecane	%	81	86	N/A	2130623
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 300000730
Sampler Initials: DH

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		II4235	II4236		
Sampling Date		2020/09/15 15:50	2020/09/15 16:50		
COC Number		C#212019-01-02	C#212019-01-02		
	Units	DSO4-ER-GW-Q3-2020	DSO4-EE-GW-Q3-2020	RDL	QC Batch
METALS					
Aluminum (Al) †	ug/L	9.2	6.3	5.0	2132670
Antimony (Sb) †	ug/L	<0.0050	0.0079	0.0050	2132670
Silver (Ag) †	ug/L	<0.0030	<0.0030	0.0030	2132670
Arsenic (As) †	ug/L	<0.080	<0.080	0.080	2132670
Barium (Ba) †	ug/L	0.47	2.3	0.030	2132670
Boron (B) †	ug/L	<0.30	2.1	0.30	2132670
Cadmium (Cd) †	ug/L	<0.0060	<0.0060	0.0060	2132670
Calcium (Ca) †	ug/L	65	190	20	2132670
Chromium (Cr) †	ug/L	<0.040	<0.040	0.040	2132670
Cobalt (Co) †	ug/L	0.0090	0.015	0.0080	2132670
Copper (Cu) †	ug/L	0.19	0.45	0.050	2132670
Tin (Sn) †	ug/L	<0.050	<0.050	0.050	2132670
Iron (Fe) †	ug/L	23	31	0.50	2132670
Magnesium (Mg) †	ug/L	40	110	10	2132670
Manganese (Mn) †	ug/L	6.6	15	0.030	2132670
Mercury (Hg) †	ug/L	<0.0020	<0.0020	0.0020	2132670
Molybdenum (Mo) †	ug/L	<0.010	<0.010	0.010	2132670
Nickel (Ni) †	ug/L	0.064	0.22	0.030	2132670
Total phosphorous	ug/L	<10	<10	10	2129951
Lead (Pb) †	ug/L	<0.010	<0.010	0.010	2132670
Potassium (K) †	ug/L	92	130	10	2132670
Selenium (Se) †	ug/L	<0.050	<0.050	0.050	2132670
Sodium (Na) †	ug/L	150	260	10	2132670
Thallium (Tl) †	ug/L	<0.010	<0.010	0.010	2132670
Titanium (Ti) †	ug/L	<0.40	<0.40	0.40	2132670
Uranium (U) †	ug/L	0.0016	0.0015	0.0010	2132670
Vanadium (V) †	ug/L	<0.050	<0.050	0.050	2132670
Zinc (Zn) †	ug/L	0.99	2.0	0.50	2132670
Total Hardness (CaCO3) †	ug/L	330	950	40	2132670
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable					





Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 300000730
Sampler Initials: DH

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		II4235		II4236	II4236		
Sampling Date		2020/09/15 15:50		2020/09/15 16:50	2020/09/15 16:50		
COC Number		C#212019-01-02		C#212019-01-02	C#212019-01-02		
	Units	DSO4-ER-GW-Q3-2020	QC Batch	DSO4-EE-GW-Q3-2020	DSO4-EE-GW-Q3-2020 Lab-Dup	RDL	QC Batch
CONVENTIONALS							
BOD5	mg/L	<5.3	2127896	<5.3	N/A	5.3	2127896
COD	mg/L	<5.0	2130019	<5.0	N/A	5.0	2130019
Conductivity	mS/cm	0.0023	2128068	0.0033	N/A	0.0010	2128068
Dissolved organic carbon †	mg/L	1.2	2130290	0.83	N/A	0.20	2130290
Dissolved oxygen †	mg/L	10	2127855	9.9	N/A	1.0	2127855
Fluoride (F)	mg/L	<0.10	2128066	<0.10	<0.10	0.10	2128066
Hexavalent Chromium (Cr 6+)	mg/L	<0.0080	2129610	<0.0080	N/A	0.0080	2129610
Hexavalent Chromium (Cr 6+) †	mg/L	<0.0080	2128954	<0.0080	N/A	0.0080	2128954
Nitrates (N-NO3-)	mg/L	0.13	2128269	<0.020	<0.020	0.020	2128269
Nitrites (N-NO2-)	mg/L	<0.020	2128269	<0.020	<0.020	0.020	2128269
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	0.060	2130107	0.080	N/A	0.020	2130107
pH	pH	6.10	2128067	6.01	6.02	N/A	2128067
Phenols-4AAP	mg/L	<0.0020	2130159	<0.0020	N/A	0.0020	2130159
Sulfides (H2S) †	mg/L	<0.021	2129456	<0.021	N/A	0.021	2129456
Sulfides (S2-)	mg/L	<0.020	2129338	<0.020	N/A	0.020	2129338
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	2129722	<0.40	N/A	0.40	2130431
Total Cyanide (CN)	mg/L	<0.0030	2129012	<0.0030	N/A	0.0030	2129012
Total Organic Carbon	mg/L	1.5	2129500	1.1	N/A	0.20	2129500
Alkalinity Total (as CaCO3) pH 4.5 †	mg/L	<1.0	2128069	<1.0	N/A	1.0	2128069
Chloride (Cl)	mg/L	0.071	2128455	0.52	N/A	0.050	2128455
Sulfates (SO4)	mg/L	<0.50	2128455	<0.50	N/A	0.50	2128455
Total Dissolved Solids	mg/L	<10	2128466	12	N/A	10	2128466
Total suspended solids (TSS)	mg/L	<2.0	2129847	2.0	N/A	2.0	2129847
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable							



Lab BV Job #: C044965
 Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
 Client Project #: DSO4 QUEBEC PARAMETER
 Site Location: GOODWOOD SURFACE WATER
 Your P.O. #: 3000000730
 Sampler Initials: DH

MICROBIOLOGY (SURFACE WATER)

Lab BV ID		114235	114236	
Sampling Date		2020/09/15 15:50	2020/09/15 16:50	
COC Number		C#212019-01-02	C#212019-01-02	
	Units	DSO4-ER-GW-Q3-2020	DSO4-EE-GW-Q3-2020	QC Batch

MICROBIOLOGICAL TESTS				
Total coliforms	UFC/100ml	NA	NA	2128023
Non-typical bacteria	UFC/100ml	>200	>200	2128023
Fecal coliforms	UFC/100ml	0	1.0	2128021
QC Batch = Quality Control Batch				



Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 3000000730
Sampler Initials: DH

GENERAL COMMENTS

Dissolved Oxygen: Holding time already past upon reception.: II4235
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: II4235
Fecal coliforms: Holding time already past upon reception.: II4235
Total coliforms: Holding time already past upon reception.: II4235
Dissolved Organic Carbon: Holding time already past upon reception.: II4235
Total Suspended Solids: Holding time already past upon reception.: II4235
Total Dissolved Solids: Holding time already past upon reception.: II4235
Total Cyanide: Deadline requested is greater than analytical holding time.: II4235
Total Alkalinity (pH end point 4.5): Deadline requested is greater than analytical holding time.: II4235
Nitrate and/or Nitrite: Holding time already past upon reception.: II4235
pH: Holding time already past upon reception.: II4235
Dissolved Hexavalent Chromium (Cr 6+): Holding time already past upon reception.: II4235
Dissolved Oxygen: Holding time already past upon reception.: II4236
Biochemical Oxygen Demand (5 days): Holding time already past upon reception.: II4236
Fecal coliforms: Holding time already past upon reception.: II4236
Total coliforms: Holding time already past upon reception.: II4236
Dissolved Organic Carbon: Holding time already past upon reception.: II4236
Total Suspended Solids: Holding time already past upon reception.: II4236
Total Dissolved Solids: Holding time already past upon reception.: II4236
Total Cyanide: Deadline requested is greater than analytical holding time.: II4236
Total Alkalinity (pH end point 4.5): Deadline requested is greater than analytical holding time.: II4236
Nitrate and/or Nitrite: Holding time already past upon reception.: II4236
pH: Holding time already past upon reception.: II4236
Dissolved Hexavalent Chromium (Cr 6+): Holding time already past upon reception.: II4236

MICROBIOLOGY (SURFACE WATER)

NA - Total coliforms are not reportable because non-typical bacteria are exceeding the acceptable limit (200 per membrane). Radium-226: Cette analyse est accréditée par le MELCC.

Results relate only to the items tested.



Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 300000730
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2127896	BPH	QC Standard	BOD5	2020/09/29		101	%
2127896	BPH	Spiked Blank	BOD5	2020/09/29		102	%
2127896	BPH	Spiked Blank DUP	BOD5	2020/09/29		97	%
2127896	BPH	Method Blank	BOD5	2020/09/29	<2.0		mg/L
2127896	BPH	Method Blank DUP	BOD5	2020/09/29	<2.0		mg/L
2128066	MPO	Spiked Blank	Fluoride (F)	2020/09/24		100	%
2128066	MPO	Method Blank	Fluoride (F)	2020/09/24	<0.10		mg/L
2128067	MPO	Spiked Blank	pH	2020/09/24		102	%
2128068	MPO	Spiked Blank	Conductivity	2020/09/24		106	%
2128068	MPO	Method Blank	Conductivity	2020/09/24	<0.0010		mS/cm
2128069	MPO	Spiked Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/09/24		103	%
2128069	MPO	Method Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/09/24	<1.0		mg/L
2128269	MSU	Spiked Blank	Nitrates (N-NO3-)	2020/09/25		103	%
			Nitrites (N-NO2-)	2020/09/25		100	%
2128269	MSU	Method Blank	Nitrates (N-NO3-)	2020/09/25	<0.020		mg/L
			Nitrites (N-NO2-)	2020/09/25	<0.020		mg/L
2128455	MSU	Spiked Blank	Chloride (Cl)	2020/09/25		101	%
			Sulfates (SO4)	2020/09/25		103	%
2128455	MSU	Method Blank	Chloride (Cl)	2020/09/25	<0.050		mg/L
			Sulfates (SO4)	2020/09/25	<0.50		mg/L
2128466	KMO	Spiked Blank	Total Dissolved Solids	2020/09/28		98	%
2128466	KMO	Method Blank	Total Dissolved Solids	2020/09/28	<10		mg/L
2128954	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/09/28		99	%
2128954	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/09/28		105	%
2128954	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/09/28	<0.0080		mg/L
2129012	AJ1	Spiked Blank	Total Cyanide (CN)	2020/09/29		91	%
2129012	AJ1	Method Blank	Total Cyanide (CN)	2020/09/29	<0.0030		mg/L
2129338	ML8	QC Standard	Sulfides (S2-)	2020/09/29		116	%
2129338	ML8	Method Blank	Sulfides (S2-)	2020/09/29	<0.020		mg/L
2129500	MSU	Spiked Blank	Total Organic Carbon	2020/09/30		111	%
2129500	MSU	Method Blank	Total Organic Carbon	2020/09/30	<0.20		mg/L
2129610	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/09/30		99	%
2129610	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/09/30		105	%
2129610	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/09/30	<0.0080		mg/L
2129722	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/09/30		100	%
2129722	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/09/30	<0.40		mg/L
2129847	SCG	Spiked Blank	Total suspended solids (TSS)	2020/10/01		98	%
2129847	SCG	Method Blank	Total suspended solids (TSS)	2020/10/01	<2.0		mg/L
2129951	AT7	Spiked Blank	Total phosphorous	2020/10/01		86	%
2129951	AT7	Method Blank	Total phosphorous	2020/10/01	<10		ug/L
2130019	DY3	Spiked Blank	COD	2020/10/01		96	%
2130019	DY3	Spiked Blank DUP	COD	2020/10/01		98	%
2130019	DY3	Method Blank	COD	2020/10/01	<5.0		mg/L
2130107	AHK	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/10/01		111	%
2130107	AHK	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/10/01	<0.020		mg/L
2130159	AJ1	QC Standard	Phenols-4AAP	2020/10/02		102	%
2130159	AJ1	Spiked Blank	Phenols-4AAP	2020/10/02		100	%
2130159	AJ1	Method Blank	Phenols-4AAP	2020/10/02	<0.0020		mg/L
2130290	MPO	Spiked Blank	Dissolved organic carbon	2020/10/02		99	%
2130290	MPO	Method Blank	Dissolved organic carbon	2020/10/02	<0.20		mg/L





Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 300000730
Sampler Initials: DH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2130431	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/10/02		107	%
2130431	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/10/02	<0.40		mg/L
2130623	SHA	Spiked Blank	1-Chlorooctadecane	2020/10/03		87	%
			Petroleum Hydrocarbons (C10-C50)	2020/10/03		112	%
2130623	SHA	Spiked Blank DUP	1-Chlorooctadecane	2020/10/03		88	%
			Petroleum Hydrocarbons (C10-C50)	2020/10/03		109	%
2130623	SHA	Method Blank	1-Chlorooctadecane	2020/10/03		82	%
			Petroleum Hydrocarbons (C10-C50)	2020/10/03	<100		ug/L
2131845	éBP	Spiked Blank	Radium-226	2020/10/06		93	%
			Radium-226	2020/10/06		93	%
			Radium-226	2020/10/06		93	%
2131845	éBP	Method Blank	Radium-226	2020/10/06	<0.005		Bq/L
			Radium-226	2020/10/06	<0.005		Bq/L
			Radium-226	2020/10/06	<0.005		Bq/L
2132670	ST5	Spiked Blank	Aluminum (Al)	2020/10/13		100	%
			Antimony (Sb)	2020/10/13		108	%
			Silver (Ag)	2020/10/13		105	%
			Arsenic (As)	2020/10/13		106	%
			Barium (Ba)	2020/10/13		106	%
			Boron (B)	2020/10/13		102	%
			Cadmium (Cd)	2020/10/13		102	%
			Calcium (Ca)	2020/10/13		100	%
			Chromium (Cr)	2020/10/13		98	%
			Cobalt (Co)	2020/10/13		108	%
			Copper (Cu)	2020/10/13		99	%
			Tin (Sn)	2020/10/13		112	%
			Iron (Fe)	2020/10/13		99	%
			Magnesium (Mg)	2020/10/13		99	%
			Manganese (Mn)	2020/10/13		112	%
			Mercury (Hg)	2020/10/13		81	%
			Molybdenum (Mo)	2020/10/13		113	%
			Nickel (Ni)	2020/10/13		103	%
			Lead (Pb)	2020/10/13		102	%
			Potassium (K)	2020/10/13		100	%
			Selenium (Se)	2020/10/13		94	%
			Sodium (Na)	2020/10/13		99	%
			Thallium (Tl)	2020/10/13		99	%
			Titanium (Ti)	2020/10/13		116	%
			Uranium (U)	2020/10/13		103	%
			Vanadium (V)	2020/10/13		114	%
			Zinc (Zn)	2020/10/13		100	%
2132670	ST5	Method Blank	Aluminum (Al)	2020/10/13	<5.0		ug/L
			Antimony (Sb)	2020/10/13	<0.0050		ug/L
			Silver (Ag)	2020/10/13	<0.0030		ug/L
			Arsenic (As)	2020/10/13	<0.080		ug/L
			Barium (Ba)	2020/10/13	<0.030		ug/L
			Boron (B)	2020/10/13	<0.30		ug/L
			Cadmium (Cd)	2020/10/13	<0.0060		ug/L
			Calcium (Ca)	2020/10/13	<20		ug/L
			Chromium (Cr)	2020/10/13	<0.040		ug/L





Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 3000000730
Sampler Initials: DH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Cobalt (Co)	2020/10/13	<0.0080		ug/L
			Copper (Cu)	2020/10/13	<0.050		ug/L
			Tin (Sn)	2020/10/13	<0.050		ug/L
			Iron (Fe)	2020/10/13	<0.50		ug/L
			Magnesium (Mg)	2020/10/13	<10		ug/L
			Manganese (Mn)	2020/10/13	<0.030		ug/L
			Mercury (Hg)	2020/10/13	<0.0020		ug/L
			Molybdenum (Mo)	2020/10/13	<0.010		ug/L
			Nickel (Ni)	2020/10/13	<0.030		ug/L
			Lead (Pb)	2020/10/13	<0.010		ug/L
			Potassium (K)	2020/10/13	<10		ug/L
			Selenium (Se)	2020/10/13	<0.050		ug/L
			Sodium (Na)	2020/10/13	<10		ug/L
			Thallium (Tl)	2020/10/13	<0.010		ug/L
			Titanium (Ti)	2020/10/13	<0.40		ug/L
			Uranium (U)	2020/10/13	<0.0010		ug/L
			Vanadium (V)	2020/10/13	<0.050		ug/L
			Zinc (Zn)	2020/10/13	<0.50		ug/L
			Total Hardness (CaCO3)	2020/10/13	<40		ug/L

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 3000000730
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



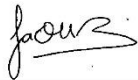


Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator





Corina Tue, B.Sc., Chemist, Montreal




Steven Simpson, Lab Director

Faouzi Sarsi, B.Sc. Chemist, SR Analyst




Lorena Di Benedetto, B.Sc., Chemist, Customer Service Specialist




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Pouya Salehi, Microbiologist, Montreal, Analyst



BUREAU
VERITAS

Lab BV Job #: C044965
Report Date: 2020/10/15

TATA STEEL MINERALS CANADA
Client Project #: DSO4 QUEBEC PARAMETER
Site Location: GOODWOOD SURFACE WATER
Your P.O. #: 3000000730
Sampler Initials: DH

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Sandra Trochei

Sandra Trochei, Analyste II



Shu Yang

Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Quarter 4:



Your Project #: GOODWOOD
Your C.O.C. #: N-A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/11/17
Report #: R2619382
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C051487
Received: 2020/10/22, 12:57
Sample Matrix: Surface Water
Samples Received: 2

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted Analyzed		
Total Alkalinity (pH end point 4.5)	2	N/A 2020/10/23	STL SOP-00038	SM 23 2320-B m
Anions	2	N/A 2020/10/25	STL SOP-00014	MA.300-Ions 1.3 R3 m
Biochemical Oxygen Demand (5 days) (4)	2	2020/10/22 2020/10/27	STL SOP-00008	MA315-DBO 1.1 R3 m
Petroleum Hydrocarbons (C10-C50)	2	2020/10/29 2020/10/29	STL SOP-00173	MA.400-HYD. 1.1 R3 m
Total Cyanide	2	2020/10/28 2020/10/28	STL SOP-00035	MA300-CN 1.2 R4 m
Chemical Oxygen Demand	1	2020/10/29 2020/10/29	STL SOP-00009	MA315-DCO 1.1 R4 m
Chemical Oxygen Demand	1	2020/10/31 2020/10/31	STL SOP-00009	MA315-DCO 1.1 R4 m
Fecal coliforms (1)	2	N/A 2020/10/22	QUE SOP-00303	MA.700-Fec.Ec 1.0
Total coliforms (1)	2	N/A 2020/10/22	STL SOP-00188	MA. 700-COL 1.0 R4
Conductivity	2	N/A 2020/10/23	STL SOP-00038	SM 23 2510-B m
Hexavalent Chromium (Cr 6+)	2	N/A 2020/10/27	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Hexavalent Chromium (Cr 6+)	2	N/A 2020/10/29	STL SOP-00037	MA200-CrHex 1.1 R1 m
Dissolved Organic Carbon (5)	2	2020/10/27 2020/10/27	STL SOP-00243	SM 23 5310-B m
Fluoride	2	N/A 2020/10/23	STL SOP-00038	SM 23 4500-F m
FILTRATION	2	N/A 2020/10/22	STL SOP-00006	MA.200- Mét 1.2 R5 m
Total Suspended Solids	2	2020/10/22 2020/10/23	STL SOP-00015	MA.104-S.S. 2.0 m
Total Extractable Metals by ICP	2	2020/10/27 2020/10/28	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Total Extractable Trace Metals by ICP-MS	2	2020/11/09 2020/11/11	STL SOP-00006	MA203-Mét Tra1.1 R1m
Ammonia Nitrogen	2	N/A 2020/10/23	STL SOP-00040	MA.300-N 2.0 R2 m
Nitrate and/or Nitrite	2	N/A 2020/10/25	STL SOP-00014	MA.300-Ions 1.3 R3 m
Dissolved Oxygen	2	N/A 2020/10/22	STL SOP-00008	MA.315-DBO 1.1 R3 m
pH	2	N/A 2020/10/23	STL SOP-00038	MA.100-pH 1.1 R3 m
Total Phenols by 4-AAP	2	2020/10/30 2020/10/30	STL SOP-00033	MA404-I.Phé 2.2 R2 m
Total Phosphorus	2	N/A 2020/10/22	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Sulfides (as S2-) (1)	2	2020/10/23 2020/10/23	QUE SOP-00107	MA. 300 - S 1.2 R3 m
Sulfides (H2S) (1)	2	N/A 2020/11/02	QUE SOP-00107	MA. 300 - S 1.2m R3
Reactive Silica (SiO2) (2)	2	N/A N/A		
Total Dissolved Solids	2	2020/10/22 2020/10/23	STL SOP-00050	MA.115-S.D. 1.0 R4 m
Total Nitrogen	1	2020/10/28 2020/10/28	STL SOP-00077	MOE:TOTNUT-E3516v1.3
Total Nitrogen	1	2020/10/29 2020/10/29	STL SOP-00077	MOE:TOTNUT-E3516v1.3





Your Project #: GOODWOOD
Your C.O.C. #: N-A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/11/17
Report #: R2619382
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C051487
Received: 2020/10/22, 12:57
Sample Matrix: Surface Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Organic Carbon (6)	2	N/A	2020/10/27	STL SOP-00243	SM 23 5310-B m
Radium-226 Low Level (3, 7)	2	N/A	2020/11/16	BQL SOP-00006 BQL SOP-00017 BQL SOP-00032	Alpha Spectrometry

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Lab BV - Québec
- (2) This test was performed by Laboratoires Bureau Veritas - Bedford
- (3) This test was performed by BV Radiological via Montreal
- (4) Please note that in the event a biochemical oxygen demand analysis cannot begin within the 48-hours holding time required (for a sample preserved at 4°C), sample will be frozen, unless otherwise specified by a regulation, to maintain its integrity.
- (5) DOC present in the sample should be considered as non-purgeable DOC
- (6) TOC present in the sample should be considered as non-purgeable TOC
- (7) Radium-226 results have not been corrected for blanks.





Your Project #: GOODWOOD
Your C.O.C. #: N-A

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/11/17
Report #: R2619382
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C051487

Received: 2020/10/22, 12:57

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Martine Lepage
Project Manager and Account
Manager
17 Nov 2020 16:19:54

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Martine Lepage, Project Manager and Account Manager
Email: Martine.LEPAGE@bvlab.com
Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

RESULTS OF ANALYSES OF SURFACE WATER

Lab BV ID		IL7818	IL7819		
Sampling Date		2020/10/15 14:00	2020/10/15 14:30		
COC Number		N-A	N-A		
	Units	DSO4-ER-GW-Q4-2020	DSO4-EE-GW-Q4-2020	RDL	QC Batch
RADIONUCLIDE					
Radium-226	Bq/L	<0.005	<0.005	0.005	2144266
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

HYDROCARBONS BY GCFID (SURFACE WATER)

Lab BV ID		IL7818	IL7819		
Sampling Date		2020/10/15 14:00	2020/10/15 14:30		
COC Number		N-A	N-A		
	Units	DSO4-ER-GW-Q4-2020	DSO4-EE-GW-Q4-2020	RDL	QC Batch
PETROLEUM HYDROCARBONS					
Petroleum Hydrocarbons (C10-C50)	ug/L	<100	<100	100	2139316
Surrogate Recovery (%)					
1-Chlorooctadecane	%	77	75	N/A	2139316
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

TOTAL EXTRACTABLE METALS (SURFACE WATER)

Lab BV ID		IL7818	IL7819		
Sampling Date		2020/10/15 14:00	2020/10/15 14:30		
COC Number		N-A	N-A		
	Units	DSO4-ER-GW-Q4-2020	DSO4-EE-GW-Q4-2020	RDL	QC Batch
METALS					
Aluminum (Al) †	ug/L	7.6	7.3	5.0	2142509
Antimony (Sb) †	ug/L	<0.0050	<0.0050	0.0050	2142509
Silver (Ag) †	ug/L	<0.0030	<0.0030	0.0030	2142509
Arsenic (As) †	ug/L	<0.080	<0.080	0.080	2142509
Barium (Ba) †	ug/L	0.38	2.0	0.030	2142509
Boron (B) †	ug/L	<0.30	2.1	0.30	2142509
Cadmium (Cd) †	ug/L	<0.0060	<0.0060	0.0060	2142509
Calcium (Ca) †	ug/L	63	200	20	2142509
Chromium (Cr) †	ug/L	<0.040	<0.040	0.040	2142509
Cobalt (Co) †	ug/L	<0.0080	<0.0080	0.0080	2142509
Copper (Cu) †	ug/L	<0.050	0.092	0.050	2142509
Tin (Sn) †	ug/L	<0.050	<0.050	0.050	2142509
Iron (Fe) †	ug/L	15	22	0.50	2142509
Magnesium (Mg) †	ug/L	36	120	10	2142509
Manganese (Mn) †	ug/L	7.7	14	0.030	2142509
Mercury (Hg) †	ug/L	<0.0020	<0.0020	0.0020	2142509
Molybdenum (Mo) †	ug/L	<0.010	<0.010	0.010	2142509
Nickel (Ni) †	ug/L	0.036	0.13	0.030	2142509
Total phosphorous	ug/L	<10	<10	10	2138206
Lead (Pb) †	ug/L	<0.010	<0.010	0.010	2142509
Potassium (K) †	ug/L	26	75	10	2142509
Selenium (Se) †	ug/L	<0.050	<0.050	0.050	2142509
Sodium (Na) †	ug/L	57	200	10	2142509
Thallium (Tl) †	ug/L	<0.010	<0.010	0.010	2142509
Titanium (Ti) †	ug/L	<0.40	<0.40	0.40	2142509
Uranium (U) †	ug/L	<0.0010	0.0011	0.0010	2142509
Vanadium (V) †	ug/L	<0.050	<0.050	0.050	2142509
Zinc (Zn) †	ug/L	<0.50	0.70	0.50	2142509
Total Hardness (CaCO3) †	ug/L	310	980	40	2142509
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable					



Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IL7818	IL7818		IL7819		
Sampling Date		2020/10/15 14:00	2020/10/15 14:00		2020/10/15 14:30		
COC Number		N-A	N-A		N-A		
	Units	DSO4-ER-GW-Q4-2020	DSO4-ER-GW-Q4-2020 Lab-Dup	QC Batch	DSO4-EE-GW-Q4-2020	RDL	QC Batch
CONVENTIONALS							
BOD5	mg/L	<5.3	N/A	2136698	<5.3	5.3	2136698
COD	mg/L	<5.0	N/A	2139135	<5.0	5.0	2139988
Conductivity	mS/cm	0.0012	N/A	2137011	0.0029	0.0010	2137011
Dissolved organic carbon †	mg/L	0.98	N/A	2138222	0.83	0.20	2138222
Dissolved oxygen †	mg/L	9.9	N/A	2136872	9.8	1.0	2136872
Fluoride (F)	mg/L	<0.10	N/A	2137014	<0.10	0.10	2137014
Hexavalent Chromium (Cr 6+)	mg/L	<0.0080	N/A	2138156	<0.0080	0.0080	2138156
Hexavalent Chromium (Cr 6+) †	mg/L	<0.0080	N/A	2139229	<0.0080	0.0080	2139229
Nitrates (N-NO3-)	mg/L	0.023	N/A	2137474	<0.020	0.020	2137474
Nitrites (N-NO2-)	mg/L	<0.020	N/A	2137474	<0.020	0.020	2137474
Nitrogen ammonia (N-NH4+ and N-NH3)	mg/L	0.049	N/A	2137209	0.21	0.020	2137209
pH	pH	6.13	N/A	2137009	5.98	N/A	2137009
Phenols-4AAP	mg/L	<0.0020	N/A	2139610	<0.0020	0.0020	2139610
Sulfides (H2S) †	mg/L	<0.021	N/A	2140170	<0.021	0.021	2140170
Sulfides (S2-)	mg/L	<0.020	N/A	2137049	<0.020	0.020	2137049
TKN Total Kjeldahl Nitrogen	mg/L	<0.40	N/A	2138570	7.9	0.40	2139204
Total Cyanide (CN)	mg/L	<0.0030	N/A	2138699	<0.0030	0.0030	2138699
Total Organic Carbon	mg/L	1.1	N/A	2138134	0.95	0.20	2138134
Alkalinity Total (as CaCO3) pH 4.5 †	mg/L	<1.0	N/A	2137012	<1.0	1.0	2137012
Chloride (Cl)	mg/L	0.13	N/A	2137482	0.65	0.050	2137482
Sulfates (SO4)	mg/L	<0.50	N/A	2137482	<0.50	0.50	2137482
Total Dissolved Solids	mg/L	<10	N/A	2136884	<10	10	2136884
Total suspended solids (TSS)	mg/L	2.0	2.0	2136985	<2.0	2.0	2136985
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable							





Lab BV Job #: C051487
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TATA STEEL MINERALS CANADA
 Client Project #: GOODWOOD
 Sampler Initials: AV

CONVENTIONAL PARAMETERS (SURFACE WATER)

Lab BV ID		IL7819		
Sampling Date		2020/10/15 14:30		
COC Number		N-A		
	Units	DSO4-EE-GW-Q4-2020 Lab-Dup	RDL	QC Batch
CONVENTIONALS				
Hexavalent Chromium (Cr 6+) †	mg/L	<0.0080	0.0080	2139229
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable				



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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

MICROBIOLOGY (SURFACE WATER)

Lab BV ID		IL7818	IL7819	
Sampling Date		2020/10/15 14:00	2020/10/15 14:30	
COC Number		N-A	N-A	
	Units	DSO4-ER-GW-Q4-2020	DSO4-EE-GW-Q4-2020	QC Batch
MICROBIOLOGICAL TESTS				
Total coliforms	UFC/100ml	3	8	2136955
Non-typical bacteria	UFC/100ml	12	6	2136955
Fecal coliforms	UFC/100ml	0	0	2136954
QC Batch = Quality Control Batch				



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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
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GENERAL COMMENTS

CONVENTIONAL PARAMETERS (SURFACE WATER)

pH, Nitrite et Nitrate : Veuillez noter que le délai de conservation était déjà dépassé à la réception des l'échantillons;
IL7818, IL7819. Radium-226: Cette analyse est accréditée par le MELCC.

Results relate only to the items tested.



Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2136698	LGR	QC Standard	BOD5	2020/10/27		11	%
2136698	LGR	Spiked Blank	BOD5	2020/10/27		105	%
2136698	LGR	Spiked Blank DUP	BOD5	2020/10/27		101	%
2136698	LGR	Method Blank	BOD5	2020/10/27	<2.0		mg/L
2136698	LGR	Method Blank DUP	BOD5	2020/10/27	<2.0		mg/L
2136884	SCG	Spiked Blank	Total Dissolved Solids	2020/10/23		100	%
2136884	SCG	Method Blank	Total Dissolved Solids	2020/10/23	<10		mg/L
2136985	KMO	Spiked Blank	Total suspended solids (TSS)	2020/10/23		90	%
2136985	KMO	Method Blank	Total suspended solids (TSS)	2020/10/23	<2.0		mg/L
2137009	MPO	Spiked Blank	pH	2020/10/22		101	%
2137011	MPO	Spiked Blank	Conductivity	2020/10/22		106	%
2137011	MPO	Method Blank	Conductivity	2020/10/22	<0.0010		mS/cm
2137012	MPO	Spiked Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/10/22		102	%
2137012	MPO	Method Blank	Alkalinity Total (as CaCO3) pH 4.5	2020/10/22	<1.0		mg/L
2137014	MPO	Spiked Blank	Fluoride (F)	2020/10/22		105	%
2137014	MPO	Method Blank	Fluoride (F)	2020/10/22	<0.10		mg/L
2137049	MCC	QC Standard	Sulfides (S2-)	2020/10/23		110	%
2137049	MCC	Method Blank	Sulfides (S2-)	2020/10/23	<0.020		mg/L
2137209	AHK	Spiked Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/10/23		111	%
2137209	AHK	Method Blank	Nitrogen ammonia (N-NH4+ and N-NH3)	2020/10/23	<0.020		mg/L
2137474	MSU	Spiked Blank	Nitrates (N-NO3-)	2020/10/24		104	%
2137474	MSU	Method Blank	Nitrates (N-NO3-)	2020/10/24	<0.020		mg/L
2137474	MSU	Method Blank	Nitrites (N-NO2-)	2020/10/24	<0.020		mg/L
2137482	MSU	Spiked Blank	Chloride (Cl)	2020/10/24		101	%
2137482	MSU	Method Blank	Sulfates (SO4)	2020/10/24		103	%
2137482	MSU	Method Blank	Chloride (Cl)	2020/10/24	<0.050		mg/L
2137482	MSU	Method Blank	Sulfates (SO4)	2020/10/24	<0.50		mg/L
2138134	MSU	Spiked Blank	Total Organic Carbon	2020/10/27		101	%
2138134	MSU	Method Blank	Total Organic Carbon	2020/10/27	<0.20		mg/L
2138156	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/10/27		100	%
2138156	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/10/27		100	%
2138156	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/10/27	<0.0080		mg/L
2138206	AT7	Spiked Blank	Total phosphorous	2020/10/28		95	%
2138206	AT7	Method Blank	Total phosphorous	2020/10/28	<10		ug/L
2138222	MSU	Spiked Blank	Dissolved organic carbon	2020/10/27		100	%
2138222	MSU	Method Blank	Dissolved organic carbon	2020/10/27	<0.20		mg/L
2138570	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/10/28		98	%
2138570	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/10/28	<0.40		mg/L
2138699	AJ1	Spiked Blank	Total Cyanide (CN)	2020/10/28		106	%
2138699	AJ1	Method Blank	Total Cyanide (CN)	2020/10/28	<0.0030		mg/L
2139135	DY3	Spiked Blank	COD	2020/10/29		100	%
2139135	DY3	Spiked Blank DUP	COD	2020/10/29		92	%
2139135	DY3	Method Blank	COD	2020/10/29	<5.0		mg/L
2139204	AJ1	Spiked Blank	TKN Total Kjeldahl Nitrogen	2020/10/29		104	%
2139204	AJ1	Method Blank	TKN Total Kjeldahl Nitrogen	2020/10/29	<0.40		mg/L
2139229	AHK	QC Standard	Hexavalent Chromium (Cr 6+)	2020/10/29		99	%
2139229	AHK	Spiked Blank	Hexavalent Chromium (Cr 6+)	2020/10/29		101	%
2139229	AHK	Method Blank	Hexavalent Chromium (Cr 6+)	2020/10/29	<0.0080		mg/L
2139316	SHA	Spiked Blank	1-Chlorooctadecane	2020/10/29		76	%
2139316	SHA	Method Blank	Petroleum Hydrocarbons (C10-C50)	2020/10/29		88	%
2139316	SHA	Spiked Blank DUP	1-Chlorooctadecane	2020/10/29		80	%





Lab BV Job #: C051487
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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2139316	SHA	Method Blank	Petroleum Hydrocarbons (C10-C50)	2020/10/29		93	%
			1-Chlorooctadecane	2020/10/30		96	%
			Petroleum Hydrocarbons (C10-C50)	2020/10/30	<100		ug/L
2139610	MA3	Spiked Blank	Phenols-4AAP	2020/10/30		102	%
2139610	MA3	Method Blank	Phenols-4AAP	2020/10/30	<0.0020		mg/L
2139988	ABT	Spiked Blank	COD	2020/10/31		94	%
2139988	ABT	Spiked Blank DUP	COD	2020/10/31		92	%
2139988	ABT	Method Blank	COD	2020/10/31	<5.0		mg/L
2142509	AT7	Spiked Blank	Aluminum (Al)	2020/11/11		88	%
			Antimony (Sb)	2020/11/11		109	%
			Silver (Ag)	2020/11/11		96	%
			Arsenic (As)	2020/11/11		83	%
			Barium (Ba)	2020/11/11		109	%
			Boron (B)	2020/11/11		101	%
			Cadmium (Cd)	2020/11/11		102	%
			Calcium (Ca)	2020/11/11		89	%
			Chromium (Cr)	2020/11/11		97	%
			Cobalt (Co)	2020/11/11		98	%
			Copper (Cu)	2020/11/11		89	%
			Tin (Sn)	2020/11/11		107	%
			Iron (Fe)	2020/11/11		89	%
			Magnesium (Mg)	2020/11/11		82	%
			Manganese (Mn)	2020/11/11		103	%
			Mercury (Hg)	2020/11/11		91	%
			Molybdenum (Mo)	2020/11/11		112	%
			Nickel (Ni)	2020/11/11		94	%
			Lead (Pb)	2020/11/11		98	%
			Potassium (K)	2020/11/11		84	%
			Selenium (Se)	2020/11/11		90	%
			Sodium (Na)	2020/11/11		85	%
			Thallium (Tl)	2020/11/11		102	%
			Titanium (Ti)	2020/11/11		98	%
			Uranium (U)	2020/11/11		98	%
			Vanadium (V)	2020/11/11		99	%
			Zinc (Zn)	2020/11/11		94	%
2142509	AT7	Method Blank	Aluminum (Al)	2020/11/11	<5.0		ug/L
			Antimony (Sb)	2020/11/11	<0.0050		ug/L
			Silver (Ag)	2020/11/11	<0.0030		ug/L
			Arsenic (As)	2020/11/11	<0.080		ug/L
			Barium (Ba)	2020/11/11	<0.030		ug/L
			Boron (B)	2020/11/11	<0.30		ug/L
			Cadmium (Cd)	2020/11/11	<0.0060		ug/L
			Calcium (Ca)	2020/11/11	<20		ug/L
			Chromium (Cr)	2020/11/11	<0.040		ug/L
			Cobalt (Co)	2020/11/11	<0.0080		ug/L
			Copper (Cu)	2020/11/11	<0.050		ug/L
			Tin (Sn)	2020/11/11	<0.050		ug/L
			Iron (Fe)	2020/11/11	<0.50		ug/L
			Magnesium (Mg)	2020/11/11	<10		ug/L
			Manganese (Mn)	2020/11/11	<0.030		ug/L
Mercury (Hg)	2020/11/11	<0.0020		ug/L			
Molybdenum (Mo)	2020/11/11	<0.010		ug/L			





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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Nickel (Ni)	2020/11/11	<0.030		ug/L
			Lead (Pb)	2020/11/11	<0.010		ug/L
			Potassium (K)	2020/11/11	<10		ug/L
			Selenium (Se)	2020/11/11	<0.050		ug/L
			Sodium (Na)	2020/11/11	<10		ug/L
			Thallium (Tl)	2020/11/11	<0.010		ug/L
			Titanium (Ti)	2020/11/11	<0.40		ug/L
			Uranium (U)	2020/11/11	<0.0010		ug/L
			Vanadium (V)	2020/11/11	<0.050		ug/L
			Zinc (Zn)	2020/11/11	<0.50		ug/L
			Total Hardness (CaCO3)	2020/11/11	<40		ug/L
2144266	éBP	Spiked Blank	Radium-226	2020/11/12		95	%
			Radium-226	2020/11/12		95	%
			Radium-226	2020/11/12		95	%
2144266	éBP	Method Blank	Radium-226	2020/11/12	<0.005		Bq/L
			Radium-226	2020/11/12	<0.005		Bq/L
			Radium-226	2020/11/12	<0.005		Bq/L

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
 Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
 Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.





Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

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Steven Simpson, Lab Director

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Michelina Cinquino, Analyste II

Mathieu Letourneau, B. Sc., Chemist, Ste-Foy, Scientific Service Specialist

Noureddine Chafiaai, B.Sc., Chemist, Montreal, Team leader

Shu Yang, B.Sc. Chemist, Montreal, Analyst 2

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.



BUREAU
VERITAS
Lab BV Job #: C051487
Report Date: 2020/11/17

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD
Sampler Initials: AV

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).
For Service Group specific validation please refer to the Validation Signature Page.

D. Air Quality

Dustfall – August 2020:



Votre # du projet: C035854
Votre # Bordereau: C035854-NONT-01-01

Attention: Martine Lepage

Bureau Veritas Laboratories
889 Montée de Liesse
Ville St-Laurent, QC
CANADA H4T 1P5

Date du rapport: 2020/09/30
Rapport: R6351738
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER BV LABS: CON3495

Reçu: 2020/09/10, 08:56

Matrice: Eau
Nombre d'échantillons reçus: 7

Analyses	Quantité	Date de l'		Méthode de laboratoire	Méthode d'analyse
		extraction	Date Analyisé		
MERCURE PAR VAPEUR FROIDE AA	1	2020/09/17	2020/09/24	CAM SOP-00453	
MERCURE PAR VAPEUR FROIDE AA	6	2020/09/24	2020/09/24	CAM SOP-00453	
Total Metals Analysis by ICPMS	7	N/A	2020/09/21	CAM SOP-00447	
Insoluble Part. in Dustfall (D1739mod)	7	2020/09/23	2020/09/23	BRL SOP-00121	ASTM D1739 m
Soluble Part. in Dustfall (D1739mod)	7	2020/09/23	2020/09/23	BRL SOP-00121	ASTM D1739 m
Volume of Sample Received	7	2020/09/23	2020/09/25		

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

clé de cryptage

Marinela Sim
Chargée de projets
30 Sep 2020 16:49:58

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Marinela Sim, Chargée de projets
Courriel: Marinela.Sim@bvlab.com
Téléphone (905)817-5828

Lab BV a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les <<signataires>> requis, conformément à l'ISO/CEI 17025. Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.



Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

RÉSULTATS D'ANALYSES POUR LES ÉCHANTILLONS D' EAU

Identification BV Labs		NOY023	NOY024	NOY025		
Date d'échantillonnage		2020/08/08 12:35	2020/08/08 11:22	2020/08/08 10:39		
# Bordereau		C035854-NONT-01-01	C035854-NONT-01-01	C035854-NONT-01-01		
Unités		ID6694-AQS1	ID6695-AQS2	ID6696-AQS3	LDR	Lot CQ
Particules Totales Insoluble	mg	3.60	6.80	2.40	0.30	6960216
Particules Totales Soluble	mg	16.8	20.0	14.8	4.0	6960218
Charge/Prep Analysis						
Volume de l'échantillon	ml	2900	2500	2000	2	6960214
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité						

Identification BV Labs		NOY026	NOY027	NOY028		
Date d'échantillonnage		2020/08/08 09:53	2020/08/09 14:30	2020/08/09 12:15		
# Bordereau		C035854-NONT-01-01	C035854-NONT-01-01	C035854-NONT-01-01		
Unités		ID6697-AQS4	LDR	ID6698-AQS7	ID6699-AQS8	LDR Lot CQ
Particules Totales Insoluble	mg	13.4	0.90	5.40	6.60	0.30 6960216
Particules Totales Soluble	mg	32.8	4.0	16.8	21.6	4.0 6960218
Charge/Prep Analysis						
Volume de l'échantillon	ml	2500	2	2200	1500	2 6960214
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité						

Identification BV Labs		NOY029		
Date d'échantillonnage		2020/08/09 14:47		
# Bordereau		C035854-NONT-01-01		
Unités		ID6700-AQS9	LDR	Lot CQ
Particules Totales Insoluble	mg	3.00	0.30	6960216
Particules Totales Soluble	mg	15.2	4.0	6960218
Charge/Prep Analysis				
Volume de l'échantillon	ml	2000	2	6960214
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité				



Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

ELEMENTS BY ATOMIC SPECTROSCOPY (EAU)

Identification BV Labs		NOY023	NOY024	NOY025		
Date d'échantillonnage		2020/08/08 12:35	2020/08/08 11:22	2020/08/08 10:39		
# Bordereau		C035854-NONT-01-01	C035854-NONT-01-01	C035854-NONT-01-01		
	Unités	ID6694-AQS1	ID6695-AQS2	ID6696-AQS3	LDR	Lot CQ
MÉTAUX						
Mercuré (Hg)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	6962134
Arsenic (As) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6955146
Baryum (Ba) totaux	ug/L	2.7	3.8	26	2.0	6955146
Béryllium (Be) totaux	ug/L	<0.40	<0.40	<0.40	0.40	6955146
Cadmium (Cd) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6955146
Chrome (Cr) totaux	ug/L	<5.0	<5.0	<5.0	5.0	6955146
Cuivre (Cu) totaux	ug/L	<0.90	<0.90	<0.90	0.90	6955146
Fer (Fe) totaux	ug/L	<100	<100	<100	100	6955146
Plomb (Pb) totaux	ug/L	0.80	<0.50	1.5	0.50	6955146
Nickel (Ni) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6955146
Argent (Ag) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6955146
Thallium (Tl) totaux	ug/L	<0.050	<0.050	<0.050	0.050	6955146
Vanadium (V) totaux	ug/L	<0.50	<0.50	<0.50	0.50	6955146
Zinc (Zn) totaux	ug/L	<5.0	<5.0	5.5	5.0	6955146
LDR = limite de détection rapportée						
Lot CQ = Lot Contrôle Qualité						



Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

ELEMENTS BY ATOMIC SPECTROSCOPY (EAU)

Identification BV Labs		NOY026	NOY027	NOY028		
Date d'échantillonnage		2020/08/08 09:53	2020/08/09 14:30	2020/08/09 12:15		
# Bordereau		C035854-NONT-01-01	C035854-NONT-01-01	C035854-NONT-01-01		
	Unités	ID6697-AQS4	ID6698-AQS7	ID6699-AQS8	LDR	Lot CQ
MÉTAUX						
Mercure (Hg)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	6962134
Arsenic (As) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6955146
Baryum (Ba) totaux	ug/L	11	4.1	9.7	2.0	6955146
Béryllium (Be) totaux	ug/L	<0.40	<0.40	<0.40	0.40	6955146
Cadmium (Cd) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6955146
Chrome (Cr) totaux	ug/L	<5.0	<5.0	<5.0	5.0	6955146
Cuivre (Cu) totaux	ug/L	<0.90	<0.90	2.5	0.90	6955146
Fer (Fe) totaux	ug/L	<100	<100	<100	100	6955146
Plomb (Pb) totaux	ug/L	1.3	1.0	1.6	0.50	6955146
Nickel (Ni) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6955146
Argent (Ag) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6955146
Thallium (Tl) totaux	ug/L	<0.050	<0.050	<0.050	0.050	6955146
Vanadium (V) totaux	ug/L	<0.50	<0.50	<0.50	0.50	6955146
Zinc (Zn) totaux	ug/L	120	<5.0	<5.0	5.0	6955146
LDR = limite de détection rapportée						
Lot CQ = Lot Contrôle Qualité						



BUREAU
VERITAS
Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

ELEMENTS BY ATOMIC SPECTROSCOPY (EAU)

Identification BV Labs		NOY029		
Date d'échantillonnage		2020/08/09 14:47		
# Bordereau		C035854-NONT-01-01		
	Unités	ID6700-AQS9	LDR	Lot CQ
MÉTAUX				
Mercuré (Hg)	mg/L	<0.00010	0.00010	6962134
Arsenic (As) totaux	ug/L	<1.0	1.0	6955146
Baryum (Ba) totaux	ug/L	19	2.0	6955146
Béryllium (Be) totaux	ug/L	<0.40	0.40	6955146
Cadmium (Cd) totaux	ug/L	<0.090	0.090	6955146
Chrome (Cr) totaux	ug/L	<5.0	5.0	6955146
Cuivre (Cu) totaux	ug/L	<0.90	0.90	6955146
Fer (Fe) totaux	ug/L	<100	100	6955146
Plomb (Pb) totaux	ug/L	1.0	0.50	6955146
Nickel (Ni) totaux	ug/L	<1.0	1.0	6955146
Argent (Ag) totaux	ug/L	<0.090	0.090	6955146
Thallium (Tl) totaux	ug/L	<0.050	0.050	6955146
Vanadium (V) totaux	ug/L	<0.50	0.50	6955146
Zinc (Zn) totaux	ug/L	<5.0	5.0	6955146
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité				



BUREAU
VERITAS

Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

REMARQUES GÉNÉRALES

50% of samples volume was processed for dustfall; remaining 50% of samples were sent for further metals and Hg analysis.
Results and DL were multiplied by 2.

Échantillon NOY023 [ID6694-AQS1] : Filtered residues appeared to be algae

Échantillon NOY024 [ID6695-AQS2] : Filtered residues appeared to be algae

Échantillon NOY026 [ID6697-AQS4] : Multiple filters were used, DL was adjusted accordingly

Échantillon NOY028 [ID6699-AQS8] : Filtered residues appeared to be algae

Les résultats s'appliquent seulement pour les paramètres analysés.



BUREAU
VERITAS
Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

RAPPORT ASSURANCE QUALITÉ

Lot Lot	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités	Limites CQ			
6955146	AFZ	Échantillon fortifié	Arsenic (As) totaux	2020/09/21		97	%	80 - 120			
			Baryum (Ba) totaux	2020/09/21		NC	%	80 - 120			
			Béryllium (Be) totaux	2020/09/21		100	%	80 - 120			
			Cadmium (Cd) totaux	2020/09/21		97	%	80 - 120			
			Chrome (Cr) totaux	2020/09/21		98	%	80 - 120			
			Cuivre (Cu) totaux	2020/09/21		101	%	80 - 120			
			Fer (Fe) totaux	2020/09/21		95	%	80 - 120			
			Plomb (Pb) totaux	2020/09/21		90	%	80 - 120			
			Nickel (Ni) totaux	2020/09/21		92	%	80 - 120			
			Argent (Ag) totaux	2020/09/21		94	%	80 - 120			
			Thallium (Tl) totaux	2020/09/21		90	%	80 - 120			
			Vanadium (V) totaux	2020/09/21		101	%	80 - 120			
			Zinc (Zn) totaux	2020/09/21		92	%	80 - 120			
			6955146	AFZ	Blanc fortifié	Arsenic (As) totaux	2020/09/21		98	%	80 - 120
						Baryum (Ba) totaux	2020/09/21		98	%	80 - 120
						Béryllium (Be) totaux	2020/09/21		97	%	80 - 120
						Cadmium (Cd) totaux	2020/09/21		99	%	80 - 120
Chrome (Cr) totaux	2020/09/21					98	%	80 - 120			
Cuivre (Cu) totaux	2020/09/21					98	%	80 - 120			
Fer (Fe) totaux	2020/09/21					97	%	80 - 120			
Plomb (Pb) totaux	2020/09/21					94	%	80 - 120			
Nickel (Ni) totaux	2020/09/21					95	%	80 - 120			
Argent (Ag) totaux	2020/09/21					97	%	80 - 120			
Thallium (Tl) totaux	2020/09/21					93	%	80 - 120			
Vanadium (V) totaux	2020/09/21					98	%	80 - 120			
Zinc (Zn) totaux	2020/09/21					101	%	80 - 120			
6955146	AFZ	Blanc de méthode				Arsenic (As) totaux	2020/09/21	<1.0		ug/L	
						Baryum (Ba) totaux	2020/09/21	<2.0		ug/L	
						Béryllium (Be) totaux	2020/09/21	<0.40		ug/L	
						Cadmium (Cd) totaux	2020/09/21	<0.090		ug/L	
			Chrome (Cr) totaux	2020/09/21	<5.0		ug/L				
			Cuivre (Cu) totaux	2020/09/21	<0.90		ug/L				
			Fer (Fe) totaux	2020/09/21	<100		ug/L				
			Plomb (Pb) totaux	2020/09/21	<0.50		ug/L				
			Nickel (Ni) totaux	2020/09/21	<1.0		ug/L				
			Argent (Ag) totaux	2020/09/21	<0.090		ug/L				
			Thallium (Tl) totaux	2020/09/21	<0.050		ug/L				
			Vanadium (V) totaux	2020/09/21	<0.50		ug/L				
			Zinc (Zn) totaux	2020/09/21	<5.0		ug/L				
			6955146	AFZ	RPD	Arsenic (As) totaux	2020/09/21	NC		%	20
						Béryllium (Be) totaux	2020/09/21	NC		%	20
						Cadmium (Cd) totaux	2020/09/21	NC		%	20
						Chrome (Cr) totaux	2020/09/21	NC		%	20
Cuivre (Cu) totaux	2020/09/21	9.0					%	20			
Fer (Fe) totaux	2020/09/21	NC					%	20			
Plomb (Pb) totaux	2020/09/21	NC					%	20			
Nickel (Ni) totaux	2020/09/21	7.4					%	20			
Argent (Ag) totaux	2020/09/21	NC					%	20			
Thallium (Tl) totaux	2020/09/21	7.0					%	20			
Vanadium (V) totaux	2020/09/21	4.0					%	20			
Zinc (Zn) totaux	2020/09/21	2.9					%	20			
6960216	FF	Blanc fortifié				Particules Totales Insoluble	2020/09/23		99	%	85 - 115



BUREAU
VERITAS
Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

RAPPORT ASSURANCE QUALITÉ(CONT'D)

Lot Lot	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités	Limites CQ
6960216	FF	Blanc de méthode	Particules Totales Insoluble	2020/09/23	<0.30		mg	
6960218	FF	Blanc fortifié	Particules Totales Soluble	2020/09/23		100	%	85 - 115
6960218	FF	Blanc de méthode	Particules Totales Soluble	2020/09/23	<2.0		mg	
6962134	MEN	Échantillon fortifié	Mercure (Hg)	2020/09/24		95	%	75 - 125
6962134	MEN	Blanc fortifié	Mercure (Hg)	2020/09/24		95	%	80 - 120
6962134	MEN	Blanc de méthode	Mercure (Hg)	2020/09/24	<0.00010		mg/L	
6962134	MEN	RPD	Mercure (Hg)	2020/09/24	NC		%	20

Duplicata: Deux parties aliquotes distinctes obtenues à partir d'un même échantillon et soumises en même temps au même processus analytique du prétraitement au dosage. Les duplicatas servent à vérifier la variance de la mesure.

Échantillon fortifié: Échantillon auquel a été ajouté une quantité connue d'un ou de plusieurs composés chimiques d'intérêt. Sert à évaluer les interférences dues à la matrice.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

NC (échantillon fortifié): La récupération de l'échantillon fortifié n'a pas été calculée. La différence relative entre la concentration de l'échantillon parent et le niveau de fortification est trop faible pour qu'un calcul fiable du pourcentage de récupération soit possible (la concentration dans l'échantillon fortifié était plus faible que l'échantillon d'origine).

NC (RPD du duplicata): La RPD du duplicata n'a pas été calculée. La concentration de l'échantillon ou du duplicata était trop faible pour permettre le calcul de la RPD (différence absolue $\leq 2 \times$ LDR)

Réc = Récupération



BUREAU
VERITAS

Dossier BV Labs: CON3495
Date du rapport: 2020/09/30

Bureau Veritas Laboratories
Votre # du projet: C035854
Initiales du préleveur: JFD

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Brad Newman, Spécialiste scientifique

Frank Mo

Lab BV a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les <<signataires>> requis, conformément à l'ISO/CEI 17025. Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dustfall – September 2020



Votre # du projet: C043417
Votre # Bordereau: c043417

Attention: Martine Lepage

Bureau Veritas Laboratories
889 Montée de Liesse
Ville St-Laurent, QC
CANADA H4T 1P5

Date du rapport: 2020/10/06
Rapport: R6359354
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER BV LABS: C002606

Reçu: 2020/09/18, 08:43

Matrice: Eau
Nombre d'échantillons reçus: 8

Analyses	Quantité	Date de l'		Méthode de laboratoire	Méthode d'analyse
		extraction	Date Analyisé		
MERCURE PAR VAPEUR FROIDE AA	6	2020/10/01	2020/10/02	CAM SOP-00453	
MERCURE PAR VAPEUR FROIDE AA	2	2020/09/28	2020/10/02	CAM SOP-00453	
Total Metals Analysis by ICPMS	8	N/A	2020/10/02	CAM SOP-00447	
Insoluble Part. in Dustfall (D1739mod)	8	2020/09/28	2020/09/29	BRL SOP-00121	ASTM D1739 m
Soluble Part. in Dustfall (D1739mod)	8	2020/09/28	2020/09/29	BRL SOP-00121	ASTM D1739 m
Volume of Sample Received	8	2020/09/28	2020/10/05		

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

clé de cryptage

Marinela Sim
Chargée de projets
06 Oct 2020 10:52:32

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Marinela Sim, Chargée de projets
Courriel: Marinela.Sim@bvlab.com
Téléphone (905)817-5828

Lab BV a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les <<signataires>> requis, conformément à l'ISO/CEI 17025. Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.



Dossier BV Labs: CO02606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

RÉSULTATS D'ANALYSES POUR LES ÉCHANTILLONS D' EAU

Identification BV Labs		NQU133	NQU134	NQU135	NQU136	NQU137	NQU138		
Date d'échantillonnage		2020/09/08 09:36	2020/09/08 10:27	2020/09/08 11:26	2020/09/08 12:25	2020/09/08 17:27	2020/09/08 17:53		
# Bordereau		c043417	c043417	c043417	c043417	c043417	c043417		
	Unités	IH6667-AQS1	IH6668-AQS2	IH6669-AQS3	IH6670-AQS4	IH6671-AQS6	IH6672-AQS7	LDR	Lot CQ
Particules Totales Insoluble	mg	8.20	1.00	1.40	3.40	9.00	6.60	0.60	6969309
Particules Totales Soluble	mg	8.8	10.4	10.4	11.2	14.8	10.4	4.0	6969312
Charge/Prep Analysis									
Volume de l'échantillon	ml	3600	3200	2800	2800	2300	2300	2	6969301
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité									

Identification BV Labs		NQU139	NQU140		
Date d'échantillonnage		2020/09/08 16:48	2020/09/08 14:22		
# Bordereau		c043417	c043417		
	Unités	IH6673-AQS8	IH6719-AQS9	LDR	Lot CQ
Particules Totales Insoluble	mg	1.60	2.40	0.60	6969309
Particules Totales Soluble	mg	14.0	10.4	4.0	6969312
Charge/Prep Analysis					
Volume de l'échantillon	ml	3000	3400	2	6969301
LDR = limite de détection rapportée Lot CQ = Lot Contrôle Qualité					



Dossier BV Labs: COO2606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

ELEMENTS BY ATOMIC SPECTROSCOPY (EAU)

Identification BV Labs		NQU133	NQU134	NQU135	NQU136	NQU137		
Date d'échantillonnage		2020/09/08 09:36	2020/09/08 10:27	2020/09/08 11:26	2020/09/08 12:25	2020/09/08 17:27		
# Bordereau		c043417	c043417	c043417	c043417	c043417		
	Unités	IH6667-AQS1	IH6668-AQS2	IH6669-AQS3	IH6670-AQS4	IH6671-AQS6	LDR	Lot CQ
MÉTAUX								
Mercuré (Hg)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	6977117
Arsenic (As) totaux	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	6977081
Baryum (Ba) totaux	ug/L	4.0	<2.0	28	17	50	2.0	6977081
Béryllium (Be) totaux	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	6977081
Cadmium (Cd) totaux	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	6977081
Chrome (Cr) totaux	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	6977081
Cuivre (Cu) totaux	ug/L	<0.90	<0.90	1.5	<0.90	<0.90	0.90	6977081
Fer (Fe) totaux	ug/L	100	<100	280	180	280	100	6977081
Plomb (Pb) totaux	ug/L	1.7	<0.50	4.4	1.1	0.89	0.50	6977081
Nickel (Ni) totaux	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	6977081
Argent (Ag) totaux	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	6977081
Thallium (Tl) totaux	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6977081
Vanadium (V) totaux	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6977081
Zinc (Zn) totaux	ug/L	<5.0	<5.0	<5.0	150	<5.0	5.0	6977081
LDR = limite de détection rapportée								
Lot CQ = Lot Contrôle Qualité								



Dossier BV Labs: CO02606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

ELEMENTS BY ATOMIC SPECTROSCOPY (EAU)

Identification BV Labs		NQU138	NQU139	NQU140		
Date d'échantillonnage		2020/09/08 17:53	2020/09/08 16:48	2020/09/08 14:22		
# Bordereau		c043417	c043417	c043417		
	Unités	IH6672-AQS7	IH6673-AQS8	IH6719-AQS9	LDR	Lot CQ
MÉTAUX						
Mercuré (Hg)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	6977117
Arsenic (As) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6977081
Baryum (Ba) totaux	ug/L	2.9	4.7	49	2.0	6977081
Béryllium (Be) totaux	ug/L	<0.40	<0.40	<0.40	0.40	6977081
Cadmium (Cd) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6977081
Chrome (Cr) totaux	ug/L	<5.0	<5.0	<5.0	5.0	6977081
Cuivre (Cu) totaux	ug/L	<0.90	<0.90	<0.90	0.90	6977081
Fer (Fe) totaux	ug/L	<100	<100	<100	100	6977081
Plomb (Pb) totaux	ug/L	<0.50	<0.50	<0.50	0.50	6977081
Nickel (Ni) totaux	ug/L	<1.0	<1.0	<1.0	1.0	6977081
Argent (Ag) totaux	ug/L	<0.090	<0.090	<0.090	0.090	6977081
Thallium (Tl) totaux	ug/L	<0.050	<0.050	<0.050	0.050	6977081
Vanadium (V) totaux	ug/L	<0.50	<0.50	<0.50	0.50	6977081
Zinc (Zn) totaux	ug/L	<5.0	<5.0	<5.0	5.0	6977081
LDR = limite de détection rapportée						
Lot CQ = Lot Contrôle Qualité						



BUREAU
VERITAS

Dossier BV Labs: COO2606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

REMARQUES GÉNÉRALES

Échantillon NQU133 [IH6667-AQS1] : Filtered residues appeared to be algae

Les résultats s'appliquent seulement pour les paramètres analysés.



Dossier BV Labs: CO02606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

RAPPORT ASSURANCE QUALITÉ

Lot	Lot	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités	Limites CQ
6969309	FF		Blanc fortifié	Particules Totales Insoluble	2020/09/29		93	%	85 - 115
6969309	FF		Blanc de méthode	Particules Totales Insoluble	2020/09/29	<0.30		mg	
6969312	FF		Blanc fortifié	Particules Totales Soluble	2020/09/29		103	%	85 - 115
6969312	FF		Blanc de méthode	Particules Totales Soluble	2020/09/29	<2.0		mg	
6977081	N_R		Échantillon fortifié	Arsenic (As) totaux	2020/10/02		100	%	80 - 120
				Baryum (Ba) totaux	2020/10/02		98	%	80 - 120
				Béryllium (Be) totaux	2020/10/02		110	%	80 - 120
				Cadmium (Cd) totaux	2020/10/02		99	%	80 - 120
				Chrome (Cr) totaux	2020/10/02		97	%	80 - 120
				Cuivre (Cu) totaux	2020/10/02		99	%	80 - 120
				Fer (Fe) totaux	2020/10/02		93	%	80 - 120
				Plomb (Pb) totaux	2020/10/02		98	%	80 - 120
				Nickel (Ni) totaux	2020/10/02		94	%	80 - 120
				Argent (Ag) totaux	2020/10/02		95	%	80 - 120
				Thallium (Tl) totaux	2020/10/02		99	%	80 - 120
				Vanadium (V) totaux	2020/10/02		99	%	80 - 120
				Zinc (Zn) totaux	2020/10/02		101	%	80 - 120
6977081	N_R		Blanc fortifié	Arsenic (As) totaux	2020/10/02		102	%	80 - 120
				Baryum (Ba) totaux	2020/10/02		98	%	80 - 120
				Béryllium (Be) totaux	2020/10/02		105	%	80 - 120
				Cadmium (Cd) totaux	2020/10/02		100	%	80 - 120
				Chrome (Cr) totaux	2020/10/02		99	%	80 - 120
				Cuivre (Cu) totaux	2020/10/02		101	%	80 - 120
				Fer (Fe) totaux	2020/10/02		97	%	80 - 120
				Plomb (Pb) totaux	2020/10/02		98	%	80 - 120
				Nickel (Ni) totaux	2020/10/02		97	%	80 - 120
				Argent (Ag) totaux	2020/10/02		96	%	80 - 120
				Thallium (Tl) totaux	2020/10/02		99	%	80 - 120
				Vanadium (V) totaux	2020/10/02		100	%	80 - 120
				Zinc (Zn) totaux	2020/10/02		104	%	80 - 120
6977081	N_R		Blanc de méthode	Arsenic (As) totaux	2020/10/02	<1.0		ug/L	
				Baryum (Ba) totaux	2020/10/02	<2.0		ug/L	
				Béryllium (Be) totaux	2020/10/02	<0.40		ug/L	
				Cadmium (Cd) totaux	2020/10/02	<0.090		ug/L	
				Chrome (Cr) totaux	2020/10/02	<5.0		ug/L	
				Cuivre (Cu) totaux	2020/10/02	<0.90		ug/L	
				Fer (Fe) totaux	2020/10/02	<100		ug/L	
				Plomb (Pb) totaux	2020/10/02	<0.50		ug/L	
				Nickel (Ni) totaux	2020/10/02	<1.0		ug/L	
				Argent (Ag) totaux	2020/10/02	<0.090		ug/L	
				Thallium (Tl) totaux	2020/10/02	<0.050		ug/L	
				Vanadium (V) totaux	2020/10/02	<0.50		ug/L	
				Zinc (Zn) totaux	2020/10/02	<5.0		ug/L	
6977081	N_R		RPD	Cadmium (Cd) totaux	2020/10/02	7.9		%	20
				Chrome (Cr) totaux	2020/10/02	0.92		%	20
				Cuivre (Cu) totaux	2020/10/02	4.0		%	20
				Fer (Fe) totaux	2020/10/02	0.46		%	20
				Plomb (Pb) totaux	2020/10/02	5.3		%	20
				Nickel (Ni) totaux	2020/10/02	0.42		%	20
				Zinc (Zn) totaux	2020/10/02	0.12		%	20
6977117	MPD		Échantillon fortifié	Mercure (Hg)	2020/10/02		94	%	75 - 125
6977117	MPD		Blanc fortifié	Mercure (Hg)	2020/10/02		96	%	80 - 120



BUREAU
VERITAS

Dossier BV Labs: COO2606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

RAPPORT ASSURANCE QUALITÉ(CONT'D)

Lot	Lot	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités	Limites CQ
6977117	MPD		Blanc de méthode	Mercure (Hg)	2020/10/02	<0.00010		mg/L	
6977117	MPD	RPD		Mercure (Hg)	2020/10/02	NC		%	20

Duplicata: Deux parties aliquotes distinctes obtenues à partir d'un même échantillon et soumises en même temps au même processus analytique du prétraitement au dosage. Les duplicatas servent à vérifier la variance de la mesure.

Échantillon fortifié: Échantillon auquel a été ajouté une quantité connue d'un ou de plusieurs composés chimiques d'intérêt. Sert à évaluer les interférences dues à la matrice.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

NC (RPD du duplicata) : La RPD du duplicata n'a pas été calculée. La concentration de l'échantillon ou du duplicata était trop faible pour permettre le calcul de la RPD (différence absolue $\leq 2 \times \text{LDR}$)

Réc = Récupération



Dossier BV Labs: COO2606
Date du rapport: 2020/10/06

Bureau Veritas Laboratories
Votre # du projet: C043417
Initiales du préleveur: JED

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Brad Newman, Spécialiste scientifique

Frank Mo

Lab BV a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les <<signataires>> requis, conformément à l'ISO/CEI 17025. Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

NO₂ – September 2020



Your P.O. #: 3000000730
Your Project #: PASSIVE NO₂ / DS03-4
Site#: 2020/09/08 - 2020/10/23
Site Location: Timmins, Newfoundland

Attention: MARIANA TRINDADE

Tata Steel Mineral Canada
1000, Sherbrooke St West
Montreal, QC
CANADA H3A 3G4

Report Date: 2020/11/09
Report #: R2953057
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C080065
Received: 2020/10/30, 10:13
Sample Matrix: Air
Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
NO ₂ Passive Analysis	6	2020/11/03	2020/11/09	PTC SOP-00148	Passive NO ₂ in ATM

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Results relate only to the items tested.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Levi Manchak
Project Manager SR
09 Nov 2020 11:58:56

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Levi Manchak, Project Manager SR
Email: Levi.MANCHAK@bvlab.com
Phone# (780)378-8542

=====
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BV Labs Job #: C080065
Report Date: 2020/11/09

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 3000000730
Sampler Initials: AC

RESULTS OF CHEMICAL ANALYSES OF AIR

BV Labs ID		YT5564	YT5565	YT5566	YT5570	YT5567	YT5569		
Sampling Date		2020/09/08 10:27	2020/09/08 12:25	2020/09/08 17:27	2020/09/08 17:53	2020/09/08 16:48	2020/09/08 14:22		
	UNITS	AQS2-NO2	AQS4-NO2	AQS6-NO2	AQS7-NO2	AQS8-NO2	AQS9-NO2	RDL	QC Batch
Passive Monitoring									
Calculated NO2	ppb	0.2	<0.1	0.2	0.3	0.1	0.5	0.1	A075870
RDL = Reportable Detection Limit									





BV Labs Job #: C080065
Report Date: 2020/11/09

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 3000000730
Sampler Initials: AC

GENERAL COMMENTS

Results relate only to the items tested.



BV Labs Job #: C080065
 Report Date: 2020/11/09

Tata Steel Mineral Canada
 Client Project #: PASSIVE NO2 / DS03-4
 Site Location: Timmins, Newfoundland
 Your P.O. #: 3000000730
 Sampler Initials: AC

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	A075870	YL6	Spiked Blank	Calculated NO2			101	%	90 - 110
	A075870	YL6	Method Blank	Calculated NO2		<0.1		ppb	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





BV Labs Job #: C080065
Report Date: 2020/11/09

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 300000730
Sampler Initials: AC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

A handwritten signature in black ink, appearing to read 'Linda Lin', written over a horizontal line.

Linda Lin, Supervisor, Centre for Passive Sampling Technology

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NO₂ – October 2020



Your P.O. #: 300000730
Your Project #: PASSIVE NO₂ / DS03-4
Site#: 2020/10/23 - 2020/11/28
Site Location: Timmins, Newfoundland

Attention: MARIANA TRINDADE

Tata Steel Mineral Canada
1000, Sherbrooke St West
Montreal, QC
CANADA H3A 3G4

Report Date: 2020/12/14
Report #: R2967150
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C089744
Received: 2020/12/04, 14:53
Sample Matrix: Air
Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
NO ₂ Passive Analysis	6	2020/12/07	2020/12/14	PTC SOP-00148	Passive NO ₂ in ATM

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Results relate only to the items tested.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Levi Manchak
Project Manager SR
14 Dec 2020 16:53:11

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Levi Manchak, Project Manager SR
Email: Levi.MANCHAK@bvlabs.com
Phone# (780)378-8542

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BV Labs Job #: C089744
 Report Date: 2020/12/14

Tata Steel Mineral Canada
 Client Project #: PASSIVE NO2 / DS03-4
 Site Location: Timmins, Newfoundland
 Your P.O. #: 3000000730
 Sampler Initials: JD

RESULTS OF CHEMICAL ANALYSES OF AIR

BV Labs ID		YZ2468	YZ2469	YZ2470	YZ2474	YZ2471	YZ2473		
Sampling Date		2020/10/23 14:01	2020/10/23 14:33	2020/10/21 08:30	2020/10/21 08:04	2020/10/22 14:03	2020/10/23 09:27		
	UNITS	AQS2-NO2	AQS4-NO2	AQS6-NO2	AQS7-NO2	AQS8-NO2	AQS9-NO2	RDL	QC Batch
Passive Monitoring									
Calculated NO2	ppb	0.2	<0.1	0.4	0.3	<0.1	0.4	0.1	A106365
RDL = Reportable Detection Limit									





BV Labs Job #: C089744
Report Date: 2020/12/14

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 3000000730
Sampler Initials: JD

GENERAL COMMENTS

Results relate only to the items tested.



BUREAU
 VERITAS

BV Labs Job #: C089744
 Report Date: 2020/12/14

Tata Steel Mineral Canada
 Client Project #: PASSIVE NO2 / DS03-4
 Site Location: Timmins, Newfoundland
 Your P.O. #: 3000000730
 Sampler Initials: JD

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A106365	YL6	Spiked Blank	Calculated NO2			98	%	90 - 110
A106365	YL6	Method Blank	Calculated NO2		<0.1		ppb	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





BV Labs Job #: C089744
Report Date: 2020/12/14

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 300000730
Sampler Initials: JD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

A handwritten signature in black ink, appearing to read 'Linda Lin', written over a horizontal line.

Linda Lin, Supervisor, Centre for Passive Sampling Technology

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For Service Group specific validation please refer to the Validation Signature Page.

NO₂ – November 2020



Your P.O. #: 3000000730
Your Project #: PASSIVE NO₂ / DS03-4
Site#: 2020/11/28 - 2021/01/12
Site Location: Timmins, Newfoundland

Attention: MARIANA TRINDADE

Tata Steel Mineral Canada
1000, Sherbrooke St West
Montreal, QC
CANADA H3A 3G4

Report Date: 2021/02/03
Report #: R2982905
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C104856
Received: 2021/01/25, 11:48
Sample Matrix: Air
Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
NO ₂ Passive Analysis	6	2021/01/26	2021/02/03	PTC SOP-00148	Passive NO ₂ in ATM

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Results relate only to the items tested.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Levi Manchak
Project Manager SR
03 Feb 2021 09:21:45

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Levi Manchak, Project Manager SR
Email: Levi.MANCHAK@bureauveritas.com
Phone# (780)378-8542

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BV Labs Job #: C104856
 Report Date: 2021/02/03

Tata Steel Mineral Canada
 Client Project #: PASSIVE NO2 / DS03-4
 Site Location: Timmins, Newfoundland
 Your P.O. #: 3000000730
 Sampler Initials: DH

RESULTS OF CHEMICAL ANALYSES OF AIR

BV Labs ID		ZF0535	ZF0536	ZF0537	ZF0541	ZF0538	ZF0540		
Sampling Date		2020/11/28 10:37	2020/11/28 11:57	2020/11/29 14:48	2020/11/30 13:47	2020/11/30 13:36	2020/11/30 14:37		
	UNITS	AQS2-NO2	AQS4-NO2	AQS6-NO2	AQS7-NO2	AQS8-NO2	AQS9-NO2	RDL	QC Batch
Passive Monitoring									
Calculated NO2	ppb	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	A141427
RDL = Reportable Detection Limit									





BUREAU
VERITAS

BV Labs Job #: C104856
Report Date: 2021/02/03

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 3000000730
Sampler Initials: DH

GENERAL COMMENTS

Results relate only to the items tested.



BV Labs Job #: C104856
Report Date: 2021/02/03

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 3000000730
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	A141427	YL6	Spiked Blank	Calculated NO2			93	%	90 - 110
	A141427	YL6	Method Blank	Calculated NO2		<0.1		ppb	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





BV Labs Job #: C104856
Report Date: 2021/02/03

Tata Steel Mineral Canada
Client Project #: PASSIVE NO2 / DS03-4
Site Location: Timmins, Newfoundland
Your P.O. #: 300000730
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

A handwritten signature in black ink, appearing to read 'Linda Lin', written over a horizontal line.

Linda Lin, Supervisor, Centre for Passive Sampling Technology

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

E. Waste Rock Quality

ARD – September 2020



Your P.O. #: 3000000730
Your Project #: ARD-GOODWOOD
Your C.O.C. #: 789969-01-01

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/12/07
Report #: R2625101
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C048500
Received: 2020/10/08, 10:15
Sample Matrix: Rock
Samples Received: 8

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Grinding	4	N/A	2020/10/15	STL SOP-00019	N/A
Fluoride- Leached	4	N/A	2020/10/19	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	1	N/A	2020/10/23	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	3	N/A	2020/10/24	STL SOP-00038	SM 23 4500-F m
Water Leachate (CTEU - 9)	4	2020/10/15	2020/10/22	STL SOP-00024	MA100-Lixcom1.1 R1 m
Acid rain simulation leachate (EPA 1312)	4	2020/10/15	2020/10/16	STL SOP-00024	MA100-Lixcom1.1 R1 m
Metals - Leached	4	2020/10/17	2020/10/18	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Metals - Leached	4	2020/10/23	2020/10/28	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/17	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/24	STL SOP-00014	MA.300-Ions 1.3 R3 m

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acid Base Accounting (Sobek modified) (1)	4	N/A	N/A		
Fluoride (free)	4	2020/11/04	2020/11/04	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	4	N/A	2020/10/19	STL SOP-00038	SM 23 4500-F m
Total Extractable Metals (low level)	4	2020/11/04	2020/11/04	STL SOP-00069	MA.200-Mét. 1.2 R5 m
Metals - Leached	4	2020/10/16	2020/10/17	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/16	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite	4	2020/11/04	2020/11/04	STL SOP-00014	MA.300-Ions 1.3 R3 m
Toxicity Charact. Leach. Proc.(EPA 1311)	4	2020/10/15	2020/10/16	STL SOP-00024	MA100-Lixcom1.1 R1 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been





Your P.O. #: 3000000730
Your Project #: ARD-GOODWOOD
Your C.O.C. #: 789969-01-01

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/12/07
Report #: R2625101
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C048500

Received: 2020/10/08, 10:15

accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Laboratoires Bureau Veritas - Burnaby

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Martine Lepage
Project Manager and Account
Manager
09 Dec 2020 09:27:16

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Martine Lepage, Project Manager and Account Manager

Email: Martine.LEPAGE@bvlabs.com

Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2137080
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2137080
Barium (Ba)	ug/L	<5.0	<5.0	10	<5.0	5.0	2137080
Boron (B)	ug/L	<50	<50	<50	<50	50	2137080
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2137080
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2137080
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2137080
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2137080
Iron (Fe)	ug/L	<100	<100	1500	<100	100	2137080
Manganese (Mn)	ug/L	66	110	270	180	3.0	2137080
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2137080
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2137080
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2137080
Zinc (Zn)	ug/L	<5.0	<5.0	6.3	<5.0	5.0	2137080
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable							



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IK2627	IK2642	IK2643	IK2644		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2134992
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2134992
Barium (Ba)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134992
Boron (B)	ug/L	<50	<50	<50	<50	50	2134992
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2134992
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2134992
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2134992
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2134992
Iron (Fe)	ug/L	<100	<100	<100	<100	100	2134992
Manganese (Mn)	ug/L	34	47	15	45	3.0	2134992
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2134992
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2134992
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	6.0	2134992
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2134992
Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134992
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable							



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	RDL	QC Batch
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2137179
Nitrites (N-NO ₂ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178
Nitrates (N-NO ₃ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Lab BV ID		IK2627	IK2642	IK2643	IK2644		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	RDL	QC Batch
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2134847
Nitrites (N-NO ₂ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134845
Nitrates (N-NO ₃ -)	mg/L	0.21	<0.20	<0.20	0.21	0.20	2134845
Nitrate (N) and Nitrite(N)	mg/L	0.21	<0.20	<0.20	0.21	0.20	2134845
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

SPLP-EPA 1312 (ROCK)

Lab BV ID		IK2627	IK2642	IK2643	IK2644	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	QC Batch
Leachates						
Weight of sample (g)	n/a	25.0	25.1	25.0	25.0	2134388
Volume of extracting fluid (mL)	n/a	500	500	500	500	2134388
pH after 18 hours leaching	n/a	5.25	5.39	5.50	5.42	2134388
QC Batch = Quality Control Batch						



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

WATER LEACHATE-CTEU-9 (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	QC Batch
Leachates						
Weight of sample (g)	n/a	40.1	40.0	40.1	40.0	2134138
Date extraction fluid added	n/a	2020/10/15	2020/10/15	2020/10/15	2020/10/15	2134138
Date leaching terminated	n/a	2020/10/22	2020/10/22	2020/10/22	2020/10/22	2134138
Volume of extracting fluid (mL)	n/a	160	160	160	160	2134138
pH after 7 days of leaching	n/a	6.60	6.59	6.58	6.66	2134138
QC Batch = Quality Control Batch						



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

TOTAL EXTRACTABLE METALS (SOIL)

Lab BV ID					IK2498	IK2499	IK2500	IK2501		
Sampling Date					2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number					789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	A	B	C	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	-	-	-	11	13	10	13	N/A	N/A
METALS										
Silver (Ag)	mg/kg	2	20	40	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Arsenic (As)	mg/kg	6	30	50	<2.0	4.6	3.9	4.6	2.0	2141004
Barium (Ba)	mg/kg	340	500	2000	<4.0	<4.0	26	<4.0	4.0	2141004
Boron (B)	mg/kg	-	-	-	2.6	4.5	2.8	<2.0	2.0	2141004
Cadmium (Cd)	mg/kg	1.5	5	20	0.13	<0.10	0.21	<0.10	0.10	2141004
Chromium (Cr)	mg/kg	100	250	800	1.6	2.0	11	1.4	1.0	2141004
Copper (Cu)	mg/kg	50	100	500	1.6	1.6	9.3	<1.0	1.0	2141004
Cobalt (Co)	mg/kg	25	50	300	1.5	1.2	4.8	<1.0	1.0	2141004
Tin (Sn)	mg/kg	5	50	300	<1.0	<1.0	<1.0	<1.0	1.0	2141004
Iron (Fe) †	mg/kg	-	-	-	41000	56000	67000	58000	10	2141004
Manganese (Mn)	mg/kg	1000	1000	2200	320	260	1400	340	2.0	2141004
Molybdenum (Mo)	mg/kg	2	10	40	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Nickel (Ni)	mg/kg	50	100	500	0.76	0.80	8.2	0.70	0.50	2141004
Mercury (Hg)	mg/kg	0.2	2	10	0.057	0.051	0.062	0.040	0.010	2141004
Lead (Pb)	mg/kg	50	500	1000	1.8	2.2	5.0	1.5	1.0	2141004
Selenium (Se)	mg/kg	1	3	10	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Uranium (U) †	mg/kg	-	-	-	<2.0	<2.0	<2.0	<2.0	2.0	2141004
Zinc (Zn)	mg/kg	140	500	1500	<5.0	<5.0	25	<5.0	5.0	2141004
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable										



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	11	13	10	13	N/A	N/A
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2134684
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2134684
Barium (Ba)	ug/L	11	10	83	9.8	5.0	2134684
Boron (B)	ug/L	<50	<50	<50	<50	50	2134684
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2134684
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2134684
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2134684
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2134684
Iron (Fe)	ug/L	220	190	<100	<100	100	2134684
Manganese (Mn)	ug/L	160	190	200	150	3.0	2134684
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2134684
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2134684
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	6.0	2134684
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2134684
Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134684
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable							



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

CONVENTIONAL PARAMETERS (SOIL)

Lab BV ID					IK2498	IK2499	IK2500	IK2501		
Sampling Date					2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number					789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	A	B	C	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	-	-	-	11	13	10	13	N/A	N/A
CONVENTIONALS										
Fluoride (F)	mg/kg	200	400	2000	<1.0	<1.0	<1.0	<1.0	1.0	2141036
Nitrates (N-NO3-) †	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	2141035
Nitrites (N-NO2-) †	mg/kg	-	-	-	<0.20	<0.20	<0.20	<0.20	0.20	2141035
Nitrate (N) and Nitrite(N)	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	2141035
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable										



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

CONVENTIONAL PARAMETERS-LAB LEACHATE (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	11	13	10	13	N/A	N/A
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2134702
Nitrites (N-NO ₂ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
Nitrates (N-NO ₃ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



Lab BV Job #: C048500
 Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
 Client Project #: ARD-GOODWOOD
 Your P.O. #: 3000000730
 Sampler Initials: CS

TCLP-EPA 1311 (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	QC Batch
% MOISTURE	%	11	13	10	13	N/A
Leachates						
Weight of sample (g)	n/a	20.0	20.1	20.0	20.1	2134125
pH of pre-test	n/a	<1.68	<1.68	<1.68	<1.68	2134125
pH end of leaching	n/a	4.96	4.95	4.95	4.95	2134125
Volume extracting fluid 1 (ml)	n/a	400	400	400	400	2134125
QC Batch = Quality Control Batch N/A = Not Applicable						



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

GENERAL COMMENTS

A,B,C: Soil Criteria following appendix 2 of the " Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MELCC, 2019." entitled " Grille des critères génériques pour les sols". The soil criteria refer to the St. Lawrence Lowlands Geological Province.

Groundwater criteria A and B follow the appendix 7 entitled "Grille des critères de qualité des eaux souterraines" of the document mentioned above. The criterion A refers to " Drinking Water " and the criterion B refers to "Seepage into Surface Water".

These criteria references are shown for visual aid only, and should not be interpreted otherwise.

- = This parameter is not part of the regulation.

CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

pH of pre-test: Please note that result for samples IK2498, IK2499, IK2500 and IK2501 is outside our calibration range, and outside the limit of linearity.

Reported detection limits are multiplied by dilution factors used for sample analysis.

Fluoride: Due to the sample matrix, a better detection limit cannot be reported.

Nitrite and Nitrate: Due to the sample matrix, a better detection limit cannot be reported.

TOTAL EXTRACTABLE METALS (SOIL)

The extraction was performed passed holding time for samples IK2498, IK2499, IK2500 and IK2501.

Results relate only to the items tested.



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2134125	ABJ	Method Blank	pH end of leaching	2020/10/16	4.95/2.88		n/a
			Volume extracting fluid 1 (ml)	2020/10/16	400		n/a
2134138	ABJ	Method Blank	Date extraction fluid added	2020/10/22	2020/10/15		n/a
			Date leaching terminated	2020/10/22	2020/10/22		n/a
			Volume of extracting fluid (mL)	2020/10/22	160		n/a
			pH after 7 days of leaching	2020/10/22	7.41		n/a
2134388	ABJ	Method Blank	Volume of extracting fluid (mL)	2020/10/16	500		n/a
			pH after 18 hours leaching	2020/10/16	4.24		n/a
2134684	DZE	LEACH. BLANK	Silver (Ag)	2020/10/17	<0.30		ug/L
			Arsenic (As)	2020/10/17	<2.0		ug/L
			Barium (Ba)	2020/10/17	<5.0		ug/L
			Boron (B)	2020/10/17	<50		ug/L
			Cadmium (Cd)	2020/10/17	<1.0		ug/L
			Chromium (Cr)	2020/10/17	<7.0		ug/L
			Cobalt (Co)	2020/10/17	<10		ug/L
			Copper (Cu)	2020/10/17	9.4		ug/L
					RDL=3.0		
			Tin (Sn)	2020/10/17	<50		ug/L
			Iron (Fe)	2020/10/17	<100		ug/L
			Manganese (Mn)	2020/10/17	<3.0		ug/L
			Mercury (Hg)	2020/10/17	<0.50		ug/L
			Molybdenum (Mo)	2020/10/17	<10		ug/L
			Nickel (Ni)	2020/10/17	<6.0		ug/L
			Lead (Pb)	2020/10/17	<1.0		ug/L
			Selenium (Se)	2020/10/17	<1.0		ug/L
			Uranium (U)	2020/10/17	<0.60		ug/L
			Zinc (Zn)	2020/10/17	<5.0		ug/L
2134684	DZE	Spiked Blank	Silver (Ag)	2020/10/17		94	%
			Arsenic (As)	2020/10/17		97	%
			Barium (Ba)	2020/10/17		97	%
			Boron (B)	2020/10/17		91	%
			Cadmium (Cd)	2020/10/17		92	%
			Chromium (Cr)	2020/10/17		95	%
			Cobalt (Co)	2020/10/17		94	%
			Copper (Cu)	2020/10/17		91	%
			Tin (Sn)	2020/10/17		100	%
			Iron (Fe)	2020/10/17		96	%
			Manganese (Mn)	2020/10/17		101	%
			Mercury (Hg)	2020/10/17		81	%
			Molybdenum (Mo)	2020/10/17		95	%
			Nickel (Ni)	2020/10/17		93	%
			Lead (Pb)	2020/10/17		93	%
			Selenium (Se)	2020/10/17		94	%
			Uranium (U)	2020/10/17		94	%
			Zinc (Zn)	2020/10/17		92	%
2134690	MSU	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/16	<0.20		mg/L
			Nitrates (N-NO3-)	2020/10/16	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/10/16	<0.20		mg/L
2134690	MSU	Spiked Blank	Nitrites (N-NO2-)	2020/10/16		103	%
			Nitrates (N-NO3-)	2020/10/16		104	%
			Nitrate (N) and Nitrite(N)	2020/10/16		103	%



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2134702	SBD	LEACH. BLANK	Fluoride (F)	2020/10/19	<1.0		mg/L
2134702	SBD	Spiked Blank	Fluoride (F)	2020/10/19		100	%
2134845	FS	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/17	<0.20		mg/L
			Nitrates (N-NO3-)	2020/10/17	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/10/17	<0.20		mg/L
2134845	FS	Spiked Blank	Nitrites (N-NO2-)	2020/10/17		101	%
			Nitrates (N-NO3-)	2020/10/17		101	%
			Nitrate (N) and Nitrite(N)	2020/10/17		101	%
2134847	SBD	LEACH. BLANK	Fluoride (F)	2020/10/19	<1.0		mg/L
2134847	SBD	Spiked Blank	Fluoride (F)	2020/10/19		100	%
2134992	JGZ	LEACH. BLANK	Silver (Ag)	2020/10/18	<0.30		ug/L
			Arsenic (As)	2020/10/18	<2.0		ug/L
			Barium (Ba)	2020/10/18	<5.0		ug/L
			Boron (B)	2020/10/18	<5.0		ug/L
			Cadmium (Cd)	2020/10/18	<1.0		ug/L
			Chromium (Cr)	2020/10/18	<7.0		ug/L
			Cobalt (Co)	2020/10/18	<10		ug/L
			Copper (Cu)	2020/10/18	13, RDL=3.0		ug/L
			Tin (Sn)	2020/10/18	<50		ug/L
			Iron (Fe)	2020/10/18	<100		ug/L
			Manganese (Mn)	2020/10/18	<3.0		ug/L
			Mercury (Hg)	2020/10/18	<0.50		ug/L
			Molybdenum (Mo)	2020/10/18	<10		ug/L
			Nickel (Ni)	2020/10/18	<6.0		ug/L
			Lead (Pb)	2020/10/18	<1.0		ug/L
			Selenium (Se)	2020/10/18	<1.0		ug/L
			Uranium (U)	2020/10/18	<0.60		ug/L
			Zinc (Zn)	2020/10/18	<5.0		ug/L
2134992	JGZ	Spiked Blank	Silver (Ag)	2020/10/18		94	%
			Arsenic (As)	2020/10/18		100	%
			Barium (Ba)	2020/10/18		103	%
			Boron (B)	2020/10/18		91	%
			Cadmium (Cd)	2020/10/18		96	%
			Chromium (Cr)	2020/10/18		93	%
			Cobalt (Co)	2020/10/18		91	%
			Copper (Cu)	2020/10/18		84	%
			Tin (Sn)	2020/10/18		101	%
			Iron (Fe)	2020/10/18		96	%
			Manganese (Mn)	2020/10/18		97	%
			Mercury (Hg)	2020/10/18		81	%
			Molybdenum (Mo)	2020/10/18		99	%
			Nickel (Ni)	2020/10/18		89	%
			Lead (Pb)	2020/10/18		91	%
			Selenium (Se)	2020/10/18		98	%
			Uranium (U)	2020/10/18		92	%
			Zinc (Zn)	2020/10/18		88	%
2137080	DZE	LEACH. BLANK	Silver (Ag)	2020/10/24	<0.30		ug/L
			Arsenic (As)	2020/10/24	<2.0		ug/L
			Barium (Ba)	2020/10/24	<5.0		ug/L
			Boron (B)	2020/10/24	<5.0		ug/L



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Cadmium (Cd)	2020/10/24	<1.0		ug/L
			Chromium (Cr)	2020/10/24	<7.0		ug/L
			Cobalt (Co)	2020/10/24	<1.0		ug/L
			Copper (Cu)	2020/10/24	<3.0		ug/L
			Tin (Sn)	2020/10/24	<5.0		ug/L
			Iron (Fe)	2020/10/24	<100		ug/L
			Manganese (Mn)	2020/10/24	<3.0		ug/L
			Mercury (Hg)	2020/10/24	<0.50		ug/L
			Molybdenum (Mo)	2020/10/24	<1.0		ug/L
			Lead (Pb)	2020/10/24	<1.0		ug/L
			Selenium (Se)	2020/10/24	<1.0		ug/L
			Uranium (U)	2020/10/24	<0.60		ug/L
			Zinc (Zn)	2020/10/24	<5.0		ug/L
2137080	DZE	Spiked Blank	Silver (Ag)	2020/10/27		99	%
			Arsenic (As)	2020/10/27		103	%
			Barium (Ba)	2020/10/27		103	%
			Boron (B)	2020/10/27		104	%
			Cadmium (Cd)	2020/10/27		107	%
			Chromium (Cr)	2020/10/27		100	%
			Cobalt (Co)	2020/10/27		100	%
			Copper (Cu)	2020/10/27		99	%
			Tin (Sn)	2020/10/27		105	%
			Iron (Fe)	2020/10/27		103	%
			Manganese (Mn)	2020/10/27		103	%
			Mercury (Hg)	2020/10/27		99	%
			Molybdenum (Mo)	2020/10/27		105	%
			Lead (Pb)	2020/10/27		96	%
			Selenium (Se)	2020/10/27		87	%
			Uranium (U)	2020/10/27		97	%
			Zinc (Zn)	2020/10/27		97	%
2137178	MSU	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/23	<0.20		mg/L
			Nitrates (N-NO3-)	2020/10/23	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/10/23	<0.20		mg/L
2137178	MSU	Spiked Blank	Nitrites (N-NO2-)	2020/10/23		102	%
			Nitrates (N-NO3-)	2020/10/23		101	%
			Nitrate (N) and Nitrite(N)	2020/10/23		101	%
2137179	MPO	LEACH. BLANK	Fluoride (F)	2020/10/23	<1.0		mg/L
2137179	MPO	Spiked Blank	Fluoride (F)	2020/10/23		97	%
2141004	KK	Spiked Blank	Silver (Ag)	2020/11/04		93	%
			Arsenic (As)	2020/11/04		96	%
			Barium (Ba)	2020/11/04		94	%
			Boron (B)	2020/11/04		112	%
			Cadmium (Cd)	2020/11/04		93	%
			Chromium (Cr)	2020/11/04		94	%
			Copper (Cu)	2020/11/04		95	%
			Cobalt (Co)	2020/11/04		94	%
			Tin (Sn)	2020/11/04		96	%
			Iron (Fe)	2020/11/04		94	%
			Manganese (Mn)	2020/11/04		96	%
			Molybdenum (Mo)	2020/11/04		94	%
			Nickel (Ni)	2020/11/04		96	%



Lab BV Job #: C048500
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TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2141004	KK	Method Blank	Mercury (Hg)	2020/11/04		90	%
			Lead (Pb)	2020/11/04		93	%
			Selenium (Se)	2020/11/04		91	%
			Uranium (U)	2020/11/04		93	%
			Zinc (Zn)	2020/11/04		93	%
			Silver (Ag)	2020/11/04	<0.50		mg/kg
			Arsenic (As)	2020/11/04	<2.0		mg/kg
			Barium (Ba)	2020/11/04	<4.0		mg/kg
			Boron (B)	2020/11/04	<2.0		mg/kg
			Cadmium (Cd)	2020/11/04	<0.10		mg/kg
			Chromium (Cr)	2020/11/04	<1.0		mg/kg
			Copper (Cu)	2020/11/04	<1.0		mg/kg
			Cobalt (Co)	2020/11/04	<1.0		mg/kg
			Tin (Sn)	2020/11/04	<1.0		mg/kg
			Iron (Fe)	2020/11/04	<10		mg/kg
			Manganese (Mn)	2020/11/04	<2.0		mg/kg
			Molybdenum (Mo)	2020/11/04	<0.50		mg/kg
			Nickel (Ni)	2020/11/04	<0.50		mg/kg
			Mercury (Hg)	2020/11/04	<0.010		mg/kg
			Lead (Pb)	2020/11/04	<1.0		mg/kg
2141035	BPH	Spiked Blank	Selenium (Se)	2020/11/04	<0.50		mg/kg
			Uranium (U)	2020/11/04	<2.0		mg/kg
			Zinc (Zn)	2020/11/04	<5.0		mg/kg
			Nitrates (N-NO3-)	2020/11/04		106	%
2141035	BPH	Method Blank	Nitrites (N-NO2-)	2020/11/04		104	%
			Nitrate (N) and Nitrite(N)	2020/11/04		105	%
			Nitrates (N-NO3-)	2020/11/04	<1.0		mg/kg
2141036	MPO	Spiked Blank	Nitrites (N-NO2-)	2020/11/04	<0.20		mg/kg
			Nitrate (N) and Nitrite(N)	2020/11/04	<1.0		mg/kg
			Fluoride (F)	2020/11/04		101	%
2141036	MPO	Method Blank	Fluoride (F)	2020/11/04	<1.0		mg/kg

RDL = Reportable Detection Limit

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alex Thibert

Member OCQ #2020-05

Alex Thibert, B.Sc., Chemist, Analyst II, Chemist in Training



Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator



Fotini Myconiatis, B.Sc., Chemist, Montreal, Senior Manager



Faouzi Sarsi, B.Sc. Chemist, SR Analyst



Michelina Cinquino, Analyst II



Shu Yang, B.Sc. Chemist, Montreal, Analyst II

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ARD – October 2020



Your Project #: GOODWOOD ARD
Site Location: GOODWOOD
Your C.O.C. #: N/A, rock

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTREAL, QC
CANADA H3A 3G4

Report Date: 2020/12/15
Report #: R2627162
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C055603
Received: 2020/11/02, 10:30
Sample Matrix: Rock
Samples Received: 14

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Grinding	7	N/A	2020/11/16	STL SOP-00019	N/A
Fluoride- Leached	7	N/A	2020/11/18	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	7	N/A	2020/11/24	STL SOP-00038	SM 23 4500-F m
Water Leachate (CTEU - 9)	7	2020/11/16	2020/11/23	STL SOP-00024	MA100-Lixcom1.1 R1 m
Acid rain simulation leachate (EPA 1312)	7	2020/11/16	2020/11/17	STL SOP-00024	MA100-Lixcom1.1 R1 m
Metals - Leached	7	2020/11/17	2020/11/18	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Metals - Leached	7	2020/11/23	2020/11/25	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	7	N/A	2020/11/19	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite- Leached	7	N/A	2020/11/23	STL SOP-00014	MA.300-Ions 1.3 R3 m

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acid Base Accounting (Sobek modified) (1)	7	N/A	N/A		
Fluoride (free)	7	2020/11/18	2020/11/18	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	7	N/A	2020/11/17	STL SOP-00038	SM 23 4500-F m
Total Extractable Metals (low level)	7	2020/11/17	2020/11/21	STL SOP-00069	MA.200-Mét. 1.2 R5 m
Metals - Leached	7	2020/11/17	2020/11/18	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	7	N/A	2020/11/18	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite	7	2020/11/18	2020/11/20	STL SOP-00014	MA.300-Ions 1.3 R3 m
Toxicity Charact. Leach. Proc.(EPA 1311)	7	2020/11/16	2020/11/17	STL SOP-00024	MA100-Lixcom1.1 R1 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.





Your Project #: GOODWOOD ARD
Site Location: GOODWOOD
Your C.O.C. #: N/A, rock

Attention: Mariana Trindade
TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/12/15
Report #: R2627162
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C055603
Received: 2020/11/02, 10:30

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Laboratoires Bureau Veritas - Burnaby

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Martine Lepage
Project Manager and Account
Manager
16 Dec 2020 14:27:31

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Martine Lepage, Project Manager and Account Manager

Email: Martine.LEPAGE@bvlab.com

Phone# (418)543-3788 Ext:7066201

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Lab BV Job #: C055603
Report Date: 2020/12/15

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD ARD
Site Location: GOODWOOD

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IN8146	IN8147	IN8148	IN8149		
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26		
COC Number		N/A	N/A	N/A	N/A		
	Units	TSMC-80248- (CTEU-9)	TSMC-80249- (CTEU-9)	TSMC-80250- (CTEU-9)	TSMC-80251- (CTEU-9)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2147091
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2147091
Barium (Ba)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2147091
Boron (B)	ug/L	<50	<50	<50	<50	50	2147091
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2147091
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2147091
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2147091
Copper (Cu)	ug/L	<3.0	4.0	<3.0	<3.0	3.0	2147091
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2147091
Iron (Fe)	ug/L	<100	310	<100	120	100	2147091
Manganese (Mn)	ug/L	120	48	230	100	3.0	2147091
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2147091
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2147091
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	6.0	2147091
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2147091
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2147091
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2147091
Zinc (Zn)	ug/L	<5.0	7.0	<5.0	5.3	5.0	2147091
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable							



Lab BV Job #: C055603
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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD ARD
Site Location: GOODWOOD

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IN8150	IN8151	IN8152		
Sampling Date		2020/10/26	2020/10/26	2020/10/26		
COC Number		N/A	rock	N/A		
	Units	TSMC-80248- (SPLP1312)	TSMC-80249- (SPLP1312)	TSMC-80250- (SPLP1312)	RDL	QC Batch
METALS						
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	0.30	2145272
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	2.0	2145272
Barium (Ba)	ug/L	<5.0	<5.0	<5.0	5.0	2145272
Boron (B)	ug/L	<50	<50	<50	50	2145272
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	1.0	2145272
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	7.0	2145272
Cobalt (Co)	ug/L	<10	<10	<10	10	2145272
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	3.0	2145272
Tin (Sn) †	ug/L	<50	<50	<50	50	2145272
Iron (Fe)	ug/L	<100	<100	<100	100	2145272
Manganese (Mn)	ug/L	49	18	12	3.0	2145272
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	0.50	2145272
Molybdenum (Mo)	ug/L	<10	<10	<10	10	2145272
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	6.0	2145272
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	1.0	2145272
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	1.0	2145272
Uranium (U)	ug/L	<0.60	<0.60	<0.60	0.60	2145272
Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	5.0	2145272
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
† Parameter is not accreditable						



Lab BV Job #: C055603
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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD ARD
Site Location: GOODWOOD

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IN8153		IN8192	IN8193		
Sampling Date		2020/10/26		2020/10/26	2020/10/29		
COC Number		N/A		N/A	N/A		
	Units	TSMC-80251- (SPLP1312)	QC Batch	TSMC-80252- (CTEU-9)	TSMC-80342- (CTEU-9)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	2145272	<0.30	<0.30	0.30	2147091
Arsenic (As)	ug/L	<2.0	2145272	<2.0	<2.0	2.0	2147091
Barium (Ba)	ug/L	<5.0	2145272	<5.0	<5.0	5.0	2147091
Boron (B)	ug/L	<50	2145272	<50	<50	50	2147091
Cadmium (Cd)	ug/L	<1.0	2145272	<1.0	<1.0	1.0	2147091
Chromium (Cr)	ug/L	<7.0	2145272	<7.0	<7.0	7.0	2147091
Cobalt (Co)	ug/L	<10	2145272	<10	<10	10	2147091
Copper (Cu)	ug/L	<3.0	2145272	<3.0	<3.0	3.0	2147091
Tin (Sn) †	ug/L	<50	2145272	<50	<50	50	2147091
Iron (Fe)	ug/L	<100	2145272	<100	<100	100	2147091
Manganese (Mn)	ug/L	13	2145272	580	3.5	3.0	2147091
Mercury (Hg)	ug/L	<0.50	2145272	<0.50	<0.50	0.50	2147091
Molybdenum (Mo)	ug/L	<10	2145272	<10	<10	10	2147091
Nickel (Ni)	ug/L	<6.0	2145272	<6.0	<6.0	6.0	2147091
Lead (Pb)	ug/L	<1.0	2145272	<1.0	<1.0	1.0	2147091
Selenium (Se)	ug/L	<1.0	2145272	<1.0	<1.0	1.0	2147091
Uranium (U)	ug/L	<0.60	2145272	<0.60	<0.60	0.60	2147091
Zinc (Zn)	ug/L	<5.0	2145272	<5.0	<5.0	5.0	2147091
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable							



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TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD ARD
Site Location: GOODWOOD

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IN8194		IN8200		IN8201	
Sampling Date		2020/10/29		2020/10/26		2020/10/29	
COC Number		N/A		N/A		N/A	
	Units	TSMC-80343- (CTEU-9)	QC Batch	TSMC-80252- (SPLP1312)	TSMC-80342- (SPLP1312)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	2147091	<0.30	<0.30	0.30	2145272
Arsenic (As)	ug/L	<2.0	2147091	<2.0	<2.0	2.0	2145272
Barium (Ba)	ug/L	<5.0	2147091	<5.0	<5.0	5.0	2145272
Boron (B)	ug/L	<50	2147091	<50	<50	50	2145272
Cadmium (Cd)	ug/L	<1.0	2147091	<1.0	<1.0	1.0	2145272
Chromium (Cr)	ug/L	<7.0	2147091	<7.0	<7.0	7.0	2145272
Cobalt (Co)	ug/L	<10	2147091	<10	<10	10	2145272
Copper (Cu)	ug/L	<3.0	2147091	<3.0	<3.0	3.0	2145272
Tin (Sn) †	ug/L	<50	2147091	<50	<50	50	2145272
Iron (Fe)	ug/L	<100	2147091	<100	<100	100	2145272
Manganese (Mn)	ug/L	350	2147091	17	16	3.0	2145272
Mercury (Hg)	ug/L	<0.50	2147091	<0.50	<0.50	0.50	2145272
Molybdenum (Mo)	ug/L	<10	2147091	<10	<10	10	2145272
Nickel (Ni)	ug/L	<6.0	2147091	<6.0	<6.0	6.0	2145272
Lead (Pb)	ug/L	<1.0	2147091	<1.0	<1.0	1.0	2145272
Selenium (Se)	ug/L	<1.0	2147091	<1.0	<1.0	1.0	2145272
Uranium (U)	ug/L	<0.60	2147091	<0.60	<0.60	0.60	2145272
Zinc (Zn)	ug/L	<5.0	2147091	<5.0	<5.0	5.0	2145272
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
† Parameter is not accreditable							



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METALS-LAB LEACHATE (ROCK)

Lab BV ID		IN8202		
Sampling Date		2020/10/29		
COC Number		N/A		
	Units	TSMC-80343- (SPLP1312)	RDL	QC Batch
METALS				
Silver (Ag) †	ug/L	<0.30	0.30	2145272
Arsenic (As)	ug/L	<2.0	2.0	2145272
Barium (Ba)	ug/L	<5.0	5.0	2145272
Boron (B)	ug/L	<50	50	2145272
Cadmium (Cd)	ug/L	<1.0	1.0	2145272
Chromium (Cr)	ug/L	<7.0	7.0	2145272
Cobalt (Co)	ug/L	<10	10	2145272
Copper (Cu)	ug/L	<3.0	3.0	2145272
Tin (Sn) †	ug/L	<50	50	2145272
Iron (Fe)	ug/L	<100	100	2145272
Manganese (Mn)	ug/L	6.7	3.0	2145272
Mercury (Hg)	ug/L	<0.50	0.50	2145272
Molybdenum (Mo)	ug/L	<10	10	2145272
Nickel (Ni)	ug/L	<6.0	6.0	2145272
Lead (Pb)	ug/L	17	1.0	2145272
Selenium (Se)	ug/L	<1.0	1.0	2145272
Uranium (U)	ug/L	<0.60	0.60	2145272
Zinc (Zn)	ug/L	180	5.0	2145272
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable				



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TATA STEEL MINERALS CANADA
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CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

Lab BV ID		IN8146	IN8147	IN8148	IN8149		
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26		
COC Number		N/A	N/A	N/A	N/A		
	Units	TSMC-80248- (CTEU-9)	TSMC-80249- (CTEU-9)	TSMC-80250- (CTEU-9)	TSMC-80251- (CTEU-9)	RDL	QC Batch
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2147103
Nitrites (N-NO2-)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2147093
Nitrates (N-NO3-)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2147093
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2147093
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Lab BV ID		IN8150	IN8151	IN8152		
Sampling Date		2020/10/26	2020/10/26	2020/10/26		
COC Number		N/A	rock	N/A		
	Units	TSMC-80248- (SPLP1312)	TSMC-80249- (SPLP1312)	TSMC-80250- (SPLP1312)	RDL	QC Batch
CONVENTIONALS						
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	1.0	2145414
Nitrites (N-NO2-)	mg/L	<0.20	<0.20	<0.20	0.20	2145413
Nitrates (N-NO3-)	mg/L	<0.20	<0.20	<0.20	0.20	2145413
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	0.20	2145413
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Lab BV ID		IN8153		IN8192	IN8193		
Sampling Date		2020/10/26		2020/10/26	2020/10/29		
COC Number		N/A		N/A	N/A		
	Units	TSMC-80251- (SPLP1312)	QC Batch	TSMC-80252- (CTEU-9)	TSMC-80342- (CTEU-9)	RDL	QC Batch
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	2145414	<1.0	<1.0	1.0	2147103
Nitrites (N-NO2-)	mg/L	<0.20	2145413	<0.20	<0.20	0.20	2147093
Nitrates (N-NO3-)	mg/L	<0.20	2145413	<0.20	<0.20	0.20	2147093
Nitrate (N) and Nitrite(N)	mg/L	<0.20	2145413	<0.20	<0.20	0.20	2147093
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



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CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

Lab BV ID		IN8194		IN8200	IN8201		
Sampling Date		2020/10/29		2020/10/26	2020/10/29		
COC Number		N/A		N/A	N/A		
	Units	TSMC-80343- (CTEU-9)	QC Batch	TSMC-80252- (SPLP1312)	TSMC-80342- (SPLP1312)	RDL	QC Batch
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	2147103	<1.0	<1.0	1.0	2145414
Nitrites (N-NO ₂ -)	mg/L	<0.20	2147093	<0.20	<0.20	0.20	2145413
Nitrates (N-NO ₃ -)	mg/L	<0.20	2147093	<0.20	<0.20	0.20	2145413
Nitrate (N) and Nitrite(N)	mg/L	<0.20	2147093	<0.20	<0.20	0.20	2145413
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Lab BV ID		IN8202		
Sampling Date		2020/10/29		
COC Number		N/A		
	Units	TSMC-80343- (SPLP1312)	RDL	QC Batch
CONVENTIONALS				
Fluoride (F)	mg/L	<1.0	1.0	2145414
Nitrites (N-NO ₂ -)	mg/L	<0.20	0.20	2145413
Nitrates (N-NO ₃ -)	mg/L	<0.20	0.20	2145413
Nitrate (N) and Nitrite(N)	mg/L	<0.20	0.20	2145413
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



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TATA STEEL MINERALS CANADA
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SPLP-EPA 1312 (ROCK)

Lab BV ID		IN8150	IN8151	IN8152	
Sampling Date		2020/10/26	2020/10/26	2020/10/26	
COC Number		N/A	rock	N/A	
	Units	TSMC-80248- (SPLP1312)	TSMC-80249- (SPLP1312)	TSMC-80250- (SPLP1312)	QC Batch

Leachates					
Weight of sample (g)	n/a	25.0	25.0	25.0	2144847
Volume of extracting fluid (mL)	n/a	500	500	500	2144847
pH after 18 hours leaching	n/a	5.49	7.15	5.81	2144847
QC Batch = Quality Control Batch					

Lab BV ID		IN8153	IN8200	IN8201	
Sampling Date		2020/10/26	2020/10/26	2020/10/29	
COC Number		N/A	N/A	N/A	
	Units	TSMC-80251- (SPLP1312)	TSMC-80252- (SPLP1312)	TSMC-80342- (SPLP1312)	QC Batch

Leachates					
Weight of sample (g)	n/a	25.0	25.1	25.0	2144847
Volume of extracting fluid (mL)	n/a	500	500	500	2144847
pH after 18 hours leaching	n/a	6.00	5.81	5.72	2144847
QC Batch = Quality Control Batch					

Lab BV ID		IN8202	
Sampling Date		2020/10/29	
COC Number		N/A	
	Units	TSMC-80343- (SPLP1312)	QC Batch

Leachates			
Weight of sample (g)	n/a	25.0	2144847
Volume of extracting fluid (mL)	n/a	500	2144847
pH after 18 hours leaching	n/a	6.11	2144847
QC Batch = Quality Control Batch			



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WATER LEACHATE-CTEU-9 (ROCK)

Lab BV ID		IN8146	IN8147	IN8148	IN8149	
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26	
	Units	TSMC-80248- (CTEU-9)	TSMC-80249- (CTEU-9)	TSMC-80250- (CTEU-9)	TSMC-80251- (CTEU-9)	QC Batch
Leachates						
Weight of sample (g)	n/a	40.0	40.1	40.0	40.0	2144742
Date extraction fluid added	n/a	2020/11/16	2020/11/16	2020/11/16	2020/11/16	2144742
Date leaching terminated	n/a	2020/11/23	2020/11/23	2020/11/23	2020/11/23	2144742
Volume of extracting fluid (mL)	n/a	160	160	160	160	2144742
pH after 7 days of leaching	n/a	6.69	6.68	6.60	7.55	2144742
QC Batch = Quality Control Batch						

Lab BV ID		IN8192	IN8193	IN8194	
Sampling Date		2020/10/26	2020/10/29	2020/10/29	
	Units	TSMC-80252- (CTEU-9)	TSMC-80342- (CTEU-9)	TSMC-80343- (CTEU-9)	QC Batch
Leachates					
Weight of sample (g)	n/a	40.0	40.0	40.0	2144742
Date extraction fluid added	n/a	2020/11/16	2020/11/16	2020/11/16	2144742
Date leaching terminated	n/a	2020/11/23	2020/11/23	2020/11/23	2144742
Volume of extracting fluid (mL)	n/a	160	160	160	2144742
pH after 7 days of leaching	n/a	6.18	6.61	6.57	2144742
QC Batch = Quality Control Batch					



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TOTAL EXTRACTABLE METALS (SOIL)

Lab BV ID					IN8142	IN8143	IN8144	IN8145		IN8174		
Sampling Date					2020/10/26	2020/10/26	2020/10/26	2020/10/26		2020/10/26		
	Units	A	B	C	TSMC-80248	TSMC-80249	TSMC-80250	TSMC-80251	RDL	TSMC-80252	RDL	QC Batch
% MOISTURE	%	-	-	-	14	11	13	9.6	N/A	11	N/A	N/A
METALS												
Silver (Ag)	mg/kg	2	20	40	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	0.50	2145317
Arsenic (As)	mg/kg	6	30	50	10	10	4.5	3.5	2.0	6.1	2.0	2145317
Barium (Ba)	mg/kg	340	500	2000	72	100	<4.0	<4.0	4.0	34	4.0	2145317
Boron (B)	mg/kg	-	-	-	3.0	2.2	2.5	<2.0	2.0	2.2	2.0	2145317
Cadmium (Cd)	mg/kg	1.5	5	20	0.48	0.64	<0.10	<0.10	0.10	0.29	0.10	2145317
Chromium (Cr)	mg/kg	100	250	800	20	21	2.4	2.0	1.0	15	1.0	2145317
Copper (Cu)	mg/kg	50	100	500	20	23	4.4	3.6	1.0	14	1.0	2145317
Cobalt (Co)	mg/kg	25	50	300	9.2	11	2.8	2.1	1.0	6.8	1.0	2145317
Tin (Sn)	mg/kg	5	50	300	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	1.0	2145317
Iron (Fe) †	mg/kg	-	-	-	65000	61000	93000	76000	10	97000	100	2145317
Manganese (Mn)	mg/kg	1000	1000	2200	3500	4500	400	560	2.0	1900	2.0	2145317
Molybdenum (Mo)	mg/kg	2	10	40	1.3	1.3	<0.50	<0.50	0.50	0.72	0.50	2145317
Nickel (Ni)	mg/kg	50	100	500	17	20	1.5	1.4	0.50	13	0.50	2145317
Mercury (Hg)	mg/kg	0.2	2	10	0.088	0.079	0.065	0.056	0.010	0.059	0.010	2145317
Lead (Pb)	mg/kg	50	500	1000	8.3	9.3	2.1	2.1	1.0	7.0	1.0	2145317
Selenium (Se)	mg/kg	1	3	10	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	0.50	2145317
Uranium (U) †	mg/kg	-	-	-	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	2145317
Zinc (Zn)	mg/kg	140	500	1500	59	70	<5.0	<5.0	5.0	38	5.0	2145317
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable												



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TATA STEEL MINERALS CANADA
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Site Location: GOODWOOD

TOTAL EXTRACTABLE METALS (SOIL)

Lab BV ID					IN8175	IN8176		
Sampling Date					2020/10/29	2020/10/29		
	Units	A	B	C	TSMC-80342	TSMC-80343	RDL	QC Batch
% MOISTURE	%	-	-	-	14	12	N/A	N/A
METALS								
Silver (Ag)	mg/kg	2	20	40	<0.50	<0.50	0.50	2145317
Arsenic (As)	mg/kg	6	30	50	3.6	8.0	2.0	2145317
Barium (Ba)	mg/kg	340	500	2000	<4.0	<4.0	4.0	2145317
Boron (B)	mg/kg	-	-	-	<2.0	<2.0	2.0	2145317
Cadmium (Cd)	mg/kg	1.5	5	20	<0.10	<0.10	0.10	2145317
Chromium (Cr)	mg/kg	100	250	800	1.3	1.4	1.0	2145317
Copper (Cu)	mg/kg	50	100	500	1.6	1.6	1.0	2145317
Cobalt (Co)	mg/kg	25	50	300	1.7	2.7	1.0	2145317
Tin (Sn)	mg/kg	5	50	300	<1.0	<1.0	1.0	2145317
Iron (Fe) †	mg/kg	-	-	-	81000	83000	10	2145317
Manganese (Mn)	mg/kg	1000	1000	2200	290	430	2.0	2145317
Molybdenum (Mo)	mg/kg	2	10	40	<0.50	<0.50	0.50	2145317
Nickel (Ni)	mg/kg	50	100	500	0.72	0.81	0.50	2145317
Mercury (Hg)	mg/kg	0.2	2	10	0.028	0.026	0.010	2145317
Lead (Pb)	mg/kg	50	500	1000	1.4	1.9	1.0	2145317
Selenium (Se)	mg/kg	1	3	10	<0.50	<0.50	0.50	2145317
Uranium (U) †	mg/kg	-	-	-	<2.0	<2.0	2.0	2145317
Zinc (Zn)	mg/kg	140	500	1500	<5.0	<5.0	5.0	2145317
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable								



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METALS-LAB LEACHATE (SOIL)

Lab BV ID		IN8142	IN8143	IN8144	IN8145	IN8174	IN8175	IN8176		
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/29	2020/10/29		
	Units	TSMC-80248	TSMC-80249	TSMC-80250	TSMC-80251	TSMC-80252	TSMC-80342	TSMC-80343	RDL	QC Batch
% MOISTURE	%	14	11	13	9.6	11	14	12	N/A	N/A
METALS										
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	2145134
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	2145134
Barium (Ba)	ug/L	6.8	120	5.6	73	37	6.1	11	5.0	2145134
Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	<50	50	2145134
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145134
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	7.0	2145134
Cobalt (Co)	ug/L	<10	<10	<10	<10	<10	<10	<10	10	2145134
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	2145134
Tin (Sn) †	ug/L	<50	<50	<50	<50	<50	<50	<50	50	2145134
Iron (Fe)	ug/L	<100	<100	<100	<100	<100	<100	<100	100	2145134
Manganese (Mn)	ug/L	150	290	85	640	140	72	57	3.0	2145134
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	2145134
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	<10	<10	<10	10	2145134
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	6.0	2145134
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145134
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145134
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	0.60	2145134
Zinc (Zn)	ug/L	<5.0	12	<5.0	12	<5.0	<5.0	<5.0	5.0	2145134
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable										



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CONVENTIONAL PARAMETERS (SOIL)

Lab BV ID					IN8142	IN8143	IN8144	IN8145	IN8145		
Sampling Date					2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/26		
	Units	A	B	C	TSMC-80248	TSMC-80249	TSMC-80250	TSMC-80251	TSMC-80251 Lab-Dup	RDL	QC Batch
% MOISTURE	%	-	-	-	14	11	13	9.6	9.6	N/A	N/A
CONVENTIONALS											
Fluoride (F)	mg/kg	200	400	2000	1.3	<1.0	<1.0	<1.0	<1.0	1.0	2145466
Nitrates (N-NO3-) †	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145480
Nitrites (N-NO2-) †	mg/kg	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	2145480
Nitrate (N) and Nitrite(N)	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145480
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable											

Lab BV ID					IN8174	IN8175	IN8176		
Sampling Date					2020/10/26	2020/10/29	2020/10/29		
	Units	A	B	C	TSMC-80252	TSMC-80342	TSMC-80343	RDL	QC Batch
% MOISTURE	%	-	-	-	11	14	12	N/A	N/A
CONVENTIONALS									
Fluoride (F)	mg/kg	200	400	2000	<1.0	<1.0	<1.0	1.0	2145466
Nitrates (N-NO3-) †	mg/kg	-	-	-	<1.0	<1.0	<1.0	1.0	2145480
Nitrites (N-NO2-) †	mg/kg	-	-	-	<0.20	<0.20	<0.20	0.20	2145480
Nitrate (N) and Nitrite(N)	mg/kg	-	-	-	<1.0	<1.0	<1.0	1.0	2145480
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable									





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CONVENTIONAL PARAMETERS-LAB LEACHATE (SOIL)

Lab BV ID		IN8142	IN8143	IN8144	IN8145	IN8174	IN8175	IN8176		
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/29	2020/10/29		
	Units	TSMC-80248	TSMC-80249	TSMC-80250	TSMC-80251	TSMC-80252	TSMC-80342	TSMC-80343	RDL	QC Batch
% MOISTURE	%	14	11	13	9.6	11	14	12	N/A	N/A
CONVENTIONALS										
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	2145195
Nitrites (N-NO ₂ -)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	2145192
Nitrates (N-NO ₃ -)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	2145192
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	2145192
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
N/A = Not Applicable										



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TCLP-EPA 1311 (SOIL)

Lab BV ID		IN8142	IN8143	IN8144	IN8145	IN8174	IN8175	IN8176	
Sampling Date		2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/26	2020/10/29	2020/10/29	
	Units	TSMC-80248	TSMC-80249	TSMC-80250	TSMC-80251	TSMC-80252	TSMC-80342	TSMC-80343	QC Batch
% MOISTURE	%	14	11	13	9.6	11	14	12	N/A
Leachates									
Weight of sample (g)	n/a	20.1	20.0	20.0	20.1	20.0	20.0	20.1	2144722
pH of pre-test	n/a	<1.68	<1.68	<1.68	<1.68	<1.68	<1.68	<1.68	2144722
pH end of leaching	n/a	4.95	4.94	4.96	4.96	4.96	4.94	4.79	2144722
Volume extracting fluid 1 (ml)	n/a	400	400	400	400	400	400	400	2144722
QC Batch = Quality Control Batch N/A = Not Applicable									





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GENERAL COMMENTS

A,B,C: Soil Criteria following appendix 2 of the " Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MELCC, 2019." entitled " Grille des critères génériques pour les sols". The soil criteria refer to the St. Lawrence Lowlands Geological Province.

Groundwater criteria A and B follow the appendix 7 entitled "Grille des critères de qualité des eaux souterraines" of the document mentioned above. The criterion A refers to " Drinking Water " and the criterion B refers to "Seepage into Surface Water".

These criteria references are shown for visual aid only, and should not be interpreted otherwise.

- = This parameter is not part of the regulation.

CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

Reported detection limits are multiplied by dilution factors used for sample analysis.

Nitrite and Nitrate: Due to the sample matrix, a better detection limit cannot be reported.

TOTAL EXTRACTABLE METALS (SOIL)

Reported detection limits are multiplied by dilution factors used for sample analysis.

CONVENTIONAL PARAMETERS-LAB LEACHATE (SOIL)

Les limites de détections indiquées sont multipliées par les facteurs de dilution utilisés pour l'analyse des échantillons.

Results relate only to the items tested.



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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2144722	ABJ	Method Blank	pH end of leaching	2020/11/17	4.95/2.88		n/a
			Volume extracting fluid 1 (ml)	2020/11/17	400		n/a
2144742	ABJ	Method Blank	Date extraction fluid added	2020/11/23	2020/11/16		n/a
			Date leaching terminated	2020/11/23	2020/11/23		n/a
			Volume of extracting fluid (mL)	2020/11/23	160		n/a
			pH after 7 days of leaching	2020/11/23	6.52		n/a
2144847	ABJ	Method Blank	Volume of extracting fluid (mL)	2020/11/17	500		n/a
			pH after 18 hours leaching	2020/11/17	4.25		n/a
2145134	AT7	LEACH. BLANK	Silver (Ag)	2020/11/17	<0.30		ug/L
			Arsenic (As)	2020/11/17	<2.0		ug/L
			Barium (Ba)	2020/11/17	<5.0		ug/L
			Boron (B)	2020/11/17	<50		ug/L
			Cadmium (Cd)	2020/11/17	<1.0		ug/L
			Chromium (Cr)	2020/11/17	<7.0		ug/L
			Cobalt (Co)	2020/11/17	<10		ug/L
			Copper (Cu)	2020/11/17	12,		ug/L
					RDL=3.0		
			Tin (Sn)	2020/11/17	<50		ug/L
			Iron (Fe)	2020/11/17	<100		ug/L
			Manganese (Mn)	2020/11/17	<3.0		ug/L
			Mercury (Hg)	2020/11/17	<0.50		ug/L
			Molybdenum (Mo)	2020/11/17	<10		ug/L
			Nickel (Ni)	2020/11/17	<6.0		ug/L
			Lead (Pb)	2020/11/17	<1.0		ug/L
			Selenium (Se)	2020/11/17	<1.0		ug/L
			Uranium (U)	2020/11/17	<0.60		ug/L
			Zinc (Zn)	2020/11/17	<5.0		ug/L
2145134	AT7	Spiked Blank	Silver (Ag)	2020/11/17		94	%
			Arsenic (As)	2020/11/17		107	%
			Barium (Ba)	2020/11/17		95	%
			Boron (B)	2020/11/17		97	%
			Cadmium (Cd)	2020/11/17		96	%
			Chromium (Cr)	2020/11/17		99	%
			Cobalt (Co)	2020/11/17		97	%
			Copper (Cu)	2020/11/17		94	%
			Tin (Sn)	2020/11/17		108	%
			Iron (Fe)	2020/11/17		97	%
			Manganese (Mn)	2020/11/17		103	%
			Mercury (Hg)	2020/11/17		95	%
			Molybdenum (Mo)	2020/11/17		98	%
			Nickel (Ni)	2020/11/17		97	%
			Lead (Pb)	2020/11/17		93	%
			Selenium (Se)	2020/11/17		93	%
			Uranium (U)	2020/11/17		98	%
			Zinc (Zn)	2020/11/17		95	%
2145192	VPA	LEACH. BLANK	Nitrites (N-NO ₂ -)	2020/11/17	<0.20		mg/L
			Nitrates (N-NO ₃ -)	2020/11/17	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/11/17	<0.20		mg/L
2145192	VPA	Spiked Blank	Nitrites (N-NO ₂ -)	2020/11/17		99	%
			Nitrates (N-NO ₃ -)	2020/11/17		101	%
			Nitrate (N) and Nitrite(N)	2020/11/17		100	%
2145195	SD2	LEACH. BLANK	Fluoride (F)	2020/11/17	<1.0		mg/L





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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2145195	SD2	Spiked Blank	Fluoride (F)	2020/11/17		113	%
2145272	DZE	LEACH. BLANK	Silver (Ag)	2020/11/17	<0.30		ug/L
			Arsenic (As)	2020/11/17	<2.0		ug/L
			Barium (Ba)	2020/11/17	<5.0		ug/L
			Boron (B)	2020/11/17	<50		ug/L
			Cadmium (Cd)	2020/11/17	<1.0		ug/L
			Chromium (Cr)	2020/11/17	<7.0		ug/L
			Cobalt (Co)	2020/11/17	<10		ug/L
			Copper (Cu)	2020/11/17	<3.0		ug/L
			Tin (Sn)	2020/11/17	<50		ug/L
			Iron (Fe)	2020/11/17	<100		ug/L
			Manganese (Mn)	2020/11/17	<3.0		ug/L
			Mercury (Hg)	2020/11/17	<0.50		ug/L
			Molybdenum (Mo)	2020/11/17	<10		ug/L
			Nickel (Ni)	2020/11/17	<6.0		ug/L
			Lead (Pb)	2020/11/17	<1.0		ug/L
			Selenium (Se)	2020/11/17	<1.0		ug/L
			Uranium (U)	2020/11/17	<0.60		ug/L
			Zinc (Zn)	2020/11/17	<5.0		ug/L
2145272	DZE	Spiked Blank	Silver (Ag)	2020/11/17		97	%
			Arsenic (As)	2020/11/17		101	%
			Barium (Ba)	2020/11/17		95	%
			Boron (B)	2020/11/17		98	%
			Cadmium (Cd)	2020/11/17		97	%
			Chromium (Cr)	2020/11/17		95	%
			Cobalt (Co)	2020/11/17		94	%
			Copper (Cu)	2020/11/17		94	%
			Tin (Sn)	2020/11/17		109	%
			Iron (Fe)	2020/11/17		95	%
			Manganese (Mn)	2020/11/17		100	%
			Mercury (Hg)	2020/11/17		96	%
			Molybdenum (Mo)	2020/11/17		99	%
			Nickel (Ni)	2020/11/17		97	%
			Lead (Pb)	2020/11/17		95	%
			Selenium (Se)	2020/11/17		97	%
			Uranium (U)	2020/11/17		101	%
			Zinc (Zn)	2020/11/17		96	%
2145317	KK	Spiked Blank	Silver (Ag)	2020/11/21		94	%
			Arsenic (As)	2020/11/21		101	%
			Barium (Ba)	2020/11/21		94	%
			Boron (B)	2020/11/21		108	%
			Cadmium (Cd)	2020/11/21		97	%
			Chromium (Cr)	2020/11/21		100	%
			Copper (Cu)	2020/11/21		100	%
			Cobalt (Co)	2020/11/21		99	%
			Tin (Sn)	2020/11/21		102	%
			Iron (Fe)	2020/11/21		96	%
			Manganese (Mn)	2020/11/21		100	%
			Molybdenum (Mo)	2020/11/21		98	%
			Nickel (Ni)	2020/11/21		103	%
			Mercury (Hg)	2020/11/21		90	%
			Lead (Pb)	2020/11/21		98	%





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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2145317	KK	Method Blank	Selenium (Se)	2020/11/21		97	%
			Uranium (U)	2020/11/21		92	%
			Zinc (Zn)	2020/11/21		99	%
			Silver (Ag)	2020/11/21	<0.50		mg/kg
			Arsenic (As)	2020/11/21	<2.0		mg/kg
			Barium (Ba)	2020/11/21	<4.0		mg/kg
			Boron (B)	2020/11/21	<2.0		mg/kg
			Cadmium (Cd)	2020/11/21	<0.10		mg/kg
			Chromium (Cr)	2020/11/21	<1.0		mg/kg
			Copper (Cu)	2020/11/21	<1.0		mg/kg
			Cobalt (Co)	2020/11/21	<1.0		mg/kg
			Tin (Sn)	2020/11/21	<1.0		mg/kg
			Iron (Fe)	2020/11/21	<10		mg/kg
			Manganese (Mn)	2020/11/21	<2.0		mg/kg
			Molybdenum (Mo)	2020/11/21	<0.50		mg/kg
			Nickel (Ni)	2020/11/21	<0.50		mg/kg
			Mercury (Hg)	2020/11/21	<0.010		mg/kg
			Lead (Pb)	2020/11/21	<1.0		mg/kg
			Selenium (Se)	2020/11/21	<0.50		mg/kg
			2145413	BPH	LEACH. BLANK	Uranium (U)	2020/11/21
Zinc (Zn)	2020/11/21	<5.0					mg/kg
Nitrites (N-NO2-)	2020/11/18	<0.20					mg/L
Nitrates (N-NO3-)	2020/11/18	<0.20					mg/L
2145413	BPH	Spiked Blank	Nitrate (N) and Nitrite(N)	2020/11/18	<0.20		mg/L
			Nitrites (N-NO2-)	2020/11/18		100	%
			Nitrates (N-NO3-)	2020/11/18		104	%
			Nitrate (N) and Nitrite(N)	2020/11/18		102	%
2145414	MPO	LEACH. BLANK	Fluoride (F)	2020/11/18	<1.0		mg/L
			Fluoride (F)	2020/11/18		105	%
2145466	MPO	Spiked Blank	Fluoride (F)	2020/11/18		102	%
2145466	MPO	Method Blank	Fluoride (F)	2020/11/18	<1.0		mg/kg
2145480	VPA	Spiked Blank	Nitrates (N-NO3-)	2020/11/19		105	%
			Nitrites (N-NO2-)	2020/11/19		103	%
			Nitrate (N) and Nitrite(N)	2020/11/19		104	%
			Nitrates (N-NO3-)	2020/11/19	<1.0		mg/kg
2145480	VPA	Method Blank	Nitrites (N-NO2-)	2020/11/19	<0.20		mg/kg
			Nitrate (N) and Nitrite(N)	2020/11/19	<1.0		mg/kg
			Nitrates (N-NO3-)	2020/11/19	<1.0		mg/kg
			Nitrites (N-NO2-)	2020/11/19	<1.0		mg/kg
2147091	DZE	LEACH. BLANK	Silver (Ag)	2020/11/25	<0.30		ug/L
			Arsenic (As)	2020/11/25	<2.0		ug/L
			Barium (Ba)	2020/11/25	<5.0		ug/L
			Boron (B)	2020/11/25	<50		ug/L
			Cadmium (Cd)	2020/11/25	<1.0		ug/L
			Chromium (Cr)	2020/11/25	<7.0		ug/L
			Cobalt (Co)	2020/11/25	<10		ug/L
			Copper (Cu)	2020/11/25	<3.0		ug/L
			Tin (Sn)	2020/11/25	<50		ug/L
			Iron (Fe)	2020/11/25	<100		ug/L
			Manganese (Mn)	2020/11/25	<3.0		ug/L
			Mercury (Hg)	2020/11/25	<0.50		ug/L
			Molybdenum (Mo)	2020/11/25	<10		ug/L
			Nickel (Ni)	2020/11/25	<6.0		ug/L
			Lead (Pb)	2020/11/25	<1.0		ug/L





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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2147091	DZE	Spiked Blank	Selenium (Se)	2020/11/25	<1.0		ug/L
			Uranium (U)	2020/11/25	<0.60		ug/L
			Zinc (Zn)	2020/11/25	<5.0		ug/L
			Silver (Ag)	2020/11/25		103	%
			Arsenic (As)	2020/11/25		105	%
			Barium (Ba)	2020/11/25		104	%
			Boron (B)	2020/11/25		107	%
			Cadmium (Cd)	2020/11/25		103	%
			Chromium (Cr)	2020/11/25		97	%
			Cobalt (Co)	2020/11/25		96	%
			Copper (Cu)	2020/11/25		93	%
			Tin (Sn)	2020/11/25		110	%
			Iron (Fe)	2020/11/25		95	%
			Manganese (Mn)	2020/11/25		102	%
			Mercury (Hg)	2020/11/25		104	%
			Molybdenum (Mo)	2020/11/25		103	%
			Nickel (Ni)	2020/11/25		94	%
			Lead (Pb)	2020/11/25		104	%
			Selenium (Se)	2020/11/25		100	%
Uranium (U)	2020/11/25		104	%			
Zinc (Zn)	2020/11/25		97	%			
2147093	BPH	LEACH. BLANK	Nitrites (N-NO2-)	2020/11/23	<0.20		mg/L
			Nitrates (N-NO3-)	2020/11/23	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/11/23	<0.20		mg/L
2147093	BPH	Spiked Blank	Nitrites (N-NO2-)	2020/11/23		102	%
			Nitrates (N-NO3-)	2020/11/23		105	%
			Nitrate (N) and Nitrite(N)	2020/11/23		103	%
2147103	MPO	LEACH. BLANK	Fluoride (F)	2020/11/24	<1.0		mg/L
2147103	MPO	Spiked Blank	Fluoride (F)	2020/11/24		107	%

RDL = Reportable Detection Limit

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.





Lab BV Job #: C055603
Report Date: 2020/12/15

TATA STEEL MINERALS CANADA
Client Project #: GOODWOOD ARD
Site Location: GOODWOOD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Frederic Arnau, B.Sc., Chemist, Montreal, Scientific Service Specialist

Faouzi Sarsi, B.Sc. Chemist, SR Analyst

Michelina Cinquino, Analyst II

Shu Yang, B.Sc. Chemist, Montreal, Analyst II

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Your P.O. #: 3000000730
 Your Project #: ARD-GOODWOOD
 Your C.O.C. #: 789969-01-01

Attention: Mariana Trindade

TATA STEEL MINERALS CANADA
 1000, RUE SHERBROOKE OUEST
 BUREAU 1120
 MONTRÉAL, QC
 CANADA H3A 3G4

Report Date: 2020/12/07
 Report #: R2625101
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C048500

Received: 2020/10/08, 10:15

Sample Matrix: Rock
 # Samples Received: 8

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Grinding	4	N/A	2020/10/15	STL SOP-00019	N/A
Fluoride- Leached	4	N/A	2020/10/19	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	1	N/A	2020/10/23	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	3	N/A	2020/10/24	STL SOP-00038	SM 23 4500-F m
Water Leachate (CTEU - 9)	4	2020/10/15	2020/10/22	STL SOP-00024	MA100-Lixcom1.1 R1 m
Acid rain simulation leachate (EPA 1312)	4	2020/10/15	2020/10/16	STL SOP-00024	MA100-Lixcom1.1 R1 m
Metals - Leached	4	2020/10/17	2020/10/18	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Metals - Leached	4	2020/10/23	2020/10/28	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/17	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/24	STL SOP-00014	MA.300-Ions 1.3 R3 m

Sample Matrix: Soil
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acid Base Accounting (Sobek modified) (1)	4	N/A	N/A		
Fluoride (free)	4	2020/11/04	2020/11/04	STL SOP-00038	SM 23 4500-F m
Fluoride- Leached	4	N/A	2020/10/19	STL SOP-00038	SM 23 4500-F m
Total Extractable Metals (low level)	4	2020/11/04	2020/11/04	STL SOP-00069	MA.200-Mét. 1.2 R5 m
Metals - Leached	4	2020/10/16	2020/10/17	STL SOP-00062	MA.200-Mét. 1.2 R5 m
Nitrate and/or Nitrite- Leached	4	N/A	2020/10/16	STL SOP-00014	MA.300-Ions 1.3 R3 m
Nitrate and/or Nitrite	4	2020/11/04	2020/11/04	STL SOP-00014	MA.300-Ions 1.3 R3 m
Toxicity Charact. Leach. Proc.(EPA 1311)	4	2020/10/15	2020/10/16	STL SOP-00024	MA100-Lixcom1.1 R1 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been



Your P.O. #: 3000000730
Your Project #: ARD-GOODWOOD
Your C.O.C. #: 789969-01-01

Attention: Mariana Trindade

TATA STEEL MINERALS CANADA
1000, RUE SHERBROOKE OUEST
BUREAU 1120
MONTRÉAL, QC
CANADA H3A 3G4

Report Date: 2020/12/07
Report #: R2625101
Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: C048500

Received: 2020/10/08, 10:15

accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Laboratoires Bureau Veritas - Burnaby

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Martine Lepage, Project Manager and Account Manager

Email: Martine.LEPAGE@bvlab.com

Phone# (418)543-3788 Ext:7066201

=====

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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2137080
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2137080
Barium (Ba)	ug/L	<5.0	<5.0	10	<5.0	5.0	2137080
Boron (B)	ug/L	<50	<50	<50	<50	50	2137080
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2137080
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2137080
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2137080
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2137080
Iron (Fe)	ug/L	<100	<100	1500	<100	100	2137080
Manganese (Mn)	ug/L	66	110	270	180	3.0	2137080
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2137080
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2137080
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2137080
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2137080
Zinc (Zn)	ug/L	<5.0	<5.0	6.3	<5.0	5.0	2137080

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

† Parameter is not accreditable



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (ROCK)

Lab BV ID		IK2627	IK2642	IK2643	IK2644		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	RDL	QC Batch
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2134992
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2134992
Barium (Ba)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134992
Boron (B)	ug/L	<50	<50	<50	<50	50	2134992
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2134992
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2134992
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2134992
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2134992
Iron (Fe)	ug/L	<100	<100	<100	<100	100	2134992
Manganese (Mn)	ug/L	34	47	15	45	3.0	2134992
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2134992
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2134992
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	6.0	2134992
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134992
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2134992
Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134992
RDL = Reportable Detection Limit QC Batch = Quality Control Batch † Parameter is not accreditable							



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	RDL	QC Batch

CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2137179
Nitrites (N-NO2-)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178
Nitrates (N-NO3-)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2137178

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Lab BV ID		IK2627	IK2642	IK2643	IK2644		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	RDL	QC Batch

CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2134847
Nitrites (N-NO2-)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134845
Nitrates (N-NO3-)	mg/L	0.21	<0.20	<0.20	0.21	0.20	2134845
Nitrate (N) and Nitrite(N)	mg/L	0.21	<0.20	<0.20	0.21	0.20	2134845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

SPLP-EPA 1312 (ROCK)

Lab BV ID		IK2627	IK2642	IK2643	IK2644	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965- (SPLP)	TSMC-71966- (SPLP)	TSMC-71967- (SPLP)	TSMC-71968- (SPLP)	QC Batch
Leachates						
Weight of sample (g)	n/a	25.0	25.1	25.0	25.0	2134388
Volume of extracting fluid (mL)	n/a	500	500	500	500	2134388
pH after 18 hours leaching	n/a	5.25	5.39	5.50	5.42	2134388
QC Batch = Quality Control Batch						



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

WATER LEACHATE-CTEU-9 (ROCK)

Lab BV ID		IK2561	IK2621	IK2622	IK2623	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965- (CTEU-9)	TSMC-71966- (CTEU-9)	TSMC-71967- (CTEU-9)	TSMC-71968- (CTEU-9)	QC Batch

Leachates						
Weight of sample (g)	n/a	40.1	40.0	40.1	40.0	2134138
Date extraction fluid added	n/a	2020/10/15	2020/10/15	2020/10/15	2020/10/15	2134138
Date leaching terminated	n/a	2020/10/22	2020/10/22	2020/10/22	2020/10/22	2134138
Volume of extracting fluid (mL)	n/a	160	160	160	160	2134138
pH after 7 days of leaching	n/a	6.60	6.59	6.58	6.66	2134138
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

TOTAL EXTRACTABLE METALS (SOIL)

Lab BV ID					IK2498	IK2499	IK2500	IK2501		
Sampling Date					2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number					789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	A	B	C	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	-	-	-	11	13	10	13	N/A	N/A
METALS										
Silver (Ag)	mg/kg	2	20	40	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Arsenic (As)	mg/kg	6	30	50	<2.0	4.6	3.9	4.6	2.0	2141004
Barium (Ba)	mg/kg	340	500	2000	<4.0	<4.0	26	<4.0	4.0	2141004
Boron (B)	mg/kg	-	-	-	2.6	4.5	2.8	<2.0	2.0	2141004
Cadmium (Cd)	mg/kg	1.5	5	20	0.13	<0.10	0.21	<0.10	0.10	2141004
Chromium (Cr)	mg/kg	100	250	800	1.6	2.0	11	1.4	1.0	2141004
Copper (Cu)	mg/kg	50	100	500	1.6	1.6	9.3	<1.0	1.0	2141004
Cobalt (Co)	mg/kg	25	50	300	1.5	1.2	4.8	<1.0	1.0	2141004
Tin (Sn)	mg/kg	5	50	300	<1.0	<1.0	<1.0	<1.0	1.0	2141004
Iron (Fe) †	mg/kg	-	-	-	41000	56000	67000	58000	10	2141004
Manganese (Mn)	mg/kg	1000	1000	2200	320	260	1400	340	2.0	2141004
Molybdenum (Mo)	mg/kg	2	10	40	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Nickel (Ni)	mg/kg	50	100	500	0.76	0.80	8.2	0.70	0.50	2141004
Mercury (Hg)	mg/kg	0.2	2	10	0.057	0.051	0.062	0.040	0.010	2141004
Lead (Pb)	mg/kg	50	500	1000	1.8	2.2	5.0	1.5	1.0	2141004
Selenium (Se)	mg/kg	1	3	10	<0.50	<0.50	<0.50	<0.50	0.50	2141004
Uranium (U) †	mg/kg	-	-	-	<2.0	<2.0	<2.0	<2.0	2.0	2141004
Zinc (Zn)	mg/kg	140	500	1500	<5.0	<5.0	25	<5.0	5.0	2141004
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable										



BUREAU
VERITAS

Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

METALS-LAB LEACHATE (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	11	13	10	13	N/A	N/A
METALS							
Silver (Ag) †	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	2134684
Arsenic (As)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	2134684
Barium (Ba)	ug/L	11	10	83	9.8	5.0	2134684
Boron (B)	ug/L	<50	<50	<50	<50	50	2134684
Cadmium (Cd)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Chromium (Cr)	ug/L	<7.0	<7.0	<7.0	<7.0	7.0	2134684
Cobalt (Co)	ug/L	<10	<10	<10	<10	10	2134684
Copper (Cu)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	2134684
Tin (Sn) †	ug/L	<50	<50	<50	<50	50	2134684
Iron (Fe)	ug/L	220	190	<100	<100	100	2134684
Manganese (Mn)	ug/L	160	190	200	150	3.0	2134684
Mercury (Hg)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	2134684
Molybdenum (Mo)	ug/L	<10	<10	<10	<10	10	2134684
Nickel (Ni)	ug/L	<6.0	<6.0	<6.0	<6.0	6.0	2134684
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Selenium (Se)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	2134684
Uranium (U)	ug/L	<0.60	<0.60	<0.60	<0.60	0.60	2134684
Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	2134684
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable							



BUREAU
VERITAS

Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

CONVENTIONAL PARAMETERS (SOIL)

Lab BV ID					IK2498	IK2499	IK2500	IK2501		
Sampling Date					2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number					789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	A	B	C	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	-	-	-	11	13	10	13	N/A	N/A
CONVENTIONALS										
Fluoride (F)	mg/kg	200	400	2000	<1.0	<1.0	<1.0	<1.0	1.0	2141036
Nitrates (N-NO3-) †	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	2141035
Nitrites (N-NO2-) †	mg/kg	-	-	-	<0.20	<0.20	<0.20	<0.20	0.20	2141035
Nitrate (N) and Nitrite(N)	mg/kg	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	2141035
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable † Parameter is not accreditable										



BUREAU
VERITAS

Lab BV Job #: C048500

Report Date: 2020/12/07

TATA STEEL MINERALS CANADA

Client Project #: ARD-GOODWOOD

Your P.O. #: 3000000730

Sampler Initials: CS

CONVENTIONAL PARAMETERS-LAB LEACHATE (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501		
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15		
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01		
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	RDL	QC Batch
% MOISTURE	%	11	13	10	13	N/A	N/A
CONVENTIONALS							
Fluoride (F)	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	2134702
Nitrites (N-NO ₂ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
Nitrates (N-NO ₃ -)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
Nitrate (N) and Nitrite(N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	2134690
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

TCLP-EPA 1311 (SOIL)

Lab BV ID		IK2498	IK2499	IK2500	IK2501	
Sampling Date		2020/09/28 14:00	2020/09/28 14:05	2020/09/28 14:10	2020/09/28 14:15	
COC Number		789969-01-01	789969-01-01	789969-01-01	789969-01-01	
	Units	TSMC-71965	TSMC-71966	TSMC-71967	TSMC-71968	QC Batch
% MOISTURE	%	11	13	10	13	N/A
Leachates						
Weight of sample (g)	n/a	20.0	20.1	20.0	20.1	2134125
pH of pre-test	n/a	<1.68	<1.68	<1.68	<1.68	2134125
pH end of leaching	n/a	4.96	4.95	4.95	4.95	2134125
Volume extracting fluid 1 (ml)	n/a	400	400	400	400	2134125
QC Batch = Quality Control Batch N/A = Not Applicable						



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TATA STEEL MINERALS CANADA

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GENERAL COMMENTS

A,B,C: Soil Criteria following appendix 2 of the " Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MELCC, 2019." entitled " Grille des critères génériques pour les sols". The soil criteria refer to the St. Lawrence Lowlands Geological Province.

Groundwater criteria A and B follow the appendix 7 entitled "Grille des critères de qualité des eaux souterraines" of the document mentioned above. The criterion A refers to " Drinking Water " and the criterion B refers to "Seepage into Surface Water".

These criteria references are shown for visual aid only, and should not be interpreted otherwise.

- = This parameter is not part of the regulation.

CONVENTIONAL PARAMETERS-LAB LEACHATE (ROCK)

pH of pre-test: Please note that result for samples IK2498, IK2499, IK2500 and IK2501 is outside our calibration range, and outside the limit of linearity.

Reported detection limits are multiplied by dilution factors used for sample analysis.

Fluoride: Due to the sample matrix, a better detection limit cannot be reported.

Nitrite and Nitrate: Due to the sample matrix, a better detection limit cannot be reported.

TOTAL EXTRACTABLE METALS (SOIL)

The extraction was performed passed holding time for samples IK2498, IK2499, IK2500 and IK2501.

Results relate only to the items tested.



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Lab BV Job #: C048500
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TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
	2134125	ABJ	Method Blank	pH end of leaching	2020/10/16	4.95/2.88		n/a
				Volume extracting fluid 1 (ml)	2020/10/16	400		n/a
	2134138	ABJ	Method Blank	Date extraction fluid added	2020/10/22	2020/10/15		n/a
				Date leaching terminated	2020/10/22	2020/10/22		n/a
				Volume of extracting fluid (mL)	2020/10/22	160		n/a
				pH after 7 days of leaching	2020/10/22	7.41		n/a
	2134388	ABJ	Method Blank	Volume of extracting fluid (mL)	2020/10/16	500		n/a
				pH after 18 hours leaching	2020/10/16	4.24		n/a
	2134684	DZE	LEACH. BLANK	Silver (Ag)	2020/10/17	<0.30		ug/L
				Arsenic (As)	2020/10/17	<2.0		ug/L
				Barium (Ba)	2020/10/17	<5.0		ug/L
				Boron (B)	2020/10/17	<50		ug/L
				Cadmium (Cd)	2020/10/17	<1.0		ug/L
				Chromium (Cr)	2020/10/17	<7.0		ug/L
				Cobalt (Co)	2020/10/17	<10		ug/L
				Copper (Cu)	2020/10/17	9.4,		ug/L
						RDL=3.0		
				Tin (Sn)	2020/10/17	<50		ug/L
				Iron (Fe)	2020/10/17	<100		ug/L
				Manganese (Mn)	2020/10/17	<3.0		ug/L
				Mercury (Hg)	2020/10/17	<0.50		ug/L
				Molybdenum (Mo)	2020/10/17	<10		ug/L
				Nickel (Ni)	2020/10/17	<6.0		ug/L
				Lead (Pb)	2020/10/17	<1.0		ug/L
				Selenium (Se)	2020/10/17	<1.0		ug/L
				Uranium (U)	2020/10/17	<0.60		ug/L
				Zinc (Zn)	2020/10/17	<5.0		ug/L
	2134684	DZE	Spiked Blank	Silver (Ag)	2020/10/17		94	%
				Arsenic (As)	2020/10/17		97	%
				Barium (Ba)	2020/10/17		97	%
				Boron (B)	2020/10/17		91	%
				Cadmium (Cd)	2020/10/17		92	%
				Chromium (Cr)	2020/10/17		95	%
				Cobalt (Co)	2020/10/17		94	%
				Copper (Cu)	2020/10/17		91	%
				Tin (Sn)	2020/10/17		100	%
				Iron (Fe)	2020/10/17		96	%
				Manganese (Mn)	2020/10/17		101	%
				Mercury (Hg)	2020/10/17		81	%
				Molybdenum (Mo)	2020/10/17		95	%
				Nickel (Ni)	2020/10/17		93	%
				Lead (Pb)	2020/10/17		93	%
				Selenium (Se)	2020/10/17		94	%
				Uranium (U)	2020/10/17		94	%
				Zinc (Zn)	2020/10/17		92	%
	2134690	MSU	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/16	<0.20		mg/L
				Nitrates (N-NO3-)	2020/10/16	<0.20		mg/L
				Nitrate (N) and Nitrite(N)	2020/10/16	<0.20		mg/L
	2134690	MSU	Spiked Blank	Nitrites (N-NO2-)	2020/10/16		103	%
				Nitrates (N-NO3-)	2020/10/16		104	%
				Nitrate (N) and Nitrite(N)	2020/10/16		103	%



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Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
	2134702	SBD	LEACH. BLANK	Fluoride (F)	2020/10/19	<1.0		mg/L
	2134702	SBD	Spiked Blank	Fluoride (F)	2020/10/19		100	%
	2134845	FS	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/17	<0.20		mg/L
				Nitrates (N-NO3-)	2020/10/17	<0.20		mg/L
				Nitrate (N) and Nitrite(N)	2020/10/17	<0.20		mg/L
	2134845	FS	Spiked Blank	Nitrites (N-NO2-)	2020/10/17		101	%
				Nitrates (N-NO3-)	2020/10/17		101	%
				Nitrate (N) and Nitrite(N)	2020/10/17		101	%
	2134847	SBD	LEACH. BLANK	Fluoride (F)	2020/10/19	<1.0		mg/L
	2134847	SBD	Spiked Blank	Fluoride (F)	2020/10/19		100	%
	2134992	JGZ	LEACH. BLANK	Silver (Ag)	2020/10/18	<0.30		ug/L
				Arsenic (As)	2020/10/18	<2.0		ug/L
				Barium (Ba)	2020/10/18	<5.0		ug/L
				Boron (B)	2020/10/18	<50		ug/L
				Cadmium (Cd)	2020/10/18	<1.0		ug/L
				Chromium (Cr)	2020/10/18	<7.0		ug/L
				Cobalt (Co)	2020/10/18	<10		ug/L
				Copper (Cu)	2020/10/18	13,		ug/L
						RDL=3.0		
				Tin (Sn)	2020/10/18	<50		ug/L
				Iron (Fe)	2020/10/18	<100		ug/L
				Manganese (Mn)	2020/10/18	<3.0		ug/L
				Mercury (Hg)	2020/10/18	<0.50		ug/L
				Molybdenum (Mo)	2020/10/18	<10		ug/L
				Nickel (Ni)	2020/10/18	<6.0		ug/L
				Lead (Pb)	2020/10/18	<1.0		ug/L
				Selenium (Se)	2020/10/18	<1.0		ug/L
				Uranium (U)	2020/10/18	<0.60		ug/L
				Zinc (Zn)	2020/10/18	<5.0		ug/L
	2134992	JGZ	Spiked Blank	Silver (Ag)	2020/10/18		94	%
				Arsenic (As)	2020/10/18		100	%
				Barium (Ba)	2020/10/18		103	%
				Boron (B)	2020/10/18		91	%
				Cadmium (Cd)	2020/10/18		96	%
				Chromium (Cr)	2020/10/18		93	%
				Cobalt (Co)	2020/10/18		91	%
				Copper (Cu)	2020/10/18		84	%
				Tin (Sn)	2020/10/18		101	%
				Iron (Fe)	2020/10/18		96	%
				Manganese (Mn)	2020/10/18		97	%
				Mercury (Hg)	2020/10/18		81	%
				Molybdenum (Mo)	2020/10/18		99	%
				Nickel (Ni)	2020/10/18		89	%
				Lead (Pb)	2020/10/18		91	%
				Selenium (Se)	2020/10/18		98	%
				Uranium (U)	2020/10/18		92	%
				Zinc (Zn)	2020/10/18		88	%
	2137080	DZE	LEACH. BLANK	Silver (Ag)	2020/10/24	<0.30		ug/L
				Arsenic (As)	2020/10/24	<2.0		ug/L
				Barium (Ba)	2020/10/24	<5.0		ug/L
				Boron (B)	2020/10/24	<50		ug/L



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VERITAS

Lab BV Job #: C048500
Report Date: 2020/12/07

TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
			Cadmium (Cd)	2020/10/24	<1.0		ug/L
			Chromium (Cr)	2020/10/24	<7.0		ug/L
			Cobalt (Co)	2020/10/24	<1.0		ug/L
			Copper (Cu)	2020/10/24	<3.0		ug/L
			Tin (Sn)	2020/10/24	<50		ug/L
			Iron (Fe)	2020/10/24	<100		ug/L
			Manganese (Mn)	2020/10/24	<3.0		ug/L
			Mercury (Hg)	2020/10/24	<0.50		ug/L
			Molybdenum (Mo)	2020/10/24	<10		ug/L
			Lead (Pb)	2020/10/24	<1.0		ug/L
			Selenium (Se)	2020/10/24	<1.0		ug/L
			Uranium (U)	2020/10/24	<0.60		ug/L
			Zinc (Zn)	2020/10/24	<5.0		ug/L
2137080	DZE	Spiked Blank	Silver (Ag)	2020/10/27		99	%
			Arsenic (As)	2020/10/27		103	%
			Barium (Ba)	2020/10/27		103	%
			Boron (B)	2020/10/27		104	%
			Cadmium (Cd)	2020/10/27		107	%
			Chromium (Cr)	2020/10/27		100	%
			Cobalt (Co)	2020/10/27		100	%
			Copper (Cu)	2020/10/27		99	%
			Tin (Sn)	2020/10/27		105	%
			Iron (Fe)	2020/10/27		103	%
			Manganese (Mn)	2020/10/27		103	%
			Mercury (Hg)	2020/10/27		99	%
			Molybdenum (Mo)	2020/10/27		105	%
			Lead (Pb)	2020/10/27		96	%
			Selenium (Se)	2020/10/27		87	%
			Uranium (U)	2020/10/27		97	%
			Zinc (Zn)	2020/10/27		97	%
2137178	MSU	LEACH. BLANK	Nitrites (N-NO2-)	2020/10/23	<0.20		mg/L
			Nitrates (N-NO3-)	2020/10/23	<0.20		mg/L
			Nitrate (N) and Nitrite(N)	2020/10/23	<0.20		mg/L
2137178	MSU	Spiked Blank	Nitrites (N-NO2-)	2020/10/23		102	%
			Nitrates (N-NO3-)	2020/10/23		101	%
			Nitrate (N) and Nitrite(N)	2020/10/23		101	%
2137179	MPO	LEACH. BLANK	Fluoride (F)	2020/10/23	<1.0		mg/L
2137179	MPO	Spiked Blank	Fluoride (F)	2020/10/23		97	%
2141004	KK	Spiked Blank	Silver (Ag)	2020/11/04		93	%
			Arsenic (As)	2020/11/04		96	%
			Barium (Ba)	2020/11/04		94	%
			Boron (B)	2020/11/04		112	%
			Cadmium (Cd)	2020/11/04		93	%
			Chromium (Cr)	2020/11/04		94	%
			Copper (Cu)	2020/11/04		95	%
			Cobalt (Co)	2020/11/04		94	%
			Tin (Sn)	2020/11/04		96	%
			Iron (Fe)	2020/11/04		94	%
			Manganese (Mn)	2020/11/04		96	%
			Molybdenum (Mo)	2020/11/04		94	%
			Nickel (Ni)	2020/11/04		96	%



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TATA STEEL MINERALS CANADA
Client Project #: ARD-GOODWOOD
Your P.O. #: 3000000730
Sampler Initials: CS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units
2141004	KK	Method Blank	Mercury (Hg)	2020/11/04		90	%
			Lead (Pb)	2020/11/04		93	%
			Selenium (Se)	2020/11/04		91	%
			Uranium (U)	2020/11/04		93	%
			Zinc (Zn)	2020/11/04		93	%
			Silver (Ag)	2020/11/04	<0.50		mg/kg
			Arsenic (As)	2020/11/04	<2.0		mg/kg
			Barium (Ba)	2020/11/04	<4.0		mg/kg
			Boron (B)	2020/11/04	<2.0		mg/kg
			Cadmium (Cd)	2020/11/04	<0.10		mg/kg
			Chromium (Cr)	2020/11/04	<1.0		mg/kg
			Copper (Cu)	2020/11/04	<1.0		mg/kg
			Cobalt (Co)	2020/11/04	<1.0		mg/kg
			Tin (Sn)	2020/11/04	<1.0		mg/kg
			Iron (Fe)	2020/11/04	<10		mg/kg
			Manganese (Mn)	2020/11/04	<2.0		mg/kg
			Molybdenum (Mo)	2020/11/04	<0.50		mg/kg
			Nickel (Ni)	2020/11/04	<0.50		mg/kg
			Mercury (Hg)	2020/11/04	<0.010		mg/kg
			2141035	BPH	Spiked Blank	Lead (Pb)	2020/11/04
Selenium (Se)	2020/11/04	<0.50					mg/kg
Uranium (U)	2020/11/04	<2.0					mg/kg
Zinc (Zn)	2020/11/04	<5.0					mg/kg
Nitrates (N-NO3-)	2020/11/04					106	%
Nitrites (N-NO2-)	2020/11/04					104	%
Nitrate (N) and Nitrite(N)	2020/11/04					105	%
2141035	BPH	Method Blank	Nitrates (N-NO3-)	2020/11/04	<1.0		mg/kg
			Nitrites (N-NO2-)	2020/11/04	<0.20		mg/kg
			Nitrate (N) and Nitrite(N)	2020/11/04	<1.0		mg/kg
2141036	MPO	Spiked Blank	Fluoride (F)	2020/11/04		101	%
2141036	MPO	Method Blank	Fluoride (F)	2020/11/04	<1.0		mg/kg

RDL = Reportable Detection Limit

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



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Lab BV Job #: C048500

Report Date: 2020/12/07

TATA STEEL MINERALS CANADA

Client Project #: ARD-GOODWOOD

Your P.O. #: 3000000730

Sampler Initials: CS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alex Thibert

Membre OCQ #2020-05

Alex Thibert, B.Sc., Chemist, Analyst II, Chemist in Training



Caroline Bougie, B.Sc. Chemist, Montreal, Laboratory Coordinator



Fotini Myconiatis, B.Sc., Chemist, Montreal, Senior Manager



Faouzi Sarsi, B.Sc. Chemist, SR Analyst



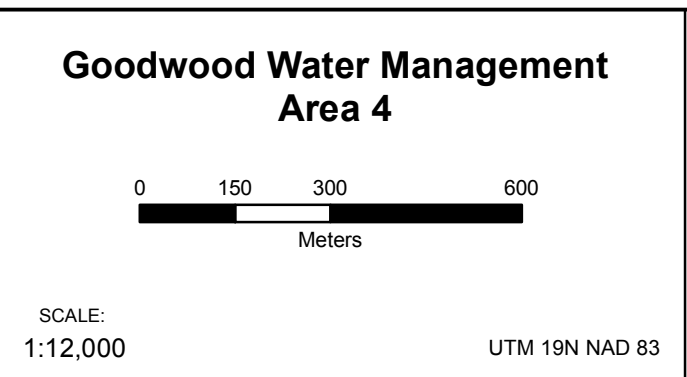
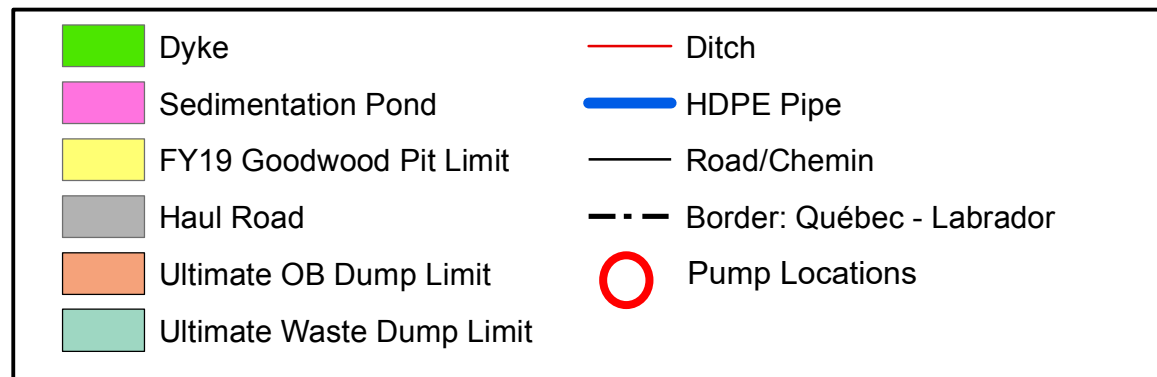
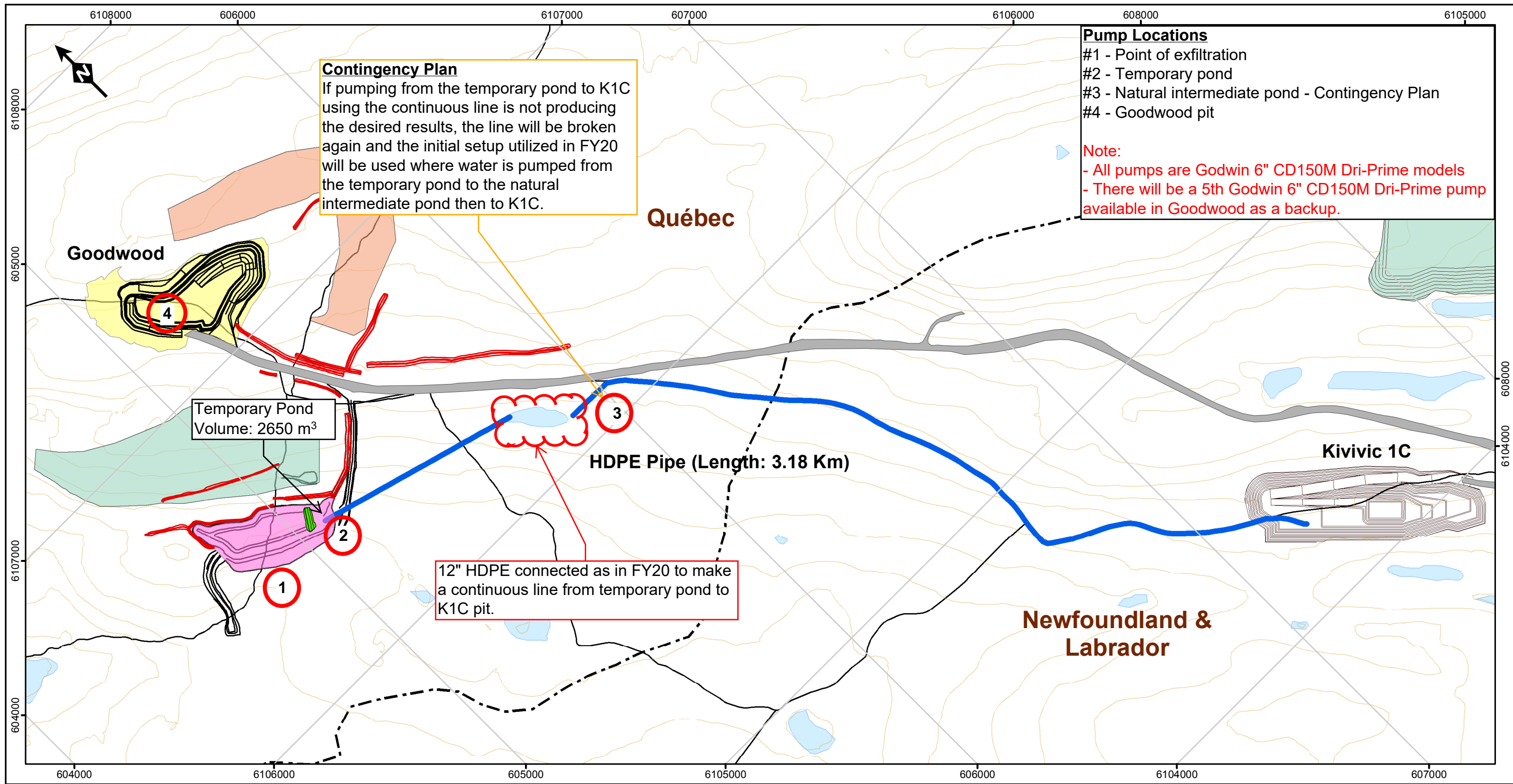
Michelina Cinquino, Analyst II



Shu Yang, B.Sc. Chemist, Montreal, Analyst II

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.


Appendix V: 2019 Spring Plan



FILE, VERSION, DATE, AUTHOR/
 FICHER, VERSION, DATE, AUTEUR:

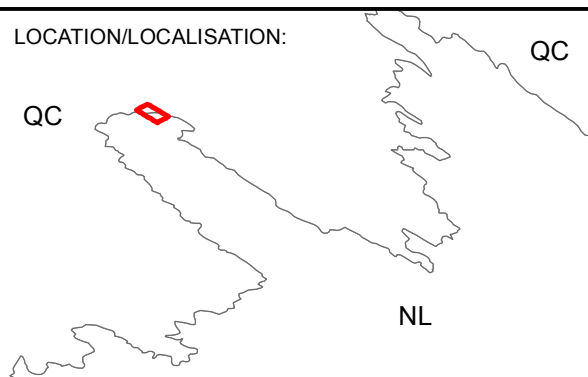
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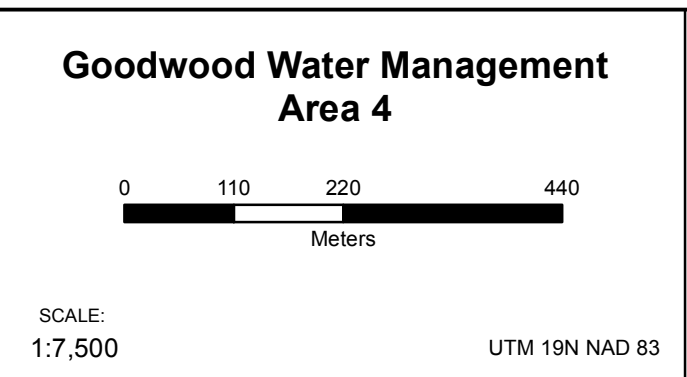
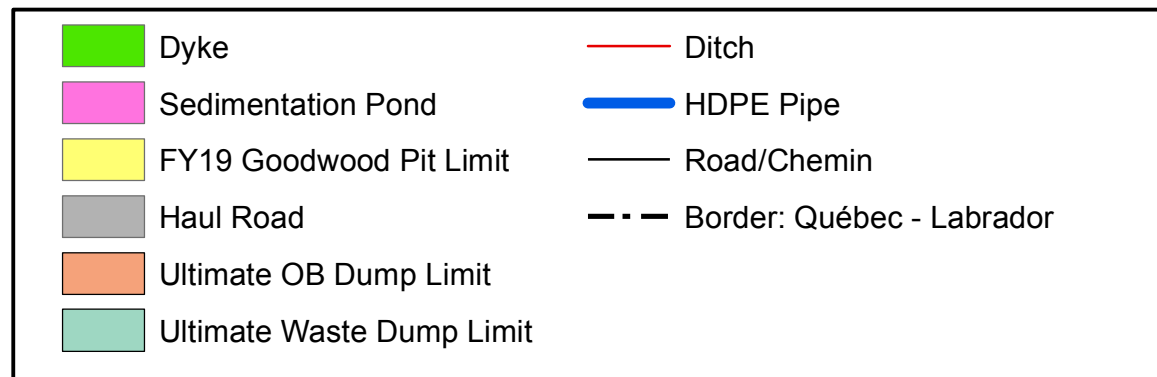
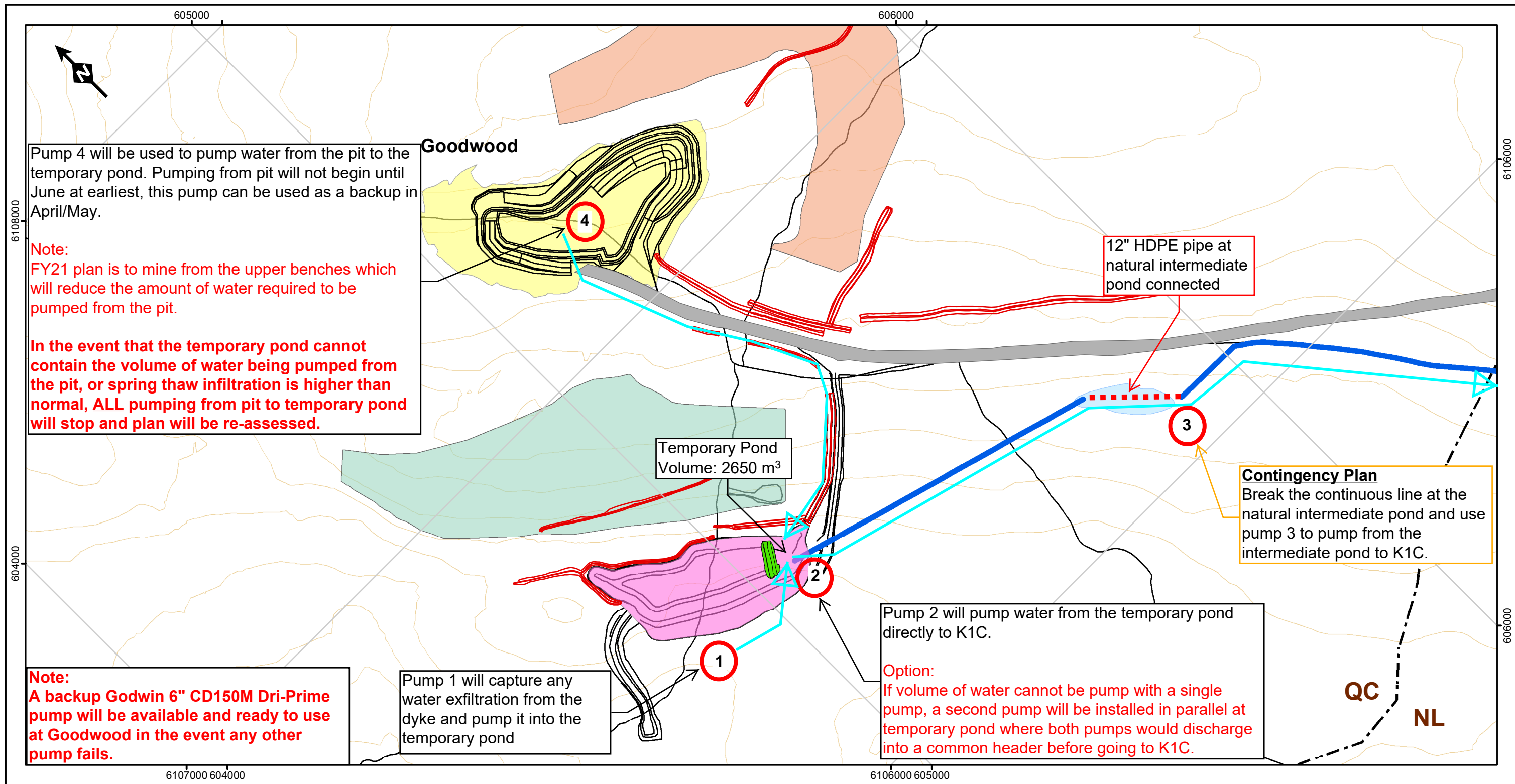
SOURCES:



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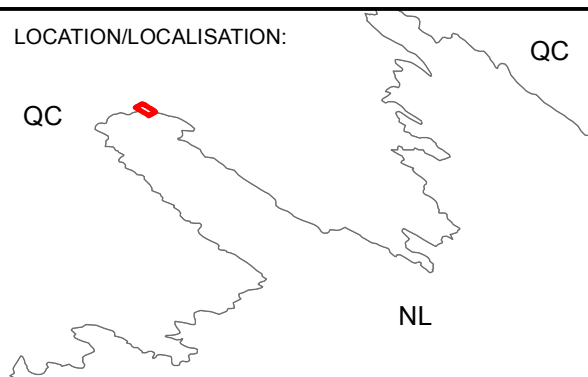
FILE, VERSION, DATE, AUTHOR/
FICHER, VERSION, DATE, AUTEUR:

GIS-DEV-83-01 , 2019-03-18, E.F.

SOURCES:

TATA STEEL MINERALS CANADA

CONFIDENTIAL & COMMERCIALY PROTECTED
CONFIDENTIEL & PROTÉGÉ COMMERCIALEMENT



Appendix VI: Benthic Community Report

Montréal, le 19 mars 2021

Mariana Trindade
Corporate Environmental Manager
Environment Department
TATA Steel Minerals Canada Limited
1000 rue Sherbrooke Ouest, Suite 1120
Montréal (Québec) H3A 3G4

Objet : Identification des invertébrés benthiques — projet Goodwood — 2020

Madame Trindade,

Nous avons le plaisir de vous transmettre le rapport relatif aux analyses menées par notre firme pour le projet mentionné en rubrique.

1 Introduction

Le programme de suivi des sédiments prévoit également un échantillonnage annuel pour effectuer un suivi des communautés d'invertébrés benthiques (CIB). Les sites d'échantillonnages se trouvent en cours d'eau permanents, le plus près des sites d'échantillonnage des sédiments. L'échantillonnage est effectué au mois d'août. Les descripteurs analysés sont :

- Densité totale des invertébrés
- Richesse
- Équitabilité de Simpson
- Dissimilarité de Bray-Curtis
- Diversité de Simpson
- Densité de chaque taxon
- Densité relative des taxons
- Absence/présence de taxons

TATA Steel Minerals Canada (TSMC) a rencontré des difficultés lors du développement du programme d'échantillonnage des organismes benthiques au site du projet Goodwood. Ceci est dû au fait qu'il n'y a pas de cours d'eau permanent dans les environs. L'exutoire du lac Fra est un cours d'eau intermittent sur la majeure partie de son tracé. Il se jette dans un autre cours d'eau, qui coule par la suite dans un milieu humide. Le suivi des communautés benthiques aurait donc lieu en aval du point de jonction, ce qui pourrait être peu représentatif des conditions dans le cours d'eau du lac Fra.

2 Méthodologie

2.1 Échantillonnage de la communauté benthique

L'échantillonnage a été réalisé par les techniciens en environnement de TSMC.

L'échantillonnage des CIB a eu lieu dans trois **aires d'études** présentées à la Figure 1. La section permanente de la décharge du lac Fra est considérée comme aire exposée (BEE), bien qu'elle soit située à 1,2 km en aval du lac Fra. Une aire de référence située à la décharge du lac Migration (BER2) a aussi été faite et a servi de comparaison au site exposé. L'aire de référence BER1, situé dans un cours d'eau parallèle et adjacent à la décharge du lac Fra, a été échantillonnée en 2019. Toutefois, l'aire était à sec lors de l'échantillonnage de 2020 il n'a donc pas pu être échantillonné.

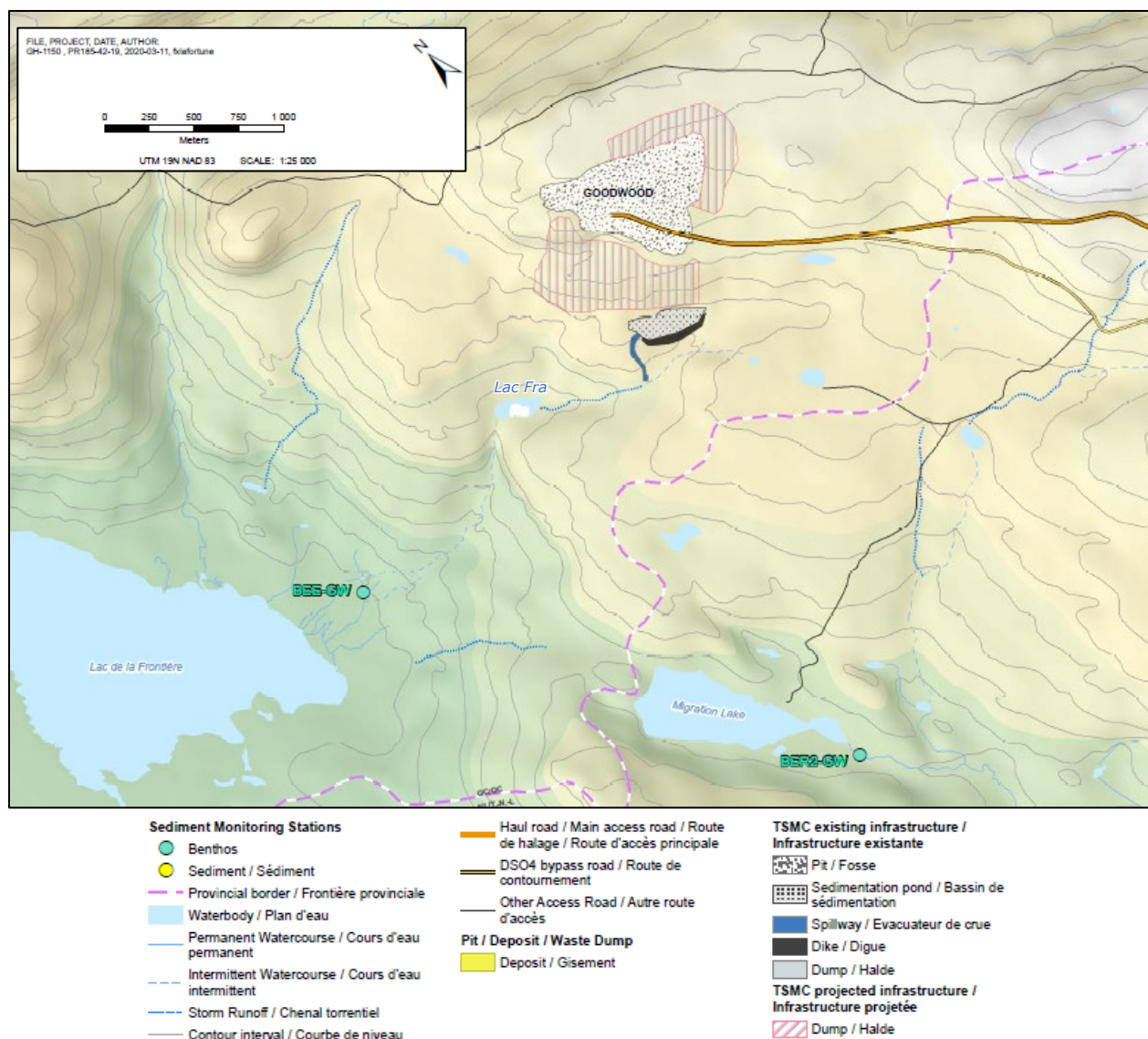


Figure 1. Aires d'étude

À chaque aire, trois sites ont été échantillonnés. Pour chacun, cinq sous-échantillons ont été prélevés à l'aide d'un échantillonneur Hess de 0,086 m² possédant un maillage de 500 µm. La méthode consiste à nettoyer tout le substrat à l'intérieur de l'échantillonneur pendant 1 minute avec une brosse douce ou à la main pour permettre au matériau de s'écouler en aval dans le filet de l'échantillonneur. Les sous-

échantillons sont ensuite combinés. L'échantillon composite est ensuite transféré dans un pot en plastique hermétique et conservé avec une solution d'alcool à 70 % pour une identification ultérieure.

2.2 Identification des invertébrés benthiques en laboratoire

L'identification des invertébrés est réalisée par un biologiste de Groupe Hémisphères avec plus de cinq ans d'expérience dans le domaine. Elle est réalisée à l'aide des clés d'identification détaillées dans Merritt et coll. (2008) et s'arrête à la famille pour les insectes (Hexapoda), à l'ordre pour les crustacés (Crustacea), à la sous-classe pour les oligochètes, sangsues (Clitellata) et acariens (Arachnida), et au phylum pour les nématodes (Nematoda).

2.3 Analyses statistiques

Afin de respecter le critère de normalité des données nécessaire aux analyses statistiques, les densités ont été transformées à l'aide de la logarithmique naturelle (Legendre et Gallagher, 2001).

Trois indices ont été utilisés pour analyser les CIB : la densité totale, l'équitabilité de Simpson et la richesse du genre. Pour chaque paramètre, la moyenne, la médiane, l'écart-type, l'erreur type, le minimum et le maximum ont été calculés pour chaque aire.

L'ANOVA est l'analyse utilisée dans le cadre de cette étude. Le seuil (α) établi pour déterminer si une différence est significative (p) est établi à 0,05. Pour déterminer si un résultat significatif est biologiquement important, la taille d'effet critique, ou « *critical effect size* » (CES) est utilisé. Un minimum de deux fois l'écart-type du site de référence est requis pour que l'effet soit considéré d'importance (Environnement Canada, 2012). Finalement, pour déterminer si un résultat non significatif est dû à un trop petit échantillonnage, une analyse de la puissance à l'aide de la taille d'effet de Cohen (d) tel que présenté à l'Équation 1 où μ est la moyenne et σ est l'écart-type (Cohen, 1988).

Équation 1

$$d = \frac{|\mu_{BEE} - \mu_{BER2}|}{\sigma_{BER2}}$$

2.3.1 Densité et abondance

La densité totale est la somme de tous les macro-invertébrés récoltés au site d'échantillonnage divisée par la surface d'échantillonnage. Puisque tous les échantillons composites couvrent la même superficie, l'abondance totale est utilisée.

2.3.2 Richesse

La richesse est le nombre total de taxons identifiés dans la communauté d'un site.

2.3.3 Équitabilité de Simpson

L'indice d'équitabilité Simpson (E) est le ratio de l'indice de diversité Simpson (D) sur le maximum mathématique D d'un site donnée (D_{max}), comme le montre Équation 1. Pour calculer D , les proportions (p) des espèces (i) dans une communauté de richesse S sont mises au carré, additionnées puis divisées de 1 (Simpson, 1949).

Équation 2

$$E = \frac{D}{D_{max}} = \left(\sum_{i=1}^S p_i^2 \right)^{-1} \times S^{-1}$$

2.3.4 Dissimilarité de Bray-Curtis

L'indice de dissimilarité de Bray-Curtis (*BC*) a également été utilisé pour représenter la différence entre toutes les communautés échantillonnées (Bray et Curtis, 1957). La dissimilarité entre les sites *a* et *b* est calculée à l'aide de l'Équation 2 où y_i est l'abondance des taxons *i* en commun entre les deux sites.

Équation 3

$$BC = \frac{\sum_{i=1}^n |y_{ia} - y_{ib}|}{\sum_{i=1}^n (y_{ia} + y_{ib})}$$

Les ordinations sont des outils utiles pour représenter des données complexes (Legendre et Legendre, 2012). L'analyse des composantes principales convertit la trame de données multidimensionnelle (*p*), dans ce cas la communauté multifamiliale, en une représentation plus simple à *n* dimensions, soit les composantes principales (CP), où $n < p$. Dans ce cas, une approche à deux dimensions ($n = 2$) a été choisie.

2.3.5 Autres indicateurs

2.3.5.1 Diversité de Simpson

L'indice de diversité Simpson (*D*) représente à la fois la proportion d'espèces (*p*) dans une communauté et le nombre d'espèces (*S*) dans celle-ci (Krebs, 1985). Comme pour les autres critères, la moyenne de l'aire, la médiane, l'écart-type, l'erreur type, le minimum et le maximum ont été calculés. *D* est calculé en utilisant l'Équation 3.

Équation 4

$$D = 1 - \sum_{i=1}^S p_i^2$$

2.3.5.2 Présence, densité et proportion des taxons

La présence de taxons peut être utilisée dans plusieurs analyses lorsque le plan d'échantillonnage ne permet pas une approche basée sur la densité. Il peut être utile d'illustrer la richesse et les amalgames d'espèces dans une communauté.

La densité des taxons représente le nombre d'individus de chaque taxon à chaque site par m² et la proportion des taxons est la proportion de chaque taxon dans la communauté.

3 Résultats

Un suivi de la communauté benthique a été effectué en août 2020.

3.1 Densité et abondance

La densité totale des invertébrés est plus élevée dans l'aire d'échantillonnage BER2 avec 464 ± 214 individus comparativement à celui de BEE avec 250 ± 236 individus. La différence n'est toutefois pas significative puisque l'aire BER2 présente des échantillons dont l'abondance est très variable. En effet, un écart-type élevé suggère que le cours d'eau à l'étude ainsi que le cours d'eau de référence possèdent des habitats hétérogènes, avec certaines zones supportant une communauté plus abondante que d'autres (Tableau 1).

Les résultats de l'année dernière allaient dans la même direction (Groupe Hémisphères, 2020), toutefois contrairement aux résultats actuels, l'ANOVA était significative. En 2019, l'aire d'échantillonnage BER1 présentait la densité en invertébrés benthique la plus élevée avec 18 fois plus d'invertébrés observés qu'à l'aire BEE.

Tableau 1. Densité totale des invertébrés benthiques

	Aire	Moyenne	Médiane	Écart-type	Erreur type	Minimum	Maximum
	BEE	250	236	56	32	203	312
	BER2	464	529	214	124	225	639
ANOVA	<i>p</i>	0,17					
	CES	±428					
	Puissance (<i>d</i>)	1,0 (fort)					

Selon le *d* de Cohen, la non-significativité de cette différence ne semble pas être due à un petit nombre d'échantillons.

3.2 Richesse

La richesse est similaire dans les deux aires d'échantillonnages (Tableau 2). Malheureusement, il n'est pas possible de déterminer si ces résultats sont dus à une représentation de la réalité ou au faible nombre d'échantillons.

Tableau 2. Richesse

	Aire	Moyenne	Médiane	Écart-type	Erreur type	Minimum	Maximum
	BEE	11,7	13	2,3	1,3	9	13
	BER2	12,0	12	1,0	0,6	11	13
ANOVA	<i>p</i>	0,83					
	CES	±2,0					
	Puissance (<i>d</i>)	0,3 (faible)					

Selon le *d* de Cohen, la non-significativité de cette différence pourrait être expliquée par un trop faible échantillonnage. En effet, les deux pages de données se superposent considérablement.

3.3 Équitabilité de Simpson

L'équitabilité des communautés benthiques n'est pas égale (Tableau 3). L'aire BEE possède une plus grande équitabilité ($0,26 \pm 0,03$), alors que l'aire de référence BER2 est plus basse ($0,16 \pm 0,03$). Cette différence est significative. Néanmoins, l'équitabilité dans les deux aires demeure très basse : un résultat prévisible et dû à la dominance des chironomidés (Diptera) dans tous les échantillons.

Tableau 3. Équitabilité de Simpson

	Aire	Moyenne	Médiane	Écart-type	Erreur type	Minimum	Maximum
	BEE	0,26	0,26	0,03	0,02	0,23	0,29
	BER2	0,16	0,15	0,03	0,01	0,15	0,19
ANOVA	p	0,01*					
	CES	$\pm 0,06$					
	Puissance (d)	>0,8 (fort)					

* Résultat significatif, $p < 0,05$

La différence significative statistiquement a également une importance biologique élevée selon l'étude du CES. En effet, avec 0,10 unité de plus que BER2, l'équitabilité de BEE est supérieure à l'aire de référence de plus de 0,06 unité.

3.4 Dissimilarité de Bray-Curtis

Les CIB sont légèrement plus homogènes dans l'aire BEE que dans l'aire BER2. Bien que les tests statistiques n'aient pas été réalisés pour ce critère, l'écart-type important de BER2 suggère qu'il n'y aura pas de différence significative (Tableau 4).

En comparant BEE avec une communauté médiane calculée à partir de l'aire de référence BER2, les deux communautés sont particulièrement dissimilaires l'une de l'autre. Ceci est aisément représenté par l'analyse de composantes principales (PCA) (Figure 2).

Tableau 4. Dissimilarité de Bray-Curtis

Aire	Moyenne	Médiane	Écart-type	Erreur type	Minimum	Maximum
BEE	0,12	0,13	0,07	0,04	0,07	0,16
BER2	0,20	0,14	0,27	0,15	0,04	0,41
BEE x BER2	0,59	0,62	0,12	0,07	0,49	0,65

La PCA à deux dimensions explique 83 % de la variance totale. L'axe horizontal, PC1, à lui seul explique 55 % et l'axe vertical, PC2, explique un 28 % additionnel. De manière générale, les échantillons de BEE sont très similaires et ont une CIB marquée par la présence de Tipulidae, Simuliidae, Capnidae, Nemouridae et hydracariens, soit cinq taxons qui ne sont pas présents dans l'aire de référence BER2. L'aire BER2 quant à elle présente une hétérogénéité plus importante. Les échantillons sont marqués par la présence d'Oligochaeta, de Copepoda, de Cladocera, etc.

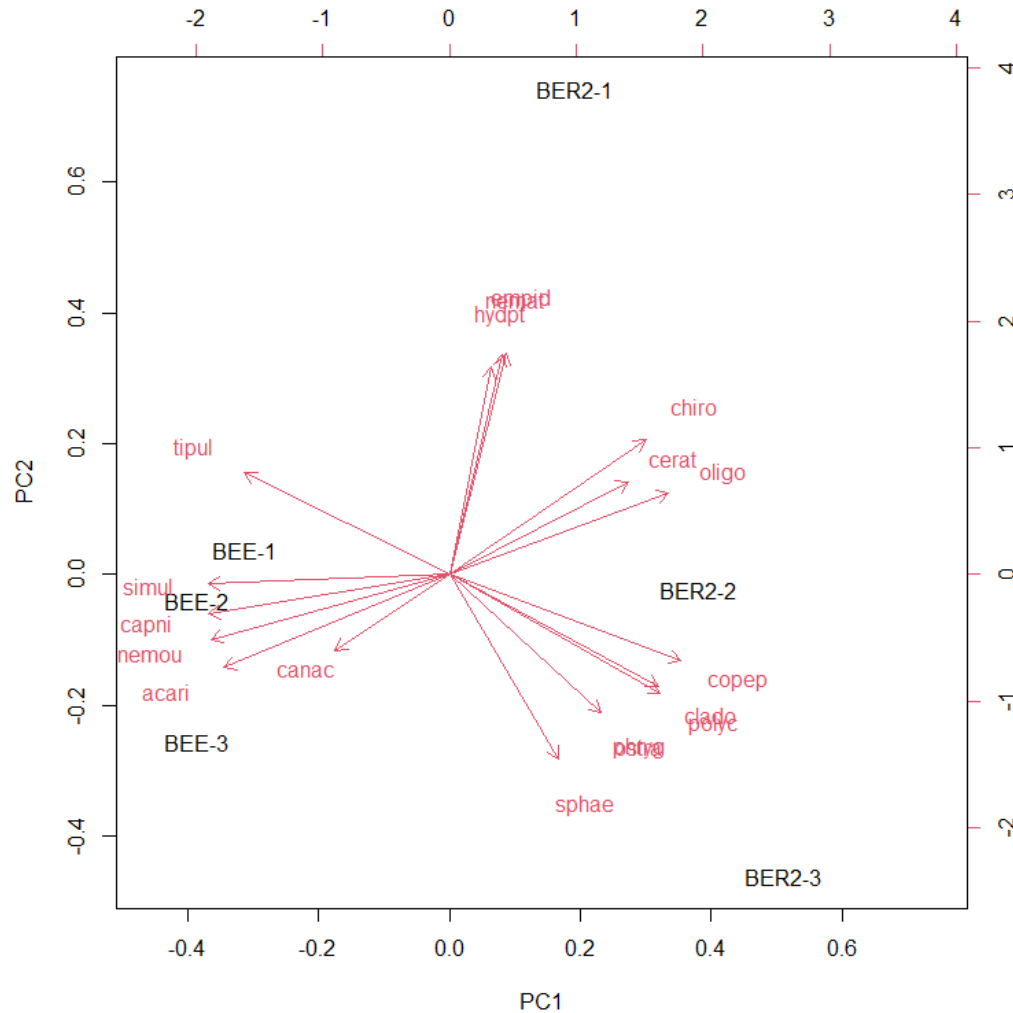


Figure 2. Analyse de composantes principales

3.5 Autres indicateurs

Cette section présente les autres indicateurs permettant de décrire les CIB des aires BEE et BER2.

3.5.1 Diversité de Simpson

L'aire BEE est significativement plus diversifiée, selon l'indice de diversité de Simpson, que l'aire BER2 (Tableau 5). Ces valeurs élevées indiquent que la probabilité que deux individus soient de la même espèce est faible. À l'instar de l'équitabilité de Simpson, ce résultat s'explique par la dominance des chironomidés dans tous les sites, mais particulièrement dans ceux de l'aire BER2. En 2019, les sites de BER2 possédaient la plus grande diversité.

Tableau 5. Index de diversité Simpson

Diversité	Aire	Moyenne	Médiane	Écart-type	Erreur type	Minimum	Maximum
	BEE		0,62	0,63	0,04	0,02	0,58
BER2		0,40	0,37	0,08	0,04	0,35	0,49
ANOVA	p	0,01*					
	CES	±0,16					
	Puissance (d)	>0,8 (fort)					

* Résultat significatif, $p < 0,05$

La différence significative statistiquement a également une importance biologique élevée selon l'étude du CES. En effet, avec 0,22 unité de plus que BER2, la diversité de BEE est supérieure à l'aire de référence de plus de 0,16 unité.

3.5.2 Abondance de chaque taxon

Les plus hautes densités observées sont pour la famille des Chironomidae aux deux aires échantillonnées. La densité de cette famille aux sites de BEE, quoique beaucoup plus basse qu'aux sites de référence, y demeure la plus élevée des familles (Tableau 6). Les taxons sous dominants aux sites de BEE sont les Capnidae/Leuctridae avec 39 individus par échantillon en moyenne et les Simuliidae avec 28 individus par échantillon. Aux sites de BER2, ce sont les Copepoda qui dominent le reste des CIB.

Tableau 6. Abondance de chaque taxon

Taxon	Taxon	BEE		BER2	
		Moyenne (ind.)	Écart-type (ind.)	Moyenne (ind.)	Écart-type (ind.)
Diptera	Chironomidae	145,3	43,4	349,7	165,4
	Ceratopogonidae	0,3	0,6	4,3	0,6
	Tipulidae	15,0	2,6	8,0	4,4
	Simuliidae	27,7	6,7	0,7	1,2
	Canacidae	0,3	0,6	-	-
	Empididae/Athericidae	-	-	0,3	0,6
	Autre Diptera #1	0,3	0,6	-	-
	Plecoptera	Capnidae/Leuctridae	38,7	13,3	0,3
Nemouridae		5,7	1,5	-	-
Autre Plecoptera #1		2,0	1,7	-	-
Trichoptera	Hydroptilidae	1,3	2,3	3,0	2,6
	Phryganeidae	-	-	0,7	1,2
	Polycentropodidae	-	-	5,3	4,6
	Autre Trichoptera #1	0,7	0,6	1,0	1,7
Crustacea	Copepoda	-	-	62,3	53,1
	Cladocera	-	-	7,0	6,2
	Ostracoda	-	-	1,0	1,7

Taxon		BEE		BER2	
		Moyenne (ind.)	Écart-type (ind.)	Moyenne (ind.)	Écart-type (ind.)
Arachnida	Hydracarina	10,0	3,6	0,3	0,6
Clitellata	Oligochaeta	-	-	16,0	7,9
Nematoda	Autre Nematoda	1,0	0,0	2,7	0,6
Mollusca	Sphaeridae	0,3	0,6	2,5	2,1
	Taxon inconnu #1	0,0	1,7	2,9	0,0
Total		250,3	55,9	464,3	214,4

3.5.3 Abondance relative

Le Tableau 7 présente les abondances relatives de chaque taxon.

Tableau 7. Abondance relative de chaque taxon

Taxon		BEE		BER2	
		Moyenne (%)	Écart-type (%)	Moyenne (%)	Écart-type (%)
Diptera	Chironomidae	57,5	4,6	75,7	6,2
	Ceratopogonidae	0,1	0,2	1,1	0,6
	Tipulidae	6,2	1,9	2,6	2,8
	Simuliidae	11,6	4,9	0,3	0,5
	Canacidae	0,1	0,2	-	-
	Empididae/Athericidae	-	-	0,1	0,3
	Autre Diptera #1	0,1	0,2	-	-
Plecoptera	Capnidae/Leuctridae	15,5	5,0	0,1	0,3
	Nemouridae	2,3	0,6	-	-
	Autre Plecoptera #1	0,7	0,5	-	-
Trichoptera	Hydroptilidae	0,4	0,7	0,9	1,1
	Phryganeidae	-	-	0,1	0,2
	Polycentropodidae	-	-	0,9	0,8
	Autre Trichoptera #1	0,2	0,2	0,4	0,8
Crustacea	Copepoda	-	-	11,1	9,3
	Cladocera	-	-	1,2	1,0
	Ostracoda	-	-	0,2	0,3
Arachnida	Hydracarina	4,0	1,3	0,1	0,1
Clitellata	Oligochaeta	-	-	4,0	2,2
Nematoda	Autre Nematoda	0,4	0,1	0,7	0,5
Mollusca	Sphaeridae	0,1	0,2	0,3	0,4
	Taxon inconnu #1	0,0	0,5	0,9	0,0

Comme c'est le cas pour l'abondance absolue présentée dans la section précédente, la famille des Chironomidae est la plus abondante relative aux autres taxons, suivi par les Capnidae/Leuctridae (aux sites de BEE) et Copepoda (aux sites BER2).

3.5.4 Présence/absence de taxons

Le Tableau 8 présente les différents taxons de la communauté benthique présente à chacun des sites d'échantillonnage : 11 taxons ont été identifiés aux sites BEE et 16 ont été identifiés aux sites BER2.

Tableau 8. Présence de chaque taxon

Taxon		BEE	BER2	Taxon		BEE	BER2
Diptera	Chironomidae	X	X	Trichoptera (suite)	Phryganeidae		X
	Ceratopogonidae	X	X		Polycentropodidae		X
	Tipulidae	X	X	Crustacea	Copepoda		X
	Simuliidae	X	X		Cladocera		X
	Canacidae	X			Ostracoda		X
	Empididae/Athericidae		X	Arachnida	Hydracarina	X	X
Plecoptera	Capnidae/Leuctridae	X	X	Clitellata	Oligochaeta		X
	Nemouridae	X		Nematoda	Autre Nematoda	X	X
Trichoptera	Hydroptilidae	X	X	Mollusca	Sphaeriidae	X	X

4 Conclusions

Un résultat significatif est obtenu pour un seul des quatre indices principaux, l'équitabilité de Simpson, et celui-ci était supérieur pour l'aire exposée (BEE). Ceci reflète de bonnes conditions dans la décharge du lac Fra lors de l'échantillonnage. Le Tableau 9 présente un résumé des résultats des derniers suivis.

Tableau 9. Résumé des derniers suivis

Indice	2019	2020
Principaux		
Densité/abondance	Biologiquement significatif	Non significatif
Richesse	Significatif	Non significatif
Équitabilité de Simpson	Biologiquement significatif	Biologiquement significatif
Dissimilarité de Bray-Curtis	Non significatif	-
Autre indicateur		
Diversité de Simpson	Biologiquement significatif	Biologiquement significatif

- Effet significatif présentant de moins bonnes conditions dans le site exposé
- Effet significatif présentant de meilleures conditions dans le site exposé

5 Portée et limitations de l'étude

Ce document est publié conformément et sous réserve d'un accord entre le Groupe Hémisphères inc. et TATA Steel Minerals Canada (TSMC) pour lequel il a été préparé. Il est limité aux questions qui ont été soulevées par TSMC dans les documents d'appel d'offres et préparé en utilisant les niveaux de compétence et de diligence normalement exercés par des scientifiques en environnement dans la préparation d'un tel document. Ce document est destiné à être lu comme un tout et des sections ou des parties ne doivent donc pas être lues, utilisées ou invoquées hors de leur contexte. Le document est confidentiel et la propriété de TSMC. La reproduction de ce document en entier ou en partie est autorisée sous réserve de faire référence à Groupe Hémisphères comme en étant l'auteur.

Ce rapport fait état des observations et données recueillies par Groupe Hémisphères dans le but d'analyser les impacts sociaux et environnementaux du projet Goodwood. Nous rappelons l'importance de conserver l'intégralité des faits et propos rapportés, de même que de l'analyse et des conclusions présentées dans ce rapport.

Lors de la préparation de ce document, Groupe Hémisphères a suivi une méthodologie et des procédures et pris les précautions appropriées au degré d'exactitude visé, en se basant sur ses compétences professionnelles en la matière et avec les précautions qui s'imposent. Groupe Hémisphères est d'opinion que les recommandations issues de ce rapport doivent être considérées comme valides avec une marge

d'erreur raisonnable pour ce type d'étude. À moins d'indication contraire, Groupe Hémisphères n'a pas contre-vérifié les hypothèses, données et renseignements en provenance de TSMC et autres sources sur lesquels peuvent être fondés son opinion. Groupe Hémisphères n'en assume nullement l'exactitude et décline toute responsabilité à leur égard.

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6 Assurance qualité

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Appendix VII: Well Level Log

Drill hole or well	Location (UTM NAD83)			Water level - in reference to the ground surface (m)
	X	Y	Z	
19-BH-02 (Tall Pipe)	604927.09	6106464.049	695.04	Dry
19-BH-02 (Short Pipe)	604927.09	6106464.049	695.04	Dry
19-BH-04 (Tall Pipe)	604818.552	6106476.807	683.852	Dry
19-BH-04 (Short Pipe)	604818.552	6106476.807	683.852	Dry
19-BH-05 (Tall Pipe)	604899.239	6106414.672	681.708	12.825
19-BH-05 (Short Pipe)	604899.239	6106414.672	681.708	Dry
19-BH-06	605008.885	6106391.423	685.78	9.47
"Old Well Casing (Undesignated)"				65.2
Drill hole or well	End of the borehole - in reference to ground surface (m)	Water level - in reference to the top of the PVC pipe (m)	PVC pipe height above ground (m)	
19-BH-02 (Tall Pipe)	14.29	Dry	0	
19-BH-02 (Short Pipe)	1.46	Dry	0	
19-BH-04 (Tall Pipe)	13.555	Dry	0.88	
19-BH-04 (Short Pipe)	8.44	Dry	0.875	
19-BH-05 (Tall Pipe)	13.545	13.86	1.035	
19-BH-05 (Short Pipe)	13.58	Dry	1	
19-BH-06	9.61	9.47	0	
"Old Well Casing (Undesignated)"	66.58	66.48	1.28	
Drill hole or well	Date	Name	Comments	
19-BH-02 (Tall Pipe)	13-Jul-20	Adam Calvert		
19-BH-02 (Short Pipe)	13-Jul-20	Adam Calvert		
19-BH-04 (Tall Pipe)	13-Jul-20	Adam Calvert		
19-BH-04 (Short Pipe)	13-Jul-20	Adam Calvert		
19-BH-05 (Tall Pipe)	13-Jul-20	Adam Calvert		
19-BH-05 (Short Pipe)	13-Jul-20	Adam Calvert		
19-BH-06	13-Jul-20	Adam Calvert		
"Old Well Casing (Undesignated)"	13-Jul-20	Adam Calvert		

NOTE: Well casings for BH-04 and BH-05 have slanted opening, distance between well casing and ground measured from bottom of slant.

Appendix VIII: 2020 Air Monitoring Results and Calculations

Sample ID	start time	end time	# of days sampled	Area sampled (m ²)	insoluble dust (mg)	soluble dust (mg)	Total dust (mg)	Dust deposition rate (g/m ² /30d)	Insoluble Dust deposition rate (g/m ² /30d)	Total Dust deposition rate (g/m ² /30d)
AOS1-	7-9-20 1:21 PM	8-8-20 12:35 PM	29.96805556	0.017672	3.6	16.8	20.4	0.20393	0.95167	1.15560
AOS2	7-9-20 1:57 PM	8-8-20 11:22 AM	29.89236111	0.017672	6.8	20	26.8	0.38618	1.13581	1.52198
AOS3	7-9-20 2:45 PM	8-8-20 10:39 AM	29.82916667	0.017672	2.4	14.8	17.2	0.13659	0.84228	0.97887
AOS4	7-9-20 12:21 PM	8-8-20 9:53 AM	29.89722222	0.017672	13.4	32.8	46.2	0.76087	1.86242	2.62329
AOS6	No sample, jar down		#VALUE!	0.017672		0	0			
AOS7	7-5-20 9:00 AM	8-9-20 2:30 PM	35.22916667	0.017672	5.4	16.8	22.2	0.26021	0.80955	1.06976
AOS8	7-5-20 12:00 AM	8-9-20 12:15 PM	35.51041667	0.017672	6.6	21.6	28.2	0.31552	1.03260	1.34812
AOS9	7-5-20 7:31 AM	8-8-20 2:47 PM	34.30277778	0.017672	3	15.2	18.2	0.14847	0.75223	0.90069

Sample ID	start time	end time	# of days sampled	Area sampled (m ²)	insoluble dust (mg)	soluble dust (mg)	Total dust (mg)	Soluble Dust deposition rate (g/m ² /30d)	Insoluble Dust deposition rate (g/m ² /30d)	Total Dust deposition rate (g/m ² /30d)
AOS1-	8-8-20 12:35 PM	9-8-20 9:36 AM	30.8769444	0.017672	8.2	8.8	17.00	0.48085	0.48384	0.93469
AOS2	8-8-20 11:22 AM	9-8-20 10:27 AM	30.96180556	0.017672	1	10.4	11.40	0.05483	0.57022	0.62505
AOS3	8-8-20 10:39 AM	9-8-20 11:26 AM	31.03263889	0.017672	1.4	10.4	11.80	0.07659	0.56892	0.64550
AOS4	8-8-20 9:53 AM	9-8-20 12:25 PM	31.10555556	0.017672	3.4	11.2	14.60	0.18556	0.61125	0.79680
AOS6	8-9-20 5:27 PM	9-9-20 5:27 PM	30.99999994	0.017672	9	14.8	23.80	0.49285	0.81047	1.30332
AOS7	8-9-20 2:30 PM	9-8-20 5:53 PM	30.14097222	0.017672	6.6	10.4	17.00	0.37173	0.58575	0.95747
AOS8	8-9-20 12:15 PM	9-8-20 4:48 PM	30.18958333	0.017672	1.6	14	15.60	0.08997	0.78724	0.87721
AOS9	8-8-20 2:47 PM	9-8-20 2:22 PM	30.98263889	0.017672	2.4	10.4	12.80	0.13150	0.56984	0.70134

Sample ID	start time	end time	# of days sampled	Area sampled (m ²)	insoluble dust (mg)	soluble dust (mg)	Total dust (mg)	Soluble Dust deposition rate (g/m ² /30d)	Insoluble Dust deposition rate (g/m ² /30d)	Total Dust deposition rate (g/m ² /30d)
AOS1-	9-8-20 9:36 AM	10-7-20 10:57 AM	29.05625	0.017672	12.8	26.4	39.20	0.74784	1.54241	2.29025
AOS2	9-8-20 10:27 AM	10-7-20 12:02 PM	29.06597222	0.017672	6.4	6	12.40	0.37379	0.35043	0.72422
AOS3	9-8-20 11:26 AM	10-7-20 12:58 PM	29.06388889	0.017672	5.2	10.4	15.60	0.30373	0.60746	0.91118
AOS4	9-8-20 12:25 PM	10-7-20 2:16 PM	29.07708333	0.017672	5.8	12.8	18.60	0.38862	0.74730	1.08592
AOS6	9-9-20 5:27 PM	10-8-20 9:47 AM	28.6805561	0.017672	4.2	6.4	10.60	0.24860	0.37882	0.62741
AOS7	9-8-20 5:53 PM	10-8-20 11:55 AM	29.75138889	0.017672	2.6	8.4	11.00	0.14835	0.47930	0.62765
AOS8	9-8-20 4:48 PM	10-7-20 3:29 PM	29.03263889	0.017672	3	8.4	11.40	0.17542	0.49117	0.66658
AOS9	9-8-20 2:22 PM	10-7-20 3:29 PM	29.04652778	0.017672	2.8	7.2	10.00	0.16364	0.42080	0.58444

Appendix IVIII: Geotechnical Monitoring Report

 PHOTO REPORT		Report # 01	
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:	0
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01
Project Manager:	Carl Gauthier, Eng. M.Sc.	Page	4 of 5



Photo 7 : Water Pond - Internal dyke: differential settlement (mentioned by TSMC in spring/summer 2020) present.



Photo 8 : Open Pit - North Wall - "Major" Water inflow in NW corner and smaller inflows on north wall

Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10
Chekel by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13


		PHOTO REPORT		Report # 01
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:	0	
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93	
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty	
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01	
Project Manager:	Carl Gauthier, Eng. M.Sc.	Page	3 of 5	



Photo 5 : Water Pond - Slumps / deformation in upstream side of south dyke (i.e. inside the pond) exposing bituminous membrane in 5 locations



Photo 6 : Water Pond - Tension / settlement crack on south dyke as observed summer 2019

Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10
Checked by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13


		PHOTO REPORT		Report # 01
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:	0	
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93	
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty	
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01	
Project Manager:	Carl Gauthier, Eng. M.Sc.	Page	5 of 5	



Photo 9 : Culvert under site access road (Mine / contact water ditch) - Metal sheet partly obstructing culvert (see detail below)

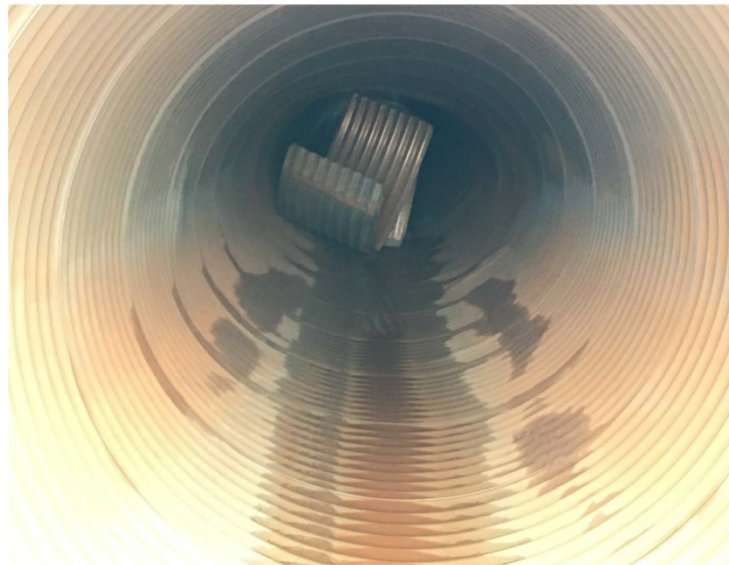


Photo 10 : Culvert under site access road (Mine / contact water ditch) - Metal sheet partly obstructing culvert

Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10
Chekel by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13


		PHOTO REPORT		Report # 01
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:	0	
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93	
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty	
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01	
Project Manager:	Carl Gauthier, Eng. M.Sc.	Page	2 of 5	



Photo 3 : Waste Rock Dump (inactive < 2020 portion) Settlement crack at crest of slope on northern area on a single lift.
 Photo looking downward.



Photo 4 : Active WRD (south-west): material highly variable, from boulder sized particles to soil particles and varying from moderately altered rock to completely weathered rock to soil and silt-like materials

Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10
Chekel by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13


		PHOTO REPORT		Report # 01
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:	0	
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93	
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty	
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01	
Project Manager:	Carl Gauthier, Eng. M.Sc.	Page	1 of 5	




Photo 1 : Overburden Stockpiles - Observations of rilling surface erosion caused by runoff



Photo 2 : Overburden stockpile (active) - Ponding on surface indicating of poor drainage

Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10
Checked by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13

		DAILY REPORT AND INSPECTION HIGHLIGHTS		Report # 01	
Client	Tata Steel Mineral Canada Inc. (TSMC)	Client ref.:			
Site	Goodwood, Québec, Canada	WSP Ref.:	181-04013-93		
Project:	2020 Geotechnical Inspection	Weather:	3°C; Cloudy, misty		
Inspector:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date of inspection:	2020-10-01		
Project Manager:	Carl Gauthier, Eng. M.Sc.	Contractor:			
Equipment / Labour / Technician(s)		Company	Comments	Arrival	Depart
Jean-François Dion (JFD)		TSMC	Guide; reference; driver	<07:00	>15:15
Jean-Sébastien Houle (JSH)		WSP	Inspector	07:00	17:00
Hour	Activity(ies)				
07:00 - 07:15	Briefing at Environment Office (Camp site)				
7:15 - 7:45	Travel from Camp to Goodwood				
7:45 - 13:45	Inspection of (Overburden stockpiles, waste rock dumps, water retention pond, pad/area of water treatment, open-pit)				
13:45 - 14h00	Travel from Goodwood to Kivivic 3 / 4				
14:00 - 14h30	Visit / inspection at Kivivic 3 / 4 for future flume				
14:30 - 15h00	Visit / inspection at Kivivic 2 for future flume				
15h00 - 15h15	Travel from K2 to Camp				
15h15 - 17h00	Inspection report (photos, notes, etc.)				
Area	Main observations / concerns / comments				Photo #
Overburden Stockpiles	Slope is generally in good conditions; local erosional features (gullies and rills) with water draining away from toe and towards environment Concern: low; recommended action: improve sloping on top to drain water away from slopes and consider building / implementing water channel lined with erosion protection material (ex.: ripp-rap)				1
	On the Active stockpile poor drainage was observed on the top lift at the south east corner: potential cause of local slope erosion and source of suspended solids in water during/after rain and/or thaw. Impact of potential instability: insignificant to none (ground between waste rock dump located south); Concern: moderate; Recommended action: reshape top of stockpile away from slope (ex.: toward the back / entrance)				2
Waste Rock Dump (WRD)	Settlement crack on top (crest) of slope in northern corner of inactive WRD (north-east) on single lift. Potential instability would impact unused terrain near slope. Concern: Low; Recommended action: monthly inspection by TSMC.				3
	Active WRD (south-west): material highly variable, from boulders composed of moderately altered rock to completely altered rock to degraded into soil, with silt-like material				4
Water Pond	Good general conditions; few slumps / deformation in upstream side of south dyke (i.e. inside the pond) exposing the membrane in 5 locations Concern: low-moderate; Recommended action: immediate: none; Summer 2021: Inspection after spring freshet and integrate any additional repair work onto the current repair design to be constructed in 2021.				5
	Tension crack on south dyke as observed summer 2019 Concern: moderate; Recommended action: no additional actions than the monitoring already on-going				6
	Internal dyke: major slump observed by TSMC in spring/summer 2020 present. Concern: low-moderate; Recommended action: to be incorporated into the dyke repair design to be implemented this Fall 2020/Winter 2021				7
Water Treatment Station "Pad"	Good general conditions; no concerns				n/a
Open Pit	Signs of overbreak in north and west wall still present (first observed in 2017): TSMC mentions these are NOT final walls				n/a
	Signs of water inflow in various location on north wall including significant water inflow from north-west corner. Recommended action: consider diverting water with peripheral ditch beyond slope crest				8
Culvert (site entrance)	Metal sheet partly obstructing culvert of contact (mine) water. Concern: Moderate. Recommended Action: remove obstruction prior to spring freshet				9; 10
Note:	Detailed observations on all infrastructures will be provided in complete geotechnical inspection report (end of November 2020)				
Prepared by:	Jean-Sébastien Houle, Eng. (OIQ# 129263)	Date	2020-11-10		
Chekel by:	Carl Gauthier, Eng. M.Sc.	Date	2020-11-13		

Appendix X: Newsletters

Mise à jour environnementale, Automne 2020



Citoyens de la région de Schefferville,

Tata Steel Minerals Canada (TSMC) vous présente cette dernière mise à jour sur les questions environnementales.

Fonte printanière

Après de multiples mesures déployées en 2019 et début 2020 (terrassements, déneigement stratégique, floculants et chaussettes de sédiments), TSMC n'a eu aucun incident de ruissellement d'eau rouge ce printemps. L'équipe environnementale de TSMC continuera ses efforts pour prévenir et minimiser tout problème potentiel à l'avenir.

Cette photo montre le pompage de l'eau à **Goodwood** pendant la fonte printanière, ce qui a assuré à ce qu'aucun ruissellement n'atteigne l'environnement naturel.



Silver Yard

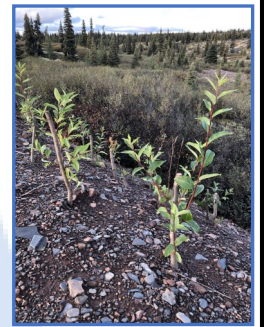
Les travaux d'assainissement finaux sont maintenant terminés.



Restauration du site / végétalisation

TSMC Environnement a été occupé cette année à planter des pousses à Pinette & Triangle Lake et à Goodwood. Les travailleurs locaux des Premières Nations ont aidé à la collecte des boutures.

Au total, 1 500 boutures de 3 variétés de saules ont été plantées. Les résultats sont remarquables.



La gestion des déchets

Enlèvement d'huile et de pneus - Près de 100 bacs d'huile usée et de glycol en plus des vieux pneus ont été retirés du site. En outre, plus de 60 barils de diesel à Goodwood ont été sécurisés. TSMC est heureux de disposer désormais d'une infrastructure pour stocker les déchets dangereux d'une manière respectueuse de l'environnement sur le site.

Nous continuons à utiliser des bouteilles d'eau et des tasses à café réutilisables sur tout notre site. On estime que cela a réduit les déchets d'environ 600 bouteilles d'eau et tasses à café jetables par jour! Malgré les contraintes majeures liées au COVID-19, TSMC Environmental a réussi à maintenir ses obligations environnementales, notamment des inspections régulières de son site d'enfouissement.



Pour signaler un problème environnemental: veuillez composer le +1(418) 585-8282, poste 374, ou écrire à mariana.trindade@tatasteelcanada.com

Environmental Update, Fall 2020



Citizens of the Schefferville Region,

Tata Steel Minerals Canada (TSMC) presents to you this latest update on environmental matters at its site.

Spring Melt

After multiple measures deployed in 2019 and early 2020 (earthworks, strategic snow removal, flocculants and sediment socks), TSMC was successful in having no red water runoff incidents this Spring. TSMC's Environment Team will continue to expand on these efforts to prevent and minimize any potential issue in the future.

This photo shows water pumping at **Goodwood** during spring melt which ensured that no water runoff reached the natural environment.



Silver Yard

Final remediation works are now **complete**.



Site Restoration / Revegetation

TSMC Environment was busy this year planting shoots at Pinette & Triangle Lake and Goodwood. Local First Nation workers assisted in the collection of the cuttings .

A total of 1,500 cuttings from 3 varieties of willows were planted. The results are remarkable.



Waste Management

Oil & Tire Removal — Close to 100 totes of used oil and glycol in addition to the old tires were removed from the site. Also, more than 60 diesel drums at **Goodwood** were secured. TSMC is pleased to now have infrastructure to store hazardous waste in an environmentally-safe manner at site.

We continue to use reusable water bottles and coffee mugs throughout our site. It is estimated that this has reduced waste by approximately 600 disposable water bottles and coffee cups/day! Despite major constraints related to COVID-19, TSMC Environmental has managed to maintain its environmental obligations, including regular inspections of the landfill.



To flag an environmental issue: please dial +1(418) 585-8282, ext. 374, or write to mariana.trindade@tatasteelcanada.com

Appendix XI: Engagement & Consultation Log 2020

**Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)**

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
1/17/2020, 2/24/2020, 3/4/2020, 3/9/2020	Emails to TSMC from NIMLJ Leadership	IBA/Commercial Payments;	Timeline for payment requested by NIMLJ.	Timeline provided by TSMC
2020-01-30	Complaint filed by NIMLJ member w/ QC Centre for Environmental Control	Reported Spill at TSMC Site	Report of a spill on TSMC site, with no details	TSMC conducted an investigation of all possible locations on its site and found no evidence of a spill
2020-02-04	Letter to TSMC from NNK Leadership	IBA/Commercial Payments;	Timeline for payment requested by NNK.	Response letter of 19 February from TSMC providing timeline
2020-01-28	Email to NIMLJ, NNK, ITUM, Innu Nation, NunatuKavut environmental representatives from TSMC	Fish Habitat Offsetting Plan (Joan Lake)	TSMC provided parties w/ the application to the federal government (Department of Fisheries & Oceans) to offset fish habitat at Joan Lake & Elross Creek.	
2020-02-19	Email to NIMLJ, NNK, ITUM, Innu Nation, NunatuKavut environmental representatives from TSMC	Fish Habitat Offsetting Plan (Joan Lake)	TSMC confirmed extension of deadline to provide comments from 28 February to 13 March 2020 and provided additional information (Appendix III - Monitoring Plan)	
2020-02-26, 2020-03-03	Emails btwn NNK Environment reps & TSMC	Fish Habitat Offsetting Plan (Joan Lake)	Query fr. NNK (email dated 26 Feb.) to TSMC on details of works envisaged, procedures to be followed for dewatering and fish transfer to another water body.	TSMC explained (email dated 3 March) to NNK that these details are not part of the application, however, TSMC will work with DFO to ensure works done in accordance w/ regulations. TSMC Health & Safety Manager, TSMC Nurse met w/ Chief & Council; shared information on measures which included COVID-19 Self-Declaration Form for all inbound workers; non-essential travel called off; collaboration w/ airlines; increased hygiene measures at site. TSMC donated 1000 N-95 face masks each to NIMLJ & Town of Schefferville.
2020-03-13	In-person Meeting btwn NIMLJ, Town of Schefferville leadership & TSMC	Coronavirus Concerns & Measures	Communities asked for explanation on measures taken by TSMC taking vis-à-vis potential for Coronavirus spread?	
2020-03-13	Conference Call btwn NIMLJ leadership & TSMC	Coronavirus Concerns & Measures	NIMLJ requested timeline of next payments fr. TSMC. Satisfied w/ information provided on Coronavirus measures being implemented	Payment timeline provided.
2020-03-13	Conference Call & in-person meeting in Kawawachikamach btwn NNK leadership & TSMC	Coronavirus Concerns & Measures	NNK indicated possible COVID-19 cases in Kawawachikamach, following student trip to US. Youths will be tested. Asked TSMC what measures being taken vis-à-vis potential for Coronavirus spread. NNK requested that TSMC to not bring new workers in and cease operations.	TSMC Health & Safety Manager, TSMC Nurse met w/ Chief & Council; shared information on measures which included COVID-19 Self-Declaration Form for all inbound workers; non-essential travel called off; collaboration w/ airlines; increased hygiene measures at site. TSMC suggested Schefferville airport be avoided by incoming workers on March 17 charter. TSMC donated 1000 N-95 face masks to NNK.
2020-03-13	Announcement by TSMC on Matimekush-Lac John Radio & Naskapi Radio & Facebook pages	Coronavirus Concerns & Measures	TSMC communicated preventive measures being taken by Company	

Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-03-15	Conference Call btwn NIMLJ, NNK Leadership & TSMC	Coronavirus Concerns & Measures	Community leadership requested that TSMC to suspend operations; Concerns that TSMC workers frequenting public places in Schefferville; Fear for health of community members, many who are in vulnerable health situation. Communities will be left with no choice but to take drastic measures if influx of large number of workers from outside region.	TSMC undertook to look into options and revert back to Community leadership.
2020-03-16	Conference Call btwn NIMLJ, NNK, Town of Schefferville Leadership, Emergency Response Committee & TSMC	Coronavirus Concerns & Measures	Communities explained that concerns increasing; Communities making sacrifices by preventing post-secondary students from returning home; Request by communities for TSMC to suspend operations; NNK considers that TSMC is not doing enough to control potential spread	TSMC undertook to adjust its operations in consultation w/ communities
2020-03-17	Letter to NIMLJ Leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC explained that : No known COVID cases on-site; Nurse regularly monitoring health of workers; Local workers from TSMC site requested to stay home, with pay; Site Gate will be closed to non-essential travel; TSMC will delay March 17 charter, workers at site will stay beyond their return home due date for now, unless emergency needs.	
2020-03-17	Letter to NNK Leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC explained that : No known COVID cases on-site; Nurse regularly monitoring health of workers; Local workers from TSMC site requested to stay home, with pay; Site Gate will be closed to non-essential travel; TSMC will delay March 17 charter, workers at site will stay beyond their return home due date for now, unless emergency needs.	
2020-03-17	Letter to Town of Schefferville Leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC explained that : No known COVID cases on-site; Nurse regularly monitoring health of workers; Local workers from TSMC site requested to stay home, with pay; Site Gate will be closed to non-essential travel; TSMC will delay March 17 charter, workers at site will stay beyond their return home due date for now, unless emergency needs.	
2020-03-17	Announcement by TSMC on Matimekush-Lac John Radio & Naskapi Radio & Facebook pages	Coronavirus Concerns & Measures	TSMC explained that : -No known COVID cases on-site; -Nurse regularly monitoring health of workers; -Local workers from TSMC site requested to stay home, with pay; -Site Gate will be closed to non-essential travel; -TSMC will delay March 17 charter, workers at site will stay beyond their return home due date for now, unless emergency needs.	
2020-03-18	Telephone calls, SMS btwn NIMLJ, NNK, Town of Schefferville Leadership & TSMC	Coronavirus Concerns & Measures	NIMLJ, NNK united in position that TSMC must suspend operations to completely safeguard local communities. Will not accept anything less. Direct action will be taken at airport if TSMC proceeds to bring in full personnel	TSMC undertook to look into options and revert back to Community leadership.

Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-03-19	SMS fr. NNK (Chief) to TSMC	Coronavirus Concerns & Measures	Concern that TSMC personnel traveling in US prior to work rotation at TSMC site, could be infected with COVID-19	TSMC verified and clarified that all precautions were being taken w/ staff traveling outside Canada, including self-isolation.
2020-03-20	Conference Call btwn NIMLJ, NNK leadership & TSMC leadership	Coronavirus Concerns & Measures	Communities have concern w/ number of workers to come in on March 24 charter; request decrease in minimum crew to 20 people	TSMC will evacuate all personnel and have a minimum crew of approx. 50 people coming in on 24 March charter; TSMC will review its numbers and revert back with a reduced number of workers to fly in on 24 March.
2020-03-21	Conference Call btwn NIMLJ, NNK leadership & TSMC leadership	Coronavirus Concerns & Measures	TSMC explained that, due to community concerns and NL government announcement, it will put operation into Care and Maintenance w/ minimum crew. There will be 3-4 aircrafts evacuating personnel at site. TSMC has reduced number of incoming workers on charter to approx. 19	FN Councils satisfied with latest TSMC plan
2020-03-27	Telephone call between NIMLJ (Chief) & TSMC	Coronavirus Concerns & Measures	Suggestion by NIMLJ to demobilize personnel to avoid using Schefferville airport	Four workers will be leaving site by March 30
2020-03-30	SMS btwn NNK (Chief) & TSMC	Coronavirus Concerns & Measures	Request by NNK for confirmation of aircraft at airport	TSMC confirmed that it was a private charter evacuating 4 contractor personnel
2020-03-30	Telephone call btwn Town of Schefferville Administrator & TSMC	Coronavirus Concerns & Measures	TSMC & Town of Schefferville provided respective updates on situation	
2020-03-31	Telephone call btwn NIMLJ (Chief) & TSMC	Coronavirus Concerns & Measures	NIMLJ Chief disappointed that TSMC numbers at site are higher than discussed previous week (approx. 30 vs 20). Requesting minimal back and forth travel and longer rotation schedules so that number of workers arriving in region is minimal.	TSMC to look into extending work rotation periods and number of people and frequency of rotations
2020-04-01	Email to Town of Schefferville leadership & TSMC	Coronavirus Concerns & Measures	TSMC shared presentation prepared for workers on current TSMC measures being taken to protect workers and communities	
2020-04-01	Letter fr. ITUM Chief to TSMC leadership	Coronavirus Concerns & Measures	ITUM requested information on Mitigation Measures taken by TSMC	TSMC provided information in letter of response (April 3)
2020-04-02	Telephone call btwn TSMC & NIMLJ (Chief)	Coronavirus Concerns & Measures	TSMC shared latest personnel change plan for April 7 charter. TSMC will review Care & Maintenance personnel plan again and revert back.	Chief unhappy w/ fact that more workers entering than departing; asked TSMC to revise that there are not more ppl arriving than departing.
2020-04-06	SMS btwn NNK leadership & TSMC	Coronavirus Concerns & Measures	TSMC confirmed upcoming charter w/ minimal crew and zero interaction with community, no entry into Schefferville airport	NNK satisfied w/ measures taken
2020-04-10	Letter to NIMLJ leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including Care & Maintenance mode, 0 interaction with local communities, charter flight from NL only every two weeks whereby personnel deboard plane and board bus directly on tarmac; no workers from communities working at site; no interactions between essential service personnel from communities and site personnel; site entrance/exit closed; 4-wk rotations	NIMLJ satisfied w/ measures taken

**Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)**

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-04-10	Letter to NNK leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including Care & Maintenance mode, 0 interaction with local communities, charter flight from NL only every two weeks whereby personnel deboard plane and board bus directly on tarmac; no workers from communities working at site; no interactions between essential service personnel from communities and site personnel; site entrance/exit closed; 4-wk rotations	NNK satisfied w/ measures taken
2020-04-10	Letter to Innu Nation leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including Care & Maintenance mode, 0 interaction with local communities, charter flight from NL only every two weeks whereby personnel deboard plane and board bus directly on tarmac; no workers from communities working at site; no interactions between essential service personnel from communities and site personnel; site entrance/exit closed; 4-wk rotations	None received
2020-04-10	Letter to NunatuKavut Community Council leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including Care & Maintenance mode, 0 interaction with local communities, charter flight from NL only every two weeks whereby personnel deboard plane and board bus directly on tarmac; no workers from communities working at site; no interactions between essential service personnel from communities and site personnel; site entrance/exit closed; 4-wk rotations	None received
2020-04-13	Letter to Town of Schefferville leadership fr. TSMC	Coronavirus Concerns & Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including Care & Maintenance mode, 0 interaction with local communities, charter flight from NL only every two weeks whereby personnel deboard plane and board bus directly on tarmac; no workers from communities working at site; no interactions between essential service personnel from communities and site personnel; site entrance/exit closed; 4-wk rotations	Town satisfied w/ measures taken
2020-04-16	Phone conversation btwn NIMLJ (Chief) & TSMC	Coronavirus Concerns & Measures	Update on upcoming charter, number of workers, strict procedures being followed	NIMLJ OK with plan
2020-04-16	SMS btwn NNK (Chief) & TSMC	Coronavirus Concerns & Measures	Update on upcoming charter, number of workers, strict procedures being followed	NNK OK with plan
2020-04-21	Email & Phone conversation btwn Town of Schefferville Administrator & TSMC	Coronavirus Concerns & Measures, TSMC Operations	Update on upcoming charter, number of workers, strict procedures being followed	Town satisfied w/ measures taken

Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-04-22	Videoconference btwn NNK, KRG, Makivik & TSMC	Project 2A (Goodwood) - Meeting of the Environmental & Social Monitoring Committee	Makivik provided update on their position vis-à-vis Qc gov't decision to resume mining operations. TSMC provided updates on: Precautionary measures being taken to protect communities & workers; Plans for Spring melt mitigation measures; Plans for Goodwood Water Treatment Unit. NNK expressed interest in seeing First Nation workers involved in the operation of the Goodwood Water Treatment Unit; Current situation and plans for Goodwood Water Basin repairs; Environmental monitoring, including air quality monitoring and presence of caribou; Results (mixed) of application of haul road capping product in areas that had created water issues in the past; Planned water management infrastructure improvements; Waste management; Rehabilitation & Closure plan to be shared for comment in 2021	TSMC undertook to seek involvement of First Nations in operation of Water Treatment Unit. Members expressed satisfaction w/ information received
2020-04-22	Phone conversation btwn NIMLJ (Chief) & TSMC	IBA/Commercial Payments; Coronavirus Concerns & Measures, TSMC Operations	NIMLJ unhappy with level of payment, uneasy w/ increase in numbers on every incoming charter; TSMC provided update on crew change of April 22 & presented notion of gradually resuming operations in coming weeks	Some payments made by TSMC; NIMLJ indicated too early to discuss increase in workers at mine site but can revisit on 4 May and review TSMC Plans/Scenarios;
2020-04-23	SMS, Phone Conversation btwn NNK (Chief) & TSMC	IBA/Commercial Payments; Coronavirus Concerns & Measures, TSMC Operations	NNK satisfied w/ payment; TSMC provided update on crew change of April 22 & presented notion of gradually resuming operations in coming weeks	Some payments made by TSMC; NNK indicated too early to discuss increase in workers at mine site but can revisit on 4 May and review TSMC Plans/Scenarios;
2020-04-28	SMS, Video Call btwn NNK (Chief) & TSMC	TSMC Operations - Next Steps	TSMC requested mtg to discuss gradually resuming operations	NNK proposed May 1
2020-04-28	Email to NIMLJ, NNK leadership & Environmental Committee representatives, Matimekush-Lac John and Kawawachikamach Facebook pages fr. TSMC	Environmental Update	TSMC has put in place various measures to manage water on its site, including: - improved sedimentation pond design (berms and ditching); - increased snow removal before Spring melt; - haul road engineering; - haul road additive to control dust, red water; - use of flocculants, sediment fencing; - increased site-wide surveillance at onset of Spring melt (on-the-ground personnel, aerial monitoring).	No comments received
2020-05-07	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	Operations Update	TSMC provided update	NNK asked whether same precautionary measures will be maintained and will there be charter from Montreal? TSMC responded that measures would be maintained but that there was no Montreal charter planned in immediate future
2020-05-25	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	Operations Update	TSMC provided update	Town of Schefferville can collaborate w/ TSMC, on plan to accommodate workers in Town w/ guidance fr. Directeur régional de la santé publique; TSMC said will consider
2020-05-27	Letter to TSMC fr. NNK leadership	TSMC Operations and Payments	NNK requesting updates on operational ramp-up and timetable for outstanding IBA and commercial payments	TSMC, by letter dated 1 June 2020, explained that it provides regular updates; balance due payment timing provided.
2020-05-28	Phone conversation btwn ITUM Council rep & TSMC	Operations Update	ITUM had questions on IBA commitments & next Implementation Committee meeting	TSMC will provide information on Project Operations update & IBA related matters in writing

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Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-05-28	Email fr. TSMC to ITUM leadership & Environmental reps	Environmental Update	TSMC has put in place various measures to manage water on its site, including: - improved sedimentation pond design (berms and ditching); - increased snow removal before Spring melt; - haul road engineering; - haul road additive to control dust, red water; - use of flocculants, sediment fencing; - increased site-wide surveillance at onset of Spring melt (on-the-ground personnel, aerial monitoring).	No comments received
2020-05-31	Email fr. TSMC to NIMLJ, Town of Schefferville leadership	Equipment mobilization from Town industrial area	TSMC provided details on mining equipment to be transported directly from Hollinger Yards to Mine Site, timeline, safety precautions being taken including zero interaction with local residents and a safety escort during operation.	Town of Schefferville confirmed that there were no issues as long as safety precautions followed, including minding overhead electrical wires.
2020-06-03	Letter fr. ITUM Chief to TSMC	TSMC Operations and IBA Payments	ITUM requesting that outstanding IBA payments be resolved	TSMC, by letter dated, 10 June 2020, provided update on operational rampup, COVID-19 precautionary measures, IBA deliverables including financial contribution timeline.
2020-06-05	Phone conversations btwn NIMLJ leadership & TSMC	IBA, Commercial payments	NIMLJ expressed concerns w/ lack of payment	TSMC explained tight financial situation and timeline for settling outstanding balances.
2020-07-09	VideoConference btwn NIMLJ, NNK, Innu Nation, NCC	Community HSE Committee Meeting	Health & Safety, COVID 19 Update; Operations Update; Environmental Update; 2020 Spring Thaw; Waste Management; Summer 2020; Silver Yard; Restoration; Howse Project. NNK explained that local citizens using haul road with personal vehicles to access area => questions re: condition of Bypass Rd; Joan Lake Compensation Program - NNK has comments, awaiting Council approval	Participants agreed that meeting should be organized btwn local community representatives & TSMC on Safety issues re: Haul Road TSMC requests comments re: Joan Lake as soon as possible
2020-07-16	Letter to DFO fr. NNK	Joan Lake Compensation Program	NNK expressed concerns w/ TSMC environmental track record and ability to implement compensation plan measures; requests further consultation	N/A
2020-07-24	Complaint fr. NIMLJ Community member @ TSMC Security Gate	Landfill Management	Suspected TSMC Site garbage dumping by NIMLJ supplier @ Schefferville Landfill	TSMC took steps to prevent supplier from leaving site with garbage in pick-up; reminder provided of TSMC landfill opening hours
2020-08-18	Email fr. Town of Schefferville Administrator to TSMC	Dust	Town of Schefferville asked about dust suppression in Town by TSMC	TSMC explained that NIMLJ has road maintenance contract fr. Municipal Landfill to Mine Site. Water spraying on road 2-3 times/day as was done in 2018 considered not particularly effective;
2020-08-20	Email, Phone fr. TSMC to NIMLJ, NNK leadership	Planned increase in workers housed in Town	NIMLJ concerned w/ increased risk of COVID, demand for Innu Security patrolling (names of candidates to be provided to TSMC), strict application of self-isolation when not at work	TSMC agreed to implement requested measures
2020-08-28	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	Update on Operations, Employment, Dust Control	TSMC provided update on Operations, Employment, Dust Controls Matters	None received
2020-09-08	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	Update on Operations, Workers Housed in Town	TSMC provided update on Operations, Workers Housed in Town	None received

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Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-09-09	SMS btwn NNK Councillor & TSMC	Bypass Road	NNK Councillor asking when maintenance/upgrade will be done as rough spots on Bypass Rd making use difficult	TSMC explained that it had issued a Purchase Order to have work done by Naskapi Heavy Machinery in 2019, however, due to restructuring of NHM, work was not carried out. A new PO will be required, bringing likely timeline to Spring/Summer 2021
2020-09-29	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	COVID-19 Preventive Measures	TSMC provided update on most recent measures taken to prevent spread of COVID-19, including new testing protocol for workers originating from Quebec City & west, in addition to pre-screening questionnaire, prohibition of workers to enter town establishments, local workers must self-isolate after their shift, physical distancing and mandatory wearing of mask when not in dorm room	None received
2020-10-07	Emails & Phone conversations btwn NNK environmental reps & TSMC	Bypass Road	TSMC informed communities of a number of events involving unauthorized presence of civilian vehicles on haul road, representing major safety risk	NNK question about condition of haul rd. TSMC responded that it had issued a Purchase Order to have work done by Naskapi Heavy Machinery in 2019, however, due to restructuring of NHM, work was not carried out. A new PO will be required, bringing likely timeline to Spring/Summer 2021. In meantime, road is passable.
2020-10-07	VideoConference btwn NNK, NIMLJ leadership & TSMC & Follow-up email fr. TSMC	COVID-19 Preventive Measures	Communities requesting: 1- TSMC to implement testing of all workers; 2- Additional surveillance in Town by Innu & Naskapi security guards of worker residences	TSMC confirmed most recent measures taken to prevent spread of COVID-19, including new testing protocol for workers originating from Quebec City & west. Testing of workers from Atlantic bubble and local workers, would be done subsequently, once logistics have been worked out. Additional measures include: pre-screening questionnaire, prohibition of workers to enter town establishments, local workers must self-isolate after their shift, physical distancing and mandatory wearing of mask when not in dorm room, and evacuation plan in event of presumed COVID case
2020-10-16	Phone conv. btwn TSMC & NIMLJ Chief	1- Perceptions Study; 2- 2019 Red water incidents; 3- Town Surveillance (COVID)	1- NIMLJ Chief not interested in supporting another study on land use. Already done in the past (Raphaël Picard) and no desire to justify or respond to questions prompted by government. 2- NIMLJ Council wants to see Fed. Gov't Report on Red Water runoff incidents of 2019 as referred to in mtgs w/ Gov't representatives 3- Have a name of candidate for Security patrol in Town; will provide coordinates on 19 Oct. '20	1- TSMC Agrees w/ multiple consultations in communities; TSMC/consultant will determine interest of community members to participate 2- TSMC will follow-up w/ fed. Gov't re: report 3- TSMC will follow-up on 19 Oct.
2020-10-21	SMS btwn NNK leadership & TSMC	COVID-19	NNK Chief seeking clarification after report by community priest that there was possible COVID case @ mine site	TSMC confirmed that there were 3 recent cases of head colds, for which workers were asked to isolate for 24-48 hrs. No presumed COVID case
2020-10-23	SMS btwn NNK leadership & TSMC	COVID-19	NNK Chief & Councillor seeking clarification on possible COVID case @ mine site	TSMC confirmed that there were 3 recent cases of head colds, for which workers were asked to isolate for 24-48 hrs. No presumed COVID case. Confirmed that TSMC would inform local communities if there is a presumed case

**Tata Steel Minerals Canada
Community Engagement and Consultation Log (2020)**

Date	Communication Type	Subject(s)	Question(s) / Matter(s) raised	Response(s)
2020-10-28	VideoConference btwn NIMLJ, NNK, ITUM, Innu Nation	Community HSE Committee Meeting	Health, Safety, Security & Training Update; Bypass Road; Operations Update; Environmental Update; Summer 2020; Waste Management Silver Yard; Site Restoration; Fish Habitat Compensation; Howse Project monitoring programs; Winter 2020 Water Management. NNK & NIMLJ Councillors raised concern of decrease in fish presence near the haul road at Greenbush crossing; decrease in stream level	TSMC Environment had not observed a decrease in water level upstream and downstream from crossing; TSMC will include Greenbush crossing as area of interest in Haul Road water management improvements.
2020-10-28	Email fr. NNK environmental rep to TSMC	Streams levels near Haul Rd @ Greenbush crossing	Concerns that creek has dried up since haul road built, something never seen before. Request that TSMC investigate & incorporate improvements into future water management planning	TSMC confirmed at meeting of 4 February 2021 that Greenbush crossing will be considered as an area of interest in Haul Road water management improvements.
2020-11-12	Email fr. TSMC to NIMLJ, NNK, ITUM, Innu Nation, NCC environmental reps	Fish Habitat Compensation Program - Potential Lakes for Fish Relocation from Joan Lake	TSMC provided "Technical Draft - Potential Lakes for the Relocation of Joan Lake's Fish" for comment/feedback	NNK responded by letter dated 15 December 2020 (see below)
2020-11-19	Email fr. NNK environmental rep to TSMC	Lichen Study on Air Quality	Request for results/report	TSMC confirmed report uploaded to Community HSE Committee Google Drive
2020-11-25	Email fr. NNK environmental rep to TSMC	Fish Habitat Compensation Program - Potential Lakes for Fish Relocation from Joan Lake	NNK indicated that there were few details in Technical Draft and asked if it was a preliminary consultation	TSMC, by email dated 25 November, 2020, explained that purpose of consultation is to seek feedback on preferred lakes from community perspective; subsequent consultation will occur w/ add'l details on relocation plan
2020-12-08	Letter fr. NNK Chief to TSMC	Payments & IBA Commitments	NNK raised amounts due & payment delays; employment & contracting opportunity dissatisfaction	By letter dated 14 January, 2021, TSMC provided an update on operations and its efforts to recruit, hire & train Naskapi, including current statistics, upcoming business opportunities & payment schedule.
2020-12-15	Letter fr. NNK leadership to TSMC	Fish Habitat Compensation Program - Potential Lakes for Fish Relocation from Joan Lake	NNK requests more information regarding conditions of each potential lake, and presence of Brook Trout and other species	By letter dated 28 January, 2021, TSMC explained that it was seeking preliminary feedback from land-user perspective. TSMC undertook to provide lake details as request by March 2021
2020-12-18	Email fr. NIMLJ DG to TSMC	Amounts Owing & Payments	Concerns with IBA & Commercial payments for services rendered.	By emails dated 21 December 2020 and 14 January 2021, TSMC provided acknowledgment, project update & payment schedule.

Tata Steel Minerals Canada
Registre d'engagement et de consultation des communautés (2020)

Date	Type de communication	Sujet(s)	Question(s) / Matière soulevée	Réponse(s)
1/17/2020, 2/24/2020, 3/4/2020, 3/9/2020	E-mails adressés à TSMC par NIMLJ Leadership	ÉRA / paiements commerciaux;	Calendrier de paiement demandé par NIMLJ.	Échéancier fourni par TSMC
2020-01-30	Plainte déposée par un membre de NIMLJ avec Centre du contrôle environnemental QC	Déversement signalé sur le site TSMC	Rapport d'un déversement sur le site TSMC, sans détails	TSMC a mené une enquête sur tous les emplacements possibles sur son site et n'a trouvé aucune preuve d'un déversement
2020-02-04	Lettre à TSMC de NNK Leadership	ÉRA / paiements commerciaux;	Calendrier de paiement demandé par NNK.	Lettre de réponse du 19 février de TSMC fournissant un calendrier
2020-01-28	Courriel aux représentants en environnement de NIMLJ, NNK, ITUM, Innu Nation, NunatuKavut de, TSMC	Plan de compensation de l'habitat du poisson (lac Joan)	TSMC a fourni aux parties une demande au gouvernement fédéral (ministère des Pêches et des Océans) pour compenser l'habitat du poisson au lac Joan et au ruisseau Elross.	
2020-02-19	Courriel aux représentants en environnement de NIMLJ, NNK, ITUM, Innu Nation, NunatuKavut de, TSMC	Plan de compensation de l'habitat du poisson (lac Joan)	TSMC a confirmé la prolongation du délai de soumission des commentaires du 28 février au 13 mars 2020 et a fourni des informations supplémentaires (Annexe III - Plan de surveillance)	
2020-02-26, 2020-03-03	E-mails entre les représentants en environnement de NNK et TSMC	Plan de compensation de l'habitat du poisson (lac Joan)	Requête de NNK (courriel du 26 février) à TSMC sur les détails des travaux envisagés, les procédures à suivre pour l'assèchement et le transfert des poissons vers un autre plan d'eau.	TSMC a expliqué (courriel daté du 3 mars) à NNK que ces détails ne font pas partie de la demande, cependant, TSMC travaillera avec le MPO pour s'assurer que les travaux sont effectués conformément aux règlements.
2020-03-13	Réunion en personne entre les directions de NIMLJ et la Ville de Schefferville et TSMC	Préoccupations et mesures relatives au Coronavirus	Les communautés ont demandé des explications sur les mesures prises par TSMC concernant le potentiel de propagation du coronavirus?	TSMC Directeur de la santé et la sécurité, TSMC Infirmier, rencontrent le leadership de NIMLJ; partage des informations sur les mesures qui comprenaient le formulaire d'auto-déclaration COVID-19 pour tous les travailleurs entrants; voyages non-essentiels annulés; collaboration avec les compagnies aériennes; mesures d'hygiène accrues à placer. TSMC fait un don de 1000 masques N-95 chacun à NIMLJ et à la Ville de Schefferville.
2020-03-13	Conférence téléphonique entre les dirigeants de NIMLJ et TSMC	Préoccupations et mesures relatives au Coronavirus	NIMLJ demande le calendrier des prochains paiements pour. TSMC. Satisfait / information fournie sur les mesures contre le coronavirus en cours de mise en œuvre	Calendrier de paiement fourni.
2020-03-13	Conférence téléphonique et réunion en personne à Kawawachikamach entre les dirigeants du NNK et TSMC	Préoccupations et mesures relatives au Coronavirus	NNK a indiqué des cas possibles de COVID-19 à Kawawachikamach, à la suite d'un voyage d'étudiants aux États-Unis. Les jeunes seront testés. NNK demande à TSMC quelles mesures étaient prises vis-à-vis du potentiel de propagation du coronavirus, et de ne pas amener de nouveaux travailleurs et de cesser ses activités.	TSMC Health & Safety Manager, TSMC Nurse rencontre w / Chief & Council; partagé des informations sur les mesures qui comprenaient le formulaire d'auto-déclaration COVID-19 pour tous les travailleurs entrants; voyage non essentiel annulé; collaboration avec les compagnies aériennes; mesures d'hygiène accrues à placer. TSMC suggère que l'aéroport de Schefferville soit évité par les travailleurs entrants le 17 mars. TSMC a fait don de 1 000 masques N-95 à NNK.

Tata Steel Minerals Canada
Registre d'engagement et de consultation des communautés (2020)

Date	Type de communication	Sujet(s)	Question(s) / Matière soulevée	Réponse(s)
2020-03-13	Annonce par TSMC sur radios et pages Facebook communautaires de Matimekush-Lac John & Kawawa	Préoccupations et mesures relatives au Coronavirus	TSMC a communiqué les mesures préventives prises par la société	
2020-03-15	Conférence téléphonique entre leadership de NIMLJ, NNK et TSMC	Préoccupations et mesures relatives au Coronavirus	Le leadership des communautés demandent à TSMC de suspendre ses opérations; Préoccupation que les travailleurs de TSMC fréquentent les lieux publics à Schefferville; Peur pour la santé des membres de la communauté, dont beaucoup sont en situation de vulnérabilité sanitaire. Les communautés n'auront d'autre choix que de prendre des mesures drastiques en cas d'afflux d'un grand nombre de travailleurs de l'extérieur de la région.	TSMC a entrepris d'examiner les options et de revenir au leadership communautaire.
2020-03-16	Conférence téléphonique entre NIMLJ, NNK, Ville de Schefferville, Comité d'intervention d'urgence & TSMC	Préoccupations et mesures relatives au Coronavirus	Les communautés ont expliqué que les préoccupations augmentaient; Les communautés font des sacrifices en empêchant les étudiants de niveau postsecondaire de rentrer chez eux; Demande des communautés pour que TSMC suspende les opérations; NNK considère que TSMC ne fait pas assez pour contrôler la propagation potentielle.	TSMC s'est engagé à ajuster ses opérations en concertation avec les communautés
2020-03-17	Lettre au leadership de NIMLJ de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC explique que: Aucun cas de COVID connu sur place; Infirmière surveillant régulièrement la santé des travailleurs; Les travailleurs locaux du site TSMC ont demandé à rester à la maison, avec salaire; La porte du site sera fermée aux déplacements non essentiels; TSMC retardera le vol nolisé du 17 mars, les travailleurs du site resteront pour l'instant au-delà de leur date d'échéance de retour à domicile, sauf en cas d'urgence.	
2020-03-17	Lettre au leadership de NNK de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC explique que: Aucun cas de COVID connu sur place; Infirmière surveillant régulièrement la santé des travailleurs; Les travailleurs locaux du site TSMC ont demandé à rester à la maison, avec salaire; La porte du site sera fermée aux déplacements non essentiels; TSMC retardera le vol nolisé du 17 mars, les travailleurs du site resteront pour l'instant au-delà de leur date d'échéance de retour à domicile, sauf en cas d'urgence.	

Tata Steel Minerals Canada
Registre d'engagement et de consultation des communautés (2020)

Date	Type de communication	Sujet(s)	Question(s) / Matière soulevée	Réponse(s)
2020-03-17	Lettre au leadership de la Ville de Schefferville de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC explique que: Aucun cas de COVID connu sur place; Infirmière surveillant régulièrement la santé des travailleurs; Les travailleurs locaux du site TSMC ont demandé à rester à la maison, avec salaire; La porte du site sera fermée aux déplacements non essentiels; TSMC retardera le vol nolisé du 17 mars, les travailleurs du site resteront pour l'instant au-delà de leur date d'échéance de retour à domicile, sauf en cas d'urgence.	
2020-03-17	Annonce par TSMC sur radios et pages Facebook communautaires de Matimekush-Lac John & Kawawa	Préoccupations et mesures relatives au Coronavirus	TSMC explique que: Aucun cas de COVID connu sur place; Infirmière surveillant régulièrement la santé des travailleurs; Les travailleurs locaux du site TSMC ont demandé à rester à la maison, avec salaire; La porte du site sera fermée aux déplacements non essentiels; TSMC retardera le vol nolisé du 17 mars, les travailleurs du site resteront pour l'instant au-delà de leur date d'échéance de retour à domicile, sauf en cas d'urgence.	
2020-03-18	Appels téléphoniques, Service de messages courts (SMS) entre leadership de NIMLJ, NNK, Ville de Schefferville & TSMC	Préoccupations et mesures relatives au Coronavirus	NIMLJ et NNK se sont unis pour dire que TSMC doit suspendre ses opérations pour protéger complètement les communautés locales. N'acceptera rien de moins. Des mesures directes seront prises à l'aéroport si TSMC procède à l'embauche de personnel complet	TSMC a entrepris d'examiner les options et de revenir au leadership communautaire.
2020-03-19	SMS de NNK (Chef) à TSMC	Préoccupations et mesures relatives au Coronavirus	Crainte que le personnel TSMC voyageant aux États-Unis avant la rotation de travail sur le site TSMC puisse être infecté par le Coronavirus	TSMC a vérifié et précisé que toutes les précautions étaient prises avec le personnel voyageant à l'extérieur du Canada, y compris l'auto-isolement.
2020-03-20	Appel conférence entre leadership de NIMLJ, NNK & leadership de TSMC	Préoccupations et mesures relatives au Coronavirus	Les communautés sont préoccupées par le nombre de travailleurs à venir avec le vol nolisé du 24 mars; demandent une réduction de l'équipage minimum à 20 personnes	TSMC évacuera tout le personnel et aura un équipage minimum d'environ 50 personnes qui arriveront le 24 mars. TSMC réexaminera ses chiffres et reviendra avec un nombre réduit de travailleurs pour le vol nolisé du 24 mars.
2020-03-21	Appel conférence entre leadership de NIMLJ, NNK & leadership de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC explique qu'en raison des préoccupations de la communauté et de l'annonce du gouvernement de Terre-Neuve-et-Labrador, il mettra les opérations en soins et entretien avec un équipage minimum. Il y aura 3-4 avions qui évacueront le personnel sur le site. TSMC a réduit le nombre de travailleurs entrants en nolisé à env. 19.	Les Conseils des PN sont satisfaits du dernier plan TSMC
2020-03-27	Appel téléphonique entre NIMLJ (Chef) & TSMC	Préoccupations et mesures relatives au Coronavirus	Suggestion de NIMLJ de démobiliser le personnel pour éviter d'utiliser l'aéroport de Schefferville	Quatre travailleurs quitteront le site d'ici le 30 mars
2020-03-30	SMS entre NNK (Chef) & TSMC	Préoccupations et mesures relatives au Coronavirus	Demande de NNK pour une confirmation d'avion à l'aéroport	TSMC confirme qu'il s'agissait d'un vol nolisé privé évacuant 4 employés d'un sous-traitant
2020-03-30	Appel téléphonique entre l'Administrateur de la Ville de Schefferville & TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC et la Ville de Schefferville ont fourni des mises à jour respectives sur la situation	

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2020-03-31	Appel téléphonique entre NIMLJ (Chef) et TSMC	Préoccupations et mesures relatives au Coronavirus	Le Chef de NIMLJ déçu que le nombre de travailleurs sur le site soient supérieurs à ceux prévus la semaine précédente (env. 30 vs 20). Demande un minimum de déplacements aller-retour et des horaires de rotation plus longs afin que le nombre de travailleurs arrivant dans la région soit minimal.	TSMC envisage d'étendre les périodes de rotation du travail, le nombre de personnes et la fréquence des rotations
2020-04-01	Courriel à la direction de la Ville de Schefferville de TSMC	Préoccupations et mesures relatives au Coronavirus	Présentation partagée de TSMC préparée pour les travailleurs sur les mesures actuelles de TSMC prises pour protéger les travailleurs et les communautés	
2020-04-01	Lettre du Chef ITUM à la direction de TSMC	Préoccupations et mesures relatives au Coronavirus	ITUM demande des informations sur les mesures d'atténuation prises par TSMC	TSMC a fourni des informations dans une lettre de réponse (3 avril)
2020-04-02	Appel téléphonique entre TSMC et NIMLJ (Chef)	Préoccupations et mesures relatives au Coronavirus	TSMC partage le dernier plan de changement de personnel pour la charte du 7 avril. TSMC examinera à nouveau le plan du personnel de soins et de maintenance et reviendra.	Chef mécontent du fait qu'il y a plus de travailleurs entrant que partant; a demandé à TSMC de réviser qu'il n'y a pas plus de personnes qui arrivent que de partir.
2020-04-06	SMS entre leadership de NNK & TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC confirme le prochain vol nolisé avec un équipage minimal et aucune interaction avec la communauté, aucune entrée à l'aéroport de Schefferville	NNK satisfaite des mesures prises
2020-04-10	Lettre au leadership de NIMLJ de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC fait le point sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le mode Entretien & surveillance, 0 interaction avec les communautés locales, le vol nolisé de Terre-Neuve-et-Labrador seulement toutes les deux semaines où le personnel débarque de l'avion et monte à bord du bus directement sur le tarmac; aucun travailleur des communautés travaillant sur le site; aucune interaction entre le personnel des services essentiels des communautés et le personnel du site; entrée / sortie du site fermée; Rotations de 4 semaines	NIMLJ satisfaite des mesures prises
2020-04-10	Lettre au leadership de NNK de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC fait le point sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le mode Entretien & surveillance, 0 interaction avec les communautés locales, le vol nolisé de Terre-Neuve-et-Labrador seulement toutes les deux semaines où le personnel débarque de l'avion et monte à bord du bus directement sur le tarmac; aucun travailleur des communautés travaillant sur le site; aucune interaction entre le personnel des services essentiels des communautés et le personnel du site; entrée / sortie du site fermée; Rotations de 4 semaines	NNK satisfaite des mesures prises

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2020-04-10	Lettre au leadership de NNK de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC fait le point sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le mode Entretien & surveillance, 0 interaction avec les communautés locales, le vol nolisé de Terre-Neuve-et-Labrador seulement toutes les deux semaines où le personnel débarque de l'avion et monte à bord du bus directement sur le tarmac; aucun travailleur des communautés travaillant sur le site; aucune interaction entre le personnel des services essentiels des communautés et le personnel du site; entrée / sortie du site fermée; Rotations de 4 semaines	Aucune reçue
2020-04-10	Lettre au leadership d'Innu Nation de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC fait le point sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le mode Entretien & surveillance, 0 interaction avec les communautés locales, le vol nolisé de Terre-Neuve-et-Labrador seulement toutes les deux semaines où le personnel débarque de l'avion et monte à bord du bus directement sur le tarmac; aucun travailleur des communautés travaillant sur le site; aucune interaction entre le personnel des services essentiels des communautés et le personnel du site; entrée / sortie du site fermée; Rotations de 4 semaines	Aucune reçue
2020-04-13	Lettre au leadership de NunatuKavut de TSMC	Préoccupations et mesures relatives au Coronavirus	TSMC fait le point sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le mode Entretien & surveillance, 0 interaction avec les communautés locales, le vol nolisé de Terre-Neuve-et-Labrador seulement toutes les deux semaines où le personnel débarque de l'avion et monte à bord du bus directement sur le tarmac; aucun travailleur des communautés travaillant sur le site; aucune interaction entre le personnel des services essentiels des communautés et le personnel du site; entrée / sortie du site fermée; Rotations de 4 semaines	Ville satisfaite des mesures prises
2020-04-16	Conversation téléphonique entre NIMLJ (Chef) et TSMC	Préoccupations et mesures relatives au Coronavirus	Mise à jour sur le vol nolisé à venir, le nombre de travailleurs, les procédures strictes sont suivies	NIMLJ accepte plan
2020-04-16	SMS entre NNK (Chef) et TSMC	Préoccupations et mesures relatives au Coronavirus	Mise à jour sur le vol nolisé à venir, le nombre de travailleurs, les procédures strictes sont suivies	NNK accepte plan
2020-04-21	Conversation par courriel et par téléphone entre l'Administrateur de la ville de Schefferville et TSMC	Préoccupations et mesures relatives aux Coronavirus, opérations de TSMC	Mise à jour sur le vol nolisé à venir, le nombre de travailleurs, les procédures strictes sont suivies	La Ville satisfaite des mesures prises

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2020-04-22	Vidéoconférence entre représentants en environnement de NNK, KRG, Makivik & TSMC	Projet 2A (Goodwood) - Réunion du comité de suivi environnemental et social	Makivik a fait le point sur sa position vis-à-vis de la décision du gouvernement de Qc de reprendre les opérations minières. TSMC a fourni des mises à jour sur: les mesures de précaution prises pour protéger les communautés et les travailleurs; Plans de mesures d'atténuation de la fonte printanière; Plans de l'unité de traitement de l'eau de Goodwood. NNK a exprimé son intérêt à voir des travailleurs des Premières nations participer à l'exploitation de l'unité de traitement de l'eau de Goodwood; Situation actuelle et plans de réparation du bassin hydrographique de Goodwood; Surveillance environnementale, y compris la surveillance de la qualité de l'air et la présence de caribou; Résultats (mitigés) de l'application du produit de recouvrement des routes de transport dans les zones qui avaient créé des problèmes d'eau dans le passé; Améliorations prévues de l'infrastructure de gestion de l'eau; La gestion des déchets; Plan de réhabilitation et de fermeture à partager pour commentaires en 2021	TSMC s'est engagée à solliciter la participation des Premières Nations à l'exploitation de l'unité de traitement des eaux. Les membres se sont déclarés satisfaits des informations reçues.
2020-04-22	Conversation téléphonique entre NIMLJ (Chef) et TSMC	IBA / paiements commerciaux; Préoccupations et mesures relatives aux Coronavirus, opérations TSMC	NIMLJ insatisfait du niveau de paiement, mal à l'aise avec l'augmentation du nombre à chaque affrètement entrant; TSMC a fait le point sur le changement d'équipage du 22 avril et a présenté l'idée de reprendre progressivement les opérations dans les semaines à venir	Certains paiements effectués par TSMC; Le NIMLJ a indiqué trop tôt pour discuter de l'augmentation du nombre de travailleurs sur le site de la mine, mais peut revoir le 4 mai et revoir les plans / scénarios du TSMC.
2020-04-23	SMS, conversation téléphonique entre NNK (chef) et TSMC	IBA / paiements commerciaux; Préoccupations et mesures relatives aux Coronavirus, opérations TSMC	NNK satisfait avec le paiement; TSMC a fait le point sur le changement d'équipage du 22 avril et a présenté l'idée d'une reprise graduelle des opérations dans les semaines à venir	Certains paiements effectués dy TSMC; NNK a indiqué trop tôt pour discuter de l'augmentation du nombre de travailleurs sur le site de la mine, mais peut revoir le 4 mai et examiner les plans / scénarios de TSMC.
2020-04-28	SMS, appel vidéo entre NNK (Chef) et TSMC	Opérations TSMC - Prochaines étapes	TSMC a demandé à mtg de discuter de la reprise progressive des opérations	NNK propose le 1er mai
2020-04-28	Courriel aux représentants de NIMLJ, de la direction du NNK et du comité environnemental, pages Facebook de Matimekush-Lac John et Kawawachikamach fr. TSMC	Mise à jour environnementale	TSMC a mis en place diverses mesures de gestion de l'eau sur son site, dont: - Amélioration de la conception des bassins de sédimentation (bermes et fossés); - augmentation du déneigement avant la fonte printanière; - ingénierie des routes de transport; - additif routier de transport pour contrôler la poussière, l'eau rouge; - utilisation de flocculants, clôtures de sédiments; - une surveillance accrue à l'échelle du site au début de la fonte printanière (personnel sur le terrain, surveillance aérienne).	Aucun commentaire reçu.
2020-05-07	Courriel à NIMLJ, NNK, direction de la Ville de Schefferville fr. TSMC	Operations Update	TSMC provided update	NNK asked whether same precautionary measures will be maintained and will there be charter from Montreal? TSMC responded that measures would be maintained but that there was no Montreal charter planned in immediate future

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Date	Type de communication	Sujet(s)	Question(s) / Matière soulevée	Réponse(s)
2020-05-25	Email to NIMLJ, NNK, Town of Schefferville leadership fr. TSMC	Mise à jour des opérations	TSMC a fourni une mise à jour	La Ville de Schefferville peut collaborer avec TSMC, sur un plan pour accueillir les travailleurs de la Ville avec des conseils du Directeur régional de la santé publique; TSMC a indiqué qu'elle envisagera
2020-05-27	Lettre à TSMC fr. Leadership NNK	Opérations et paiements TSMC	NNK demande des mises à jour sur la montée en puissance opérationnelle et le calendrier des paiements IBA et commerciaux impayés	TSMC, par lettre datée du 1er juin 2020, a expliqué qu'il fournissait des mises à jour régulières; solde dû délai de paiement fourni.
2020-05-28	Conversation téléphonique entre le représentant du Conseil ITUM et TSMC	Mise à jour des opérations	L'ITUM avait des questions sur les engagements de l'ÉRA et la prochaine réunion du comité de mise en œuvre	TSMC fournira des informations sur la mise à jour des opérations du projet et les questions liées à l'IBA par écrit
2020-05-28	Email de TSMC à la direction de l'ITUM et aux représentants environnementaux	Mise à jour environnementale	TSMC a mis en place diverses mesures de gestion de l'eau sur son site, dont: - Amélioration de la conception des bassins de sédimentation (bermes et fossés); - augmentation du déneigement avant la fonte printanière; - ingénierie des routes de transport; - additif routier de transport pour contrôler la poussière, l'eau rouge; - utilisation de flocculants, clôtures de sédiments; - une surveillance accrue à l'échelle du site au début de la fonte printanière (personnel sur le terrain, surveillance aérienne). TSMC a fourni des détails sur l'équipement minier à transporter directement de Hollinger Yards au site minier, le calendrier, les mesures de sécurité prises, y compris l'absence d'interaction avec les résidents locaux et une escorte de sécurité pendant l'exploitation.	No comments received
2020-05-31	Email de TSMC à NIMLJ, direction de la Ville de Schefferville	Mobilisation des équipements de la zone industrielle de la Ville	TSMC a fourni des détails sur l'équipement minier à transporter directement de Hollinger Yards au site minier, le calendrier, les mesures de sécurité prises, y compris l'absence d'interaction avec les résidents locaux et une escorte de sécurité pendant l'exploitation.	La Ville de Schefferville a confirmé qu'il n'y avait aucun problème tant que les mesures de sécurité suivaient, y compris la surveillance des fils électriques aériens.
2020-06-03	Lettre du Chef d'ITUM à TSMC	Opérations TSMC et paiements ÉRA	ITUM demande que les paiements IBA impayés soient résolus	TSMC, par lettre datée du 10 juin 2020, a fourni une mise à jour sur la montée en puissance opérationnelle, les mesures de précaution COVID-19, les livrables ÉRA, y compris le calendrier des contributions financières.
2020-06-05	Conversations téléphoniques entre les dirigeants de NIMLJ et TSMC	IBA, paiements commerciaux	La NIMLJ a exprimé des inquiétudes concernant les retards de paiement	TSMC a expliqué la situation financière serrée et le calendrier de règlement des soldes impayés.
2020-07-09	TSMC a expliqué la situation financière serrée et le calendrier de règlement des soldes impayés.	Réunion du Comité communautaire de la Santé, la Sécurité et l'environnement	Santé et sécurité, mise à jour COVID 19; mise à jour des opérations; mise à jour environnementale; dégel du printemps 2020; gestion des déchets; été 2020; Silver Yard; restauration; projet Howse. NNK a expliqué que les citoyens locaux utilisant la route de transport avec des véhicules personnels pour accéder à la zone => questions sur: l'état du chemin de contournement; Programme de compensation de Joan Lake - NNK a des commentaires, en attente d'approbation par le Conseil	Les participants ont convenu qu'une réunion devrait être organisée entre les représentants de la communauté locale et TSMC sur les questions de sécurité relatives à Haul Road TSMC demande des commentaires sur Joan Lake dès que possible
2020-07-16	Lettre au MPO de NNK	Programme d'indemnisation de Joan Lake	NNK a exprimé des inquiétudes concernant les antécédents environnementaux de TSMC et sa capacité à mettre en œuvre des mesures de plan de compensation; demande une consultation supplémentaire	N/A

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2020-07-24	Réclamation d'un membre de la communauté NIMLJ @ TSMC Security Gate	Gestion du dépotoir	Décharge de déchets présumée sur le site TSMC par le fournisseur NIMLJ à la décharge de Schefferville	TSMC a pris des mesures pour empêcher le fournisseur de quitter le site avec des ordures en ramassage; rappel des heures d'ouverture du dépotoir TSMC
2020-08-18	Email de l'Administrateur de la Ville de Schefferville à TSMC	Poussières	La Ville de Schefferville a été interrogée sur la suppression de la poussière dans la ville par TSMC	TSMC a expliqué que NIMLJ a un contrat d'entretien routier entre le site d'enfouissement municipal au site minier. L'arrosage d'eau sur la route 2 à 3 fois / jour comme cela a été fait en 2018, considérée comme pas particulièrement efficace;
2020-08-20	Email, téléphone de TSMC aux leadership de NIMLJ, NNK	Augmentation prévue du nombre de travailleurs logés en ville	NIMLJ préoccupé avec risque accru de COVID, demande de patrouilles de sécurité Innu (noms des candidats à fournir au TSMC), application stricte de l'auto-isolément en l'absence de travail	TSMC a accepté de mettre en œuvre les mesures demandées
2020-08-28	Courriels au leadership de NIMLJ, NNK, Ville de Schefferville de TSMC	Mise à jour sur les opérations, l'emploi, le contrôle de la poussière	TSMC a fourni une mise à jour sur les opérations, l'emploi et les questions de contrôle des poussières	Aucun reçu
2020-09-08	Courriels au leadership de NIMLJ, NNK, Ville de Schefferville de TSMC	Mise à jour sur les opérations, les travailleurs logés en ville	TSMC a fourni une mise à jour sur les opérations, les travailleurs hébergés en ville	Aucun reçu
2020-09-09	SMS entre Conseiller de NNK & TSMC	Route de contournement	Le Conseiller NNK demande quand la maintenance / mise à niveau sera effectuée car les endroits difficiles sur Bypass Rd rendent l'utilisation difficile	TSMC explique qu'elle avait émis un bon de commande pour faire effectuer des travaux par Naskapi Heavy Machinery en 2019, cependant, en raison de la restructuration de NHM, les travaux n'ont pas été effectués. Un nouveau bon de commande sera nécessaire, ce qui amènera probablement l'échéancier au printemps / été 2021
2020-09-29	Courriels au leadership de NIMLJ, NNK, Ville de Schefferville de TSMC	Mesures préventives COVID-19	TSMC a fourni une mise à jour sur les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le nouveau protocole de test pour les travailleurs originaires de Québec et de l'ouest, en plus du questionnaire de présélection, l'interdiction des travailleurs d'entrer dans les établissements de la ville, les travailleurs locaux doivent s'auto- s'isoler après leur quart de travail, éloignement physique et port obligatoire du masque lorsqu'ils ne sont pas dans le dortoir	Aucun reçu
2020-10-07	E-mails et conversations téléphoniques entre les représentants environnementaux de NNK et TSMC	Route de contournement	TSMC a informé les communautés d'un certain nombre d'événements impliquant la présence non autorisée de véhicules civils sur la route de transport, représentant un risque majeur pour la sécurité	Question de NNK sur l'état du transport. TSMC a répondu qu'elle avait émis un bon de commande pour faire effectuer des travaux par Naskapi Heavy Machinery en 2019, cependant, en raison de la restructuration de NHM, les travaux n'ont pas été effectués. Un nouveau bon de commande sera nécessaire, ramenant l'échéancier probable au printemps / été 2021. En attendant, la route est praticable.

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2020-10-07	VideoConférence entre leadership de NNK, NIMLJ & TSMC & Suivi par email de TSMC	Mesures préventives COVID-19	Communautés demandent: 1- TSMC à mettre en œuvre les tests de dépistage de tous les travailleurs; 2- Surveillance supplémentaire en Ville par les gardes de sécurité innus et naskapis des résidences des travailleurs	TSMC a confirmé les mesures les plus récentes prises pour empêcher la propagation du COVID-19, y compris le nouveau protocole de test pour les travailleurs originaires de Québec et de l'ouest. Des tests sur les travailleurs de la bulle atlantique et les travailleurs locaux seraient effectués ultérieurement, une fois la logistique établie. Les mesures supplémentaires comprennent: un questionnaire de présélection, l'interdiction des travailleurs d'entrer dans les établissements de la Ville, les travailleurs locaux doivent s'isoler après leur quart de travail, l'éloignement physique et le port obligatoire d'un masque lorsqu'ils ne sont pas dans le dortoir, et un plan d'évacuation en cas de cas présumé de COVID
2020-10-16	Conv. téléphonique btwn entre TSMC & NIMLJ (Chef)	1- Étude sur les perceptions; 2- Incidents d'eau rouge en 2019; 3- Surveillance de la Ville (COVID)	1- Le chef du NIMLJ n'est pas intéressé à soutenir une autre étude sur l'utilisation des terres. Déjà fait par le passé (Raphaël Picard) et aucune volonté de justifier ou de répondre aux questions posées par le gouvernement. 2- Le Conseil du NIMLJ veut voir la Fed. Rapport du gouvernement sur les incidents de ruissellement de Red Water en 2019, comme indiqué dans les MTG avec des représentants du gouvernement 3- Avoir un nom de candidat pour la patrouille de sécurité en ville; fournira les coordonnées le 19 octobre 20 "	1- TSMC accepte les consultations multiples dans les communautés; TSMC / consultant déterminera l'intérêt des membres de la communauté à participer 2- TSMC fera un suivi avec gouv. fédéral sur rapport 3- TSMC fera un suivi le 19 octobre.
2020-10-21	SMS entre leadership NNK et TSMC	COVID-19	NNK demande des éclaircissements après un signalement par un prêtre de la communauté qu'il y avait un cas possible de COVID au site minier	TSMC a confirmé qu'il y avait 3 cas récents de rhume de tête, pour lesquels les travailleurs ont été invités à isoler pendant 24 à 48 heures. Aucun cas présumé de COVID
2020-10-23	SMS entre leadership NNK et TSMC	COVID-19	Les membres du Conseil NNK demandent des éclaircissements sur un cas possible de COVID au site minier	TSMC a confirmé qu'il y avait 3 cas récents de rhume de tête, pour lesquels les travailleurs ont été invités à isoler pendant 24 à 48 heures. Aucun cas présumé de COVID. Confirmé que TSMC informerait les communautés locales en cas de cas présumé
2020-10-28	Conférence vidéo entre représentements en environnement de NIMLJ, NNK, ITUM, Innu Nation	Réunion du Comité communautaire SSE	Mise à jour sur la santé, la sûreté, la sécurité et la formation; Route de contournement; Mise à jour des opérations; Mise à jour environnementale; Été 2020; Gestion des déchets Silver Yard; Restauration du site; Compensation de l'habitat du poisson; Programmes de surveillance du projet Howse; Gestion de l'eau hiver 2020. Les conseillers du NNK et du NIMLJ ont soulevé des préoccupations concernant la diminution de la présence de poissons près de la route de transport au passage à niveau de Greenbush; diminution du niveau du flux	TSMC Environnement n'avait pas observé de diminution du niveau d'eau en amont et en aval du franchissement; TSMC inclura le croisement Greenbush comme zone d'intérêt dans les améliorations de la gestion de l'eau du chemin minier.
2020-10-28	Réunion du comité communautaire HSE	Niveaux des cours d'eau près du chemin minier au croisement de Greenbush	Des inquiétudes selon lesquelles le ruisseau s'est asséché depuis la construction de la route de transport, ce qui n'a jamais été vu auparavant. Demander à TSMC d'étudier et d'intégrer des améliorations dans la planification future de la gestion de l'eau	TSMC a confirmé lors de la réunion du 4 février 2021 que le croisement de Greenbush sera considéré comme une zone d'intérêt dans les améliorations de la gestion de l'eau du chemin minier.

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2020-11-12	Email de TSMC aux représentants environnementaux du NIMLJ, du NNK, de l'ITUM, de la nation innue et de la CCN	Programme de compensation de l'habitat du poisson - Lacs potentiels pour le déplacement du poisson à partir du lac Joan	TSMC a fourni «Ébauche technique - Lacs potentiels pour le déplacement des poissons de Joan Lake» pour commentaires / réaction	NNK a répondu par lettre du 15 décembre 2020 (voir ci-dessous)
2020-11-19	Email de la représentante environnemental de NNK auprès de TSMC	Étude sur les lichens sur la qualité de l'air	Demande de résultats / rapport	Rapport confirmé TSMC téléchargé sur le Serveur partagé du Comité communautaire HSE
2020-11-25	Email de la représentante environnemental de NNK auprès de TSMC	Programme de compensation de l'habitat du poisson - Lacs potentiels pour le déplacement du poisson à partir du lac Joan	NNK a indiqué qu'il y avait peu de détails dans le projet technique et a demandé s'il s'agissait d'une consultation préliminaire	TSMC, par courriel daté du 25 novembre 2020, a expliqué que le but de la consultation est d'obtenir des commentaires sur les lacs préférés du point de vue de la communauté; une consultation ultérieure aura lieu avec des détails supplémentaires sur le plan de réinstallation
2020-12-08	Lettre de NNK (Chef) à TSMC	Paiements et engagements IBA	NNK a augmenté les montants dus et les retards de paiement; insatisfaction liée à l'emploi et aux opportunités de contrats	Par lettre en date du 14 janvier 2021, TSMC a fourni une mise à jour sur les opérations et ses efforts pour recruter, embaucher et former des Naskapis, y compris les statistiques actuelles, les opportunités commerciales à venir et le calendrier de paiement.
2020-12-15	Lettre du leadership NNK leadership à TSMC	Programme de compensation de l'habitat du poisson - Lacs potentiels pour le déplacement du poisson à partir du lac Joan	NNK demande plus d'informations sur les conditions de chaque lac potentiel et la présence d'omble de fontaine et d'autres espèces	Dans une lettre en date du 28 janvier 2021, TSMC a expliqué qu'elle recherchait des commentaires préliminaires du point de vue des utilisateurs des terres. TSMC s'est engagé à fournir les détails demandés sur le lac d'ici mars 2021
2020-12-18	Email de la DG, NIMLJ à TSMC	Montants dus et paiements	Préoccupations concernant les paiements IBA et commerciaux pour les services rendus.	Par e-mails datés du 21 décembre 2020 et du 14 janvier 2021, TSMC a fourni un accusé de réception, une mise à jour du projet et un calendrier de paiement.

Appendix XII: Public announcements



13 March, 2020

Wachiya,

This is an announcement regarding the corona virus, now called COVID-19, a situation affecting us, and many around the world.

TSMC has an Emergency Response Plan in place and is following the matter closely. The Company's priority is to protect the health of its workers and of the local communities.

Effective immediately, TSMC has put in place the following measures :

- It requires that all employees, contractors and visitors fill a Self-Declaration COVID-19 form before being admitted on our flights, both commercial and charter.
- All non-essential travel to site and business travel outside Canada is postponed
- We are collaborating with airline companies in order to remain up-to-date and have in place the most appropriate measures;
- As preventive measures, self-hygiene and camp cleaning practices are being reinforced and strengthened.

TSMC operations will continue at this time while the company continuously monitors the situation.

We are in regular contact with the Naskapi Council Office and will keep informed of any developments relating to activities and measures.

We thank you for your understanding.

Akua Tutamouk!
Tshinashkumitin



March 17, 2020

ANNOUNCEMENT
COVID 19 - Precautionary Measures

TSMC continues to work together with the local communities to address the challenges of this unprecedented situation.

Our number one priority is to protect the health of all community members in the entire Schefferville/Kawawachikamach area as well as that of our workers.

We are constantly monitoring and assessing the COVID-19 situation and are committed to adapting our approach as the matter evolves.

At the present time, we still have no suspected cases of infection, or symptoms, at our operating Site, which our Health Center is constant monitoring. We continue to follow all provincial and federal guidelines.

We have deployed the following precautionary measures so far:

1. Restricted access to the TSMC Site in order to optimize social distancing

- All workers who live in the Schefferville/Kawawachikamach area and who commute daily to the Site have been asked to stay at home.
- On Monday March 16, the Site gate was closed to any non-essential services, leaving access only to essential services such as fueling and snow clearing activities. Workers involved in these activities are strictly required to have no interaction with personnel on Site.

2. Employee Travel

- We have cancelled our charter flights and as such, no TSMC employees or contractors flew in this week.
- TSMC will continue operating this week, but with a reduced team.
- TSMC Nurses continue to monitor worker health at site and will only authorize the departure of workers who must go home for medical or personal reasons.

We are discussing on a regular basis with community leadership developments both on our Site and in the communities, so that we can make the necessary decisions together.



June 4th 2020

Greetings Citizens,

This is an announcement regarding operations at the mine and an exceptional activity of transporting equipment from Hollinger yards and from the train station to the mine site.

Firstly, our site continues to be COVID-19 free.

A partial restart of operations at the mine site began in late May. TSMC plans to increase the number of workers to a maximum of 150 people by the end of June so that they can be all accommodated at the Timmins camp.

The dome has been back in operation for a few days and is processing ore well. Train shipments will resume shortly.

In terms of preventive measures of COVID-19, in collaboration with the Councils of local communities, the company has strictly in place the following measures:

- No worker may leave the site during their rotation;
- Schefferville Airport is completely bypassed; workers disembark the charter plane onto the tarmac at Schefferville and are transported by bus directly to the mine site.
- The rotation of workers is now 3 weeks with weekly changeovers of a portion of personnel.
- TSMC nurses monitor the health of workers on site and rigorously filter the COVID-19 self-declaration forms before selecting workers for the next shift.
- a nurse examines the workers' health at the departure airport.

Exceptionally, by June 11, you may see vehicles from the mine site transporting very large equipment from Hollinger yards or the train station directly to the site. It is important to note that this transport is supervised by the Director of Health and Safety of TSMC and that the logistics personnel are allowed to travel between these yards and the mine site. Directives are very clear that the staff are absolutely and strictly not permitted to deviate from their course to go to town for anything whatsoever.

We are in regular communication with the Council office regarding activities. Furthermore, I invite you to contact Coco Calderhead with any questions.

Thank you for your understanding.

Tshinashkumitin!

Appendix XIII: Blast Notifications

AVIS PUBLIC / PUBLIC NOTICE



Ceci est pour aviser les populations locales de Matimekush-Lac John, Kawawachikamach et de Schefferville qu'il y aura des activités de dynamitage au gisement minier **Goodwood** vendredi le 27 novembre 2020 à 12h.

Pour des raisons de sécurité, l'accès dans ces secteurs sera restreint durant ces activités.

Soyez prudent lorsque vous êtes dans le secteur.



This is to advise the local communities of Matimekush-Lac John, Kawawachikamach and Schefferville, of blasting activities at the **Goodwood** deposit Friday 27 November 2020 at 12pm.

For safety reasons, access in these areas will be restricted during blasting activities.

Please be safe while in the area.

Appendix XIV: Perceptions Survey

Land User Perceptions Survey 2020
Goodwood & Sunny Deposits
Final Report

Prepared by:

Sikumiut Environmental Management Limited



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Prepared for:

Tata Steel Minerals Canada
Montreal, QC



Project File: 086-002

March 18, 2021

Report Preparation			
	Name	Signature	Date
Prepared by:	S. Bendenia		January 15, 2021
Reviewed by:	S. Gullage		January 15, 2021

Report Revision Record				
Revision	Description of Change	Prepared by:	Approved by:	Date:
A	Initial Draft Report to Client	S. Bendenia	S. Gullage	January 15, 2021
01	Final Report	S. Bendenia	S. Gullage	March 5, 2021
02	Final Report – updated Figure 3.7	S. Bendenia	S. Gullage	March 12, 2021
03	Final Report – Title changed and updated § 3.1.2 and 3.3	S. Bendenia	S. Gullage	March 18, 2021

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Appendix A	Project 2A Perception Survey - Questionnaire
Appendix B	Project 2A Perception Survey – Open Answer Responses

EXECUTIVE SUMMARY

In 2020, Tata Steel Mineral Canada (TSMC) engaged SEM Ltd. to conduct a perception survey with the land users of TSMC's Project 2A, in the Goodwood area in Québec. The purpose of the survey was to comply with Condition 20 of TSMC's Certificate of Authorization to conduct an evaluation program of land users' perceptions of Project 2A, as well as to ensure that the efficiency of TSMC's methods of communication of the results of the various monitoring programs is evaluated and that complaints by land users related to the Project are received. The following report summarizes the findings of 21 surveys.

The questionnaire was designed based on best practice guidelines developed for the mining and metals industry (ICMM, 2015). Interviews were conducted between October and November 2020 by telephone and online social media.

Key results from this survey included:

- Impacts of TSMC's activities in Goodwood were considered moderately negative and focused on environmental and economic aspects;
- Land users indicated they had a moderate degree of knowledge about the Project;
- Project-related complaints are received but the land users are mainly dissatisfied with the resolution process;
- Relational variables such as trust and procedural fairness were rated low for TSMC.

These data provide key information to inform current and future engagement strategies by TSMC. They highlight the need for increased involvement of land users in decision-making processes and identify priority communication topics for each community group.

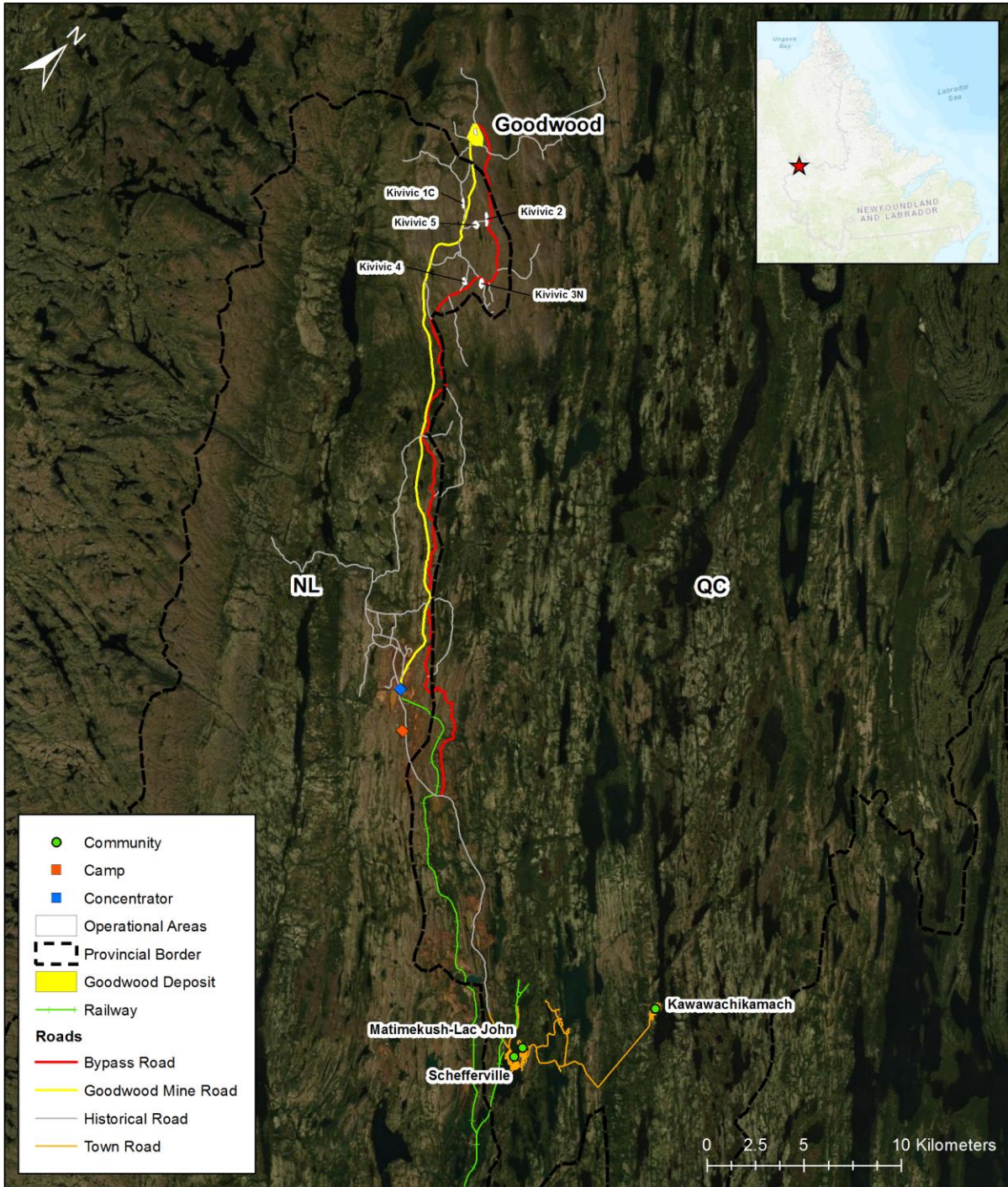
1.0 INTRODUCTION

As part of its mining operations in the Province of Québec, Tata Steel Mineral Canada (TSMC) holds a Certificate of Authorization (C of A) which includes a number of conditions. Condition 20 of the C of A requires that TSMC presents an evaluation program, or survey, of land users' perceptions of Project 2A (Goodwood and Sunny deposits). TSMC has decided to delay the start of the Sunny project, however, operations at the Goodwood pit are on-going since 2017 (TSMC, 2019). The location of Goodwood and the survey area are shown in Figure 1.1.

In 2020, TSMC engaged SEM Ltd to undertake a perceptions survey of Project 2A's land users, defined as persons who carry out activities such as hunting, trapping, fishing, berry picking, any type of recreational activities, or traveling and camping in the area of study (Goodwood, Québec). The primary objectives of the survey were to:

- Evaluate land users' perceptions of the Project (i.e. Project 2A, the Goodwood and Sunny deposits);
- Evaluate the efficiency of TSMC's methods of communication of results from the various TSMC monitoring programs;
- Ensure that project-related complaints are received.

The present report contains a statistical analysis of data collected through a telephone and online survey process. A descriptive analysis (i.e. examining the mean levels of responses on each of the items or questions) was conducted, as well as a comparison of the responses of community members from each of the three communities. The report is structured to reflect the structure of the questionnaire (Appendix A), with a description of the methodology employed and a discussion of the findings.



	Tata Steel Minerals Canada (TSMC)	FIGURE NO: 1.0	PREPARED BY:
	Project 2A (Goodwood) Location	COORDINATE SYSTEM: NAD83 UTM Zone 19	DATE: 05/03/2021

Figure 1.1 Map of the survey area and Goodwood

2.0 METHODOLOGY

This section provides details of the design and implementation of the survey instrument, the limitations encountered during the data collection as well as a description of the profile of the respondents.

2.1 Questionnaire design

The questionnaire was developed based on best practice guidelines for measuring and monitoring stakeholder relationships in the mining and metals industry resources sector developed by the International Council on Mining and Metals (ICMM, 2015).

The structure of the survey comprised 38 questions divided into 4 categories: demographic items, issue and impact items, relational items, and outcome items. Five-point Likert response scales were utilized to assess participants' responses. In addition, open-ended questions were included to seek additional information on the different aspects discussed in the survey.

A copy of the questionnaire is contained in Appendix A.

2.2 Survey method

Given the Covid-19 pandemic and its associated restrictions and obstacles, in-person interviews could not be conducted. Therefore a mixed-method approach was used for data collection. This included phone interviews as well as online surveys.

Representatives of the three communities were first contacted and were asked to provide a list of potential participants that would fit the desired profile (i.e. persons that carry out activities such as hunting, trapping, fishing, berry picking, any type of recreational activities or travelling and camping in the area of study). All phone numbers provided were contacted up to five times to obtain a phone interview and if the time was not convenient to participants, appointments were made to complete the survey at a later date and time. A total of 5 land users were interviewed by phone between October 22 and November 17, 2020.

The online questionnaire was published in English on the Naskapi Radio Facebook page and in French on the CRKA Radio Kue Attinukan Matimekush Lac John Facebook page. The survey was open from October 26 to November 17, 2020. A total of 16 land users participated in the online survey.

2.3 Limitations

- TSMC has been constructing and operating several pits as part of its Direct Shipping Ore (DSO) project since 2012. Although this survey was designed to incite participants to focus on their recent experiences in the Goodwood area when answering the questions, it was not guaranteed that all responses were compliant with this requirement. In fact, many answers appeared to pertain to TSMC's entire mining operation and presence in the Schefferville region.
- One community leader expressed to TSMC that community members do not recognize borders imposed by others, and as such, the premise of this survey might be flawed in their opinion. Indeed, from this perspective, the differentiation between deposits or mining areas within a broader land use area is often immaterial.
- The number of participants who were available and willing to participate in this survey was limited to users of the Goodwood area. Community representatives have acknowledged a climate of "consultation fatigue", which has set in as a result of the numerous studies required for various projects, including TSMC's Howse Project near the Timmins deposits in Labrador, and other mining projects planned in recent years on the traditional territories of the local communities by various proponents. Given these limitations, the participation rate for this survey was deemed to be quite sufficient.

2.4 Sample description

A total of 21 interviews of land users were completed. Table 2.1 presents the demographic characteristics of the survey respondents.

Table 2.1 Demographic data

	Kawawachikamach	Matimekush-Lac John	Schefferville	Total Land users
Number of Participants	11 52%	7 33%	3 14%	21 100%
Employment Status (%)				
Student	20%	0%	0%	10%
Unemployed	0%	29%	0%	10%
Employed	70%	71%	100%	75%
Retired	0%	0%	0%	0%
Stay-at-home parent	10%	0%	0%	5%
Gender breakdown (%)				
Males	73%	86%	67%	76%
Females	27%	14%	33%	24%
Age breakdown (%)				
Less than 18 yrs	0%	0%	0%	0%
18 to 34 yrs	27%	14%	0%	19%
35 to 54 yrs	64%	71%	33%	62%
55 to 64 yrs	9%	14%	67%	19%
65 yrs and over	0%	0%	0%	0%

As can be seen in **Table 2.1**:

- 52% of the land users interviewed belonged to the Kawawachikamach community, 33% to the Matimekush-Lac John community, and 14% to the Schefferville community;
- 75% of participants were employed;
- 76% of participants were male, and 24% were female;
- 62% of participants were aged between 35 to 54 years. Furthermore, as per the collected data, participants were aged between 21 to 62 years and the mean age was 42.76 years (SD=11.00 years¹).

Figure 2.1 shows the activities that these land users conducted in Goodwood in the past year. The 3 main activities were caribou hunting², fishing, and camping.

1 SD refers to Standard Deviation. SD is the standard distance a score is from the mean, or average.

2 There have been no reports of Caribou being present in the area in the recent years.

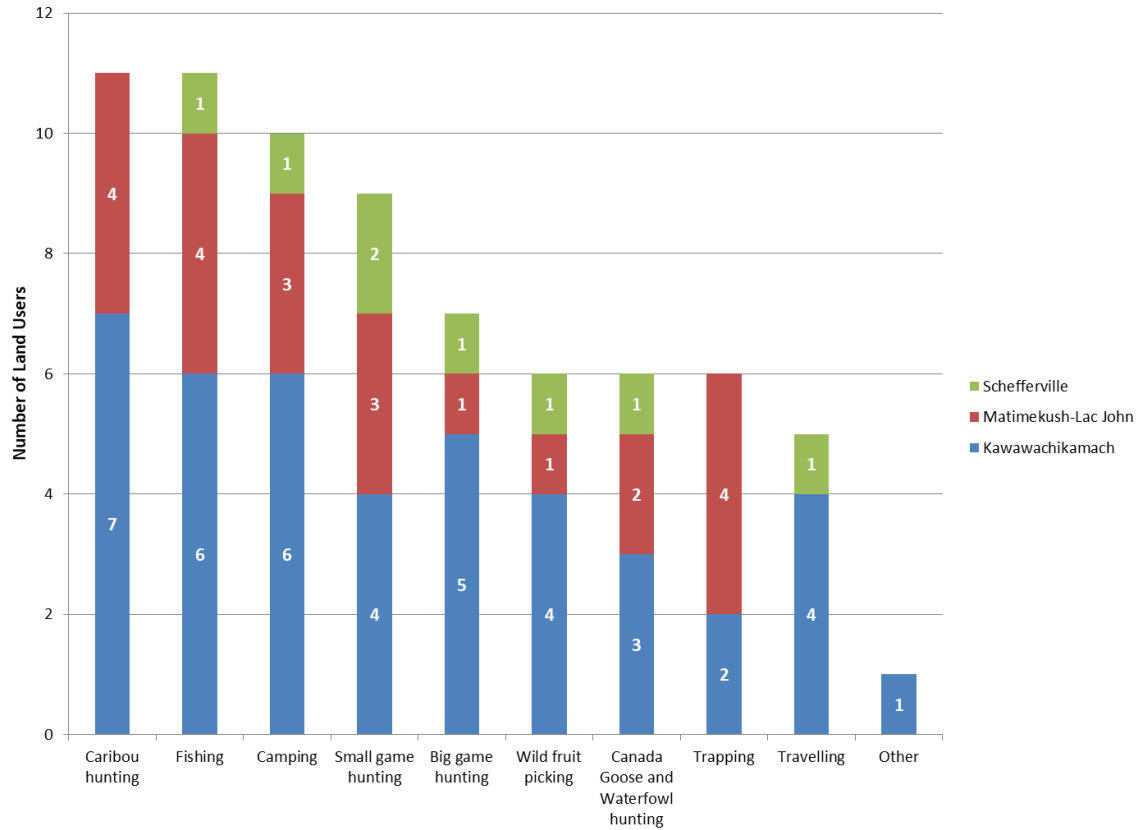


Figure 2.1 Main activities conducted by the survey participants in Goodwood

3.0 RESULTS

This section outlines the results of the survey according to the specific survey item's themes.

3.1 Perceptions of Project 2A's impacts

Participants were asked to rate several aspects relating to impacts in Goodwood and surrounding area associated with TSMC's activities, using a scale of 1 (*very negative impact*) through to 5 (*very positive impact*). Participants were also asked to list any other issues associated with mining in the Goodwood area that they believe should be addressed.

3.1.1 Overall results

In order to measure the perceptions of TSMC's economic, environmental and social impacts, the participants were asked to rate their experience with the following aspects:

- Environmental: such as dust, noise, fauna, waste and water, and other amenity issues;
- Cultural heritage: such as traditional activities and areas of cultural importance;
- Housing and accommodation: such as availability and costs for ownership and renting and tourism;
- Employment and training: such as education, training, apprenticeships and opportunities for women, Indigenous Peoples and disabled peoples;
- Local business opportunities: such as supplying, contracting, new businesses, increased local capacity and Indigenous-led businesses;
- Community health: such as access to medical and health facilities, emergency services and specialists, pandemic response plan;
- Community well-being: such as community safety, crime, roads and personal well-being; and
- Community investment: such as increased economic development, health services, education and training, cultural and recreational infrastructure and reduced negative impacts.

As seen in Figure 3.1, overall responses indicated that impacts of TSMC’s activities in Goodwood were considered moderately negative.

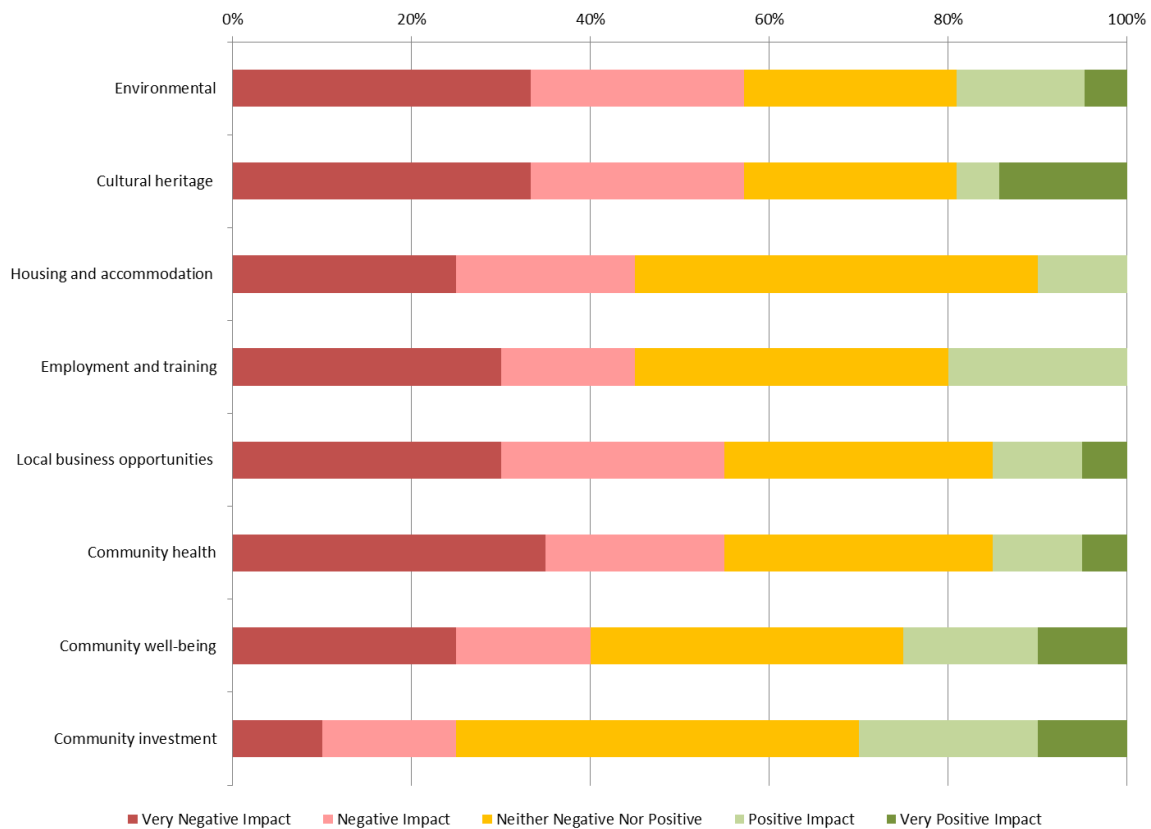


Figure 3.1 Perceptions of impacts

The 3 lowest-rated aspects were:

- Community health impacts (M³=2.30, SD=1.22);
- Environmental impacts (M=2.33, SD=1.24); and
- Local business opportunities (M=2.35, SD=1.18).

The most highly rated aspect was Community investment (M=3.05, SD=1.10).

Participants were asked if there were other issues associated with mining in the Goodwood area that they think should be addressed. Of those who provided an answer, the most frequently identified issues included (see Figure 3.2):

3 Mean or average score

- Dust control (25%).
- Employment and business opportunities locally (17%).
- More community investment (17%).
- Reinstate road to access hunting and fishing sites (17%).

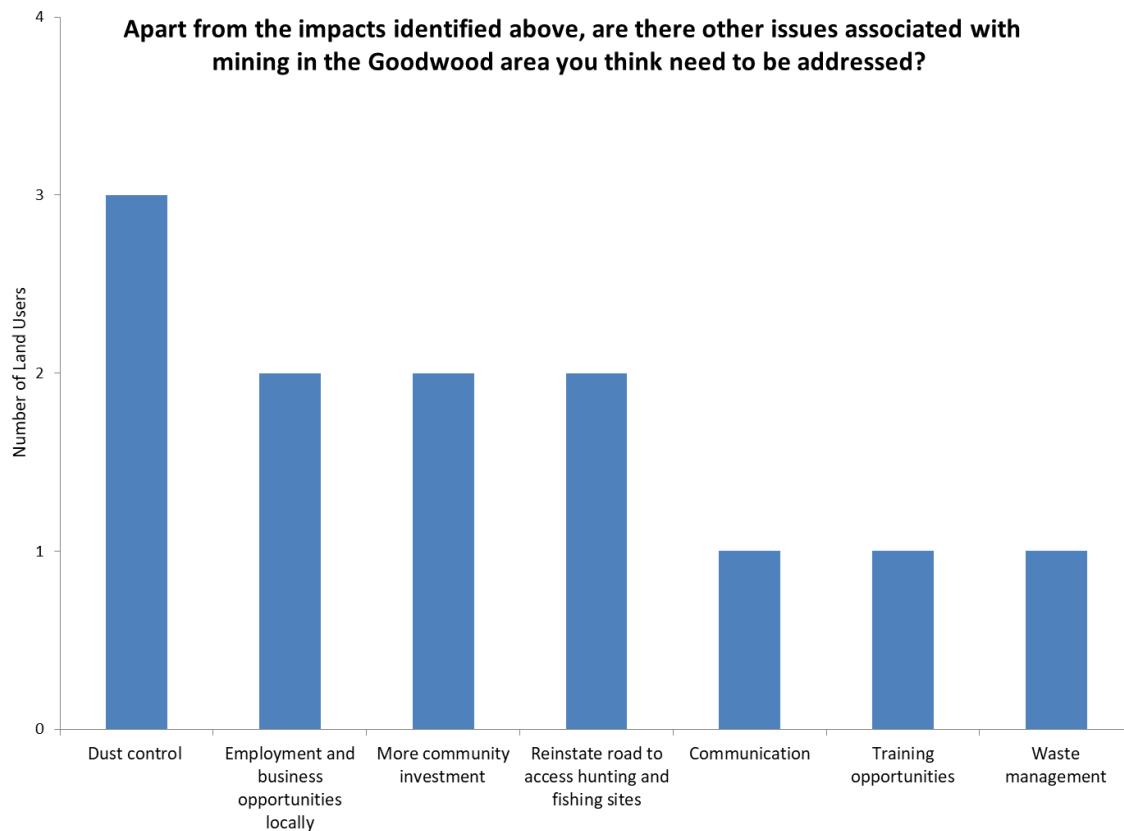


Figure 3.2 Are there other issues associated with mining in the Goodwood area you think need to be addressed? (multiple responses allowed)

Complete responses to this open-ended question can be found in Appendix B (Table 1).

3.1.2 Results by community

A spider diagram allows data incorporation for each impact and the different communities on a single, visually meaningful chart (ICMM, 2015). Each of the outer points on the spider diagram corresponds to one of the 8 aspects of impact perceptions assessment. For all 8 aspects, the outermost line on the chart represents the highest score possible (i.e. 5, or the impact of TSMC’s activities in Goodwood on a particular aspect is perceived as very positive). The lower

the score of each aspect, the closer it is plotted to the center of the chart (i.e. 1, or the impact of TSMC’s activities in Goodwood on a particular aspect is perceived as very negative).

As seen in Figure 3.3, all three communities agree on considering community investment as the most highly rated impact. Schefferville and Matimekush-Lac John land users also give a rather high score to employment and training while it was given the lowest score by Kawawachikamach land users. Aspects that scored the lowest for Schefferville and Matimekush-Lac John land users were, in their respective order, environmental/community health and housing and accommodation.



Figure 3.3 Spider diagram – Perceptions of impacts by each community

3.2 Relational factors

3.2.1 Knowledge of TSMC and its programs

Self-reported knowledge of TSMC’s activities in Goodwood was assessed in this survey. Responses to the question about knowledge could range from 1 (*low knowledge*) to 5 (*high knowledge*). The mean response to the question ($M=2.95$, $SD=1.53$) indicated a moderate degree of knowledge about TSMC’s activities (see Figure 3.4).

Greater knowledge of TSMC’s activities was reported by participants from Kawawachikamach (M=3.54, SD=1.57) and Schefferville (M=3.33, SD=0.58) compared to Matimekush-Lac John (M=1.86, SD=1.21).

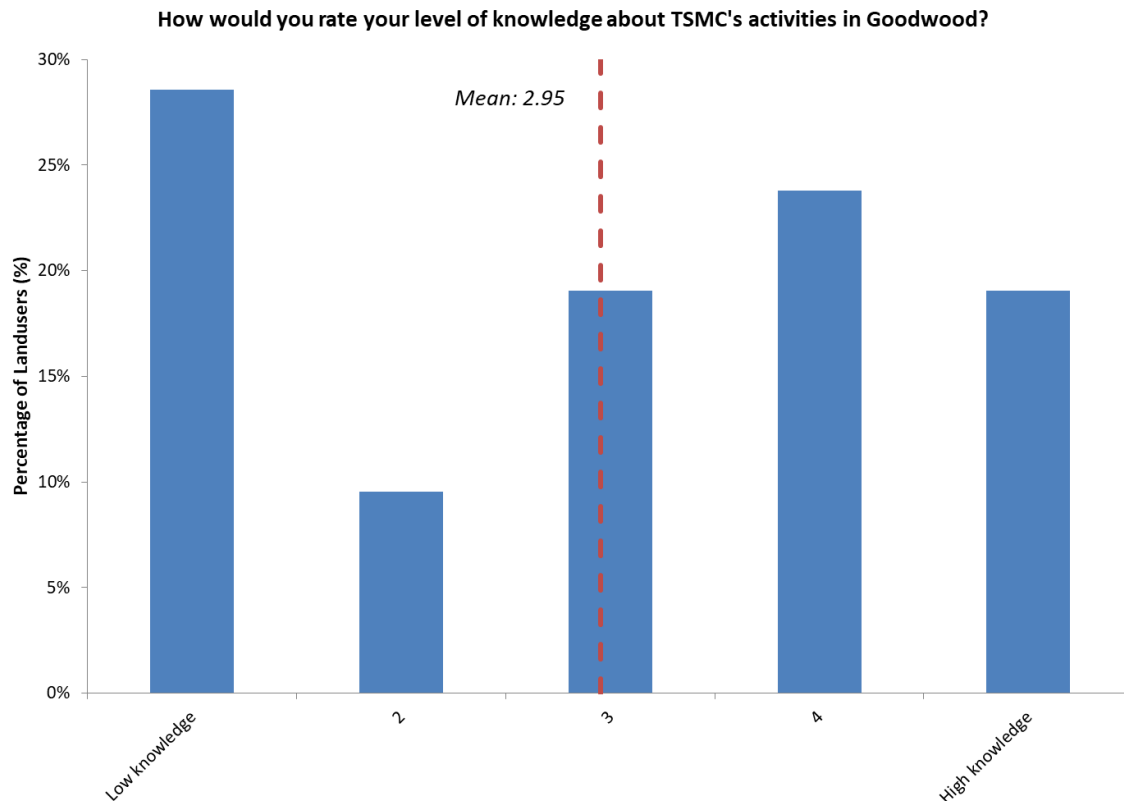


Figure 3.4 Knowledge of TSMC

Concerning programs that TSMC has implemented, or initiatives of which they have been a part, only 2 land users were able to name one. One land user replied positively to the question but did not provide an example. The programs recalled related to the spring-melt runoff management and future pit rehabilitation. A total of 18 respondents, being 86%, did not know of, or could not recall any program or initiative that TSMC had implemented.

Participants were asked to name initiatives or programs to which they think TSMC should contribute or support. Of those who provided an answer, the most frequently identified suggestions included (see Figure 3.5):

- Education and training (33%);
- Environment (14%)

- Local community (10%).

Complete responses to this open-ended question can be found in Appendix B (Table 2 and Table 5).

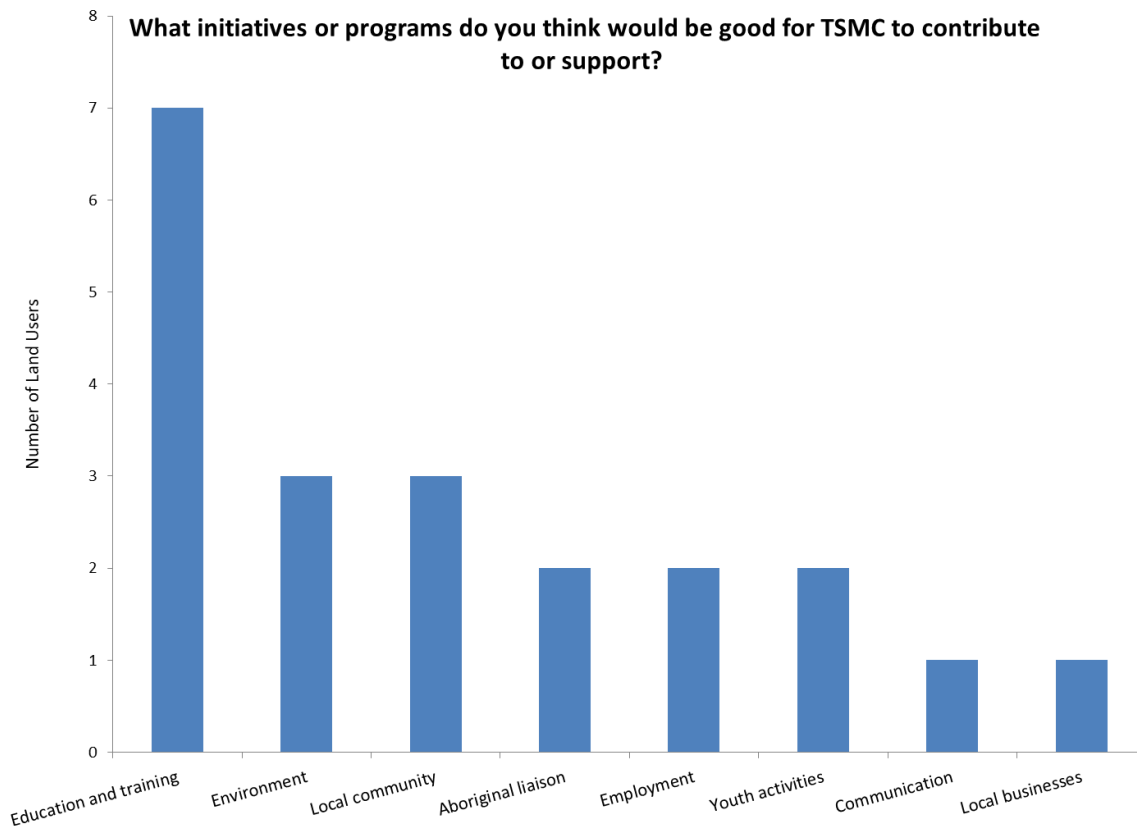


Figure 3.5 What initiatives or programs do you think would be good for TSMC to contribute to or support? (multiple responses allowed)

3.2.2 Sources of information about the project

It is useful to understand where the land users receive their information regarding support, communication activities, and evaluate the type of information they receive. The three main sources of information reported by the participants were (see Figure 3.6):

- Social Media (Facebook) (21%);
- Mine employees (19%);
- Chief & Council (17%).

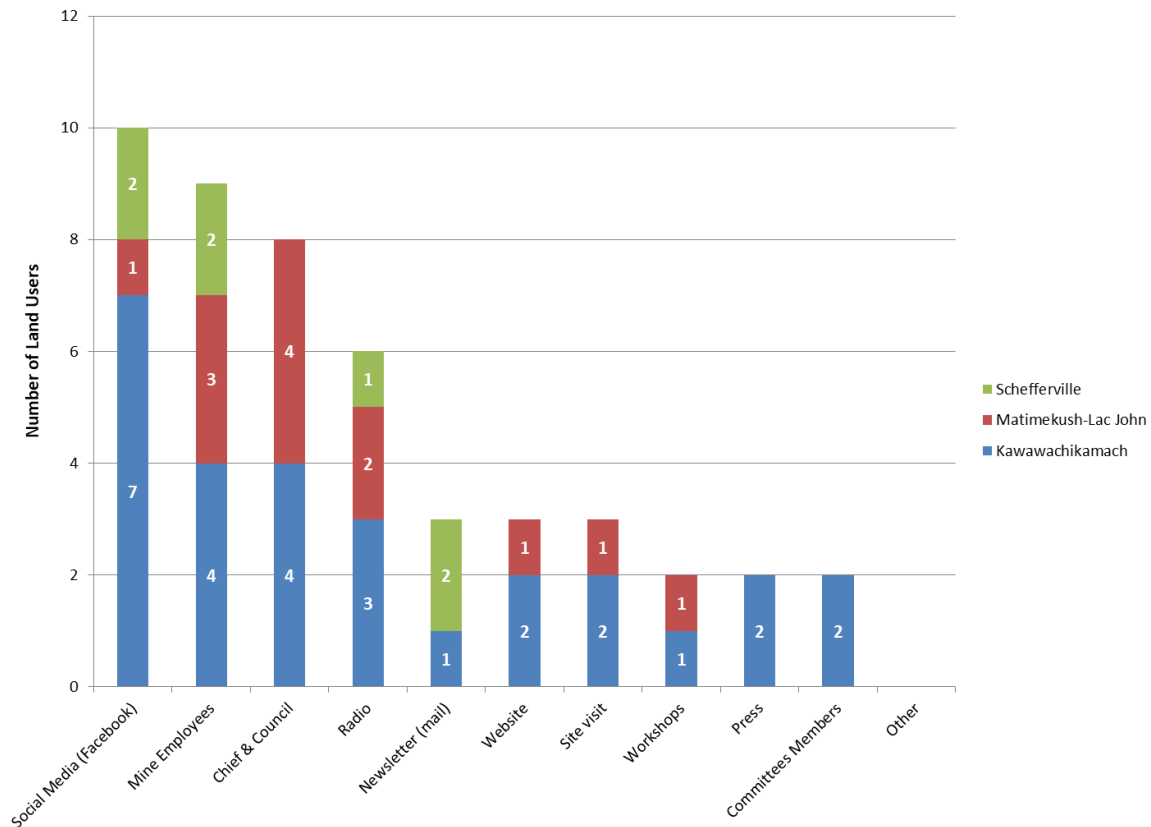


Figure 3.6 Main sources of information about the project (multiple responses allowed)

Specifically, response differences due to location were:

- Matimekush-Lac John land users preferred media to receive information about the project is the radio (14%) and not social media (Facebook) (8%);
- One of the preferred sources of information for Schefferville land users is the newsletter (mail) (29%);
- Chief & Council is one of the preferred sources of information among 31% of Matimekush-Lac John land users compared to 14% of Kawawachikamach land users.

When asked if there was any other way that they would like to hear about the project, 62% of participants replied that there was not. Of those who provided an answer, the most frequently identified suggestions are shown in Figure 3.7 below.

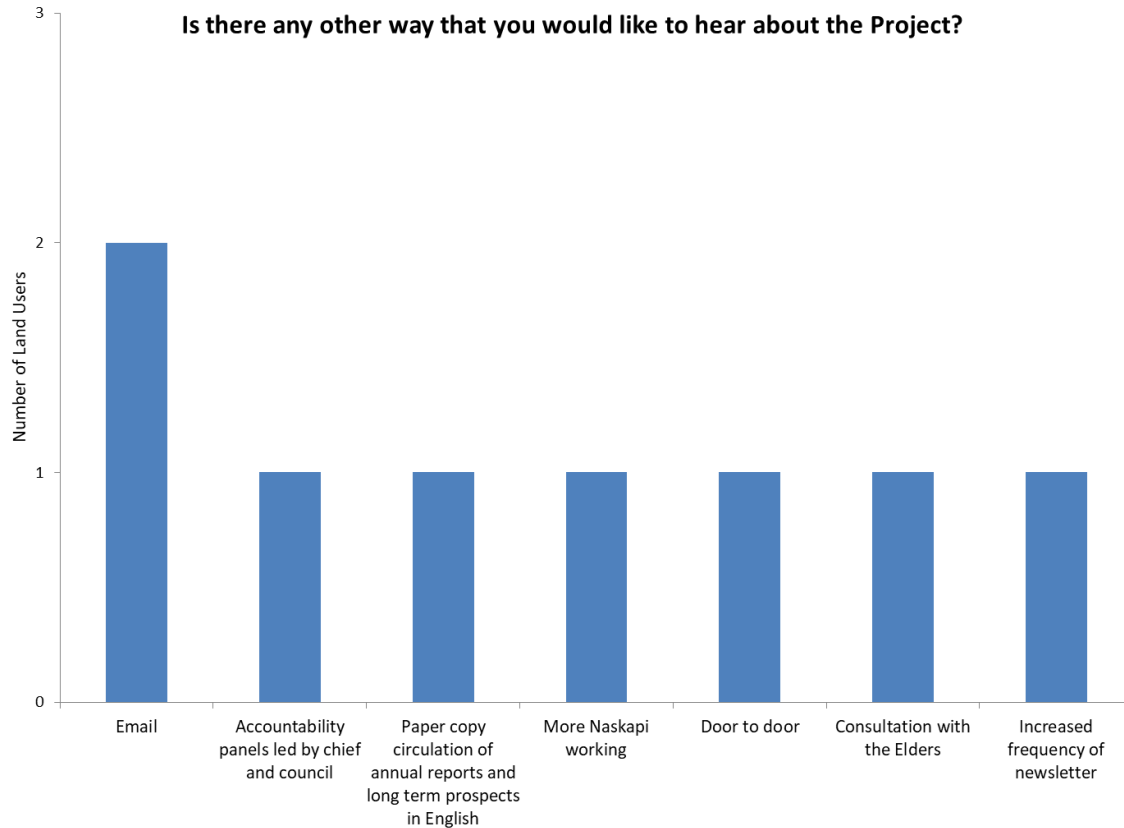


Figure 3.7 Is there any other way that you would like to hear about the Project? (multiple responses allowed)

52% of participants indicated that there was no additional information about the project that they would like to receive from TSMC. Those participants who indicated that they would like additional information about the project were most likely to mention environmental impacts assessment (27%), employment (18%), community investment (18%), and mine operations update (18%) as shown on Figure 3.8 below.

Complete responses to these open-ended questions can be found in Appendix B (Table 3 and Table 4).

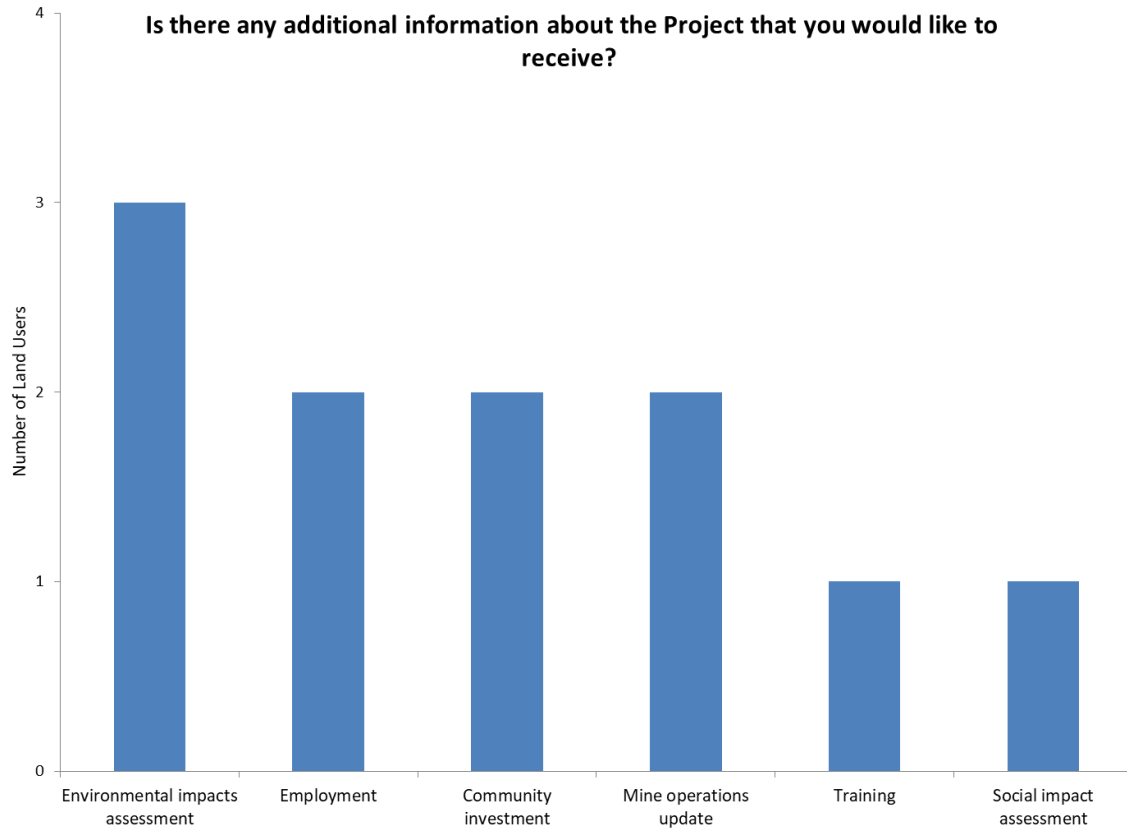


Figure 3.8 Is there any additional information about the Project that you would like to receive? (multiple responses allowed)

3.2.3 Quantity of contact with TSMC

Participants were asked about the amount or quantity of their contact with TSMC personnel on a scale from 1 (*near no contact*) to 5 (*lots of contact*). Overall, low levels of contact were reported (see Figure 3.9). There were no significant differences in the quantity of contact when participants' locations were considered.

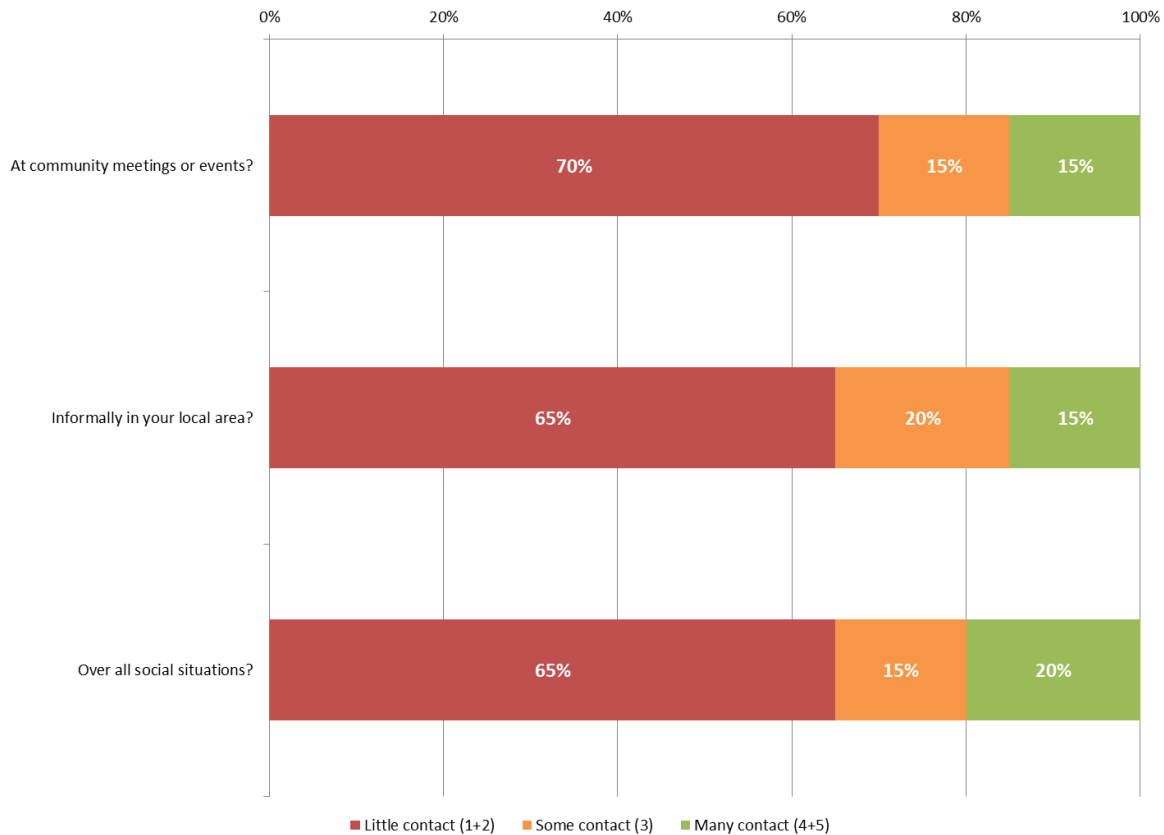


Figure 3.9 How much contact have you had with TSMC personnel?

3.2.4 Project-related complaints

Eight participants (38% of respondents) indicated they had made contact with TSMC with regards to an issue or complaint. The average experience for these 8 people was mostly unsatisfactory. One person responded that their issue was still being dealt with (see Figure 3.10). Also, there were no significant differences in satisfaction when participants' locations were considered.

More information on these issues is provided in Appendix B (Table 6).

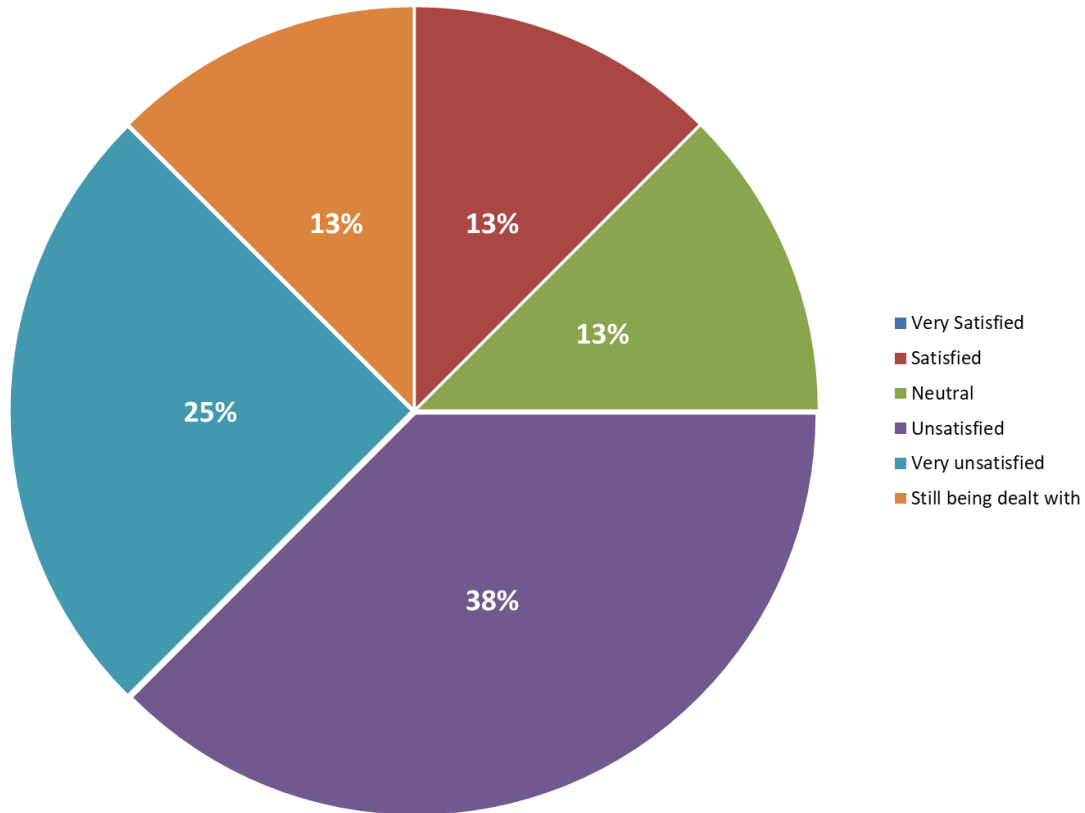


Figure 3.10 Satisfaction with complaint resolution

3.3 Attitudes towards Project 2A and TSMC

3.3.1 Overall results

Attitudes are general evaluations that people hold regarding a particular entity (Lavrakas, P. J. 2008). In this part of the survey, participants were asked to rate their current attitude towards TSMC’s activities in Goodwood area, using a scale of 1 (*negative attitude*) through to 5 (*positive attitude*). Results indicated that attitudes towards TSMC’s activities in Goodwood were generally slightly negative, with an overall average rating of 2.53 (SD=1.17) (see Figure 3.11).

There was no significant difference when comparing the results from the different communities. The average rating was 2.60 (SD=1.43) for participants from Kawawachikamach, 2.50 (SD=0.55) for participants from Matimekush-Lac John, and 2.33 (SD=1.53) for participants from Schefferville.

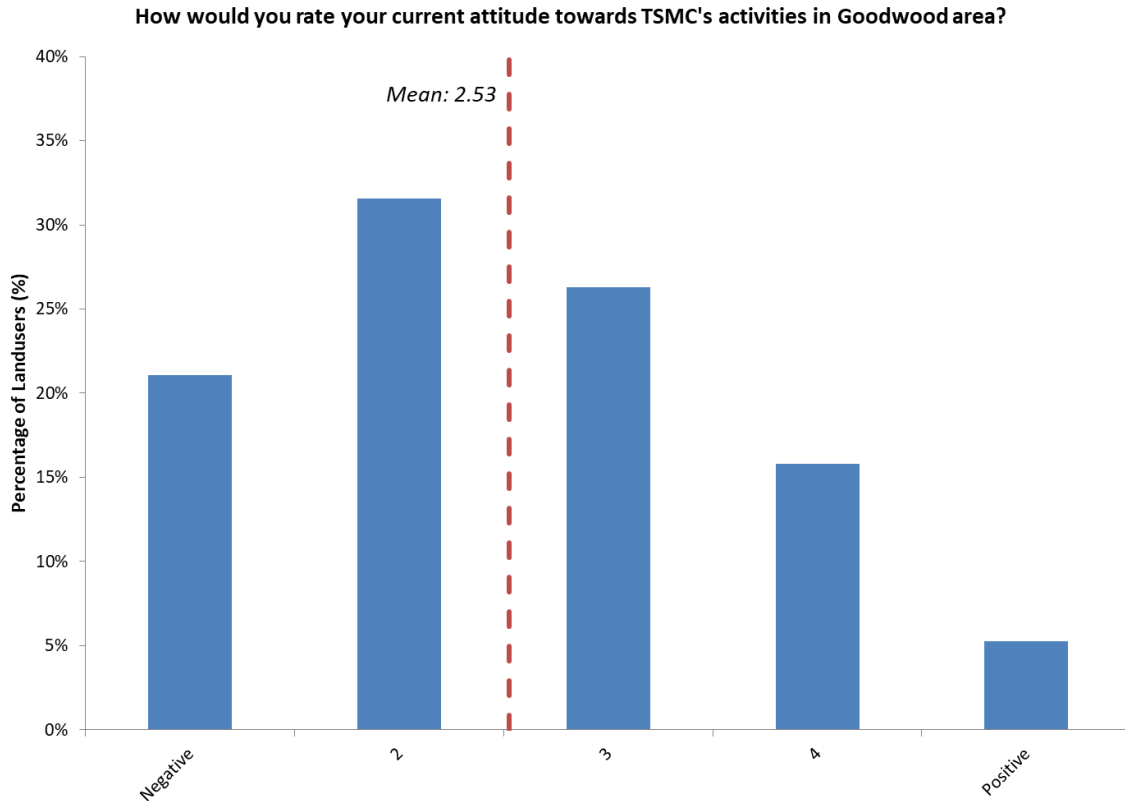


Figure 3.11 Attitudinal ratings towards TSMC’s activities in Goodwood area

Participants were then asked 11 attitudinal statements about Project 2A and TSMC’s activities in Goodwood area, and asked to rate each statement using a scale of 1 (*strongly disagree*) through to 5 (*strongly agree*). The choice was given as well to select unsure for those participants who did not have an opinion on the subject. Participants were also asked to provide specific examples related to the ratings provided. Complete responses to this open-ended question can be found in Appendix B (Table 7).

As can be seen in Figure 3.12, on average participants did not agree with the statements, except the statement “*Project 2A has negatively impacted my activities in the Goodwood area*” (M=3.11, SD=1.52). This statement is negatively worded and as such, a higher level of agreement reflects negatively on TSMC.

Survey participants most strongly disagreed with the statements “*Goodwood area land users trust TSMC*” (M=1.78, SD=1.11) and “*TSMC cares about land users in the Goodwood area*” (M=1.78, SD=0.88).

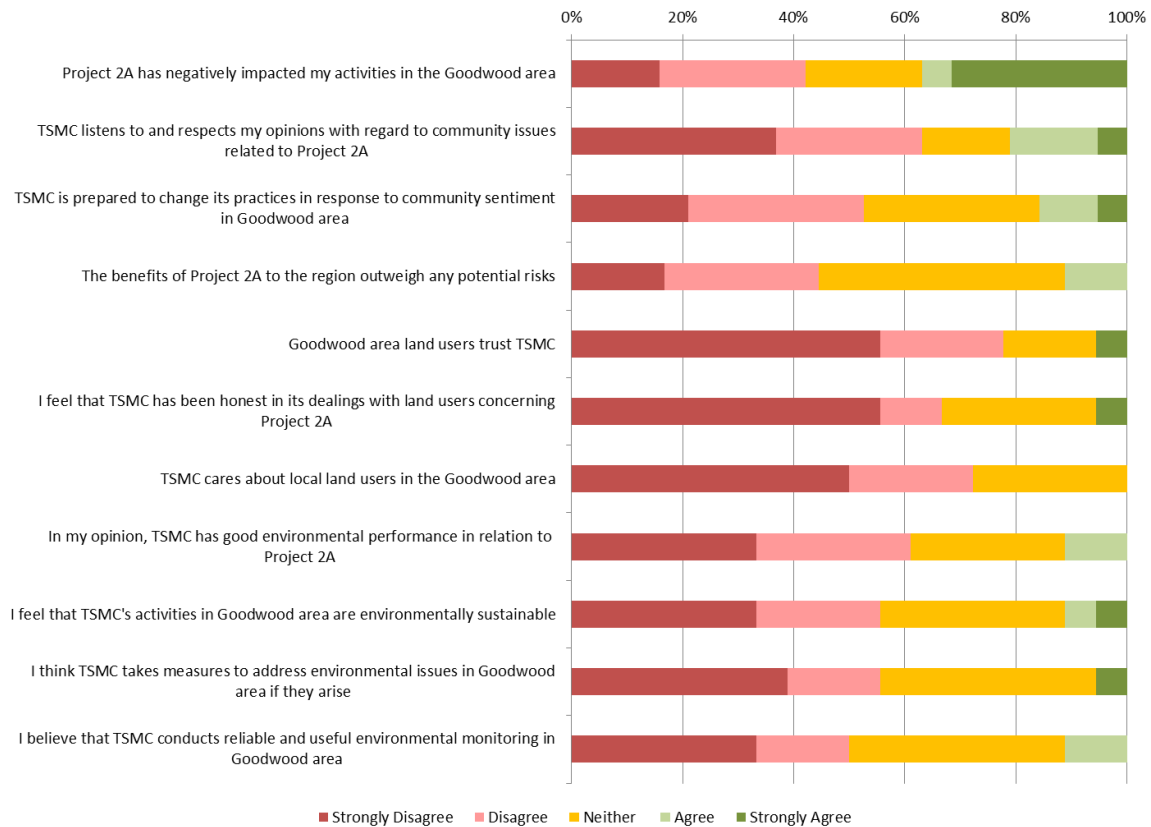


Figure 3.12 Attitudinal statements

3.3.2 Results by community

A spider diagram was created based on the participants' responses to the attitudinal statements (see Figure 3.13). The 5 aspects were defined by grouping the statements as follows:

- Reputational context (question 25);
- Compatibility of interests (questions 26 and 29);
- Respect / Procedural fairness (questions 27, 28 and 32);
- Trust (questions 30 and 31);
- Environmental management (questions 33 to 36).

Results for each aspect are discussed in the following paragraphs.

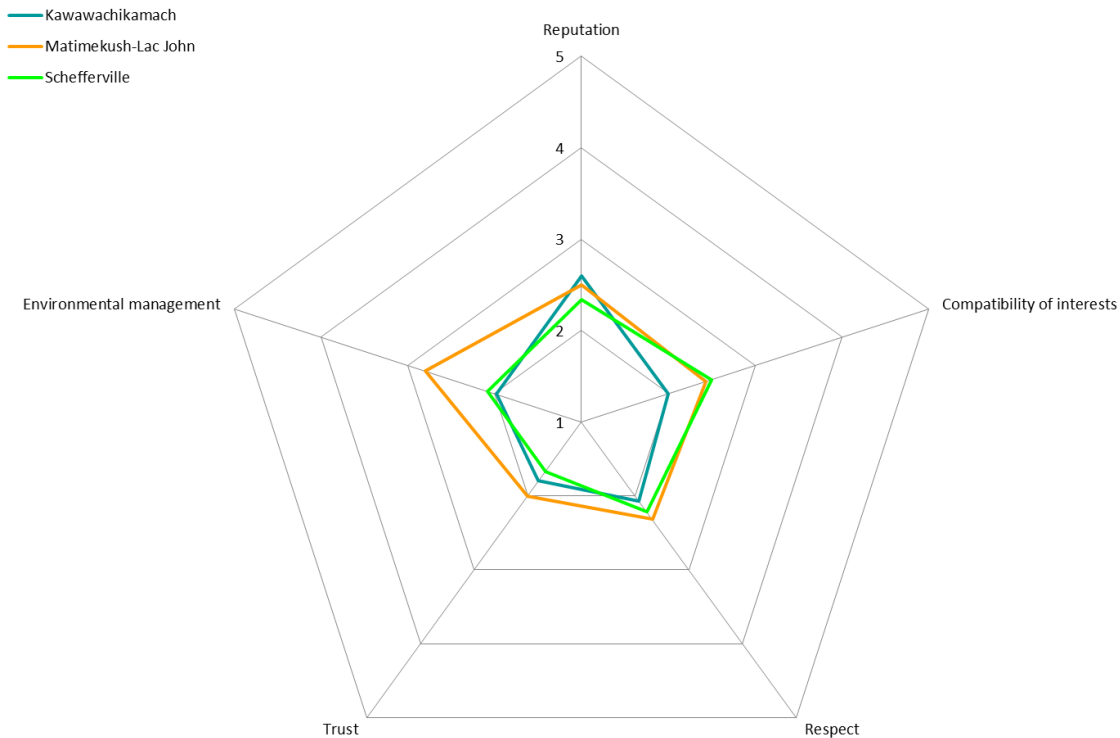


Figure 3.13 Spider diagram – Attitudinal statements’ results by community

3.3.2.1 Reputation

Reputation can be defined as the opinions and beliefs that stakeholders hold of a company (ICMM, 2015). As discussed in paragraph 3.3.1, TSMC’s overall reputation in Goodwood (i.e. the land users’ general feelings towards TSMC) was slightly negative, but there was no significant difference when comparing the results from the different communities. The average rating was 2.60 (SD=1.43) for participants from Kawawachikamach, 2.50 (SD=0.55) for participants from Matimekush-Lac John, and 2.33 (SD=1.53) for participants from Schefferville.

TSMC’s reputation, however, is the strongest aspect of the company-community relationship for participants from Kawawachikamach.

3.3.2.2 Compatibility of interest

Compatibility of interest is a measure of whether the interests of TSMC and the Goodwood area land users are aligned, or complementary but not mutually exclusive.

Compatibility of interest is the strongest aspect of the relationship for participants from Schefferville. The average rating was 2.50 (SD=0.89), which is slightly higher than the average rating for participants from Matimekush-Lac John (M=2.43, SD=1.10). The average rating was 2.00 (SD=1.40) for participants from Kawawachikamach.

Specifically, for participants from Matimekush-Lac John:

- After correcting for the negatively worded sentence, the lowest score of all statements was reported regarding the impact of Project 2A on the land users' activities (M=1.67, SD=1.37).
- The highest score of all statements was reported regarding the benefits of the Project to the region (M=3.20, SD=0.84).

3.3.2.3 Respect / Procedural fairness

Procedural fairness relates to the extent to which the land users of Goodwood area felt that TSMC listens to and respects them, and the degree to which TSMC responds to participants' concerns and cared about them.

Overall, TSMC was viewed as moderately unresponsive to community concerns and issues, with average responses below the mid-point of the scale. The average rating was 2.32 (SD=1.11) for participants from Matimekush-Lac John, followed by 2.22 (SD=1.20) for Schefferville and finally 2.07 (SD=1.14) for Kawawachikamach.

Specifically, for participants from Kawawachikamach:

- The highest score of all statements was reported regarding preparedness to change (M=2.60, SD=1.07).
- The lowest score of all statements was reported regarding the level of care of TSMC (M=1.70, SD=0.95).

3.3.2.4 Trust

All three communities agree on considering trust as the weakest aspect of the relationship. The average rating was 2.00 (SD=0.94) for participants from Matimekush-Lac John, followed by 1.80 (SD=1.28) for Kawawachikamach and finally 1.67 (SD=1.03) for Schefferville.

3.3.2.5 Environmental management

Overall, the three communities view TSMC's environmental practices at Goodwood as moderately efficient with average responses below the mid-point of the scale. Environmental management is the strongest aspect of the relationship for participants from Matimekush-Lac John with an average rating of 2.80 (SD=1.01). The average rating was only 2.08 (SD=0.79) for participants from Schefferville, and 1.98 (SD=1.12) for Kawawachikamach.

It should be noted that not one participant selected unsure for the statement "*I believe that TSMC conducts reliable environmental monitoring in Goodwood area*" which implies that participants are aware and familiar with such programs.

3.4 Open comments

Participants were asked whether they had any additional comments that they would like to make regarding TSMC and its activities in Goodwood area. Eight participants provided such comments and these can be found in Appendix B (Table 8).

4.0 CONCLUSION

The report details the analysis of 21 surveys, collected through a telephone and online process, from land users of TSMC's Project 2A area (Goodwood, Québec).

Impacts of TSMC's activities in Goodwood were considered moderately negative. Perceived negative impacts of the operations appear to be largely focused on community health and environmental related aspects (such as dust control), as well as employment and business opportunities.

Land users indicated that they possessed a moderate degree of knowledge of the operations; however, only a low percentage of participants could recall areas in which the company supports and contributes to the local community or monitors the surrounding environment in the Goodwood area.

Land users were asked about their interactions with the company's employees and where they obtained information about the Project. Responses indicated a low amount of contact with TSMC representatives. Sources of information cited consisted mainly of social media such as Facebook, mine employees, and Chief & Council. The radio and mailed newsletter were preferred in specific communities.

Project-related complaints are received but a majority of land users expressed their lack of satisfaction concerning the resolution process.

Land users have generally slightly negative attitudes towards the company. Participants felt that their interests can potentially be aligned with TSMC's. However, TSMC was viewed as moderately unresponsive to community concerns and issues. Land users felt that they can't fully trust the company and that they are moderately excluded from decision-making processes about community issues by TSMC. Their responses expressed that TSMC had work to do in listening and respecting community opinions and changing its practices based on these concerns. TSMC's environmental practices at Goodwood are seen as moderately efficient.

5.0 RECOMMENDATIONS

TSMC's Project 2A in Québec faces several challenges in developing and maintaining a constructive relationship with the land users of the Goodwood area. From the findings of this survey, levels of trust in the company currently appear to be low and land users feel slightly neglected.

While there are challenges, there are also opportunities and clear signals regarding how the land users would like to be engaged. Involvement in decision-making processes, feeling heard and respected, and receiving timely and accessible information should all be TSMC goals for future engagement with land users.

Communicating with TSMC on topics such as employment, education and training opportunities, and dust control are among the top priorities of many Goodwood area land users. Furthermore, using the comparative analysis provided in this survey can help identify specific areas where efforts are required for each community group, which can be addressed through a differentiated business strategy and communication program and methods. For example, Matimekush-Lac John land users are concerned about the Project's impact on housing and accommodation and their preferred method of communication is through Chief & Council.

It will also be beneficial to measure the evolution of land users' perceptions of the Project to assess the performance of TSMC's community engagement strategies. Tracking data longitudinally, or across time, allows for the identification of issues within stakeholders groups before they become conflicts and will demonstrate that the company is listening and responding appropriately to community concerns.

6.0 REFERENCES

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Appendix A

Project 2A Perception Survey

Questionnaire

Perceptions Survey



Demographic Measures

1. Please indicate which community you live in:

- Matimekush-Lac John Kawawachikamach
 Schefferville
-

2. With respect to your employment, which of the following best describes your current situation?

- Student Employed – part time/casual
 Unemployed Retired
 Employed – full time Stay-at-home parent
 Other
-

3. What is your gender?

- Male Female
-

4. Please indicate your age (in years):

5. What are the main activities that you conducted in Goodwood in the past year?

- Caribou hunting Trapping
 Big game hunting Wild fruit picking
 Fishing Travelling
 Small game hunting Camping
 Canada Goose and Waterfowl hunting Other

Issues and Impacts

These questions relate to impacts in Goodwood and surrounding area that are associated with TSMC’s activities. For each impact area, we would like to know what your experience has been like over the past year (12 months).

1 having the most negative impact and 5 having the most positive impact

	1	2	3	4	5	N/A
6. Environmental impacts (e.g. dust, noise, fauna, waste and water, other amenity issues)						
7. Cultural heritage (e.g. traditional activities, areas of cultural importance)						
8. Housing and accommodation (e.g. availability and costs for ownership and renting and tourism)						
9. Employment and training (e.g. education, training, apprenticeships and opportunities for women, Indigenous Peoples and disabled peoples)						
10. Local business opportunities (e.g. supplying, contracting, new businesses, increased local capacity and Indigenous-led businesses)						
11. Community health (e.g. access to medical and health facilities, emergency services and specialists, pandemic response plan)						

Section continues...

12. Community well-being
(e.g. community safety, crime,
roads and personal well-being)

13. Community investment
(e.g. increased economic
development, health services,
education and training, cultural
and recreational infrastructure
and reduced negative impacts)

14. Apart from the impacts
identified above, are there other
issues associated with mining
in the Goodwood area you think
need to be addressed?

Yes (If yes, list below.) No

Relational Measures

1 being low knowledge and 5
being high knowledge.

15. How would you rate your level
of knowledge about TSMC's
activities in Goodwood?

1 2 3 4 5

16. Do you recall any initiative
or program associated with
TSMC's activities in Goodwood
area?

Yes (If yes, what was it?) No

17. From the following list, which
are the three main sources
of information about TSMC's
activities in Goodwood for you?
(Select up to three sources)

- | | |
|---|--|
| <input type="radio"/> Website | <input type="radio"/> Committees Members |
| <input type="radio"/> Press | <input type="radio"/> Chief & Council |
| <input type="radio"/> Radio | <input type="radio"/> Mine Employees |
| <input type="radio"/> Newsletter (mail) | <input type="radio"/> Workshops |
| <input type="radio"/> Site Visit | <input type="radio"/> Other |

Social Media (Facebook)

Section continues...

18. Is there any other way that you would like to hear about the Project?

- Yes (If yes, what is it?) No

19. Is there any additional information about the Project that you would like to receive?

- Yes (If yes, what is it?) No

20. What initiatives or programs do you think it would be good for TSMC to contribute to or support?

These questions are about your contact with TSMC personnel.

1 being near no contact and 5 being lots of contact.

How much contact have you had with people from TSMC:

1

2

3

4

5

21. At community meetings or events?

22. Informally in your local area?

23. Over all social situations?

--	--	--	--	--

24. Have you contacted TSMC regarding any complaints related to Project 2a?

- Yes No

24a. If yes, could you provide information on the issue (what, where, when)?

24b. And how satisfied were you that the issue was resolved in an adequate manner?

- Very satisfied Unsatisfied
 Satisfied Very unsatisfied
 Neutral Still being dealt with

Attitudes

1 being a negative attitude and 5 being a positive attitude.

	1	2	3	4	5
25. How would you rate your current attitude towards TSMC's activities in Goodwood area?					

Attitudinal statements: how would you rate each statement?

1 being strongly disagree and 5 being a strongly agree.

	1	2	3	4	5	Unsure
26. Project 2a has negatively impacted my activities in the Goodwood area						
27. TSMC listens to and respects my opinions with regard to community issues related to Project 2a						
28. TSMC is prepared to change its practices in response to community sentiment in Goodwood area						
29. The benefits of the Project 2a to the region outweigh any potential risks						
30. Goodwood area land users trust TSMC						
31. I feel that TSMC has been honest in its dealings with land users concerning Project 2a						

Section continues...

1 being strongly disagree and 5 being a strongly agree.

	1	2	3	4	5	Unsure
32. TSMC cares about local land users in the Goodwood area						
33. In my opinion TSMC has good environmental performance in relation to Project 2a						
34. I feel that TSMC's activities in Goodwood area are environmentally sustainable						
35. I think TSMC takes measures to address environmental issues in Goodwood area if they arise						
36. I believe that TSMC conducts reliable environmental monitoring in Goodwood area						

37. Are there any specific examples related to the ratings provided?

38. Do you have any other comments you would like to make?

Appendix B

Project 2A Perception Survey

Open Answer Responses

Table 1 - Issues associated with mining (Question 14)

Employment
<ul style="list-style-type: none">- More contracts to local and hiring in local.- Hire people from province of Québec when mining on Québec side.
Environment
<ul style="list-style-type: none">- Dust control during summer months.- Be more mindful of the environment: there needs to be nets on the trains and dump trucks since dust is originating from there. All sorts of waste are deposited in the landfill and are ingested by the bears. They will fall ill and we won't be able to eat them.*- Red dust.*
Education and Training
<ul style="list-style-type: none">- The lack of training and skills development that should be offered to those who want to work in the area.
Communication
<ul style="list-style-type: none">- Transparency of operations and communication of future plans.
Infrastructure
<ul style="list-style-type: none">- No investment from Tata into the community infrastructure.- Goodwood road doesn't go where it used to. Disrupted the hunting. There should be a road past Goodwood to the north to access hunting and fishing sites.- TSMC has demanded a lot from the town of Schefferville but did not help out in return. Infrastructures have deteriorated as there is a lot more people using them, the roads in town are damaged due to the increased traffic from trucks. A lot has changed since the mine has been operational.*- The old access road has been cut. We can't go to the places we used to go to anymore.*
Other
<ul style="list-style-type: none">- Not right now.- Leave.- Non sayed.

* Translated from French

Table 2 – Recalled company Initiatives and programs (Question 16)

Recalled Initiatives and Programs
<ul style="list-style-type: none">- Yes.- DSOT/DSO, Project2.- No.- They implemented stormwater/runoff management features. The access road was modified and there were some repairs done. Because of spring thaw, they had to repair the road again but there are still some areas that are inaccessible. They could have done a better job with the potholes repairs.*- All the holes will be covered at the end of operations.*

Table 3 – Suggested ways to hear about the Project (Question 18)

Suggested ways to hear about the Project
<ul style="list-style-type: none">- Website.- Accountability panels led by chief and council open to public, paper copy circulation of annual reports and long term prospectus in English.- yes...more Naskapi working.- Door to door.- Regular consultations with the Elders at the local community center.- Email.*- Increase frequency of newsletter distribution.*- Email.*

Table 4 – Additional information they would like to receive (Question 19)

Environmental Impact Assessments
<ul style="list-style-type: none">- More information about what actually goes on. Do you environmental assessment on how the Innu and Naskapi are affected by the mines, water quality, and air quality.- I would like to know what the impacts on the environment are.*- What are the measures to protect the environment?*

* Translated from French

Employment
<ul style="list-style-type: none"> - Job fairs for high school grads. - Potential job applications.
Community Investment
<ul style="list-style-type: none"> - Tata's investment into the community. - Additional roads to be constructed towards north and east.
Mine Operations Update
<ul style="list-style-type: none"> - How is the project developing? What is the status about new mines/projects?* - We only hear about safety announcements. We know nothing else about what is going on. There is no information about project and operations progress such as how many tons were produced...*
Training
<ul style="list-style-type: none"> - Scholarships available, apprenticeship program info as well as school to work transition programs.
Social Impact Assessments
<ul style="list-style-type: none"> - The project should continue in respect with the agreement signed with the Nations.
Other
<ul style="list-style-type: none"> - Yes. - Yes.

Table 5 – Suggested initiatives and programs for contributions (Question 20)

Education and Training
<ul style="list-style-type: none"> - Training programs again back in Schefferville and kawawa. - Make scholarships available and advertise them well, create more apprenticeships and school to work transition agreements with Cegep Sept Iles and their Natural Sciences program. - Electrical courses. - Training and skills development to indigenous who are pursuing a career in the mining industry. - Environmental and business training. - Education (invest money in schools).*

* Translated from French

Education and Training (continued)

Professional training sessions. Provide integration courses or a basic English course so that people can apply to TSMC's job openings.*

Environment

- Contribute to the municipality's funds for waste management, recycling, clean city awareness campaigns including the protection of the George River herd and keeping green space green.
- Less traffic, less pollution and dust.
- Environment.*

Aboriginal Liaison

- Hire aboriginal liaison officer Tata steel.
- Learn how native thinks.

Employment

- Set up an annual job fair for high school grads.
- Jobs.

Local Community

- The community.
- Assistance to growth and development of the community.
- Swimming pool and baseball court not built as promised.*

Youth Activities

- Things TSMC had promised, especially for the youth, such as getting them out in the woods, making sure we don't lose our culture...*
- Help the youth to take on traditional or sports activities.*

Communication

- Replying to the communities how it is affecting their health, environment, animals specifically bears, water and air.

Local Businesses

- Helping to start businesses.

* Translated from French

Table 6 – Additional information on complaints filed (Question 24a.)

Complaints
<ul style="list-style-type: none">- The impacts on the caribou, small and big game, fishing, air quality and the water quality. The garbage that sits up on the hill and is ignored. Not properly handled!- Using our hunting road.- Barricades 2 years ago. They promised money and things for the youth.*- COVID: there were employees in town even though they are not allowed to come.- Dust control near my fishing spot at Greenbush lake please.†- Last year because of vehicles covered in mud were all around town and the airport. There are too many vehicles at the airport, they should look into organizing better and have shuttles. The situation has improved because of COVID linked restrictions.*

Table 7 – Examples with regards to attitudes ratings (Question 37)

Attitudes ratings - Examples
<ul style="list-style-type: none">- Water, security.- The press incident that occurred a few years ago. Where a river was contaminated by the tailing pond. The lack of communication and acknowledgment by TSMC caused a hindering effect on environmental trust to TSMC by the indigenous peoples co-habiting the area.- Environmental impact: I feel discouraged because there is too much activity there and too much dust. Wildlife is disturbed.- Caribou don't come through here anymore. Lots of holes on the road. Pollution and dust. People who have asthma are having difficult times. A lot of dust gets in the houses during the summer. The lakes are all red.*- TSMC starts projects even if there are objections, they go on with them anyway. For instance, they weren't supposed to mine in a certain area but they went anyway. We thought it was confined to a specific area but they are taking much more space. They've only been here for 10 years and their footprint has extended more than IOC in the 30-35 years they were here. Last year, a river where people hunt and fish became red because of a spill. People complained about it but it could have gone unnoticed otherwise.*

* Translated from French

† Greenbush lake is not located in the Goodwood area

Attitudes ratings – Examples (continued)

- There have been improvements but there is still more to do: dust, red water... In the summer, when it's hot, there is a lot of dust due to the 200T that transport the ore and we are in the middle of a cloud of dust when on the access road. How is this affecting the partridges and other animals? Dust contamination? Are there any studies on this topic? The environment surrounding the access road: the leaves change and the lakes become red because of runoff from the road. We want to be a little more informed and see studies on these issues, to know if it is harmful.*
- I don't go fishing anymore because last time I went, I had to wait over an hour to be escorted while the person went to have lunch first. Sometimes the bypass road is very close to the haulage road. It is not a very safe situation for instance if a hunter fires and hits a truck. It's all disturbed up there. We would like to have a site visit to see the operations and better understand the environmental monitoring program. We need more information.*

Table 8 – Open comments (Question 38)

Open Comments

- No.
- Even this questionnaire is unclear. You do not offer any reading material to inform us of projects before asking for our opinion and everything I try to find online is in French, which I do not speak. This entire questionnaire is inaccessible for language learners and shows how much Tata doesn't care.
- No.
- Training more locals for future upcoming jobs.
- Tata has no consideration to the communities and wildlife, and waters that are impacted by the mines!!! Get the fuck off the land.
- Hire more natives and stop being racist.
- onsite HR was rude, disrespectful and unprofessional to prospective indigenous applicants.
- Activity in Goodwood has impacted me in various ways regarding traditional activities. Even though the Naskapi benefited business wise and from private training, there should be more local business opportunities.

* Translated from French

Open Comments (continued)

- No.
- We used to go camping, caribou hunting during the weekend but it's not the case anymore. Nobody goes there anymore because there are no more caribous and no access road. They built a new road but we can't access everywhere. It's sad to see and depressing. Thefts are more frequent, a lot of drugs and alcohol. It has improved and returned to normal this past year but I think it will be worse again. It's better but it's not as it used to be. There are fewer hunters.*
- With the two other communities, we are being trampled over on the economic front. There is no communication. We don't know what is happening over there. There aren't a lot of jobs held by natives (10 to 15). The hiring process is discriminatory because one needs to speak both languages. There aren't any Innu or Naskapi in administration positions. a strong emphasis needs to be placed on trainings including in schools and high schools. We need also more information, for instance, go to the schools and explain the mine operations and have a representative with Chief & Council.*



Perceptions Evaluation Survey Goodwood & Sunny Deposits

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January 15, 2021

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Report Revision Record				
Revision	Description of Change	Prepared by:	Approved by:	Date:
A	Initial Draft Report to Client	S. Bendenia	S. Gullage	January 15, 2021
01	Final Report	S. Bendenia	S. Gullage	March 5, 2021

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EXECUTIVE SUMMARY

In 2020, Tata Steel Mineral Canada (TSMC) engaged SEM Ltd. to conduct a perception survey with the land users of TSMC's Project 2A, in the Goodwood area in Québec. The purpose of the survey was to comply with Condition 20 of TSMC's Certificate of Authorization to conduct an evaluation program of land users' perceptions of Project 2A, as well as to ensure that the efficiency of TSMC's methods of communication of the results of the various monitoring programs is evaluated and that complaints by land users related to the Project are received. The following report summarizes the findings of 21 surveys.

The questionnaire was designed based on best practice guidelines developed for the mining and metals industry (ICMM, 2015). Interviews were conducted between October and November 2020 by telephone and online social media.

Key results from this survey included:

- Impacts of TSMC's activities in Goodwood were considered moderately negative and focused on environmental and economic aspects;
- Land users indicated they had a moderate degree of knowledge about the Project;
- Project-related complaints are received but the land users are mainly unsatisfied by the resolution process;
- Relational variables such as trust and procedural fairness were rated low for TSMC.

These data provide key information to inform current and future engagement strategies by TSMC. They highlight the need of increased involvement of the land users in decision-making processes and identify priority communication topics for each community group.

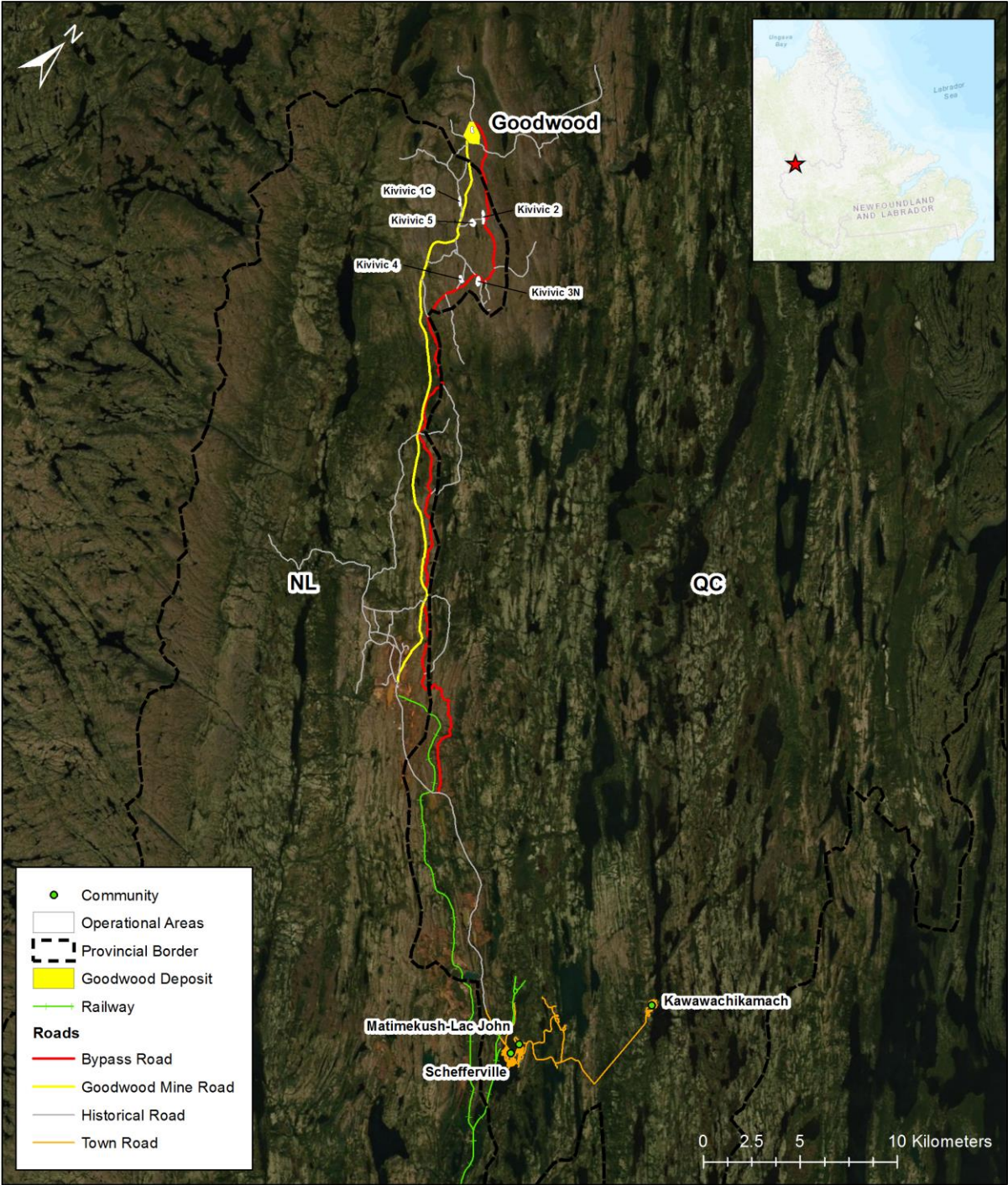
1.0 INTRODUCTION

As part of its mining operations in the Province of Québec, Tata Steel Mineral Canada (TSMC) holds a certificate of authorization (C of A) which consists of numerous conditions. Condition 20 of this C of A requires that TSMC presents an evaluation program, or survey, of land users' perceptions of Project 2A (Goodwood and Sunny deposits). TSMC has decided to delay the start of the Sunny project, however, operations at the Goodwood pit are on-going since 2017 (TSMC, 2019). The location of Goodwood and the survey area are shown in Figure 1.1.

In 2020, TSMC engaged SEM Ltd to undertake the perceptions survey of Project 2A's land users, which include persons that carry out activities such as hunting, trapping, fishing, berry picking, any type of recreational activities, or traveling and camping in the area of study (Goodwood, Québec). The primary objectives of the survey were to:

- Evaluate land users' perceptions of the Project (i.e. Project 2A, the Goodwood and Sunny deposits);
- Evaluate the efficiency of TSMC's methods of communication of results from the various TSMC monitoring programs;
- Ensure that project-related complaints are received.

The report contains a statistical analysis of data collected through a telephone and online survey process. Two kinds of analyses were conducted on these data: descriptive (i.e. examining the mean levels of responses on each of the items or questions), and inferential (i.e. comparing the responses of community members from each of the three communities). The report is structured to reflect the structure of the questionnaire (Appendix A), with a description of the methodology employed and a discussion of the findings.



	Tata Steel Minerals Canada (TSMC)	FIGURE NO: 1.0	PREPARED BY:
	Project 2A (Goodwood) Location	COORDINATE SYSTEM: NAD83 UTM Zone 19	DATE: 05/03/2021

Figure 1.1 Map of the survey area and Goodwood

2.0 METHODOLOGY

This section provides details of the design and implementation of the survey instrument, the limitations encountered during the data collection as well as a description of the profile of the respondents.

2.1 Questionnaire design

The questionnaire was developed based on best practice guidelines for measuring and monitoring stakeholder relationships in the mining and metals industry resources sector developed by the International Council on Mining and Metals (ICMM, 2015).

The structure of the survey comprised 38 questions divided into 4 categories: demographic items, issue and impact items, relational items, and outcome items. Five-point Likert response scales were utilized to assess participants' responses. In addition, open-ended questions were included to seek additional information on the different aspects discussed in the survey.

A copy of the questionnaire is contained in Appendix A.

2.2 Survey method

Given the Covid-19 pandemic and its associated restrictions and obstacles, in-person interviews could not be conducted. Therefore a mixed-method approach was used for data collection. This included phone interviews as well as online surveys.

Representatives of the three communities were first contacted and were asked to provide a list of potential participants that would fit the desired profile (i.e. persons that carry out activities such as hunting, trapping, fishing, berry picking, any type of recreational activities or travelling and camping in the area of study). All phone numbers provided were contacted up to five times to obtain a phone interview and if the time was not convenient to participants, appointments were made to complete the survey at a later date and time. A total of 5 land users were interviewed by phone between October 22 and November 17, 2020.

The online questionnaire was published in English on the Naskapi Radio Facebook page and in French on the CRKA Radio Kue Attinukan Matimekush Lac John Facebook page. The survey was open from October 26 to November 17, 2020. A total of 16 land users participated in the online survey.

2.3 Limitations

- TSMC has been constructing and operating several pits as part of its Direct Shipping Ore (DSO) project since 2012. Although this survey was designed to incite participants to focus on their recent experiences in the Goodwood area when answering the questions, it was not guaranteed that all responses were compliant with this requirement. In fact, many answers appeared to pertain to TSMC's entire mining operation and presence in the Schefferville region.
- One community leader expressed to TSMC that community members do not recognize borders imposed by others, and as such, the premise of this survey might be flawed in their opinion. Indeed, from this perspective, the differentiation between deposits or mining areas within a broader land use area is often immaterial.
- The number of participants that were available and willing to participate in this survey was limited to users of the Goodwood area. Community representatives have acknowledged a climate of "consultation fatigue", which has set in as a result of the numerous studies required for various projects, including TSMC's Howse Project near the Timmins deposits in Labrador, and other mining projects planned in recent years on the traditional territories of the local communities by various proponents. Given these limitations, the participation rate for this survey was deemed to be quite sufficient.

2.4 Sample description

A total of 21 interviews of land users were completed. **Table 2.1** presents the demographic characteristics of the survey respondents.

Table 2.1 Demographic data

	Kawawachikamach	Matimekush-Lac John	Schefferville	Total Land users
Number of Participants	11 52%	7 33%	3 14%	21 100%
Employment Status (%)				
Student	20%	0%	0%	10%
Unemployed	0%	29%	0%	10%
Employed	70%	71%	100%	75%
Retired	0%	0%	0%	0%
Stay-at-home parent	10%	0%	0%	5%
Gender breakdown (%)				
Males	73%	86%	67%	76%
Females	27%	14%	33%	24%
Age breakdown (%)				
Less than 18 yrs	0%	0%	0%	0%
18 to 34 yrs	27%	14%	0%	19%
35 to 54 yrs	64%	71%	33%	62%
55 to 64 yrs	9%	14%	67%	19%
65 yrs and over	0%	0%	0%	0%

As can be seen in **Table 2.1**:

- 52% of the land users interviewed belonged to the Kawawachikamach community, 33% to the Matimekush-Lac John community, and 14% to the Schefferville community;
- 75% of participants were employed;
- 76% of participants were male, and 24% were female;
- 62% of participants were aged between 35 to 54 years. Furthermore, as per the collected data, participants were aged between 21 to 62 years and the mean age was 42.76 years (SD=11.00 years¹).

Figure 2.1 shows the activities that these land users conducted in Goodwood in the past year. The 3 main activities were caribou hunting, fishing, and camping.

¹ SD refers to Standard Deviation. SD is the standard distance a score is from the mean, or average.

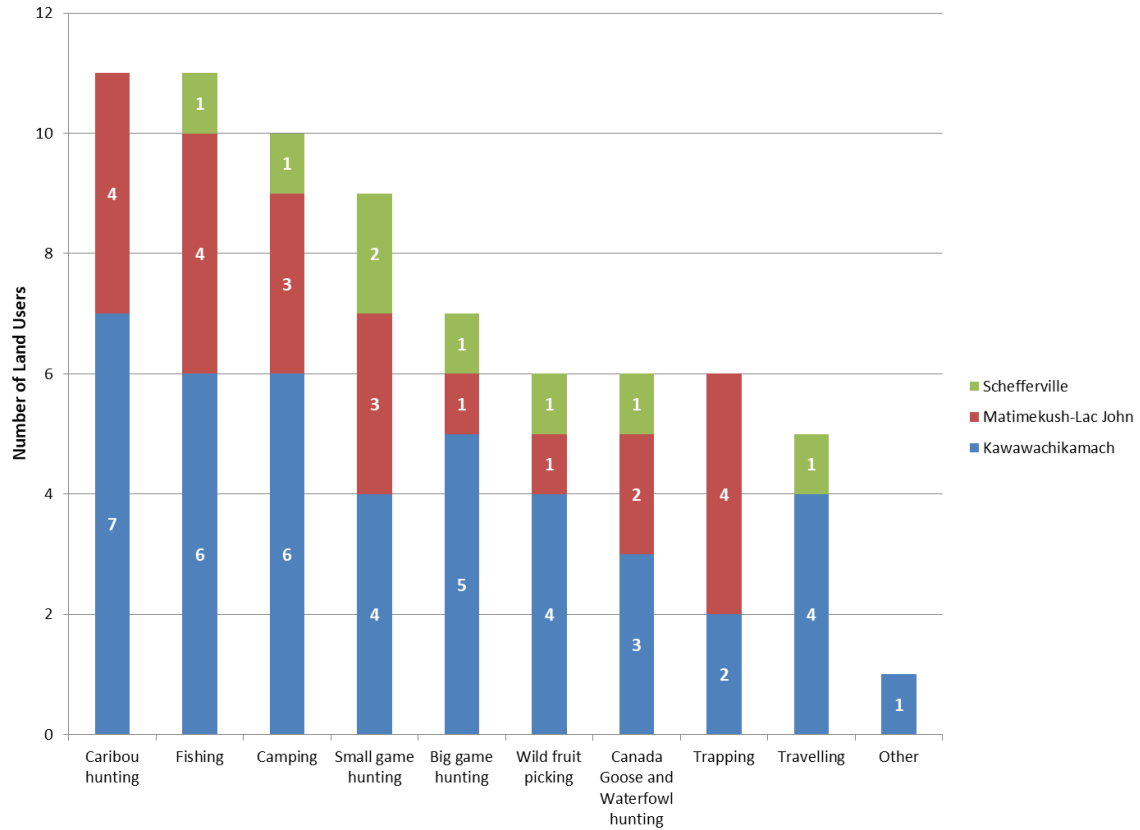


Figure 2.1 Main activities conducted by the survey participants in Goodwood²

² There have been no reports of Caribou being present in the area in the recent years.

3.0 RESULTS

This section outlines the results of the survey according to the specific survey item's themes.

3.1 Perceptions of Project 2A's impacts

Participants were asked to rate several aspects relating to impacts in Goodwood and surrounding area associated with TSMC's activities, using a scale of 1 (*very negative impact*) through to 5 (*very positive impact*). Participants were also asked to list any other issues associated with mining in the Goodwood area that they believe should be addressed.

3.1.1 Overall results

In order to measure the perceptions of TSMC's economic, environmental and social impacts, the participants were asked to rate their experience with the following aspects:

- Environmental: such as dust, noise, fauna, waste and water, and other amenity issues;
- Cultural heritage: such as traditional activities and areas of cultural importance;
- Housing and accommodation: such as availability and costs for ownership and renting and tourism;
- Employment and training: such as education, training, apprenticeships and opportunities for women, Indigenous Peoples and disabled peoples;
- Local business opportunities: such as supplying, contracting, new businesses, increased local capacity and Indigenous-led businesses;
- Community health: such as access to medical and health facilities, emergency services and specialists, pandemic response plan;
- Community well-being: such as community safety, crime, roads and personal well-being; and
- Community investment: such as increased economic development, health services, education and training, cultural and recreational infrastructure and reduced negative impacts.

As seen in Figure 3.1, overall responses indicated that impacts of TSMC’s activities in Goodwood were considered moderately negative.

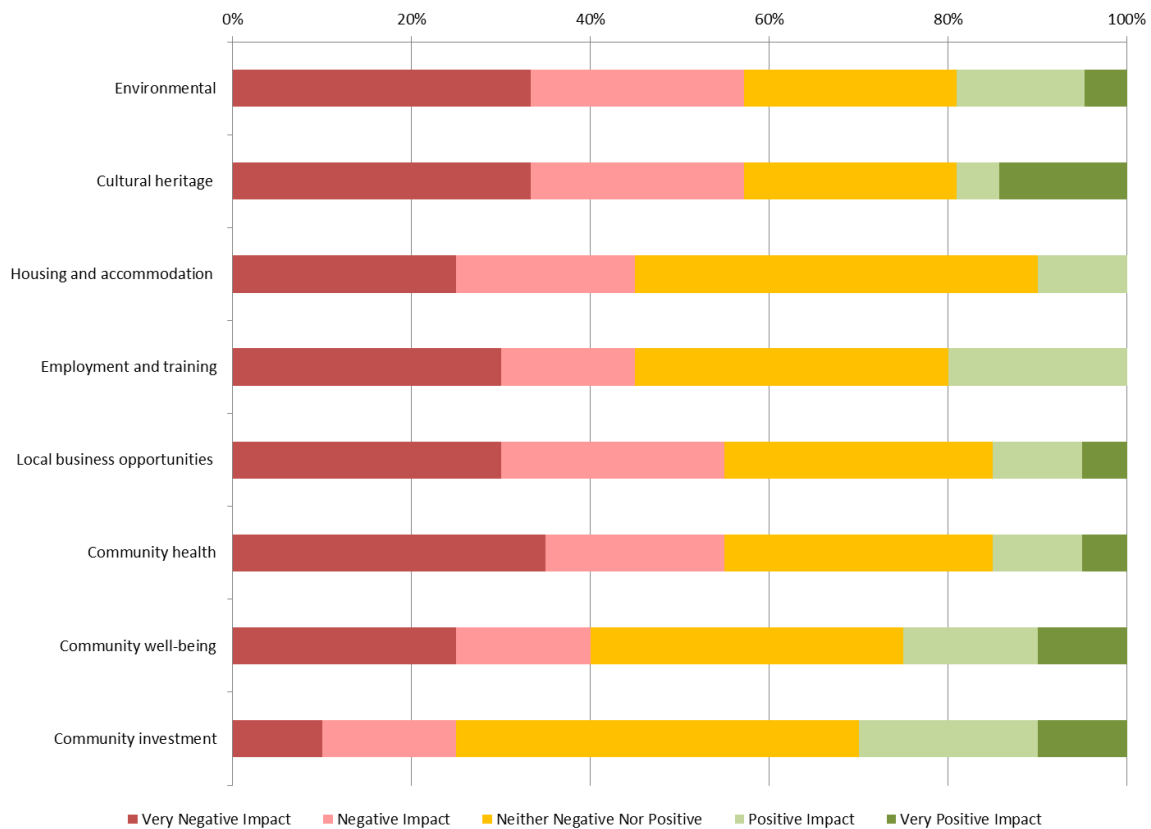


Figure 3.1 Perceptions of impacts

The 3 lowest-rated aspects were:

- Community health impacts (M³=2.30, SD=1.22);
- Environmental impacts (M=2.33, SD=1.24); and
- Local business opportunities (M=2.35, SD=1.18).

The most highly rated aspect was Community investment (M=3.05, SD=1.10).

Participants were asked if there were other issues associated with mining in the Goodwood area that they think should be addressed. Of those who provided an answer, the most frequently identified issues included (see Figure 3.2):

3 Mean or average score

- Dust control (25%).
- Employment and business opportunities locally (17%).
- More community investment (17%).
- Reinstate road to access hunting and fishing sites (17%).

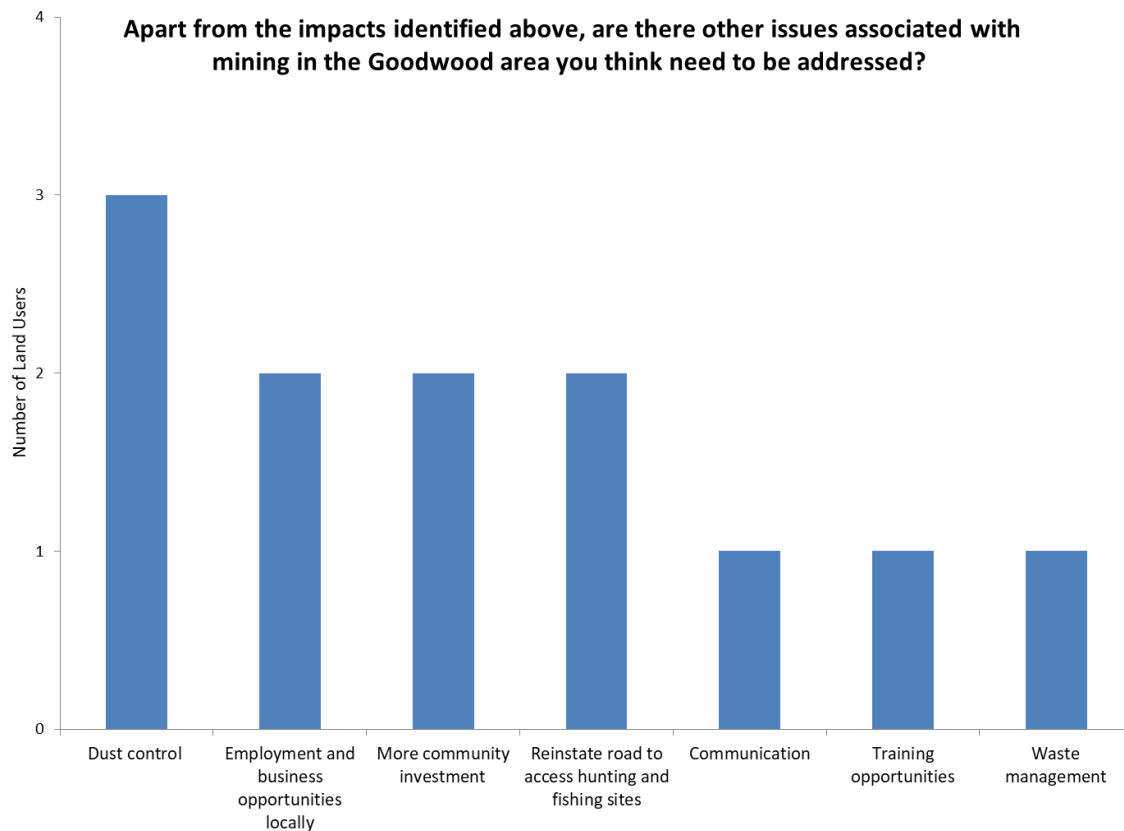


Figure 3.2 Are there other issues associated with mining in the Goodwood area you think need to be addressed? (multiple responses allowed)

Complete responses to this open-ended question can be found in Appendix B (Table 1).

3.1.2 Results by community

A spider diagram allows data incorporation for each impact and the different communities on a single, visually meaningful chart (ICMM, 2015). Each of the outer points on the spider diagram corresponds to one of the 8 aspects of impact perceptions assessment. For all 8 aspects, the outermost line on the chart represents the highest score possible (i.e. 5). The lower the score of each aspect, the closer it is plotted to the center of the chart.

As seen in Figure 3.3, all three communities agree on considering community investment as the most highly rated impact. Schefferville and Matimekush-Lac John land users also give a rather high score to employment and training while it was given the lowest score by Kawawachikamach land users. Aspects that scored the lowest for Schefferville and Matimekush-Lac John land users were, in their respective order, environmental/community health and housing and accommodation.



Figure 3.3 Spider diagram – Perceptions of impacts by each community

3.2 Relational factors

3.2.1 Knowledge of TSMC and its programs

Self-reported knowledge of TSMC’s activities in Goodwood was assessed in this survey. Responses to the question about knowledge could range from 1 (*low knowledge*) to 5 (*high knowledge*). The mean response to the question ($M=2.95$, $SD=1.53$) indicated a moderate degree of knowledge about TSMC’s activities (see Figure 3.4).

Greater knowledge of TSMC’s activities was reported by participants from Kawawachikamach (M=3.54, SD=1.57) and Schefferville (M=3.33, SD=0.58) compared to Matimekush-Lac John (M=1.86, SD=1.21).

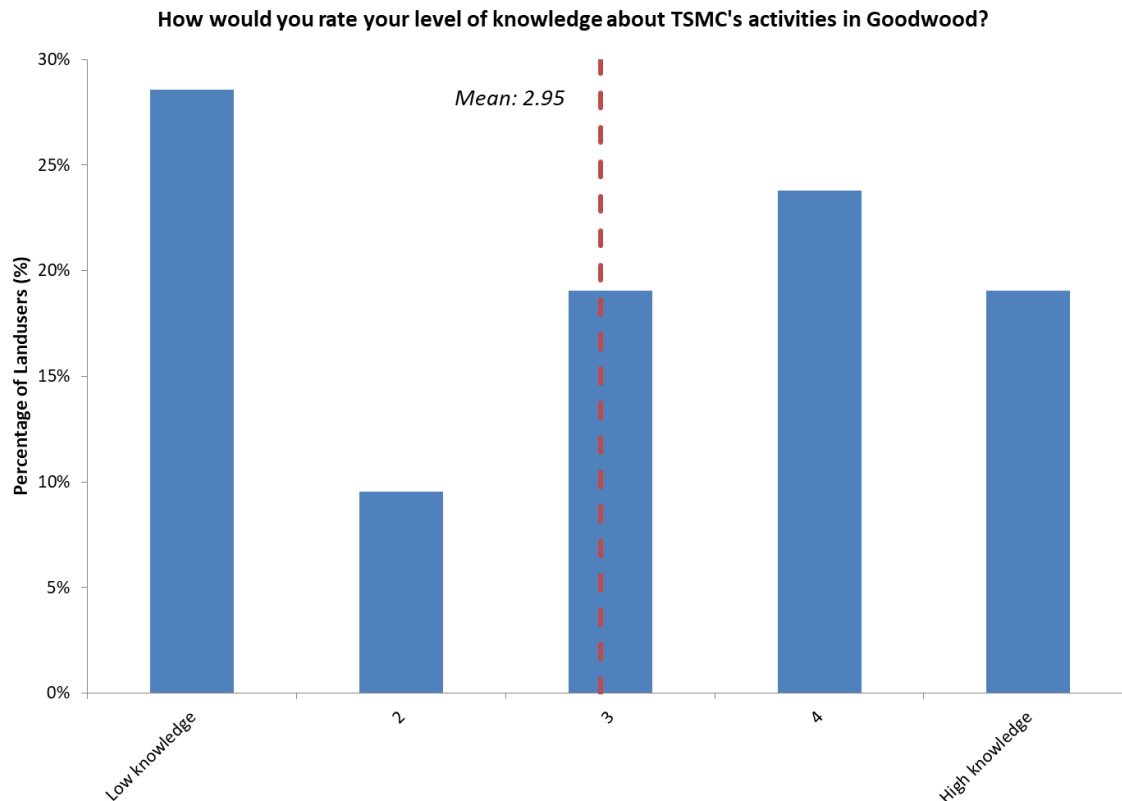


Figure 3.4 Knowledge of TSMC

Concerning programs that TSMC has implemented, or initiatives of which they have been a part, only 2 land users were able to name one. One land user replied positively to the question but did not provide an example. The programs recalled related to the spring-melt runoff management and future pit rehabilitation. A total of 18 respondents, being 86%, did not know of, or could not recall any program or initiative that TSMC had implemented.

Participants were asked to name initiatives or programs to which they think TSMC should contribute or support. Of those who provided an answer, the most frequently identified suggestions included (see Figure 3.5):

- Education and training (33%);
- Environment (14%)

- Local community (10%).

Complete responses to this open-ended question can be found in Appendix B (Table 2 and Table 5).

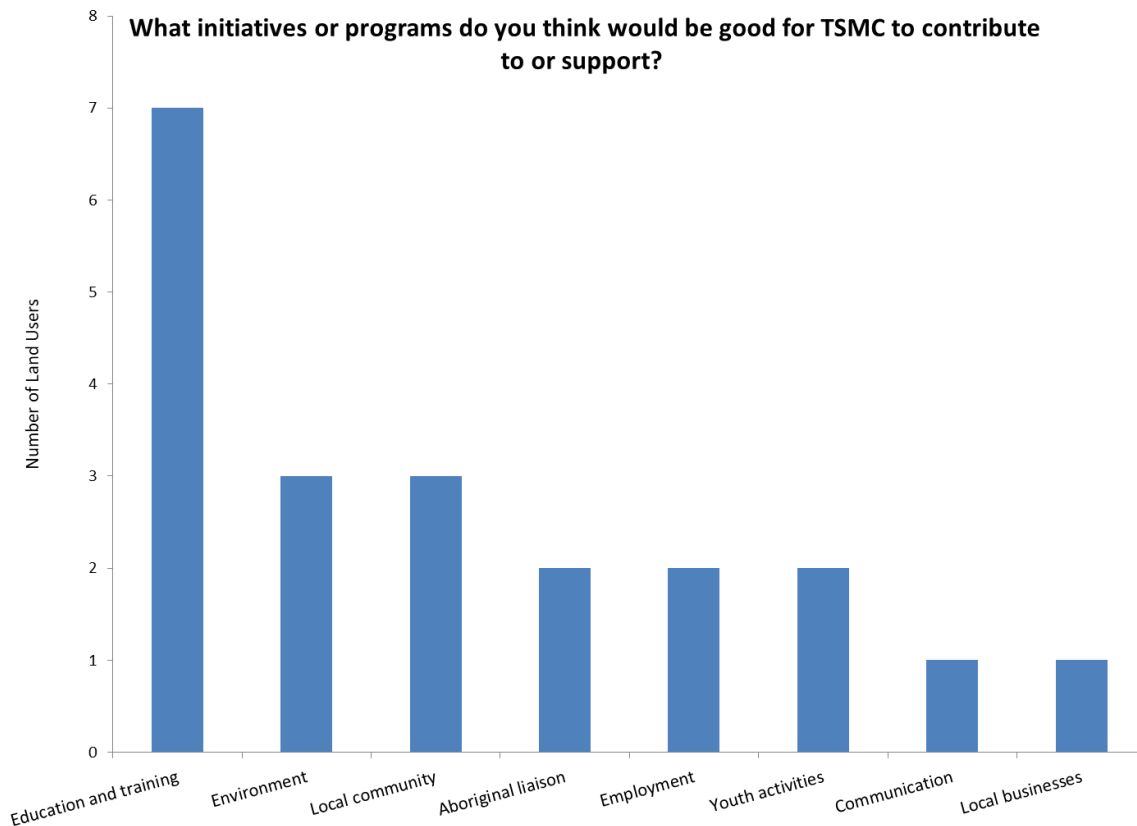


Figure 3.5 What initiatives or programs do you think would be good for TSMC to contribute to or support? (multiple responses allowed)

3.2.2 Sources of information about the project

It is useful to understand where the land users receive their information regarding support, communication activities, and evaluate the type of information they receive. The three main sources of information reported by the participants were (see Figure 3.6):

- Social Media (Facebook) (21%);
- Mine employees (19%);
- Chief & Council (17%).

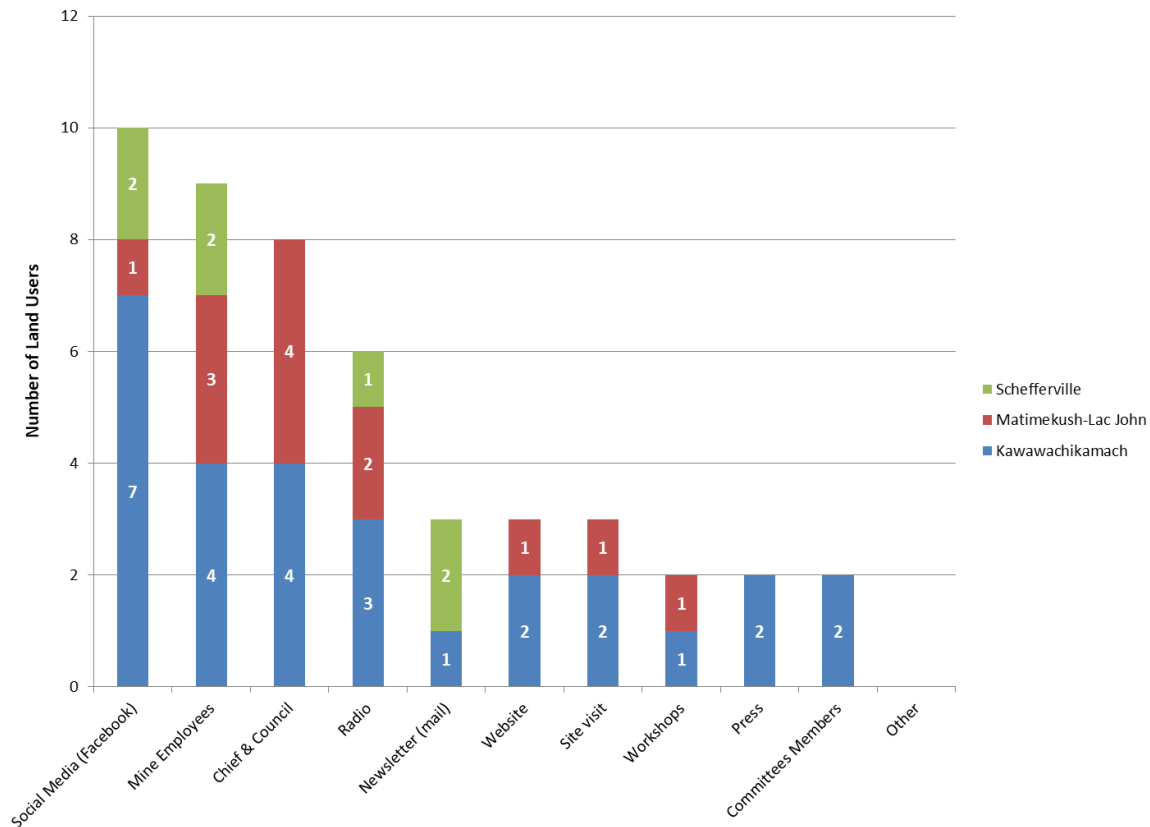


Figure 3.6 Main sources of information about the project (multiple responses allowed)

Specifically, response differences due to location were:

- Matimekush-Lac John land users preferred media to receive information about the project is the radio (14%) and not social media (Facebook) (8%);
- One of the preferred sources of information for Schefferville land users is the newsletter (mail) (29%);
- Chief & Council is one of the preferred sources of information among 31% of Matimekush-Lac John land users compared to 14% of Kawawachikamach land users.

When asked if there was any other way that they would like to hear about the project, 62% of participants replied that there was not. Of those who provided an answer, the most frequently identified suggestions are shown in Figure 3.7 below.

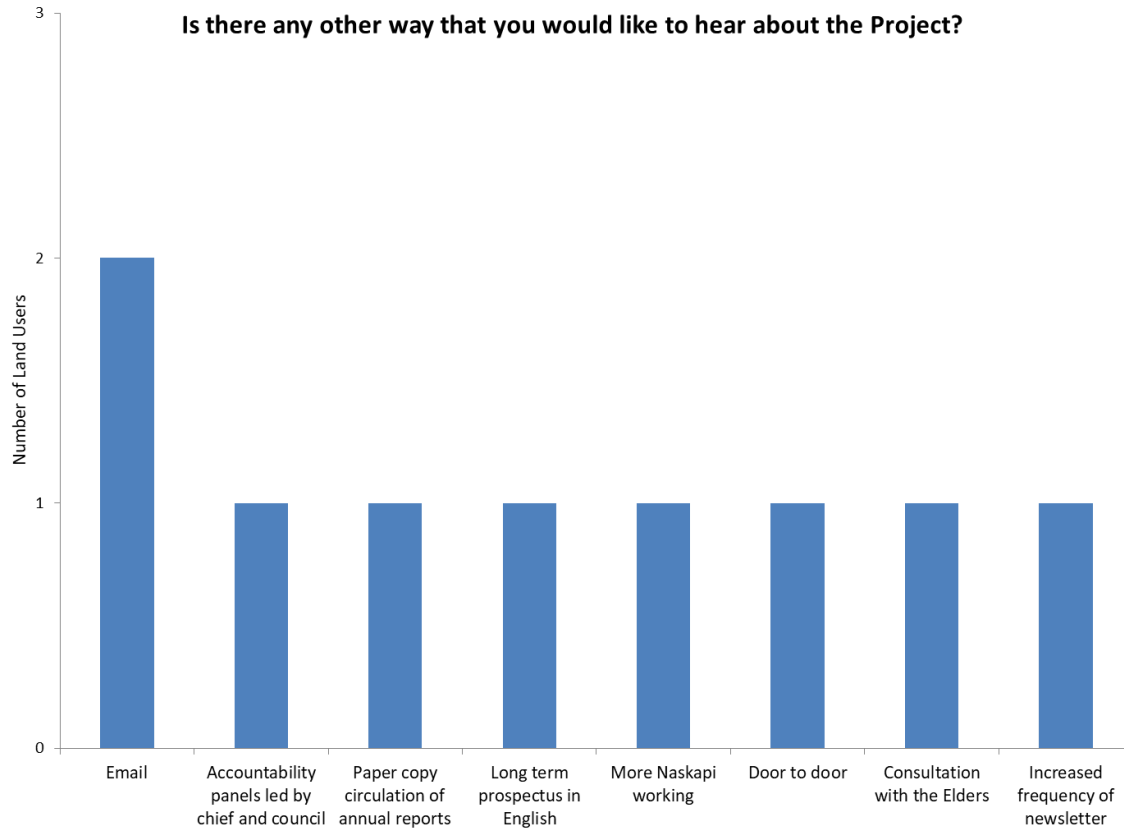


Figure 3.7 Is there any other way that you would like to hear about the Project? (multiple responses allowed)

52% of participants indicated that there was no additional information about the project that they would like to receive from TSMC. Those participants who indicated that they would like additional information about the project were most likely to mention environmental impacts assessment (27%), employment (18%), community investment (18%), and mine operations update (18%) as shown on Figure 3.8 below.

Complete responses to these open-ended questions can be found in Appendix B (Table 3 and Table 4).

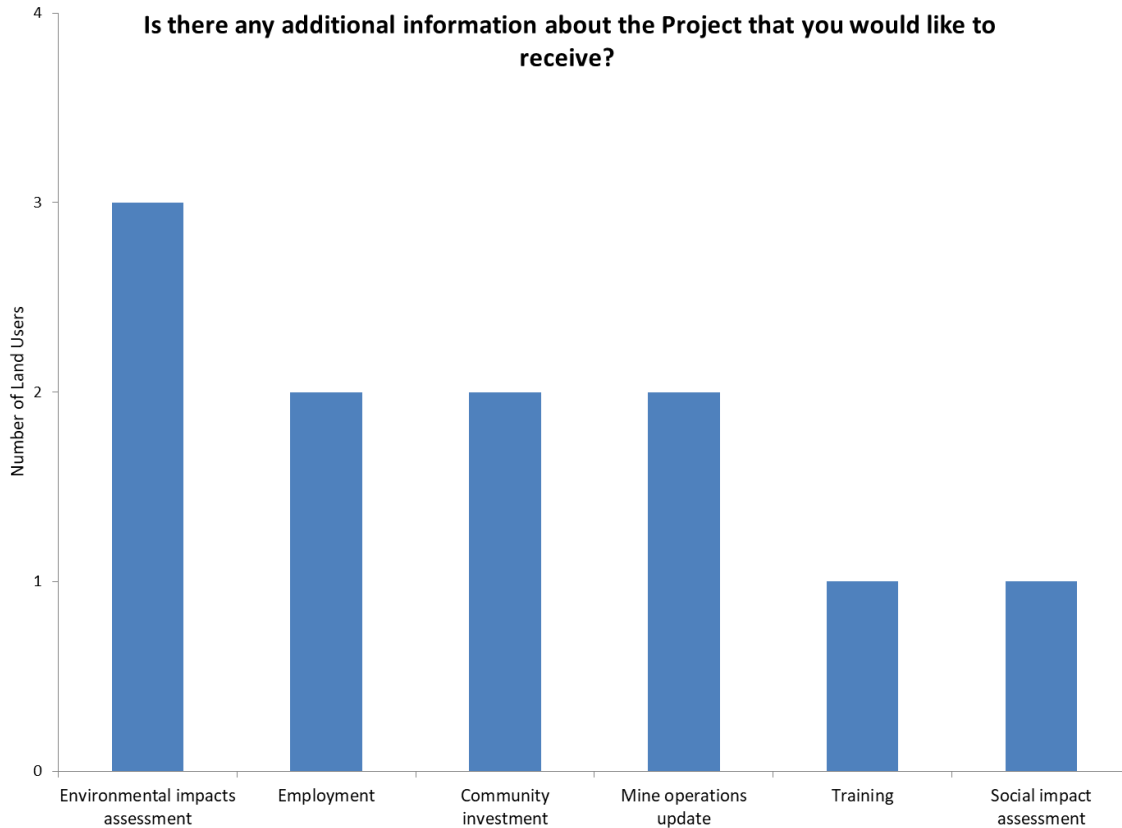


Figure 3.8 Is there any additional information about the Project that you would like to receive? (multiple responses allowed)

3.2.3 Quantity of contact with TSMC

Participants were asked about the amount or quantity of their contact with TSMC personnel on a scale from 1 (*near no contact*) to 5 (*lots of contact*). Overall, low levels of contact were reported (see Figure 3.9). There were no significant differences in the quantity of contact when participants' locations were considered.

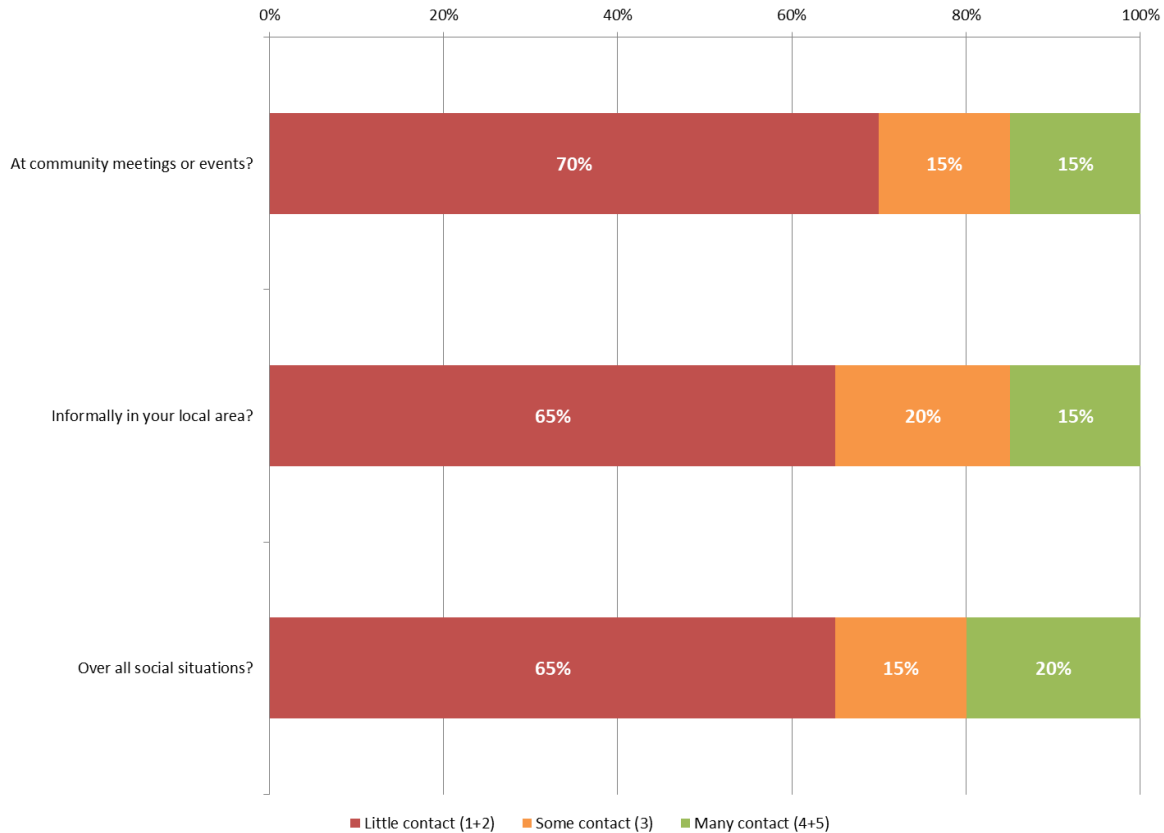


Figure 3.9 How much contact have you had with TSMC personnel?

3.2.4 Project-related complaints

Eight participants (38% of respondents) indicated they had made contact with TSMC with regards to an issue or complaint. The average experience for these 8 people was mostly unsatisfactory. One person responded that their issue was still being dealt with (see Figure 3.10). Also, there were no significant differences in satisfaction when participants’ locations were considered.

More information on these issues is provided in Appendix B (Table 6).

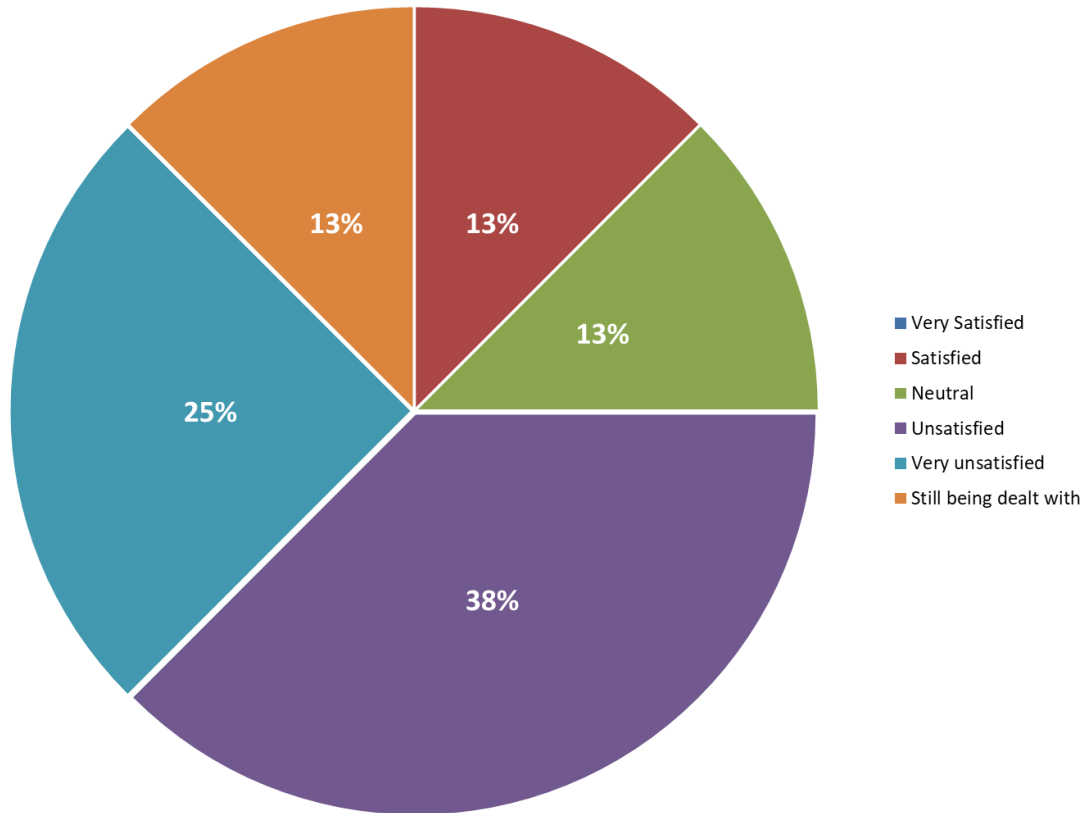


Figure 3.10 Satisfaction with complaint resolution

3.3 Attitudes towards Project 2A and TSMC

3.3.1 Overall results

Participants were asked to rate their current attitude towards TSMC’s activities in Goodwood area, using a scale of 1 (*negative attitude*) through to 5 (*positive attitude*). Results indicated that attitudes towards TSMC’s activities in Goodwood were generally slightly negative, with an overall average rating of 2.53 (SD=1.17) (see Figure 3.11).

There was no significant difference when comparing the results from the different communities. The average rating was 2.60 (SD=1.43) for participants from Kawawachikamach, 2.50 (SD=0.55) for participants from Matimekush-Lac John, and 2.33 (SD=1.53) for participants from Schefferville.

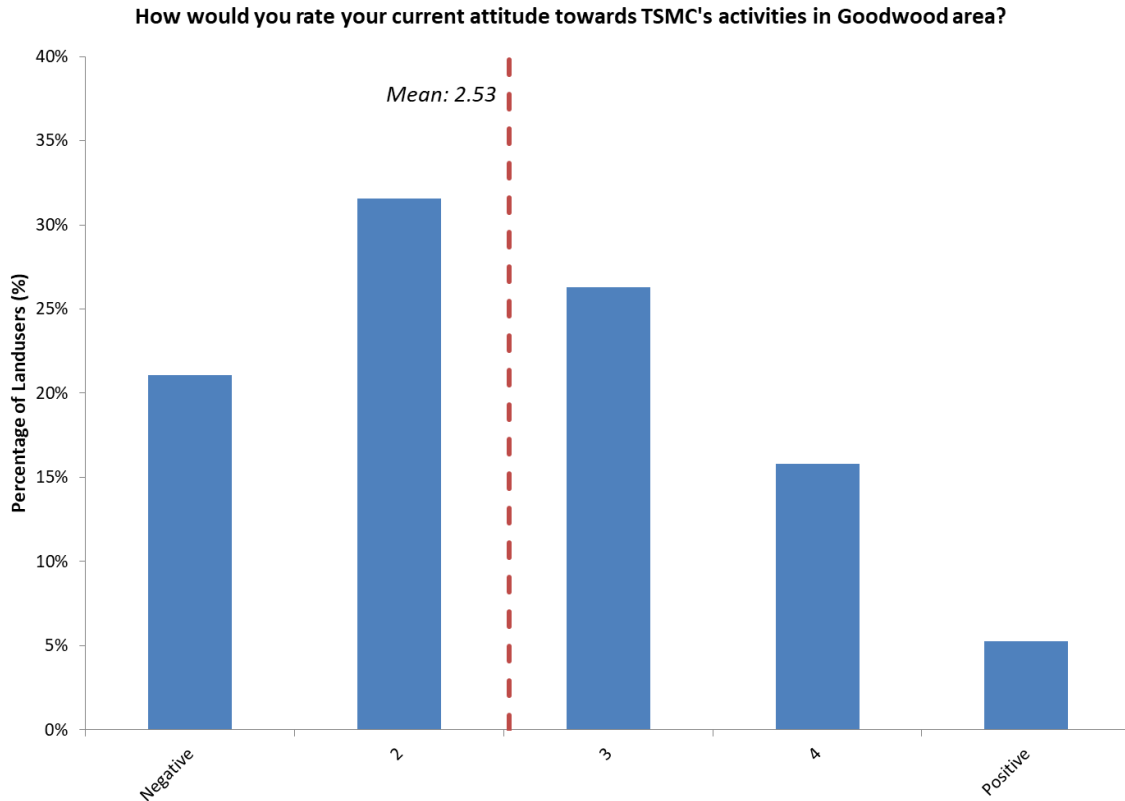


Figure 3.11 Attitudinal ratings towards TSMC’s activities in Goodwood area

Participants were then asked 11 attitudinal statements about Project 2A and TSMC’s activities in Goodwood area, and asked to rate each statement using a scale of 1 (*strongly disagree*) through to 5 (*strongly agree*). The choice was given as well to select unsure for those participants who did not have an opinion on the subject. Participants were also asked to provide specific examples related to the ratings provided. Complete responses to this open-ended question can be found in Appendix B (Table 7).

As can be seen in Figure 3.12, on average participants did not agree with the statements, except the statement “*Project 2A has negatively impacted my activities in the Goodwood area*” (M=3.11, SD=1.52). This statement is negatively worded and as such, a higher level of agreement reflects negatively on TSMC.

Survey participants most strongly disagreed with the statements “*Goodwood area land users trust TSMC*” (M=1.78, SD=1.11) and “*TSMC cares about land users in the Goodwood area*” (M=1.78, SD=0.88).

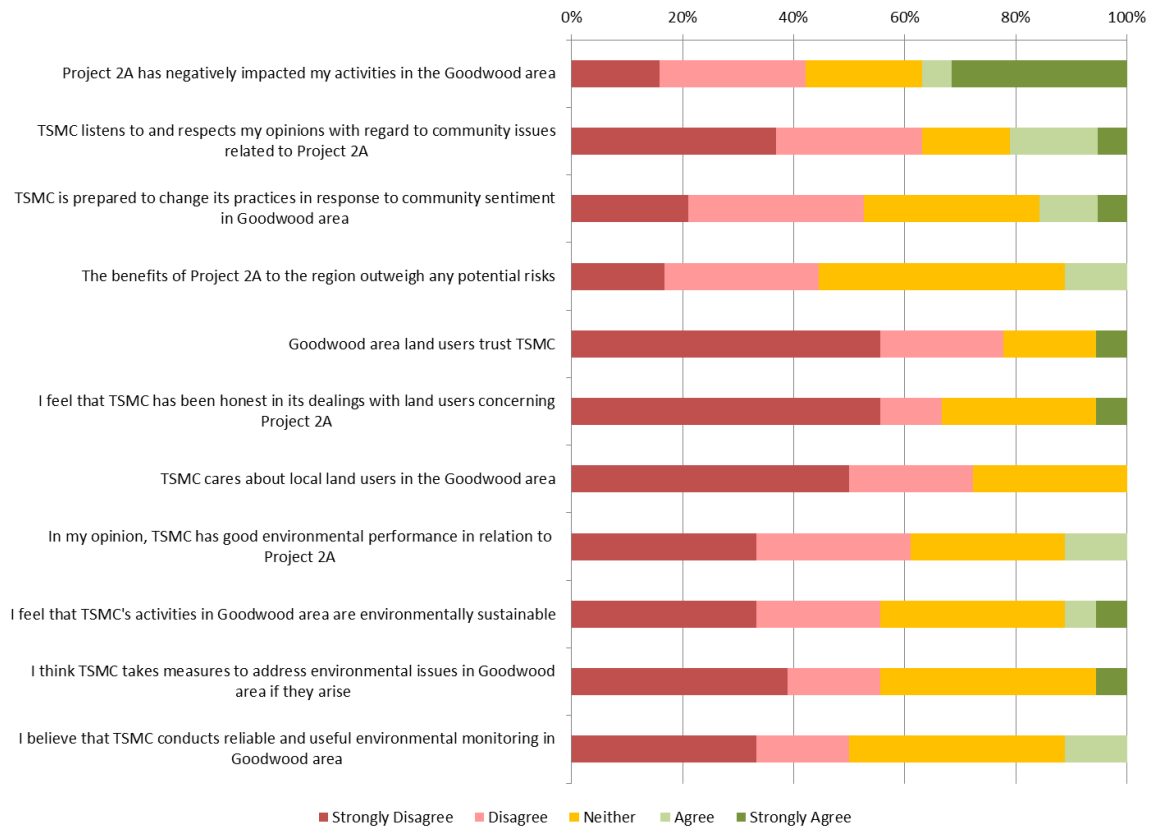


Figure 3.12 Attitudinal statements

3.3.2 Results by community

A spider diagram was created based on the participants' responses to the attitudinal statements (see Figure 3.13). The 5 aspects were defined by grouping the statements as follows:

- Reputational context (question 25);
- Compatibility of interests (questions 26 and 29);
- Respect / Procedural fairness (questions 27, 28 and 32);
- Trust (questions 30 and 31);
- Environmental management (questions 33 to 36).

Results for each aspect are discussed in the following paragraphs.

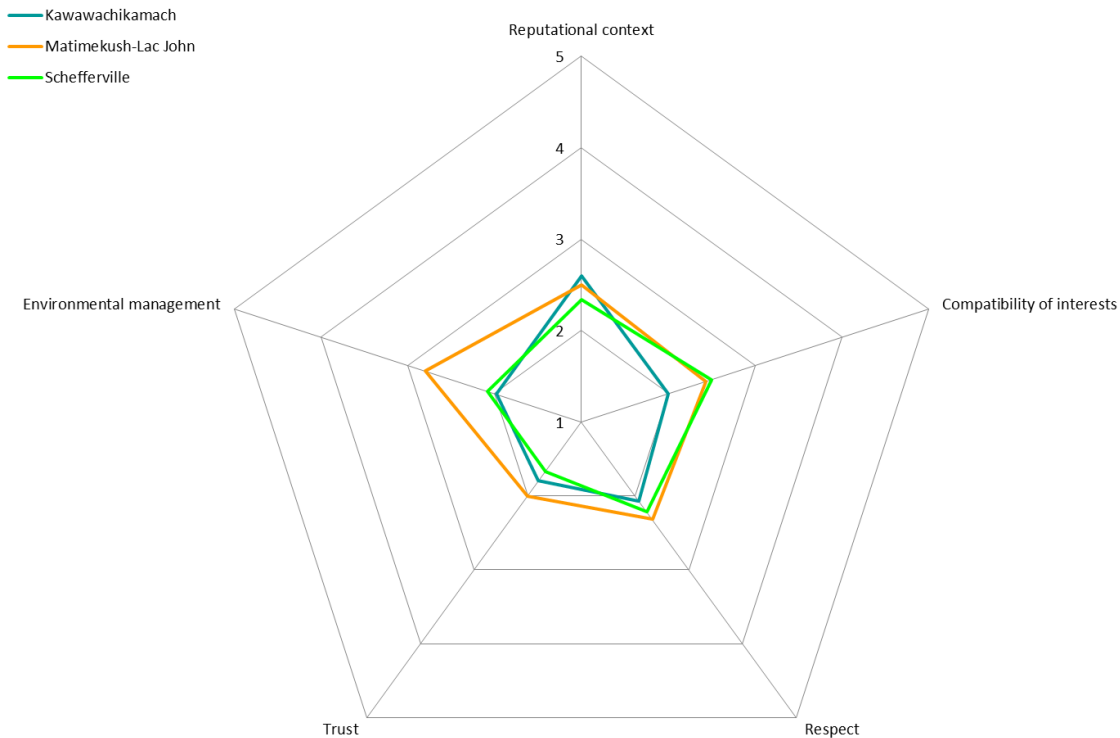


Figure 3.13 Spider diagram – Attitudinal statements’ results by community

3.3.2.1 Reputation

As discussed in paragraph 3.3.1, there was no significant difference when comparing the results for reputational context from the different communities. The average rating was 2.60 (SD=1.43) for participants from Kawawachikamach, 2.50 (SD=0.55) for participants from Matimekush-Lac John, and 2.33 (SD=1.53) for participants from Schefferville.

TSMC’s reputation is the strongest aspect of the relationship for participants from Kawawachikamach.

3.3.2.2 Compatibility of interest

Compatibility of interest is a measure of whether the interests of TSMC and the Goodwood area land users are aligned, or complementary but not mutually exclusive.

Compatibility of interest is the strongest aspect of the relationship for participants from Schefferville. The average rating was 2.50 (SD=0.89), which is slightly higher than the average

rating for participants from Matimekush-Lac John (M=2.43, SD=1.10). The average rating was 2.00 (SD=1.40) for participants from Kawawachikamach.

Specifically, for participants from Matimekush-Lac John:

- After correcting for the negatively worded sentence, the lowest score of all statements was reported regarding the impact of Project 2A on the land users' activities (M=1.67, SD=1.37).
- The highest score of all statements was reported regarding the benefits of the Project to the region (M=3.20, SD=0.84).

3.3.2.3 Respect / Procedural fairness

Procedural fairness relates to the extent to which the land users of Goodwood area felt that TSMC listens to and respects them, and the degree to which TSMC responds to participants' concerns and cared about them.

Overall, TSMC was viewed as moderately unresponsive to community concerns and issues, with average responses below the mid-point of the scale. The average rating was 2.32 (SD=1.11) for participants from Matimekush-Lac John, followed by 2.22 (SD=1.20) for Schefferville and finally 2.07 (SD=1.14) for Kawawachikamach.

Specifically, for participants from Kawawachikamach:

- The highest score of all statements was reported regarding preparedness to change (M=2.60, SD=1.07).
- The lowest score of all statements was reported regarding the level of care of TSMC (M=1.70, SD=0.95).

3.3.2.4 Trust

All three communities agree on considering trust as the weakest aspect of the relationship. The average rating was 2.00 (SD=0.94) for participants from Matimekush-Lac John, followed by 1.80 (SD=1.28) for Kawawachikamach and finally 1.67 (SD=1.03) for Schefferville.

3.3.2.5 Environmental management

Overall, the three communities view TSMC's environmental practices at Goodwood as moderately efficient with average responses below the mid-point of the scale. Environmental management is the strongest aspect of the relationship for participants from Matimekush-Lac John with an average rating of 2.80 (SD=1.01). The average rating was only 2.08 (SD=0.79) for participants from Schefferville, and 1.98 (SD=1.12) for Kawawachikamach.

It should be noted that not one participant selected unsure for the statement "*I believe that TSMC conducts reliable environmental monitoring in Goodwood area*" which implies that participants are aware and familiar with such programs.

3.4 Open comments

Participants were asked whether they had any additional comments that they would like to make regarding TSMC and its activities in Goodwood area. Eight participants provided such comments and these can be found in Appendix B (Table 8).

4.0 CONCLUSION

The report details the analysis of 21 surveys, collected through a telephone and online process, from land users of TSMC's Project 2A area (Goodwood, Québec).

Impacts of TSMC's activities in Goodwood were considered moderately negative. Perceived impacts of the operations appear to be largely focused on community health and environmental related aspects (such as dust control), as well as employment and business opportunities.

Land users indicated that they possessed a moderate degree of knowledge of the operations; however, only a low percentage of participants could recall areas in which the company supports and contributes to the local community or monitors the surrounding environment in the Goodwood area.

Land users were asked about their interactions with the company's employees and where they obtained information about the Project. Responses indicated a low amount of contact with TSMC representatives. Sources of information cited consisted mainly of social media such as Facebook, mine employees, and Chief & Council. The radio and mailed newsletter were preferred in specific communities.

Project-related complaints are received but a majority of land users expressed their lack of satisfaction concerning the resolution process.

Land users have generally slightly negative attitudes towards the company. Participants felt that their interests can potentially be aligned with TSMC's. However, TSMC was viewed as moderately unresponsive to community concerns and issues. Land users felt that they can't fully trust the company and that they are moderately excluded from decision-making processes about community issues by TSMC. Their responses expressed that TSMC had work to do in listening and respecting community opinions and changing its practices based on these concerns. TSMC's environmental practices at Goodwood are seen as moderately efficient.

5.0 RECOMMENDATIONS

TSMC's project 2A in Québec faces several challenges in developing and maintaining a constructive relationship with the land users of the Goodwood area. From the findings of this survey, levels of trust in the company currently appear to be low and land users feel slightly neglected.

While there are challenges, there are also opportunities and clear signals regarding how the land users would like to be engaged. Involvement in decision-making processes, feeling heard and respected, and receiving timely and accessible information should all be TSMC goals for future engagement with land users.

Communicating with TSMC on topics such as employment, education and training opportunities, and dust control are among the top priorities of many Goodwood area land users. Furthermore, using the comparative analysis provided in this survey can help identify specific areas where efforts are required for each community group, which can be addressed through a differentiated business strategy and communication program and methods. For example, Matimekush-Lac John land users are concerned about the Project's impact on housing and accommodation and their preferred method of communication is through Chief & Council.

It will also be beneficial to measure the evolution of land users' perceptions of the Project to assess the performance of TSMC's community engagement strategies. Tracking data longitudinally, or across time, allows for the identification of issues within stakeholders groups before they become conflicts and will demonstrate that the company is listening and responding appropriately to community concerns.

6.0 REFERENCES

TATA Steel Minerals Canada (TSMC). 2019. 2019 Annual Report – Project 2a (Goodwood) Québec. 376 pp.

The International Council on Mining and Metals (2015). Stakeholder Research Toolkit. ICMM, London. 60 pp.

The International Council on Mining and Metals (2015). Understanding Company-Community Relations Toolkit. ICMM, London. 76 pp.

Appendix A

Project 2A Perception Survey

Questionnaire

Perceptions Survey



Demographic Measures

1. Please indicate which community you live in:

Matimekush-Lac John

Kawawachikamach

Schefferville

2. With respect to your employment, which of the following best describes your current situation?

Student

Employed – part time/casual

Unemployed

Retired

Employed – full time

Stay-at-home parent

Other

3. What is your gender?

Male

Female

4. Please indicate your age (in years):

5. What are the main activities that you conducted in Goodwood in the past year?

Caribou hunting

Trapping

Big game hunting

Wild fruit picking

Fishing

Travelling

Small game hunting

Camping

Canada Goose and Waterfowl hunting

Other

Issues and Impacts

These questions relate to impacts in Goodwood and surrounding area that are associated with TSMC's activities. For each impact area, we would like to know what your experience has been like over the past year (12 months).

1 having the most negative impact and 5 having the most positive impact

1 2 3 4 5 N/A

6. Environmental impacts
(e.g. dust, noise, fauna, waste and water, other amenity issues)

7. Cultural heritage
(e.g. traditional activities, areas of cultural importance)

8. Housing and accommodation
(e.g. availability and costs for ownership and renting and tourism)

9. Employment and training
(e.g. education, training, apprenticeships and opportunities for women, Indigenous Peoples and disabled peoples)

10. Local business opportunities
(e.g. supplying, contracting, new businesses, increased local capacity and Indigenous-led businesses)

11. Community health
(e.g. access to medical and health facilities, emergency services and specialists, pandemic response plan)

Section continues...

12. Community well-being
(e.g. community safety, crime,
roads and personal well-being)

13. Community investment
(e.g. increased economic
development, health services,
education and training, cultural
and recreational infrastructure
and reduced negative impacts)

14. Apart from the impacts
identified above, are there other
issues associated with mining
in the Goodwood area you think
need to be addressed?

Yes (If yes, list below.)

No

Relational Measures

1 being low knowledge and 5
being high knowledge.

1

2

3

4

5

15. How would you rate your level
of knowledge about TSMC's
activities in Goodwood?

16. Do you recall any initiative
or program associated with
TSMC's activities in Goodwood
area?

Yes (If yes, what was it?)

No

17. From the following list, which
are the three main sources
of information about TSMC's
activities in Goodwood for you?
(Select up to three sources)

Website

Committees Members

Press

Chief & Council

Radio

Mine Employees

Newsletter (mail)

Workshops

Site Visit

Other

Social Media (Facebook)

Section continues...

18. Is there any other way that you would like to hear about the Project?

Yes (If yes, what is it?)

No

19. Is there any additional information about the Project that you would like to receive?

Yes (If yes, what is it?)

No

20. What initiatives or programs do you think it would be good for TSMC to contribute to or support?

These questions are about your contact with TSMC personnel.

1 being near no contact and 5 being lots of contact.

How much contact have you had with people from TSMC:

1

2

3

4

5

21. At community meetings or events?

22. Informally in your local area?

23. Over all social situations?

24. Have you contacted TSMC regarding any complaints related to Project 2a?

Yes

No

24a. If yes, could you provide information on the issue (what, where, when)?

24b. And how satisfied were you that the issue was resolved in an adequate manner?

Very satisfied

Unsatisfied

Satisfied

Very unsatisfied

Neutral

Still being dealt with

Attitudes

1 being a negative attitude and
5 being a positive attitude.

1 2 3 4 5

25. How would you rate your current attitude towards TSMC's activities in Goodwood area?
-

Attitudinal statements: how would you rate each statement?

1 being strongly disagree and 5
being a strongly agree.

1 2 3 4 5 Unsure

26. Project 2a has negatively impacted my activities in the Goodwood area
-

27. TSMC listens to and respects my opinions with regard to community issues related to Project 2a
-

28. TSMC is prepared to change its practices in response to community sentiment in Goodwood area
-

29. The benefits of the Project 2a to the region outweigh any potential risks
-

30. Goodwood area land users trust TSMC
-

31. I feel that TSMC has been honest in its dealings with land users concerning Project 2a
-

Section continues...

1 being strongly disagree and 5 being a strongly agree.

1 2 3 4 5 Unsure

32. TSMC cares about local land users in the Goodwood area

33. In my opinion TSMC has good environmental performance in relation to Project 2a

34. I feel that TSMC's activities in Goodwood area are environmentally sustainable

35. I think TSMC takes measures to address environmental issues in Goodwood area if they arise

36. I believe that TSMC conducts reliable environmental monitoring in Goodwood area

37. Are there any specific examples related to the ratings provided?

38. Do you have any other comments you would like to make?

Appendix B

Project 2A Perception Survey

Open Answer Responses

Table 1 - Issues associated with mining (Question 14)

Employment
<ul style="list-style-type: none">- More contracts to local and hiring in local.- Hire people from province of Québec when mining on Québec side.
Environment
<ul style="list-style-type: none">- Dust control during summer months.- Be more mindful of the environment: there needs to be nets on the trains and dump trucks since dust is originating from there. All sorts of waste are deposited in the landfill and are ingested by the bears. They will fall ill and we won't be able to eat them.*- Red dust.*
Education and Training
<ul style="list-style-type: none">- The lack of training and skills development that should be offered to those who want to work in the area.
Communication
<ul style="list-style-type: none">- Transparency of operations and communication of future plans.
Infrastructure
<ul style="list-style-type: none">- No investment from Tata into the community infrastructure.- Goodwood road doesn't go where it used to. Disrupted the hunting. There should be a road past Goodwood to the north to access hunting and fishing sites.- TSMC has demanded a lot from the town of Schefferville but did not help out in return. Infrastructures have deteriorated as there is a lot more people using them, the roads in town are damaged due to the increased traffic from trucks. A lot has changed since the mine has been operational.*- The old access road has been cut. We can't go to the places we used to go to anymore.*
Other
<ul style="list-style-type: none">- Not right now.- Leave.- Non sayed.

* Translated from French

Table 2 – Recalled company Initiatives and programs (Question 16)

Recalled Initiatives and Programs
<ul style="list-style-type: none">- Yes.- DSOT/DSO, Project2.- No.- They implemented stormwater/runoff management features. The access road was modified and there were some repairs done. Because of spring thaw, they had to repair the road again but there are still some areas that are inaccessible. They could have done a better job with the potholes repairs.*- All the holes will be covered at the end of operations.*

Table 3 – Suggested ways to hear about the Project (Question 18)

Suggested ways to hear about the Project
<ul style="list-style-type: none">- Website.- Accountability panels led by chief and council open to public, paper copy circulation of annual reports and long term prospectus in English.- yes...more Naskapi working.- Door to door.- Regular consultations with the Elders at the local community center.- Email.*- Increase frequency of newsletter distribution.*- Email.*

Table 4 – Additional information they would like to receive (Question 19)

Environmental Impact Assessments
<ul style="list-style-type: none">- More information about what actually goes on. Do you environmental assessment on how the Innu and Naskapi are affected by the mines, water quality, and air quality.- I would like to know what the impacts on the environment are.*- What are the measures to protect the environment?*

* Translated from French

Employment
<ul style="list-style-type: none"> - Job fairs for high school grads. - Potential job applications.
Community Investment
<ul style="list-style-type: none"> - Tata's investment into the community. - Additional roads to be constructed towards north and east.
Mine Operations Update
<ul style="list-style-type: none"> - How is the project developing? What is the status about new mines/projects?* - We only hear about safety announcements. We know nothing else about what is going on. There is no information about project and operations progress such as how many tons were produced...*
Training
<ul style="list-style-type: none"> - Scholarships available, apprenticeship program info as well as school to work transition programs.
Social Impact Assessments
<ul style="list-style-type: none"> - The project should continue in respect with the agreement signed with the Nations.
Other
<ul style="list-style-type: none"> - Yes. - Yes.

Table 5 – Suggested initiatives and programs for contributions (Question 20)

Education and Training
<ul style="list-style-type: none"> - Training programs again back in Schefferville and kawawa. - Make scholarships available and advertise them well, create more apprenticeships and school to work transition agreements with Cegep Sept Iles and their Natural Sciences program. - Electrical courses. - Training and skills development to indigenous who are pursuing a career in the mining industry. - Environmental and business training. - Education (invest money in schools).*

* Translated from French

Education and Training (continued)

Professional training sessions. Provide integration courses or a basic English course so that people can apply to TSMC's job openings.*

Environment

- Contribute to the municipality's funds for waste management, recycling, clean city awareness campaigns including the protection of the George River herd and keeping green space green.
- Less traffic, less pollution and dust.
- Environment.*

Aboriginal Liaison

- Hire aboriginal liaison officer Tata steel.
- Learn how native thinks.

Employment

- Set up an annual job fair for high school grads.
- Jobs.

Local Community

- The community.
- Assistance to growth and development of the community.
- Swimming pool and baseball court not built as promised.*

Youth Activities

- Things TSMC had promised, especially for the youth, such as getting them out in the woods, making sure we don't lose our culture...*
- Help the youth to take on traditional or sports activities.*

Communication

- Replying to the communities how it is affecting their health, environment, animals specifically bears, water and air.

Local Businesses

- Helping to start businesses.

* Translated from French

Table 6 – Additional information on complaints filed (Question 24a.)

Complaints
<ul style="list-style-type: none">- The impacts on the caribou, small and big game, fishing, air quality and the water quality. The garbage that sits up on the hill and is ignored. Not properly handled!- Using our hunting road.- Barricades 2 years ago. They promised money and things for the youth.*- COVID: there were employees in town even though they are not allowed to come.- Dust control near my fishing spot at Greenbush lake please.†- Last year because of vehicles covered in mud were all around town and the airport. There are too many vehicles at the airport, they should look into organizing better and have shuttles. The situation has improved because of COVID linked restrictions.*

Table 7 – Examples with regards to attitudes ratings (Question 37)

Attitudes ratings - Examples
<ul style="list-style-type: none">- Water, security.- The press incident that occurred a few years ago. Where a river was contaminated by the tailing pond. The lack of communication and acknowledgment by TSMC caused a hindering effect on environmental trust to TSMC by the indigenous peoples co-habiting the area.- Environmental impact: I feel discouraged because there is too much activity there and too much dust. Wildlife is disturbed.- Caribou don't come through here anymore. Lots of holes on the road. Pollution and dust. People who have asthma are having difficult times. A lot of dust gets in the houses during the summer. The lakes are all red.*- TSMC starts projects even if there are objections, they go on with them anyway. For instance, they weren't supposed to mine in a certain area but they went anyway. We thought it was confined to a specific area but they are taking much more space. They've only been here for 10 years and their footprint has extended more than IOC in the 30-35 years they were here. Last year, a river where people hunt and fish became red because of a spill. People complained about it but it could have gone unnoticed otherwise.*

* Translated from French

† Greenbush lake is not located in the Goodwood area

Attitudes ratings – Examples (continued)

- There have been improvements but there is still more to do: dust, red water... In the summer, when it's hot, there is a lot of dust due to the 200T that transport the ore and we are in the middle of a cloud of dust when on the access road. How is this affecting the partridges and other animals? Dust contamination? Are there any studies on this topic? The environment surrounding the access road: the leaves change and the lakes become red because of runoff from the road. We want to be a little more informed and see studies on these issues, to know if it is harmful.*
- I don't go fishing anymore because last time I went, I had to wait over an hour to be escorted while the person went to have lunch first. Sometimes the bypass road is very close to the haulage road. It is not a very safe situation for instance if a hunter fires and hits a truck. It's all disturbed up there. We would like to have a site visit to see the operations and better understand the environmental monitoring program. We need more information.*

Table 8 – Open comments (Question 38)

Open Comments

- No.
- Even this questionnaire is unclear. You do not offer any reading material to inform us of projects before asking for our opinion and everything I try to find online is in French, which I do not speak. This entire questionnaire is inaccessible for language learners and shows how much Tata doesn't care.
- No.
- Training more locals for future upcoming jobs.
- Tata has no consideration to the communities and wildlife, and waters that are impacted by the mines!!! Get the fuck off the land.
- Hire more natives and stop being racist.
- onsite HR was rude, disrespectful and unprofessional to prospective indigenous applicants.
- Activity in Goodwood has impacted me in various ways regarding traditional activities. Even though the Naskapi benefited business wise and from private training, there should be more local business opportunities.

* Translated from French

Open Comments (continued)

- No.
- We used to go camping, caribou hunting during the weekend but it's not the case anymore. Nobody goes there anymore because there are no more caribous and no access road. They built a new road but we can't access everywhere. It's sad to see and depressing. Thefts are more frequent, a lot of drugs and alcohol. It has improved and returned to normal this past year but I think it will be worse again. It's better but it's not as it used to be. There are fewer hunters.*
- With the two other communities, we are being trampled over on the economic front. There is no communication. We don't know what is happening over there. There aren't a lot of jobs held by natives (10 to 15). The hiring process is discriminatory because one needs to speak both languages. There aren't any Innu or Naskapi in administration positions. a strong emphasis needs to be placed on trainings including in schools and high schools. We need also more information, for instance, go to the schools and explain the mine operations and have a representative with Chief & Council.*

Appendix XV: Feedback & Complaint Process

FEEDBACK & COMPLAINTS MANAGEMENT PROCESS

Foreword

A Stakeholder Approach to Business

Jamsetji Tata, founder of the Tata Group, conceived Tata Steel to be a conduit to the economic freedom for the people of India. He emphasized on the consideration of the interests of the shareholder, and the health and welfare of employees as the sure foundation of success. This defined the purpose and nature of Tata Steel's relationships with its stakeholders.

This vision continues to be highlighted, over a century later, across the world, as one of the key principles of Tata Steel's young subsidiary, Tata Steel Minerals Canada (TSMC).

TSMC identifies its stakeholders based on voluntarily accepted obligations, on the legal landscape in Canada with respect to Aboriginal land rights, and those whose interests it must address in the value creation process. Strategic planning and risk management processes systematically collect and analyze information on existing and emerging stakeholders and continually define organizational priorities.

This document presents the process followed by TSMC for managing Feedback and Complaints.

Primary audience (5 Indigenous groups):

Local Indigenous groups:

- Naskapi Nation of Kawawachikamach
- Nation Innu Matimekush Lac-John

All Indigenous groups:

- Local Indigenous groups
- Innu Takuaikan Ushuat mak Mani-Utenam
- Innu Nation
- NunatuKavut Community Council

Medium/resources used

As much as possible, existing mediums/resources will be used to communicate and consult with Indigenous groups and relevant stakeholders:

- Emails between TSMC and Indigenous groups/relevant stakeholders
- Phone calls between TSMC's representatives and Indigenous groups/relevant stakeholders
- Announcements on local community radio stations
- Quarterly Health, Safety and Environment (HSE) Committee meetings
- Project 2A (Goodwood) Environment & Social Monitoring Committee Meeting
- Community Newsletter

- Annual Report, available on Internet
- Shared drive for above Committee members¹
- TSMC personnel (TSMC Environment & Community Affairs)

Coordinates of Key Stakeholders

In order to ensure that key stakeholders can be reached in a timely manner, a list of names and contact information is kept and is updated on a regular basis.

(a) Indigenous groups

Naskapi Nation of Kawawachikamach (NNK): (418) 585-2686	
Lindsay Richardson	Billy Shecanapish
Nation Innu Matimekush Lac-John (NIMLJ): (418) 585-2601	
Myriam Rossignol	Lucien Mckenzie
Innu Takuaiakan Ushuat mak Mani-Utenam (ITUM): (418) 962-0327 or 1 (800) 563-0327	
Maude Régis-Pilot	André Michel
Innu Nation (IN): 709 497-8398	
Paula Reid	
NunatuKavut Community Council (NCC): 1 (877) 896-0592 or (709) 896-0592	
George Russel Jr.	Kathleen Simms

(b) Archaeology (see also TSMC’s Cultural Heritage Control Plan)

Provincial Archaeology Office (PAO):	(709) 729-2462 – fax: (709) 729-0870
Naskapi Nation of Kawawachikamach (NNK):	(418) 585-2686
Nation Innu Matimekush Lac-John (NIMLJ):	(418) 585-2601
Innu Takuaiakan Ushuat mak Mani-Utenam (ITUM)	(418) 962-4000
Innu Nation (IN)	(709) 497-8398
NunatuKavut Community Council (NCC)	(709) 896-0592

¹ A shared drive allows all registered users to securely access remotely, documents that were saved on the drive. One becomes a registered user when he/she joins a committee, a meeting, etc. and when TSMC grants access to the shared drive.

(c) TSMC’s Feedback and Complaint Coordinators

In order to ensure that feedback and complaints are treated efficiently, TSMC has designated key employees to liaise with stakeholders:

Manager, Community Affairs	(514) 258-9116
TSMC’s Environmental Team	(514) 764-6700 or 1 (866) 904-0394, ext. 374 or 488
Mine Site Security Gate (24hrs/day, 7 days/week)	1 (866) 904-0394, ext.397
Corporate Environmental Manager	(514) 220-9937

(d) Relevant Authorities

Canadian Environmental Assessment Agency, Atlantic Office	(902) 426-0564
Ministère de l’Environnement et de la Lutte contre les changements climatiques, Direction de l’évaluation environnementale des projets miniers et nordiques et de l’évaluation environnementale stratégique	(418) 521-3933, ext.4654
Town of Schefferville	1 (888) 828-2503

(e) Other Entities

Schefferville Airport	(418) 585-3325
Sûreté du Québec in Schefferville	(418) 585-2626

Community Affairs Resources

The Company has dedicated resources whose focus is to foster cordial and constructive relations with its stakeholders and carry-through on our IBA commitments:

- i. Reporting to the Vice-President of Operations, the **Community Affairs Manager** is responsible for implementation of the agreements with stakeholders, including communication with communities and with company departments in relation to commitments and responsibilities; reporting on employment and procurement; committee meeting planning, minutes and follow-up; First Nation payments; donations; Aboriginal consultation for permits and Mine Development and Rehabilitation and Closure Plans; supervision of Community Affairs personnel where applicable.

TSMC-Community Committees

A number of committees operate for the purposes of the implementation of the IBAs and environmental monitoring:

- **Impact & Benefit Agreement Implementation Committee** for each of the 5 Aboriginal group agreements (NIMLJ, NNK, ITUM, Innu Nation and NCC), composed of representatives from TSMC the Aboriginal group. Their mandate is to monitor the timely and effective execution of the obligations and objectives of these agreements.
- **Community Health, Safety & Environment Committee** comprised of TSMC representatives and the NIMLJ, NNK, ITUM, Innu Nation, NCC, and the Quebec Inuit (for activities north of the 55th parallel). Its mandate is to address Health, Safety and Environment issues related to the DSO Project. The Committee meets 3 to 4 times per year either in Schefferville or remotely. The meetings provide an opportunity for the Aboriginal groups to meet with TSMC to review Project activities, review environmental and health and safety matters important to the communities, and identify solutions to improve practices and relations.
- **Project 2A (Goodwood) Environmental & Social Monitoring Committee** comprised for representatives from the NNK, Kativik Regional Government, Makivik Corp and TSMC, for TSMC's mining operations north of the 55th parallel, in Kativik. The Committee meets twice annually in Schefferville or remotely. The meetings provide an opportunity for the members to meet to receive an update on mining operations, review environmental matters, and identify solutions to improve practices and relations.

Feedback and Complaint Process

General purpose:

Ensure that feedback and complaints from Indigenous groups and other stakeholders are solicited. Once feedback or complaints are given, TSMC will keep providers informed of how their input was taken into consideration and of the actions taken to solve or mitigate the issue reported.

Strong and trusted mechanisms can help address problems proactively as they arise, and in turn helps build trust between parties and effectively identifying potential problems.

Note that:

- if any feedback or complaints reported constitute an emergency, the Emergency Preparedness Response Plan would apply.
- If the feedback given is simply an observation or comment, the information will be shared with the appropriate TSMC employees.
- a noise complaint will be treated 48 hours or less.

Feedback and Complaint Process			
When	What (action)	How (medium)	Accountability
January of each year or when need arises	<ul style="list-style-type: none"> • Review list of TSMC's contacts to whom complaints should be directed, including a general number and email address (sole contact point). • Ensure voice mail linked to the general number is adapted (is in English and French, asking to leave message, etc.) • Review feedback and complaint process to ensure efficiency. 	Revised contact list and feedback and complaint process	Manager, Community Affairs

Feedback and Complaint Process			
When	What (action)	How (medium)	Accountability
	<ul style="list-style-type: none"> Advise internally how and where feedback or complaints should be directed 	Internal advertisement	
When need arises	Send stakeholders feedback and complaint process and updated contact coordinates	Email	Manager, Community Affairs
Quarterly	<ul style="list-style-type: none"> Advertise externally feedback and complaint process with contact information. Send email on process and contacts 	Email Facebook Community Newsletter	Manager, Community Affairs
Feedback received	<p>The Community Affairs logs the feedback or complaint in a centralized file on shared drive:</p> <ul style="list-style-type: none"> Date of feedback Person giving feedback / Group (Indigenous, authorities, local users, etc.) Nature of feedback (noise, dust, blasting, fauna, general comment, etc.) A noise complaint needs to be treated within 48 hours. Name of the competent resource who will treat the feedback/solve the situation (self, other departments or resources) Date of referral to the competent resource Follow-up actions (24 hours, 48 hours until the action plan, action plan) Final outcome General comments <p>If needed, Community Affairs communicates with the person giving feedback or complaint to obtain clarity.</p> <p><i>**If the receiver is someone other than one of the coordinators, he/she needs to reassure the stakeholder that the feedback or complaint will be treated quickly by one of the coordinators.</i></p> <p><i>He/she must then transfer the feedback or complaint to one of feedback and complaint coordinators. **</i></p>	Centralized feedback/complaint log	Manager, Community Affairs
As soon as possible	Community Affairs transfers feedback/complaint to a competent resource if needed, with explanation, deadline to start treating feedback (3 days generally or 2 if re: noise)	Email Phone call	Manager, Community Affairs
48 hrs after feedback received	<p>Community Affairs communicates with competent resource to have an update on the feedback or complaint and updates log.</p> <p>Community Affairs contacts stakeholder to give an update of the treatment.</p> <p>** A noise complaint needs to be treated within 48 hours</p>	Email Phone call	Manager, Community Affairs
Weekly until feedback is addressed	<p>Community Affairs communicates with the competent resource to have an update on the action plan.</p> <p>Community Affairs contacts stakeholder to give an update of treatment.</p>	Email Phone call	Manager, Community Affairs

Feedback and Complaint Process			
When	What (action)	How (medium)	Accountability
<ul style="list-style-type: none"> ▪ HSE Committee meeting ▪ Project 2A Environmental & Social Monitoring Committee meeting 	Provide update on the treatment of the feedback or complaint received.	In-person or virtually Meeting notes	Manager, Community Affairs
Annually	Summarize feedback and complaints received and how they were addressed.	Annual report (printed and on the internet)	Manager, Community Affairs