

**Approval for Site-specific Standards Issued  
Pursuant to s.35(1) of O. Reg. 419/05**

Approval Number: 501-21-rv0

Reference Number: 0538-C7YKSX

Issue Date: December xx 2021

Expiry Date: December xx, 2031

Site-specific  
Standard Issued to:

Vale Canada Limited  
Copper Cliff, Ontario

Site Location:

Copper Cliff Smelter  
18 Rink Street, Copper Cliff  
Greater Sudbury City, District of Sudbury  
P0M 1N0

## DEFINITIONS - TERMS

For the purpose of this site-specific standard approval for *Nickel* the following definitions apply:

- (1) *"Action Plan"* means the document entitled "Action Plan", dated September 28, 2020 submitted by the *Company* as part of its *Request*, including but not limited to the items summarized in Appendix 1 of this *Approval*.
- (2) *"Ambient TSP Monitoring Stations"* means the monitors and related equipment that measure ground level concentrations of *Nickel* within the City of Greater Sudbury and includes:
  - i. any monitor identified in Appendix 2 which includes the monitoring stations at Copper Cliff Creek, Delki Dozzi, Dynamic Earth, Fielding, Norite, Power, Spruce, Union and Venice; and
  - ii. any other such monitor identified in writing by the *District Manager* or the *Director*.
- (3) *"Approval"* means this site-specific standard approval, approval number xxx-xx-rv0.
- (4) *"Company"* means Vale Canada Limited that is responsible for the construction or operation of the *Facility* and includes any successors and assigns in accordance with section 19 of the Environmental Protection Act.
- (5) *"Director"* means a person appointed under section 35 of the *Regulation* under the Environmental Protection Act.
- (6) *"District Manager"* means the District Manager of the appropriate local district office of the *Ministry*, where the *Facility* is geographically located.

- (7) *“Environmental Compliance Approval”* means the Environmental Compliance Approval number 6785-9BXPTC issued on January 14, 2014, as amended from time to time.
- (8) *“Facility”* means the *Company* facility referred to as Copper Cliff Smelter and located at 18 Rink Street in the City of Greater Sudbury.
- (9) *“Ministry”* means the ministry of the government of Ontario responsible for the Environmental Protection Act and includes all officials, employees or other persons acting on its behalf.
- (10) *“Ministry Review Report”* means the report dated October 2021 that provides a written review by *Ministry* staff of the Request by the *Company* for site-specific standard for *Nickel*, annual averaging period.
- (11) *“Nickel”* means the contaminant including nickel and nickel compounds, identified by the Chemical Abstract System (CAS) number of 7440-02-2.
- (12) *“POI”* means point of impingement and has the same meaning as in the *Regulation*.
- (13) *“Regulation”* means Ontario Regulation 419/05: Air Pollution – Local Air Quality under the Environmental Protection Act as amended from time to time.
- (14) *“Request”* means the request dated September 28, 2020 made under section 32 of the *Regulation* and submitted by the *Company* with respect to the *Nickel* standard listed in Schedule 3 of the *Regulation* and includes,
- i. the request for site-specific standard dated September 21, 2020, and signed by Dino Otranto, Director North Atlantic Operations, of the *Company*;
  - ii. an Emission Summary and Dispersion Modelling Report dated August 15, 2020;
  - iii. a Technology Benchmarking Report dated August 15, 2020;
  - iv. a Public Consultation Report dated September 25, 2020 summarizing the public involvement undertaken by Vale Canada Limited;
  - v. an *Action Plan* report dated September 28, 2020; and
  - vi. other supporting information.
- (15) *“TSP”* means suspended particulate matter less than 44 microns in diameter.

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## DEFINITIONS – REQUIRED REPORTS

- (16) “*Baghouse Information Report*” means a report that includes the following information related to baghouses that emit *Nickel*:
- i. “Baghouses Description” chapter that provides an inventory of each baghouse including volumetric flow, exit gas temperature, bag type, bag area, cleaning mechanism type, operation and maintenance protocols, the manufacturer’s recommended frequency of bag replacement, presence of leak detection devices and where present, the make, model and specifications of the device; and
  - ii. “Baghouse Performance Assessment” chapter that provides the following information related to baghouses that emit *Nickel*:
    - a. A summary of the performance of the baghouses including a record of bag filter replacement.
    - b. A summary of source testing results, the data from bag leakage detection devices with an indication of events where there was breakage or leakage of *Nickel* emissions from the baghouse.
    - c. A risk-based assessment of the requirement for leak detection devices for those baghouses that do not have one.
    - d. Recommendations for improvement.
    - e. Timelines for recommended improvements.
- (17) “*Best Management Practices Plan for Control of Fugitive Dust Emissions*” means the Best Management Practices Plan required by the *Environmental Compliance Approval*, as that term is defined in the *Environmental Compliance Approval*.
- (18) “*Environmental Management System and Community Engagement Report*” means the annual report required by the *Environmental Compliance Approval*.
- (19) “*Root Cause Analysis and Pollution Abatement Report*” means a report that:
- i. describes the investigation and outcome of an analysis to determine the cause of a measured exceedance of the site-specific measured level of *Nickel* identified in Table 2 of this Approval; and
  - ii. identifies specific actions to reduce the likelihood of further exceedances of the site-specific measured level of *Nickel* identified in Table 2 of this Approval.

## GROUNDS FOR APPROVAL

In accordance with section 35 of the *Regulation*,

A. I, the *Director*, am satisfied that:

1. The *Request* is consistent with subsection 32(1), paragraph 8.1 of the *Regulation*.

2. The requirements of section 32 of the *Regulation* have been met.
  3. The *Request* satisfies the requirements of section 33 and other relevant portions of the *Regulation*.
  4. Pursuant to subsection 34 (1.1) of the *Regulation*, the *Company* was not required to hold a public meeting or comply with subsections 34 (2) to (4). Nevertheless, the *Company* conducted a public engagement campaign with respect to the *Request*.
- B.** Based on the above conclusions and the information that I have reviewed, including the *Request*, the *Ministry Review Report* and various interactions with the *Company*, I am of the opinion that:
1. The *Company* cannot comply with section 20 of the *Regulation* with respect to the *Nickel* standard of 0.04 µg/m<sup>3</sup> annual averaging period listed in Schedule 3 of the *Regulation* because it is not technically and economically feasible for the *Company* to comply.
  2. The site-specific *Nickel* standard set out in Table 1 below is the minimum change necessary to enable the *Company* to comply with section 20 of the *Regulation*.
  3. The conditions imposed are appropriate having considered the following as per section 35(12) of the *Regulation*:
    - a. The nature of *Nickel*;
    - b. The frequency with which the inability to comply with section 20 referred to in subclause 35 (1)(b)(i) of the *Regulation* would occur; and
    - c. Whether there are any acute effects associated with the contaminant.
  4. There is no public interest reason sufficient to require denial of the *Request*.
  5. The site-specific *Nickel* standard is not likely to permit frequent discharges of *Nickel* that result in the concentration of *Nickel* at a *POI* located on a place referred to in subsection 30 (8) of the *Regulation* exceeding the other time period upper risk threshold set out for the contaminant in Schedule 6 of the *Regulation*.
  6. Compliance with this *Approval* will result in improvements to reduce discharges to air.
- C.** The *Company* was provided a copy of a draft of the *Approval* on October 22, 2021 and provided an opportunity to make written submissions to the *Director* during the period that ended 30 days after the draft was given.

**SITE-SPECIFIC STANDARD(S) APPROVED**

Pursuant to s.35 (4), (4.1) and (5) of the *Regulation*, with respect to discharges from the *Facility*, references in the *Regulation* to a standard set out in Schedule 3 for *Nickel* shall be deemed to be references to the corresponding site-specific standard set out in Table 1.

**Table 1: Site-Specific Standard for the Facility**

<b>Contaminant</b>	<b>Contaminant Chemical Abstract System No.</b>	<b>Applicable Time Periods</b>	<b>Site-specific Standard</b>	<b>Site-specific Standard Averaging Period</b>
<i>Nickel</i>	7440-02-0	From the date of this <i>Approval</i> to December 31, 2031	0.4 µg/m <sup>3</sup>	Annual

NOTES: µg/m<sup>3</sup> means micrograms per cubic meter

## CONDITIONS

You are hereby notified that this *Approval* is issued to you subject to the conditions outlined below pursuant s.35 (6) of the *Regulation*. Please note that s.35 (7) of the *Regulation* states that the approved site-specific standard for *Nickel*, annual averaging period applies only if the following conditions are complied with.

### Condition 1: Nickel Emissions – Measured Level

1.1 If there a concentration of *Nickel* measured at an *Ambient TSP Monitoring Station* exceeds the level set out below in table 2, the *Company* shall submit to the *District Manager*:

- a) written notification in a format acceptable to the *District manager* within twenty-four hours of becoming aware of a measured exceedance; and
- b) a *Root Cause Analysis and Pollution Abatement Report* within ninety days of becoming aware of a measured exceedance.

1.2 The actions set out in the *Pollution Abatement Report* must be implemented within sixty days of the *Root Cause Analysis and Pollution Abatement Report* submission, or within a period set by the District manager in writing.

**Table 2: Measured Level of Nickel, Above Which, Trigger Action**

Contaminant	Contaminant Chemical Abstract System No.	Applicable Dates	Measured Level	Averaging Period
<i>Nickel</i>	7440-02-0	From the date of this <i>Approval</i> to December 31, 2031	1 µg/m <sup>3</sup>	24-Hour

### Condition 2: Submission of Monitoring Results

2.1 The *Company* shall continue to submit on a quarterly basis, to the *District Manager*, monitoring results for particulate and metals contained in the particulate from its *Ambient TSP Monitoring Stations*. Monitoring shall be done in accordance with the requirements of the Operations Manual for Air Quality Monitoring in Ontario (as amended).

### **Condition 3: Further Investigations and Submissions of Reports**

3.1 The *Company* shall update and submit an electronic copy of the following reports to the *Director* and *District Manager* on an annual basis, no later than March 31 each year or by a later date as set out in writing by the *Director*:

- a) *Best Management Practices Plan for Control of Fugitive Dust Emission*; and
- b) *Baghouse Information Report*.

3.2 The *Company* shall submit an electronic copy of the *Environmental Management System and Community Engagement Report* to the *Director* and *District Manager* [no later than March 31 each year or by a later date as set out in writing by the *Director* | as soon as practical after it is prepared pursuant to the *Environmental Compliance Approval*].

3.3 The *Company* shall prepare a written summary of the measures taken each calendar year to implement the *Action Plan*, including a description of each measure taken, the date of implementation of each measure taken and proposed dates for the implementation of measures yet to be taken, and shall submit an electronic copy of the written summary to the *Director* and *District Manager* no later than March 31 each year following the calendar year that is being summarized or by a later date as set out in writing by the *Director*.

### **REASONS FOR CONDITIONS**

Condition 1, Condition 2 and Condition 3 are included in accordance with the subsection 35(12) of the Regulation to assist in minimizing the frequency of exceedances of the nickel standard in Schedule 3 of the Regulation.

### **Expiry**

In accordance with s.35 (9) of the *Regulation*, this *Approval* shall expire on December 31, 2031 after which the standard set out in Schedule 3 to the *Regulation* for the annual averaging period will apply to discharges of *Nickel* from the *Facility*.

The above noted *Request* is approved under Section 35 of the *Regulation*.

DATED AT TORONTO this day of xxxxxxxxxxxx, 2021

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*Director*

Ontario Regulation 419/05 – Section 35

c:

XXXXXXXXXXXXXXXXXX, District Manager, Ministry of the Environment Conservation and  
Parks, Sudbury Office

XXXXXXXXXXXXXXXXXXxx, Vale Canada Limited



### Appendix 1: Summary of Action Plan Items

Item	Actions	Proposed completion date
1	Material Handling Relocation Project	2024
<b>Roads</b>		
2	Determine the impact of actual measures and the need for additional track-out control stations.	2025
3	Design and install additional track-out control stations if need is determined.	2027
4	Reassess and optimize the road vacuuming, watering and surfactant application schedule based on item #2 determinations.	2025
5	If additional track-out control is required and implemented in 2027, conduct road dust sampling campaigns in 2028, and reassess and optimize the road vacuuming, watering and surfactant application schedule.	2028
6	Submit a Scope of Work and Cost Effectiveness Study for options to reduce the truck traffic on the on the Balsam Street access road to the Smelter (P01 to P05), considering at least the following options: <ul style="list-style-type: none"> <li>• Route deliveries of final products, flux (quartz/sand) and Nickel Refinery mixed reverts and slag, down Godfrey Road (off RR35) and into the Smelter property via a new paved road</li> <li>• Rail deliveries of final products, flux (quartz/sand) and Nickel Refinery mixed reverts and slag</li> </ul>	2026
<b>General</b>		
7	Continue implementing the <i>Best Management Practices Plan for Control of Fugitive Dust Emissions</i> including evaluating opportunities to relocate stockpiles and outside work and to adjust traffic patterns away from sensitive areas.	On going
<b>Work Room Improvements</b>		
8	Conduct an annual evaluation of potential workroom improvement initiatives and implement select initiatives as appropriate – targeting the Filter Plant, Furnace Building (M-Floor), Casting and Crushing Building and the FBR Building.	2023

9	<p>Submit a report documenting the initiatives considered, the potential effectiveness of each initiative, how the initiative would be implemented, and justification for selected actions to be implemented in the following year.</p> <p>In subsequent years, similar reports must be submitted no later than December 31, however they must also include a summary of the work successfully implemented in the previous year.</p>	2024- On going
<b>Housekeeping Protocol</b>		
10	Create a standardized, formal “Housekeeping Protocol for Nickel Emissions to the Environment” (Housekeeping Protocol), with documentation requirements and triggers for action within specific timeframes – to be implemented at the Filter Plant, Furnace Building, Converter Aisle, Copper Circuit, Casting and Crushing, Matte Separation and FBR Building.	2023
11	Begin implementing the Housekeeping Protocol and if any changes occur update the protocol by the end of that year.	2024-on going
<b>Baghouse Protocol</b>		
12	<p>Create a standardized, formal “Baghouse and Dust Collection Systems Protocol for Nickel Emissions to the Environment” (Baghouse Protocol), with documentation requirements and triggers for action within specific timeframes, to be implemented for the following baghouse dust collection systems:</p> <ul style="list-style-type: none"> <li>· CRF Building: Material Handling Dust Collector #1 and General Building Dust Collector #2</li> <li>· Filter Plant: Gallery Dust Collector, Diverter Area Dust Collector and Workroom Baghouse</li> <li>· Area 10 Building: Area 10 Baghouse</li> <li>· Furnace Building: No. 1 Dust Collector, No. 2 Dust Collector and M-Floor Baghouse</li> <li>· Converter Aisle: Sandfloor Baghouse</li> <li>· Copper Circuit: MK Dust Collector</li> <li>· Casting and Crushing: Crusher Baghouse #1/#3 (two baghouses exhausting out a common stack)</li> <li>· Matte Separation: AB Baghouse</li> <li>· FBR Building: Baghouse #1, Baghouse #2, Baghouse #3, Baghouse #4/5, Baghouse #7, Baghouse #8 and Baghouse #9</li> <li>· Secondary Baghouse (exhausting out the 450’ SBH/FBR Stack)</li> <li>· Fluid Bed Dryer Baghouses (exhausting out the 450’ FBD/FF Stack)</li> </ul>	2023
13	Begin implementing the Baghouse Protocol and if there are any	2024-on

	updates to the Baghouse Protocol in a given year, the updated Baghouse Protocol must be submitted no later than December 31 of that year.	going
<b>Dust Collection Systems</b>		
14	Conduct an assessment of the overall dust collection system for each building to ensure the dust collection systems are collecting emissions at the appropriate locations and in the appropriate amounts. The report shall: · describe the existing dust collection system(s) for each building including deficiencies and recommended improvements · include a proposal to ensure the Filter Plant Venturi Scrubber discharges dust to the environment at less than 2mg/m <sup>3</sup> .	2024-2026
15	Incorporate the results/recommendations into the annual evaluation of workroom improvement initiatives.	2025
16	Conduct workroom sampling campaigns and conduct dispersion modelling to determine the impact of recent emissions reduction initiatives. The results of this assessment will determine if another assessment of the overall dust collection system is required, on a building-by-building basis.	2027-2028
17	If another assessment of the overall dust collection system is required, submit a summary report describing the existing dust collection system(s) for each building requiring additional assessment, including deficiencies and recommended improvements and incorporate the recommendations into the annual evaluation of workroom improvement initiatives. ·	2030-2031
<b>Additional Work</b>		
18	Conditional on future workroom conditions, close 6 sidewall vents and 3 roof vents at the FBR Building for 6 months per year (weather dependent, generally November to April).	2022
19	Continue previous Action Plan items related to "Additional Work": <ul style="list-style-type: none"> <li>• Characterizing emissions and measuring the results and effectiveness of control projects</li> <li>• Operating a community particulate monitoring network</li> <li>• Reviewing and updating the environmental training as required</li> <li>• Annual community engagement meetings with the Environmental Monitoring Team</li> </ul>	On going

Appendix 2: Map of Vale's Copper Cliff Smelter Ambient TSP Monitoring Stations

