

March 29, 2024

**Action Plan Status Update: Copper Cliff Smelter
Site-Specific Standard Approvals for Nickel, # 501-21-rv0**

Context

On December 23, 2021, the Ministry of Environment, Conservation and Parks (MECP) issued the Site-Specific Standard (SSS) approval for nickel for Vale’s Copper Cliff Smelter operations.

The table below shows the written summary of action plan items in 501-21-rv0, under section 3.3.

Action Item	Category	Action	Proposed Completion Time	Comments, Initiatives, Change
#1	Material Handling	Material Handling Relocation Project	2026	FEL3 work completed. The new Material Handling building is in the process of undergoing re-engineering which is scheduled to be completed in April. The new scope of work will be tendered out and it is anticipated that foundation work will begin in June. The bulk of building construction will take place in 2025 with completion scheduled in the early part of 2026.
#2	Roads	Determine the impact of actual measures and the need for additional track-out control stations.	2026	Work not started. Need Material handling relocation completed prior to proper assessment.
#3	Roads	Design and install additional track-out control stations if need is determined.	2028	Work not started. Need Material handling re-location completed prior to proper assessment.
#4	Roads	Reassess and optimize the road vacuuming, watering and surfactant application schedule based on the impact of actual measures and the need for additional track-out control stations.	2026	Road conditions evaluated during Road dust sampling campaigns and during annual ESDM compilation. Work for assessment for additional measures has not started. Delay due to material handling relocation.

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#5	Roads	If additional track-out control is required and implemented in 2028, conduct road dust sampling campaigns in 2029, and reassess and optimize the road vacuuming, watering, and surfactant application schedule.	2029	Waiting for investigation work to be completed.
#6	Roads	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: <input type="checkbox"/> 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 <input type="checkbox"/> Rail deliveries of final products, flux (quartz/sand) and Nickel Refinery mixed reverts and slag	2027	Work not started. Delayed due to material handling relocation completion date.
#7	General	Continue implementing the Best Management Practices Plan for Control of Fugitive Dust Emissions” including evaluating opportunities to relocate stockpiles and outside work and to adjust traffic patterns away from sensitive areas.	On going	Work On going to control fugitive emissions.
#8	Work Room Improvements	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- On going	Workroom projects or capital projects that could have an impact on workroom have started to be collected for the sites. Submitted report in December 2023, additional updates for ongoing projects.
#9	Work Room Improvements	Submit a report documenting the initiatives considered, the potential	2024- On going	Work room initiatives update submitted in December 2023. Based on investigation for

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		effectiveness of each initiative, how the initiative would be implemented, and justification for selected actions to be implemented in the following year. 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.		work room improvements – investigation has not started.
#10	Housekeeping Protocol	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- On going	Housekeeping protocols from operating areas were collected and formalized for December 31, 2023, submission. Additional evaluation for housekeeping will be done through audits of site in 2024.
#11	Housekeeping Protocol	Begin implementing the Housekeeping Protocol and if any changes occur update the protocol by the end of that year.	2024-on going	Implementation of housekeeping ongoing. Updates will be provided annually.
#12	Baghouse Protocol	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: · CRF Building: Material Handling Dust Collector #1 and General Building Dust Collector #2	2023 – On going	Baghouse Program was finalized with formal protocol with sites being developed and submitted for December 2023. Any updates will be done when needed.

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		<ul style="list-style-type: none"> · Filter Plant: Gallery Dust Collector, Diverter Area Dust Collector and Workroom Baghouse · Area 10 Building: Area 10 Baghouse · Furnace Building: No. 1 Dust Collector, No. 2 Dust Collector and M-Floor Baghouse · Converter Aisle: Sandfloor Baghouse · Copper Circuit: MK Dust Collector · Casting and Crushing: Crusher Baghouse #1/#3 (two baghouses exhausting out a common stack) · Matte Separation: AB Baghouse · FBR Building: Baghouse #1, Baghouse #2, Baghouse #3, Baghouse #4/5, Baghouse #7, Baghouse #8 and Baghouse #9 · Secondary Baghouse (exhausting out the 450' SBH/FBR Stack) · Fluid Bed Dryer Baghouses (exhausting out the 450' FBD/FF Stack) 		
#13	Baghouse Protocol	Begin implementing the Baghouse Protocol and if there are any updates to the Baghouse Protocol in a given year, the updated Baghouse Protocol must be submitted no later than December 31 of that year.	2024-on going	Updated as required and on any changes to equipment, alarms or OFIs.
#14	Dust Collection Systems	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:	2025-2027	Work not started due to budgetary constraints for 2024.

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		<ul style="list-style-type: none"> · 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/m³. 		
#15	Dust Collection Systems	Incorporate the results/recommendations into the annual evaluation of workroom improvement initiatives.	2026	Work not started due to budgetary constraints.
#16	Dust Collection Systems	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.	2028-2029	Work not started. Based on previous work.
#17	Dust Collection Systems	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	Work not started. Based on previous work.
#18	Additional Work	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, Moved to December 2023 for evaluation. Completed. Proposing Q4 2025	The vents were checked in December 2022, January 2023, and October 2024. All 3 roof vents were closed. Not all sidewall vents were observed closed. Evaluated sidewall vent closure through modelling and results indicated negligible improvement. Evaluate of workroom testing results need to be conducted over multiple years.

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#19	Additional Work	<p>Continue previous Action Plan items related to "Additional Work":</p> <ul style="list-style-type: none"> -Characterizing emissions and measuring the results and effectiveness of control projects -Operating a community particulate monitoring network -Reviewing and updating the environmental training as required -Annual community engagement meetings with the Environmental Monitoring Team 	On going	<p>On April 1st, 2019, Vale took over the operation, maintenance and reporting of results from its particulate monitoring network of 9 stations in accordance with the requirements of the Operations Manual for Air Quality Monitoring in Ontario. Quarterly reports are sent to the Ministry. Graphical summaries of the monitoring results and the quarterly reports are posted on Vale's internet website https://vale.com/sudbury</p> <p>Community engagement meeting scheduled in last week of March delayed until following week.</p> <p>Trained all personnel on Environmental Management System ISO14001. Included in training is environmental aspects which include emissions to air.</p>