AIR QUALITY VOL 3
CLASS I MODELING

TWIN METALS MINNESOTA PROJECT
Environmental Review Support Document

Prepared for Twin Metals Minnesota, LLC
Prepared by

Document No. TMM-ES-025-0144-03
Revision 0A
November 20, 2020

REVISION RECORD

Revision	Date	Description	EDMS Download Date	Project Configuration Version
0A	11-20-2020	Submitted for Agency Review – TOC		

REVISION NARRATIVE

DISCLAIMER

This document is a working document. This document may change over time because of new information, or further analysis or deliberation.

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LIST OF ABBREVIATIONS, ACRONYMS, AND SYMBOLS

TMM	Twin Metals Minnesota, LLC

1.0 INTRODUCTION

The Twin Metals Minnesota, LLC (TMM) Project (Project) is focused on designing, permitting, constructing, and operating an underground copper, nickel, cobalt, platinum, palladium, gold, and silver mining project. Located approximately nine miles (14 kilometers [km]) southeast of Ely, Minnesota, and 11 miles (18 km) northeast of Babbitt, Minnesota, the Project targets valuable state, federal, and private minerals within the Maturi deposit, which is a part of the Duluth Complex geologic formation.

All potential Project infrastructure locations presented herein are considered preliminary and are undergoing further design and engineering evaluations which will dictate final design and locations. Further information about TMM and the Project is located at http://www.twin-metals.com/.

The purpose of this document is to provide necessary information for the environmental review and permitting process. TMM retained [insert Consultant name] (insert abbreviated Consultant name) to complete [insert text].

2.0 SUMMARY

This report will describe impact assessment by:

- Referencing relevant sections of the FSDD, SEAW, and / or federal documents to remind the reader there is a defined scope that is being followed;
- Describing the baseline conditions;
- Describing the Class I protocol and modeling evaluation;
- Establishing the indicators of effects to the baseline conditions; and
- Discussion of modeling results and environmental effects.

The modeling protocol will use the emission sources inventoried in the other volumes of the *Air Quality Data Package*.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed Action

- Reference the TMM Project Description and Alternatives document and indicate the proposed action is defined within this document.

3.2 Alternatives to the Proposed Action

- Reference the TMM Project Description and Alternatives document and indicate the alternatives to the proposed action are defined within this document.

3.3 No Action Alternative

- Reference the TMM Project Description and Alternatives document and indicate the no action alternative is defined within this document.

4.0 BASELINE CONDITIONS

4.1 Area of Analysis

Area of analysis for the affected environment for this volume would be defined by the requirement of Federal Land Manager to assess all new emission sources within a 300-km radius for all USEPA-defined Class I areas.

4.2 Methods

4.2.1 Desktop Review

This will include review of publicly available data.

4.2.2 Climate and Meteorology

- Discussion of climate and meteorological datasets used for Class I modeling.

4.2.3 Ambient Air Quality

This section will include a discussion on approach and methods used to describe:

- Baseline ambient air quality
    - Publicly available sources
        - MPCA ambient monitoring, should include the following values:
            - Carbon Monoxide
            - Nitrogen Dioxide
            - Ozone (O_3)
            - Lead
            - Total Suspended Particulate (TSP)
            - PM_{10}
            - $PM_{2.5}$

- Sulfur Dioxide
  - Interagency Monitoring of Protected Visual Environments (IMPROVE) network monitoring stations BOWA1 and VOYA2

4.2.4 Existing Emission Sources

This section will include a discussion on approach and methods used to describe:

- Baseline existing emission.
  - Publicly available sources
    - MPCA permitting

4.2.5 Quality Control

Discussion of QA/QC or QAPP.

4.3 Existing Conditions

Using the defined areas of analysis and methods, existing conditions will be described within this section. The existing conditions will be discussed in terms of:

4.3.1 Climate and Meteorology

- Reference applicable existing conditions from *Climate and Meteorology Resource Report*

4.3.2 Ambient Air Quality

- Class I Modeling Air Quality Related Values (AQRV)

5.0 MODELING EVALUATION

5.1 Area of analysis

- Area of analysis would be Class I areas within 300 km of the proposed action:
  - BWCAW
  - Voyageurs National Park
  - Rainbow Lakes Wilderness
  - Isle Royale National Park

5.2 Methodology and Evaluation Criteria

This section will include a discussion on the predictive modeling approach. In addition to assessments of prevention of significant deterioration (PSD) - Class I

increment effects, modeling should include acid deposition on ecosystems, and visibility impacts analysis of haze, coherent plumes, or both.

5.2.1 Modeling Protocol

- Point Source Modeling Parameters
- Volume Source Modeling Parameters
- Area Source Modeling Parameters
- Assumptions

5.2.2 Description of Model Used - CALPUFF

- This section will include a discussion on the predictive modeling approach.

5.2.3 Modeling Evaluation Design Concentrations

- Pollutants - PM_{10}, $PM_{2.5}$, NO_2, SO_2
- Modeling Standards – Class I SIL
- Class I Modeling AQRV Screening Values
- Class I Deposition and Visibility
    - Nitrogen / sulfur deposition
    - Visibility Impairment

5.2.4 Quality Control

- Discussion of QA/QC or QAPP.

6.0 MODELING RESULTS

This section will include a brief comparison of modeled results to evaluation design concentrations.

6.1 Proposed Action

6.2 Alternatives to the Proposed Action

6.3 No Action Alternative

7.0 DISCUSSION OF ENVIRONMENTAL EFFECTS

An assessment of impacts will be conducted and described within this section. The following items will be assessed and described for the proposed action, alternatives to the proposed action, and the no action alternative:

- Prevention of Significant Deterioration
    - SIL Results
- Air Quality Related Values Impact Analysis
    - Plume Analysis
        - Results from air modeling on plumes and generation of visibility reducing particles.
            - Plumes as related to visual impacts and compatibility with the USFS Forest Service plan's preservation of scenic integrity that would fall into the visual report
    - Nitrogen and Sulfur Deposition
        - Results from air modeling on deposition of nitrogen and sulfur based upon model-predicted annual deposition.
        - Results from air modeling on deposition of SO_2 based upon model-predicted annual deposition.

7.1 Indicators of Impacts

Discuss indicators of impacts.

- Consumption of PSD increments as defined by the CAA Title I, PSD rule;
- Adverse effects on visibility in Class I areas;
- Adverse effects on other AQRV in Class I areas; and
- Increase in nitrogen and sulfate deposition.
- Describe time for analysis:
    - Timeline for analysis for direct effects would be during the construction, operations, and early closure phase. Proposed action would not have emissions after reclamation of the dry stack facility.

7.2 Proposed Action

Direct and indirect impacts associated with the proposed action will be described in this section.

7.3 Alternatives to the Proposed Action

Direct and indirect impacts associated with the 1352 and transmission corridor alternatives will be described in this section. This discussion will focus on differences in impacts between the alternatives and proposed action. Impacts that are the same between the proposed action and alternatives will be noted but not discussed in detail.

7.4 No Action Alternative

Direct and indirect impacts associated with the no action alternative will be described in this section.

8.0 REFERENCES

TABLES

FIGURES

APPENDICES

APPENDIX [#A, B, C, D]

[APPENDIX TITLE]

APPENDIX [#A, B, C, D]

[APPENDIX TITLE]

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