CUMULATIVE EFFECT VOL 2
IMPACT INDICATORS AND METHODS

TWIN METALS MINNESOTA PROJECT
Environmental Review Support Document

Prepared for Twin Metals Minnesota, LLC
Prepared by

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REVISION RECORD

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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

- Provide a high level summary of what is presented within this report.
- Describes rationale for approach and methods.
- Describes rationale for selection of indicators based on features, phase, and activities that would contribute to cumulative effect.
- Describes rationale for the environmentally relevant areas.
- Describes how the analysis addresses the combined effects of a proposed Project with other reasonably foreseeable projects that could contribute similar environmental effects.
- Describe how this report volume relates to the other volumes.
    - Indicate regulatory framework is presented in the other volumes of the *Cumulative Effect Data Package.*
    - Indicated proposed action and alternatives are defined in the other volumes of the *Cumulative Effect Data Package*.
- Reference relevant sections of the FSDD, SEAW, and / or federal documents to remind the reader there is a defined scope that is being followed.

3.0 IMPACT ASSESSMENT CRITERIA

3.1 Impact Assessment Indicators and Methods

Indicators and methods for assessing cumulative effects based on resource specific factors will be described within this section including the following:

- Establishment of environmentally relevant areas (by resource) between two Projects so the analysis can be completed;
- Timescales of the Project on each resource and each potential impact;
- Changes in indictors that measure the cumulative effect of present or future actions.

3.2 Area of Analysis

This section will describe how the area of analysis for cumulative effects is derived using the BLM and EQB guidance. Describing the present condition of the affected resources within the identified geographic scope provides a baseline for the cumulative effect analysis.

The geographic scope is generally based on the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope will often be different for each cumulative effects issue as noted in the NEPA handbook H-1790-1.

EQB guidance suggests that potential cumulative effects would occur where the "environmental footprints" of Project's overlap. These overlapping footprints are referred to as environmentally relevant areas. Environmentally relevant areas are determined on a case-by-case basis, based on each resource and each potential impact.

Also, as noted in the NEPA handbook H-1790-1 the time scales of potential effects need to be considered on a case-by-case basis, based on each resource and each potential impact. This is done in the context of past, present, and reasonably foreseeable projects that would affect the resource of concern within the geographic scope and the timeframe of the analysis. For future projects, you must include reasonably foreseeable future actions within the geographic scope and the timeframe of the analysis (40 CFR 1508.7). When considering if the future project is "reasonably likely to occur:"

- Is there an existing proposal or permit application.
- Is there a commitment of resources, such as funding.
- Has the NEPA process begun.
- "Sufficiently detailed information is available about the Project to contribute to the understanding of cumulative potential effects" (EQB, 2013).

Using this approach to define the environmentally relevant areas by resource and then applying a timescale provides a framework for analyzing whether affected resources have the capacity to accommodate additional effect and to determine the potential for significance of identified cumulative effects.

4.0 REFERENCES

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FIGURES

APPENDICES

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