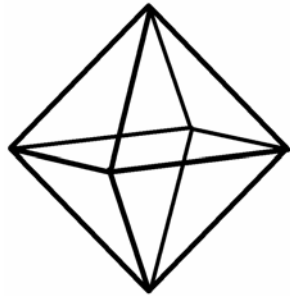


Plan



Kennecott
Eagle Minerals

Eagle Project

Topsoil Management Plan

Project I.D.: 04W018

Kennecott Eagle Minerals Company
Marquette, Michigan

December 2007

Eagle Project Topsoil Management Plan

Contents

	Page
1. Introduction	1
1.1 Purpose.....	1
2. Topsoil Management	2
2.1 Topsoil Stripping and Stockpiling	2
2.2 Potential Long-Term Effects of Topsoil Stockpiling.....	2
2.3 Topsoil Management Plan	2
3. References	4

Figures

Figure 1 Site Development Plan and Topographical Map

1. Introduction

1.1 Purpose

This Topsoil Management Plan has been prepared to address the potential effects of long-term storage of topsoil in stockpiles, and Kennecott Eagle Minerals Company (KEMC) methods to segregate and re-spread the topsoil during mine site reclamation. Additionally, this plan presents KEMC's plan to achieve a topsoil thickness and fertility commensurate with pre-construction activities.

2. Topsoil Management

2.1 Topsoil Stripping and Stockpiling

As discussed in the Mine Permit Application (Foth, 2006), average topsoil thickness at the site is approximately 3 inches. The quantity of topsoil to be stripped from the site during project construction is estimated at approximately 28,600 cubic yards (yd³). Approximately 11,400 yd³ of topsoil will be used on-site during construction to revegetate the disturbed areas, resulting in approximately 17,200 yd³ to be stockpiled in the on-site topsoil stockpile area (Figure 1).

The topsoil stripping and stockpiling will be completed using conventional earth-moving equipment such as bulldozers, scrapers, graders and off-road trucks. In areas where the topsoil is relatively thin, the contractor will remove the topsoil using smaller equipment to minimize mixing of topsoil and subsoils.

Topsoil will be stockpiled in a controlled manner in the topsoil stockpile area. The stockpile will be surrounded by silt fencing or similar erosion control devices to prevent soil erosion until permanent erosion control measures are installed. Permanent measures include establishment of vegetation. Topsoil stockpiles will be seeded with a Michigan Department of Transportation (MDOT), 2003 Standard Specification for Construction (MDOT, 2003) Temporary Seed Mixture 24+ (TSM 24+). TSM 24+ includes a 50/50 mixture of Perennial Ryegrass and Spring Oats. The rye and oats will quickly establish vegetation on the stockpile and mitigate soil erosion and dust emissions.

2.2 Potential Long-Term Effects of Topsoil Stockpiling

During long-term stockpiling of soils, changes can occur below depth for sandy textured soils such as those present at the site. Potential changes could be a reduction in the content of available nutrients, pH and organic matter levels.

2.3 Topsoil Management Plan

To minimize the detrimental effects of long-term storage of topsoil in stockpiles, KEMC will implement the following procedures.

- ◆ Following stockpiling, KEMC will collect up to four samples (1 sample/5,000 yd³ of topsoil stockpiled) of the topsoil for analysis, and test for pH, nitrogen, and organic content to establish an initial nutrient composition of the topsoil.
- ◆ As a temporary soil erosion and control measure, silt fences or similar erosion control devices will be installed surrounding the stockpiles to prevent soil erosion. For permanent soil erosion control, topsoil stockpiles will be seeded. In accordance with the facilities soil erosion sedimentation and control plan (Foth, 2007) to establish a vegetative cover and minimize erosion and dust emissions.
- ◆ Prior to use of the topsoil for reclamation, KEMC will collect samples of the topsoil for analysis, including pH, nitrogen, and organic content and compare these results to the initial condition. If required, soil amendment will be performed before re-spreading the topsoil to mitigate any deficiencies in the topsoil so that the topsoil is productive and a topsoil thickness and fertility commensurate with pre-construction activities is achieved.

Fertilizer application rates will be established upon evaluation of the soil nutrient content. If needed, additional similar quality topsoil will be purchased to meet reclamation needs.

- ◆ KEMC will re-spread topsoil in those areas requiring reclamation, to approximate pre-development thicknesses of approximately 3 inches using scrapers and bulldozers, as required.
- ◆ Vegetation establishment will proceed in accordance with the Mine Reclamation Plan and Mine Permit requirements.

3. References

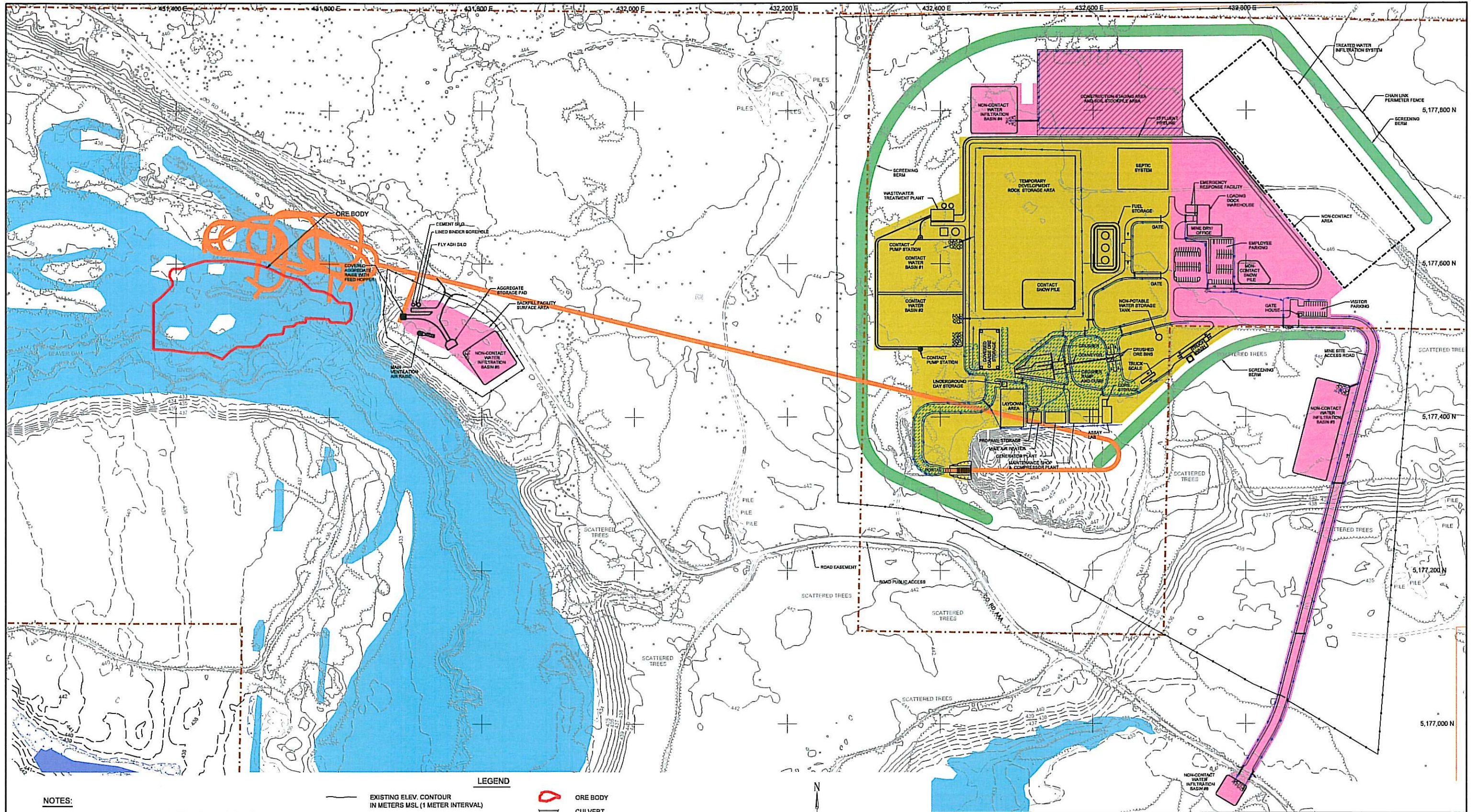
Foth Infrastructure & Environment, LLC. *Eagle Project Part 91 Soil Erosion and Sedimentation Control Permit Application Main Facility*. July 2007

Foth & Van Dyke and Associates, 2006. *Eagle Project Mining Permit Application* (submitted to Michigan Department of Environmental Quality in February 2006).

Michigan Department of Environmental Quality. *General Permit Conditions Non Ferrous Metallic Mineral Mining Permit No. MP 01 2007*. Anticipated Issuance Date of December 14, 2007.

Michigan Department of Transportation, 2003. *Standard Specification for Construction*.

Figures



- NOTES:**
1. TOPOGRAPHIC AND PLANIMETRIC DATA SUPPLIED BY AERO-METRIC ENGINEERING, SHEBOYGAN, WISCONSIN. DATE OF PHOTOGRAPHY: JUNE 2, 2004.
 2. MINE PLAN DATA AREA ADAPTED FROM MCINTOSH ENGINEERING, INC., TEMPE, ARIZONA.
 3. SURFACE PROPERTY BOUNDARY AS OF NOVEMBER 18, 2004 SUPPLIED BY KENNECOTT VIA GOLDER & ASSOCIATES INC., AUGUST, 2005.
 4. CONTOUR INTERVAL BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988. HORIZONTAL DATUM BASED ON NAD 83/04. HORIZONTAL COORDINATES BASED ON UTM ZONE 18.
 5. ORE BODY, WETLAND BOUNDARY (WETLAND AND COASTAL RESOURCES) SUPPLIED BY GOLDER & ASSOCIATES, INC. AUGUST, 2005.
 6. SITE LOCATION: PROJECT SITE WITHIN SECTIONS 11 & 12, T50N, R22W, TOWN OF MICHIGAMME, MARQUETTE COUNTY, MICHIGAN

- LEGEND**
- EXISTING ELEV. CONTOUR IN METERS MSL (1 METER INTERVAL)
 - UNPAVED ROAD
 - TREE
 - TREE LINE
 - WCR MAPPED WETLAND BOUNDARY PROVIDED BY GOLDER & ASSOCIATES, INC. APRIL 7, 2005.
 - KENNECOTT PROPERTY BOUNDARY
 - TREATED WATER INFILTRATION SYSTEM
 - PLANIMETRIC WETLAND NOTATION
 - PERIMETER FENCE
 - APPROXIMATE MINE DECLINE AND ACCESS RAMP

- ORE BODY
- CULVERT
- EROSION MAT OR RIPRAP
- DRAINAGE DITCH AND FLOW DIRECTION
- EXCESS SOIL BERM (FINAL LOCATION AND SIZE BASED UPON ACTUAL EXCAVATED SOIL QUANTITIES)
- NON-CONTACT AREA
- MAIN OPERATIONS AREA
- BITUMINOUS LINED OPERATIONS AREA
- WETLANDS ADAPTED FROM US FISH AND WILDLIFE WETLAND INVENTORY MAP
- CONSTRUCTION STAGING AREA AND SOIL STOCKPILE AREA



Fath Infrastructure & Environment, LLC			
REVISED	DATE	BY	DESCRIPTION
CHECKED BY:	JOS1	DATE:	DEC. '07
APPROVED BY:	SVD1	DATE:	DEC. '07
APPROVED BY:		DATE:	



Kennecott Eagle Minerals

FIGURE 1
SITE DEVELOPMENT PLAN AND TOPOGRAPHIC MAP

Scale: 0 60M 120M
 Date: DECEMBER, 2007
 Prepared By: JOW
 Project No. 04W018