

July 16, 2020

Project No. 123-93309-09

#### Shannon Cook

Ohio Environmental Protection Agency Division of Environmental Response and Revitalization Ohio Environmental Protection Agency Southeast District Office 2195 Front Street Logan, OH 43138

#### WORKPLAN FOR PHASE 1 MINE AREA INVESTIGATION SATRALLOY SITE (JEFFERSON COUNTY, OHIO)

Dear Mr. Cook:

On behalf of Cyprus Amax Minerals Company, Golder is submitting this workplan for initial investigation of the former coal mine area of the former Satralloy site. This initial investigation is the Phase 1 of a comprehensive investigation of the former coal mine area to support the Focused Feasibility Study, identified in Amendment No. 7 to the Interim Action Workplan. The purpose of the comprehensive investigation is to determine if the area is suitable for placement of slag as part of remediation, and to provide pre-design data for remediation.

We propose to begin this Phase 1 investigation this year and complete the investigation in 2021. This Phase 1 investigation will be used to inform the scope of the remainder of the comprehensive investigation, which is expected to include installation and sampling of additional wells, additional seep sampling, and borehole geophysics.

## 1.0 SCOPE OF WORK

## 1.1 Instrumentation of Existing Wells and Seeps

Transducers will be installed in existing wells RBH-1 and RBH-2 and up to four perennial seep locations. These transducers will record water pressure, temperature, and conductivity. The pressure data and high-resolution conductivity data will provide information about water quality variability. In addition, field parameters will be measured on water samples quarterly.

## 1.2 PHASE I Surface Geophysical Program

A series of linear transects will be completed over portions of the former coal mine area where historical subsurface mining is known or suspected to have occurred based on the Kolmont No. 1 mine map obtained from the Ohio Department of Natural Resources. Along each transect three datasets will be collected, consisting of:

seismic refraction (to determine depth to rock/thickness of fill), electrical resistivity tomography (ERT), and electromagnetic induction (EM). Phase I geophysical transects are shown on Figure 1.

During geophysical data collection geological features and water features pertinent to the investigation will be located using global navigational satellite system (GNSS) and staked, the types of surface material observed (mine spoil, slag, etc.) will be recorded, descriptions of the slopes on the slag piles, locations of seeps and springs, and locations of the geologic contacts between pertinent lithologic units will be noted when encountered during the investigation.

Geophysical data will be processed and interpreted to identify anomalies that may indicate the presence of voids/mine workings, abandoned wells, impacted groundwater, fresh water, structural discontinuities, changing fill and soil thicknesses, and/or other variations in subsurface conditions.

# 2.0 CLOSING

We request your expedited review of this workplan in order to ensure the timely installation of the transducers to gain the necessary data for the next Phase of the investigation. If you have any questions, please contact Barbara Nielsen at (480) 313-2895.

Sincerely yours,

Golder Associates Inc.

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Lee K. Holder, PE Associate Engineer, Project Manager

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Attachments: Figure 1

cc: Barbara Nielsen, Cyprus Amax Minerals Company

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LEGEND

Existing Monitoring Well Location

Surface Water LocationSeep Location

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