

Attachment 2-8

**Kearney, C. PolyMet Overburden Sampling Plan. Email to Stuart Arkley
and Jennifer Engstrom, MDNR. February 26, 2010.**

From: [Christie Kearney](#)
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Cc: [John Borovsky](#); [Mehgan M. Blair](#); [Day, Stephen](#); [Tom Radue](#); [Heather Arends \(heather.arends@state.mn.us\)](#); [Dennis Martin \(dennis.martin@state.mn.us\)](#); [Paul Eger \(DNR\) \(a.paul.eger@state.mn.us\)](#); [Jim Scott](#); [Cheryl D. Feigum](#)
Subject: PolyMet Overburden Sampling Plan
Date: Friday, February 26, 2010 8:51:17 AM
Attachments: [Field Rinse pH.PDF](#)
[Pit Wall Log.pdf](#)
[Boring Locations January 2010.pdf](#)

Good morning! A conference call was held on Feb. 16, 2010 to discuss PolyMet's plan to sample unsaturated overburden. As described in Barr's *NorthMet Mine Site Construction Materials and Overburden Management* (February 10, 2010), PolyMet plans to do additional sampling of the unsaturated overburden to better characterize the material for use in construction. An exploratory drilling program at the Mine Site is currently underway to collect additional bedrock cores and obtain additional depth to bedrock data for the mine plan. Access to the drilling sites was granted by the U.S. Forest Service (USFS) for the specific purpose of exploratory drilling. With this drilling program underway, PolyMet determined that this would provide an opportunity to collect unsaturated overburden samples during the excavation of sumps associated with each drill site. The conference call on Feb. 16, 2010 was held to discuss the collection of unsaturated overburden samples during this effort.

The conference call attendees included the following:

MDNR – LAM: Jennifer Engstrom, Heather Arends, Paul Eger, Kim Lapakko

Barr: John Borovsky, Cheryl Feigum, Christie Kearney, and Steve Day with SRK

At this meeting, it was requested that PolyMet submit a sampling plan for this effort. The collection of unsaturated overburden at these sumps has already begun and a formal sampling plan has not previously been developed. According to the drilling plan accepted by the USFS, the sumps are to be "...generally 8' by 8' by 5' deep, or smaller," which typically has been the case. The sampling methods have been documented in the field and are generally as follows:

- 1) For sumps that have been excavated and filled with drill cuttings but not yet closed, as was the case for J020, J018, and the "central sump" located near MW-05-08, break up the frozen soil with a spud bar to collect the sample (as described in step 5). Describe any remaining exposed sidewall, and describe the soil sampled, once a split of the samples has been thawed.
- 2) For sumps not already opened, excavate the sump by segregating bulk soils of different compositions or colors into individual spoil piles. Individual layers are generally not segregated unless a significant thickness (minimum of 2') is observed, due to sample volume requirements and equipment inefficiencies at smaller scales. The depths each spoil pile came from (i.e., 0-3, 3-6, etc) is documented, and the sump profile is described (color; texture [ASTM D2488]; moisture; mottling, if present; reaction with dilute HCl; magnetic properties). An example of a completed sump profile is attached.
- 3) Photograph sump profiles and spoil piles;
- 4) GPS each sump location;
- 5) Collect samples from the spoil piles at each sump, collecting about 4-5 gallons of soil per

- sample (lab may require up to 12 kg, depending on selected analyses);
- 6) Split the sample to keep about a half gallon of soil thawed for rinse testing and freeze the remaining sample for further analysis. The rinse testing procedure is attached.

In an email on Feb. 9, 2010, Jennifer Engstrom, MDNR-LAM, requested that this sampling effort be focused on *“areas that will be disturbed during construction and mining”* and *“areas of thicker unsaturated overburden since that represents a larger quantity of material.”* Because this sampling coincides with an on-going drilling program, few changes can be made to the sump locations. At this time, available sumps have been described, and samples have been collected where unsaturated conditions have been observed. This includes the following drill sites: J020, J018, J107, J007, J012, J013, J008, J010/J011, J003/J004, J027, and J037. However, sump descriptions and sampling efforts going forward will be focused on sumps opened within or adjacent to the footprint of the RMSA pits: J039/J040, J036, J030, J024, J021/J022, J029, J019, J015/16, and possibly J025, J031, and J032. The scope and schedule of overburden sampling is constrained by the evolving scope and schedule of the exploratory drilling program and the accessibility of the sites (sites will become inaccessible as temperatures increase this spring).

The Feb. 9, 2010 email also requests the sampling of soil horizons separately.

Based on the results of the Feb. 16, 2010 conference call, we are proceeding with this sampling effort in accordance to the methods described above. If possible, depending on the depths of the soil horizons found at each sump, we will collect additional soil horizon samples for analyses, as requested.

The results of this additional sampling will be submitted to the MDNR with recommendations regarding subsequent laboratory analysis.

Please contact Mehgan Blair at 218-529-8237 or me at 218-262-8629 if you have any questions about or concerns about this sampling program.

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