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## Memorandum

**To:** Mr. Jon Ahlness, USCOE  
Mr. Steve Dewar, MnDNR

**From:** Mark Jacobson  
Cheryl Feigum

**Subject:** Addendum to Wetland Hydrology Monitoring Plan

**Date:** May 13, 2008

**Project:** PolyMet Mining Company

**c:** Jim Scott, John Borovsky, Stuart Arkley

The purpose of this memo is to provide an update to the wetland hydrology monitoring program at the proposed PolyMet mine site. The original work plan was submitted and approved in 2005. Monitoring was started in late 2005 and continued during the 2006 and 2007 growing seasons. This monitoring plan update is being prepared in response to comments on the 2006 *Wetland Hydrology Study Report* and to account for other issues raised during the environmental review process.

The Corps and Applied Ecological Services both indicated that monitoring water levels once every two weeks does not capture the complete record of the hydrologic conditions present in the wetlands, which may result in difficulties determining potential indirect impacts during the project. Therefore, we propose to install recording wells in all monitoring locations (both existing and as proposed below) and record water levels every 2 to 4 hours. Well installations will be conducted following the protocols established in the 2005 *Wetland Hydrology Study Plan*. The elevation of each well will be surveyed during the 2008 growing season. Data from the recording wells will be downloaded approximately once per month during the monitoring period. During download events, water levels will also be recorded within manual wells to provide a quality check on the operation of the recording wells.

The Corps has also informally indicated the need for establishing reference wetlands and collecting baseline hydrology data in those locations. Reference wetlands are wetlands that are located near the project site, but will not be affected by the project. The purpose of collecting reference wetland baseline data and monitoring those wetlands during the project is to provide data that indicates the expected hydrologic conditions given the climatic regime during the monitoring. The reference wetland hydrology data will be used to interpret whether or not indirect wetland impacts result from the project.

Two reference wetlands are proposed to be implemented as part of the monitoring program starting in May, 2008 as shown on Figure 1. The proposed reference wetland monitoring locations are located approximately 1.5 miles (Ref #1) and 2.5 miles (Ref #2) away from the nearest proposed mine pit and 1 mile (Ref #1) and 2 miles (Ref #2) away from the nearest proposed stockpile. Both monitoring sites are located outside of the watersheds affected by the project, but should be within the same general climatic regime. Reference Wetland #1 appears to be a shrub and forested wetland and Reference Wetland #2 appears to be a forested wetland comparable to the majority of the wetlands within the project site. During well installation, the vegetation and wetland communities within each wetland will be characterized along with the soils encountered during installation.

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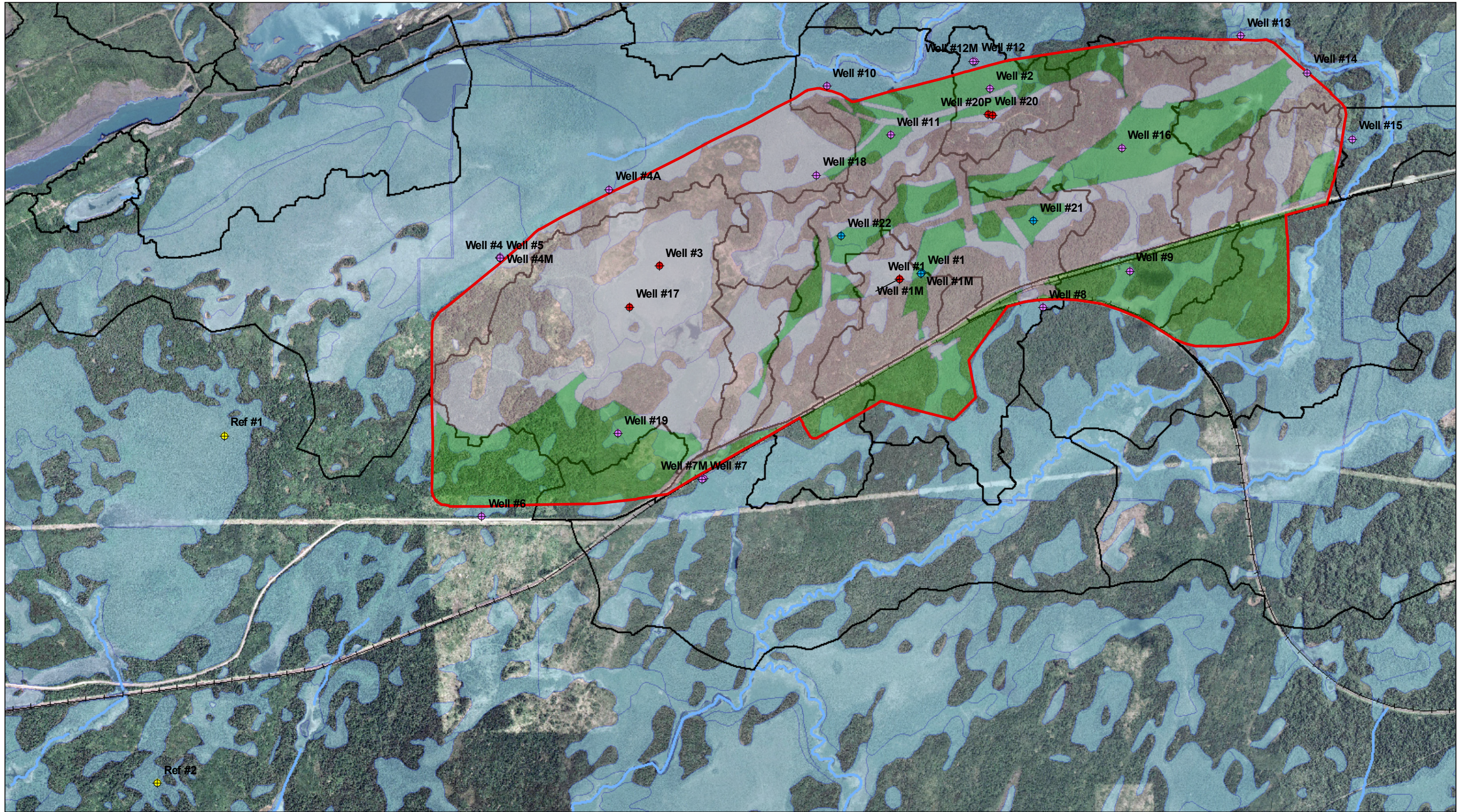
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General concern has been expressed regarding the potential for impacts to the hydrology of wetlands located within segmented wetlands located amongst the proposed roads on the south side of the proposed mine. To ensure adequate baseline data within those wetlands, with which to compare to future conditions, two additional monitoring locations are proposed (Wells 21 and 22, Figure 1).

Finally, we propose to remove two monitoring wells (Wells 3 and 17) and relocate one monitoring location (Well 1) from the program that have been monitored since June, 2005 (Figure 1). Wells 3 and 17 are located within the footprint of a proposed stockpile, so they are not likely to provide useful data for determining indirect wetland impacts. The three years of data collected to-date has clearly established the presence of wetland hydrology, so it appears that continued monitoring will not provide additional value to determining effects of the project on those wetlands. Well 1 and 1M are located in an area that is proposed to be impacted by the project. We proposed to move the location of these wells approximately 500 feet east to an area within the same wetland that is not proposed to be impacted. Figure 1 also shows the removal of Well 20 and Piezometer 20P from the program, primarily for clarification purposes. Monitoring at Well 20 and Piezometer 20P was utilized specifically for evaluating hydrogeologic conditions during the pumping test conducted in 2006 and has not been monitored since that time.

Please review and comment on this addendum to the PolyMet Mine Site Wetland Hydrology Monitoring Study at your earliest convenience. If you have any questions, please contact Mark Jacobson at (952) 832-2764.

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- Legend**
- Project Area
  - No
  - Yes
  - Detailed Watersheds
  - Wetland Delineations

- 2008 Wetland Monitoring Locations**
- ◆ Active 2008
  - ◆ New 2008
  - ◆ Reference Wetland
  - ◆ Remove 2008
  - Railroad
  - Streams

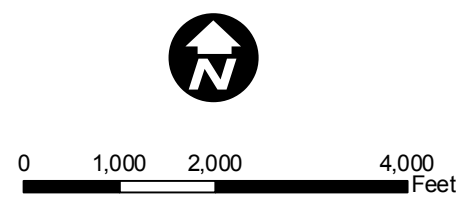


Figure 1  
 2008 PROPOSED WETLAND  
 MONITORING LOCATIONS  
 PolyMet Mining  
 Hoyt Lakes, Minnesota