

Appendix 1

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Appendix 1.1

Preapplication Conference and Site Visit Memorandum



100 King Street West, Suite 5700, Toronto, Ontario, Canada, M5X 1C7
Tel: +1 (416) 915-4149

444 Cedar Street, St. Paul, MN 55101, Tel: +1 (651) 389-4100

6500 County Road 666, Hoyt Lakes, MN 55750-0475
Tel: +1 (218) 471-2150 / Fax: +1 (218) 225-4429

www.polymetmining.com

MEMORANDUM

To: File
From: Jennifer Saran
Date: November 30, 2017

Minnesota Statutes, Chapter 93 and Minnesota Rules, chapter 6132 establish various procedures with respect to applying for and obtaining a nonferrous permit to mine. Poly Met Mining, Inc. (PolyMet) has assembled in Appendix 1 various regulatory filings and compliance documents supporting its Permit to Mine Application (Application). The table of contents for Appendix 1 follows this Memorandum. Appendix 1.2 contains a checklist summarizing the application requirements under Minnesota Statutes, Chapter 93 and the Minnesota Department of Natural Resources' (DNR) nonferrous mining rules, and cross-references the sections within the Application addressing the statutory and regulatory requirements.

Among the required procedures in the nonferrous permit to mine rules is the requirement that a permit applicant meet with DNR for a preapplication conference and site visit. Minnesota Rules, part 6132.1100, subpart 1. The purpose of these preapplication requirements is for the DNR "to review the proposed mining operation and to provide direction on the preparation of an application for a permit to mine." *Id.* The nonferrous mining rules further provide that "[i]n conjunction with the preapplication conference, the commissioner shall hold a public information meeting with the assistance of the applicant and invite" various governmental entities to participate and the public to attend pursuant to specified notification requirements. *Id.*

PolyMet and DNR worked together to meet the regulatory requirements set forth in Minnesota Rules, part 6132.1100, subpart 1 as they apply to the Application for the NorthMet Project, including those requirements relating to the preapplication conference and site visit. DNR held initial preapplication conferences with company representatives on March 23, April 6, and April 13, 2016. The topics addressed in those conferences are summarized in the agency's master agenda included as Appendix 1.3.

Additionally, the DNR commissioner and agency staff, along with other federal and state officials, met with PolyMet in Hoyt Lakes, Minnesota for a final preapplication conference and site visit on April 19, 2016. The site visit included a tour of the NorthMet Plant Site, Mine Site, and other areas within the Facility Boundary. Appendix 1.4 contains the DNR agenda for the final preapplication conference and site visit, along with a list of the attendees.

After the site visit on April 19, DNR hosted a public information meeting at the Mesabi East High School in Aurora, Minnesota. Copies of the public notice for this meeting and related information are provided in Appendix 1.5. As part of the public information meeting, DNR made a formal presentation, which included a summary of the proposed NorthMet Project, an overview of the non-ferrous permit to mine process and other required State permits, and an explanation of future public opportunities to participate in permitting processes. Appendix 1.6 includes a copy of the DNR formal presentation.

As part of the public information meeting, and immediately before the DNR's formal presentation, representatives of DNR (and other governmental officials, including staff from the Minnesota Pollution

Control Agency and Minnesota Department of Health) were available to answer questions from the public and to provide materials in a "open house" format with agency-staffed information booths. PolyMet also had an information booth to respond to questions from the public.

Additional regulatory requirements provided in this appendix include the following:

- Proof of Registration and Certificate of Good Standing for Poly Met Mining, Inc. in the State of Minnesota and Certificate of Authority for PolyMet Mining Corp. in the State of Minnesota demonstrating PolyMet's authority to transact business in Minnesota pursuant to Minnesota Rules, part 6132.1100, subpart 3, item B (Appendix 1.7)
- Certificate of Insurance for Poly Met Mining, Inc. and PolyMet Mining Corp. as required by Minnesota Statutes, section 93.481, subdivision 1(a)(2); and Minnesota Rules, part 6132.1100, subpart 3, item C (Appendix 1.8)
- Consolidated financial statements for PolyMet Mining Corp. for 2016 (Appendix 1.9)
- Resumes demonstrating proficiency pursuant with Minnesota Rules, part 6132.2200, subpart 2 item B; part 6132.2400, subpart 2, item A (1); ; part 6132.2500, subpart 2, item A; and part 6132.1000, subpart 2 (Appendix 1.10)
- Additional details on land and mineral ownership, include surface interests and mineral ownership in accordance with Minnesota Rules, part 6132.1100 subpart 5, item B (13) (Appendix 1.11)
- Well logs in accordance with Minnesota Rules, part 6132.1100, subpart 5, item B (4) (b) (Appendix 1.12)

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Appendix 1.2

Completeness Checklist

PERMIT TO MINE – COMPLETENESS CHECKLIST

REQUIRED CONTENT	APPLICABLE STATUTE/RULE	LOCATION IN APPLICATION	✓
Documents & Fees			
PTM Application (in duplicate)	Minn. R. 6132.1100, subp. 2	Duplicate submitted with application	
Advertisement and affidavit of publication	Minn. R. 6132.1100, subp. 3.A	To be filed after publication	
Certificate of authority to transact business in Minnesota	Minn. R. 6132.1100, subp. 3.B	Appendix (“App.”) 1.7	
Certificate of insurance	Minn. Stat. § 93.481, subd. 1(a)(2); Minn. R. 6132.1100, subp. 3.C	App. 1.8	
Financial assurance documents: Documented estimate of costs necessary to implement contingency reclamation plan	Minn. R. 6132.1100, subp. 3.D; Minn. R. 6132.1200, subp. 2	Section 16.2 and App. 15.2	
Financial assurance documents: Closure and postclosure maintenance activities required if operations cease in first calendar year	Minn. R. 6132.1100, subp. 3.D; Minn. R. 6132.1200, subp. 2	Section 16.2 and App. 15.2	
Application fee of \$50,000	Minn. Stat. § 93.481, subd. 1(a)(3)	Previously submitted	
Supplemental application fee (if any) for processing application	Minn. Stat. § 93.482, subd. 2	N/A (see Note 1)	
Organizational Structure			
Post office address	Minn. R. 6132.1100, subp. 4.A	Section 2.1	
Organizational structure, including parent companies, owners, principal stockholders, partners, and joint venturers	Minn. R. 6132.1100, subp. 4.B	Section 2.2	
Managing agents or subsidiaries involved in operations	Minn. R. 6132.1100, subp. 4.C	N/A	
Organizational relationships among joint applicants	Minn. R. 6132.1100, subp. 4.D	N/A	
Environmental Setting			
Copy of FEIS and all environmental reports	Minn. R. 6132.1100, subp. 5.A	App. 16	
Environmental setting maps	Minn. R. 6132.1100, subp. 5.B	Section 5	
<ul style="list-style-type: none"> • Bedrock geology 	Minn. R. 6132.1100, subp. 5.B(1)	Section 5.1, Figures 5-1 through 5-3	
<ul style="list-style-type: none"> • Water basins, water courses, and wetlands that may be affected by mining 	Minn. R. 6132.1100, subp. 5.B(2)	Sections 5.2 and 5.3, Figures 5-4 through 5-7	
<ul style="list-style-type: none"> • Boundaries of watersheds that may be affected by mining 	Minn. R. 6132.1100, subp. 5.B(3)	Section 5.2, Figures 5-4 through 5-6	
<ul style="list-style-type: none"> • Hydrogeologic information, including plan view and cross section maps and description of features on the maps 	Minn. R. 6132.1100, subp. 5.B(4)	Section 5.4, Figures 5-8 through 5-21	

PERMIT TO MINE – COMPLETENESS CHECKLIST

REQUIRED CONTENT	APPLICABLE STATUTE/RULE	LOCATION IN APPLICATION	✓
<ul style="list-style-type: none"> Description of hydrogeological information, including overburden and rock features, well locations, well logs, uses, pumping rates and capacities 	Minn. R. 6132.1100, subp. 5.B(4)	Section 5.4, Table 5-3 and Appendix 1.12	
<ul style="list-style-type: none"> Surface and groundwater compliance monitoring sites and water quality and toxicity standards 	Minn. R. 6132.1100, subp. 5.B(5)	Section 5.5, Figures 5-22 through 5-29	
<ul style="list-style-type: none"> Soil inventory 	Minn. R. 6132.1100, subp. 5.B(6)	Section 5.6, Figure 5-30	
<ul style="list-style-type: none"> Recorded locations of rare, endangered, and threatened species 	Minn. R. 6132.1100, subp. 5.B(7)	Section 5.7, Figure 5-31	
<ul style="list-style-type: none"> Past mining facilities 	Minn. R. 6132.1100, subp. 5.B(8)	Section 5.8, Figure 5-32	
<ul style="list-style-type: none"> Recorded archaeological or historic sites 	Minn. R. 6132.1100, subp. 5.B(9)	Section 5.9, Figures 5-33	
<ul style="list-style-type: none"> Known surface/subsurface uses 	Minn. R. 6132.1100, subp. 5.B(10)	Section 5.10, Figures 5-34 through 5-36	
<ul style="list-style-type: none"> Siting, exclusion, prohibition, and restriction areas 	Minn. R. 6132.1100, subp. 5.B(11)	Section 5.11, Figure 5-37	
<ul style="list-style-type: none"> Zoning ordinances and applicable land use plans 	Minn. R. 6132.1100, subp. 5.B(12)	Section 5.12, Figure 5-38	
<ul style="list-style-type: none"> Surface and mineral rights ownership 	Minn. R. 6132.1100, subp. 5.B(13)	Section 5.13, Figures 1-5 through 1-7, Figure 4-1 through 4-8	
Mining and Reclamation Plan			
Operating life of mine, including mine rate and anticipated changes to mine rate	Minn. R. 6132.1100, subp. 6.A	Sections 3 and 7	
Mining activities: types, amounts, sequence, and schedule of mining and storage piling	Minn. R. 6132.1100, subp. 6.B(1)	Sections 3, 7, and 10	
Mining activities: ore beneficiating process, including type and amount of added chemicals, amounts, sequence, schedule, and means of tailings disposal	Minn. R. 6132.1100, subp. 6.B(2)	Sections 3, 8, and 10	
Engineering design, methods, sequence, and schedules of reclamation, including closure and postclosure maintenance	Minn. R. 6132.1100, subp. 6.C	Sections 3 and 15, and App. 3 through 14	
Mine waste characterization	Minn. R. 6132.1000, subp. 3.A; Minn. R. 6132.1100, subp. 6.D	Section 10 and App. 2	
Wetland replacement plan	Minn. Stat. § 103G.222, subd. 1; Minn. R. 6132.5300, subp. 2	App. 18.1	

PERMIT TO MINE – COMPLETENESS CHECKLIST

REQUIRED CONTENT	APPLICABLE STATUTE/RULE	LOCATION IN APPLICATION	✓
Mining and reclamation maps			
Shape and extent of ore body for operating life of mine	Minn. R. 6132.1100, subp. 7.A	Figure 7-5	
Lands proposed for use as vegetative reference areas	Minn. R. 6132.1100, subp. 7.B	Figure 15-3	
Detailed drainage patterns for waters that may contact reactive mine waste	Minn. R. 6132.1100, subp. 7.C	Figures 5-4 through 5-6,	
Status of mining ore body	Minn. R. 6132.1100, subp. 7.D	Figure 7-7	
Status of watershed and hydrogeologic modification	Minn. R. 6132.1100, subp. 7.D	Figure 11-1 through 11-4	
Status of construction of storage piles, tailings basin, mine, reservoir, dam, diversion channel, drainage control, settling basin, heap and dump leaching facility, and auxiliary facilities	Minn. R. 6132.1100, subp. 7.D	Figures 7-6 and 7-7;-Figures 7-10 through 7-13; Figures 10-15 through 10-18	
First year of operations			
Detailed plan of activities for first year of operations	Minn. R. 6132.1100, subp. 8	App. 13.2	
First Year: Anticipated rate of mining	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.A	Section 3.1 of App. 13.2	
First Year: Anticipated mining activities	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.B	Section 16.2; Section 3.1 of App. 13.2	
First Year: Anticipated reclamation	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.C	Section 16.2; Section 3.2 of App. 13.2	
First Year: Notification of intent to close mining area	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.D	Section 3.3 of App. 13.2	
First Year: Discussion of how anticipated activities differ from approved mining and reclamation plan	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.E	Section 3.4 of App. 13.2	
First Year: Evidence of liability insurance compliance	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.F	Section 16; Section 3.5 of App. 13.2	
First Year: Anticipated changes in ownership and organizational structure	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.G	Section 3.6 of App. 13.2	
First Year: Approved wetland replacement plan	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 3.H	Section 3.7 of App. 13.2, when approved	
Contingency Reclamation Plan: Methods, sequence, and schedule of reclamation	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 4.A	Section 16.2; App. 15.2	
Contingency Reclamation Plan: Maps and cross-sections depicting construction of each area affected by mining	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 4,B	Figures 16-1, 16-2 and 16-3	
Contingency Reclamation Plan: Cost estimates and financial mechanisms necessary to implement contingency reclamation plan if operations cease in first year	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 4.C	Section 16.3; App. 15.2	

PERMIT TO MINE – COMPLETENESS CHECKLIST

REQUIRED CONTENT	APPLICABLE STATUTE/RULE	LOCATION IN APPLICATION	✓
Corrective Action: Actual corrective action conducted in previous year	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 5.A	Section 5 of App. 13.2 and Section 16.3	
Corrective Action: Anticipated corrective action for first year	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 5.B	Section 5 of App. 13.2 and Section 16.3	
Corrective Action: Corrective action cost estimate	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 5.C	Section 5 of App. 13.2 and Section 16.3	
Maps showing status of mining, construction, and reclamation	Minn. R. 6132.1100, subp. 8; 6132.1300, subp. 6	App. 13.2 and Figures 16-1, 16-2 and 16-3	

Notes:

- (1) Supplemental fees have been submitted as required and will continue to be submitted for processing the application up until a decision is reached on the Application

Appendix 1.3

DNR Agenda for Initial Preapplication Conferences

Agenda

Preapplication Conferences

Proposed PolyMet NorthMet Project

March 23 & 30/April 6, 2016

In accordance with M.R. 6132.1100, Subpart 1, the DNR will hold preapplication conferences to review the proposed mining operations and to provide direction on the preparation of an application for a permit to mine. The following is an outline of the content for the preapplication conferences.

- I. Introductions**
- II. Purpose and Scope of Preapplication Conference**
- III. Documentation of Preapplication Conference**
- IV. Logistics for Application Submittal (e.g., electronic submission, hard copies, recipients)**
- V. Application Process for Review and Public Participation**
- VI. Resolution and Documentation of items referred to Permitting, during Environmental Review (EIS)**
- VII. Application Content**
 - A. Overview of application structure (e.g., Table of Contents, appendices, etc.)
 - B. Regulatory requirements and checklist
 - C. Format of maps
 - D. Terminology
 - E. General approach for overlap with other permits (e.g., air, water quality, wetlands)
- VIII. Project Specific Topics**
 - A. Applicant qualifications, documents, and organizational structure requirements
 - B. Overview of proposed operations
 - C. Mining area
 - D. Environmental setting maps
 - E. Siting criteria and buffers
 - F. Mining and reclamation plans and maps (e.g., life of mine, specific operations)
 - G. Mine waste characterization
 - H. First year of operation/annual report content and scope (including wetland replacement)
 - I. Financial assurance
- IX. Conclusions**

NOTE: This agenda was prepared prior to the meetings. Meeting dates were adjusted, and occurred on 3/23/16, 4/6/16 and 4/13/16.

Appendix 1.4

DNR Agenda for Final Preapplication Conference and Site Visit and Related Information

Agenda

Preapplication Final Conference Meeting and Site Visit

PolyMet Proposed NorthMet Mining Project

Location: PolyMet Office and Plant Site/Tailings Basin

Hoyt Lakes, MN

April 19, 2016 (noon – 3:00 pm)

In accordance with MN Rule 1632.1100 Permit Application the DNR will hold preapplication conferences and site visits for proposed nonferrous mining projects.

I. Welcome/Introductions (PolyMet)

II. Purpose and Scope (DNR)

III. Summarize Preapplication Conference Meetings (DNR/PolyMet)

- Preapplication Conference Meetings held on March 23, April 6 & 13, 2016
- Topics discussed include:
 - Application submittal process, requirements, reviews, and public participation
 - Application content - mining operations, environmental setting, maps, mine waste characterization, reclamation, financial assurance, reporting

IV. Proposed NorthMet Project Overview (PolyMet)

- Review of proposed mining operations:
 - Mine Site
 - Transportation/Utilities Corridors
 - Plant Site/Tailings Basin

V. Site Visit (PolyMet)

- Maps/drone coverage of Mine Site (PolyMet Office)
- Plant Site/Tailings Basin visit

Logistics: Meet at the PolyMet office and ready for meeting to begin at noon; lunch will be on your own (beforehand); following presentations/discussions at PolyMet Office, we will bus to the Plant Site/Tailings Basin; following Site visit we will return to PolyMet office and proceed accordingly to Aurora for the Preapplication Public Information Meeting.

Sign in Sheet

Preapplication Final Conference Meeting and Site Visit

PolyMet Proposed NorthMet Mining Project

Location: PolyMet Office and Plant Site/Tailings Basin

Hoyt Lakes, MN

April 19, 2016 (noon - 3:00)

Mike Liljegren	DNR
Brad Moore	PolyMet
Mike Kuvz	DNR
Julie Jordan	DNR
Cristine Almeida	PolyMet
Douglas Mewby	PolyMet
Jennifer Engstrom	DNR
Barb Naramore	DNR
Jon Cherry	PolyMet
Bruce Richardson	PolyMet
Ann Foss	MPCA
Rebecca Flood	MPCA
Latisha Gietzen	PolyMet
Joe Henderson	DNR
JENNIFER SARAN	PolyMet
Jess Richards	DNR
Cathy Polasky	GOV
Kenton Spading	USACE

Appendix 1.5

Notice and Related Information for Public Informational Meeting

Appendix 1.5

Notice and Related Information for Public Informational Meeting

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PREAPPLICATION
PUBLIC INFORMATIONAL MEETING

PolyMet Mining, Inc., NorthMet Mining Project

On Tuesday, April 19, 2016, the Minnesota, Department of Natural Resources (MDNR) is holding a Preapplication Public Informational Meeting in Aurora, Minnesota regarding PolyMet Mining, Inc.'s (PolyMet's) proposed NorthMet Mining Project. Prior to submittal of a permit to mine application, in accordance with Minnesota Rule 6132.1100, the DNR must hold a public informational meeting and invite the participation of the Minnesota Pollution Control Agency (MPCA), Environmental Quality Board (EQB), and the local unit of government.

The purpose of this meeting is to meet the requirements of Minnesota Rule by informing the public that a permit to mine application may be submitted and providing an overview of the permitting process. The meeting is being held in Aurora to facilitate local government participation.

The Preapplication Public Informational Meeting will take place as follows:

Date: Tuesday, April 19, 2016

Time: 8:00 to 8:30 p.m.

Formal Presentation at 8:30

Open House throughout the meeting

Location: Mesabi East High School (<http://www.mesabi-east.k12.mn.us/>) 601 North 1st St. West, Aurora, MN 55705

The meeting will include both a formal presentation and an open house. The formal presentation will provide an overview of the proposed mining project and the permit to mine process. The presentation will also provide a brief summary of the other state permits that may be required for the project. State agency staff and the proposer will be available in an open house format throughout the meeting to answer questions about the permit to mine process and other permit processes, such as tailings dam safety, water quality, air quality, wetlands, and others.

This meeting is being held to provide information about the permitting process. Permit applications have not yet been submitted for the project. Formal comment on permits is not taken at this point in the process. However, if applications are received, there will be future opportunities to both obtain information about applications and review and comment on draft permit decisions.

State agencies are currently developing a centralized website for the PolyMet permitting process. DNR

will announce the availability of this website once it is completed. The website will include directions on how to sign up for updates on the permitting process through the State's GovDelivery system.

Project Overview

The proposed NorthMet mine project would be located in the St. Louis River watershed on the eastern edge of the Mesabi Iron Range, about 8 miles south of Babbitt and about 1 mile south of the existing Iron-ore Northshore Mine. The ore would be processed at a former industrial site, the LTV plant in Hoyt Lakes.

The total project area would include the open pit mine, a processing plant, tailings basin and an existing 7-mile-long railroad corridor for ore transport between the mine and the processing plant.

Published in the Range Times March 17, 2016.

Affidavit of Publication

STATE OF MINNESOTA
COUNTY OF ST. LOUIS - SS

GARY D. ALBERTSON, being duly sworn, on oath says he is and during all the times herein has been the publisher and printer of the newspaper known as Range Times and has full knowledge of the facts herein stated as follows: (1) Said newspaper is printed in the English language in newspaper format and in column and sheet form equivalent in printed space to at least 900 square inches. (2) Said newspaper is a weekly and is distributed at least once each week. (3) Said newspaper has 50% of its news columns devoted to news of local interest to the community which it purports to serve and does not wholly duplicate any other publication and is not made up entirely of patents, plate matter and advertisements. (4) Said newspaper is circulated in and near the municipality which it purports to serve, has at least 500 copies regularly delivered to paying subscribers, has an average of at least 75% of its total circulation currently paid or no more than three months in arrears and has entry as a second-class matter in its local post office. (5) Said newspaper purports to serve the Cities of Biwabik, Aurora, Hoyt Lakes, and townships of same in the County of St. Louis and it has its known office of issue in the City of Biwabik in said county, established and open during its regular business hours for the gathering of news, sale of advertisements and sale of subscriptions and maintained by the publisher or persons in his employ and subject to his direction and control during all such regular business hours and devoted exclusively during such regular business hours to the business of the newspaper and business related thereto. (6) Said newspaper files a copy of each issue immediately with the State Historical Society. (7) Said newspaper has complied with all the foregoing conditions for at least two years preceding the day or dates of publication mentioned below. (8) Said newspaper has filed with the Secretary of State of Minnesota prior to January, 1966 and each January 1 thereafter an affidavit in the form prescribed by the Secretary of State and signed by the publisher of said newspaper and sworn to before a notary public stating that the newspaper is a legal newspaper.

He further states on oath that the printed pre application
public informational meeting

hereto attached as a part hereof was cut from the columns of said newspaper, and was printed and published therein in the English language, once each week, for 1 successive weeks; that it was first so published on the 17 day of March 2016 and was thereafter printed and published on every Thursday to and including the _____ day of _____ 20____ and that the following is a printed copy of the lower case alphabet from A to Z, both inclusive, and is hereby acknowledged as being the size and kind of type used in the composition and publication of said notice, to wit:

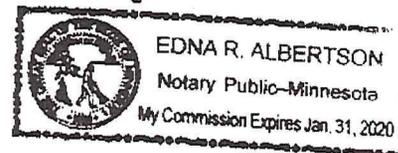
abcdefghijklmnopqrstuvwxyz

Subscribed and sworn to before me this 17 day of March, 2016

Edna R. Albertson

Notary Public St. Louis County, Minn.

My commission expires Jan 31, 2020



Official Notices

Minnesota Department of Natural Resources Notice of Preapplication Public Informational Meeting Regarding PolyMet Mining proposed NorthMet Mining Project

On Tuesday April 19, 2016, the Minnesota Department of Natural Resources (MDNR) is holding a Preapplication Public Informational Meeting in Aurora, Minnesota regarding PolyMet Mining, Inc.'s (PolyMet's) proposed NorthMet Mining Project. Prior to submittal of a permit to mine application, in accordance with Minnesota Rule 6132.1100, the DNR must hold a public informational meeting and invite the participation of the Minnesota Pollution Control Agency (MPCA), Environmental Quality Board (EQB), and the local unit of government.

The purpose of this meeting is to meet the requirements of Minnesota Rule by informing the public that a permit to mine application may be submitted and providing an overview of the permitting process. The meeting is being held in Aurora to facilitate local government participation.

The Preapplication Public Informational Meeting will take place as follows:

Date: Tuesday April 19, 2016

Time: 6:00 to 8:30 p.m.
Formal Presentation at 6:30
Open House throughout the meeting

Location: Mesabi East High School (<http://www.mesabieast.k12.mn.us/>)
601 North First St. West
Aurora, MN 55705

The meeting will include both a formal presentation and an open house. The formal presentation will provide an overview of the proposed mining project and the permit to mine process. The presentation will also provide a brief summary of the other state permits that may be required for the project. State agency staff and the proposer will be available in an open house format throughout the meeting to answer questions about the permit to mine process and other permit processes, such as tailings dam safety, water quality, air quality, wetlands, and others.

This meeting is being held to provide information about the permitting process. Permit applications have not yet been submitted for the project. Formal public comment on permits is not taken at this point in the process. However, if applications are received, there will be future opportunities to both obtain information about applications and review and comment on draft permit decisions.

State agencies are currently developing a centralized website for the PolyMet permitting process. DNR will announce the availability of this website once it is completed. The website will include directions on how to sign up for updates on the permitting process through the State's GovDelivery system.

Project Overview

The proposed NorthMet mine project would be located in the St. Louis River watershed on the eastern edge of the Mesabi Iron Range, about 6 miles south of Babbitt and about 1 mile south of the existing iron-ore Northshore Mine. The ore would be processed at a former industrial site, the LTV plant in Hoyt Lakes.

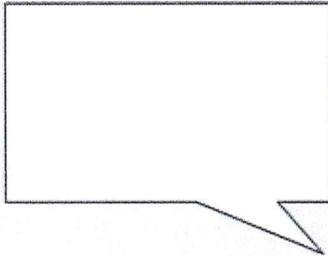
The total project area would include the open pit mine, a processing plant, tailings basin and an existing seven-mile-long railroad corridor for ore transport between the mine and the processing plant.



Minnesota Environmental Quality Board

Publication Date: March 21, 2016
Vol. 40, No. 12

Next Publication (8:00 AM): March 28, 2016
Submittal Deadline (4:00 PM): March 21, 2016
Use the [EQB Monitor Submission Form](#)
View the [2016 EQB Monitor Schedule](#)



You can manage your subscription to the EQB *Monitor* [here](#). Be sure to add MNEQB@public.govdelivery.com to your address book or safe sender list.

Check the [EQB Calendar](#) for more details on *Monitor* deadlines and Board Meetings. Meeting minutes, agendas and additional notices are also posted on the [EQB website](#).

- [Environmental Assessment Worksheet](#)
- [Environmental Impact Statement Need Decision](#)
- [Notices](#)

Environmental Assessment Worksheet

The following EAW has a comment deadline of April 20, 2016

Project Title: Lindbo Landing Marina Multiple Dock License

Project Description: The Lake Minnetonka Conservation District (LMCD) has received a new multiple dock license application from Lindbo Landing Marina. The proposal is to reconfigure and reconstruct the existing seasonal multiple dock utilizing LMCD Ordinance 217 for Qualified Commercial Marinas. Lindbo Landing Marina is located on Echo Bay at 285 West Point Road, Tonka Bay, MN 55331.

RGU: Lake Minnetonka Conservation District

Contact Person:
Gregory S. Nybeck
Executive Director
5341 Maywood Road (Suite 200)
Mound, MN 55364
gnybeck@lmcd.org
952-745-0789

Environmental Impact Statement Need Decision

The noted responsible governmental unit has determined the following project does not require preparation of an EIS. The dates given are, respectively, the date of the determination and the date the EAW notice was published in the EQB *Monitor*.

- Anoka County, CSAH 116 Reconstruction Project, 2-16-16 (2-16-15)

Notices

Preapplication Public Informational Meeting - PolyMet Mining, Inc., NorthMet Mining Project

On Tuesday April 19, 2016, the Minnesota Department of Natural Resources (MDNR) is holding a Preapplication Public Informational Meeting in Aurora, Minnesota regarding PolyMet Mining, Inc.'s (PolyMet's) proposed NorthMet Mining Project. Prior to submittal of a permit to mine application, in accordance with Minnesota Rule 6132.1100, the DNR must hold a public informational meeting and invite the participation of the Minnesota Pollution Control Agency (MPCA), Environmental Quality Board (EQB), and the local unit of government.

The purpose of this meeting is to meet the requirements of Minnesota Rule by informing the public that a permit to mine application may be submitted and providing an overview of the permitting process. The meeting is being held in Aurora to facilitate local government participation.

The Preapplication Public Informational Meeting will take place as follows:

Date:

Tuesday April 19, 2016

Time:

6:00 to 8:30 p.m.

Formal Presentation at 6:30

Open House throughout the meeting

Location:

Mesabi East High School (<http://www.mesabieast.k12.mn.us/>)

601 North 1st St. West, Aurora, MN 55705

The meeting will include both a formal presentation and an open house. The formal presentation will provide an overview of the proposed mining project and the permit to mine process. The presentation will also provide a brief summary of the other state permits that may be required for the project. State agency staff and the proposer will be available in an open house format throughout the meeting to answer questions about the permit to mine process and other permit processes, such as tailings dam safety, water quality, air quality, wetlands, and others.

This meeting is being held to provide information about the permitting process. Permit applications have not yet been submitted for the project. Formal public comment on permits is not taken at this point in the process. However, if applications are received, there will be future opportunities to both obtain information about applications and review and comment on draft

permit decisions.

State agencies are currently developing a centralized website for the PolyMet permitting process. DNR will announce the availability of this website once it is completed. The website will include directions on how to sign up for updates on the permitting process through the State's GovDelivery system.

Project Overview

The proposed NorthMet mine project would be located in the St. Louis River watershed on the eastern edge of the Mesabi Iron Range, about 6 miles south of Babbitt and about 1 mile south of the existing iron-ore Northshore Mine. The ore would be processed at a former industrial site, the LTV plant in Hoyt Lakes.

The total project area would include the open pit mine, a processing plant, tailings basin and an existing 7-mile-long railroad corridor for ore transport between the mine and the processing plant.

Minnesota Department of Agriculture - Notification of Releases of Genetically Engineered Organisms

MDA Notification	Applicant	Crop	Project Category	County(s)
16-NO-024, 16-NO-029	Syngenta Crop Protection, LLC	Corn	IR, HT 16-NO-024, 16-NO-029 IR – Insect Resistance HT – Herbicide Tolerance	Blue Earth, Dakota, Faribault, Goodhue, Mower, Rice (Up to 10 acres each)

Syngenta Crop Protection, LLC, filed a Notification for Releases of Genetically Engineered Organisms with the Minnesota Department of Agriculture, MDA notification numbers 16-NO-024, and 16-NO-029. Notification is for genetically modified corn, pending USDA-APHIS Biotechnology Regulatory Services (BRS) approval for the environmental release of transgenic corn, referenced as Application Numbers 16-055-101n, and 16-061-106n. For additional information contact Clifford Watrin, Minnesota Department of Agriculture, 625 Robert St N., St. Paul, MN 55155, 651-201-6531, clifford.watrin@state.mn.us

MDA Notification	Applicant	Crop	Project Category	County(s)
16-NO-025	Syngenta Crop Protection, LLC	Corn	IR – Insect Resistance	Freeborn (up to 5 acres)

Syngenta Crop Protection, LLC, filed a Notification for Releases of Genetically Engineered Organisms with the Minnesota Department of Agriculture, MDA notification numbers 16-NO-025. Notification is for genetically modified corn, pending USDA-APHIS Biotechnology Regulatory Services (BRS) approval for the environmental release of transgenic corn, referenced as Application Number 16-057-106n. For additional information contact Clifford Watrin, Minnesota Department of Agriculture, 625 Robert St N., St. Paul, MN 55155, 651-201-6531, clifford.watrin@state.mn.us

MDA Notification	Applicant	Crop	Project Category	County(s)
16-NO-026	Bayer CropScience LP	Soybean	HT – Herbicide Tolerance	Big Stone Clay (up to 10 acres each)

Bayer CropScience LP, filed a Notification for Releases of Genetically Engineered Organisms with the Minnesota Department of Agriculture, MDA notification numbers 16-NO-026. Notification is for genetically modified soybean, pending USDA-APHIS Biotechnology Regulatory Services (BRS) approval for the environmental release of transgenic soybean, referenced as Application Number 16-057-107n. For additional information contact Clifford Watrin, Minnesota Department of Agriculture, 625 Robert St N., St. Paul, MN 55155, 651-201-6531, clifford.watrin@state.mn.us

MDA Notification	Applicant	Crop	Project Category	County(s)
16-NO-027	Betaseed Inc.	Sugarbeet	PQ – Feed/Food Properties	Clay (2) 15 acres Clay (3) 10 acres Dakota (2) 10 acres Goodhue (1) 10 acres Scott (1) 10 acres Wilkin (1) 15 acres Wilkin (1) 10 acres

Betaseed Inc., filed a Notification for Releases of Genetically Engineered Organisms with the Minnesota Department of Agriculture, MDA notification numbers 16-NO-027. Notification is for genetically modified sugarbeet, pending USDA-APHIS Biotechnology Regulatory Services (BRS) approval for the environmental release of transgenic sugarbeet, referenced as Application Number 16-060-103n. For additional information contact Clifford Watrin, Minnesota Department of Agriculture, 625 Robert St N., St. Paul, MN 55155, 651-201-6531, clifford.watrin@state.mn.us



DNR NEWS – FOR IMMEDIATE RELEASE

March 17, 2016

*Media contact: Chris Niskanen, DNR communications director, 651-259-5023,
chris.niskanen@state.mn.us.*

DNR to host public information meeting in advance of PolyMet permit application

The Minnesota Department of Natural Resources is hosting a public information meeting on Tuesday, April 19, about PolyMet Mining, Inc.'s potential permit to mine application for its proposed NorthMet project. The meeting will be at Mesabi East High School, 601 North 1st St. W., Aurora, from 6 p.m. to 8:30 p.m.

The purpose of the meeting is to inform the public that PolyMet might submit a permit to mine application and to provide an overview of the permitting process. Under state rules, the Minnesota Pollution Control Agency, Environmental Quality Board, St. Louis County and the cities of Babbitt, Aurora and Hoyt Lakes, which are near the proposed mine, have been invited to participate. The meeting is in Aurora to enable local government participation.

The meeting will include a formal presentation and an open house. The formal presentation, which begins at 6:30 p.m., will provide an overview of the proposed mining project and the permit to mine process. It will also include a brief summary of the other state permits that may be required for the project. State agency staff and PolyMet representatives will be available during the open house to answer questions about the permit to mine process and other permit processes, such as tailings dam safety, water quality, air quality, wetlands and others.

Project permit applications have not yet been submitted. Formal public comment on permits will not be taken at this point. However, if applications are received, there will be future opportunities to both obtain information about the applications and review and comment on draft permit decisions.

State agencies are currently developing a centralized website for the PolyMet permitting process. The DNR will announce when the website is ready through its email system and will post the presentation material from the meeting on April 19. The website will also include directions on how to sign up for updates on the permitting process.

About the NorthMet mine proposal

The proposed NorthMet mine project would be located in the St. Louis River watershed on the eastern edge of the Mesabi Iron Range, about 6 miles south of Babbitt and about 1 mile south of the existing iron-ore Northshore Mine. The ore would be processed at a former industrial site, the LTV plant in Hoyt Lakes.

The total project area would include the open pit mine, a processing plant, tailings basin and an existing 7-mile-long railroad corridor for ore transport between the mine and the processing plant.

-30-



TSX: POM, NYSE MKT: PLM

NEWS RELEASE

2016-04

POLYMET PERMITTING PROCESS INITIATED

St. Paul, Minn., March 17, 2016 – PolyMet Mining Corp. TSX: POM; NYSE MKT: PLM today reported that the first step in the formal state permitting process has started with notice by the Minnesota Department of Natural Resources that it will hold a Preapplication Public Informational Meeting regarding the process for the NorthMet Project permit to mine.

Date: Tuesday April 19, 2016

Time: 6:00 to 8:30 p.m.
Formal Presentation at 6:30
Open House throughout the meeting

Location: Mesabi East High School (<http://www.mesabieast.k12.mn.us/>)
601 North 1st St. West, Aurora, MN 55705

“This public meeting initiates the formal state permitting process, building on the foundation of the state’s Record of Decision that was issued two weeks ago, which affirmed the Final Environmental Impact Statement,” observed Jon Cherry, president and CEO. “The recently completed environmental review process demonstrated that the project as designed meets federal and state human health and environmental regulatory standards. The permit applications will provide additional engineering details for the design, construction and operation of the project. When permits are issued by the State, they will include various financial assurance, operating, monitoring, reclamation and reporting requirements to ensure compliance with applicable environmental laws.”

The public meeting will include a formal presentation from the DNR that will provide an overview of the NorthMet Project and the permit to mine process. A brief summary of other state permits, such as tailings dam safety, water quality, air quality and wetlands will also be provided. State agency staff and PolyMet will be available in an open house format during the evening to answer questions about the permitting process and project respectively.

Minnesota regulations lay out the permitting process, starting with 30-day notice of the Preapplication Meeting to be held near the project location, followed by formal submission of permit applications and a review by the state that the applications are complete. Following the Meeting and after consultation with the DNR and the Minnesota Pollution Control Agency, PolyMet will begin to submit the various state permit applications that will be required to construct and operate the project.

Preparation of Records of Decision on the US Forest Service Land Exchange and the US Army Corps of Engineers' 404 Wetland Permit is proceeding according to those respective agencies' regulations.

Background

The NorthMet EIS is the most thorough environmental review conducted in the state of Minnesota. The EIS was written by the DNR, the U.S. Army Corps. of Engineers and the U.S. Forest Service as Co-lead Agencies and, since 2011, the U.S. Environmental Protection Agency as federal Cooperating Agency. In addition to the state's Record of Decision, the EPA stated that the final EIS addresses all of its prior concerns and any remaining questions should properly be addressed in permitting.

PolyMet has spent more than \$60 million providing engineering and legal input to the environmental review process. In addition, the state spent approximately \$32 million independently assessing the environmental impacts, including approximately \$22 million paid to the independent EIS Contractor to assess engineering solutions designed to ensure that NorthMet meets regulatory standards and to write the EIS. State staff logged approximately 90,000 hours – an average of 4.5 people working full time for a decade. Under established state procedures, PolyMet has reimbursed the state for all of these costs.

“The environmental review process followed established procedures resulting in the state’s affirmative Record of Decision,” Cherry stated. “It is important that all participants respect and honor this process. PolyMet is committed to building Minnesota’s first copper-nickel mine and understands the very important responsibility of doing so in a way that is protective of the things that matter most to the community where we will have the privilege operating.”

* * * * *

About PolyMet

PolyMet Mining Corp. (www.polymetmining.com) is a publicly-traded mine development company that owns 100 percent of Poly Met Mining, Inc., a Minnesota corporation that controls 100 percent of the NorthMet copper-nickel-precious metals ore body through a long-term lease and owns 100 percent of the Erie Plant, a large processing facility located approximately six miles from the ore body in the established mining district of the Mesabi Range in northeastern Minnesota. Poly Met Mining, Inc. has completed its Definitive Feasibility Study and is seeking environmental and operating permits to enable it to commence production. The NorthMet project is expected to require approximately two million hours of construction labor, creating approximately 360 long-term jobs, a level of activity that will have a significant multiplier effect in the local economy.

POLYMET MINING CORP.

Per: *"Jon Cherry"*

Jon Cherry, CEO

For further information, please contact:

Media

Bruce Richardson
Corporate Communications
Tel: +1 (651) 389-4111
brichardson@polymetmining.com

Investor Relations

Jenny Knudson
Investor Relations
Tel: +1 (651) 389-4110
jknudson@polymetmining.com

This news release contains certain forward-looking statements concerning anticipated developments in PolyMet's operations in the future. Forward-looking statements are frequently, but not always, identified by words such as "expects," "anticipates," "believes," "intends," "estimates," "potential," "possible," "projects," "plans," and similar expressions, or statements that events, conditions or results "will," "may," "could," or "should" occur or be achieved or their negatives or other comparable words. These forward-looking statements may include statements regarding the ability to receive environmental and operating permits, job creation, or other statements that are not a statement of fact. Forward-looking statements address future events and conditions and therefore involve inherent known and unknown risks and uncertainties. Actual results may differ materially from those in the forward-looking statements due to risks facing PolyMet or due to actual facts differing from the assumptions underlying its predictions.

PolyMet's forward-looking statements are based on the beliefs, expectations and opinions of management on the date the statements are made, and PolyMet does not assume any obligation to update forward-looking statements if circumstances or management's beliefs, expectations and opinions should change.

Specific reference is made to PolyMet's most recent Annual Report on Form 20-F for the fiscal year ended January 31, 2015 and in our other filings with Canadian securities authorities and the U.S. Securities and Exchange Commission, including our Report on Form 6-K providing information with respect to our operations for the three and six months ended October 31, 2015, for a discussion of some of the risk factors and other considerations underlying forward-looking statements.

The TSX has not reviewed and does not accept responsibility for the adequacy or accuracy of this release.

Permit to Mine Preapplication Public Informational Meeting PolyMet's NorthMet Mining Project

Preapplication Public Informational Meeting

On April 19, 2016 the DNR hosted a public informational meeting, as required before PolyMet can apply for a Permit to Mine. At the meeting, the DNR gave an overview of the proposed mining project and the process for reviewing a nonferrous Permit to Mine application.

Please see the Minnesota Rules, section [6132.1100](#), for more information on the steps an applicant needs to fulfill before submitting an application, as well as what an application should contain.

The meeting took place on Tuesday April 19, 2016, at the Mesabi East High School in Aurora, MN.

A formal presentation was given by the Director of the DNR's Lands and Minerals Division at 6:30, and an open house was held throughout the meeting from 6:00 to 8:30 p.m.



PolyMet NorthMet Email Updates

Sign up to receive updates regarding the proposed NorthMet Mining Project

Email Address
Submit

Meeting summary

The meeting is:

The meeting includes a DNR presentation to provide an overview of the proposed mining project and the permit to mine process.

The meeting provides a brief summary of the other state permits that may be required for the project.

The meeting is an open house style opportunity to ask questions to State agency staff and PolyMet representatives about the permit to mine process and other permit processes.

The meeting is not:

The meeting is not an opportunity to review or discuss permit applications. Project permit applications have not yet been submitted.

The meeting is not an opportunity to offer formal public comment on permits, there will be future opportunities to both obtain information about the applications and review and comment on draft permits.

The meeting is not a venue for commenting on the Environmental Review process or on the Environmental Impact Statement (EIS).

Questions and Answers

Provided below are questions and answers about the preapplication public informational meeting

*Click each topic below to expand.
Click again to hide.*

What is the preapplication public informational meeting?

Prior to the submittal of an application for a Permit to Mine (PTM), the Minnesota Department of Natural Resources (DNR), with assistance of the applicant, is required to hold a public informational meeting. The meeting serves as a venue to provide an overview of the proposed mining project and permit to mine process.

Who is invited to the preapplication public informational meeting?

In addition to the MDNR, the Minnesota Pollution Control Agency (MPCA), the Environmental Quality Board (EQB), and the local unit of government are invited to participate in the meeting. Any member of the public may attend the meeting, and a notice of the meeting was published at least 30 days prior using the State Register, the EQB Monitor, and a local newspaper.

What happens during this preapplication public informational meeting?

As mentioned above, this meeting serves as an opportunity to provide an overview of the proposed mining project and permit to mine process. The meeting includes a short presentation on these topics. There will also be an open house style opportunity to ask questions to State agency staff and PolyMet representatives about the permit to mine process and other permit processes.

Is this meeting part of the Environmental Review process?

No, this meeting serves to provide an overview of the Permit to Mine process, and is not part of the Environmental Review process.

Is there a permit to mine application to review?

The permit to mine rules require that the public informational meeting occur prior to the applicant submitting their permit to mine application. PolyMet has not submitted a permit to mine application. PolyMet has also not submitted any other permit applications to other state agencies prior to this meeting.

Will the public be able to provide comments at this meeting?

The public may ask questions on the permitting process during the open house venue of the meeting. Participants will also have the opportunity to sign up for email notifications regarding the permitting process. No formal public comment on permits will be taken at this

meeting. There will be future opportunities to both obtain information about the applications and review and ~~comment on draft permits.~~

Appendix 1.6

DNR Presentation at Public Informational Meeting

PolyMet - NorthMet Mining Proposal

Preapplication Public Informational Meeting

April 19, 2016



Jess Richards, Director

Division of Lands & Minerals

Minnesota Department of

Natural Resources



OVERVIEW

- Summary of proposed project & steps completed
- Permit to mine process
- Overview of other State permits
- Stay informed: mn.gov/polymet

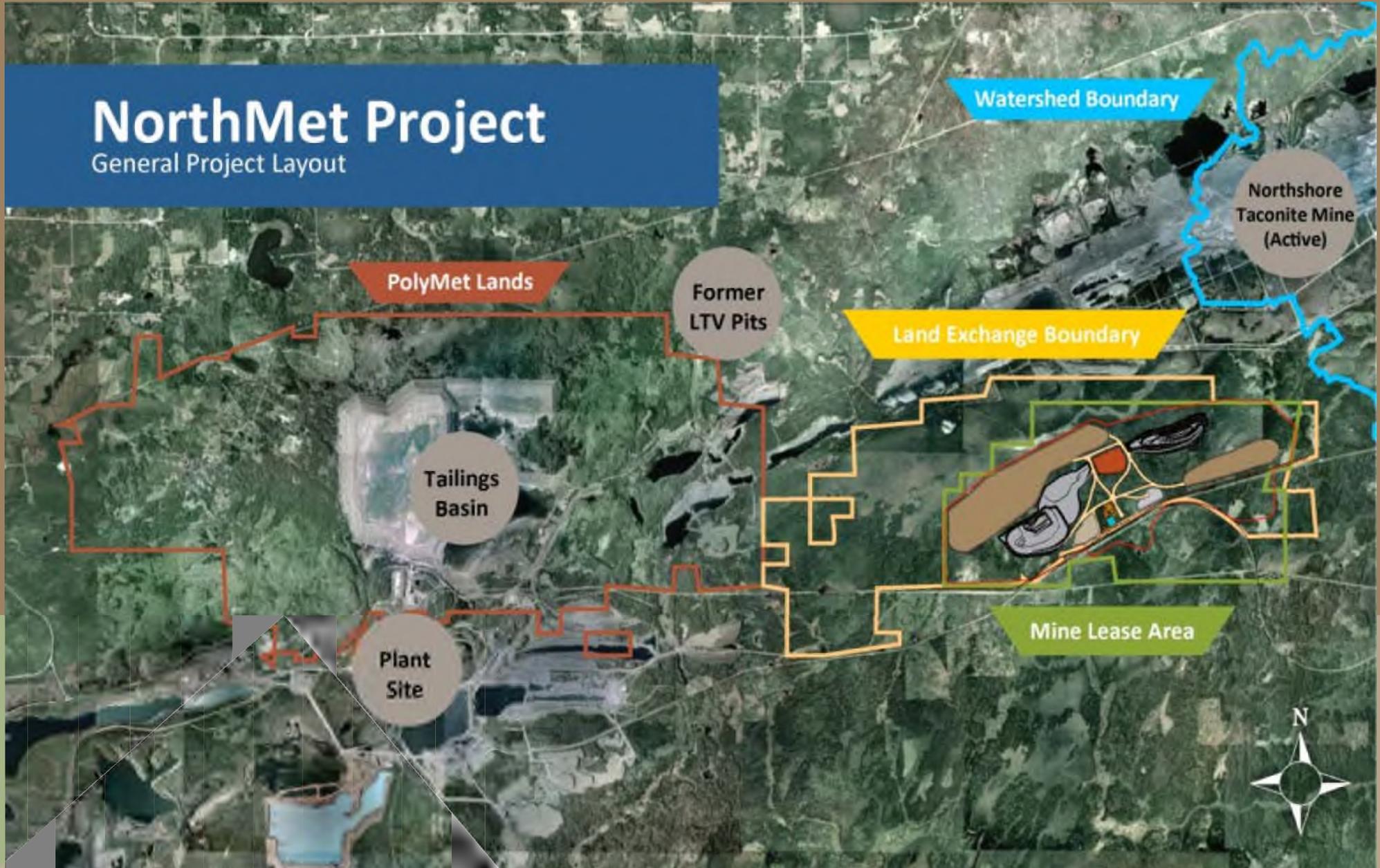
POLYMET – NORTHMET LOCATION



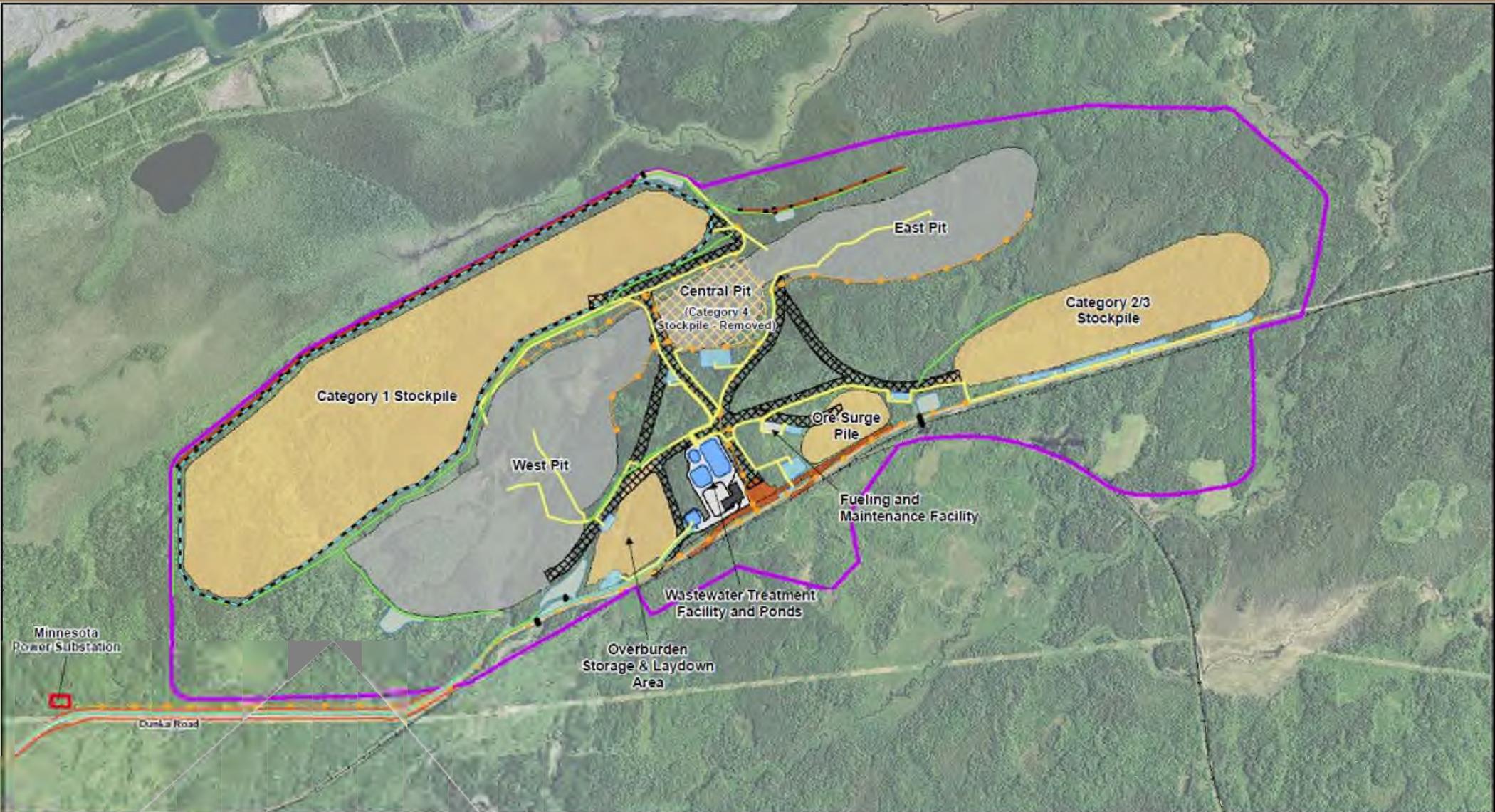
POLYMET – NORTHMET PROJECT AREA



NorthMet Project General Project Layout

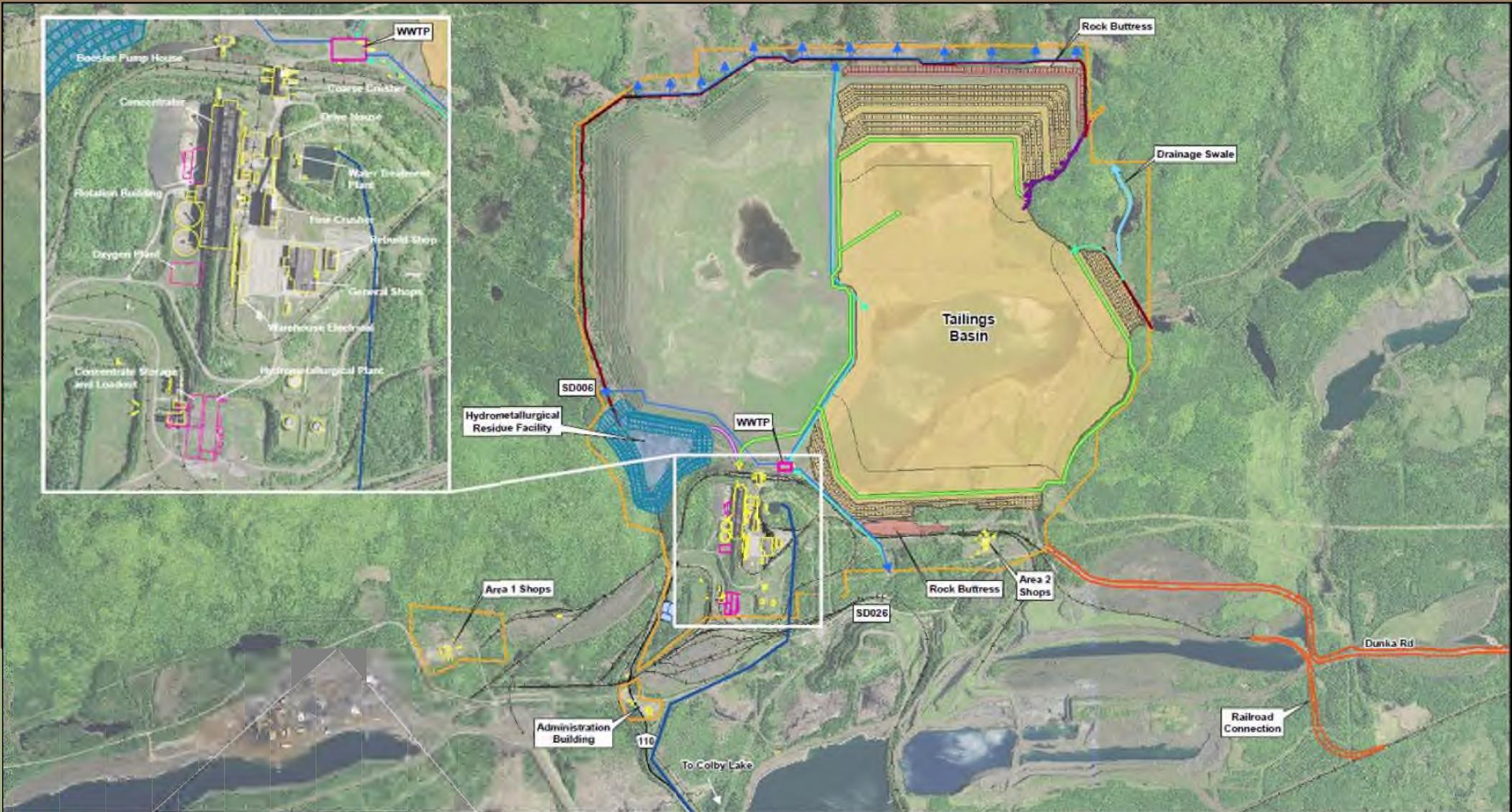


MINE SITE PROPOSAL - YEAR 11



<ul style="list-style-type: none"> Mine Site Active Stockpile Category 4 Stockpile Removed Mine Pit Perimeter Dike Transmission Line 	<ul style="list-style-type: none"> Transportation and Utility Corridor Rail Transfer Hopper and Near Railroad Spout Groundwater Containment System 	<ul style="list-style-type: none"> Culvert Stormwater Collection Ditch Process Water Pipes Treated Water Pipeline Ponds and Sumps Stormwater Pond 			<p>Figure 3.2-7 Mine Site Plan - Year 11 NorthMet Mining Project and Land Exchange FEIS Minnesota</p>
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PLANT SITE PROPOSAL



Plant Site	Transportation and Utility Corridor	Drainage Flow Direction
Tailings Basin	Containment System	Hydrometallurgical Residue Pipeline
Proposed Building	Colby Lake Water Pipeline Corridor	Flotation Tailings Pipeline
Existing Building	Treated Water Discharge	Tailings Basin Emergency Overflow
Hydrometallurgical Facility	Sewage Water Pipe	Sewage Treatment Systems Ponds
Rock Buttriss	Existing Railroad	

Figure 3.2-23
Plant Site Layout
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota

MINE SITE PROPOSAL IN CLOSURE

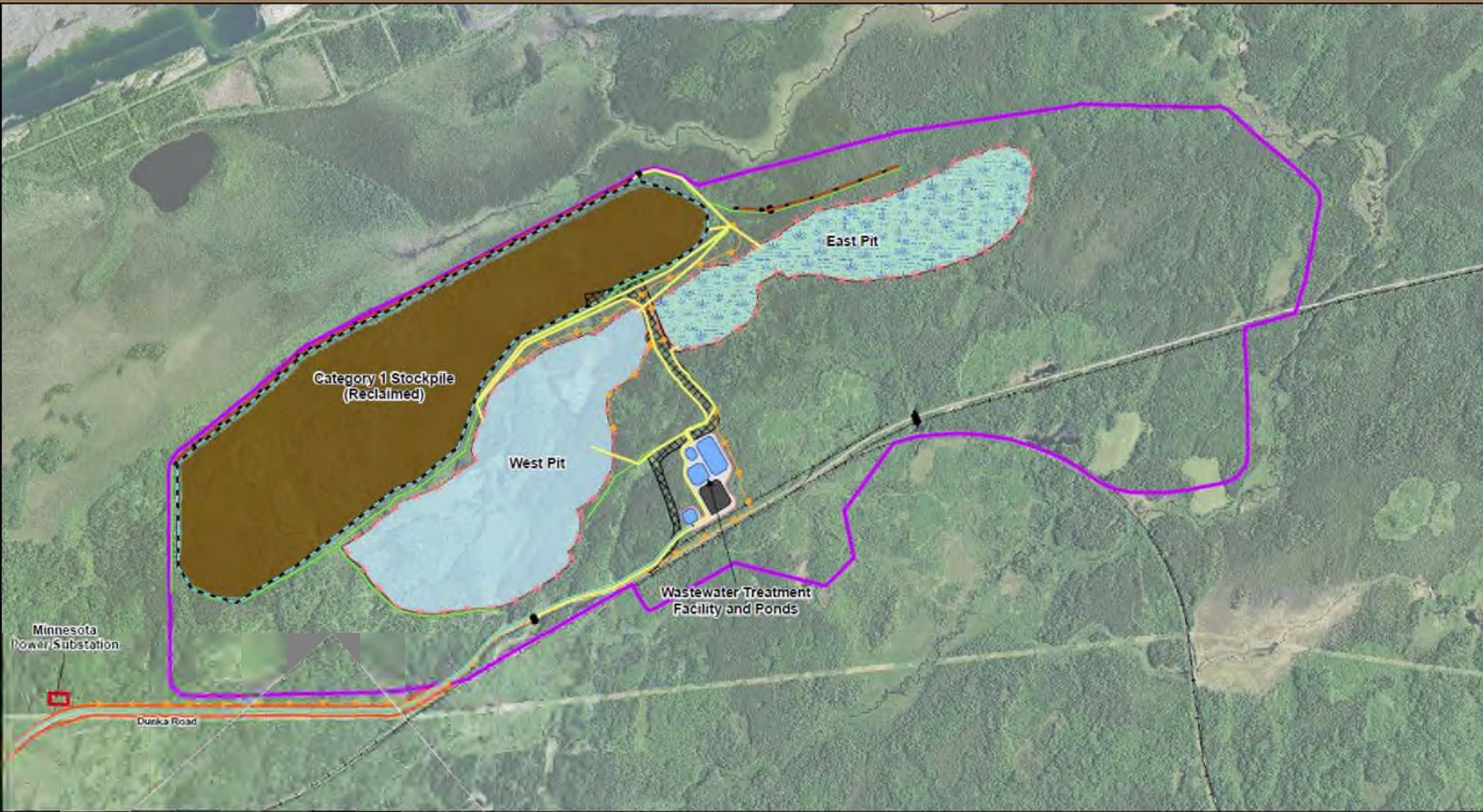
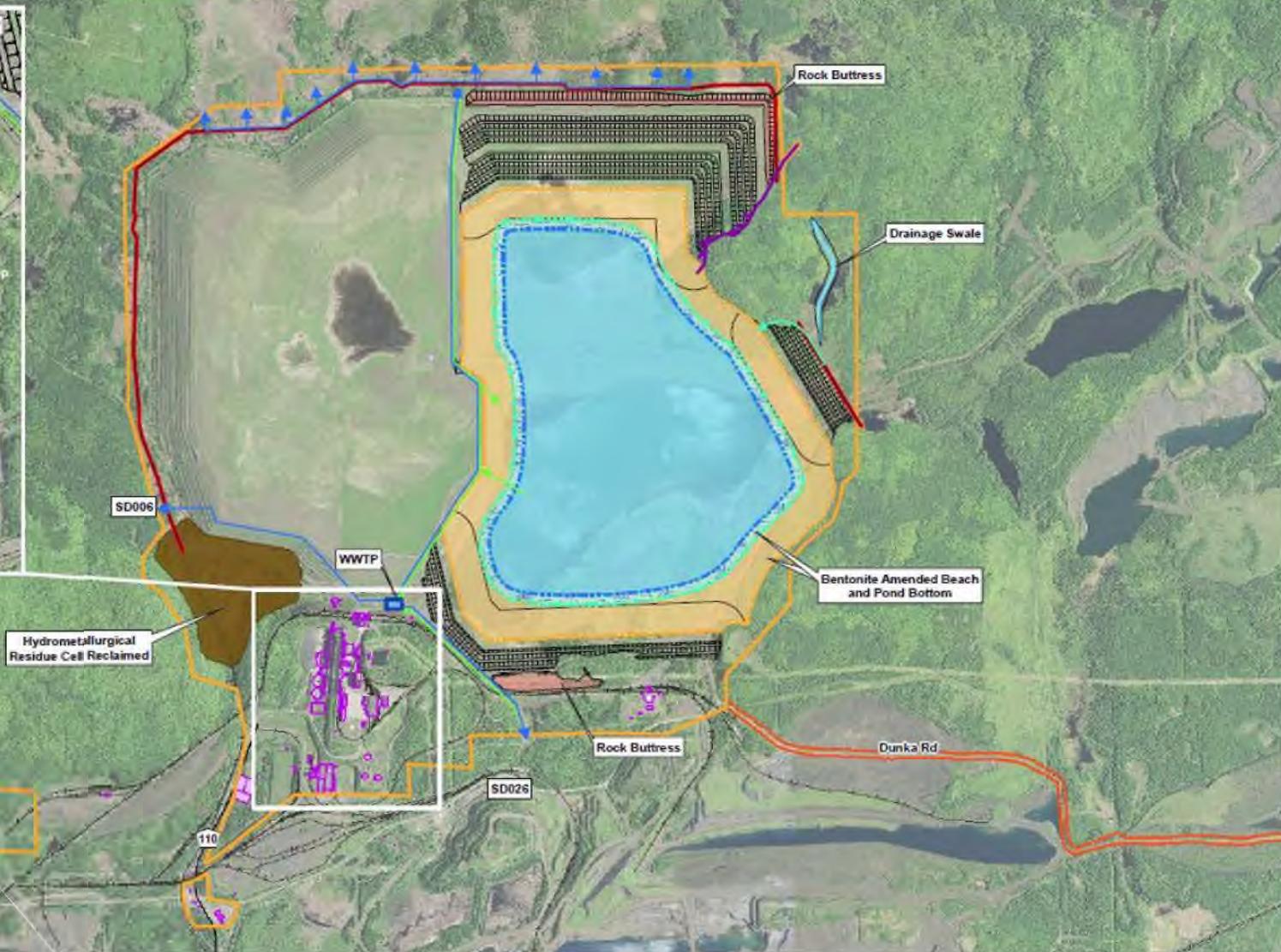


Figure 3.2-9
Mine Site Plan - Long-term Closure
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota
 November 2015

PLANT SITE IN CLOSURE



Plant Site	Rock Butress	Tailings Basin Emergency Overflow
Wastewater Treatment Plant and Pump Station	Approximate Pond Area	Treated Water Discharge
Building	Approximate Wetland Area	Seepage Water Pipe
Treatment and Containment System	Approximate Upland Area	Pipe to Treatment Plant
Hydrometallurgical Residue Cell Reclaimed	Containment System	Existing Railroad
	Drainage Flow Direction	

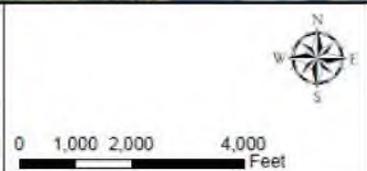


Figure 3.2-29
Plant Site Layout - Long Term Closure
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota

KEY OPERATIONAL FIGURES

➤ **Total Ore Removed = 225 Million Tons**

➤ *Note: Ore includes both metals and eventual tailings*

➤ **Total Waste Rock Removed = 308 Million Tons**

Projected Annual Production

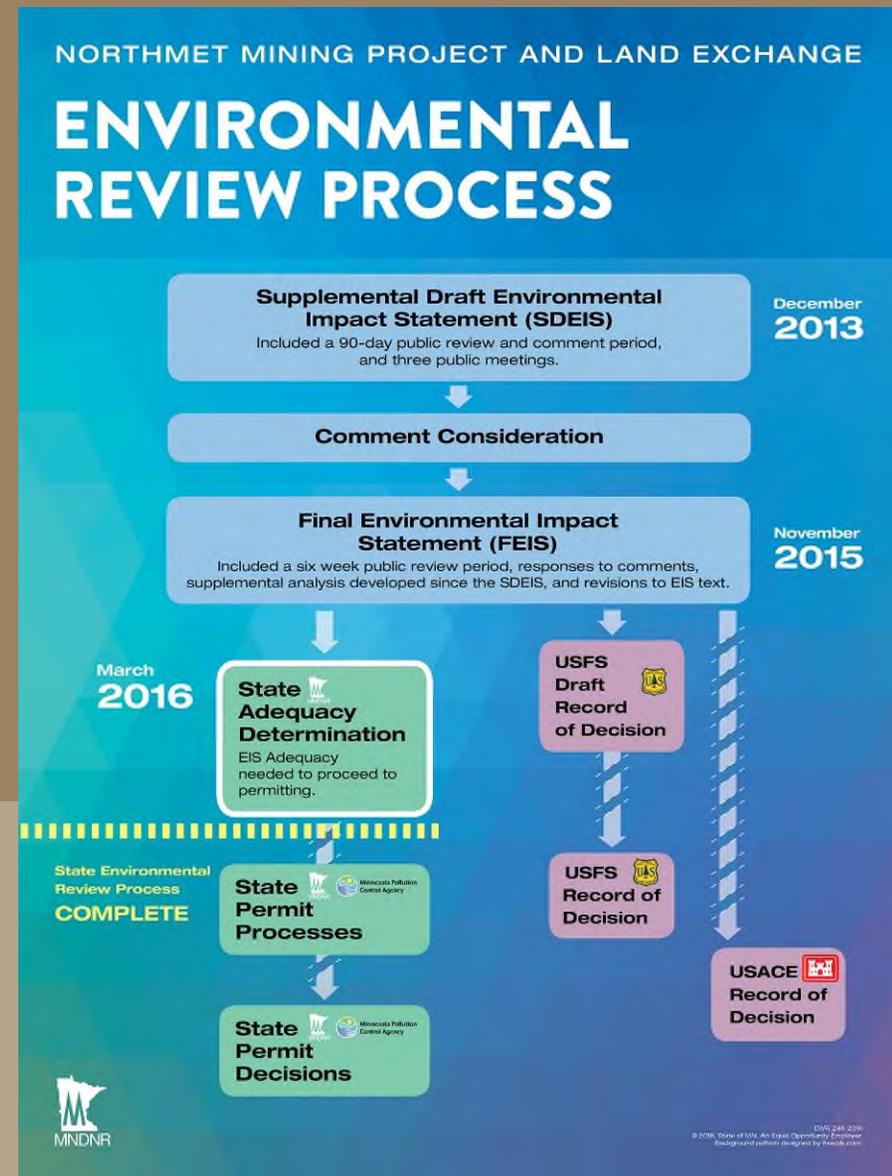
- **Copper – 36,000 tons**
- **Nickel - 7,500 tons**
- **Cobalt - 360 tons**
- **Precious Metals -7,200 lbs**

Expected Mine Life
20 years

STEPS COMPLETED: ENVIRONMENTAL IMPACT STATEMENT



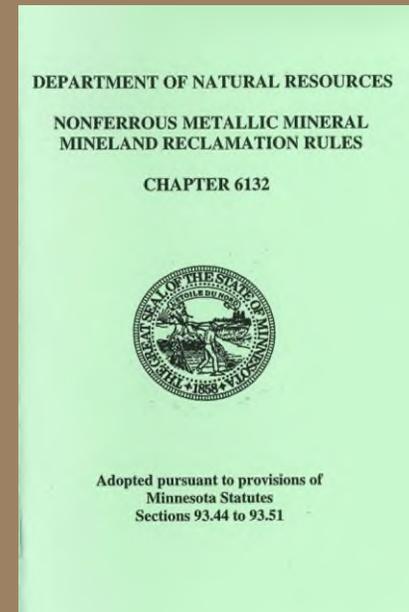
- Proposed - 2005
- Final EIS - Nov. 2015
- Deemed Adequate
March 2016



PERMIT TO MINE: NON-FERROUS (MINN. R. 6132)

Permit to Mine Components:

- Corporation organizational data and certificates
- Geology and mine pit progression
- Waste characterization
- Mining and reclamation maps and plans



PERMIT TO MINE: NON-FERROUS (MINN. R. 6132)

Permit to Mine Components:

- Stockpile design and siting
- Management of runoff
- Tailings basin design and operation plans
- Financial assurance
- Closure plan



PERMIT TO MINE FINANCIAL ASSURANCE

Source of funds to be used by the commissioner if the permittee fails to perform:

- reclamation activities including closure and postclosure maintenance if operations cease; and
- corrective actions if noncompliance with the Permit to Mine occurs.

Example Financial Tools:

- Irrevocable Letter of Credit
- Surety Bond
- Trust Fund



PERMIT TO MINE FINANCIAL ASSURANCE

Evaluation criteria:

- Sufficient to cover all reclamation costs
- Payable to DNR: available when needed
- Valid, binding, and enforceable
- Not dischargeable through bankruptcy
- Acceptable to the Commissioner

March, 2016
DNR Hires Emmons &
Olivier Resources, Inc

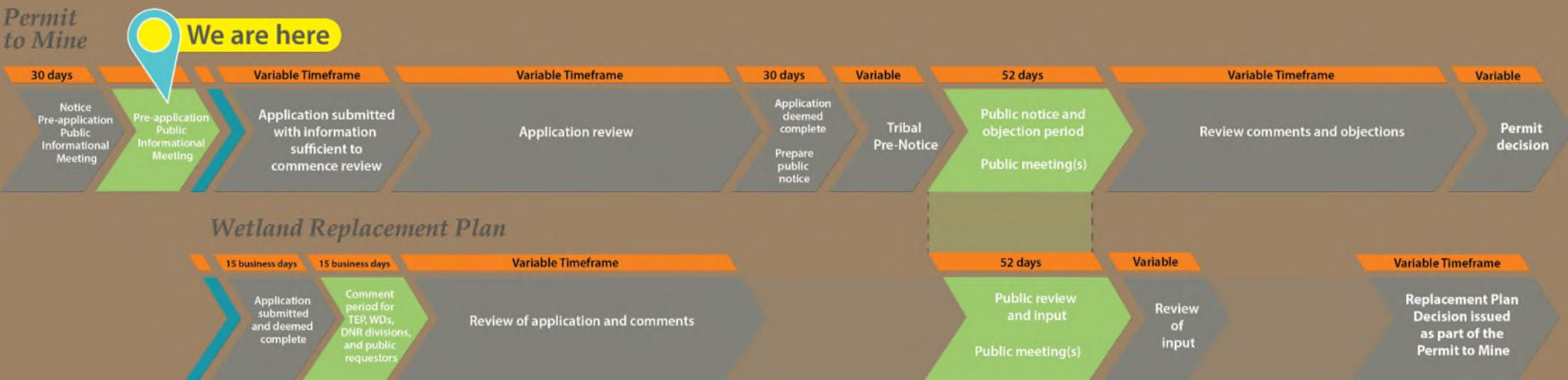


Additional Key Elements:

- Initial funds on day 1
- Updated annually
- Sufficient to fund closure at any point in time



DNR – PERMIT TO MINE & WETLANDS REPLACEMENT PLAN

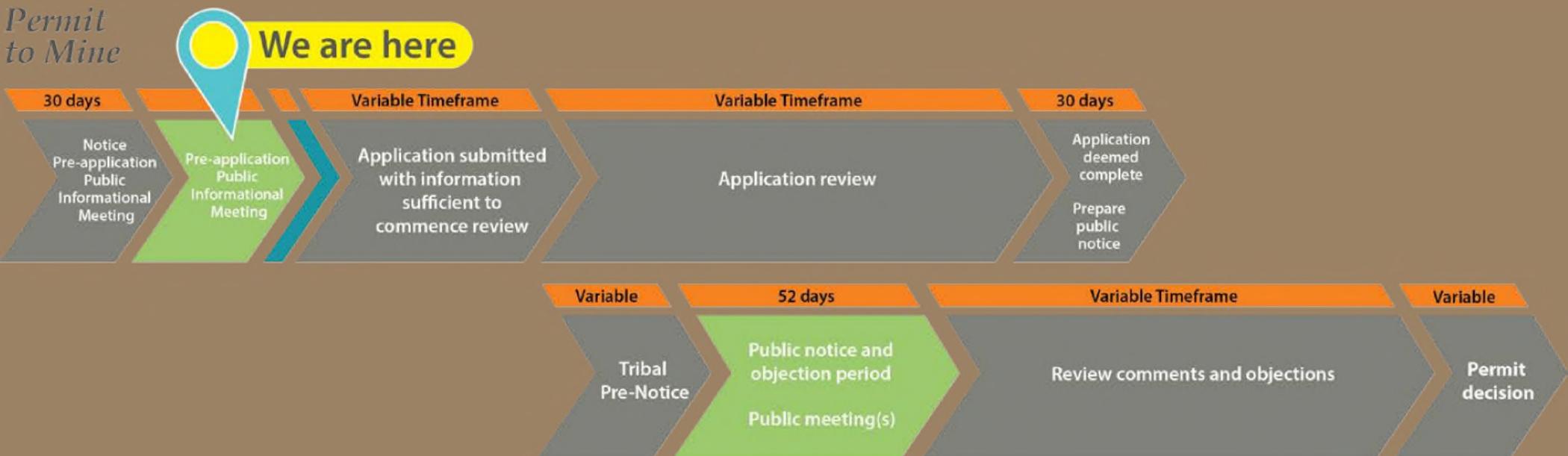


- Draft Permit to Mine application & proposed financial assurance will be posted on website once received.

mn.gov/polymet



DNR – PERMIT TO MINE



- Draft Permit to Mine application & proposed financial assurance will be posted on website once received.

mn.gov/polymet



DNR – WETLANDS REPLACEMENT PLAN

Wetland Replacement Plan



DNR – WATER APPROPRIATION

Water Appropriation Permit



- Conserve and utilize the water resources
- Minimize adverse environmental effects

DNR – DAM SAFETY PERMIT

Dam Safety Permit



- Ensure safe design, construction, monitoring, and operation of tailing basin dams



ADDITIONAL DNR PERMITS & APPROVALS

Endangered Species
Takings

Work in Public
Waters

Burning Permit

MPCA PERMITS & APPROVALS

Air Emissions Permit

Water Discharge
Permit

Storage Tanks

Wetlands 401 Cert.

Hazardous Waste

Stormwater (Const. & Industrial)

MPCA permitting processes

Air Permitting



Water Permitting



401 Certification



ADDITIONAL ORGANIZATIONS WITH PERMITS OR APPROVALS



STAY INFORMED

- Sign up for email updates
- Access draft permit applications
- View project background & recent news

mn MINNESOTA **PolyMet Permitting** ABOUT THE PROJECT NEWS

PolyMet's NorthMet Project Email Updates
Sign up to receive updates.
NOTE: DNR is hosting this site, but updates will come from both MPCA and DNR.

Email Address
Submit

Learn about the state's permitting processes:

 [Minnesota Department of Natural Resources »](#)  [Minnesota Pollution Control Agency »](#)

mn.gov/polymet



THANK YOU



Crowd at PolyMet EIS Meeting – St. Paul, MN

Jess Richards
Director
DNR Lands and Minerals
Phone: 651-259-5959
Jess.Richards@state.mn.us

Appendix 1.7

**Proof of Registration and Certificate of Good Standing for
Poly Met Mining, Inc. and Certificate of Authority for PolyMet
Mining Corp.**

MINNESOTA REVENUE

September 10, 2007

POLYMET MINING INC
PO BOX 475
HOYT LAKES, MN 55750-0475

This letter confirms that your business is registered with the State of Minnesota, Department of Revenue, and has been assigned a Minnesota Tax ID Number. **Please keep this letter as proof of registration.** If you have questions about this registration, call the Registration Services number at the bottom of this page.

Your Minnesota Tax ID number is: 9049755

Use this number on all returns, payments, and correspondence.

Your business has been activated for the following tax(es):

	Effective Date	Filing Cycle
Withholding Tax	Jul 1 2007	Quarterly
Use Tax	Jul 1 2007	Annually

If sales tax is listed above, this letter constitutes your permit to make taxable sales.

If withholding tax is listed above, deposit according to your federal deposit schedule.

If MinnesotaCare tax is listed above, deposit according to the deposit schedule in your instruction book.

e-File Minnesota

If you are registered for sales or use tax, withholding tax, or any of the MinnesotaCare taxes, you must file your returns electronically using our e-File Minnesota filing and payment system. To file over the Internet, go to www.taxes.state.mn.us. If you don't have Internet access, you can file by touch-tone phone. Call 1-800-570-3329. You can also use e-File Minnesota to make electronic payments for any Minnesota business tax.

Note: The first time you use e-File Minnesota, you'll need the following temporary password: **912604**

Filing and paying your taxes

Information about your filing and paying responsibilities is available on our website (click on "Quick Start for Business Taxpayers"). If you have questions and don't have Internet access, call the tax assistance number for your tax type.

Sales and use taxes:	651-296-6181	Corporation franchise tax:	651-297-7000
Withholding tax:	651-282-9999	S corporation, partnership,	
MinnesotaCare taxes:	651-282-5533	and estate/trust taxes:	651-296-3475

Registration Services
Mail Station 4410
St. Paul, MN 55146-4410

Tel: 651-282-5225 Fax: 651-556-5155
TTY: 651-556-3030 or 711 Minnesota Relay
www.taxes.state.mn.us

**Office of the Minnesota Secretary of State
Certificate of Good Standing**

I, Steve Simon, Secretary of State of Minnesota, do certify that: The business entity listed below was filed pursuant to the Minnesota Chapter listed below with the Office of the Secretary of State on the date listed below and that this business entity is registered to do business and is in good standing at the time this certificate is issued.

Name: Poly Met Mining, Inc.
Date Filed: 02/16/1989
File Number: 6F-388
Minnesota Statutes, Chapter: 302A
Home Jurisdiction: Minnesota

This certificate has been issued on: 09/14/2017



Steve Simon

Steve Simon
Secretary of State
State of Minnesota

Office of the Minnesota Secretary of State Certificate of Authority

I, Steve Simon, Secretary of State of Minnesota, do certify that: The following business entity has duly complied with the relevant provisions of Minnesota Statutes listed below, and is formed or authorized to do business in Minnesota on and after this date with all the powers, rights and privileges, and subject to the limitations, duties and restrictions, set forth in that chapter.

The business entity is now legally registered under the laws of Minnesota.

Name in Minnesota: PolyMet Mining Corp.

Name in Home Jurisdiction: PolyMet Mining Corp.

File Number: 981023800023

Minnesota Statutes, Chapter: 303

Home Jurisdiction: Canada

This certificate has been issued on: 11/20/2017



Steve Simon
Secretary of State
State of Minnesota

Appendix 1.8

Certificate of Insurance

Appendix 1.9

Consolidated Financial Statements for PolyMet Mining Corp. for 2016

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 40-F

REGISTRATION STATEMENT PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

OR

ANNUAL REPORT PURSUANT TO SECTION 13(a) OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended **January 31, 2017**

Commission file number **001-32929**

POLYMET MINING CORP.

(Exact name of Registrant as specified in its charter)

British Columbia, Canada

(Province or other jurisdiction of incorporation or organization)

1000

(Primary Standard Industrial Classification Code)

84-1461363

(I.R.S. Employer Identification No.)

**Suite 5700 – 100 King Street West,
Toronto, Ontario, Canada M5X 1C7**

416-915-4149

(Address and telephone number of Registrant's principal executive offices)

Douglas Newby

**c/o Poly Met Mining, Inc.
444 Cedar Street, Suite 2060
St Paul, Minnesota 55101**

651-389-4100

(Name, address (including zip code), and telephone number
(including area code) of agent for service in the United States)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

<u>Title of each class</u>	<u>Name of each exchange on which registered</u>
Common Shares, without par value	NYSE MKT and TSX

Securities registered or to be registered pursuant to Section 12(g) of the Act: **None**

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: **None**

For annual reports, indicate by check mark the information filed with this form.

Annual Information Form

Audited Annual Financial Statements

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report. **318,545,519**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes No

EXPLANATORY NOTE

PolyMet Mining Corp. (the “Company” or “PolyMet”) is a Canadian issuer eligible to file its Annual Report pursuant to Section 13 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), on Form 40-F pursuant to the multi-jurisdictional disclosure system of the Exchange Act. The Company is a “foreign private issuer” as defined in Rule 3b-4 under the Exchange Act. Equity securities of the Company are accordingly exempt from Sections 14(a), 14(b), 14(c), 14(f) and 16 of the Exchange Act pursuant to Rule 3a12-3.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 40-F (this “Annual Report”) contains statements that constitute “forward-looking statements” within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These statements appear in a number of different places in this Annual Report and can be identified by words such as “expects”, “anticipates”, “believes”, “intends”, “estimates”, “potential”, “possible”, “projects”, “plans”, and similar expressions, or statements that events, conditions or results “will”, “may”, “could”, or “should” occur or be achieved or their negatives or other comparable words. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. The statements are inherently subject to a variety of risks and uncertainties that could cause actual results, performance or achievements to differ significantly. Forward-looking statements include statements regarding the outlook for our future operations, plans and timing for our exploration and development programs, statements about future market conditions, supply and demand conditions, forecasts of future costs and expenditures, the outcome of legal proceedings, and other expectations, intentions and plans that are not historical fact. Actual results may differ materially from those in the forward-looking statements due to risks facing us or due to actual facts differing from the assumptions underlying our predictions. Some of these risks and assumptions include:

- obtaining permits on a timely basis;
- ability to raise the funds necessary to develop the NorthMet Project and continue operations;
- ability to execute prospective business plans;
- changes in the general economic and business conditions, including changes in interest rates and exchange rates;
- changes in the resources market, including prices of natural resources, costs associated with mineral exploration and development, and other economic conditions;
- natural phenomena;
- actions by government authorities, including changes in government regulation;
- uncertainties associated with legal proceedings; and
- future decisions by management in response to changing conditions.

All forward-looking statements included in this Annual Report are based on information available to us on the date of this Annual Report. We expressly disclaim any obligation to update publicly or otherwise these statements, whether as a result of new information, future events or otherwise except to the extent required by law, rule or regulation. You should not place undue reliance on forward-looking statements. You should carefully review the cautionary statements and risk factors contained in this and other documents that we file from time to time with the United States Securities and Exchange Commission (the “SEC”).

NOTE TO UNITED STATES READERS REGARDING DIFFERENCES IN UNITED STATES AND CANADIAN REPORTING PRACTICES

The Company is permitted, under the multi-jurisdictional disclosure system adopted by the SEC, to prepare this Annual Report on Form 40-F in accordance with Canadian disclosure requirements, which differ from those of the United States. The Company has prepared its financial statements, which are filed as Exhibit 99.2 to this Annual Report on Form 40-F, in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (“IASB”), and they are also subject to international auditing and auditor

independence standards and SEC / Public Company Accounting Oversight Board (“PCAOB”) independence standards. The Company’s financial statements may not be comparable to financial statements of other United States companies. Since the Company has prepared its financial statements in accordance with IFRS as issued by the IASB, it is not required to provide a reconciliation to United States generally accepted accounting principles.

NOTE TO UNITED STATES READERS REGARDING RESOURCE AND RESERVE ESTIMATES

The Company’s Annual Information Form for the fiscal year ended January 31, 2017 filed as Exhibit 99.1 to this Annual Report on Form 40-F and management’s discussion and analysis for the fiscal year ended January 31, 2017 filed as Exhibit 99.3 to this Annual Report on Form 40-F have been prepared in accordance with the requirements of the securities laws in effect in Canada, which differ from the requirements of United States securities laws. The terms “mineral reserve”, “proven mineral reserve” and “probable mineral reserve” are Canadian mining terms as defined in accordance with Canadian National Instrument 43-101 – Standards of Disclosure for Mineral Projects (“NI 43-101”) and the Canadian Institute of Mining, Metallurgy and Petroleum (the “CIM”) - *CIM Definition Standards on Mineral Resources and Mineral Reserves*, adopted by the CIM Council, as amended. These definitions differ materially from the definitions in SEC Industry Guide 7 under the United States Securities Act of 1933, as amended. Under SEC Industry Guide 7 standards, a “final” or “bankable” feasibility study is required to report reserves, the three-year historical average price is used in any reserve or cash flow analysis to designate reserves, and the primary environmental analysis or report must be filed with the appropriate governmental authority.

In addition, the terms “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are defined in and required to be disclosed by NI 43-101; however, these terms are not defined terms under SEC Industry Guide 7 and are normally not permitted to be used in reports and registration statements filed with the SEC. Investors are cautioned not to assume that all or any part of a mineral deposit in these categories will ever be converted into SEC Industry Guide 7 reserves. “Inferred mineral resources” have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, except in rare cases. Investors are cautioned not to assume that all or any part of an inferred mineral resource exists or is economically or legally mineable. Disclosure of “contained ounces” in a resource is permitted disclosure under Canadian regulations; however, the SEC normally only permits issuers to report mineralization that does not constitute “reserves” by SEC Industry Guide 7 standards as in place tonnage and grade without reference to unit measures.

Accordingly, information contained in this Annual Report on Form 40-F and the documents incorporated by reference herein that contain descriptions of the Company’s mineral deposits may not be comparable to similar information filed by other United States companies.

ANNUAL INFORMATION FORM

The Company’s Annual Information Form for the fiscal year ended January 31, 2017 is filed as Exhibit 99.1 to this Annual Report on Form 40-F and is incorporated by reference herein.

AUDITED ANNUAL FINANCIAL STATEMENTS

The audited consolidated financial statements of the Company for the years ended January 31, 2017 and 2016, including the report of the independent auditor with respect thereto, are filed as Exhibit 99.2 to this Annual Report on Form 40-F and incorporated by reference herein.

MANAGEMENT'S DISCUSSION AND ANALYSIS

The Company's management's discussion and analysis for the year ended January 31, 2017 is filed as [Exhibit 99.3](#) to this Annual Report on Form 40-F and incorporated by reference herein.

TAX MATTERS

Purchasing, holding, or disposing of securities of the Company may have tax consequences under the laws of the United States and Canada that are not described in this Annual Report on Form 40-F. Holders of the Company's common shares should consult their own tax advisors regarding the tax consequences of purchasing, holding or disposing of securities of the Company.

CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

The Company's Chief Executive Officer and Chief Financial Officer have evaluated the effectiveness of the Company's disclosure controls and procedures (as such term is defined in Rules 13(a)-15(e) and 15(d)-15(e) under the "Exchange Act" as of the end of the period covered by this Annual Report (the "Evaluation Date"). Based on such evaluation, such officers have concluded that, as of the Evaluation Date, the Company's disclosure controls and procedures are effective. Such disclosure controls and procedures are designed to ensure that the information required to be disclosed by the Company in reports that it files or submits to the Securities and Exchange Commission under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in applicable rules and forms, and includes controls and procedures designed to ensure information relating to the Company required to be included in reports filed or submitted under the Exchange Act is accumulated and communicated to the Company's management to allow timely decision regarding disclosure.

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Consolidated Financial Statements for external reporting purposes in accordance with IFRS as issued by IASB.

Internal control over financial reporting, no matter how well designed, has inherent limitations. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management has assessed the effectiveness of internal controls over financial reporting as at January 31, 2017. In making its assessment, management has used the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") to evaluate internal controls over financial reporting.

Based on its assessment, management has concluded that, as at January 31, 2017, internal controls over financial reporting is effective.

Attestation Report of the Registered Public Accounting Firm

The effectiveness of the Company's internal control over financial reporting as of January 31, 2017, has been audited by PricewaterhouseCoopers LLP, independent auditors, as stated in their report included in [Exhibit 99.2](#) to this Annual Report on Form 40-F.

Changes in Internal Controls

There have been no changes in the Company's internal control over financial reporting during the period covered by this Annual Report that have materially affected, or is reasonably likely to material affect, the Company's internal control over financial reporting.

CORPORATE GOVERNANCE

The Company is listed on the Toronto Stock Exchange ("TSX") and is required to describe its practices and policies with regards to corporate governance with specific reference to TSX guidelines by way of an annual corporate governance statement in the Company's annual report or information circular filed with the appropriate securities regulators in Canada.

The Company is also listed on the NYSE MKT and additionally complies as necessary with the rules and guidelines of the NYSE MKT and SEC.

The Company reviews its governance practices on an ongoing basis to ensure it is in compliance with all applicable requirements.

The Company's Board of Directors is responsible for the Company's Corporate Governance policies and has determined that all the members of the Audit, Compensation, and Nominating & Corporate Governance Committees are independent, based on the criteria for independence and unrelatedness prescribed by the TSX and Section 803A of the NYSE MKT Company Guide.

Compensation Committee

Compensation of the Company's Chief Executive Officer ("CEO") and all other officers is recommended to the Board of Directors for determination by the Compensation Committee. The Compensation Committee develops, reviews and monitors director and executive officer compensation and policies. The Compensation Committee is also responsible for annually reviewing the adequacy of compensation to directors, officers, and other consultants and the composition of compensation packages. The Company's CEO cannot be present during deliberations or voting on the CEO's compensation.

The Compensation Committee is composed of Alan R. Hodnik, W. Ian L. Forrest, and Michael M. Sill, each of whom, in the opinion of the Board of Directors, is independent under the rules of the TSX and pursuant to Sections 803A and 805(c)(1) of the NYSE MKT Company Guide. The Company's Compensation Committee Charter is available on the Company's website at www.polymetmining.com.

Nominating & Corporate Governance Committee

Nominees for the election to the Company's Board of Directors are recommended by the Nominating & Corporate Governance Committee. The Company has adopted a formal written board resolution addressing the nomination process and such related matters as may be required under the rules of the TSX and the NYSE MKT and any applicable securities laws.

The Nominating & Corporate Governance Committee is composed of W. Ian L. Forrest, Dr. David Dreisinger, and Alan R. Hodnik, each of whom, in the opinion of the Board of Directors, is independent under the rules of the TSX and the NYSE MKT. Stephen Rowland is a non-voting participant. The Company's Nominating and Corporate Governance Committee Charter is available on the Company's website at www.polymetmining.com.

AUDIT COMMITTEE

Composition and Responsibilities

The Company's Board of Directors has a separately designated standing Audit Committee established in accordance with Section 3(a)(58)(A) of the Exchange Act and Section 803B of the NYSE MKT Company Guide. During the Company's year ended January 31, 2017, the Company's Audit Committee was composed of Michael M. Sill, Dr. David Dreisinger, and W. Ian L. Forrest, each of whom, in the opinion of the Company's Board of Directors, is independent as determined under the rules of the TSX and Rule 10A-3 of the Exchange Act, Section 803A of the NYSE MKT Company Guide and each of whom is financially literate. The Audit Committee meets the composition requirements set forth by Section 803B(2) of NYSE MKT Company Guide. Helen Harper is a non-voting participant.

The members of the Audit Committee do not have fixed terms and are appointed and replaced from time to time by resolution of the Board of Directors.

The Audit Committee meets with the Company's President and CEO, the Company's Chief Financial Officer ("CFO"), and the Company's independent auditors to review and inquire into matters affecting financial reporting, the system of internal accounting and financial controls, and the Company's audit procedures and audit plans. The Audit Committee also recommends to the Board of Directors the independent auditors to be appointed for each fiscal year. In addition, the Audit Committee reviews and recommends to the Board of Directors for approval the annual and quarterly financial statements and management's discussion and analysis. Finally, the Audit Committee undertakes other activities as required by the rules and regulations of the TSX and the NYSE MKT and other governing regulatory authorities.

The full text of the Audit Committee Charter is set forth in the Company's Annual Information Form incorporated by reference in this Annual Report on Form 40-F.

Audit Committee Financial Expert

During the Company's year ended January 31, 2017, the Board of Directors determined that W. Ian L. Forrest qualified as the Audit Committee's "financial expert," as defined in Item 407(d)(5)(ii) of Regulation S-K under the Exchange Act and was "financially sophisticated" as determined under Section 803(B)(2)(iii) of the NYSE MKT Company Guide.

Mr. Forrest qualifies as a financial expert and is financially sophisticated, in that he has an understanding of generally accepted accounting principles and financial statements; is able to assess the general application of accounting principles in connection with the accounting for estimates, accruals and reserves; has experience analyzing or evaluating financial statements that entail accounting issues of equal complexity to the Company's financial statements (or actively supervising another person who did so); and has a general understanding of internal controls and procedures for financial reporting and an understanding of audit committee functions.

PRINCIPAL ACCOUNTING FEES AND SERVICES – INDEPENDENT AUDITORS

The required disclosure is included under the heading "Audit Committee – External Auditor Service Fees" in the Company's Annual Information Form incorporated by reference in this Annual Report on Form 40-F.

PRE-APPROVAL POLICIES AND PROCEDURES

The required disclosure is included under the heading "Audit Committee – Pre-Approval Policies and Procedures" in the Company's Annual Information Form incorporated by reference in this Annual Report on Form 40-F.

OFF-BALANCE SHEET TRANSACTIONS

The Company does not have any off-balance sheet financing arrangements or relationships with unconsolidated special purpose entities.

CODE OF ETHICS

The Company has adopted a Code of Ethics, effective April 5, 2006, which applies to all employees, including directors and executive officers, including principal executive, financial and accounting officers, and persons performing similar functions. The Code of Ethics covers areas of professional and business conduct, and is intended to promote honest and ethical behavior, including fair dealing and the ethical handling of conflicts of interest, support full, fair, accurate, and timely disclosure in reports and documents filed with, or submitted to, the SEC and other governmental authorities, and in its other public communications; deter wrongdoing; encourage compliance with applicable laws, rules, and regulations; and to ensure the protection of legitimate business interests. The Company also encourages directors, officers, employees and consultants to promptly report any violations of the Code of Ethics. All amendments to the Code of Ethics, and all waivers of the Code of Ethics with respect to any of the employees, officers or directors covered by it, will be posted on the Company's website, submitted on Form 6-K and provided in print to any shareholder who requests them. A copy of the Code of Ethics is available on the Company's website, www.polymetmining.com. A copy of the Code of Ethics is also available to shareholders by contacting the Corporate Secretary at PolyMet Mining Corp., First Canadian Place, 100 King Street West, Suite 5700, Toronto, Ontario M5X 1C7 or by e-mail at info@polymetmining.com.

CONTRACTUAL OBLIGATIONS

The following table lists information as at January 31, 2017 with respect to known contractual obligations and environmental rehabilitation provision:

Contractual Obligations (in 000's)	Carrying Value	Contractual Cash Flows	Less than 1 year	1 – 3 years	3 – 5 years	More than 5 years
Accounts payable and accrued liabilities	\$ 3,188	\$ 3,188	\$ 3,188	\$ -	\$ -	\$ -
Convertible debt	42,154	51,099	-	51,099		
Non-convertible debt	65,752	79,766	-	79,766		
Environmental rehabilitation provision	70,626	79,249	781	6,592	20,521	51,355
Firm Commitments	-	1,127	908	219	-	-
Total	\$ 181,720	\$ 214,429	\$ 4,877	\$ 137,676	\$ 20,521	\$ 51,355

NOTICES PURSUANT TO REGULATION BTR

There were no notices required by Rule 104 of Regulation BTR that the Registrant sent during the year ended January 31, 2017 concerning any equity security subject to a blackout period under Rule 101 of Regulation BTR.

NYSE MKT CORPORATE GOVERNANCE

The Company's common shares are listed on the NYSE MKT under the trading symbol "PLM". Section 110 of the NYSE MKT Company Guide permits the NYSE MKT to consider the laws, customs and practices of foreign issuers in relaxing certain NYSE MKT listing criteria, and to grant exemptions from NYSE MKT listing criteria based on these considerations. A description of the significant ways in which the Corporation's governance practices differ from those followed by domestic companies pursuant to NYSE MKT standards is as follows:

Shareholder Approval Requirements: NYSE MKT requires a listed company to obtain the approval of its shareholders for certain types of securities issuances, including the issuance of common shares of the Company to directors of the Company in a private placement transaction at a price per Unit that is less than the market value of the common shares of the Company on the date of the definitive agreement of the offering. The Company sought and received a waiver from NYSE MKT's shareholder approval requirements in circumstances where the securities issuance does not trigger such a requirement under the rules of the TSX.

In addition, the Company may from time-to-time seek relief from NYSE MKT corporate governance requirements on specific transactions under Section 110 of the NYSE MKT Company Guide by providing written certification from independent local counsel that the non-complying practice is not prohibited by the Company's home-country law, in which case, the Company shall make the disclosure of such transactions available on its website at www.polymetmining.com. Information contained on the website of the Company is not part of this Annual Report on Form 40-F.

MINE SAFETY DISCLOSURE

Pursuant to Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act"), issuers that are operators, or that have a subsidiary that is an operator, of a coal or other mine in the United States are required to disclose in their periodic reports filed with the SEC information regarding specified health and safety violations, orders and citations, related assessments and legal actions, and mining-related fatalities under the regulation of the Federal Mine Safety and Health Administration ("MSHA") under the Federal Mine Safety and Health Act of 1977 ("Mine Act"). This required information is filed as [Exhibit 99.4](#) to this Annual Report filed on Form 40-F.

DISCLOSURE PURSUANT TO SECTION 219 OF THE IRAN THREAT REDUCTION & SYRIA HUMAN RIGHTS ACT

Section 219 of the Iran Threat Reduction and Syria Human Rights Act of 2012 ("ITRA"), effective August 10, 2012, added a new subsection (r) to Section 13 of the Exchange Act, which requires issuers that file periodic reports with the SEC to disclose in their annual and quarterly reports whether, during the reporting period, they or any of their "affiliates" (as defined in Rule 12b-2 under the Exchange Act) have knowingly engaged in specified activities or transactions relating to Iran, including activities not prohibited by U.S. law and conducted outside the U.S. by non-U.S. affiliates in compliance with applicable laws. Issuers must also file a notice with the SEC if any disclosable activity under ITRA has been included in an annual or quarterly report.

Because the SEC defines the term "affiliate" broadly, the Company's largest shareholder may be considered an affiliate of the Company despite the fact that the Company has no control over its largest shareholder's actions or the actions of its affiliates. As such, pursuant to Section 13(r)(1)(D)(iii) of the Exchange Act, the Company hereby discloses the following information provided by its largest shareholder regarding transactions or dealings with entities controlled by the Government of Iran (the "GOI"):

During the period from February 1, 2016 until January 31, 2017, a non-U.S. affiliate of the largest shareholder of the Company (the "non-U.S. Shareholder Affiliate") entered into sales and purchase contracts for agricultural products, metals, minerals, and energy products with, or for delivery to or from Iranian entities wholly or majority owned by the GOI. The non-U.S. Shareholder Affiliate performed its obligations under the contracts in compliance with applicable sanctions laws and, where required, with the necessary prior approvals by the relevant governmental authorities.

The gross revenue of the non-U.S. Shareholder Affiliate related to these contracts did not exceed the value of US \$1.124 billion for the twelve months ended January 31, 2017.

The non-U.S. Shareholder Affiliate does not allocate net profit on a country-by-country or activity-by-activity basis, but estimates that the net profit attributable to the contracts would not exceed a small fraction of the gross

revenue from such contracts. It is not possible to determine accurately the precise net profit attributable to such contracts.

The contracts disclosed above do not violate applicable sanctions laws administered by the U.S. Department of the Treasury, Office of Foreign Assets Control, and are not the subject of any enforcement action under Iran sanction laws.

In compliance with applicable economic sanctions and in conformity with U.S. secondary sanctions, the non-U.S. Shareholder Affiliate expects to continue to engage in Iran related activities in the future.

Neither the Company nor any of its subsidiaries (i) engaged in any transactions or activities requiring disclosure under ITRA nor (ii) were involved in the transactions described in this section. As of the date of this report, the Company is not aware of any other activity, transaction or dealing by it or any of its affiliates during the fiscal year ended January 31, 2017 that requires disclosure in this report under Section 13(r) of the Exchange Act.

UNDERTAKING

The Company undertakes to make available, in person or by telephone, representatives to respond to inquiries made by the Commission staff, and to furnish promptly, when requested to do so by the Commission staff, information relating to: the securities registered pursuant to Form 40-F; the securities in relation to which the obligation to file an Annual Report on Form 40-F arises; or transactions in said securities.

CONSENT TO SERVICE OF PROCESS

The Registrant has filed a Form F-X with respect to the class of securities in relation to which the obligation to file this Annual Report on Form 40-F arises. Any change to the name or address of the agent for service of process of the Registrant will be communicated promptly to the SEC by amendment to Form F-X referencing the file number of the Registrant.

WEBSITE INFORMATION

Notwithstanding any reference to PolyMet's website or other websites in the documents attached as Exhibits hereto, the information contained in PolyMet's website or any other site in the documents attached as Exhibits hereto, or referred to in PolyMet's website, is not a part of this Annual Report on Form 40-F and, therefore, is not filed with the SEC.

EXHIBIT INDEX

The following exhibits have been filed as part of this Annual Report on Form 40-F:

EXHIBITS

- 99.1 Annual Information Form for the year ended January 31, 2017
- 99.2 Consolidated Financial Statements as at and for the years ended January 31, 2017 and 2016
- 99.3 Management's Discussion and Analysis for the year ended January 31, 2017
- 99.4 Mine Safety Disclosure

CERTIFICATIONS

- 99.5 Certification of Principal Executive Officer pursuant to 17 C.F.R. 240.13a-14(a)
- 99.6 Certification of Principal Financial Officer pursuant to 17 C.F.R. 240.13a-14(a)
- 99.7 Certification of Principal Executive Officer and Principal Financial Officer pursuant to 17 C.F.R. 240.13a-14(b) and 18 U.S.C. 1350.

CONSENTS

- 99.8 Consent of Independent Auditor
- 99.9 Consent of Technical Report Author – Pierre Desautels
- 99.10 Consent of Technical Report Author – Gordon Zurowski
- 99.11 Consent of Technical Report Author – Karl Everett
- 99.12 Consent of Technical Report Author – David Dreisinger
- 99.13 Consent of Technical Report Author – William Murray

SIGNATURES

Pursuant to the requirements of the Exchange Act, the Registrant certifies that it meets all of the requirements for filing on Form 40-F and has duly caused this Annual Report to be signed on its behalf by the undersigned, thereto duly authorized.

Dated: April 20, 2017

POLYMET MINING CORP.

/s/ Jonathan Cherry

Name: Jonathan Cherry

Title: Chief Executive Officer

Exhibit 99.1 – Annual Information Form for the year ended Jan. 31, 2017



**ANNUAL INFORMATION FORM
FOR THE FISCAL YEAR ENDED JANUARY 31, 2017**

of

POLYMET MINING CORP.
(the "Company" or "PolyMet")

April 20, 2017

Suite 5700 – 100 King Street West,
Toronto, Ontario
M5X 1C7

Tel: 416-915-4149
Fax: 416-915-4189
Website: www.polymetmining.com

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1. Introductory Notes

In this Annual Information Form ("AIF") "PolyMet" or the "Company" refers to PolyMet Mining Corp. and its subsidiaries (unless the context otherwise dictates). All information contained herein is as of April 20, 2017 unless otherwise indicated, other than certain financial information which is as of January 31, 2017, being the date of the Company's most recently audited fiscal year end. All dollar amounts in this AIF are expressed in United States ("U.S.") dollars, the functional and reporting currency of the Company, unless otherwise indicated.

Additional information related to the Company is available for view on the System for Electronic Document Analysis and Retrieval ("SEDAR") and EDGAR at www.sedar.com and at www.sec.gov, respectively, and at the Company's website www.polymetmining.com.

Cautionary Statement Regarding Forward-Looking Statements

This AIF contains statements that constitute "forward-looking statements" within the meaning of Section 21E of the United States Securities Exchange Act of 1934, as amended (the "Exchange Act") and forward-looking information within the meaning of applicable Canadian securities laws (together, "forward-looking statements"). These statements appear in a number of different places in this AIF and can frequently, but not always, be identified by words such as "expects", "anticipates", "believes", "intends", "estimates", "potential", "possible", "projects", "plans", and similar expressions, or statements that events, conditions or results "will", "may", "could", or "should" occur or be achieved or their negatives or other comparable words. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause actual results, performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. Forward-looking statements include statements regarding the outlook for future operations, plans and timing for exploration and development programs, statements about future market conditions, supply and demand conditions, forecasts of future costs and expenditures, the outcome of legal proceedings, and other expectations, intentions and plans that are not historical fact. Actual results may differ materially from those in the forward-looking statements due to risks facing the Company or due to actual facts differing from the assumptions underlying the predictions.

The forward-looking statements contained in this AIF are based on assumptions, which include, but are not limited to:

- Obtaining permits on a timely basis;
- Raising the funds necessary to develop the NorthMet Project and continue operations;
- Execution of prospective business plans; and
- Complying with applicable governmental regulations and standards.

Such forward-looking statements are subject to risks, uncertainties and other factors, including those listed or incorporated by reference under "Risk Factors" in Item 5. These risks, uncertainties and other factors include, but are not limited to:

- Changes in general economic and business conditions, including changes in interest rates and exchange rates;
- Changes in the resource market including prices of natural resources, costs associated with mineral exploration and development, and other economic conditions;
- Natural phenomena;
- Actions by governments and authorities including changes in government regulation;
- Uncertainties associated with legal proceedings; and
- Other factors, many of which are beyond the Company's control.

The Company's forward-looking statements are based on the beliefs, expectations and opinions of management on the date the statements are made and should not be relied on as representing the Company's views on any subsequent date. While the Company anticipates that subsequent events may

cause its views to change, the Company specifically disclaims any intention or any obligation to update forward-looking statements if circumstances or management's beliefs, expectations or opinions should change, except as required by applicable law. For the reasons set forth above, investors should not place undue reliance on forward-looking statements.

Cautionary Note to U.S. Investors – Information Concerning Preparation of Resource Estimates

This AIF has been prepared in accordance with the requirements of the securities laws in effect in Canada, which differ from the requirements of United States securities laws. The terms “mineral reserve”, “proven mineral reserve” and “probable mineral reserve” are Canadian mining terms as defined in accordance with Canadian National Instrument 43-101 – Standards of Disclosure for Mineral Projects (“NI 43-101”) and the Canadian Institute of Mining, Metallurgy and Petroleum (the “CIM”) – CIM Definition Standards on Mineral Resources and Mineral Reserves, adopted by the CIM Council, as amended. These definitions differ materially from the definitions in the United States Securities and Exchange Commission’s (“SEC”) Industry Guide 7 under the United States Securities Act of 1933, as amended. Under SEC Industry Guide 7 standards, mineralization cannot be classified as a “reserve” unless the determination has been made that the mineralization could be economically and legally extracted at the time the reserve determination is made. As applied under SEC Industry Guide 7, a “final” or “bankable” feasibility study is required to report reserves, the three-year historical average price is used in any reserve or cash flow analysis to designate reserves, and the primary environmental analysis or report must be filed with the appropriate governmental authority.

In addition, the terms “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are defined in and required to be disclosed by NI 43-101; however, these terms are not defined terms under SEC Industry Guide 7 and are normally not permitted to be used in reports and registration statements filed with the SEC. Investors are cautioned not to assume that all or any part of a mineral deposit in these categories will ever be converted into SEC Industry Guide 7 reserves. “Inferred mineral resources” have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, except in rare cases. Investors are cautioned not to assume that all or any part of an inferred mineral resource exists or is economically or legally mineable. Disclosure of “contained metal” in a resource is permitted disclosure under Canadian regulations; however, the SEC normally only permits issuers to report mineralization that does not constitute “reserves” by SEC Industry Guide 7 standards as in place tonnage and grade without reference to unit measures.

Accordingly, information concerning mineral deposits contained in this AIF may not be comparable to similar information made public by U.S. companies subject to the reporting and disclosure requirements under the United States federal securities laws and the rules and regulations thereunder, including SEC Industry Guide 7.

Qualified Person Under NI 43-101

Except where specifically indicated otherwise, the disclosure in this AIF of scientific and technical information regarding PolyMet’s mineral properties has been reviewed and approved by the following persons who are Qualified Persons as defined by NI 43-101:

- Pierre Desautels, P. Geo., of AGP Mining Consultants Inc., of Barrie, ON;
- Gordon Zurowski, P. Eng., of AGP Mining Consultants Inc., of Barrie, ON;
- Karl Everett, P. E., of Foth Infrastructure & Environment LLC, of Duluth, MN;
- David Dreisinger, Ph.D., P Eng., of Dreisinger Consulting Inc., of Delta, BC; and
- William Murray, P. Eng., of Optimum Project Services Ltd., of Richmond, BC.

2. Corporate Structure

PolyMet Mining Corp. was incorporated under the *Business Corporations Act* (British Columbia) on March 4, 1981 under the name Fleck Resources Ltd. and changed its name to PolyMet Mining Corp. on June 10, 1998. Through its 100%-owned subsidiary, Poly Met Mining, Inc. (“PolyMet US” and, together with PolyMet Mining Corp., “PolyMet” or the “Company”) the Company is engaged in the exploration and development of natural resource properties. PolyMet US was incorporated in Minnesota, United States on February 16, 1989.

The Company’s corporate office is located at 100 King Street West, Suite 5700, Toronto, ON M5X 1C7, Canada. The principal executive office is located at 444 Cedar Street, Suite 2060, St. Paul, MN 55101, USA. The registered and records office is located at 2500 – 700 West Georgia Street, Vancouver, B.C. V7Y 1B3, Canada. The operational headquarters are located at 6500 County Road 666, Hoyt Lakes, MN 55750-0475, USA.

3. General Development of the Business

Significant History of the Company

PolyMet’s primary mineral property and principal focus is the commercial development of its NorthMet Project (“NorthMet” or “Project”), a polymetallic project in northeastern Minnesota, United States of America, which hosts copper, nickel, cobalt and platinum group metal mineralization.

The NorthMet ore body is at the western end of a series of known copper-nickel-precious metals deposits in the Duluth Complex. Completion of the Definitive Feasibility Study (“DFS”) in 2006 established proven and probable reserves, positioning NorthMet as the most advanced of the four advanced projects in the Duluth Complex: namely, from west to east, NorthMet, Mesaba, Serpentine, and Maturi.

PolyMet acquired the Erie Plant, associated infrastructure, and approximately 12,400 acres (19.4 square miles) of surface rights from Cliffs Erie LLC, a subsidiary of Cliffs Natural Resources Inc. (together “Cliffs”). The plant is located about six miles west of the NorthMet ore body and comprises a 100,000 ton-per-day crushing and milling facility, a railroad and railroad access rights connecting the Erie Plant to the NorthMet ore body, tailings storage facilities, 120 railcars, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site, and approximately 6,000 acres of land to the east and west of the existing tailings storage facilities.

In 2008, PolyMet and Glencore AG, a wholly owned subsidiary of Glencore plc (together “Glencore”), entered into a strategic partnership in which Glencore will market PolyMet’s products, provides technical and commercial support, and now owns 29.1% of PolyMet’s issued shares, holds \$25 million initial principal senior secured convertible debentures, and holds \$55 million initial principal senior secured non-convertible debentures.

In November 2015, the Minnesota Department of Natural Resources (“MDNR”), the U.S. Army Corps of Engineers (“USACE”), and the United States Forrest Service (“USFS”) published the NorthMet Final Environmental Impact Statement (“EIS”) as required under the Minnesota Environmental Policy Act (“MEPA”) and the National Environmental Policy Act (“NEPA”). The U.S. Environmental Protection Agency (“EPA”) was a Cooperating Agency in preparation of the EIS. As part of the decade-long MEPA and NEPA process there were several extensive periods for public review and comment prior to publication of the Final EIS. The EIS included a proposed land exchange between the USFS and the Company.

Since March 2016, when the MDNR issued its decision that the Final EIS met the requirements under MEPA, PolyMet has submitted the permit applications required to construct and operate the NorthMet Project. The state is focused on reviewing those applications and preparing draft permits.

On January 9, 2017, the USFS issued its Final Record of Decision authorizing the land exchange.

Three Year History

The Company's focus has been on completion of the environmental review by state and federal agencies, preparation and submission of permit applications, and supporting the agencies in their review of those permit application leading to their preparation of draft permits for public review.

Major highlights include:

- March 2014 – EPA review of the supplemental draft EIS (“SDEIS”), including an EC-2 rating which is the highest rating for a proposed mining project, so far as the Company is aware;
- February 2015 – \$30 million senior secured non-convertible loan facility from Glencore;
- November 2015 – publication of the Final EIS and USFS Draft Record of Decision (“ROD”) on the proposed land exchange;
- January 2016 – additional \$11 million senior secured non-convertible loan facility from Glencore;
- March 2016 – Minnesota determined that the Final EIS addresses the objectives defined in the EIS scoping review, meets procedural requirements and responds appropriately to public comments. The 30-day period allowed by law to challenge the state’s decision passed without any legal challenge being filed. The Final EIS demonstrates that the NorthMet Project can be constructed and operated in compliance with environmental and human health standards;
- June 2016 – additional \$14 million senior secured non-convertible loan facility from Glencore;
- July 2016 – the Company submitted applications for water-related permits required to construct and operate NorthMet. The Eastern Region Regional Office of the USFS issued its response to comments on the Draft ROD for the land exchange and instructed the Superior National Forest to proceed with completing the Final ROD. The Company also repaid the \$4.0 million initial principal loan from the Iron Range Resources and Rehabilitation Board (“IRRRB”);
- August 2016 – the Company renewed its request for Water Quality Certification under Section 401 of the Clean Water Act and submitted the air quality permit application required to construct and operate NorthMet;
- October 2016 – the Company closed the initial tranche of a private placement of 25,963,167 units for gross proceeds of \$19.472 million and a second tranche of a private placement of 14,111,251 units for gross proceeds of \$10.583 million pursuant to Glencore’s right to maintain its pro rata ownership;
- November 2016 – the Company submitted the permit to mine application required to construct and operate NorthMet;
- December 2016 – the Company received AEMA’s Environmental Excellence Award for its responsible development of the NorthMet Project. The Memorandum of Agreement of the Section 106 Consultation under the National Historic Preservation Act was signed by the statutory parties; and
- January 2017 – the USFS issued its Final ROD authorizing the land exchange.

4. Description of the Business

The Company's primary mineral property is the NorthMet Project, which comprises the NorthMet copper-nickel-precious metals ore body and the nearby Erie Plant facilities and associated infrastructure.

As at January 31, 2017 PolyMet had 21 full-time employees, with 1 located in its Toronto office, 12 located in its Hoyt Lakes office, and 8 located in its St. Paul office. None of the Company's employees is covered by a collective bargaining agreement. The Company believes that its relations with employees are good.

Asset Acquisitions

In November 2005, the Company acquired the Erie Plant, which is located approximately six miles west of PolyMet's NorthMet deposit. The plant was managed by Cliffs for many years and was acquired by Cliffs from LTV Steel Mining Company ("LTV") after LTV's bankruptcy, at which time the plant was shut down with a view to a potential restart. The facility includes crushing and milling equipment, comprehensive spare parts, plant site buildings, real estate, tailings storage facilities and mine workshops, as well as access to extensive mining infrastructure including roads, rail, water, and power.

PolyMet plans to refurbish, reactivate and, as appropriate, rebuild the crushing, concentrating and tailings storage facilities at the Erie Plant to produce concentrates containing copper, nickel, cobalt and precious metals. Once it has established commercial operations, the Company may install an autoclave to upgrade the nickel concentrates to produce a nickel-cobalt hydroxide and a precious metals precipitate. The autoclave circuit has been included as an option in the Final EIS.

In December 2006, the Company acquired from Cliffs, property and associated rights sufficient to provide it with a railroad connection linking the mine development site and the Erie Plant. The transaction also included 120 railcars, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site and an additional 6,000 acres of land to the east and west of the existing tailings storage facilities.

PolyMet indemnified Cliffs for reclamation and remediation associated with the property under both transactions. In April 2010, Cliffs entered into a consent decree with the Minnesota Pollution Control Agency ("MPCA") regarding short-term and long-term environmental mitigation. Field study activities were completed in 2010 and 2011 and short-term mitigations approved by the MPCA were initiated in 2011. In April 2012, long-term mitigation plans were submitted to the MPCA and, in October 2012, the MPCA approved plans for pilot tests of various treatment options to determine the best course of action.

Feasibility Study, Mineral Resources and Mineral Reserves

With publication of the DFS in September 2006, summarized in a NI 43-101 Technical Report, PolyMet established proven and probable mineral reserves estimated at 181.7 million short tons grading 0.31% copper, 0.09% nickel, 0.01% cobalt, 77 parts per billion ("ppb") platinum, 279 ppb palladium, and 39 ppb gold.

In September 2007, PolyMet reported an expansion in these proven and probable mineral reserves to an estimated 274.7 million short tons grading 0.28% copper, 0.08% nickel, 0.01% cobalt, 75 ppb platinum, 260 ppb palladium, and 37 ppb gold. These mineral reserves lie within measured and indicated mineral resources of an estimated 694.2 million short tons grading 0.27% copper, 0.08% nickel, 0.01% cobalt, 68 ppb platinum, 239 ppb palladium, and 35 ppb gold. The reserves are based on copper at \$1.25 per pound, nickel at \$5.60 per pound, cobalt at \$15.25 per pound, palladium at \$210 per ounce, platinum at \$800 per ounce, and gold at \$400 per ounce.

From 2008 to 2013, PolyMet incorporated numerous project improvements that were reflected in the draft and supplemental draft EIS's published in 2009 and 2013, respectively. The changes included Phase I production of separate copper and nickel concentrates with Phase II installation of an autoclave to upgrade the nickel concentrate as well as numerous modifications that will result in reduced environmental impacts including: reductions in sulfur dioxide, mercury and greenhouse gas emissions at

the plant site, capture of groundwater and surface seepage with the construction of an in ground containment system to the north and west of the existing tailings basin and all contact water discharged from the NorthMet Project will be treated. An Updated Technical Report under NI 43-101, dated January 14, 2013, describing these changes is filed on SEDAR and EDGAR.

PolyMet plans to complete a definitive cost estimate and Project update prior to commencement of construction. The Project update will incorporate numerous process and project improvements, as well as environmental controls described in the Final EIS. The Project update will also include detailed capital and operating costs reflecting the advanced stage of engineering and design.

Environmental Review and Permitting

PolyMet commenced the environmental review and permitting process in 2004. In 2005, the MDNR published its Environmental Assessment Worksheet Decision Document establishing the MDNR as the lead state agency and the USACE as the lead federal agency for preparation of an EIS for NorthMet.

In November 2009, the Co-lead Agencies published the NorthMet draft EIS, which marked the start of a period for public review and comment including two public meetings.

In June 2010, the Co-lead Agencies announced that they intended to complete the EIS process by preparing a supplemental draft EIS incorporating a proposed land exchange with the USFS and expanding government agency cooperation. The USFS joined the USACE as a federal Co-lead Agency and in June 2011, the EPA joined as a Cooperating Agency.

In December 2013, the Co-lead Agencies published the supplemental draft EIS, which started a new period for public review and comment, including three public meetings, which ended in March 2014. The EPA issued comments on the supplemental draft EIS including an EC-2 (“Environmental Concerns”) rating, which is the highest rating for a proposed mining project, so far as the Company is aware. The highest rating LO (“Lack of Objections”) is typically applied to non-industrial projects such as the Upper Mississippi National Wildlife and Fish Refuge Comprehensive Conservation Plan Implementation. The EC-2 rating is the same as received by some other notable Minnesota projects including the Central Corridor Light Rail Project in the Twin Cities and the St. Croix River Crossing which have been built or are in the process of being constructed.

On November 6, 2015, the Co-lead Agencies published the Final EIS, which incorporated responses to comments on the draft and supplemental draft EIS’s.

USFS Land Exchange

On November 17, 2015, the USFS issued its Draft ROD on the proposed land exchange which concluded that the land exchange was in the public interest and meets the desired conditions in the Superior National Forest Land and Resource Management Plan. Publication of the Draft ROD started an objection process during which the public could comment on the Final EIS or the Draft ROD.

On January 9, 2017, after responding in writing to more than 22,500 individual objections, and supported by a Memorandum of Agreement under Section 106 of the National Historic Preservation Act, the USFS issued its Final ROD authorizing the land exchange.

The Final ROD cites several benefits of the land exchange, including:

- A 505-acre net increase of wetlands to the federal estate;
- A net increase of 94 acres with public water frontage available for public and tribal use;
- A 40-acre net gain in USFS lands;
- Improved management effectiveness by exchanging lands that have no public overland access with lands that do have access;
- Reduction of 33 miles in property boundaries to be managed by the USFS;
- Federal cost savings from the elimination of two easements and their associated administrative costs; and

- Conveyance of federal lands already adjacent to intensively developed private lands for other inholdings in the Superior National Forest.

The Final ROD states that the land exchange would eliminate a fundamental conflict between the rights that PolyMet believes it has as a result of its control of the mineral rights and the USFS position on those rights which otherwise could result in litigation that has no certain outcome and could set a judicial precedent regarding other lands acquired in the same deed under the Weeks Act.

On January 10, 2017, the Center for Biological Diversity and Earthworks gave notice of intent to sue the USFS under the Endangered Species Act (see below.)

On January 30, 2017, WaterLegacy filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had not properly appraised the land being transferred to the Company as part of the land exchange and, on February 23, 2017, WaterLegacy filed a motion for a preliminary injunction to stop the land exchange from proceeding. PolyMet applied for and was granted intervenor-defendant status and is working with the USFS and the U.S. Department of Justice to defend the WaterLegacy challenge.

On March 10, 2017 PolyMet filed motion to dismiss the WaterLegacy suit for lack of standing. The defendants filed their responses to WaterLegacy's preliminary injunction motion, and WaterLegacy filed its response to PolyMet's motion to dismiss the case on March 30, 2017. The hearing on these motions is scheduled for April 28, 2017.

On March 27, 2017, the Minnesota Center for Environmental Advocacy, the Center for Biological Diversity, and the W.J. McCabe Chapter of the Izaak Walton League of America filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had not properly appraised the land being transferred to the Company as part of the land exchange.

On March 27, 2017, Save Our Sky Blue Waters, Save Lake Superior Association, and the Sierra Club North Star Chapter filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had violated the Weeks Act and NEPA.

On March 28, 2017, the Center for Biological Diversity, Earthworks, and Save Our Sky Blue Waters filed suit in the U.S. District Court, District of Minnesota claiming that the 2016 NorthMet Biological Opinion violated the Endangered Species Act and the Final ROD's reliance on the Biological Opinion was arbitrary and unlawful.

PolyMet is confident that the environmental review process, including the land exchange, was thorough, thoughtful and in compliance with the law and that the USFS properly evaluated the proposed land exchange in the Final ROD.

State Permits

On March 3, 2016, the MDNR issued its decision that the Final EIS addresses the objectives defined in the EIS scoping review, meets procedural requirements, and responds appropriately to public comments. The state's decision also laid the foundation for decisions on permits to construct and operate the NorthMet Project.

After consultation with the MDNR and the MPCA, PolyMet submitted the various state permit applications that will be required to construct and operate the Project, with the water-related permit applications submitted on July 11, 2016, air-related permit application on August 24, 2016, and the permit to mine on November 3, 2016.

The permitting process is managed by the regulatory agencies and, therefore, timelines are not under PolyMet's control. Under state guidelines, decisions on draft state permits should be within 150 days of the applications being accepted, although those guidelines recognize that complex permit applications could take longer.

The key permits and approvals to be received are:

U.S. Army Corps of Engineers

- Section 404 Individual Permit for Impacted Wetlands

Minnesota Department of Natural Resources

- Permit to Mine
- Water Appropriations Permit
- Dam Safety Permit
- Wetland Replacement Plan

Minnesota Pollution Control Agency

- Section 401 Certification (required before the USACE can issue its ROD and Section 404 Permit)
- National Pollutant Discharge Elimination System (NPDES) Permit
- State Disposal System (SDS) Permit
- Air Emissions Permit

Goals and Objectives for the Next Twelve Months

The environmental review and permitting process is managed by the regulatory agencies and, therefore, timelines are not within PolyMet's control. Given these circumstances, PolyMet's objectives include:

- Transfer of title to the surface rights over and around the NorthMet mineral rights to PolyMet;
- Decision by the state on 401 Water Quality Certification and USACE Final ROD and 404 wetlands permit under Clean Water Act;
- Publication of draft state permits (Permit to Mine, air, water, dam safety and water appropriation permits) for public comment;
- Decisions on state permit issuances;
- Completion of definitive cost estimate and Project update following permits;
- Completion of project implementation plan;
- Repayment, restructuring and/or conversion of Glencore loans; and
- Completion of construction finance plan including commitment of debt prior to the issuance of permits, subject to typical conditions precedent such as receipt of key permits.

Upon completion of the land exchange, PolyMet will own surface rights to approximately 19,050 acres or 29.8 square miles of contiguous surface rights stretching from west of the Erie Plant to east of the proposed East Pit at NorthMet.

PolyMet expects to spend approximately \$30 million during the year ended January 31, 2018. The primary focus continues to be completion of the permitting process. Other areas of focus include engineering and updated cost estimates that will be reported in an Updated Technical Report under National Instrument 43-101, maintaining existing infrastructure and financing.

Prior to receipt of permits, the Company will seek to secure construction financing that would be available upon receipt of key permits, with construction and ramp-up to commercial production anticipated to take approximately 24 months from receipt of key permits. The Company is in discussion with commercial banks and other financial institutions regarding construction finance.

History

The NorthMet ore body is located immediately south of the eastern end of the historic Mesabi Iron Range in northeastern Minnesota. Mining in the Iron Range dates back to the 1880's when high grade iron ore known as hematite was first mined commercially. During the 1940's and 1950's, with reserves of hematite dwindling, the iron industry began to focus on taconite, a lower-grade iron ore.

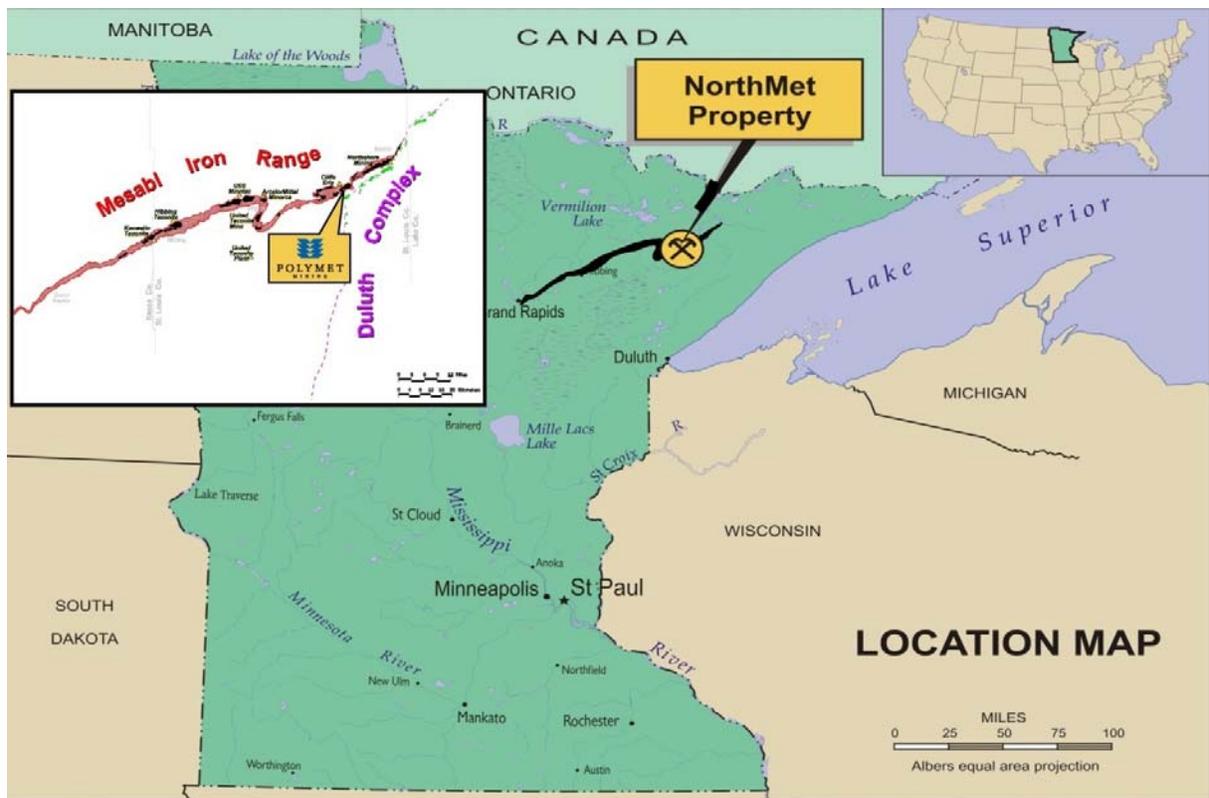
In the 1940's, copper and nickel were discovered nearby, following which, in the 1960's, United States Steel Corporation ("US Steel") drilled what is the NorthMet ore body.

In 1987, the Minnesota Natural Resources Research Institute (“NRRI”) published data suggesting the possibility of a large resource of PGMs in the base of the Duluth Complex. In 1989, PolyMet acquired a perpetually renewable mining lease over NorthMet from US Steel and commenced an investigation into the potential for mining and recovery of copper, nickel, and PGMs.

PolyMet commissioned a pre-feasibility study on the Project that was completed in 2001. The study found the economics of the NorthMet Project were unacceptably low owing to the capital cost of building a new plant facility combined with low metal prices prevailing at that time.

In March 2003, a new management team took over and commenced a detailed review of the Project recognizing that the Erie Plant and associated infrastructure had the potential to substantially reduce the capital cost and to simplify the permitting process.

NorthMet Project Location Map



Location / Access / Climate

The NorthMet Project covers a total of approximately 16,700 acres or 25.9 square miles comprising two areas: the NorthMet mine site totaling approximately 4,300 acres or 6.5 square miles of leased mineral rights and the Erie Plant site totaling approximately 12,400 acres or 19.4 square miles of freehold land located approximately six miles west of the mine site. The property is located in St. Louis County in the Mesabi Iron Range mining district about 60 miles north of Duluth, Minnesota. NorthMet is easily accessible via state and county roads. The surfaced County Highway 666 links the plant to the town of Hoyt Lakes, itself approximately 25 miles east of Virginia, Minnesota which is located on State Highway 53. The mine site is accessible by an all-season gravel road from the plant site and a private railroad crosses the property immediately south of the deposit and runs to the plant site. The plant site is serviced by commercial railroad which connects into the US national and Trans-Canadian railroad systems, as well as a private railroad providing access to port facilities located on Lake Superior. High-

voltage power lines owned by Minnesota Power, with whom PolyMet has already secured a 10 year power supply contract, supply the plant site and there is ready access to industrial electric power at the mine site.

The northern Minnesota climate is continental, characterized by wide variations in temperature. The temperature in the nearby town of Babbitt averages -14°C (7°F) in January and 19°C (66°F) in July. The average annual precipitation is 28 inches with approximately 30% during the months from November to April and 70% from May through October.

Claims and ownership

(i) NorthMet Leases

Pursuant to an agreement dated January 4, 1989, subsequently amended and assigned, the Company leases certain property in St. Louis County, Minnesota from RGGGS Land & Minerals Ltd., L.P. The initial term of the perpetually renewable lease was 20 years and called for total lease payments of \$1.475 million. The Company can, at its option, terminate the lease at any time by giving written notice to the lessor not less than 90 days prior to the effective termination date or can indefinitely extend the term by continuing to make \$150,000 annual lease payments on each successive anniversary date. All lease payments have been paid to January 31, 2017. The next payment is due in January 2018.

Pursuant to an agreement effective December 1, 2008, the Company leases certain property in St. Louis County, Minnesota from LMC Minerals. The initial term of the renewable lease is 20 years and calls for minimum annual lease payments of \$3,000 for the first four years after which the minimum annual lease payment increased to \$30,000. The initial term may be extended for up to four additional five-year periods on the same terms. All lease payments have been paid to January 31, 2017. The next payment is due in November 2017.

The lease payments are considered advance royalty payments and shall be deducted from future production royalties payable to the lessor, which range from 3% to 5% based on the net smelter return per ton received by the Company. The Company's recovery of \$2.675 million in advance royalty payments to RGGGS Land & Minerals Ltd., L.P. is subject to the lessor receiving an amount not less than the amount of the annual lease payment due for that year. The Company's recovery of \$0.159 million in advance royalty payments to LMC Minerals is subject to the lessor receiving an amount not less than the amount of the annual lease payment due for that year.

Pursuant to the leases, PolyMet holds mineral rights and the right to mine upon receiving the required permits. PolyMet has proposed to acquire surface rights through a land exchange with the USFS authorized by the USFS on January 9, 2017.

(ii) The Erie Plant

The Erie Plant was built by a consortium of steel companies in the mid-1950's and processed low grade iron ore known as taconite that was transported to the facility by railroad from nearby mines. In the mid-1980's, the consortium was consolidated into a single owner – LTV Steel. Pickands, Mather and Company and its successor Cliffs, operated the plant on behalf of the owners, processing approximately 100,000 tons per day of taconite ore. The plant was shut down in 2001 after LTV Steel filed for bankruptcy protection. Since then it has been maintained initially by Cliffs, and since November 2005, by the Company. The plant did not operate during the 12 months ended January 31, 2017.

The plant is located approximately six miles west of the NorthMet ore body, about five miles north-northwest of the town of Hoyt Lakes, itself located about 25 miles west of Virginia, Minnesota. The plant site covers approximately 12,400 acres, or 19.4 square miles, and is powered by electricity from local power lines. Established plant infrastructure includes a 225 MVA high voltage electrical substation, water supply, roads, tailings basins and rail facilities. PolyMet also acquired a 120-railcar fleet, locomotive fueling and maintenance facilities, water rights and pipelines, and large administrative offices on site.

Until the plant was closed in 2001, Cliffs had undertaken numerous programs to update and modernize control systems. The plant is generally in good physical condition and was operating at or near full capacity prior to its closure. The Company is not yet utilizing the Erie Plant but has examined the plant in detail and has restarted certain pieces of equipment and believe it to be serviceable.

By a Memorandum of Understanding in December 2003 and an option agreement in February 2004, the Company obtained the right to acquire certain property, plant, and equipment located near the NorthMet ore body from Cliffs, including the Erie Plant. As consideration for the option, PolyMet paid \$0.500 million and issued to Cliffs 1,000,000 common shares valued at \$0.229 million to maintain its exclusive rights until June 30, 2006.

In November 2005 PolyMet exercised the option and agreed to pay Cliffs \$1.0 million in cash, 6,200,547 million common shares valued at \$7.564 million, and \$2.4 million plus interest at 4% per annum in quarterly payments of \$250,000 starting in March 2006.

In September 2006, PolyMet entered into an agreement through two separate contracts for deed with Cliffs whereby PolyMet would acquire additional property and associated rights ("Cliffs II") for 2,000,000 common shares valued at \$6.160 million, \$1.0 million in cash and two notes each for \$7.0 million. The Company repaid the two \$7 million notes plus accrued interest in December 2011.

In December 2006, the Company acquired from Cliffs, property and associated rights sufficient to provide it with a railroad connection linking the mine development site and the Erie Plant. The transaction also included 120 railcars, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site and an additional 6,000 acres of land to the east and west of and contiguous to its existing tailings storage facilities.

PolyMet indemnified Cliffs for reclamation and remediation associated with the property under both transactions. Once the NorthMet permit to mine is issued and Cliffs is released from its obligations by certain state agencies, PolyMet will be directly obligated to comply with applicable obligations. Until NorthMet permits are issued, Cliffs remains the "Regulated Party" for such obligations.

In January 2010, Cliffs received a notice of intent to sue pursuant to Section 505 of the Clean Water Act on behalf of the Center for Biological Diversity, Save Lake Superior Association and the Indigenous Environmental Network. Pursuant to the notice, these environmental groups intended to file a lawsuit in Federal court for alleged violations by Cliffs of NPDES permits at three separate locations on the Cliffs Erie property.

In April 2010, Cliffs entered a consent decree with the MPCA under which it is obligated to proceed with both short and long-term mitigation of the alleged violations. As the indemnifying party, PolyMet is working closely with Cliffs on fulfillment of Cliff's obligations under the consent decree. Field study activities were completed in 2010 and 2011 and short-term mitigations approved by the MPCA were initiated in 2011. In April 2012, long-term mitigation plans were submitted to the MPCA and, in October 2012, the MPCA approved plans for pilot tests of various treatment options to determine the best course of action. Although there is substantial uncertainty related to applicable water quality standards, engineering scope, and responsibility for the financial liability, the October 2012 response from the MPCA and subsequent communication amongst MPCA, Cliffs and the Company provide increasing clarification of the potential liability for the long-term mitigation included in PolyMet's environmental rehabilitation provision.

Mineral Resources and Mineral Reserves

Cautionary Note to United States Investors Concerning Estimates of Measured, Indicated and Inferred Resources

This section uses the terms "measured resources", "indicated resources", and "inferred resources". The Company advises United States investors that while these terms are recognized and required by Canadian regulations (under NI-43-101), the SEC does not recognize them. **United States investors are cautioned not to assume that any part or all of the mineral deposits in these categories will ever be converted to reserves.** In addition, "inferred resources" have a great amount of uncertainty as to their existence and economic and legal feasibility. It cannot be assumed that all or any part of an Inferred Mineral Resource will ever be upgraded to a higher category. Under Canadian Rules, estimates of Inferred Mineral Resources may not form the basis of Feasibility or Pre-Feasibility Studies, or economic studies except for a Preliminary Assessment as defined under NI 43-101. **United States investors are cautioned not to assume that part or all of an inferred resource exists, or is economically or legally mineable.**

Important Notes and Assumptions Throughout.

1. The terms Mineral Resources and Reserves as used herein conform to the definitions contained in NI 43-101.
2. Reserves are contained within the envelope of Measured & Indicated Mineral Resource. Mineral Resources are not Reserves and do not have demonstrated economic viability.
3. Mineral Resources and Reserves have been calculated using the following metal prices: Copper - \$1.25/lb, Nickel - \$5.60 per pound, Cobalt - \$15.25/lb, Palladium - \$210 per ounce, Platinum - \$800 per ounce and Gold - \$400 per ounce.
4. Base Case economics for the purpose of the 2006 DFS and associated NI 43-101 Technical Report are the weighted average of the three-year trailing (60%) and two-year forward (40%) market prices using July 31, 2006 as a reference for the three-year trailing price and average forward prices during July 2006 for forward prices. Specifically, these prices are: Copper - \$2.25/lb, Nickel - \$7.80 per pound, Cobalt - \$16.34/lb, Palladium - \$274 per ounce, Platinum - \$1,040 per ounce and Gold - \$540 per ounce.
5. The copper equivalent grade is calculated by multiplying the grade of each metal by the metal price (in the same units) used in reserve and resource modeling (see note 3) and dividing the product by the copper price.
6. The Net Metal Value (NMV) is calculated by summing the product of the grade of each metal, the metal price (in the same units) used in reserve and resource modeling (see note 3), the expected metal recovery, and the expected payment terms.

Within the overall mineralized envelope defined by these exploration programs, the DFS defined measured and indicated mineral resources above the 500-foot elevation (approximately 1,120 feet below surface.) The results of additional drilling through October 2007 resulted in a further increase in measured and indicated mineral resources to 694 million short tons from the 422 million short tons reported in the DFS. The 2008 updated mineral resource estimates are based on the same cut-off grades used in the DFS – namely a Net Metal Value ("NMV") of \$7.42 per ton, reflecting mine planning at a copper price of \$1.25 per pound and a nickel price of \$5.60 per pound – see notes to the following table.

Details of the mineral resources are set out in the following table:

2008 Updated Mineral Resources compared with 2006 DFS Mineral Resources

	Short Tons (million)	Copper (%)	Nickel (%)	Cobalt (%)	Platinum (ppb)	Palladium (ppb)	Gold (ppb)
2008 Updated Resources							
Measured (M)	202.5	0.29	0.08	0.01	71	258	36
Indicated (I)	491.7	0.26	0.08	0.01	66	231	34
Measured & Indicated (M&I)	694.2	0.27	0.08	0.01	68	239	35
Inferred	229.7	0.27	0.08	0.01	73	263	37
2006 DFS Resources							
Measured (M)	133.7	0.30	0.09	0.01	67	269	35
Indicated (I)	288.4	0.27	0.08	0.01	66	231	33
Measured & Indicated (M&I)	422.1	0.28	0.08	0.01	66	243	34
Inferred	120.6	0.25	0.07	0.01	65	217	33

The increase in mineral resources reflects two changes:

- Data from the 2007 drill program which confirmed the continuity of the main mineralized zone and the size of the Magenta Zone, which was extended down dip and to the west; and
- Extension of the overall mineral envelope to approximately 1,620 feet below surface (0' – elevation), compared with the prior cutoff at approximately 1,120 feet below surface (500' – elevation).

The mineral resource estimate update was completed by Pierre Desautels of AGP Mining Consultants in Toronto working closely with PolyMet's chief geologist, at the time, Richard Patelke. A NI 43-101 Technical Report describing this increase is filed on EDGAR and SEDAR.

The 2006/2007 drill program also increased proven and probable mineable reserves at the NorthMet Project. Reserves are constrained to mineable blocks associated with material contained in the measured and indicated resource blocks in the DFS for which detailed mining cost estimates, infrastructure planning, and waste rock stockpile locations were prepared as part of a larger study supporting the DFS. It should be noted that the inferred resources were not included in the DFS or in this interim reserve update.

In conjunction with this increase in reserves, the strip (waste:ore) ratio for the revised mine plan declined to 1.46:1 from 1.66:1.

Details of the mineral reserves are set out in the following table:

2008 Updated Mineral Reserves compared with 2006 DFS Mineral Reserves

	Short Tons (million)	Copper (%)	Nickel (%)	Cobalt (%)	Platinum (ppb)	Palladium (ppb)	Gold (ppb)
2008 Updated Reserves							
Proven	118.1	0.30	0.09	0.008	75	275	38
Probable	156.5	0.27	0.08	0.008	75	248	37
Proven and Probable	274.7	0.28	0.08	0.008	75	260	37
Waste	401.2						
Strip Ratio	1.46						
2006 DFS Reserves							
Proven	80.4	0.32	0.09	0.008	75	292	39
Probable	101.3	0.30	0.08	0.007	79	268	38
Proven and Probable	181.7	0.31	0.08	0.008	77	279	39
Waste	302.3						
Strip Ratio	1.66						

The reserve estimate update was completed by Gordon Zurowski of AGP Mining Consultants (formerly Wardrop) in Toronto working closely with PolyMet's team at the time, Don Hunter and Richard Patelke. Gordon Zurowski and Don Hunter were the Qualified Persons.

While the Company believes that it has completed sufficient exploration work required for the initial phases of production, the Company plans to conduct further in-fill drilling during construction and operations.

Geology and Mineralization

The geology of northeastern Minnesota is predominantly Precambrian in age. Approximately 1.1 billion years ago, mid-continent rifting resulted in mafic volcanism and associated intrusions along a portion of the Midcontinent Rift System, which extends from Ohio, through the Lake Superior region to Kansas. The Midcontinent Rift consists of three parts: thick lava flows, intrusive rock and overlying sedimentary rock. There are three major intrusive complexes: the Coldwell Complex of Ontario, the Mellen Complex along the south shore of Lake Superior and the Duluth Complex along the north shore.

The Duluth Complex hosts the NorthMet mineralization. The Complex extends in an arcuate belt from Duluth to the northeastern tip of Minnesota. Emplacement of the intrusion appears to have been along a system of northeast-trending normal faults that form half-grabens stepping down to the southeast. The magma was intruded as sheet-like bodies along the contact between the Early Proterozoic sedimentary rocks of the Animikie Group and the mafic lava flows of the North Shore Volcanic Group.

The Duluth Complex is represented by the Partridge River intrusion which overlays the Biwabik Iron Formation – the Partridge River intrusion is locally sub-divided into seven troctolitic units:

- Unit 7 and Unit 6 – texturally homogeneous plagioclase-rich troctolite, each with a persistent ultramafic base. Units 6 and 7 are each about 400 ft. thick.
- Unit 5 – coarse grained anorthositic troctolite (300 ft.) grading down to Unit 4.
- Unit 4 – homogeneous augite troctolite and troctolite, with a less persistent ultramafic horizon. The contact between Unit 4 and Unit 5 is difficult to establish and the two units may actually be a single unit.
- Unit 3 – the most easily recognized unit because of its mottled appearance due to olivine oikocrysts. It is fine grained troctolitic anorthosite to anorthositic troctolite. Average thickness is 250 ft. but locally can be up to 500 ft.
- Unit 2 – homogeneous troctolite with abundant ultramafic units and a generally persistent basal ultramafic. This unit shows the most variation in thickness and may be locally absent. Units 2 & 3 are modeled as a single package for resource estimation.
- Unit 1 – the most heterogeneous unit, both texturally and compositionally. Grain size is generally coarser at the top of the unit and fines downward. The unit contains abundant inclusions of the footwall rock and is noritic towards the base. This is the main sulfide mineral bearing unit. Two internal ultramafic layers are generally present. Unit 1 is probably the result of multiple pulses of magma injection. Average thickness is about 450 ft.

The general trend of the sedimentary rocks at the base of the NorthMet deposit is striking east-northeast and dipping to the southeast at about 15-25°; the Partridge River intrusion appears to follow this general trend.

The majority of the rock at NorthMet is unaltered, with minor alteration comprising serpentine, chlorite and magnetite replacing olivine, uralite and biotite replacing pyroxene, and sausserite and sericite replacing plagioclase. Sulfide mineralization does not appear to be directly related to the alteration.

The metals of interest at NorthMet are copper, nickel, cobalt, platinum, palladium, gold, and silver with lesser amounts of rhodium and ruthenium. With the exception of cobalt, the metals are generally positively correlated with copper mineralization. Unit 1 mineralization is found throughout the deposit. A shallow dipping, near surface though less extensively mineralized zone that is copper-rich relative to sulfur is found in Units 4, 5, and 6 in the western part of the deposit.

Sulfide mineralization consists of chalcopyrite, cubanite, pyrrhotite and pentlandite with minor bornite, violarite, pyrite, sphalerite, galena, talnakhite, mackinawite and valleriite. Sulfide minerals occur mainly as blebs interstitial with plagioclase, olivine and augite grains, but also occur within plagioclase and augite grains, as intergrowths with silicates, or as fine veinlets. The percentage of sulfides average less than 1%, varying from trace to about 5%. Precious metals are associated with the sulfides.

The NorthMet deposit has been identified over a length of approximately 2.5 miles and has been found to a depth of more than 2,600 feet. It is covered by a thin layer of glacial till but otherwise reaches to the surface at the northern edge.

Development Plans

The DFS was prepared in 2006 by Bateman and contemplated the development of a new open pit mine, using existing rail infrastructure to transport ore from the mine site to the existing Erie Plant facilities to crush and mill the rock. The finely ground material would then pass to a new flotation circuit with waste material sent to existing tailing storage facilities. The 2006 plan contemplated a hydrometallurgical plant to recover value-added metals from the concentrate.

From 2008 to 2013, PolyMet incorporated numerous project improvements that were reflected in the draft and supplemental draft EIS's published in 2009 and 2013 respectively. The changes included Phase I production of separate copper and nickel concentrates with Phase II installation of an autoclave to upgrade the nickel concentrate as well as numerous modifications that will result in reduced environmental impacts, including: reductions in sulfur dioxide, mercury and greenhouse gas emissions at the plant site, capture of groundwater and surface seepage with the construction of an in ground containment system to the north and west of the existing tailings basin, and treatment of all contact water discharged from the NorthMet Project .

PolyMet plans to complete a Definitive Cost Estimate and Project Update prior to commencement of construction. The Project Update will incorporate numerous process and project improvements, environmental controls described in the Final EIS. The Project Update will also include detailed capital and operating costs reflecting the advanced stage of engineering and design and will be filed as a NI 43-101 Technical Report.

Saleable Products

During Phase I, PolyMet plans to sell a copper concentrate and a nickel bulk concentrate.

In October 2008, PolyMet entered into an agreement with Glencore whereby Glencore will purchase concentrates, metals, or intermediate products at prevailing market terms at the time of delivery for at least the first 5 years of production.

Capital Costs

The 2008 DFS Update set out total capital cost of \$601.9 million, reflecting both cost inflation and design scope changes since the DFS to that date, including facilities needed to ship concentrate during the construction and commissioning of Phase II. Further simplification of the metallurgical process reported in 2011 eliminated the planned copper solvent-extraction/electro-winning circuit.

5. Risk Factors

The following are major risk factors management has identified which relate to the Company's business activities. Such risk factors could materially affect the Company's future financial results, and could cause events to differ materially from those described in forward-looking statements relating to the Company. Although the following are major risk factors identified by management, they do not comprise a definitive list of all risk factors related to the Company's business and operations. Other specific risk factors are discussed elsewhere in this AIF, as well as in the Company's consolidated financial statements (under the headings "Description of Business and Nature of Operations", "Significant Accounting Policies" and "Financial Instruments" and elsewhere within that document) and in management's discussion and analysis (under the headings "Critical Accounting Estimates" and "Risk Factors" and elsewhere within that document) for its most recently completed fiscal year ended January 31, 2017, and its other disclosure documents, all as filed on SEDAR and EDGAR.

Dependence on a single mineral project.

The NorthMet Project accounts for all of the mineral resources and mineral reserves and exclusively represents the current potential for the future generation of revenue. Mineral exploration and development involves a high degree of risk that even a combination of careful evaluation, experience and knowledge cannot eliminate and few properties that are explored are ultimately developed into producing mines. Any adverse development affecting the NorthMet Project may have a material adverse effect on PolyMet's business, prospects, financial position, results of operations and cash flows.

The Company may experience delays, higher than expected costs, difficulties in obtaining environmental permits and other obstacles when implementing the development plans.

PolyMet is investing heavily in various facets of the NorthMet Project, which is subject to a number of risks that may make it less successful than anticipated, including:

- delays in the issuance of permits;
- delays or higher than expected costs in obtaining the necessary equipment or services to build and operate the Project; and
- adverse mining conditions may delay and hamper PolyMet's ability to produce the expected quantities of minerals.

Future activities could be subject to environmental laws and regulations, which may have a materially adverse effect on future operations, in which case operations could be suspended or terminated.

PolyMet, like other companies doing business in Canada and the United States, is subject to a variety of federal, provincial, state and local statutes, rules and regulations designed to, among other things:

- protect the environment, including the quality of the air and water in the vicinity of exploration, development, and mining operations;
- remediate the environmental impacts of those exploration, development, and mining operations;
- protect and preserve wetlands and endangered species; and
- mitigate negative impacts on certain archaeological and cultural sites.

Compliance with statutory environmental quality requirements described above may require significant capital outlays, impacting the Company's earning power, or cause material changes in its intended activities. Environmental standards imposed by federal, state, or local governments may be changed or become more stringent in the future, which could materially and adversely affect proposed activities.

Moreover, governmental authorities and private parties may bring lawsuits based upon damage to property and injury to persons resulting from the environmental, health and safety impacts of prior and current operations. These lawsuits could lead to the imposition of substantial fines, remediation costs, penalties and other civil and criminal sanctions. Substantial costs and liabilities, including for restoring the environment after the closure of mines, are inherent in the Company's operations. PolyMet cannot assure that any such law, regulation, enforcement or private claim would not have a material adverse effect on its financial condition, results of operations or cash flows.

Land reclamation requirements for the NorthMet Project may be burdensome.

Land reclamation requirements are generally imposed on mineral exploration companies (as well as companies with mining operations) in order to minimize long-term effects of land disturbance. In order to carry out reclamation obligations imposed on the Company in connection with exploration, potential development and production activities, PolyMet must allocate financial resources that might otherwise be spent on further exploration and development programs. In addition, regulatory changes could increase the Company's obligations to perform reclamation and mine closing activities. If PolyMet is required to carry out unanticipated reclamation work, the Company's financial position could be adversely affected.

PolyMet is subject to significant governmental regulations and related costs and delays may negatively affect business.

Mining activities are subject to extensive federal, state, local and foreign laws and regulations governing environmental protection, natural resources, prospecting, development, production, post-closure reclamation, taxes, labor standards and occupational health and safety laws and regulations, including mine safety, toxic substances and other matters. The costs associated with compliance with such laws and regulations are substantial. Possible future laws and regulations, or more restrictive interpretations of current laws and regulations by governmental authorities, could cause additional expense, capital expenditures, restrictions on or suspensions of operations and delays in the development of new properties.

PolyMet is required to obtain various governmental permits to conduct exploration, development, construction and mining activities at its properties. Obtaining the necessary governmental permits is often a complex and time-consuming process involving numerous United States or Canadian federal, provincial, state, and local agencies. The duration and success of each permitting effort is contingent upon many variables not within the Company's control. In the context of obtaining permits or approvals, PolyMet must comply with known standards, existing laws, and regulations that may entail greater or lesser costs and delays depending on the nature of the activity to be permitted and the interpretation of the laws and regulations implemented by the permitting authority. The failure to obtain certain permits or the adoption of more stringent permitting requirements could have a material adverse effect on business, operations, and properties and the Company may be unable to proceed with exploration and development programs.

Federal legislation and implementing regulations adopted and administered by the United States Environmental Protection Agency, Army Corp of Engineers, Forest Service, Fish and Wildlife Service, Mine Safety and Health Administration, and other federal agencies, and legislation such as the Federal Clean Water Act, Clean Air Act, National Environmental Policy Act, Endangered Species Act, and Comprehensive Environmental Response, Compensation, and Liability Act, have a direct bearing on exploration, development and mining operations United States. Due to the uncertainties inherent in the permitting process, the Company cannot be certain that it will be able to obtain required approvals for proposed activities at any of the Company's properties in a timely manner, or that PolyMet's proposed activities will be allowed at all.

Failure to comply with applicable laws, regulations and permitting requirements may result in enforcement actions, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, which may require corrective measures including capital expenditures, installation of additional equipment or remedial actions. Parties engaged in mining operations or in the exploration or development of mineral properties may be required to compensate those suffering loss or damage by

reason of the mining activities and may be subject to civil or criminal fines or penalties imposed for violations of applicable laws or regulations. Any such penalties, fines, sanctions or shutdowns could have a material adverse effect on business and results of operations.

Because the price of metals fluctuate, if the prices of metals in PolyMet's ore body decrease below a specified level, it may no longer be profitable to develop the NorthMet Project for those metals and PolyMet will cease operations.

Prices of metals are determined by some of the following factors:

- global and regional supply and demand;
- political and economic conditions and production costs in major metal producing regions;
- the strength of the United States dollar; and
- expectations for inflation.

The aggregate effect of these factors on metals prices is impossible for the Company to predict. In addition, the prices of metals are sometimes subject to rapid short-term and/or prolonged changes because of speculative activities. The current demand for and supply of various metals affect the prices of copper, nickel, cobalt, platinum, palladium and gold, but not necessarily in the same manner as current supply and demand affect the prices of other commodities. The supply of these metals primarily consists of new production from mining. If the prices of copper, nickel, cobalt, platinum, palladium and gold are, for a substantial period, below foreseeable costs of production, PolyMet could cease operations.

PolyMet is dependent on its key personnel.

Company success depends on key members of management. The loss of the services of one or more of such key management personnel could have a material adverse effect on the Company. PolyMet's ability to manage exploration and development activities, and hence success, will depend in large part on the efforts of these individuals. PolyMet faces intense competition for qualified personnel, and cannot be certain that it will be able to attract and retain such personnel.

In addition, PolyMet anticipates that if the NorthMet Project goes into production, PolyMet will experience significant growth in operations. PolyMet expects this growth to create new positions and responsibilities for management and technical personnel and to increase demands on operating and financial systems. There can be no assurance that PolyMet will successfully meet these demands and effectively attract and retain additional qualified personnel to manage anticipated growth. The failure to attract such qualified personnel to manage growth would have a material adverse effect on business, financial position, results of operations and cash flows.

The Company may not be able to raise the funds necessary to develop the NorthMet Project. If PolyMet is unable to raise such additional funds, the Company will have to suspend or cease operations.

PolyMet will need to seek additional financing to complete the development and construction of the NorthMet Project. Sources of such external financing may include future equity and debt offerings, advance payments by potential customers to secure long-term supply contracts, grants and low-cost debt from certain state financial institutions, and commercial debt secured by the NorthMet Project. If the Company cannot raise the money necessary to continue to explore and develop NorthMet, PolyMet will have to suspend or cease operations.

PolyMet's metals exploration and development efforts are highly speculative in nature and may be unsuccessful.

As a development stage company, PolyMet's work is speculative and involves unique and greater risks than are generally associated with other businesses.

The development of mineral deposits involves uncertainties, which careful evaluation, experience, and knowledge cannot eliminate. Few properties explored are ultimately developed into producing mines. It is impossible to ensure that the current development program the Company has planned will result in a profitable commercial mining operation.

PolyMet is subject to all the risks inherent to the mining industry, which may have an adverse affect on business operations.

PolyMet is subject to all of the risks inherent in the mining industry, including, without limitation, the following:

- Success in discovering and developing commercially viable quantities of minerals is the result of a number of factors, including the quality of management, the interpretation of geological data, the level of geological and technical expertise and the quality of land available for exploration;
- Operations are subject to a variety of existing laws and regulations relating to exploration and development, permitting procedures, safety precautions, property reclamation, employee health and safety, air and water quality standards, pollution and other environmental protection controls, all of which are subject to change and are becoming more stringent and costly to comply with;
- A large number of factors beyond PolyMet's control, including fluctuations in metal prices and production costs, inflation, the proximity and liquidity of precious metals and energy fuels markets and processing equipment, government regulations, including regulations relating to prices, taxes, royalties, land tenure, land use, importing and exporting of minerals and environmental protection, and other economic conditions, will affect the economic feasibility of mining;
- Substantial expenditures are required to construct mining and processing facilities;
- Title to mining properties may be subject to other claims; and
- In the development stage of a mining operation, PolyMet's mining activities could be subject to substantial operating risks and hazards, including metal bullion losses, environmental hazards, industrial accidents, labor disputes, encountering unusual or unexpected geologic formations or other geological or grade problems, encountering unanticipated ground or water conditions, cave-ins, pit-wall failures, flooding, rock falls, periodic interruptions due to inclement weather conditions or other unfavorable operating conditions and other acts of God. Some of these risks and hazards are not insurable or may be subject to exclusion or limitation in any coverage which the Company obtains or may not be insured due to economic considerations.

Actual mineral reserves and mineral resources may not conform to the Company's established estimates.

The figures for mineral reserves and mineral resources stated in this AIF are estimates and no assurances can be given that the anticipated tonnages and grades will be achieved or that the indicated level of recovery will be realized. Market fluctuations and the prices of metals may render reserves and mineral resources uneconomic. Moreover, short-term operating factors relating to the mineral deposits, such as the need for the orderly development of the deposits or the processing of new or different grades of ore, may cause a mining operation to be unprofitable in any particular accounting period.

The estimating of mineral reserves and mineral resources is a subjective process that relies on the judgment of the persons preparing the estimates. Estimates of mineral resources are, to a large extent, based on the interpretation of geological data obtained from drill holes and other sampling techniques. This information is used to calculate estimates of the configuration of the mineral resource, expected recovery rates, anticipated environmental conditions and other factors. As a result, mineral resource estimates for the NorthMet Project may require adjustments or downward revisions based upon further exploration or development work or upon actual production experience, thereby adversely impacting the economics of the NorthMet Project. Any material reductions in estimates of mineralization, or of the Company's ability to extract this mineralization, could have a material adverse effect on the Company's results of operations or financial condition.

There is no assurance that any of PolyMet's mineral resources, not currently classified as mineral reserves, will ever be classified as mineral reserves under the disclosure standards of the SEC.

Item 4 of this AIF discusses mineral resources in accordance with NI 43-101. Resources are classified as "measured resources", "indicated resources" and "inferred resources" under NI 43-101. However, U.S. investors are cautioned that the SEC does not recognize these resource classifications. There is no assurance that any of the Company's mineral resources, not currently classified as mineral reserves, will be converted into mineral reserves under the disclosure standards of the SEC.

The Company has had no production history and does not know if it will generate revenues in the future.

While the Company was incorporated in 1981, it has no history of producing minerals. The Company has not developed or operated any mines and has no operating history upon which an evaluation of future success or failure can be made. PolyMet currently has no mining operations of any kind. The Company's ability to achieve and maintain profitable mining operations is dependent upon a number of factors, including its ability to successfully build and operate mines, processing plants and related infrastructure. PolyMet may not successfully establish mining operations or profitably produce metals at any of its properties. As such, the Company does not know if it will ever generate revenues.

PolyMet has a history of losses, which it expects will continue for the future. If the Company does not begin to generate revenues, it may either have to suspend or cease operations.

As a development stage company with no holdings in any producing mines, PolyMet continues to incur losses and expect to incur losses in the future. As at January 31, 2017, the Company had an accumulated deficit of \$122.4 million. PolyMet may not be able to achieve or sustain profitability in the future. If the Company does not begin to generate revenues, it may either have to suspend or cease operations.

PolyMet has prepared its consolidated financial statements on a going concern basis, which contemplates the realization of assets and the settlement of liabilities in the normal course of operations.

PolyMet currently has negative cash flows from operating activities and cannot predict if or when it will operate profitably to generate positive cash flows. The Company has taken steps to fund operations through the issuance of equity and debt. The Company plans to meet its financial obligations to the point at which all regulatory approvals for the NorthMet Project have been obtained and which will allow the Company to raise capital to construct the mine and commence commercial production.

Since September 2006, the Company has raised approximately \$207 million in equity, \$80 million of initial principal debt secured by the Company's assets of which \$25 million may be exchangeable into equity upon receipt of permits necessary to build and operate the NorthMet Project. The Company also borrowed and repaid the IRRRB \$4 million principal plus accrued interest secured by land acquired with proceeds from the loan.

PolyMet will need to raise sufficient funds to meet its current obligations as well as fund ongoing development, capital expenditures and administration expenses, in accordance with Company spending plans for the next year. While in the past the Company has been successful in closing financing agreements, there can be no assurance it will be able to do so again in the future. Factors that could affect the availability of financing include the state of debt and equity markets, investor perceptions and expectations, and the metals markets.

The Company may not have adequate, if any, insurance coverage for some business risks that could lead to economically harmful consequences to PolyMet.

The Company's business is generally subject to a number of risks and hazards, including:

- industrial accidents;
- railroad accidents;
- labor disputes;
- environmental hazards;
- electricity stoppages;
- equipment failures; and
- severe weather and other natural phenomena.

These occurrences could result in damage to, or destruction of, mineral properties, production facilities, transportation facilities, or equipment. They could also result in personal injury or death, environmental damage, waste of resources or intermediate products, delays or interruption in mining, production or transportation activities, monetary losses and possible legal liability. The insurance the Company maintains against risks that are typical in the business may not provide adequate coverage. Insurance against some risks (including liabilities for environmental pollution or certain hazards or interruption of certain business activities) may not be available at a reasonable cost or at all. As a result, accidents or other negative developments involving mining, production or transportation facilities could have a material adverse effect on operations.

PolyMet may be subject to future litigation and regulatory proceedings which may have an adverse effect on business operations.

PolyMet may be subject to civil claims (including class action claims) based on allegations of negligence, breach of statutory duty, public nuisance or private nuisance or otherwise in connection with its operations or investigations relating thereto. While the Company is presently unable to quantify its potential liability under any of the above, such liability may be material to the Company and may have a material adverse effect on its ability to continue in operation.

In addition, the Company may be subject to actions or related investigations by governmental or regulatory authorities. Such actions may include civil or criminal prosecution for breach of relevant statutes, regulations or rules or failure to comply with the terms of PolyMet's licenses and permits and may result in liability for pollution, other fines or penalties, revocation of consents, permits, approvals or licenses or similar action, which could be material and may affect the Company's results of operations. Exposures to fines and penalties generally are uninsurable as a matter of public policy.

The mining industry is an intensely competitive industry, and the Company may have difficulty effectively competing with other mining companies in the future.

The Company faces intense competition from other mining and producing companies. In recent years, the mining industry has experienced significant consolidation among some of the Company's competitors. PolyMet cannot assure you that the result of current or further consolidation in the industry will not adversely affect the Company.

In addition, because mines have limited lives PolyMet must periodically seek to replace and expand its reserves by acquiring new properties. Significant competition exists to acquire properties producing, or capable of producing, copper, nickel and other metals.

If PolyMet is unable to successfully manage these risks, its growth prospects and profitability may suffer.

The Company is dependent on information technology and its systems and infrastructure face certain risks, including cyber security risks and data leakage risks.

PolyMet utilizes a variety of information technology systems and infrastructure. Any significant breakdown, invasion, destruction or interruption of these systems by employees, others with authorized access to the systems, or unauthorized persons could negatively impact operations. There is also a risk that the Company could experience a business interruption, theft of information, or reputational damage as a result of a cyber-attack, such as a data leakage of confidential information either internally or by third-party providers. While the Company has invested in the protection of its data and information technology to reduce these risks and periodically test the security of its information systems network, there can be no assurance that these efforts will prevent breakdowns or breaches in PolyMet's systems that could adversely affect the business.

PolyMet may be subject to risks relating to the global economy.

Market events and conditions in recent years, including disruptions in the international credit markets and other financial systems and the deterioration of global economic conditions could impede the Company's access to capital or increase the cost of capital. These disruptions in the credit and financial markets have had a significant material adverse impact on a number of financial institutions and have limited access to capital and credit for many companies, including PolyMet. These disruptions could, among other things, make it more difficult for the Company to obtain, or increase its cost of obtaining capital and financing for operations.

RISKS RELATED TO THE OWNERSHIP OF POLYMET COMMON SHARES

PolyMet may experience volatility in its share price.

PolyMet's common shares are listed for trading on the TSX and on the NYSE MKT. Shareholders may be unable to sell significant quantities of the common shares into the public trading markets without a significant reduction in the price of the Company's shares, if at all. The market price of the common shares may be affected significantly by factors such as changes in operating results, the availability of funds, fluctuations in the price of metals, the interest of investors, traders and others in development stage public companies such as PolyMet and general market conditions. In recent years, the securities markets have experienced a high level of price and volume volatility, and the market price of securities of many companies, particularly development companies similar to PolyMet, have experienced wide fluctuations, which have not necessarily been related to the operating performances, underlying asset values, or the future prospects of such companies. There can be no assurance that future fluctuations in the price of PolyMet's shares will not occur.

A large number of shares will be eligible for future sale and may depress PolyMet's share price.

Shares that are eligible for future sale may have an adverse effect on the price of the Company's common shares. As at January 31, 2017 there were 318,545,519 common shares outstanding. The average trading volume for the three months prior to January 31, 2017 was approximately 23,100 shares per day on the TSX and 248,500 shares per day on the NYSE MKT. Sales of substantial amounts of the Company's common shares, or a perception that such sales could occur, and the existence of options or warrants to purchase common shares and debt convertible into common shares at prices that may be below the then current market price of the common shares, could adversely affect the market price of common shares and could impair the Company's ability to raise capital through the sale of equity securities.

Ownership interest, voting power and the market price of common shares may decrease because the Company has issued, and may continue to issue, a substantial number of securities convertible or exercisable into common shares.

PolyMet has issued common shares, options, restricted shares, restricted share units, convertible debt and warrants to purchase its common shares to satisfy its obligations and fund operations. Since the Company currently does not have a source of revenue, it will likely issue additional common shares, options, warrants, preferred shares or other securities exercisable for or convertible into common shares to raise money for continued operations or as non-cash incentives to the Company's directors, officers, and key employees. If conversions of warrants and/or options into common shares or additional sales of equity occur, ownership interest and voting power in PolyMet will be diluted and the market price of common shares may decrease.

Under the Company's 2007 Omnibus Share Compensation Plan, as amended and restated ("Omnibus Plan"), the aggregate number of share options, restricted shares, restricted share units, and other share-based awards is restricted to 10% of the issued and outstanding common shares on the grant date, excluding 2,500,000 common shares pursuant to an exemption approved by the Toronto Stock Exchange.

Because PolyMet believes that it will be classified as a passive foreign investment company, or "PFIC", United States holders of common shares may be subject to United States federal income tax consequences that are worse than those that would apply if PolyMet were not a PFIC.

Because PolyMet believes that it will be classified as a PFIC, United States holders of common shares may be subject to United States federal income tax consequences that are worse than those that would apply if the Company were not a PFIC, such as ordinary income treatment plus a charge in lieu of interest upon a sale or disposition of common shares even if the shares were held as a capital asset.

6. Dividends

Since its incorporation, PolyMet has not declared or paid, and has no present intention to declare or to pay, any cash dividends with respect to its common shares. Earnings will be retained to finance further growth and development of the Company's business. However, if the board of directors were to declare a dividend, all common shares would participate equally.

7. Capital Structure

The Company's authorized capital consists of an unlimited number of common shares, without par value of which 318,545,519 common shares were issued and outstanding as fully paid and non-assessable as of January 31, 2017.

Shareholders are entitled to one vote per Common Share at all meetings of Shareholders except meetings at which only holders of another specified class or series of shares of the Company are entitled to vote separately as a class or series. The holders of Common Shares are entitled to receive dividends as and when declared by the Board, and to receive a pro rata share of the remaining property and assets of the Company in the event of liquidation, dissolution or winding up of the Company. The Common Shares carry no pre-emptive, redemption, purchase or conversion rights. Pursuant to the terms of prior financings, Glencore has certain anti-dilution rights that permit it to acquire additional securities so as to maintain its proportional equity interest in the Company. Neither the *Business Corporations Act* (British Columbia) ("BCBCA") nor the constating documents of the Company impose restrictions on the transfer of Common Shares on the register of the Company, provided that the Company receives the certificate representing the Common Shares to be transferred together with a duly endorsed instrument of transfer and payment of any fees and taxes which may be prescribed by the Board from time to time. There are no sinking fund provisions in relation to the Common Shares and they are not liable to further calls or to assessment by the Company. The BCBCA provides that the rights and provisions attached to any class of shares may not be modified, amended or varied unless consented to by special resolution passed by a majority of not less than two-thirds of the votes cast in person or by proxy holders of the common shares.

8. Market for Securities

PolyMet's common shares are listed and posted for trading on the Toronto Stock Exchange (the "TSX") under the symbol "POM", and on the NYSE-MKT Equities Exchange (the "NYSE MKT") under the symbol "PLM". The following table sets forth the market price range and trading volumes of the Company's common shares on each of the TSX and NYSE MKT for the periods indicated.

Month	TSX			NYSE MKT		
	High (C\$)	Low (C\$)	Volume	High (US\$)	Low (US\$)	Volume
February 2016	1.24	1.10	158,700	0.89	0.80	2,551,900
March 2016	1.52	1.05	884,700	1.13	0.80	9,660,000
April 2016	1.25	1.10	252,400	0.98	0.84	2,988,000
May 2016	1.11	1.04	320,800	0.88	0.79	2,173,600
June 2016	1.08	0.99	219,100	0.84	0.76	2,106,300
July 2016	1.01	0.96	326,800	0.79	0.75	2,113,800
August 2016	1.35	0.98	997,000	1.01	0.74	5,902,300
September 2016	1.15	1.05	364,100	0.90	0.80	2,636,100
October 2016	1.10	0.97	263,000	0.83	0.74	3,768,900
November 2016	1.22	0.98	581,200	0.90	0.74	4,689,500
December 2016	1.14	1.00	431,400	0.87	0.74	5,167,500
January 2017	1.19	1.02	443,000	0.94	0.75	5,553,100

9. Securities Not Listed or Quoted

The only classes of securities of the Company that are not listed or quoted on a marketplace are stock options, restricted shares units (“RSU”), and share purchase warrants.

The following stock options were issued during the year ended January 31, 2017:

Date of Issuance	Number of Stock Options Issued	Exercise Price (US\$)
February 1, 2016	2,577,000	0.76
July 14, 2016	250,000	0.76
January 5, 2017	2,675,000	0.75

The following RSU were issued during the year ended January 31, 2017:

Date of Issuance	Number of Restricted Share Units Issued	Exercise Price (US\$)
February 1, 2016	1,226,521	N/A
January 5, 2017	1,076,718	N/A

The following share purchase warrants were issued during the year ended January 31, 2017:

Date of Issuance	Number of Share Purchase Warrants Issued	Exercise Price (U\$)
October 18, 2016	13,641,586	1.00
October 28, 2016	7,680,626	1.00

As at January 31, 2017, the Company had the following outstanding securities held in escrow:

Designation of Class	Number of Securities held in Escrow	Percentage of Class
Common shares ⁽¹⁾	236,000	0.01%

⁽¹⁾ Common shares are held by Farris, Vaughan, Wills & Murphy LLP and were issued as restricted shares to certain United States employees. Contractual restrictions on transfer ends on receipt of permits to commence construction (118,000 common shares) and commencement of commercial production (118,000 common shares).

10. Directors and Officers

Name, Occupation and Security Holding

The name, province or state, country of residence, position or office held with the Company and principal occupation during the past five years of each director and executive officer of the Company as at January 31, 2017 and as at the date hereof are described as follows:

Name & Residence	Position(s) with the Company	Principal Occupation during past five years	Director since
Jonathan Cherry ^(4,5,6) Minnesota, United States	Director, President & Chief Executive Officer	Same	July 16, 2012
Matthew Daley ^(4,6) Ontario, Canada	Director	Project Manager for Australia, Asia and American Copper Assets, Glencore	July 9, 2014
David Dreisinger ^(2,3,4,6) British Columbia, Canada	Director	Professor and Chairholder of the Industrial Research and Chair in Hydrometallurgy, University British Columbia	October 3, 2003
W. Ian L. Forrest ^(1,2,3,5,7) Vaud, Switzerland	Director, Chairman	Chartered Accountant	October 3, 2003
Helen Harper ^(2,4,6) Ontario, Canada	Director	Asset Manager for North America Copper Operations, Glencore	July 13, 2016
Alan R. Hodnik ^(1,3,4,5,7) Minnesota, United States	Director	Chairman, President and Chief Executive Officer, Allele Inc.	March 9, 2011
Stephen Rowland ^(3,6) Connecticut, United States	Director	Executive, Glencore	October 30, 2008
Michael M. Sill ^(1,2,4,5,7) Minnesota, United States	Director	Chief Executive Officer, Road Machinery & Supplies Co.	March 9, 2011
Douglas Newby New York, United States	Chief Financial Officer	Same	N/A
Bradley Moore Minnesota, United States	Executive Vice President, Environmental & Governmental Affairs	Same	N/A

- Notes:
- (1) Member of the Compensation Committee.
 - (2) Member of the Audit Committee. Helen Harper is a non-voting participant.
 - (3) Member of the Nominating and Corporate Governance Committee. Stephen Rowland is a non-voting participant.
 - (4) Member of the Health, Safety, Environment and Communities Committee.
 - (5) Member of the Capital Finance Committee.
 - (6) Member of the Technical Steering Committee.
 - (7) Member of the Business Development and Risk Committee.

As at the date of this AIF, PolyMet's directors and executive officers, as a group, beneficially owned, directly or indirectly, or exercised control or direction over 5,473,574 Common Shares, representing 1.7 percent of the total number of Common Shares outstanding before giving effect to the exercise of options or warrants to purchase Common Shares held by such directors and executive officers. The statement as to the number of Common Shares beneficially owned, directly or indirectly, or over which control or direction is exercised by the Company's directors and executive officers as a group is based upon information furnished by the directors and executive officers.

Each Director serves until the next annual general meeting of shareholders or until his/her successor is duly elected, unless his/her office is vacated in accordance with the Articles of Incorporation. Vacancies

on the Board of Directors are filled by election from nominees chosen by the remaining Directors and the persons filling those vacancies will hold office until the next annual general meeting of shareholders, at which time they may be re-elected or replaced.

Indebtedness

No director or executive officer, nor any of their respective associates or affiliates is or has been at any time since the beginning of the last completed fiscal year indebted to PolyMet.

Cease Trade Orders, Bankruptcies, Penalties or Sanctions

To the knowledge of PolyMet's management and as of the date of this AIF, except for Mr. Forrest's directorships as noted below, no directors: (i) are, at the date hereof, or have been, during the 10 years prior to the date hereof, a director or executive officer of any company that, while that person was acting in that capacity or within a year of that person ceasing to act in that capacity became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or became subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver-manager or trustee appointed to hold assets of the director; or (ii) have, within the 10 years before the date hereof, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangements or compromises with creditors, or had a receiver, receiver manager or trustee appointed to hold assets of the director. Viatrade plc, an investment company of which Mr. Forrest was a director, went into administration in August 2009. Georex SA, an oil services company of which Mr. Forrest was a director, is in the process of filing for administration in France on account of its business model no longer being sustainable. Poros SAS, an associated company of Georex SA of which Mr. Forrest was also a director, has ceased to be active since France banned oil shale fracking.

Conflicts of Interest

Directors and officers may become in a position of conflict. Directors and officers must disclose the nature and extent of the conflict and abstain from voting on the approval of the proposed contract or transaction, unless all of the directors have a disclosable interest, in which case the director may vote on such resolution and may be liable to account to the Company for any profit that accrued under such transaction. To the knowledge of PolyMet's management and as of the date of this AIF, there are no known existing conflicts of interest between the Company and any of PolyMet's directors or officers as a result of such individual's outside business interests.

11. Legal Proceedings and Regulatory Actions

To the knowledge of Company's management, there are no material legal proceedings or regulatory actions outstanding to which PolyMet is a party, or to which any of its property is subject to and no such proceedings or regulatory actions are known to the Company to be threatened or pending, as of the date hereof, with the exception of challenges to the USFS ROD as discussed in Item 4 above.

12. Interest of Management and Other Material Transactions

Other than as disclosed in this AIF, PolyMet is not aware of any material interest, direct or indirect, involving any director or executive officer or any shareholder who holds more than 10% of the outstanding voting securities, or any associate or affiliate of any of the foregoing, which has been entered into since the commencement of the last completed fiscal year or in any proposed transaction which, in either case, has materially affected or will materially affect PolyMet or any of PolyMet's subsidiaries.

13. Transfer Agent and Registrar

The Company's registrar and transfer agent is Computershare Investor Services Inc. located at 100 University Avenue, 9th Floor, Toronto, Ontario M5J 2Y1, Canada.

14. Material Contracts

The following is a summary of each material contract to which the Company is a party, other than contracts entered into in the ordinary course of business, for the last fiscal year or before the last fiscal year that is still in effect.

- Acquisition of the mine site lease, see Item 4 for a complete description;
- Acquisition of the Erie Plant and associated infrastructure acquired in the Asset Purchase Agreements I and II, see Item 4 for a complete description; and
- Financing agreements entered into with Glencore, see below for a complete description.

Since October 2008, the Company and Glencore have entered into a series of financing and other agreements comprising:

- Equity – five separate agreements comprising \$25.0 million placement of PolyMet common shares in calendar 2009 in two tranches; a \$30.0 million placement of PolyMet common shares in calendar 2010 in three tranches; a \$20.0 million placement of PolyMet common shares in calendar 2011 in one tranche; a \$20.960 million purchase of PolyMet common shares in the 2013 Rights Offering; and a \$10.583 million purchase of PolyMet common shares in the 2016 Private Placement;
- Convertible debt (“Glencore Convertible Debt”) – agreement comprising \$25.0 million initial principal secured convertible debentures drawn in four tranches;
- Non-convertible debt (“Glencore Non-Convertible Debt”) – three separate agreements comprising \$30.0 million initial principal secured debentures in calendar 2015 drawn in four tranches; an \$11.0 million initial principal secured debenture in calendar 2016 drawn in one tranche; and a \$14.0 million initial principal secured debenture in calendar 2016 drawn in four tranches;
- Marketing Agreement whereby Glencore committed to purchase all of the Company's production of concentrates, metal, or intermediate products on market terms at the time of delivery for at least the first five years of production; and
- Corporate Governance Agreement whereby from January 1, 2014 as long as Glencore holds 10% or more of PolyMet's shares (on a fully diluted basis), Glencore has the right, but not obligation, to nominate at least one director and not more than the number of directors proportionate to Glencore's fully diluted ownership of PolyMet, rounded down to the nearest whole number, such number to not exceed 49% of the total board.

As a result of these financing transactions and the purchase by Glencore of PolyMet common shares previously owned by Cliffs, Glencore's ownership and ownership rights of PolyMet as at January 31, 2017 comprises:

- 92,836,072 shares representing 29.1% of PolyMet's issued shares;
- Glencore Convertible Debt exchangeable through the exercise of an exchange warrant (“Exchange Warrant”) at \$1.2696 per share into 33,265,768 common shares of PolyMet (including capitalized and accrued interest as at January 31, 2017) until the earlier of March 31, 2018, availability of \$100

million of debt or equity financing, or an earlier date on which PolyMet can demonstrate that it is prudent to repay the debentures, subject to ten days notice during which time Glencore can elect to exercise the Exchange Warrant, and where the exercise price and the number of shares issuable are subject to conventional anti-dilution provisions;

- Warrants to purchase 6,458,001 common shares at \$0.8231 per share at any time until December 31, 2017, subject to mandatory exercise if the 20-day volume weighted average price (“VWAP”) of PolyMet common shares is equal to or greater than 150% of the exercise price and PolyMet has received permits and construction finance is available (“Exercise Triggering Event”), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions;
- Warrants to purchase 7,055,626 common shares at \$1.00 per share at any time until October 28, 2021, subject to acceleration on the earlier of receipt of permits necessary to construct NorthMet or the 12 month anniversary of the issue date provided the 20-day VWAP of PolyMet common shares is equal to or greater than \$1.50 (“Acceleration Triggering Event”), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions; and
- Warrants to purchase 625,000 common shares at \$0.7797 per share at any time until October 28, 2021, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions.

If Glencore were to exercise all of its rights and obligations under these agreements, it would own 140,240,467 common shares of PolyMet, representing 38.3% on a partially diluted basis, that is, if no other options or warrants were exercised or 34.8% on a fully diluted basis, if all other options and warrants were exercised, whether they are in-the-money or not.

15. Interest of Experts

PricewaterhouseCoopers LLP has served as PolyMet’s auditor since April 2006 and is located at 250 Howe Street, Suite 700, Vancouver, British Columbia, Canada V6C 3S7. PricewaterhouseCoopers LLP is independent within the meaning of the Code of Professional Conduct of the Chartered Professional Accountants of British Columbia and PCAOB Rule 3520, Auditor Independence.

PolyMet has relied on the work of the qualified persons listed in the section of this AIF titled “Introductory Notes - Qualified Person Under NI 43-101” in connection with the scientific and technical information presented in this AIF in respect of its mineral property, NorthMet, which is based upon the NI 43-101 Technical Report filed on SEDAR and EDGAR.

Except for David Dreisinger, who is a director of the Company, and William Murray, who was a former director of the Company, none of the qualified persons listed in the section of this AIF titled “Introductory Notes - Qualified Person Under NI 43-101”, nor any of the companies listed therein that employ those individuals, received or has received a direct or indirect interest in the property of the Company or of any associate or affiliate of the Company in connection with the preparation of reports relating to the Company’s mineral properties. As of the date hereof, the aforementioned persons and companies beneficially own, directly or indirectly, less than 1% of the Company’s outstanding securities of any class and less than 1% of the outstanding securities of any class of PolyMet’s associates or affiliates.

16. Controls and Procedures

A. Evaluation of Disclosure Controls and Procedures

Disclosure controls and procedures are designed to ensure that information required to be disclosed in reports filed or submitted by the Company under Canadian and United States securities legislation is recorded, processed, summarized and reported within the time periods specified in those rules, including providing reasonable assurance that material information is gathered and reported to senior management, including the Chief Executive Officer (“CEO”) and Chief Financial Officer (“CFO”), as appropriate, to permit timely decisions regarding public disclosure. Management, including the CEO and CFO, have evaluated the effectiveness of the design and operation of the Company’s disclosure controls and procedures, as defined in Rule 13a-15(e) and 15d-15(e) of the US Exchange Act and the rules of the Canadian Securities Administrators (the “CSA”). Based on this evaluation, the CEO and CFO have concluded that the Company’s disclosure controls and procedures were effective as at January 31, 2017.

There have been no adverse changes in the Company’s disclosure controls and procedures during the year ended January 31, 2017 and they continue to remain effective.

B. Management’s Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) and 15d-15(f) of the U.S. Exchange Act and National Instrument 52-109 Certification of Disclosure in Issuer’s Annual and Interim filings. Any system of internal control over financial reporting, no matter how well designed, has inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Management has used the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission to evaluate the effectiveness of the Company’s internal control over financial reporting. Based on this assessment, management concluded the Company’s internal control over financial reporting was effective as at January 31, 2017.

C. Attestation Report of the Registered Public Accounting Firm

The effectiveness of the Company’s internal control over financial reporting as at January 31, 2017 has been audited by PricewaterhouseCoopers LLP, the Company’s independent auditors, and their opinion is included with the Company’s annual consolidated financial statements.

D. Changes in Internal Controls

There have been no changes in the Company’s internal control over financial reporting during the period covered by this AIF that have materially affected, or is reasonably likely to material affect, the Company’s internal control over financial reporting.

17. Audit Committee

PolyMet is subject to National Instrument 52-110 - *Audit Committees*, which has been adopted in various Canadian provinces and territories and which prescribes certain requirements in relation to audit committees and defines the meaning of independence with respect to directors. These reflect current regulatory guidelines of the CSA as well as certain U.S. initiatives under the *Sarbanes-Oxley Act of 2002* and adopted corporate governance rules of the NYSE and NASDAQ National Market. A copy of the Company’s Audit Committee’s charter is attached as Schedule A to this AIF.

The Audit Committee consists of Michael M. Sill (Chair), Dr. David Dreisinger and W. Ian L. Forrest, all of whom are independent directors.

Michael M. Sill has served as a member of PolyMet's board of directors since March 2011. He serves as the Chair on the Audit committee and also serves on the Capital Finance, Compensation and Health, Safety, Environment and Communities committees. Since 1994, Mr. Sill has served as President and CEO of Road Machinery & Supplies Co., a distributor of construction, mining and forestry equipment. Educated at Dartmouth College and J.L. Kellogg Graduate School of Management, Mr. Sill started his career as a financial analyst and commercial lending officer with The Northern Trust Company. He serves on the board of Reviva Corporation and Dunwoody College of Technology, and has previously served on the Twin Cities Regional Board of US Bank and numerous industry association boards.

Dr. David Dreisinger has served as a member of PolyMet's board of directors since October 2003. He serves as the Chair of the Technical Steering committee and also serves on the Health, Safety, Environment and Communities, Audit, Business Development and Risk Management, and on the Nominating and Corporate Governance committees. Since 1988, Dr. Dreisinger has been a member of the faculty at the University of British Columbia in the Department of Materials Engineering and is currently Professor and Chairholder of the Industrial Research and Chair in Hydrometallurgy. He has published over 250 papers and has been extensively involved as a process consultant in industrial research programs with metallurgical companies. Dr. Dreisinger has participated in 19 U.S. patents for work in areas such as pressure leaching, ion exchange removal of impurities from process solutions, use of thiosulfate as an alternative to cyanide in gold leaching, and leach-electrolysis treatment of copper recovery from sulfide ores, and the Sepon Copper Process for copper recovery from sulfidic-clayey ores. Dr. Dreisinger serves as a director of Search Minerals, Inc. and as Vice President – Metallurgy for each of Camrova Resources, Inc., Search Minerals Inc., and TriMetals Mining Inc.

W. Ian L. Forrest has served as a member of PolyMet's board of directors since October 2003 and as its Chairman since July 2012. Mr. Forrest previously served as Chairman of the board from May 2004 to February 2008 and Co-Chairman from January 2011 to July 2012. He serves as the Chair on both the Business Development and Risk Management and the Nominating and Corporate Governance committees and also serves on the Audit, Compensation and Capital Finance committees. Mr. Forrest played an important role in the Company's revival in 2003. Mr. Forrest is a member of the Institute of Chartered Accountants of Scotland. Mr. Forrest has more than 40 years of experience with public companies in the resource sector. His experience encompasses the areas of promotion, financing, exploration, production and company management. He has also participated in several notable projects including Gulfstream's North Dome gas discovery, Qatar, Reunion Mining's Scorpion zinc, Namibia, which was subsequently developed by Anglo American, and Ocean Diamond Mining, which pioneered the independent diamond dredging industry off the west coast of southern Africa. He also served as a director of Tanager Energy Inc. (formerly MGold Resources Inc.) until October 2011 and Belmore Resources (Holdings) plc until July 2011 when it was acquired by Lundin Mining Ltd. Mr. Forrest was a director of Viatrade plc Georex SA, and Poros SAS. See further discussion surrounding these directorships in Item 10 above.

The Company's Board of Directors determined that there is at least one audit committee financial expert, serving on its audit committee, namely, W. Ian L. Forrest, who is a member of the Institute of Chartered Accountants of Scotland. Mr. Forrest is independent as such term is defined by the listing standards of the TSX and NYSE MKT. All other members of the Audit Committee are also independent as defined by the listing standards of the TSX and NYSE MKT.

The Audit Committee oversees the Company's auditing procedures, receives and accepts the reports of the Company's external auditors, oversees the internal systems of accounting and management controls, and makes recommendations to the Board of Directors as to the selection and appointment of the Company's external auditors.

The Audit Committee meets four times a year, at a minimum, and has access to all officers, management and employees of the Company and may engage advisors or counsel as deemed necessary to perform its duties and responsibilities as a committee.

Pre-Approval Policies and Procedures

All fees paid to the external auditors, PricewaterhouseCoopers LLP, were pre-approved by the Audit Committee. This pre-approval involved a submission by the auditors to the Audit Committee of a scope of work to complete the audit and prepare tax returns, an estimate of the time involved, and a proposal for the fees to be charged for the audit. The Audit Committee reviewed this proposal with management and after discussion with the auditors, pre-approved the scope of work and fees.

External Auditor Service Fees

The following outlines the expenditures for accounting fees billed and paid for the last two fiscal periods ended:

<i>Fiscal Year Ending</i>	<i>Audit Fees</i>	<i>Audit Related Fees</i>	<i>Tax Fees</i>	<i>All Other Fees</i>
January 31, 2017	CDN \$199,000	CDN \$54,000	CDN \$21,060	CDN \$Nil
January 31, 2016	CDN \$203,000	CDN \$58,000	CDN \$18,950	CDN \$Nil

"Audit Fees" are the aggregate fees billed by PricewaterhouseCoopers LLP for the audit of the Company's consolidated annual financial statements.

"Audit-Related Fees" are fees billed by PricewaterhouseCoopers LLP for services reasonably related to the performance of the audit or interim review and services associated with registration statements and prospectuses.

"Tax Fees" are fees for professional services rendered by PricewaterhouseCoopers LLP for tax compliance, tax advice on actual or contemplated transactions.

18. Additional Information

All documents referred to in this AIF are available for inspection at the Company's registered and records office, listed below, during normal office hours.

Farris, Vaughan, Wills & Murphy LLP
2500 - 700 W Georgia St
Vancouver BC
Canada V7Y 1B3

In Canada, additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Company's securities and securities authorized for issuance under equity compensation plans, is contained in the Management Information Circular for the most recent annual meeting of security holders that involves the election of directors. Additional information relating to PolyMet may be found on SEDAR at www.sedar.com and additional financial information is provided in the Company's financial statements and MD&A for its most recently completed fiscal year.

PolyMet is subject to the informational requirements of the Exchange Act. In accordance with these requirements, the Company will file reports and other information with the SEC. These materials, including this AIF and its exhibits, may be inspected and copied at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549 and at the SEC's regional office at 500 West Madison Street, Suite 1400, Chicago, Illinois 60661. Copies of the materials may be obtained from the Public Reference Room of the Commission at 100 F. Street, N.E., Washington, D.C. 20549 at prescribed rates. The public may obtain information on the operation of the Commission's Public Reference Room by calling the Commission in the United States at 1-800-SEC-0330. The reports, registration statements and other information can also be inspected on EDGAR available on the SEC's website at www.sec.gov.

SCHEDULE "A"

AUDIT COMMITTEE CHARTER

1. PURPOSE

The purpose of the Audit Committee (in this charter, the "Committee") is to oversee the accounting and financial reporting processes of PolyMet Mining Corp. (the "Company"), the audits of the Company's financial statements, the qualifications of the public accounting firm engaged as the Company's independent auditor to prepare or issue an audit report on the financial statements of the Company and internal control over financial reporting, and the performance of the Company's internal audit function and independent auditor. The Committee reviews and assesses the qualitative aspects of the Company's financial reporting to shareholders, the Company's financial risk assessment and management, and the Company's ethics and compliance programs. The Committee is directly responsible for the appointment (subject to shareholder ratification), compensation, retention, and oversight of the independent auditor. The Committee also reviews and assesses the Company's processes to manage and control risk, except for risks assigned to other committees of the Board or retained by the Board.

2. STRUCTURE AND OPERATIONS

The Committee shall be composed of not less than three (3) directors. Members of the Committee shall be independent and each shall be "financially literate" and will be appointed or reappointed at the meeting of the Board, immediately following the annual general meeting of the shareholders of the Company (the "AGM"), and in the normal course of business will serve a minimum of three (3) years. At least one member of the Committee shall in the judgment of the Board be an "audit committee financial expert" as defined by the rules and regulations of the Securities and Exchange Commission. Each member shall continue to be a member of the Committee until a successor is appointed, unless the member resigns, is removed or ceases to be a director. The Board may fill a vacancy that occurs in the Committee at any time. Generally, no member of the Committee may serve on more than three audit committees of publicly traded companies (including the Audit Committee of the Company) at the same time.

"Financially Literate" means the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised by the Company's financial statements.

The Board or, in the event of its failure to do so, the members of the Committee, shall appoint or reappoint, at the meeting of the Board immediately following the AGM, a chairman from among their number. The chairman shall not be a former officer of the Company and shall serve as a liaison between the Committee and members of the Company's management team ("Management").

Meetings of the Committee shall be held at least four times annually, provided that due notice is given and a quorum of a majority of the members is present. Where a meeting is not possible, resolutions in writing which are signed by all members of the Committee are as valid as if they had been passed at a duly held meeting. The frequency and nature of the meeting agendas are dependent upon business matters and affairs, which the Company faces from time to time.

The Committee shall report to the Board on its activities after each of its meetings. In addition, it shall review and assess the adequacy of this charter annually and, where necessary, recommend changes to the Board for approval. The Committee shall undertake and review with the Board an annual performance evaluation of the Committee.

3. RESOURCES AND AUTHORITY

The Committee shall have the resources and authority appropriate to discharge its responsibilities, including the authority to use internal personnel and to obtain advice and assistance from internal or external legal, accounting or other advisors and the funding for compensating any such external advisors. In addition, the Committee shall have sole authority to retain and terminate any such firms and to approve the fees and other retention terms related to the appointment such firms.

4. RESPONSIBILITIES

The responsibilities of the Committee are:

1. To assist the Board of Directors in fulfilling its fiduciary responsibilities' relating to the Company's quality and integrity of accounting, auditing, and reporting practices and the integrity of the Company's internal accounting controls and management information systems;
2. To review with the auditors, internal accountants and management of the Company:
 - a. any audited financial statement of the Company, including any such statement that is to be presented to an annual general meeting or provided to shareholders or filed with regulatory authorities and including any audited financial statement contained in a prospectus, registration statement or other similar document, and
 - b. the financial disclosure in each Annual Report and Management Discussion and Analysis of the Company which accompanies such audited financial statement and in each such filing, prospectus, registration statement or other similar document;
3. To review with the internal accountants and management of the Company:
 - a. any unaudited financial statement of the Company, including any such statement that is to be presented to an annual general meeting or provided to shareholders or filed with regulatory authorities and including any unaudited financial statement contained in a prospectus, registration statement, Quarterly Report or other similar document,
 - b. the financial disclosure in each Quarterly Report and when applicable, Management Discussion and Analysis of the Company accompanying such unaudited financial statement and in each such filing, prospectus, registration statement or other similar document which accompanies such unaudited financial statement, and
 - c. in connection with the Form 40-F of the Company, review (i) Management's disclosure to the Committee and the independent auditor under Section 302 of the Sarbanes-Oxley Act, including identified changes in internal control over financial reporting; and (ii) the contents of the Chief Executive Officer and the Chief Financial Officer certificates to be filed under Sections 302 and 906 of the Sarbanes-Oxley Act and the process conducted to support the certifications;
4. To otherwise review as required and report to the Board of Directors with respect to the adequacy of internal accounting and audit procedures and the adequacy of the Company's management information systems;
5. To otherwise ensure that no restrictions are placed by Management on the scope of the auditors review and examination of the Company's accounts;
6. To appoint or replace the independent auditor and approve the terms on which the independent auditor is engaged for the ensuing fiscal year;
7. At least annually, evaluate the independent auditor's qualifications, performance, and independence, including that of the lead partner. The evaluation will include obtaining a written report from the independent auditor describing the firm's internal quality control procedures; any material issues raised by the most recent Public Company Accounting Oversight Board inspection, internal quality control review, or PCAOB review, of the firm or by any inquiry or investigation by

governmental or professional authorities within the past five years, concerning an independent audit or audits carried out by the firm, and any steps taken to deal with those issues; and all relationships between the independent auditor and the Company;

8. Resolve any disagreements between Management and the independent auditor about financial reporting;
9. Establish and oversee a policy designating permissible services that the independent auditor may perform for the Company, providing for preapproval of those services by the Committee subject to the de minimis exceptions permitted under applicable rules, and quarterly review of any services approved by the designated member under the policy and the firm's non-audit services and related fees;
10. Ensure receipt from the independent auditor of a formal written statement delineating all relationships between the auditor and the Company, consistent with applicable requirements of the PCAOB regarding the independent auditor's communications with the Committee concerning independence, actively engage in a dialogue with the auditor about any disclosed relationships or services that may impact the objectivity and independence of the auditor, and take appropriate action to oversee the independence of the independent auditor;
11. Advise the Board about the Committee's determination whether the Committee consists of three or more members who are Financially Literate, including at least one member who has financial sophistication and is a financial expert;
12. Inquire of Management and the independent auditor about significant risks or exposures, review the Company's policies for risk assessment and risk management, and assess the steps Management has taken to control such risk to the Company, except as to those risks for which oversight has been assigned to other committees of the Board or retained by the Board;
13. Review with Management and the independent auditor:
 - a. The Company's annual assessment of the effectiveness of its internal controls and the independent auditor's attestation,
 - b. The adequacy of the Company's internal controls, including computerized information system controls and security,
 - c. Any "material weakness" or "significant deficiency" in the design or operation of internal control over financial reporting, and any steps taken to resolve the issue, and
 - d. Any related significant findings and recommendations of the independent auditor and internal audit together with Management's responses;
14. Develop, review, and oversee procedures for (i) receipt, retention, and treatment of complaints received by the Company regarding accounting, internal accounting controls, and auditing matters and (ii) the confidential, anonymous submission of employee concerns regarding accounting or auditing matters;
15. Review policies and procedures with respect to transactions between the Company and officers and directors, or affiliates of officers or directors, or transactions that are not a normal part of the Company's business, and review and approve those related-party transactions that would be disclosed pursuant to SEC Regulation S-K, Item 404;
16. Review with Management and the independent auditor at least annually the Company's critical accounting policies and significant judgments and estimates, including any significant changes in the Company's selection or application of accounting principles and the effect of regulatory and accounting initiatives on the financial statements of the Company;
17. To ensure that the Company disseminates information concerning its financial position and results of operations to the public in a timely fashion;
18. Complete an annual evaluation of the Committee's performance;

19. Include a copy of the Committee charter as an appendix to the proxy statement at least once every three years, or disclose annually in the proxy statement where the charter can be found on the Company's website;
20. Set clear hiring policies for the Company's hiring of employees or former employees of the independent auditor who were engaged in the Company's account, and ensure the policies comply with any regulations applicable to the Company; and
21. Review with Management the Company's policies and processes for tax planning and compliance.

5.0 COMMUNICATIONS

The independent auditor reports directly to the Committee. The Committee is expected to maintain free and open communication with the independent auditor, the internal auditors, and Management. This communication will include periodic private executive sessions with each of these parties.

6.0 EDUCATION

The Company is responsible for providing new members with appropriate orientation briefings and educational opportunities, and the full Committee with educational resources related to accounting principles and procedures, current accounting topics pertinent to the Company, and other matters as may be requested by the Committee. The Company will assist the Committee in maintaining appropriate financial literacy.

Exhibit 99.2 – Consolidated Financial Statements as at and for the years ended January 31, 2017
and 2016



P O L Y M E T
M I N I N G

POLYMET MINING CORP.

CONSOLIDATED FINANCIAL STATEMENTS

**As at January 31, 2017 and 2016
And for the years then ended**

Management's Responsibility for Consolidated Financial Statements

The accompanying Consolidated Financial Statements of PolyMet Mining Corp. (the "Company") are the responsibility of management. The Consolidated Financial Statements have been prepared by management in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB") and include certain estimates that reflect management's best judgments.

The Company's Board of Directors has approved the information contained in the Consolidated Financial Statements. The Board of Directors fulfills its responsibilities regarding the Consolidated Financial Statements mainly through its Audit Committee, which has a written mandate that complies with current requirements of Canadian securities legislation, United States securities legislation, and the United States Sarbanes-Oxley Act of 2002. The Audit Committee meets at least on a quarterly basis.

Management's Annual Report on Internal Control over Financial Reporting

Management is also responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Consolidated Financial Statements for external reporting purposes in accordance with IFRS as issued by the IASB.

Internal control over financial reporting, no matter how well designed, has inherent limitations. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management has assessed the effectiveness of the Company's internal control over financial reporting as at January 31, 2017. In making its assessment, management has used the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") to evaluate the Company's internal control over financial reporting. Based on this assessment, management has concluded that the Company's internal control over financial reporting was effective as at that date.

The effectiveness of the Company's internal control over financial reporting as at January 31, 2017 has been audited by PricewaterhouseCoopers LLP, the Company's independent auditors, as stated in their report, which appears herein.

/s/ Jonathan Cherry

Jonathan Cherry
President and Chief Executive Officer

/s/ Douglas Newby

Douglas Newby
Chief Financial Officer

Independent Auditor's Report

To the Shareholders of PolyMet Mining Corp.

We have completed integrated audits of PolyMet Mining Corp.'s current year and prior year consolidated financial statements and its internal control over financial reporting as at January 31, 2017. Our opinions, based on our audits are presented below.

Report on the consolidated financial statements

We have audited the accompanying consolidated financial statements of PolyMet Mining Corp., which comprise the consolidated balance sheets as at January 31, 2017 and January 31, 2016 and the consolidated statements of loss and comprehensive loss, changes in shareholders' equity and cash flows for the years then ended, and the related notes, which comprise a summary of significant accounting policies and other explanatory information.

Management's responsibility for the consolidated financial statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Canadian generally accepted auditing standards and the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement. Canadian generally accepted auditing standards also require that we comply with ethical requirements.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained in our audits is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of PolyMet Mining Corp. as at January 31, 2017 and January 31, 2016 and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

Report on internal control over financial reporting

We have also audited PolyMet Mining Corp.'s internal control over financial reporting as at January 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Management's responsibility for internal control over financial reporting

Management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in Management's Annual Report on Internal Control over Financial Reporting.

Auditor's responsibility

Our responsibility is to express an opinion on the PolyMet Mining Corp.'s internal control over financial reporting based on our audit. We conducted our audit of internal control over financial reporting in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

An audit of internal control over financial reporting includes obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control, based on the assessed risk, and performing such other procedures as we consider necessary in the circumstances.

We believe that our audit provides a reasonable basis for our audit opinion on PolyMet Mining Corp.'s internal control over financial reporting.

Definition of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Inherent limitations

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

Opinion

In our opinion, PolyMet Mining Corp. maintained, in all material respects, effective internal control over financial reporting as at January 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by COSO.

(Signed) "PricewaterhouseCoopers LLP"

Chartered Professional Accountants

Vancouver, British Columbia
April 20, 2017

PolyMet Mining Corp.
Consolidated Balance Sheets

All figures in thousands of U.S. Dollars

	January 31, 2017	January 31, 2016
ASSETS		
Current		
Cash	\$ 18,674	\$ 10,256
Amounts receivable	749	429
Prepaid expenses	813	1,285
	20,236	11,970
Non-Current		
Amounts receivable (Note 5)	2,012	2,153
Mineral Property, Plant and Equipment (Notes 3 and 4)	364,913	321,649
Wetland Credit Intangible (Note 5)	1,888	1,888
Total Assets	389,049	337,660
LIABILITIES		
Current		
Accounts payable and accrued liabilities	3,188	3,348
Non-convertible debt (Notes 7 and 9)	-	4,962
Environmental rehabilitation provision (Note 6)	781	1,498
	3,969	9,808
Non-Current		
Convertible debt (Notes 7 and 8)	42,154	35,986
Non-convertible debt (Notes 7 and 9)	65,752	43,023
Environmental rehabilitation provision (Note 6)	69,845	64,186
Total Liabilities	181,720	153,003
SHAREHOLDERS' EQUITY		
Share Capital (Note 10)	268,895	242,917
Share Premium	1,151	1,151
Equity Reserves	59,682	53,759
Deficit	(122,399)	(113,170)
Total Shareholders' Equity	207,329	184,657
Total Liabilities and Shareholders' Equity	\$ 389,049	\$ 337,660

Nature of Business and Liquidity (Note 1)

Commitments and Contingencies (Note 14)

ON BEHALF OF THE BOARD OF DIRECTORS:

_____/s/ Jonathan Cherry_____, Director

_____/s/ Dr. David Dreisinger_____, Director

- See Accompanying Notes -

PolyMet Mining Corp.
Consolidated Statements of Loss and Comprehensive Loss

All figures in thousands of U.S. Dollars, except for shares and per share amounts

	For the years ended January 31,	
	2017	2016
General and Administrative Expenses		
Salaries and benefits	\$ 1,892	\$ 1,863
Share-based compensation (Note 10)	1,808	457
Director fees and expenses	307	296
Professional fees	432	363
Filing and regulatory fees	154	173
Investor and public relations	1,227	1,567
Travel	344	295
Rent and other office expenses	240	260
Insurance	172	202
Amortization	18	32
Total General and Administration Expenses	6,594	5,508
Other Expenses (Income)		
Finance costs - net (Note 11)	2,672	2,017
(Gain) / loss on foreign exchange	(7)	17
Gain on disposal of available-for-sale financial instrument (Note 5)	(8)	(16)
Loss on disposal of Wetland Credit Intangible (Note 5)	-	1,852
Rental income	(22)	(32)
Total Other Expenses	2,635	3,838
Loss for the Year	9,229	9,346
Other Comprehensive Income		
Reclassified gain on disposal of available-for-sale financial instrument (Note 5)	8	16
Items that may be subsequently reclassified to profit or loss:		
Unrealized gain on available-for-sale financial instrument (Note 5)	(221)	(215)
Other Comprehensive Income for the Year	(213)	(199)
Total Comprehensive Loss for the Year – Net of Tax	\$ 9,016	\$ 9,147
Basic and Diluted Loss per Share	\$ (0.03)	\$ (0.03)
Weighted Average Number of Shares	288,998,010	276,812,958

- See Accompanying Notes -

PolyMet Mining Corp.

Consolidated Statements of Changes in Shareholders' Equity

All figures in thousands of U.S. Dollars, except for shares

	Share Capital (authorized = unlimited)			Equity Reserves				Total Shareholders' Equity
	Issued Shares	Share Capital	Share Premium	Contributed Surplus	Accumulated Other Comp Inc / (Loss)	Equity Reserves	Deficit	
Balance - January 31, 2015	276,351,374	\$ 241,489	\$ 3,007	\$ 51,704	\$ -	\$ 51,704	\$ (103,824)	\$ 192,376
Total comprehensive loss for the year	-	-	-	-	199	199	(9,346)	(9,147)
Refinance of debenture (Notes 7 and 8)	-	-	(1,856)	1,856	-	1,856	-	-
Payment of land purchase options (Note 10)	224,038	199	-	-	-	-	-	199
Exercise of share options (Note 10)	275,000	434	-	(218)	-	(218)	-	216
Vesting of restricted shares and RSU's (Note 10)	729,670	795	-	(950)	-	(950)	-	(155)
Share-based compensation (Note 10)	(23,000)	-	-	835	-	835	-	835
Bonus share cost amortization (Note 10)	-	-	-	333	-	333	-	333
Balance - January 31, 2016	277,557,082	\$ 242,917	\$ 1,151	\$ 53,560	\$ 199	\$ 53,759	\$ (113,170)	\$ 184,657
Total comprehensive loss for the year	-	-	-	-	213	213	(9,229)	(9,016)
Private placement and issuance costs (Note 10)	40,074,418	25,091	-	3,444	-	3,444	-	28,535
Refinance of debentures (Notes 7, 8 and 9)	-	-	-	250	-	250	-	250
Payment of land purchase options (Note 10)	241,376	200	-	-	-	-	-	200
Vesting of restricted shares and RSU's (Note 10)	537,481	575	-	(694)	-	(694)	-	(119)
Share-based compensation (Note 10)	135,162	112	-	2,406	-	2,406	-	2,518
Bonus share cost amortization (Note 10)	-	-	-	304	-	304	-	304
Balance - January 31, 2017	318,545,519	\$ 268,895	\$ 1,151	\$ 59,270	\$ 412	\$ 59,682	\$ (122,399)	\$ 207,329

- See Accompanying Notes -

PolyMet Mining Corp.
Consolidated Statements of Cash Flows

All figures in thousands of U.S. Dollars

	For the years ended January 31,	
	2017	2016
Operating Activities		
Loss for the year	\$ (9,229)	\$ (9,346)
Items not involving cash:		
Amortization	18	32
Environmental rehabilitation provision accretion (Note 6)	1,465	1,663
Share-based compensation (Note 10)	1,808	457
Unrealized loss on foreign exchange	4	10
Loss on disposal of wetland credit intangible (Note 5)	-	1,852
Gain on disposal of available-for-sale financial instrument (Note 5)	(8)	(16)
Changes in non-cash working capital:		
Amounts receivable	(40)	316
Prepaid expenses	472	(177)
Accounts payable and accrued liabilities	47	387
Net cash used in operating activities	(5,463)	(4,822)
Financing Activities		
Share issuance proceeds, net of costs (Note 10)	28,535	216
Debenture funding, net of costs (Notes 7 and 9)	13,943	32,954
Debenture repayment (Notes 7 and 9)	(5,111)	-
Cash settled RSU's (Note 10)	(119)	(155)
Net cash provided by financing activities	37,248	33,015
Investing Activities		
Property, plant and equipment purchases (Note 4)	(23,445)	(27,378)
Available-for-sale financial instrument disposal proceeds (Note 5)	82	250
Wetland credit intangible purchases (Note 5)	-	(100)
Net cash used in investing activities	(23,363)	(27,228)
Net Increase (Decrease) in Cash	8,422	965
Effect of foreign exchange on Cash	(4)	(10)
Cash - Beginning of year	10,256	9,301
Cash - End of year	\$ 18,674	\$ 10,256
Supplementary information		
Accounts payable and accrued liabilities related to PP&E	\$ (207)	\$ 334
Debt accretion and capitalized interest (Notes 7, 8, and 9)	15,103	5,051
Share-based compensation related to PP&E (Note 10)	710	378
Bonus share amortization related to PP&E (Note 10)	304	333
Fair value of shares issued for land options (Note 10)	\$ 200	\$ 199

- See Accompanying Notes -

PolyMet Mining Corp.

Notes to Consolidated Financial Statements

As at January 31, 2017 and 2016 and for the years then ended

Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

1. Nature of Business and Liquidity

PolyMet Mining Corp. was incorporated in British Columbia, Canada on March 4, 1981 under the name Fleck Resources Ltd. and changed its name to PolyMet Mining Corp. on June 10, 1998. Through its 100%-owned subsidiary, Poly Met Mining, Inc. ("PolyMet US" and, together with PolyMet Mining Corp., "PolyMet" or the "Company") the Company is engaged in the exploration and development of natural resource properties. The Company's primary mineral property is the NorthMet Project ("NorthMet" or "Project"), a polymetallic project in northeastern Minnesota, United States of America, which comprises the NorthMet copper-nickel-precious metals ore body and the Erie Plant, a processing facility located approximately six miles from the ore body. The realization of the Company's investment in NorthMet and other assets is dependent upon various factors, including the existence of economically recoverable mineral reserves, the ability to obtain permits necessary to construct and operate NorthMet, the ability to obtain financing necessary to complete the development of NorthMet, and future profitable operations or alternatively, disposal of the investment on an advantageous basis.

The corporate address and records office of the Company are located at 100 King Street West, Suite 5700, Toronto, Ontario, Canada M5X 1C7, and 700 West Georgia, 25th Floor, Vancouver, British Columbia, Canada, V7Y 1B3, respectively. The executive office of Poly Met Mining, Inc. ("PolyMet US"), the Company's wholly-owned subsidiary, is located at 444 Cedar Street, Suite 2060, St. Paul, Minnesota, United States of America, 55101.

The consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the settlement of liabilities in the normal course of operations.

Liquidity risk is the risk the Company will not be able to meet its financial obligations as they become due and arises through the excess of financial obligations over financial assets due at any point in time. As at January 31, 2017, the Company had cash of \$18.674 million and working capital of \$16.267 million. The \$42.154 million secured convertible debt and \$65.752 million secured non-convertible debt due to Glencore AG, a wholly owned subsidiary of Glencore plc (together "Glencore"), are classified as non-current obligations based on the expected repayment date of March 31, 2018. If Glencore does not exchange the convertible debt for common shares upon maturity, PolyMet will need to renegotiate the agreement or raise sufficient funds to repay the entire debt. See additional details in Notes 7, 8, and 9.

Management believes, based upon the underlying value of the NorthMet Project, the advanced stage of permitting, the history of support from shareholders (see Notes 7, 8 and 9) and the ongoing discussions with numerous investment banks and investors regarding potential financing, that financing will continue to be available allowing the Company to meet its current obligations, as well as fund ongoing development, capital expenditures and administration expenses in accordance with the Company's spending plans through January 31, 2018. While in the past the Company has been successful in closing financing agreements, there can be no assurance it will be able to do so again. Factors that could affect the availability of financing include the state of debt and equity markets, investor perceptions and expectations, and the metals markets.

PolyMet Mining Corp.

Notes to Consolidated Financial Statements

As at January 31, 2017 and 2016 and for the years then ended
Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

2. Summary of Significant Accounting Policies

a) Statement of Compliance

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (“IASB”). The financial statements were approved by the Board of Directors on April 20, 2017.

b) Basis of Consolidation and Presentation

The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary. Intercompany balances and transactions have been eliminated on consolidation.

The consolidated financial statements have been prepared under the historical cost convention, as modified by the revaluation of assets available-for-sale. All dollar amounts presented are in United States (“U.S.”) dollars unless otherwise specified.

c) Critical Accounting Estimates and Judgments

The preparation of consolidated financial statements in conformity with IFRS requires the use of certain critical accounting estimates. These critical accounting estimates require management to make judgments and estimates that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as at the date of the financial statements.

Critical accounting estimates and judgments used in the preparation of the consolidated financial statements are as follows:

(i) Determination of mineral reserves

Reserves are estimates of the amount of product that can be economically and legally extracted from the Company’s property. In order to estimate reserves, estimates are required about a range of geological, technical and economic factors, including quantities, production techniques, production costs, capital costs, transport costs, demand, prices and exchange rates. Estimating the quantity of reserves requires the size, shape and depth of deposits to be determined by analyzing geological data. This process may require complex and difficult geological judgments to interpret the data. In addition, management will form a view of forecast sales prices, based on current and long-term historical average price trends. Changes in the proven and probable reserves estimates may impact the carrying value of property, plant and equipment, rehabilitation provisions, recognition of deferred tax amounts and depreciation, depletion and amortization.

PolyMet Mining Corp.
Notes to Consolidated Financial Statements

As at January 31, 2017 and 2016 and for the years then ended
Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

2. Summary of Significant Accounting Policies - Continued

c) Critical Accounting Estimates and Judgments - Continued

(ii) Impairment of non-financial assets

The carrying amounts of the Company's non-financial assets, including mineral property, plant and equipment, and wetland credit intangible are reviewed at each reporting date or when events or changes in circumstances occur that indicate the asset may not be recoverable to determine whether there is any indication of impairment. If any such indication exists, the asset's recoverable amount is estimated at the greater of its value in use and its fair value less costs of disposal. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. An impairment loss is recognized if the carrying amount of an asset exceeds its estimated recoverable amount. An impairment loss previously recorded is reversed if there has been a change in the estimates used to determine the recoverable amount resulting in an increase in the estimated service potential of an asset.

For its mineral property interest the Company considers both external and internal sources of information in assessing whether there are any indications of impairment. External sources of information the Company considers include changes in the market, economic and legal environment in which the Company operates that are not within its control and affect the recoverable amount of mineral property interests. Internal sources of information the Company considers include indications of economic performance of the asset. No impairment loss on the mineral property interest was recorded for the year ended January 31, 2017 or January 31, 2016.

The carrying value of mineral property, plant, and equipment, and wetland credit intangible at the balance sheet date is described in Note 4 and Note 5, respectively.

(iii) Provision for Environmental Rehabilitation Costs

Provisions for environmental rehabilitation costs associated with mineral property, plant and equipment, are recognized when the Company has a present legal or constructive obligation that can be estimated reliably, and it is probable an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax risk-free rate that reflects current market assessments of the time value of money.

The Company's estimates of its ultimate environmental rehabilitation liabilities could be affected by changes in regulations, changes in the extent of environmental rehabilitation required, changes in the means of rehabilitation, changes in the extent of responsibility for the financial liability or changes in cost estimates. The operations of the Company may in the future be affected from time to time in varying degrees by changes in environmental regulations, including those for future removal and site restoration costs. Both the likelihood of new regulations and their overall effect upon the Company may vary greatly and are not predictable.

The Company's provision for environmental rehabilitation cost obligations represents management's best estimate of the present value of the future cash outflows required to settle the liability. See additional discussion in Note 6.

PolyMet Mining Corp.
Notes to Consolidated Financial Statements

As at January 31, 2017 and 2016 and for the years then ended
Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

2. Summary of Significant Accounting Policies - Continued

d) Foreign Currency Translation

The U.S. dollar is the functional currency of the Company and its wholly-owned subsidiary. Amounts in the consolidated financial statements are expressed in U.S. dollars unless otherwise stated. Transactions in foreign currencies are translated into the functional currency at the exchange rates at the date of the transactions. Monetary assets and liabilities of the Company's operations denominated in a currency other than the U.S. dollar are translated using exchange rates prevailing at the balance sheet date. Revenue and expense items are translated at the exchange rates in effect at the date of the underlying transaction. Exchange differences are recognized in net loss in the year in which they arise.

e) Cash and Cash Equivalents

The Company considers cash and cash equivalents to include amounts held in banks and highly liquid investments with original maturities of three months or less.

f) Financial Assets

All financial assets are initially recorded at fair value and designated upon inception as one of the following four categories: held to maturity, available for sale, loans and receivables or at fair value through profit or loss ("FVTPL"). Financial assets classified as FVTPL are measured at fair value with unrealized gains and losses recognized through profit and loss. Financial assets classified as loans and receivables and held to maturity are measured at amortized cost using the effective interest method less any allowance for impairment. The effective interest method is a method of calculating the amortized cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period. Financial assets classified as available for sale are measured at fair value with unrealized gains and losses recognized in other comprehensive income or loss except when there is objective evidence that the asset is impaired, the cumulative income or loss that had been recognized shall be reclassified from equity to profit or loss as a reclassification adjustment. Transaction costs associated with FVTPL financial assets are expensed as incurred, while transaction costs associated with all other financial assets are included in the initial carrying amount of the asset. See additional discussion in Note 15.

PolyMet Mining Corp.
Notes to Consolidated Financial Statements

As at January 31, 2017 and 2016 and for the years then ended
Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

2. Summary of Significant Accounting Policies - Continued

g) Mineral Property, Plant and Equipment

Mineral Property

Exploration and evaluation costs incurred prior to a Definitive Feasibility Study (“DFS”) are expensed as incurred. Development costs incurred subsequent to a DFS and mineral property acquisition costs are capitalized until the property is placed into production, sold, allowed to lapse or abandoned. As a result of the DFS, NorthMet entered the development stage effective October 1, 2006. The Company has capitalized development expenditures related to NorthMet from that date.

Upon commencement of production, related property acquisition and development costs are amortized on a unit of production basis over the estimated proven and probable mineral reserves not to exceed the assets’ useful lives.

Plant and Equipment

Plant and equipment are recorded at historical cost less accumulated depreciation and if applicable, accumulated impairment losses. Subsequent costs are included in the asset’s carrying amount or recognized as a separate asset, as appropriate, if it is probable that the future economic benefits of the expenditure will flow to the Company and its cost can be measured reliably. The carrying amount of a replaced part is derecognized. All other repairs and maintenance are charged to the statement of loss and comprehensive loss during the period in which they are incurred. Plant and equipment is depreciated over the estimated life of the related assets calculated on a unit of production or straight-line basis, as appropriate.

Depreciation of plant and equipment is calculated using the cost of the asset, less its residual value, over the estimated useful life of the asset. Estimated useful lives are as follows:

Leasehold improvements	Straight-line over the term of the lease
Furniture and equipment	Straight-line over 10 years
Computers	Straight-line over 5 years
Computer software	Straight-line over 1 year

h) Wetland Credit Intangible

Wetland Credit Intangible costs and related acquisition costs are capitalized until the wetland credits are used, sold, or abandoned. Wetland credits are used to offset and mitigate wetlands disturbed during construction and operation of NorthMet. As such, costs are amortized on a unit of production basis over the estimated proven and probable mineral reserves not to exceed the assets’ useful lives. See additional discussion in Note 5.

PolyMet Mining Corp.

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2. Summary of Significant Accounting Policies - Continued

i) Financial Liabilities

All financial liabilities are initially recorded at fair value and designated upon inception as FVTPL or other financial liabilities. Financial liabilities classified as other financial liabilities are initially recognized at fair value less directly attributable transaction costs. After initial recognition, other financial liabilities are subsequently measured at amortized cost using the effective interest method. The effective interest method is a method of calculating the amortized cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period. Financial liabilities classified as FVTPL include financial liabilities held for trading and financial liabilities designated upon initial recognition as FVTPL. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Transaction costs on financial liabilities classified as FVTPL are expensed as incurred. At the end of each reporting period subsequent to initial recognition, financial liabilities at FVTPL are measured at fair value, with changes in fair value recognized directly in profit or loss in the period in which they arise. See additional discussion in Note 15.

j) Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset are capitalized as part of the cost of that asset until such time as the asset is substantially complete and ready for its intended use or sale. Where funds have been borrowed specifically to finance an asset, the amount capitalized is the actual borrowing costs incurred. Where the funds used to finance an asset form part of general borrowings, the amount capitalized is calculated using a weighted average of rates applicable to relevant borrowings of the Company during the period. Other borrowing costs not directly attributable to a qualifying asset are expensed in the year incurred. Classification in the cash flow statement is in accordance with the classification of the underlying asset to which those payments were capitalized.

k) Share-Based Compensation

All share-based compensation awards made to directors, employees and non-employees are measured and recognized using a fair value based method. For directors and employees, or those providing services similar to employees, the fair value of options is determined using the Black-Scholes pricing model. The fair value of the bonus shares, restricted shares, and restricted share units is calculated using the intrinsic value of the shares at issuance, and is amortised straight-line over the vesting period.

The fair value of the award is accrued and charged either to operations or mineral property plant and equipment, with the offsetting credit to equity reserves, on a graded method over the vesting period. If and when share options are ultimately exercised or bonus shares, restricted shares, and restricted share units vest, the applicable amounts from equity reserves are transferred to share capital.

Certain awards vest upon achievement of a specified performance condition. On a quarterly basis, management assesses the probability of achieving those performance conditions using the best available information, and estimates the appropriate vesting period.

When the Company amends the terms of share options, the incremental change in the fair value of the options due to the amendment, as determined using the Black-Scholes pricing model, is recognized over the vesting period in the statement of loss or capitalized as appropriate.

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2. Summary of Significant Accounting Policies - Continued

l) Share Purchase Warrants

The Company issues share purchase warrants in connection with certain equity transactions. The fair value of the warrants, as determined using the Black-Scholes pricing model or fair value of goods or services received, is credited to equity reserves. The recorded value of share purchase warrants is transferred to share capital upon exercise.

m) Loss Per Share

Loss per share is computed by dividing the loss for the year by the weighted average number of common shares outstanding during the year. Basic and diluted loss per share for each year presented are the same due to the effect of potential issuances of shares under warrant or share option agreements being, in total, anti-dilutive.

n) Income Taxes and Deferred Taxes

The income tax expense or benefit for the year consists of two components: current and deferred.

Current tax is the expected tax payable or receivable on the taxable profit or loss for the year. Current tax is calculated using tax rates and laws that were enacted or substantively enacted at the balance sheet date in each of the jurisdictions and include any adjustments for taxes payable or recovery in respect of prior periods.

Taxable profit or loss differs from profit or loss as reported in the Consolidated Statements of Loss and Comprehensive Loss because of items of income or expense that are taxable or deductible in other years, and items that are never taxable or deductible.

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax basis used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences not eligible for offset. Deferred tax assets are generally recognized for all deductible temporary differences, loss carry forwards and tax credit carry forwards to the extent that it is probable that taxable profits will be available against which they can be utilized. To the extent that the Company does not consider it to be probable that taxable profits will be available against which deductible temporary differences, loss carry forwards, and tax credit carry forwards can be utilized, a deferred tax asset is not recognized.

o) Future Accounting Changes

The Company anticipates that all of the relevant pronouncements will be adopted in the Company's accounting policy for the first period beginning after the effective date of the pronouncement. Information on new standards, amendments and interpretations that are expected to be relevant to the Company's financial statements is provided below. Certain other new standards and interpretations have been issued but are not expected to have a material impact on the Company's financial statements and are therefore not discussed below.

IFRS 9 – Financial Instruments - Classification and Measurement

IFRS 9 addresses the classification, measurement and recognition of financial assets and financial liabilities. This standard replaces parts of *IAS 39 - Financial Instruments: Recognition and Measurement*. IFRS 9 requires financial assets to be classified into two measurement categories: those measured at fair value and those measured at amortized cost. The determination is made at

PolyMet Mining Corp.

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2. Summary of Significant Accounting Policies - Continued

o) Future Accounting Changes – Continued

initial recognition. The classification depends on the entity's business model for managing its financial instruments and the contractual cash flow characteristics of the instrument. For financial liabilities, the standard retains most of the IAS 39 requirements. The main change is that, in cases where the fair value option is taken for financial liabilities, the part of a fair value change due to an entity's own credit risk is recorded in other comprehensive income rather than in net earnings, unless this creates an accounting mismatch. The new standard will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of adopting IFRS 9 on its consolidated financial statements.

IFRS 7 - Financial Instruments - Disclosures

IFRS 7 addresses disclosures for financial assets and financial liabilities. Amendments to this standard require new disclosures resulting from the amendments to IFRS 9 and will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of amendments to IFRS 7 on its consolidated financial statements.

IFRS 15 – Revenue from Contracts with Customers

IFRS 15 replaces *IAS 18 - Revenue* and *IAS 11 - Construction Contracts* and provides a five step framework for application to customer contracts: identification of customer contract, identification of the contract performance obligations, determination of the contract price, allocation of the contract price to the contract performance obligations, and revenue recognition as performance obligations are satisfied. A new requirement where revenue is variable stipulates that revenue may only be recognized to the extent that it is highly probable that significant reversal of revenue will not occur. The new standard will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of adopting IFRS 15 on its consolidated financial statements.

IFRS 16 – Leases

IFRS 16 replaces *IAS 17 - Leases* and eliminates the classification of leases as either operating or finance leases by the lessee. The treatment of leases by the lessee will require capitalization of all leases resulting in accounting treatment similar to finance leases under *IAS 17 - Leases*. Exemptions for leases of very low value or short-term leases will be applicable. The new standard will result in an increase in lease assets and liabilities for the lessee. Under the new standard the treatment of all lease expense is aligned in the statement of earnings with depreciation, and an interest expense component recognized for each lease, in line with finance lease accounting under *IAS 17 - Leases*. The new standard will be effective for annual periods beginning on or after January 1, 2019. The Company is currently assessing the impact of adopting IFRS 16 on its consolidated financial statements.

PolyMet Mining Corp.
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3. Mineral Property Agreements

NorthMet, Minnesota, U.S.A.

Pursuant to an agreement dated January 4, 1989, subsequently amended and assigned, the Company leases certain property in St. Louis County, Minnesota from RGGGS Land & Minerals Ltd., L.P. The Company can indefinitely extend the term by continuing to make \$150,000 annual lease payments on each successive anniversary date or can, at its option, terminate the lease at any time by giving written notice to the lessor not less than 90 days prior to the effective termination date. All lease payments have been paid to January 31, 2017. The next payment is due in January 2018.

Pursuant to an agreement effective December 1, 2008, the Company leases certain property in St. Louis County, Minnesota from LMC Minerals. The initial term of the renewable lease is 20 years and calls for minimum annual lease payments of \$3,000 for the first four years after which the minimum annual lease payment increased to \$30,000. The initial term may be extended for up to four additional five year periods on the same terms. All lease payments have been paid to January 31, 2017. The next payment is due in November 2017.

The lease payments are considered advance royalty payments and will be deducted from future production royalties payable to the lessor, which range from 3% to 5% based on the net smelter return per ton received by the Company. The Company's recovery of \$2.675 million in advance royalty payments to RGGGS Land & Minerals Ltd., L.P. is subject to the lessor receiving an amount not less than the amount of the annual lease payment due for that year. The Company's recovery of \$0.159 million in advance royalty payments to LMC Minerals is subject to the lessor receiving an amount not less than the amount of the annual lease payment due for that year.

Pursuant to the leases, the Company holds mineral rights and the right to mine upon receiving the required permits. The Company has proposed to acquire surface rights through a land exchange with the United States Forest Service ("USFS") authorized by the USFS on January 9, 2017 (see Note 9a).

4. Mineral Property, Plant and Equipment

Details of Mineral Property, Plant, and Equipment are as follows:

Net Book Value	NorthMet	Other fixed assets	Total
Balance at January 31, 2015	\$ 296,102	\$ 145	\$ 296,247
Additions	32,726	19	32,745
Changes to environmental rehabilitation provision (Note 6)	(7,269)	-	(7,269)
Amortization	-	(74)	(74)
Balance at January 31, 2016	321,559	90	321,649
Additions	38,767	89	38,856
Changes to environmental rehabilitation provision (Note 6)	4,467	-	4,467
Amortization	-	(59)	(59)
Balance at January 31, 2017	\$ 364,793	\$ 120	\$ 364,913

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4. Mineral Property, Plant and Equipment - Continued

NorthMet	January 31, 2017	January 31, 2016
Mineral property acquisition and interest costs	\$ 68,352	\$ 53,041
Mine plan and development	47,833	45,422
Environmental	111,421	95,709
Consulting and wages	49,715	45,770
Reclamation and remediation (Note 6)	66,652	62,185
Site activities	19,871	18,483
Mine equipment	949	949
Total	\$ 364,793	\$ 321,559

Erie Plant, Minnesota, U.S.A.

In February 2004, the Company entered into an option with Cliffs Natural Resources Inc. ("Cliffs") to purchase 100% ownership of large parts of the former LTV Steel Mining Company ore processing plant in northeastern Minnesota (the "Erie Plant"). The Company exercised this option in November 2005 under the Asset Purchase Agreement with Cliffs.

In December 2006, the Company acquired from Cliffs property and associated rights sufficient to provide it with a railroad connection linking the mine development site and the Erie Plant. The transaction also included a railcar fleet, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site and an additional 6,000 acres of land to the east and west of the existing tailings storage facilities.

The consideration paid for the Erie Plant and associated infrastructure was \$18.9 million in cash and 9,200,547 shares at a fair market value of \$13.953 million.

The Company indemnified Cliffs for reclamation and remediation obligations as a result of the above purchases (see Note 6). These obligations are presently contractual in nature under the terms of the purchase agreements with Cliffs. Once the Company obtains its permit to mine and Cliffs is released from its obligations by the State agencies, the Company's obligations will be direct with the governing bodies.

During the year ended January 31, 2017, the Company capitalized 100% of the borrowing costs on the convertible debt (see Note 8) and non-convertible debt (see Note 9) in the amount of \$15.103 million (January 31, 2016 - \$5.051 million) as part of the cost of NorthMet assets. As NorthMet assets are not in use or capable of operating in a manner intended by management, no amortization of these assets has been recorded to January 31, 2017.

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5. Wetland Credit Intangible and EIP Receivable

Details of Wetland Credit Intangible are as follows:

		For the year ended January 31,	
		2017	2016
Wetland Credit Intangible – beginning of year	\$	1,888	\$ 6,192
Additions		-	100
Disposals		-	(4,404)
Wetland Credit Intangible – end of year	\$	1,888	\$ 1,888

In March 2012, the Company acquired a secured interest in land owned by AG for Waterfowl, LLP ("AG") that is permitted for wetland restoration. AG subsequently assigned the agreement to EIP Minnesota, LLC ("EIP") in September 2012. EIP will restore the wetlands and, upon completion, wetland credits are to be issued by the proper governmental authorities. As part of the initial consideration, AG received warrants to purchase 1,249,315 common shares at \$1.3007 per share. These warrants expired on December 31, 2015 (see Note 10f).

On April 6, 2015, the Company entered into a revised agreement with EIP whereby EIP will seek to sell credits that the Company does not need to third parties and, over time, reimburse the Company for its costs. The financial instrument has been designated as available for sale. Upon closing of the transaction, the Company recognized the receivable at fair value calculated using a 9.25% discount rate and 12 year term resulting in a receivable of \$2.552 million and a non-cash loss of \$1.852 million. The Company will account for subsequent fair value changes through other comprehensive income or loss. Under the agreement, the Company retained the right to purchase up to 300 credits until February 28, 2017 with additional payments due only if the Company exercised that right in part or in full. Subsequent to year end, the right to purchase additional credits expired and EIP will seek to sell these credits and reimburse the Company for its costs under the terms of the April 2015 agreement.

Details of the EIP receivable are as follows:

		For the year ended January 31,	
		2017	2016
EIP Receivable – beginning of year	\$	2,517	\$ -
Initial recognition		-	2,552
Collections from EIP		(82)	(250)
Accretion		228	192
(Loss) / Gain on re-measurement		(7)	23
EIP Receivable – end of year		2,656	2,517
Less current portion		(644)	(364)
Non-current portion	\$	2,012	\$ 2,153

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6. Environmental Rehabilitation Provision

Details of Environmental Rehabilitation Provision are as follows:

		For the year ended January 31,	
		2017	2016
Environmental Rehabilitation Provision – beginning of year	\$	65,684	\$ 72,260
Change in estimate		4,467	(7,269)
Liabilities discharged		(990)	(970)
Accretion expense		1,465	1,663
Environmental Rehabilitation Provision – end of year		70,626	65,684
Less current portion		(781)	(1,498)
Non-current portion	\$	69,845	\$ 64,186

Federal, state and local laws and regulations concerning environmental protection affect the NorthMet assets. As part of the consideration for the Cliffs Purchase Agreements (see Note 4), the Company indemnified Cliffs for reclamation and remediation obligations of the acquired property. The Company's provisions are based upon existing laws and regulations. It is not currently possible to estimate the impact on operating results, if any, of future legislative or regulatory developments.

In April 2010, Cliffs entered into a consent decree with the Minnesota Pollution Control Agency ("MPCA") relating to alleged violations on the Cliffs Erie Property. This consent decree required both short-term and long-term mitigation. Field study activities were completed in 2010 and 2011 and short-term mitigations approved by the MPCA were initiated in 2011. In April 2012, long-term mitigation plans were submitted to the MPCA and, in October 2012, the MPCA approved plans for pilot tests of various treatment options to determine the best course of action. Although there is substantial uncertainty related to applicable water quality standards, engineering scope, and responsibility for the financial liability, the October 2012 response from the MPCA and subsequent communications amongst the MPCA, Cliffs and the Company provide increasing clarification of the potential liability for the long-term mitigation included in the Company's environmental rehabilitation provision.

The Company's best estimate of the environmental rehabilitation provision under IFRS at January 31, 2017 was \$70.6 million (January 31, 2016 - \$65.7 million) based on estimated cash flows required to settle this obligation in present day costs of \$79.2 million (January 31, 2016 - \$69.5 million), a projected inflation rate of 2.00% (January 31, 2016 – 2.00%), a market risk-free interest rate of 2.78% (January 31, 2016 – 2.36%) and expenditures expected to occur over a period of approximately 31 years.

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7. Glencore Financing

Since October 2008, the Company and Glencore have entered into a series of financing and other agreements comprising:

- Equity – five separate agreements comprising \$25.0 million placement of PolyMet common shares in calendar 2009 in two tranches; a \$30.0 million placement of PolyMet common shares in calendar 2010 in three tranches; a \$20.0 million placement of PolyMet common shares in calendar 2011 in one tranche; a \$20.960 million purchase of PolyMet common shares in the 2013 Rights Offering; and a \$10.583 million purchase of PolyMet common shares in the 2016 Private Placement (see Note 10);
- Convertible debt (“Glencore Convertible Debt”) – agreement comprising \$25.0 million initial principal secured convertible debentures drawn in four tranches (see Note 8);
- Non-convertible debt (“Glencore Non-Convertible Debt”) – three separate agreements comprising \$30.0 million initial principal secured debentures in calendar 2015 drawn in four tranches; an \$11.0 million initial principal secured debenture in calendar 2016 drawn in one tranche; and a \$14.0 million initial principal secured debenture in calendar 2016 drawn in four tranches (see Note 9b);
- Marketing Agreement whereby Glencore committed to purchase all of the Company’s production of concentrates, metal, or intermediate products on market terms at the time of delivery for at least the first five years of production; and
- Corporate Governance Agreement whereby from January 1, 2014 as long as Glencore holds 10% or more of PolyMet’s shares (on a fully diluted basis), Glencore has the right, but not obligation, to nominate at least one director and not more than the number of directors proportionate to Glencore’s fully diluted ownership of PolyMet, rounded down to the nearest whole number, such number to not exceed 49% of the total board.

As a result of these financing transactions and the purchase by Glencore of PolyMet common shares previously owned by Cliffs, Glencore’s ownership and ownership rights of PolyMet as at January 31, 2017 comprises:

- 92,836,072 shares representing 29.1% of PolyMet’s issued shares (January 31, 2016 - 78,724,821 shares);
- Glencore Convertible Debt exchangeable through the exercise of an exchange warrant (“Exchange Warrant”) at \$1.2696 per share into 33,265,768 common shares of PolyMet (including capitalized and accrued interest as at January 31, 2017) until the earlier of March 31, 2018, availability of \$100 million of debt or equity financing, or an earlier date on which PolyMet can demonstrate that it is prudent to repay the debentures, subject to ten days notice during which time Glencore can elect to exercise the Exchange Warrant, and where the exercise price and the number of shares issuable are subject to conventional anti-dilution provisions. See Note 8 for additional details;
- Warrants to purchase 6,458,001 common shares at \$0.8231 per share at any time until December 31, 2017 (“Purchase Warrants”), subject to mandatory exercise if the 20-day volume weighted average price (“VWAP”) of PolyMet common shares is equal to or greater than 150% of the exercise price and PolyMet has received permits and construction finance is available (“Exercise Triggering Event”), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions;

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7. Glencore Financing - *Continued*

- Warrants to purchase 7,055,626 common shares at \$1.00 per share at any time until October 28, 2021, subject to acceleration on the earlier of receipt of permits necessary to construct NorthMet or the 12 month anniversary of the issue date provided the 20-day VWAP of PolyMet common shares is equal to or greater than \$1.50 ("Acceleration Triggering Event"), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. See 2016 Agreements below for additional details; and
- Warrants to purchase 625,000 common shares at \$0.7797 per share at any time until October 28, 2021, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. See 2016 Agreements below for additional details.

If Glencore were to exercise all of its rights and obligations under these agreements, it would own 140,240,467 common shares of PolyMet, representing 38.3% on a partially diluted basis, that is, if no other options or warrants were exercised or 34.8% on a fully diluted basis, if all other options and warrants were exercised, whether they are in-the-money or not.

2015 Agreements

On July 30, 2015, the Company extended the term of the Glencore Convertible Debentures and the expiration date of the associated Exchange Warrant to March 31, 2016 and the interest rate was increased from 12 month U.S. dollar LIBOR plus 4.0% to 12 month U.S. dollar LIBOR plus 8.0% effective August 1, 2015. The Purchase Warrant expiration date was extended to December 31, 2016 and the exercise price was reduced from \$1.3022 per share to \$0.9292 per share. The transaction was accounted for as a modification of the existing convertible debt with the \$1.241 million difference in the fair value of the purchase warrants as a result of the extension in term and price reduction being recorded within equity. See additional details below and in Notes 8 and 9.

On December 15, 2015, the Company extended the term of the Glencore Convertible Debentures, the expiration date of the associated Exchange Warrant and extended the term of Glencore Non-Convertible Debentures to the earlier of i) March 31, 2017, ii) availability of \$80 million of debt or equity financing or iii) an earlier date on which PolyMet can demonstrate that it is prudent to repay the debentures, subject to ten-days notice during which time Glencore can elect to exercise the Exchange Warrant. The interest rate was increased from 12 month U.S. dollar LIBOR plus 8.0% to 12 month U.S. dollar LIBOR plus 15.0% effective January 1, 2016. The Purchase Warrant expiration date was extended to December 31, 2017 and the exercise price was reduced from \$0.9292 per share to \$0.8231 per share. The transactions were accounted for as a modification of the existing convertible debt with the \$0.615 million difference in the fair value of the purchase warrants as a result of the extension in term and price reduction being recorded within equity. See additional details below and in Notes 8 and 9.

2016 Agreements

On January 27, 2016, the Company issued to Glencore a Tranche J secured debenture with the total principal amount of \$11.0 million. The interest rate on this debenture was 12 month U.S. dollar LIBOR plus 15.0% per annum payable in cash upon maturity, which was the earlier of i) March 31, 2017, ii) availability of \$80 million of debt or equity financing or iii) an earlier date on which PolyMet can demonstrate that it is prudent to repay the debentures. The Company provided security by way of a guarantee and a pledge of the assets of the Company and its wholly-owned subsidiary. The Company recognized this debenture initially at fair value and subsequently accounted for the debenture at amortized cost. Transaction costs for the financing were \$0.050 million. See additional details below and in Notes 8 and 9.

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7. Glencore Financing - Continued

On June 3, 2016, the Company issued \$3.0 million Tranche K secured debenture, on July 1, 2016 it issued \$5.0 million Tranche L-1 secured debenture, on July 26, 2016 it issued \$3.0 million Tranche L-2 secured debenture, and on August 5, 2016 it issued \$3.0 million Tranche M secured debenture to Glencore. Each of these debentures bears interest at 12 month U.S. dollar LIBOR plus 15.0%. The Company provided security on these debentures covering all of the assets of PolyMet, including a pledge of PolyMet's 100% ownership of Poly Met Mining, Inc. The due date of these debentures was initially the earlier of (i) March 31, 2017 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. See additional details below and in Note 9.

On September 14, 2016, the Company extended the term of the Glencore Non-Convertible Debt, the term of the Glencore Convertible Debt and the expiration date of the associated Exchange Warrant to the earlier of (i) March 31, 2018 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. In connection with this extension, the Company issued warrants to purchase 625,000 common shares at \$0.7797 per share at any time until October 28, 2021, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. All other terms of the debt were unchanged. The transaction has been accounted for as a modification of the existing debentures with the \$0.250 million fair value of the warrants allocated pro rata on the basis of the Glencore Non-Convertible Debt and Glencore Convertible Debt and an offsetting entry to equity reserves. See additional details in Notes 8 and 9.

On October 28, 2016, the Company issued 14,111,251 units ("Glencore Units") to Glencore for gross proceeds of \$10.583 million pursuant to Glencore's right to maintain its pro rata ownership following the private placement which closed on October 18, 2016. Each Glencore Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. See additional details in Note 10.

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8. Convertible Debt

Details of the Convertible Debt are as follows:

		For the year ended January 31,	
		2017	2016
Convertible Debt – beginning of year	\$	35,986	\$ 33,451
Accretion and capitalized interest		6,168	2,535
Convertible Debt – end of year		42,154	35,986
Less current portion		-	-
Non-current portion	\$	42,154	\$ 35,986

Since October 2008, the Company has issued \$25.0 million of secured convertible debentures to Glencore. The Company has provided security on these debentures covering all of the assets of PolyMet and PolyMet US, including a pledge of PolyMet's 100% shareholding in PolyMet US.

These debentures bear interest at 12 month U.S. dollar LIBOR plus 4.0% through July 31, 2015, 12 month U.S. dollar LIBOR plus 8.0% through December 31, 2015, and 12 month U.S. dollar LIBOR plus 15.0% beginning January 1, 2016. Interest is compounded quarterly and payable in cash or by increasing the principal amount of the debentures, at Glencore's option. Since inception, \$17.154 million of interest had been accreted and capitalized to the principal amount of the debenture. All borrowing costs were eligible for capitalization and 100% of these costs were capitalized during the year ended January 31, 2017.

Following the amendments agreed to on September 14, 2016 (see Note 7), the due date of these debentures is the earlier of (i) March 31, 2018 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. Upon receipt of ten days notice of PolyMet's intention to repay the debentures Glencore can exercise the Exchange Warrant and exchange the initial principal and capitalized interest into common shares of PolyMet at \$1.2920 per share. As a result of anti-dilution provisions in the agreement, following the private placement which closed on October 18, 2016, the exchange price was adjusted to \$1.2696 per share from \$1.2920 per share (see Note 10). The adjustment did not have a material impact to the financial statements. Glencore has the right to exchange some or all of the debentures at any time under the same conversion terms.

PolyMet Mining Corp.
Notes to Consolidated Financial Statements

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Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

9. Non-Convertible Debt

Details of Non-Convertible Debt are as follows:

		For the year ended January 31,	
		2017	2016
IRRRB – beginning of year	\$	4,962	\$ 4,614
Accretion and capitalized interest		149	348
Repayment		(5,111)	-
IRRRB – end of year (Note 9a)		-	4,962
Glencore – beginning of year		43,023	7,855
Accretion and capitalized interest		8,786	2,168
Funding, net of costs		13,943	33,000
Glencore – end of year (Note 9b)		65,752	43,023
Total Non-Convertible Debt		65,752	47,985
Less current portion		-	(4,962)
Non-current portion	\$	65,752	\$ 43,023

a) **IRRRB**

During the year ended January 31, 2017, the Company fully repaid a \$4.0 million initial principal loan, drawn in June 2011 from the Iron Range Resources & Rehabilitation Board ("IRRRB"). The loan was used to exercise the Company's options to acquire land as part of the proposed land exchange with the USFS authorized by the USFS on January 9, 2017. The loan was secured by the land acquired and carried a fixed interest rate of 5%, compounded annually. Warrants giving the IRRRB the right to purchase 461,286 shares of its common shares at \$2.1678 per share expired on June 30, 2016. All borrowing costs were eligible for capitalization and 100% of these costs were capitalized during the year ended January 31, 2017.

b) **Glencore**

Since January 2015, the Company has issued \$55.0 million of secured non-convertible debentures to Glencore, including \$14.0 million during the year ended January 31, 2017. On June 3, 2016, the Company issued \$3.0 million Tranche K secured debenture, on July 1, 2016 it issued \$5.0 million Tranche L-1 secured debenture, on July 26, 2016 it issued \$3.0 million Tranche L-2 secured debenture, and on August 5, 2016 it issued \$3.0 million Tranche M secured debenture to Glencore. The Company has provided security on these debentures covering all of the assets of PolyMet and PolyMet US, including a pledge of PolyMet's 100% shareholding in PolyMet US. Each of these debentures bears interest at 12 month U.S. dollar LIBOR plus 15.0%. The due date of these debentures was initially the earlier of (i) March 31, 2017 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. All borrowing costs were eligible for capitalization and 100% of these costs were capitalized during the year ended January 31, 2017.

On September 14, 2016, the Company extended the term of the Glencore Non-Convertible Debentures to the earlier of (i) March 31, 2018 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. See Note 7 for additional details.

PolyMet Mining Corp.
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10. Share Capital

a) Issuances for Cash and Land Acquisition

On October 18, 2016, the Company issued 25,963,167 units ("Placement Units") in a private placement to subscribers for gross proceeds of \$19.472 million. Each Placement Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. A total of 25,963,167 common shares and 13,641,586 purchase warrants were issued under this transaction, including 660,005 broker warrants issued to the underwriters. The amount attributable to common shares was \$15.881 million and the amount attributable to warrants was \$2.174 million, which includes the broker warrant fair value of \$0.151 million. Transaction costs for the issuance were \$1.568 million. The closing triggered customary anti-dilution provisions for the Exchange Warrant. See Note 8 for additional details.

On October 28, 2016, the Company issued 14,111,251 units ("Glencore Units") to Glencore for gross proceeds of \$10.583 million pursuant to Glencore's right to maintain its pro rata ownership following the private placement which closed on October 18, 2016. Each Glencore Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. A total of 14,111,251 common shares and 7,055,626 purchase warrants were issued under this transaction. The amount attributable to common shares was \$9.210 million and the amount attributable to warrants was \$1.270 million. Transaction costs for the issuance were \$0.103 million.

During the year ended January 31, 2017 the Company issued no shares (January 31, 2016 – 275,000 shares) pursuant to the exercise of share purchase options for proceeds of \$nil (January 31, 2016 - \$0.216 million).

During the year ended January 31, 2017 the Company issued 241,376 shares (January 31, 2016 – 224,038 shares) to maintain land purchase options.

PolyMet Mining Corp.
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10. Share Capital - Continued

b) Share-Based Compensation

The Omnibus Share Compensation Plan (“Omnibus Plan”) was created to align the interests of the Company’s employees, directors, officers and consultants with those of shareholders. Effective May 25, 2007, the Company adopted the Omnibus Plan, which was approved by the Company’s shareholders on June 27, 2007, modified and further ratified and reconfirmed by the Company’s shareholders most recently on July 15, 2015. The Omnibus Plan restricts the award of share options, restricted shares, restricted share units, and other share-based awards to 10% of the common shares issued and outstanding on the grant date, excluding 2,500,000 common shares pursuant to an exemption approved by the Toronto Stock Exchange.

During the year ended January 31, 2017, the Company recorded \$2.518 million for share-based compensation (January 31, 2016 - \$0.835 million) with \$1.808 million expensed to share-based compensation (January 31, 2016 - \$0.457 million) and \$0.710 million capitalized to mineral property, plant and equipment (January 31, 2016 - \$0.378 million). The offsetting entries were to equity reserves. Total share-based compensation for the year ended January 31, 2017 comprised \$1.490 million for share options (January 31, 2016 - \$0.146 million), \$0.916 million for restricted shares and restricted share units (January 31, 2016 - \$0.689 million), and \$0.112 million for issuance of unrestricted shares (January 31, 2016 - \$nil). Vesting of restricted share units during the year ended January 31, 2017 resulted in \$0.694 million being transferred from equity reserves to share capital (January 31, 2016 - \$0.950 million). Exercise of share options during the year ended January 31, 2016 resulted in \$0.218 million being transferred from equity reserves to share capital.

c) Share Options

Share options granted may not exceed a term of ten years and are forfeited if the grantee ceases to be an eligible person under the Omnibus Plan. Details of share options are as follows:

	Year ended January 31, 2017		Year ended January 31, 2016	
	Number of Options	Weighted Average Exercise Price	Number of Options	Weighted Average Exercise Price
Outstanding – beginning of year	18,975,002	1.29	21,085,002	1.33
Granted	5,502,000	0.76	338,000	1.50
Exercised	-	-	(275,000)	0.79
Expired	(3,515,000)	1.64	(2,173,000)	1.59
Outstanding – end of year	20,962,002	1.10	18,975,002	1.29

The weighted average share price when share options were exercised during the year ended January 31, 2016 was \$1.15.

PolyMet Mining Corp.
Notes to Consolidated Financial Statements

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10. Share Capital - Continued

c) **Share Options - Continued**

The fair value of share options granted was estimated at the date of grant using the Black-Scholes pricing model with the following weighted average assumptions:

	For the year ended January 31,	
	2017	2016
Risk-free interest rate	1.01% to 1.30%	0.93%
Expected dividend yield	Nil	Nil
Expected forfeiture rate	Nil	Nil
Expected volatility	55.88% to 59.17%	49.61%
Expected life in years	2.50 to 5.00	2.50
Weighted average fair value of each option	\$0.26 to \$0.38	\$0.32

The expected volatility reflects the Company's expectation that historical volatility over a period similar to the life of the option is indicative of future trends, which may or may not necessarily be the actual outcome.

Details of share options outstanding as at January 31, 2017 are as follows:

Range of Exercise Prices	Number of options outstanding	Number of options exercisable	Weighted Average Exercise Price	Weighted Average Remaining Life
0.7110 to 0.8671	10,112,000	9,228,667	0.75	4.57
0.9300 to 1.1500	6,907,002	6,907,002	1.02	5.45
1.5000 to 1.8816	1,928,000	1,928,000	1.69	3.23
2.0475 to 2.4886	615,000	415,000	2.31	1.35
2.5059 to 3.0695	1,400,000	1,227,500	2.65	0.64
	20,962,002	19,706,169	1.10	4.38

As at January 31, 2017 all outstanding share options had vested and were exercisable, with the exception of 1,255,833, which were scheduled to vest upon completion of specific targets (Permits – 908,333; Construction – 87,500; Production – 200,000; Other – 60,000). The outstanding share options have expiry periods between 0.04 and 9.45 years.

PolyMet Mining Corp.
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10. Share Capital - Continued

d) Restricted Shares and Restricted Share Units

Restricted shares and restricted share units granted are forfeited if the grantee ceases to be an eligible person under the Omnibus Plan. Details of restricted shares and restricted share units are as follows:

	For the year ended January 31,	
	2017	2016
Outstanding - beginning of year	990,471	2,130,286
Issued	2,303,239	-
Forfeited	-	(64,667)
Vested	(675,690)	(1,075,148)
Outstanding - end of year	2,618,020	990,471

During the year ended January 31, 2017, the Company issued 2,303,239 restricted share units which had a fair value of \$1.740 million to be expensed and capitalized over the vesting periods.

During the year ended January 31, 2017, there were 138,209 restricted share units settled with \$0.119 million in cash upon vesting (January 31, 2016 – 254,125 restricted share units settled with \$0.155 million in cash).

During the year ended January 31, 2016, there were 41,667 restricted share units and 23,000 restricted shares forfeited upon individuals ceasing to be eligible persons under the Plan.

As at January 31, 2017 outstanding restricted shares and restricted share units were scheduled to vest upon completion of specific targets or dates (Permits – 157,391; Production – 157,390; February 2018 – 1,226,521; January 2019 – 860,663; Other – 216,055).

e) Bonus Shares

The bonus share incentive plan was established for the Company's directors and key employees and was approved by the disinterested shareholders at the Company's shareholders' meeting held in May 2004. The Company has authorized 3,640,000 bonus shares for the achievement of Milestone 4 representing commencement of commercial production at NorthMet at a time when the Company has not less than 50% ownership interest in NorthMet. At the Company's Annual General Meeting of shareholders held in June 2008, the disinterested shareholders approved the bonus shares for Milestone 4. Regulatory approval is required prior to issuance of these shares. Details of bonus shares are as follows:

	Year ended January 31, 2017		Year ended January 31, 2016	
	Allocated	Authorized & Unissued	Allocated	Authorized & Unissued
Outstanding – beginning of year	3,150,000	3,640,000	3,150,000	3,640,000
Outstanding – end of year	3,150,000	3,640,000	3,150,000	3,640,000

The fair value of these unissued bonus shares is being amortized until the estimated date of issuance. During the year ended January 31, 2017, the Company recorded \$0.304 million amortization related to Milestone 4 bonus shares (January 31, 2016 – \$0.333 million), which was capitalized to Mineral Property, Plant and Equipment.

PolyMet Mining Corp.
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10. Share Capital - Continued

f) Share Purchase Warrants

Details of share purchase warrants are as follows:

	Year ended January 31, 2017		Year ended January 31, 2016	
	Number of Purchase Warrants	Weighted Average Exercise Price	Number of Purchase Warrants	Weighted Average Exercise Price
Outstanding – beginning of year	6,919,287	\$ 0.91	8,168,602	\$ 1.35
Issued (<i>Notes 7 and 10a</i>)	21,322,212	0.99	-	-
Expiration (<i>Notes 5 and 9a</i>)	(461,286)	(2.17)	(1,249,315)	(1.30)
Glencore Adjustments (<i>Note 7</i>)	-	-	-	(0.48)
Outstanding – end of year	27,780,213	\$ 0.95	6,919,287	\$ 0.91

The outstanding share purchase warrants have expiry periods between 0.92 years and 4.74 years, subject to acceleration in certain circumstances.

The fair value of share purchase warrants granted was estimated at the date of grant using the Black-Scholes pricing model with the following weighted average assumptions:

	For the year ended January 31,	
	2017	2016
Risk-free interest rate	0.98% to 1.33%	Nil
Expected dividend yield	Nil	Nil
Expected forfeiture rate	Nil	Nil
Expected volatility	55.58% to 58.47%	Nil
Expected life in years	2.50 to 5.00	Nil
Weighted average fair value of each warrant ⁽¹⁾	\$0.19 to \$0.40	Nil

⁽¹⁾ The fair value of share purchase warrants was used in determining the allocation of net proceeds under the relative fair value method for Placement Units on October 18, 2016 and Glencore Units on October 28, 2016.

The expected volatility reflects the Company's expectation that historical volatility over a period similar to the life of the warrant is indicative of future trends, which may or may not necessarily be the actual outcome.

PolyMet Mining Corp.
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11. Finance Costs - Net

Details of net finance costs are as follows:

	Year ended January 31,	
	2017	2016
Debt accretion and capitalized interest:		
Convertible debt (<i>Notes 7 and 8</i>)	\$ 6,168	\$ 2,535
Non-convertible debt (<i>Notes 7 and 9</i>)	8,935	2,516
Environmental rehabilitation provision accretion (<i>Note 6</i>)	1,465	1,663
Other finance costs	1,261	375
Less: amounts capitalized on qualifying assets	(15,103)	(5,051)
Finance costs	2,726	2,038
Interest income:		
Bank deposits	(54)	(21)
Finance income	(54)	(21)
Finance costs - net	\$ 2,672	\$ 2,017

12. Related Party Transactions

The Company conducted transactions with senior management, directors and persons or companies related to these individuals, and paid or accrued amounts, as follows:

	Year ended January 31,	
	2017	2016
Salaries and other short-term benefits	\$ 1,828	\$ 1,825
Other long-term benefits	44	36
Share-based payment ⁽¹⁾	1,709	411
Total	\$ 3,581	\$ 2,272

⁽¹⁾ Share-based payment represents the amount expensed during the period and are described in Note 10.

There are agreements with key employees that contain severance provisions for termination without cause or in the event of a take-over. Other than the President and Chief Executive Officer, none of PolyMet's other directors has a service contract with the Company providing for benefits upon termination of their employment.

As a result of Glencore's ownership of 29.1% of the Company it is also a related party. PolyMet has entered into a Technical Services Agreement with Glencore whereby PolyMet reimburses Glencore for costs associated with providing technical support to PolyMet, primarily in detailed project design and mineral processing where PolyMet requests assistance under an agreed scope of work. During the year ended January 31, 2017, the Company recorded \$0.102 million (year ended January 31, 2016 - \$3.350 million) for services under this agreement. PolyMet has also entered into a Financing Advisory Agreement with Glencore whereby PolyMet reimburses Glencore for costs associated with providing financing advisory support to PolyMet. During the year ended January 31, 2017, the Company recorded \$0.730 million (year ended January 31, 2016 - \$nil) for services under this agreement. Additional transactions with Glencore are described in Notes 7, 8, and 9.

PolyMet Mining Corp.
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13. Income Taxes

a) Effective tax rate

The effective tax rate differs from the cumulative Canadian federal and provincial income tax rate due to the following:

	Year ended January 31,	
	2017	2016
Loss for the year before taxes	\$ (9,229)	\$ (9,346)
Canadian statutory tax rate	26.0%	26.0%
Expected tax recovery	(2,400)	(2,430)
Difference in foreign tax rates	(413)	(771)
Non-deductible items	470	119
Change in unrecognized deferred tax and other items	2,343	3,082
Income Tax Expense / (Recovery)	\$ -	\$ -

b) Deferred income tax assets and liabilities

Deferred income tax assets and liabilities have been recognized in respect of the following items:

	Year ended January 31,	
	2017	2016
Non-capital loss carry forward assets	\$ 35,992	\$ 31,488
Mineral property acquisition, exploration and development costs	(35,992)	(31,488)
Other	-	-
Net deferred income tax liabilities	\$ -	\$ -

Deferred income tax assets have not yet been recognized in respect of the following items:

	Year ended January 31,	
	2017	2016
Non-capital loss carry forward assets	\$ 25,619	\$ 22,380
Capital loss carry forward assets	347	347
Intercompany receivable assets	2,031	2,031
Other assets	1,059	1,074
Unrecognized deferred income tax assets	\$ 29,056	\$ 25,832

As of January 31, 2017, the Company has Canadian non-capital loss carry forwards of approximately \$37.8 million (January 31, 2016 - \$24.5 million) and US non-capital loss carry forwards of approximately \$125.6 million (January 31, 2016 - \$115.1 million). The non-capital loss carry forwards are available to reduce future income for tax purposes and expire between 2019 and 2037, except for US state non-capital loss carry forwards which expire between 2018 and 2032.

The Company is not recognizing these deferred tax assets because they relate to entities that have a history of losses and there is not yet adequately convincing evidence that these entities will generate future taxable income to enable timely offset.

PolyMet Mining Corp.
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14. Commitments and Contingencies

In addition to items described elsewhere in these financial statements:

- a) As at January 31, 2017, the Company had firm commitments related to the environmental permitting process, land options, and rent of approximately \$1.1 million with the majority due over the next year and the remainder due over three years.
- b) As at January 31, 2017, the Company had non-binding commitments to maintain its mineral lease rights of \$0.180 million with all due in the next year.
- c) The following table lists the known contractual obligations as at January 31, 2017:

Contractual Obligations	Carrying Value	Contractual Cash flows	Less than 1 year	1 – 3 years	3 – 5 years	More than 5 years
Accounts payable and accrued liabilities	\$ 3,188	\$ 3,188	\$ 3,188	\$ -	\$ -	\$ -
Convertible debt (Note 8)	42,154	51,099	-	51,099	-	-
Non-convertible debt (Note 9)	65,752	79,766	-	79,766	-	-
Firm commitments	-	1,127	908	219	-	-
Total	\$ 111,094	\$ 135,180	\$ 4,096	\$ 131,084	\$ -	\$ -

15. Financial Instruments and Risk Management

The Company's financial instruments are classified as loans and receivables, available for sale, and other financial liabilities.

The carrying values of each classification of financial instrument at January 31, 2017 are:

	Loans and receivables	Available for sale	Other financial liabilities	Total carrying value
Financial assets				
Cash	\$ 18,674	\$ -	\$ -	\$ 18,674
Amounts receivable	105	2,656	-	2,761
Total financial assets	\$ 18,779	\$ 2,656	\$ -	\$ 21,435
Financial liabilities				
Accounts payable and accrued liabilities	\$ -	\$ -	\$ 3,188	\$ 3,188
Convertible debt	-	-	42,154	42,154
Non-convertible debt	-	-	65,752	65,752
Total financial liabilities	\$ -	\$ -	\$ 111,094	\$ 111,094

PolyMet Mining Corp.
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15. Financial Instruments and Risk Management - Continued

The carrying values of each classification of financial instrument at January 31, 2016 are:

	Loans and receivables	Available for sale	Other financial liabilities	Total carrying value
Financial assets				
Cash	\$ 10,256	\$ -	\$ -	\$ 10,256
Amounts receivable	65	2,517	-	2,582
Total financial assets	\$ 10,321	\$ 2,517	\$ -	\$ 12,838
Financial liabilities				
Accounts payable and accrued liabilities	\$ -	\$ -	\$ 3,348	\$ 3,348
Convertible debt	-	-	35,986	35,986
Non-convertible debt	-	-	47,985	47,985
Total financial liabilities	\$ -	\$ -	\$ 87,319	\$ 87,319

Fair Value Measurements

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

- Level 1 – Quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2 – Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 – Inputs for the asset or liability that are not based on observable market data.

The fair values of cash, current amounts receivable, and accounts payable and accrued liabilities approximate their carrying amounts due to their short-term nature.

The fair value of convertible debt and non-convertible debt approximates the carrying amount at amortized cost using the effective interest method. The Company believes this is appropriate as the transaction was negotiated at arms length and the interest rate is floating. The following table shows the impact of changes in the interest rate used to fair value the convertible debt and non-convertible debt for disclosure purposes:

	Impact on fair value due to 2% decrease in interest rate	Impact on fair value due to 1% decrease in interest rate	Impact on fair value due to 1% increase in interest rate	Impact on fair value due to 2% increase in interest rate
Convertible debt	867	429	(421)	(835)
Non-convertible debt	1,352	670	(657)	(1,303)

PolyMet Mining Corp.

Notes to Consolidated Financial Statements

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15. Financial Instruments and Risk Management - *Continued*

Risks Arising from Financial Instruments and Risk Management

The Company's activities expose it to a variety of financial risks: market risk (including currency and interest rate), credit risk, and liquidity risk. Reflecting the current stage of development of the Company's NorthMet Project, the overall risk management program focuses on facilitating the Company's ability to continue as a going concern and seeks to minimize potential adverse effects on the Company's ability to execute its business plan.

Risk management is the responsibility of executive management. Material risks are identified and monitored and are discussed with the Audit Committee and the Board of Directors.

Currency Risk

The Company incurs expenditures in Canada and in the United States. The functional and reporting currency of the Company and its subsidiary is the U.S. dollar. Foreign exchange risk arises because the amount of Canadian dollar cash, amounts receivable, or accounts payable and accrued liabilities will vary in U.S. dollar terms due to changes in exchange rates.

As the majority of the Company's expenditures are in U.S. dollars, the Company has kept a significant portion of its cash in U.S. dollars. The Company has not hedged its exposure to currency fluctuations as the exposure to currency risk is currently insignificant.

Interest Rate Risk

Interest rate risk arises from interest paid on floating rate debt and interest received on cash and short-term deposits. The Company has not hedged any of its interest rate risk. The Company currently capitalizes to qualifying assets the majority of interest charges, and therefore the risk exposure is primarily on cash interest payable and net earnings in relation to the subsequent depreciation of capitalized interest charges.

The Company was exposed to interest rate risk through the following assets and liabilities:

	January 31, 2017	January 31, 2016
Cash	\$ 18,674	\$ 10,256
Convertible debt	42,154	35,986
Non-convertible debt	\$ 65,752	\$ 47,985

Credit Risk

Credit risk arises on cash held with banks and financial institutions, as well as credit exposure on outstanding amounts receivable. The maximum exposure to credit risk is equal to the carrying value of the financial assets of \$21.435 million.

The Company's cash is primarily held through a large Canadian financial institution.

PolyMet Mining Corp.
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15. Financial Instruments and Risk Management - *Continued*

Liquidity Risk

Liquidity risk is the risk the Company will not be able to meet its financial obligations as they become due and arises through the excess of financial obligations over available financial assets due at any point in time. The Company's objective in managing liquidity risk is to maintain sufficient readily available reserves in order to meet its liquidity requirements at any point in time and is achieved by maintaining sufficient cash. See additional discussion in Note 1.

Capital Management

The Company's capital management objective is to safeguard the Company's ability to continue as a going concern in order to pursue the development of its mineral property. In the management of capital, the Company includes the components of shareholders' equity, convertible debt and non-convertible debt. The Company manages the capital structure and makes adjustments to it depending on economic conditions and the rate of anticipated expenditures. To maintain or adjust the capital structure, the Company may attempt to issue new shares, issue new debt, acquire or dispose of assets. The Company has no externally imposed capital requirements.

In order to assist in management of its capital requirements, the Company prepares budgets that are updated as necessary depending on various factors. The budgets are approved by the Company's Board of Directors.

Although the Company plans to have the resources to carry out its plans and operations through January 31, 2018, it does not currently have sufficient capital to meet its estimated project capital expenditure requirements and is in discussions to arrange sufficient capital to meet these requirements. During the upcoming fiscal year, the Company's objective is to identify the source or sources from which it will obtain the capital required to complete the Project. See additional discussion in Note 1.

Exhibit 99.3 – Management’s Discussion and Analysis for the year ended January 31, 2017



P O L Y M E T
M I N I N G

POLYMET MINING CORP.

MANAGEMENT DISCUSSION AND ANALYSIS

**As at January 31, 2017 and 2016
And for the years then ended**

PolyMet Mining Corp.

Management Discussion and Analysis

As at January 31, 2017 and 2016 and for the years then ended

Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

General

The following information, prepared as at April 20, 2017 should be read in conjunction with the audited consolidated financial statements of PolyMet Mining Corp. and its subsidiaries (together "PolyMet" or the "Company") as at January 31, 2017 and 2016 and for the years then ended and related notes attached thereto, which are prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB"). All amounts are expressed in United States ("U.S.") dollars unless otherwise indicated.

Forward Looking Statements

This Management Discussion and Analysis ("MD&A") contains statements that constitute "forward-looking statements" within the meaning of Section 21E of the United States Securities Exchange Act of 1934, as amended (the "US Exchange Act"). These statements appear in a number of different places in this MD&A and can frequently, but not always, be identified by words such as "expects", "anticipates", "believes", "intends", "estimates", "potential", "possible", "projects", "plans" and similar expressions, or statements that events, conditions or results "will", "may", "could" or "should" occur or be achieved or their negatives or other comparable words. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause PolyMet's actual results, performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. Forward-looking statements include statements regarding the outlook for the Company's future operations, plans and timing for PolyMet's exploration and development programs, statements about future market conditions, supply and demand conditions, forecasts of future costs and expenditures, the outcome of legal proceedings, and other expectations, intentions and plans that are not historical fact. The Company's actual results may differ materially from those in the forward-looking statements due to risks facing PolyMet or due to actual facts differing from the assumptions underlying the Company's predictions.

The forward-looking statements contained in this MD&A are based on assumptions, which include, but are not limited to:

- Obtaining permits on a timely basis;
- Raising the funds necessary to develop the NorthMet Project and continue operations;
- Execution of prospective business plans; and
- Complying with applicable governmental regulations and standards.

Such forward-looking statements are subject to risks, uncertainties and other factors, including those listed or incorporated by reference under "Risk Factors" in the Annual Information Form. These risks, uncertainties and other factors include, but are not limited to:

- Changes in general economic and business conditions, including changes in interest rates and exchange rates;
- Changes in the resource market including prices of natural resources, costs associated with mineral exploration and development, and other economic conditions;
- Natural phenomena;
- Actions by governments and authorities including changes in government regulation;
- Uncertainties associated with legal proceedings; and
- Other factors, many of which are beyond the Company's control.

All forward-looking statements included in this MD&A are based on information available to the Company on the date of this MD&A. The Company expressly disclaims any obligation to update publicly, or otherwise, these statements, whether as a result of new information, future events or otherwise except to the extent required by law, rule or regulation. Readers should not place undue reliance on forward-looking statements. Readers should carefully review the cautionary statements and risk factors contained in this and all other documents that the Company files from time to time with regulatory authorities.

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Cautionary note to U.S. investors: the terms “measured and indicated mineral resource”, “mineral resource”, and “inferred mineral resource” used in this MD&A are Canadian geological and mining terms as defined in accordance with National Instrument 43-101, Standards of Disclosure for Mineral Projects (“NI 43-101”) under the guidelines set out in the Canadian Institute of Mining, Metallurgy and Petroleum (the “CIM”) Standards on Mineral Resources and Mineral Reserves. U.S. investors are advised that while such terms are recognized and required under Canadian regulations, the SEC does not recognize these terms. Mineral Resources do not have demonstrated economic viability. It cannot be assumed that all or any part of a Mineral Resource will be upgraded to Mineral Reserves. Under Canadian rules, estimates of inferred mineral resources may not form the basis of or be included in feasibility or other studies. U.S. investors are cautioned not to assume that any part of an inferred mineral resource exists, or is economically or legally mineable.

Summary of Business

PolyMet is a TSX and NYSE MKT listed Issuer engaged in the exploration and development of natural resource properties. The Company’s primary mineral property and principal focus is the commercial development of its NorthMet Project (“NorthMet” or “Project”), a polymetallic project in northeastern Minnesota, United States of America, which hosts copper, nickel, cobalt and platinum group metal mineralization.

The NorthMet ore body is at the western end of a series of known copper-nickel-precious metals deposits in the Duluth Complex. Completion of the Definitive Feasibility Study (“DFS”) in 2006 established proven and probable reserves, positioning NorthMet as the most advanced of the four advanced projects in the Duluth Complex: namely, from west to east, NorthMet, Mesaba, Serpentine, and Maturi.

PolyMet acquired the Erie Plant, associated infrastructure, and approximately 12,400 acres (19.4 square miles) of surface rights from Cliffs Erie LLC, a subsidiary of Cliffs Natural Resources Inc. (together “Cliffs”). The plant is located about six miles west of the NorthMet ore body and comprises a 100,000 ton-per-day crushing and milling facility, a railroad and railroad access rights connecting the Erie Plant to the NorthMet ore body, tailings storage facilities, 120 railcars, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site, and approximately 6,000 acres of land to the east and west of the existing tailings storage facilities.

See additional discussion below.

Summary of Recent Events and Outlook

Highlights of Fiscal 2017 and Fiscal 2018 to date

PolyMet made significant progress during Fiscal 2017 and the start of Fiscal 2018. Notably the state of Minnesota issued its adequacy decision for the NorthMet Final Environmental Impact Statement (“EIS”), which enabled PolyMet to submit formal permit applications for construction and operation that the state is now reviewing. The United States Forest Service (“USFS”) issued its Final Record of Decision (“ROD”) on the land exchange. The Company also completed a private placement with institutional investors in the United Kingdom and Canada in which Glencore exercised its right to maintain its pro rata ownership.

More specifically:

- On March 3, 2016, the state determined that the Final EIS addresses the objectives defined in the EIS scoping review, meets procedural requirements and responds appropriately to public comments. The 30-day period allowed by law to challenge the state’s decision passed without any legal challenge being filed. The Final EIS demonstrates that the NorthMet Project can be constructed and operated in compliance with environmental and human health standards;
- On June 2, 2016, the Company agreed to issue up to an additional \$14.0 million secured debentures to Glencore AG, a wholly owned subsidiary of Glencore plc (together “Glencore”), to fund permitting

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and general corporate purposes. The debentures are on similar terms as the existing non-convertible senior secured Tranche F-J Debentures;

- On July 1, 2016, the Company repaid the \$4.0 million initial principal loan from the Iron Range Resources and Rehabilitation Board (“IRRRB”);
- On July 11, 2016, the Company submitted applications for water-related permits required to construct and operate NorthMet;
- On July 12, 2016, the Eastern Region Regional Office of the USFS issued its response to comments on the Draft ROD for the land exchange and instructed the Superior National Forest to proceed with completing the Final ROD;
- On August 2, 2016, the Company renewed its request for Water Quality Certification under Section 401 of the Clean Water Act;
- On August 24, 2016, the Company submitted the air quality permit application required to construct and operate NorthMet;
- On September 14, 2016, the Company and Glencore agreed to extend the maturity date of outstanding secured convertible debentures and outstanding secured non-convertible debentures to the earlier of March 31, 2018, availability of \$100 million of debt or equity financing, or when it is prudent for the Company to repay the debt;
- On October 18, 2016, the Company closed the initial tranche of a private placement of 25,963,167 units for gross proceeds of \$19.472 million;
- On October 28, 2016, the Company closed the second tranche of a private placement of 14,111,251 units for gross proceeds of \$10.583 million pursuant to Glencore’s right to maintain its pro rata ownership;
- On November 3, 2016, the Company submitted the Permit to Mine application required to construct and operate NorthMet;
- On December 15, 2016, the Company received AEMA’s Environmental Excellence Award for its responsible development of the NorthMet Project;
- On December 20, 2016, the Memorandum of Agreement of the Section 106 Consultation under the National Historic Preservation Act was signed by the statutory parties; and
- On January 9, 2017, the USFS issued its Final ROD authorizing the land exchange.

Net cash used in operating and investing activities during the year ended January 31, 2017 was \$28.826 million, of which approximately \$16 million was spent on environmental review and permitting. PolyMet pays its own engineering and legal consultants and also reimburses the state of Minnesota for its internal staff and contractor costs. Other spending relates to engineering and cost estimates, maintaining existing infrastructure, financing, and general corporate purposes.

Goals and Objectives for the Next Twelve Months

The environmental review and permitting process is managed by the regulatory agencies and, therefore, timelines are not within PolyMet’s control. Given these circumstances, PolyMet’s objectives include:

- Transfer of title to the surface rights over and around the NorthMet mineral rights to PolyMet;
- Decision by the state on 401 Water Quality Certification and U.S. Army Corps of Engineers (“USACE”) Final ROD and 404 wetlands permit under Clean Water Act;
- Publication of draft state permits (Permit to Mine, air, water, dam safety and water appropriation permits) for public comment;
- Decisions on state permit issuances;
- Completion of definitive cost estimate and Project update following permits;
- Completion of project implementation plan;
- Repayment, restructuring, and/or conversion of Glencore loans; and
- Completion of construction finance plan including commitment of debt prior to the issuance of permits, subject to typical conditions precedent such as receipt of key permits.

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Upon completion of the land exchange, PolyMet will own surface rights to approximately 19,050 acres or 29.8 square miles of contiguous surface rights stretching from west of the Erie Plant to east of the proposed East Pit at NorthMet.

PolyMet expects to spend approximately \$30 million during the year ended January 31, 2018. See additional discussion in the “Liquidity and Capital Resources” section below. The primary focus continues to be completion of the permitting process. Other areas of focus include engineering and updated cost estimates that will be reported in an Updated Technical Report under National Instrument 43-101, maintaining existing infrastructure and financing.

Prior to receipt of permits, the Company will seek to secure construction financing that would be available upon receipt of key permits, with construction and ramp-up to commercial production anticipated to take approximately 24 months from receipt of key permits. The Company is in discussion with commercial banks and other financial institutions regarding construction finance.

See additional discussion below.

Detailed Description of Business

Asset Acquisitions

In November 2005, the Company acquired the Erie Plant, which is located approximately six miles west of PolyMet’s NorthMet deposit. The plant was managed by Cliffs for many years and was acquired by Cliffs from LTV Steel Mining Company (“LTV”) after LTV’s bankruptcy, at which time the plant was shut down with a view to a potential restart. The facility includes crushing and milling equipment, comprehensive spare parts, plant site buildings, real estate, tailings storage facilities and mine workshops, as well as access to extensive mining infrastructure including roads, rail, water, and power.

PolyMet plans to refurbish, reactivate and, as appropriate, rebuild the crushing, concentrating and tailings storage facilities at the Erie Plant to produce concentrates containing copper, nickel, cobalt and precious metals. Once it has established commercial operations, the Company may install an autoclave to upgrade the nickel concentrates to produce a nickel-cobalt hydroxide and a precious metals precipitate. The autoclave circuit has been included as an option in the Final EIS.

In December 2006, the Company acquired from Cliffs, property and associated rights sufficient to provide it with a railroad connection linking the mine development site and the Erie Plant. The transaction also included 120 railcars, locomotive fueling and maintenance facilities, water rights and pipelines, administrative offices on site and an additional 6,000 acres of land to the east and west of the existing tailings storage facilities.

PolyMet indemnified Cliffs for reclamation and remediation associated with the property under both transactions. In April 2010, Cliffs entered into a consent decree with the Minnesota Pollution Control Agency (“MPCA”) regarding short-term and long-term environmental mitigation. Field study activities were completed in 2010 and 2011 and short-term mitigations approved by the MPCA were initiated in 2011. In April 2012, long-term mitigation plans were submitted to the MPCA and, in October 2012, the MPCA approved plans for pilot tests of various treatment options to determine the best course of action.

Feasibility Study, Mineral Resources and Mineral Reserves

With publication of the DFS in September 2006, summarized in a NI 43-101 Technical Report, PolyMet established proven and probable mineral reserves estimated at 181.7 million short tons grading 0.31% copper, 0.09% nickel, 0.01% cobalt, 77 parts per billion (“ppb”) platinum, 279 ppb palladium, and 39 ppb gold.

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In September 2007, PolyMet reported an expansion in these proven and probable mineral reserves to an estimated 274.7 million short tons grading 0.28% copper, 0.08% nickel, 0.01% cobalt, 75 ppb platinum, 260 ppb palladium, and 37 ppb gold. These mineral reserves lie within measured and indicated mineral resources of an estimated 694.2 million short tons grading 0.27% copper, 0.08% nickel, 0.01% cobalt, 68 ppb platinum, 239 ppb palladium, and 35 ppb gold. The reserves are based on copper at \$1.25 per pound, nickel at \$5.60 per pound, cobalt at \$15.25 per pound, palladium at \$210 per ounce, platinum at \$800 per ounce, and gold at \$400 per ounce.

From 2008 to 2013, PolyMet incorporated numerous project improvements that were reflected in the draft and supplemental draft EIS's published in 2009 and 2013, respectively. The changes included Phase I production of separate copper and nickel concentrates with Phase II installation of an autoclave to upgrade the nickel concentrate as well as numerous modifications that will result in reduced environmental impacts including: reductions in sulfur dioxide, mercury and greenhouse gas emissions at the plant site, capture of groundwater and surface seepage with the construction of an in-ground containment system to the north and west of the existing tailings basin, and treatment of all contact water discharged from the NorthMet Project. An Updated Technical Report under NI 43-101, dated January 14, 2013, describing these changes is filed on SEDAR and EDGAR.

PolyMet plans to complete a definitive cost estimate and Project update prior to commencement of construction. The Project update will incorporate numerous process and project improvements, as well as environmental controls described in the Final EIS. The Project update will also include detailed capital and operating costs reflecting the advanced stage of engineering and design.

Environmental Review and Permitting

PolyMet commenced the environmental review and permitting process in 2004. In 2005, the Minnesota Department of Natural Resources ("MDNR") published its Environmental Assessment Worksheet Decision Document establishing the MDNR as the lead state agency and the USACE as the lead federal agency for preparation of an EIS for NorthMet.

In November 2009, the Co-lead Agencies published the NorthMet draft EIS, which marked the start of a period for public review and comment including two public meetings.

In June 2010, the Co-lead Agencies announced that they intended to complete the EIS process by preparing a supplemental draft EIS incorporating a proposed land exchange with the USFS and expanding government agency cooperation. The USFS joined the USACE as a federal Co-lead Agency and in June 2011, the U.S. Environmental Protection Agency ("EPA") joined as a Cooperating Agency.

In December 2013, the Co-lead Agencies published the supplemental draft EIS, which started a new period for public review and comment, including three public meetings, which ended in March 2014. The EPA issued comments on the supplemental draft EIS including an EC-2 ("Environmental Concerns") rating, which is the highest rating for a proposed mining project, so far as the Company is aware. The highest rating LO ("Lack of Objections") is typically applied to non-industrial projects such as the Upper Mississippi National Wildlife and Fish Refuge Comprehensive Conservation Plan Implementation. The EC-2 rating is the same as received by some other notable Minnesota projects including the Central Corridor Light Rail Project in the Twin Cities and the St. Croix River Crossing which have been built or are in the process of being constructed.

On November 6, 2015, the Co-lead Agencies published the Final EIS, which incorporated responses to comments on the draft and supplemental draft EIS's.

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USFS Land Exchange

On November 17, 2015, the USFS issued its Draft ROD on the proposed land exchange which concluded that the land exchange was in the public interest and meets the desired conditions in the Superior National Forest Land and Resource Management Plan. Publication of the Draft ROD started an objection process during which the public could comment on the Final EIS or the Draft ROD.

On January 9, 2017, after responding in writing to more than 22,500 individual objections, and supported by a Memorandum of Agreement under Section 106 of the National Historic Preservation Act, the USFS issued its Final ROD authorizing the land exchange.

The Final ROD cites several benefits of the land exchange, including:

- A 505-acre net increase of wetlands to the federal estate;
- A net increase of 94 acres with public water frontage available for public and tribal use;
- A 40-acre net gain in USFS lands;
- Improved management effectiveness by exchanging lands that have no public overland access with lands that do have access;
- Reduction of 33 miles in property boundaries to be managed by the USFS;
- Federal cost savings from the elimination of two easements and their associated administrative costs; and
- Conveyance of federal lands already adjacent to intensively developed private lands for other inholdings in the Superior National Forest.

The Final ROD states that the land exchange would eliminate a fundamental conflict between the rights that PolyMet believes it has as a result of its control of the mineral rights and the USFS position on those rights which otherwise could result in litigation that has no certain outcome and could set a judicial precedent regarding other lands acquired in the same deed under the Weeks Act.

On January 10, 2017, the Center for Biological Diversity and Earthworks gave notice of intent to sue the USFS under the Endangered Species Act (see below).

On January 30, 2017, WaterLegacy filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had not properly appraised the land being transferred to the Company as part of the land exchange and, on February 23, 2017, WaterLegacy filed a motion for a preliminary injunction to stop the land exchange from proceeding. PolyMet applied for and was granted intervenor-defendant status and is working with the USFS and the U.S. Department of Justice to defend the WaterLegacy challenge.

On March 10, 2017, PolyMet filed motion to dismiss the WaterLegacy suit for lack of standing. The defendants filed their responses to WaterLegacy's preliminary injunction motion, and WaterLegacy filed its response to PolyMet's motion to dismiss the case on March 30, 2017. The hearing on these motions is scheduled for April 28, 2017.

On March 27, 2017, the Minnesota Center for Environmental Advocacy, the Center for Biological Diversity, and the W.J. McCabe Chapter of the Izaak Walton League of America filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had not properly appraised the land being transferred to the Company as part of the land exchange.

On March 27, 2017, Save Our Sky Blue Waters, Save Lake Superior Association, and the Sierra Club North Star Chapter filed suit in the U.S. District Court, District of Minnesota claiming that the USFS had violated the Weeks Act and NEPA.

On March 28, 2017, the Center for Biological Diversity, Earthworks, and Save Our Sky Blue Waters filed suit in the U.S. District Court, District of Minnesota claiming that the 2016 NorthMet Biological

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Opinion violated the Endangered Species Act and the Final ROD's reliance on the Biological Opinion was arbitrary and unlawful.

PolyMet is confident that the environmental review process, including the land exchange, was thorough, thoughtful and in compliance with the law and that the USFS properly evaluated the proposed land exchange in the Final ROD.

State Permits

On March 3, 2016, the MDNR issued its decision that the Final EIS addresses the objectives defined in the EIS scoping review, meets procedural requirements, and responds appropriately to public comments. The state's decision also laid the foundation for decisions on permits to construct and operate the NorthMet Project.

After consultation with the MDNR and the MPCA, PolyMet submitted the various state permit applications that will be required to construct and operate the Project, with the water-related permit applications submitted on July 11, 2016, air-related permit application on August 24, 2016, and the Permit to Mine on November 3, 2016.

The permitting process is managed by the regulatory agencies and, therefore, timelines are not under PolyMet's control. Under state guidelines, decisions on draft state permits should be within 150 days of the applications being accepted, although those guidelines recognize that complex permit applications could take longer.

The key permits and approvals to be received are:

U.S. Army Corps of Engineers

- Section 404 Individual Permit for Impacted Wetlands

Minnesota Department of Natural Resources

- Permit to Mine
- Water Appropriations Permit
- Dam Safety Permit
- Wetland Replacement Plan

Minnesota Pollution Control Agency

- Section 401 Certification (required before the USACE can issue its ROD and Section 404 Permit)
- National Pollutant Discharge Elimination System (NPDES) Permit
- State Disposal System (SDS) Permit
- Air Emissions Permit

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Financing Activities

Glencore Financing

Since October 2008, the Company and Glencore have entered into a series of financing agreements comprising:

- Equity – five separate agreements comprising \$25.0 million placement of PolyMet common shares in calendar 2009 in two tranches; a \$30.0 million placement of PolyMet common shares in calendar 2010 in three tranches; a \$20.0 million placement of PolyMet common shares in calendar 2011 in one tranche; a \$20.960 million purchase of PolyMet common shares in the 2013 Rights Offering; and a \$10.583 million purchase of PolyMet common shares in the 2016 Private Placement;
- Convertible debt (“Glencore Convertible Debt”) – agreement comprising \$25.0 million initial principal secured convertible debentures drawn in four tranches; and
- Non-convertible debt (“Glencore Non-Convertible Debt”) – three separate agreements comprising \$30.0 million initial principal secured debentures in calendar 2015 drawn in four tranches; an \$11.0 million initial principal secured debenture in calendar 2016 drawn in one tranche; and a \$14.0 million initial principal secured debenture in calendar 2016 drawn in four tranches.

As a result of these financing transactions and the purchase by Glencore of PolyMet common shares previously owned by Cliffs, Glencore’s ownership and ownership rights of PolyMet as at January 31, 2017 comprises:

- 92,836,072 shares representing 29.1% of PolyMet's issued shares;
- Glencore Convertible Debt exchangeable through the exercise of an exchange warrant (“Exchange Warrant”) at \$1.2696 per share into 33,265,768 common shares of PolyMet (including capitalized and accrued interest as at January 31, 2017) until the earlier of March 31, 2018, availability of \$100 million of debt or equity financing, or an earlier date on which PolyMet can demonstrate that it is prudent to repay the debentures, subject to ten days notice during which time Glencore can elect to exercise the Exchange Warrant, and where the exercise price and the number of shares issuable are subject to conventional anti-dilution provisions;
- Warrants to purchase 6,458,001 common shares at \$0.8231 per share at any time until December 31, 2017, subject to mandatory exercise if the 20-day volume weighted average price (“VWAP”) of PolyMet common shares is equal to or greater than 150% of the exercise price and PolyMet has received permits and construction finance is available (“Exercise Triggering Event”), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions;
- Warrants to purchase 7,055,626 common shares at \$1.00 per share at any time until October 28, 2021, subject to acceleration on the earlier of receipt of permits necessary to construct NorthMet or the 12 month anniversary of the issue date provided the 20-day VWAP of PolyMet common shares is equal to or greater than \$1.50 (“Acceleration Triggering Event”), and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions; and
- Warrants to purchase 625,000 common shares at \$0.7797 per share at any time until October 28, 2021, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions.

If Glencore were to exercise all of its rights and obligations under these agreements, it would own 140,240,467 common shares of PolyMet, representing 38.3% on a partially diluted basis, that is, if no other options or warrants were exercised or 34.8% on a fully diluted basis, if all other options and warrants were exercised, whether they are in-the-money or not.

On June 3, 2016, the Company issued \$3.0 million Tranche K secured debenture, on July 1, 2016 it issued \$5.0 million Tranche L-1 secured debenture, on July 26, 2016 it issued \$3.0 million Tranche L-2 secured debenture, and on August 5, 2016 it issued \$3.0 million Tranche M secured debenture to

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Glencore. Each of these debentures bears interest at 12 month U.S. dollar LIBOR plus 15.0%. The Company provided security on these debentures covering all of the assets of PolyMet, including a pledge of PolyMet's 100% ownership of Poly Met Mining, Inc. The due date of these debentures was initially the earlier of (i) March 31, 2017 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable.

On September 14, 2016, the Company extended the term of the Glencore Non-Convertible Debt, the term of the Glencore Convertible Debt and the expiration date of the associated Exchange Warrant to the earlier of (i) March 31, 2018 or (ii) the availability of at least \$100 million of debt or equity financing or (iii) when it is prudent for PolyMet to repay the debt, on which date all principal and interest accrued to such date will be due and payable. In connection with this extension, the Company issued warrants to purchase 625,000 common shares at \$0.7797 per share at any time until October 28, 2021, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. All other terms of the debt were unchanged. The transaction has been accounted for as a modification of the existing debentures with the \$0.250 million fair value of the warrants allocated pro rata on the basis of the Glencore Non-Convertible Debt and Glencore Convertible Debt and an offsetting entry to equity reserves.

As a result of anti-dilution provisions in the agreement, following the private placement which closed on October 18, 2016, the exchange price was adjusted to \$1.2696 per share from \$1.2920 per share. The adjustment did not have a material impact to the financial statements.

On October 28, 2016, the Company issued 14,111,251 units ("Glencore Units") to Glencore for gross proceeds of \$10.583 million pursuant to Glencore's right to maintain its pro rata ownership following the private placement which closed on October 18, 2016. Each Glencore Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions.

IRRRB Financing

During the year ended January 31, 2017, the Company fully repaid a \$4.0 million initial principal loan, drawn in June 2011 from the IRRRB. The loan was used to exercise the Company's options to acquire land as part of the proposed land exchange with the USFS authorized by the USFS on January 9, 2017. The loan was secured by the land acquired and carried a fixed interest rate of 5%, compounded annually. Warrants giving the IRRRB the right to purchase 461,286 shares of its common shares at \$2.1678 per share expired on June 30, 2016.

AG for Waterfowl, LLP ("AG") Financing

In March 2012, the Company acquired a secured interest in land owned by AG that is permitted for wetland restoration. AG subsequently assigned the agreement to EIP Minnesota, LLC ("EIP") in September 2012. EIP will restore the wetlands and, upon completion, wetland credits are to be issued by the proper governmental authorities. As part of the initial consideration, AG received warrants to purchase 1,249,315 common shares at \$1.3007 per share. These warrants expired December 31, 2015.

In April 2015, the Company entered into a revised agreement with EIP whereby EIP will seek to sell credits that the Company does not need to third parties and, over time, reimburse the Company for its costs. The financial instrument has been designated as available for sale. Upon closing of the transaction, the Company recognized the receivable at fair value calculated using a 9.25% discount rate and 12 year term resulting in a receivable of \$2.552 million and a non-cash loss of \$1.852 million. The Company accounts for subsequent fair value changes through other comprehensive income or loss. Under the agreement, the Company retained the right to purchase up to 300 credits until February 28, 2017 with additional payments due only if PolyMet exercised that right in part or in full. Subsequent to

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year end, the right to purchase additional credits expired and EIP will seek to sell these credits and reimburse the Company for its costs under the terms of the April 2015 agreement.

2016 Private Placement

On October 18, 2016, the Company issued 25,963,167 units ("Placement Units") in a private placement to subscribers for gross proceeds of \$19.472 million. Each Placement Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. A total of 25,963,167 common shares and 13,641,586 purchase warrants were issued under this transaction, including 660,005 broker warrants issued to the underwriters. The amount attributable to common shares was \$15.881 million and the amount attributable to warrants was \$2.174 million, which includes the broker warrant fair value of \$0.151 million. Transaction costs for the issuance were \$1.568 million. The closing triggered customary anti-dilution provisions for the Exchange Warrant.

On October 28, 2016, the Company issued 14,111,251 units ("Glencore Units") to Glencore for gross proceeds of \$10.583 million pursuant to Glencore's right to maintain its pro rata ownership following the private placement which closed on October 18, 2016. Each Glencore Unit consists of one common share and one half of one common share purchase warrant, each whole warrant exercisable for one common share at a price of \$1.00 per share for a period beginning 6 months following the issue date and ending 60 months after the issue date, subject to the Acceleration Triggering Event, and where the exercise price and the number of warrants are subject to conventional anti-dilution provisions. A total of 14,111,251 common shares and 7,055,626 purchase warrants were issued under this transaction. The amount attributable to common shares was \$9.210 million and the amount attributable to warrants was \$1.270 million. Transaction costs for the issuance were \$0.103 million.

Other Financings

During the year ended January 31, 2017 the Company issued no shares (January 31, 2016 – 275,000 shares) pursuant to the exercise of share purchase options for proceeds of \$nil (January 31, 2016 – \$0.216 million).

During the year ended January 31, 2017 the Company issued 241,376 shares (January 31, 2016 – 224,038 shares) to maintain land purchase options.

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Summary of Quarterly Results

(All figures in thousands of U.S. dollars except loss per share)

Three Months Ended	Jan 31 2017	Oct 31 2016	July 31 2016	Apr 30 2016	Jan 31 2016	Oct 31 2015	July 31 2015	Apr 30 2015
Revenues	-	-	-	-	-	-	-	-
General and Administrative	(2,583)	(993)	(1,178)	(1,840)	(1,827)	(1,170)	(1,168)	(1,343)
Other Income (Expenses)	(645)	(1,101)	(377)	(512)	(602)	(491)	(530)	(2,215)
Loss for the Period	(3,228)	(2,094)	(1,555)	(2,352)	(2,429)	(1,661)	(1,698)	(3,558)
Loss per Share ⁽¹⁾	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cash used in operating activities	(1,589)	(1,483)	(855)	(1,536)	(1,717)	(881)	(712)	(1,512)
Cash provided by financing activities	331	31,085	5,832	-	11,156	5,880	8,025	7,954
Cash used in investing activities	(5,613)	(6,339)	(4,553)	(6,858)	(7,206)	(6,138)	(8,078)	(5,806)

⁽¹⁾ Loss per share amounts may not reconcile due to rounding differences.

The loss for the period includes share-based compensation expense for the three months ended:

January 31, 2017 - \$0.811 million	January 31, 2016 - \$0.056 million
October 31, 2016 - \$0.137 million	October 31, 2015 - \$0.148 million
July 31, 2016 - \$0.233 million	July 31, 2015 - \$0.127 million
April 30, 2016 - \$0.627 million	April 30, 2015 - \$0.126 million

Results fluctuate from quarter to quarter based on activity in the Company including NorthMet development and corporate activities. See additional discussion of significant items in the sections above and below.

Three months ended January 31, 2017 compared to three months ended January 31, 2016

The Company's focus during the three months ended January 31, 2017 was on the environmental permitting process for the NorthMet Project, maintenance of existing infrastructure, and financing.

a) Loss for the Period:

During the three months ended January 31, 2017, the Company incurred a loss of \$3.228 million (\$0.01 loss per share) compared to a loss of \$2.429 million (\$0.01 loss per share) during the three months ended January 31, 2016. The increase in the net loss was primarily due to non-cash share-based compensation.

b) Cash Flows for the Period:

Cash used in operating activities for the three months ended January 31, 2017 was \$1.589 million compared to cash used in the three months ended January 31, 2016 of \$1.717 million. The variance in cash is primarily due to changes in non-cash working capital balances.

Cash provided by financing activities for the three months ended January 31, 2017 was \$0.331 million compared to cash provided in the three months ended January 31, 2016 of \$11.156 million. The decrease was primarily due to prior year funding from the non-convertible loan.

Cash used in investing activities for the three months ended January 31, 2017 was \$5.613 million compared to cash used in the three months ended January 31, 2016 of \$7.206 million. The decrease was primarily due to decreased environmental technical support as the permitting process winds down.

PolyMet Mining Corp. Management Discussion and Analysis

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Including the effect of foreign exchange, total cash for the three months ended January 31, 2017 decreased by \$6.871 million for a balance of \$18.674 million compared to the three months ended January 31, 2016 where cash increased \$2.227 million to a balance of \$10.256 million.

c) Capital Expenditures for the Period:

During the three months ended January 31, 2017 the Company capitalized \$13.748 million of mineral property, plant, and equipment costs related to the acquisition, development and preservation of the NorthMet Project and other fixed assets as compared to a \$7.578 million during the three months ended January 31, 2016. The increase is primarily due to an increase in the environmental rehabilitation provision of \$3.271 million during the three months ended January 31, 2017 as compared to a decrease of \$2.074 million during the three months ended January 31, 2016. The change in the environmental rehabilitation provision includes an increase of \$9.045 million (prior year decrease of \$4.230 million) as a result of clarification of the potential liability for long-term mitigation and a decrease of \$5.774 million (prior year increase of \$2.156 million) as a result of changes in the market risk-free interest rate. In addition, capitalized borrowing costs totaled \$4.364 million during the three months ended January 31, 2017 as compared to \$1.951 million during the three months ended January 31, 2016 due to recent borrowing and refinancing, which included revisions to the interest rate.

Selected Annual Financial Information

(All figures in thousands of U.S. dollar except loss per share)

Year Ended January 31,	2017	2016	2015
Revenues	-	-	-
Net Loss	(9,229)	(9,346)	(7,276)
Basic and Diluted Loss Per Share	(0.03)	(0.03)	(0.03)
Total Assets	389,049	337,660	313,229
Long-Term Debt including Convertible Debt	107,906	79,009	41,306
Total Shareholders' Equity	207,329	184,657	192,376

The loss for the year includes share-based compensation expense of:

January 31, 2017 - \$1.808 million

January 31, 2016 - \$0.457 million

January 31, 2015 - \$1.121 million

Year ended January 31, 2017 compared to year ended January 31, 2016

The Company's focus during the year ended January 31, 2017 was on the environmental review and permitting process for the NorthMet Project, maintenance of existing infrastructure, and financing.

a) Loss for the Year:

During the year ended January 31, 2017, the Company incurred a loss of \$9.229 million (\$0.03 loss per share) compared to a loss of \$9.346 million (\$0.03 loss per share) during the year ended January 31, 2016. An increase in finance costs and non-cash share-based compensation was offset by a decrease in non-cash loss on disposal of Wetland Credit Intangible.

PolyMet Mining Corp.

Management Discussion and Analysis

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b) Cash Flows for the Year:

Cash used in operating activities for the year ended January 31, 2017 was \$5.463 million compared to cash used in the year ended January 31, 2016 of \$4.822 million. The variance in cash is primarily due to operating variances noted above.

Cash provided by financing activities for the year ended January 31, 2017 was \$37.248 million compared to cash provided in the year ended January 31, 2016 of \$33.015 million. The current year includes \$28.535 million in share issuance proceeds and \$13.943 million in non-convertible loan funding partially offset by \$5.111 million debt repayment. The prior year includes \$32.954 million in net proceeds from funding of the non-convertible loan and share option exercises.

Cash used in investing activities for the year ended January 31, 2017 was \$23.363 million compared to cash used in the year ended January 31, 2016 of \$27.228 million. The decrease was primarily due to decreased environmental technical support as the permitting process winds down.

Including the effect of foreign exchange, total cash for the year ended January 31, 2017 increased by \$8.418 million for a balance of \$18.674 million compared to the year ended January 31, 2016 where cash increased \$0.955 million for a balance of \$10.256 million.

c) Capital Expenditures for the Year:

During the year ended January 31, 2017 the Company capitalized \$43.264 million (prior year - \$25.402 million) of mineral property, plant, and equipment costs related to the acquisition, development and preservation of the NorthMet Project and other fixed assets. The increase is primarily due to an increase in the environmental rehabilitation provision of \$4.467 million during the year ended January 31, 2017 as compared to a decrease of \$7.269 million during the year ended January 31, 2016. The change in the environmental rehabilitation provision includes an increase of \$9.045 million (prior year decrease of \$4.230 million) as a result of clarification of the potential liability for long-term mitigation and a decrease of \$4.578 million (prior year decrease of \$3.039 million) as a result of changes in the market risk-free interest rate. In addition, capitalized borrowing costs totaled \$15.103 million during the year ended January 31, 2017 as compared to \$5.051 million during the year ended January 31, 2016 due to recent borrowing and refinancing, which included revisions to the interest rate.

Year ended January 31, 2016 compared to year ended January 31, 2015

The Company's focus during the year ended January 31, 2016 was on the environmental review and permitting process for the NorthMet Project, maintenance of existing infrastructure, and financing.

a) Loss for the Year:

During the year ended January 31, 2016, the Company incurred a loss of \$9.346 million (\$0.03 loss per share) compared to a loss of \$7.276 million (\$0.03 loss per share) during the year ended January 31, 2015. The increase in the net loss for the year was primarily attributable to a non-cash loss on disposal of Wetland Credit Intangible as the proceeds are anticipated to be received over many years.

b) Cash Flows for the Year:

Cash used in operating activities for the year ended January 31, 2016 was \$4.822 million compared to cash used in the year ended January 31, 2015 of \$4.196 million. The variance in cash is primarily due to changes in non-cash working capital balances.

Cash provided by financing activities for the year ended January 31, 2016 was \$33.015 million compared to cash provided in the year ended January 31, 2015 of \$7.977 million. The year ended January 31, 2016

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includes \$32.954 million in net proceeds from funding of the non-convertible loan and share option exercises. The year ended January 31, 2015 includes \$7.896 million funding of the non-convertible loan and proceeds from share option exercises.

Cash used in investing activities for the year ended January 31, 2016 was \$27.228 million compared to cash used in the year ended January 31, 2015 of \$27.253 million. Increased spending on engineering and cost estimates were mostly offset by decreased environmental technical support costs as the EIS process winds down.

Including the effect of foreign exchange, total cash for the year ended January 31, 2016 increased by \$0.955 million for a balance of \$10.256 million compared to the year ended January 31, 2015 where cash decreased \$23.489 million for a balance of \$9.301 million.

c) Capital Expenditures for the Year:

During the year ended January 31, 2016 the Company capitalized \$25.402 million (January 31, 2015 - \$50.219 million) of mineral property, plant, and equipment costs related to the acquisition, development and preservation of the NorthMet Project and other fixed assets. The decrease is primarily due to a decrease in the environmental rehabilitation provision of \$7.269 million during the year ended January 31, 2016 as compared to an increase of \$20.454 million during the year ended January 31, 2015. The change in the environmental rehabilitation provision includes a decrease of \$4.230 million (January 31, 2015 increase of \$9.867 million) as a result of clarification of the potential liability for the long-term mitigation at the tailings basin and a decrease of \$3.039 million (January 31, 2015 increase of \$10.587 million) as a result of changes in the risk free-interest rate. In addition, the Company capitalized \$0.100 million (January 31, 2015 - \$0.100 million) of wetland credit intangible costs related to wetland credit options and development agreements.

Liquidity and Capital Resources

As at January 31, 2017, the Company had working capital of \$16.267 million compared with a working capital of \$2.162 million as at January 31, 2016 consisting primarily of cash of \$18.674 million (January 31, 2016 - \$10.256 million), amounts receivable of \$0.749 million (January 31, 2016 - \$0.429 million), prepaid expenses of \$0.813 million (January 31, 2016 - \$1.285 million), accounts payable and accrued liabilities of \$3.188 million (January 31, 2016 - \$3.348 million), the current portion of non-convertible debt of \$nil (January 31, 2016 - \$4.962 million), and the current portion of environmental rehabilitation provision of \$0.781 million (January 31, 2016 - \$1.498 million).

As at January 31, 2017, the Company had firm commitments related to the environmental permitting process, land options, and rent of approximately \$1.1 million with the majority due over the next year and the remainder due over three years.

As at January 31, 2017, the Company had non-binding commitments to maintain its mineral lease rights of \$0.180 million with all due in the next year.

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The following table lists the known contractual obligations as at January 31, 2017:

Contractual Obligations	Carrying Value	Contractual Cash flows	Less than 1 year	1 – 3 years	3 – 5 years	More than 5 years
Accounts payable and accrued liabilities	\$ 3,188	\$ 3,188	\$ 3,188	\$ -	\$ -	\$ -
Convertible debt	42,154	51,099	-	51,099	-	-
Non-convertible debt	65,752	79,766	-	79,766	-	-
Firm Commitments	-	1,127	908	219	-	-
Total	\$ 111,094	\$ 135,180	\$ 4,096	\$ 131,084	\$ -	\$ -

The Company expects to repay the non-convertible debt from additional financing and to either exchange the convertible debt into equity or repay from additional financings.

As at January 31, 2017, the Company had obligations to issue 3,640,000 shares under the Company's bonus share incentive plan upon achievement of Milestone 4 representing commencement of commercial production at NorthMet at a time when the Company has not less than 50% ownership interest in NorthMet. At the Company's Annual General Meeting of shareholders held in June 2008, the disinterested shareholders approved the bonus shares for Milestone 4. Regulatory approval is required prior to issuance of these shares.

The consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the settlement of liabilities in the normal course of operations.

Liquidity risk is the risk the Company will not be able to meet its financial obligations as they become due and arises through the excess of financial obligations over available financial assets due at any point in time. As at January 31, 2017, PolyMet had cash of \$18.674 million and working capital of \$16.267 million. The \$42.154 million secured convertible debt and \$65.752 million secured non-convertible debt due to Glencore, are classified as non-current obligations based on the expected repayment date of March 31, 2018. If Glencore does not exchange the convertible debt for common shares upon maturity, PolyMet will need to renegotiate the agreement or raise sufficient funds to repay the entire debt.

Management believes, based upon the underlying value of the NorthMet Project, the advanced stage of permitting, the history of support from shareholders and the ongoing discussions with numerous investment banks and investors regarding potential financing, that financing will continue to be available allowing the Company to meet its current obligations, as well as fund ongoing development, capital expenditures and administration expenses in accordance with the Company's spending plans for the next twelve months. While in the past the Company has been successful in closing financing agreements, there can be no assurance it will be able to do so again. Factors that could affect the availability of financing include the state of debt and equity markets, investor perceptions and expectations, and the metals markets.

Prior to the start of construction of NorthMet, the Company will complete an Updated Feasibility Study including updated capital cost estimates. The Company is in active discussion with commercial banks and other sources of both debt and equity finance. The Company intends to secure debt and equity financing commitments sufficient to fund the capital costs prior to starting construction.

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Financial Instruments and Risk Management

The Company's financial instruments are classified as loans and receivables, available for sale, and other financial liabilities.

Fair Value Measurements

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

Level 1 – Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 – Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.

Level 3 – Inputs for the asset or liability that are not based on observable market data.

The fair values of cash, amounts receivable, and accounts payable and accrued liabilities approximate their carrying amounts due to their short-term nature.

The fair value of convertible debt and non-convertible debt approximates the carrying amount at amortized cost using the effective interest method. The Company believes this is appropriate as the transaction was negotiated at arm's length and the interest rate is floating. The following table shows the impact of changes in the interest rate used to fair value the convertible debt and non-convertible debt for disclosure purposes:

	Impact on fair value due to 2% decrease in interest rate	Impact on fair value due to 1% decrease in interest rate	Impact on fair value due to 1% increase in interest rate	Impact on fair value due to 2% increase in interest rate
Convertible debt	867	429	(421)	(835)
Non-convertible debt	1,352	670	(657)	(1,303)

Risks Arising from Financial Instruments and Risk Management

The Company's activities expose it to a variety of financial risks: market risk (including currency and interest rate), credit risk, and liquidity risk. Reflecting the current stage of development of the Company's NorthMet Project, the overall risk management program focuses on facilitating the Company's ability to continue as a going concern and seeks to minimize potential adverse effects on the Company's ability to execute its business plan.

Risk management is the responsibility of executive management. Material risks are identified and monitored and are discussed with the Audit Committee and the Board of Directors.

Currency Risk

The Company incurs expenditures in Canada and in the United States. The functional and reporting currency of the Company and its subsidiary is the U.S. dollar. Foreign exchange risk arises because the amount of Canadian dollar cash, amounts receivable, or accounts payable and accrued liabilities will vary in U.S. dollar terms due to changes in exchange rates.

As the majority of the Company's expenditures are in U.S. dollars, the Company has kept a significant portion of its cash in U.S. dollars. The Company has not hedged its exposure to currency fluctuations as the exposure to currency risk is currently insignificant.

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Interest Rate Risk

Interest rate risk arises from interest paid on floating rate debt and interest received on cash and short-term deposits. The Company has not hedged any of its interest rate risk. The Company currently capitalizes to qualifying assets the majority of interest charges, and therefore the risk exposure is primarily on cash interest payable and net earnings in relation to the subsequent depreciation of capitalized interest charges.

The Company was exposed to interest rate risk through the following assets and liabilities:

	January 31, 2017	January 31, 2016
Cash	\$ 18,674	\$ 10,256
Convertible debt	42,154	35,986
Non-convertible debt	\$ 65,752	\$ 47,985

Credit Risk

Credit risk arises on cash held with banks and financial institutions, as well as credit exposure on outstanding amounts receivable. The maximum exposure to credit risk is equal to the carrying value of the financial assets of \$21.435 million.

The Company's cash is primarily held through a large Canadian financial institution.

Liquidity Risk

Liquidity risk is the risk the Company will not be able to meet its financial obligations as they become due and arises through the excess of financial obligations over available financial assets due at any point in time. The Company's objective in managing liquidity risk is to maintain sufficient readily available reserves in order to meet its liquidity requirements at any point in time. The Company achieves this by maintaining sufficient cash and cash equivalents. See additional discussion in the "Liquidity and Capital Resources" section above.

Capital Management

The Company's capital management objective is to safeguard the Company's ability to continue as a going concern in order to pursue the development of its mineral property. In the management of capital, the Company includes the components of shareholders' equity, convertible debt and non-convertible debt. The Company manages the capital structure and makes adjustments to it depending on economic conditions and the rate of anticipated expenditures. To maintain or adjust the capital structure, the Company may attempt to issue new shares, issue new debt, acquire or dispose of assets. The Company has no externally imposed capital requirements.

In order to assist in management of its capital requirements, the Company prepares budgets that are updated as necessary depending on various factors. The budgets are approved by the Company's Board of Directors.

Although the Company plans to have the resources to carry out its plans and operations through January 31, 2018, it does not currently have sufficient capital to meet its estimated project capital expenditure requirements and is in discussions to arrange sufficient capital to meet these requirements. During the upcoming fiscal year, the Company's objective is to identify the source or sources from which it will obtain the capital required to complete the Project. See additional discussion in the "Liquidity and Capital Resources" section above.

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Related Party Transactions

The Company conducted transactions with senior management, directors and persons or companies related to these individuals, and paid or accrued amounts as follows:

	Year ended January 31,	
	2017 ⁽¹⁾	2016 ⁽²⁾
Salaries and other short-term benefits	\$ 1,828	\$ 1,825
Other long-term benefits	44	36
Share-based payment ⁽³⁾	1,709	411
Total	\$ 3,581	\$ 2,272

(1) Year ended January 31, 2017 includes Directors (Jonathan Cherry, Matthew Daley, David Dreisinger, W. Ian L. Forrest, Helen Harper, Alan Hodnik, William Murray, Stephen Rowland, and Michael Sill) and senior management (Jonathan Cherry, Douglas Newby, and Bradley Moore).

(2) Year ended January 31, 2016 includes Directors (Jonathan Cherry, Matthew Daley, David Dreisinger, W. Ian L. Forrest, Alan Hodnik, William Murray, Stephen Rowland, and Michael Sill) and senior management (Jonathan Cherry, Douglas Newby, and Bradley Moore).

(3) Share-based payment represents the amount expensed during the period.

There are agreements with key employees (Jonathan Cherry, Douglas J. Newby and Bradley Moore) that contain severance provisions for termination without cause or in the event of a take-over. Other than the President and Chief Executive officer, none of PolyMet's other directors has a service contract with the Company providing for benefits upon termination of their employment.

As a result of Glencore's ownership of 29.1% of the Company it is also a related party. PolyMet has entered into a Technical Services Agreement with Glencore whereby PolyMet reimburses Glencore for costs associated with providing technical support to PolyMet, primarily in detailed project design and mineral processing where PolyMet requests assistance under an agreed scope of work. During the year ended January 31, 2017, the Company paid \$0.102 million (January 31, 2016 - \$3.350 million) for services under this agreement. PolyMet has also entered into a Financing Advisory Agreement with Glencore whereby PolyMet reimburses Glencore for costs associated with providing financing advisory support to PolyMet. During the year ended January 31, 2017, the Company recorded \$0.730 million (year ended January 31, 2016 - \$nil) for services under this agreement. See additional discussion in the "Financing Activities" section above.

Off Balance-Sheet Arrangements

The Company does not utilize off-balance sheet arrangements.

Proposed Transactions

There are no proposed transactions that will materially affect the performance of the Company.

Critical Accounting Estimates and Judgments

The preparation of the consolidated financial statements in conformity with IFRS requires the use of certain critical accounting estimates. These critical accounting estimates require management to make judgments and estimates that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as at the date of the financial statements.

Critical accounting estimates and judgments used in the preparation of these consolidated financial statements are as follows:

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(i) Determination of mineral reserves

Reserves are estimates of the amount of product that can be economically and legally extracted from the Company's property. In order to estimate reserves, estimates are required about a range of geological, technical and economic factors, including quantities, production techniques, production costs, capital costs, transport costs, demand, prices and exchange rates. Estimating the quantity of reserves requires the size, shape and depth of deposits to be determined by analyzing geological data. This process may require complex and difficult geological judgments to interpret the data. In addition, management will form a view of forecast sales prices, based on current and long-term historical average price trends. Changes in the proven and probable reserves estimates may impact the carrying value of property, plant and equipment, restoration provisions, recognition of deferred tax amounts and depreciation, depletion and amortization.

(ii) Impairment of non-financial assets

The carrying amounts of the Company's non-financial assets, including mineral property, plant and equipment, and wetland credit intangible are reviewed at each reporting date or when events or changes in circumstances occur that indicate the asset may not be recoverable to determine whether there is any indication of impairment. If any such indication exists, the asset's recoverable amount is estimated at the greater of its value in use and its fair value less costs of disposal. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. An impairment loss is recognized if the carrying amount of an asset exceeds its estimated recoverable amount. An impairment loss previously recorded is reversed if there has been a change in the estimates used to determine the recoverable amount resulting in an increase in the estimated service potential of an asset.

For its mineral property interest the Company considers both external and internal sources of information in assessing whether there are any indications of impairment. External sources of information the Company considers include changes in the market, economic and legal environment in which the Company operates that are not within its control and affect the recoverable amount of mineral property interests. Internal sources of information the Company considers include indications of economic performance of the asset. No impairment loss on the mineral property interests was recorded for the year ended January 31, 2017 or January 31, 2016.

(iii) Provision for Environmental Rehabilitation Costs

Provisions for environmental rehabilitation costs associated with mineral property, plant and equipment, are recognized when the Company has a present legal or constructive obligation that can be estimated reliably, and it is probable an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax risk-free rate that reflects current market assessments of the time value of money.

It is possible that the Company's estimates of its ultimate environmental rehabilitation liabilities could be affected by changes in regulations, changes in the extent of environmental rehabilitation required, changes in the means of rehabilitation, changes in the extent of responsibility for the financial liability or changes in cost estimates. The operations of the Company may in the future be affected from time to time in varying degrees by changes in environmental regulations, including those for future removal and site restoration costs. Both the likelihood of new regulations and their overall effect upon the Company may vary greatly and are not predictable.

The Company's provision for environmental rehabilitation cost obligations represents management's best estimate of the present value of the future cash outflows required to settle the liability.

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Future Accounting Changes

The Company anticipates that all of the relevant pronouncements will be adopted in the Company's accounting policy for the first period beginning after the effective date of the pronouncement. Information on new standards, amendments and interpretations that are expected to be relevant to the Company's financial statements is provided below. Certain other new standards and interpretations have been issued but are not expected to have a material impact on the Company's financial statements and are therefore not discussed below.

IFRS 9 – Financial Instruments - Classification and Measurement

IFRS 9 addresses the classification, measurement and recognition of financial assets and financial liabilities. This standard replaces parts of IAS 39 - Financial Instruments: Recognition and Measurement. IFRS 9 requires financial assets to be classified into two measurement categories: those measured at fair value and those measured at amortized cost. The determination is made at initial recognition. The classification depends on the entity's business model for managing its financial instruments and the contractual cash flow characteristics of the instrument. For financial liabilities, the standard retains most of the IAS 39 requirements. The main change is that, in cases where the fair value option is taken for financial liabilities, the part of a fair value change due to an entity's own credit risk is recorded in other comprehensive income rather than in net earnings, unless this creates an accounting mismatch. The new standard will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of adopting IFRS 9 on its consolidated financial statements.

IFRS 7 - Financial Instruments - Disclosures

IFRS 7 addresses disclosures for financial assets and financial liabilities. Amendments to this standard require new disclosures resulting from the amendments to IFRS 9 and will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of amendments to IFRS 7 on its consolidated financial statements.

IFRS 15 – Revenue from Contracts with Customers

IFRS 15 replaces IAS 18 - Revenue and IAS 11 - Construction Contracts and provides a five step framework for application to customer contracts: identification of customer contract, identification of the contract performance obligations, determination of the contract price, allocation of the contract price to the contract performance obligations, and revenue recognition as performance obligations are satisfied. A new requirement where revenue is variable stipulates that revenue may only be recognized to the extent that it is highly probable that significant reversal of revenue will not occur. The new standard will be effective for annual periods beginning on or after January 1, 2018. The Company is currently assessing the impact of adopting IFRS 15 on its consolidated financial statements.

IFRS 16 – Leases

IFRS 16 replaces IAS 17 - Leases and eliminates the classification of leases as either operating or finance leases by the lessee. The treatment of leases by the lessee will require capitalization of all leases resulting in accounting treatment similar to finance leases under IAS 17 - Leases. Exemptions for leases of very low value or short-term leases will be applicable. The new standard will result in an increase in lease assets and liabilities for the lessee. Under the new standard the treatment of all lease expense is aligned in the statement of earnings with depreciation, and an interest expense component recognized for each lease, in line with finance lease accounting under IAS 17 - Leases. The new standard will be effective for annual periods beginning on or after January 1, 2019. The Company is currently assessing the impact of adopting IFRS 16 on its consolidated financial statements.

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Other MD&A Requirements

Outstanding Share Data

Authorized Capital: Unlimited common shares without par value.

The following table summarizes the outstanding share information as at April 14, 2017:

Type of Security	Number Outstanding	Weighted Average Exercise Price
Issued and outstanding common shares	318,545,519	\$ -
Restricted share units	2,382,020	\$ -
Share options	20,412,002	\$ 1.06
Share purchase warrants	27,780,213	\$ 0.95
Convertible debt including capitalized interest	34,178,184	\$ 1.27

Risks and Uncertainties

An investment in the Company's common shares is highly speculative and subject to a number of risks and uncertainties. Only those persons who can bear the risk of the entire loss of their investment should participate. An investor should carefully consider the risks described in PolyMet's Annual Information Form for the year ended January 31, 2017 and other information filed with both the Canadian and United States securities regulators before investing in the Company's common shares. The risks described in PolyMet's Annual Information Form are not the only ones faced. Additional risks that the Company currently believes are immaterial may become important factors that affect the Company's business. If any of the risks described in PolyMet's Annual Information Form for the year ended January 31, 2017 occur, the Company's business, operating results and financial condition could be seriously harmed and investors could lose all of their investment.

Disclosure controls and procedures

Disclosure controls and procedures are designed to ensure that information required to be disclosed in reports filed or submitted by the Company under Canadian and United States securities legislation is recorded, processed, summarized and reported within the time periods specified in those rules, including providing reasonable assurance that material information is gathered and reported to senior management, including the Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), as appropriate, to permit timely decisions regarding public disclosure. Management, including the CEO and CFO, have evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures, as defined in Rule 13a-15(e) and 15d-15(e) of the US Exchange Act and the rules of the Canadian Securities Administrators. Based on this evaluation, the CEO and CFO have concluded the Company's disclosure controls and procedures were effective as at January 31, 2017.

Management's Responsibility for Financial Statements

The information provided in this report including the financial statements, is the responsibility of management. In the preparation of these statements, estimates are sometimes necessary to make a determination of future values for certain assets or liabilities. Management believes such estimates have been based on careful judgments and have been properly reflected in the accompanying financial statements.

Management maintains a system of internal controls to provide reasonable assurances that the Company's assets are safeguarded and to facilitate the preparation of relevant and timely information.

PolyMet Mining Corp.

Management Discussion and Analysis

As at January 31, 2017 and 2016 and for the years then ended

Tabular amounts in thousands of U.S. Dollars, except for shares and per share amounts

Management's report on internal control over financial reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) and 15d-15(f) of the US Exchange Act and National Instrument 52-109 Certification of Disclosure in Issuer's Annual and Interim filings. Any system of internal control over financial reporting, no matter how well designed, has inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Management has used the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission to evaluate the effectiveness of the Company's internal control over financial reporting. Based on this assessment, management concluded the Company's internal control over financial reporting was effective as at January 31, 2017.

The effectiveness of the Company's internal control over financial reporting as at January 31, 2017 has been audited by the Company's independent auditors, and their opinion is included with the Company's annual consolidated financial statements.

Additional Information

Additional information related to the Company is available on SEDAR and EDGAR, respectively, at www.sedar.com and at www.sec.gov, and at the Company's website www.polymetmining.com.

Disclosure of Mine Safety and Health Administration (“MSHA”) Safety Data

PolyMet is committed to the health and safety of its employees and in providing an incident free workplace. The Company maintains a comprehensive health and safety program that includes extensive training for all employees and contractors, site inspections, emergency response preparedness, crisis communications training, incident investigation, regulatory compliance training and process auditing.

PolyMet’s U.S. mining operations are subject to MSHA regulation under the U.S. Federal Mine Safety and Health Act of 1977 (the “Mine Act”). MSHA inspects our mining operations on a regular basis and issues various citations and orders when it believes a violation has occurred under the Mine Act. Whenever MSHA issues a citation or order, it also generally proposes a civil penalty, or fine, related to the alleged violation.

The following disclosures are provided pursuant to Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the “Act”), which requires certain disclosures by companies required to file periodic reports under the Securities Exchange Act of 1934 that operate mines regulated under the Mine Act.

The information in the table below reflects citations and orders MSHA issued to PolyMet during the year ended January 31, 2017 as reflected in our records. The data in our system may not match or reconcile with the data MSHA maintains on its public website. In evaluating this information, consideration should also be given to factors such as: (i) the number of citations and orders may vary depending on the size and operation of the mine, (ii) the number of citations issued may vary from inspector to inspector and mine to mine, and (iii) citations and orders may be contested and appealed, and in that process, may be reduced in severity and amount, and may be dismissed.

Mine ID number ⁽¹⁾	Mine or Operating Name	Section 104 Significant Citations ⁽²⁾	Section 104(b) Orders ⁽³⁾	Section 104(d) Citations and Orders ⁽⁴⁾	Section 110(b)(2) Violations ⁽⁵⁾	Section 107(a) Orders ⁽⁶⁾	Total dollar value of MSHA assessments proposed ⁽⁷⁾	Total number of Mining Related Fatalities	Received Notice of Pattern of Violations Under Section 104(e) yes/no	Received Notice of Potential Pattern under section 104(e) yes/no	Legal Actions Pending as of Last Day of Period ⁽⁸⁾	Categories of Pending Legal Actions (i-vii) ⁽⁹⁾	Legal Actions Initiated During Period	Legal Actions Resolved During Period
2103658	POLYMET	0	0	0	0	0	\$ 0	0	No	No	0	NA	0	0

1 MSHA assigns an identification number to each mine or operation and may or may not assign separate identification number to related facilities. The information provided in this table is presented by mine identification number.

2 Represents the total number of citations issued by MSHA for violation of health or safety standards that could significantly and substantially contribute to a serious injury if left unabated.

3 Represents the total number of orders issued, which represents a failure to abate a citation under section 104(a) within the period prescribed by MSHA. This results in an order of immediate withdrawal from the area of the mine affected by the condition until MSHA determines that the violation has been abated.

4 Represents the total number of citation and orders issued by MSHA for unwarrantable failure to comply with mandatory health or safety standards.

5 Represents the total number of flagrant violations identified.

6 Represents the total number of imminent danger orders issued under section 107(a) of the Mine Act.

7 Amounts represent the total dollar value of proposed assessments received from MSHA.

8 Pending legal actions before the Federal Mine Safety and Health Review Commission (the “Commission”) as required to be reported by Section 1503(a)(3) of the Act.

9 The following provides additional information regarding the types or categories of proceedings that may be brought before the commission:

(i) Contest Proceedings - may be filed with the Commission by an operator to challenge the issuance of a citation or order issued by MSHA;

(ii) Civil Penalty Proceedings - may be filed with the Commission by an operator to challenge a civil penalty MSHA has proposed for a violation contained in a citation or order;

(iii) Discrimination Proceedings - involves a miner’s allegation that he or she has suffered adverse employment action because he or she engaged in activity protected under the Mine Act, such as making a safety complaint;

(iv) Temporary Reinstatement Proceedings - involves cases in which a miner has filed a complaint with MSHA stating that he or she suffered discrimination and the miner lost his or her position;

(v) Compensation Proceedings - may be filed with the Commission by miners entitled to compensation when a mine is closed by certain closure orders issued by MSHA. The purpose of the proceeding is to determine the amount of compensation if any, due to miners idled by the orders;

(vi) Applications for Temporary Relief - applications for temporary relief of any order issued under Section 104; and

(vii) Appeals.

CERTIFICATION

I, Jonathan Cherry, certify that:

1. I have reviewed this Annual Report on Form 40-F of PolyMet Mining Corp. (“the Company”);
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the Company’s internal control over financial reporting that occurred during the period covered by the Annual Report that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.
5. The Company’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company’s auditors and the audit committee of the Company’s board of directors (or persons performing the equivalent functions):
 - (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company’s ability to record, process, summarize and report financial information; and
 - (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal control over financial reporting.

Date: April 20, 2017

/s/ Jonathan Cherry

Name: Jonathan Cherry

Title: Chief Executive Officer (Principal Executive Officer)

CERTIFICATION

I, Douglas Newby, certify that:

1. I have reviewed this Annual Report on Form 40-F of PolyMet Mining Corp. (“the Company”);
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company’s internal control over financial reporting that occurred during the period covered by the Annual Report that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.
5. The Company’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company’s auditors and the audit committee of the Company’s board of directors (or persons performing the equivalent functions):
 - (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company’s ability to record, process, summarize and report financial information; and
 - (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal control over financial reporting.

Date: April 20, 2017

/s/ Douglas Newby

Name: Douglas Newby

Title: Chief Financial Officer (Principal Financial Officer)

CERTIFICATION
Pursuant to 18 United States Code § 1350
As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. Section 1350), as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, each of the undersigned officers hereby certify that the Annual Report on Form 40-F for the fiscal year ended January 31, 2017 of PolyMet Mining Corp. (the “Company”) filed with the Securities and Exchange Commission on the date hereof fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that the information contained in such report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 20, 2017

/s/ Jonathan Cherry

Name: Jonathan Cherry
Title: Chief Executive Officer (Principal Executive Officer)

Date: April 20, 2017

/s/ Douglas Newby

Name: Douglas Newby
Title: Chief Financial Officer (Principal Financial Officer)

CONSENT OF INDEPENDENT AUDITOR

We hereby consent to the incorporation by reference in this Annual Report on Form 40-F for the year ended January 31, 2017 of PolyMet Mining Corp of our report dated April 20, 2017, relating to the consolidated financial statements and the effectiveness of internal control over financial reporting, which appears in the Exhibit incorporated by reference in this Annual Report.

We also consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 333-192208) of PolyMet Mining Corp. of our report dated April 20, 2017 referred to above. We also consent to the reference to us under the heading "Interests of Experts", which appears in the Annual Information Form included in the Exhibit incorporated by reference in this Annual Report on Form 40-F, which is incorporated by reference in such Registration Statement.

(Signed) "PricewaterhouseCoopers LLP"

Chartered Professional Accountants

Vancouver, British Columbia
April 20, 2017

CONSENT OF AUTHOR

(Pierre Desautels, P.Geo., of AGP Mining Consultants Inc., with an office at
92 Caplan Avenue, Suite 246, Barrie, ON, L4N 0Z7)

To: PolyMet Mining Corp.
United States Securities and Exchange Commission

Re: PolyMet Mining Corp.’s Incorporation by Reference of the “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I, Pierre Desautels, P.Geo., consent to the incorporation by reference of extracts of the Technical Report entitled “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I consent to extracts from, or a summary of, the Technical Report in Item 4, Description of Business, Mineral Resources and Mineral Reserves, Geology and Mineralization and Development Plans (the “relevant sections”) of PolyMet Mining Corp.’s 40-F filing with the Securities and Exchange Commission, for the year ended January 31, 2017.

I confirm that I have read the relevant sections of the Form 40-F filing for PolyMet Mining Corp. for the year ended January 31, 2017 and that it fairly and accurately represents the information in the Technical Report that supports the disclosure.

Dated this 20th day of April, 2017.

/s/ Pierre Desautels

Name: Pierre Desautels, P.Geo.

CONSENT OF AUTHOR

(Gordon Zurowski, P.Eng., of AGP Mining Consultants Inc., with an office at
92 Caplan Avenue, Suite 246, Barrie, ON, L4N 0Z7)

To: PolyMet Mining Corp.
United States Securities and Exchange Commission

Re: PolyMet Mining Corp.’s Incorporation by Reference of the “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I, Gordon Zurowski, P.Eng., consent to the incorporation by reference of extracts of the Technical Report entitled “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I consent to extracts from, or a summary of, the Technical Report in Item 4, Description of Business, Mineral Resources and Mineral Reserves, Geology and Mineralization and Development Plans (the “relevant sections”) of PolyMet Mining Corp.’s 40-F filing with the Securities and Exchange Commission, for the year ended January 31, 2017.

I confirm that I have read the relevant sections of the Form 40-F filing for PolyMet Mining Corp. for the year ended January 31, 2017 and that it fairly and accurately represents the information in the Technical Report that supports the disclosure.

Dated this 20th day of April, 2017.

/s/ Gordon Zurowski

Name: Gordon Zurowski, P.Eng.

CONSENT OF AUTHOR

(Karl D. Everett, P.E., of Foth, with an office at
Eagle Point II, 8550 Hudson Blvd. North, Suite 105, Lake Elmo, MN 55042)

To: PolyMet Mining Corp.
United States Securities and Exchange Commission

Re: PolyMet Mining Corp.’s Incorporation by Reference of the “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I, Karl D. Everett, P.E., consent to the incorporation by reference of extracts of the Technical Report entitled “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I consent to extracts from, or a summary of, the Technical Report in Item 4, Description of Business, Development Plans (the “relevant sections”) of PolyMet Mining Corp.’s 40-F filing with the Securities and Exchange Commission, for the year ended January 31, 2017.

I confirm that I have read the relevant sections of the Form 40-F filing for PolyMet Mining Corp. for the year ended January 31, 2017 and that it fairly and accurately represents the information in the Technical Report that supports the disclosure.

Dated this 20th day of April, 2017.

/s/ Karl D. Everett

Name: Karl D. Everett, P.E.

CONSENT OF AUTHOR

(David Dreisinger, Ph.D., P.Eng., of Dreisinger Consulting Inc., with an office at
5233 Bentley Crescent, Delta, BC, V4K4K2)

To: PolyMet Mining Corp.
United States Securities and Exchange Commission

Re: PolyMet Mining Corp.’s Incorporation by Reference of the “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I, David Dreisinger, Ph.D., P.Eng., consent to the incorporation by reference of extracts of the Technical Report entitled “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I consent to extracts from, or a summary of, the Technical Report in Item 4, Description of Business, Mineral Resources and Mineral Reserves, Geology and Mineralization and Development Plans (the “relevant sections”) of PolyMet Mining Corp.’s 40-F filing with the Securities and Exchange Commission, for the year ended January 31, 2017.

I confirm that I have read the relevant sections of the Form 40-F filing for PolyMet Mining Corp. for the year ended January 31, 2017 and that it fairly and accurately represents the information in the Technical Report that supports the disclosure.

Dated this 20th day of April, 2017.

/s/ David Dreisinger

Name: David Dreisinger, Ph.D., P. Eng

CONSENT OF AUTHOR

(William Murray, P.Eng, of Optimum Project Services Ltd., with an office at
6440 Gibbons Drive, Richmond, B.C., V7C 2E1)

To: PolyMet Mining Corp.
United States Securities and Exchange Commission

Re: PolyMet Mining Corp.’s Incorporation by Reference of the “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I, William Murray, P.Eng., consent to the incorporation by reference of extracts of the Technical Report entitled “Updated NI 43-101 Technical Report on the NorthMet Deposit, Minnesota, USA” with effective date January 14, 2013 and inclusion of references to the Technical Report in the Company’s Form 40-F for the year ended January 31, 2017.

I consent to extracts from, or a summary of, the Technical Report in Item 4, Description of Business, Mineral Resources and Mineral Reserves, Geology and Mineralization and Development Plans (the “relevant sections”) of PolyMet Mining Corp.’s 40-F filing with the Securities and Exchange Commission, for the year ended January 31, 2017.

I confirm that I have read the relevant sections of the Form 40-F filing for PolyMet Mining Corp. for the year ended January 31, 2017 and that it fairly and accurately represents the information in the Technical Report that supports the disclosure.

Dated this 20th day of April, 2017.

/s/ William Murray

Name: William Murray, P.Eng

Appendix 1.10

Resumes

Resumes included in Appendix 1.10

Design of Project Features			
Designer	Company	Facility	Applicable Rule
Brent Bronson, Gordon Gjerapic	Golder Associates Inc.	Category 1 Waste Rock Stockpile Category 2/3 Waste Rock Stockpile, Category 4 Waste Rock Stockpile, Ore Surge Pile	Minn. Rule 6132.2200, Subpart 2B: Reactive Mine Waste Storage Facility Minn. Rule 6132.2400, Subpart 2A(1): Storage Pile Design
Tom Radue, Aaron Grosser, Iván Contreras	Barr Engineering Co.	Flotation Tailings Basin	Minn. Rule 6132.2200, Subpart 2B: Reactive Mine Waste Storage Facility Minn. Rule 6132.2500, Subpart 2A: Tailings Basins
Scott Olson	University of Illinois at Urbana-Champaign		
Richard Davidson	AECOM		
Tom Radue, Cristian Diaz	Barr Engineering Co.	Hydrometallurgical Residue Facility	Minn. Rule 6132.2200, Subpart 2B: Reactive Mine Waste Storage Facility Minn. Rule 6132.2400, Subpart 2A(1): Storage Pile Design
Paul Swenson	Barr Engineering Co.	Overburden Storage and Laydown Area	Minn. Rule 6132.2400, Subpart 2A(1): Storage Pile Design

Mine Waste Characterization		
Geochemists	Company	Applicable Rule
Stephen Day	SRK Consulting	Minn. Rule 6132.1000, Subpart 2
Tamara Diedrich	MineraLogic LLC	Minn. Rule 6132.1000, Subpart 2

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Golder Associates Inc. – Denver

Principal - Senior Practice Leader

Brent Bronson, PE, is a Principal Senior Practice Leader with more than 33 years of professional experience, 30 of which include working on large design, permitting, construction and site characterization projects for mine development and closure projects worldwide. He has been the lead designer, project director and/or project manager for numerous domestic and international metal and non-metal mining projects, including approximately 45 heap leach projects, 24 earthen dams, 13 tailing facilities, 10 mine pit slope designs, coal refuse and a variety of heavy civil engineering projects. He has actively supported the federal, state and local permitting requirements for these projects, both domestically and internationally. Mr. Bronson has designed and managed a number of large domestic and international mine closure projects. Mr. Bronson is a registered professional engineer in Nevada, Utah, Idaho, Arizona, Colorado, New Mexico and Minnesota.

Education

MS, Geological Engineering, Mackay School of Mines, University of Nevada - Reno

BS, Geology, Idaho State University

BA, Civil Engineering, Idaho State University

Certifications

Professional Engineer - AZ, CO, ID, MN, NM, NV, UT

Areas of Practice

- **Life of Mine Audits / Reviews** – Mr. Bronson has been the lead auditor / reviewer for sixteen life-of-mine (LoM) reviews. LoM audits / reviews include a review of existing information coupled with a site inspection to evaluate the adequacy of existing designs, cost estimates, and supporting studies to minimize the long term risks, uncertainties and to identify opportunities on a LoM basis. A primary focus is to consider synergies with operations to reduce the LoM costs, with an emphasis on TSF and mine waste facilities. LoM reviews have been completed at mine sites in the US, Peru, Ghana, Indonesia, Canada, New Zealand, Australia and Chile.
- **Tailings Facility Design.** Mr. Bronson has been the engineer lead and/or quality assurance manager for numerous gold, copper, base metals, and phosphate tailing projects, which have included both new development and TSF closure projects in the United States, Mauritania, Peru, Chile, Turkey, and Argentina. Mr. Bronson is currently serving as the EoR for a large upstream constructed “sand dam” in Utah and a new geomembrane lined TSF in Mauritania.
- **Heap Leach Facility Design.** Project manager, project director and/or lead designer for more than 45 heap leach design projects for gold and copper operations in Armenia, United States, Mexico, Argentina, Israel, Peru, Saudi Arabia, Australia and Indonesia. Projects have ranged from feasibility to detailed engineering design, and constructions and closures.
- **Mine Closure Design.** Mr. Bronson has designed and managed a number of large domestic and international mine closure projects, including projects for gold and base metals projects in the United States, Canada, Armenia, Ghana, Peru, New Zealand, Australia, Turkey, and Chile. Mr. Bronson is the lead author for Newmont’s “Closure and Reclamation Planning and Implementation Guidance” document.
- **Rock Slope Design.** Managed and completed pit slope designs for multiple open-pit gold and base metals operations



SELECT PROJECT EXPERIENCE – TSF, HLF AUDITS AND LOM REVIEWS

<p>MYRSL Yanacocha Complex, Peru</p>	<p>Mr. Bronson was the project director and lead designer for the pre-feasibility (2013) and feasibility (2014) level closure and rehabilitation designs for the major facilities at the Yanacocha Mine Complex, which included the mine pits and the heap leach, waste rock and tailing facilities.</p>
<p>Polymet Northmet Deposit Minnesota</p>	<p>Project Director to assist the Polymet with the scoping and design of the geomembrane lined mine waste containment system(s) for the Northmet Deposit, located near Hoyt Lakes, Minnesota.</p>
<p>Tailings Storage Facility Design & EoR Mauritania</p>	<p>Active Engineer of Record (EoR) for the design and construction of the TMLSA Tailing Storage Facility</p>
<p>HLF Peer Review Turkey</p>	<p>Lead peer reviewer for a detailed geotechnical review of the Çöpler Mine Heap Leach Facility Expansion (Phase 4). Evaluations included site inspection, geotechnical evaluations of the leach ore, liner system and foundation stability considering both static and seismic loading conditions. Steady State seepage modeling was completed to estimate phreatic levels in the ore heap.</p>
<p>Confidential TSF Construction Africa</p>	<p>Project director for the construction management and construction quality assurance services for the Phase 2 expansion of an existing zero-discharge permitted TSF.</p>
<p>Tailings Storage Facility Expansion Nevada, USA</p>	<p>Project Manager for final design, cost estimating, bid document preparation and QA/QC for a three stage, 12.1 million ton vertical expansion of TSF 1 &2, Cell #3 and Cell #4. Design provided for a combination of upstream and downstream dam raise techniques for a four sided ring-dike structure, with deposition via thin-layer managed tailings deposition. This work was supported with a detailed geotechnical evaluation, including a detailed seismic liquefaction analyses.</p>
<p>Phosphate Tailing Storage Facility Utah, USA</p>	<p>Engineer of Record (EoR) for the Simplot Phosphate Tailing Storage Facility (TSF), an upstream constructed TSF located near Vernal, UT. Mr. Bronson completes annual EoR inspections for this facility and oversees tailing stewardship in general compliance with Mining Association of Canada criteria.</p>
<p>Confidential Client TSF Closures New Mexico, USA</p>	<p>Mr. Bronson was the project manager and Engineer of Record of a multi-company design team for the detailed design and construction QA for the closure and rehabilitation (C&R) of approximately 2000 acres of eight separate TSFs. Surface water design concept was barber-pole, with articulated concrete block downdrains. C&R support included the development of IFC drawings and specifications, a CQA Plan, Geotechnical Report, Surface Hydrology Report, and Cover Report per New Mexico agency requirements.</p>
<p>Newmont LoM Audits and Technical Reviews Denver, Colorado, USA</p>	<p>Evaluated the LoM design, site conditions, uncertainties, opportunities, and risks that may impact the Closure & Rehabilitation (C&R) implementation, success and costs. Audits include an on-site technical review of the adequacy of the C&R designs, TSF(s), HLF(s), mine waste facilities, mine pits, risk registers, supporting technical studies and LOM costs, at the following mine sites: Mule Canyon, Carlin North, Phoenix, Gold Quarry, Twin Creek, Midas, Northumberland, and Rain Mines in Nevada; KCGM, Boddington and Jundee Mines in Western Australia; Batu Hijau Mine in Sumbawa, Indonesia; Golden Giant Mine in Canada; Ahafo Mine in Ghana, Africa; Yanacocha, Maqui Maqui, Carachugo, China Linda, La Quina and Cerro Negro Mines in Cajamarca, Peru; and, Wahi Mine in New Zealand.</p>

A full summary of all projects worked on by Mr. Bronson is available upon request.



Education

PhD Geotechnical Engineering, University of Colorado

MS Geotechnical Engineering, University of Colorado

ME Structural Engineering, University of Zagreb

Certifications

Professional Engineer CA, CO, MN, NM

Golder Associates Inc. – Denver

Professional Summary

Gordan Gjerapic has over 15 years of geotechnical engineering experience. During this time, he has participated in solving various geo-environmental and rock mechanics problems dealing with numerical modelling of deformation, stability, seepage, contaminant transport and tunnelling. His work includes heap leach, waste pile and tailings facility designs, with an emphasis on consolidation and unsaturated flow modelling, solution collection piping design, water balance modelling, foundation and embankment stability and stability of underground openings. He specializes in testing and modelling of geotechnical materials subjected to large strain consolidation. Other responsibilities include analysis, design and installation of field equipment, geotechnical investigation of soil and rock sites, and project management locally, nationally and internationally.

Employment History

Golder Associates Inc. – Denver, Colorado

Geotechnical Engineer (2001 to Present)

Responsibilities include analysis, design, reporting, and project management for local, national and international projects.

Numerical modelling expertise:

- 1) Soil stability using SLIDE, FLAC and PLAXIS;
- 2) Soil-structure interaction using FLAC and PLAXIS;
- 3) Seismic stability of waste rock and heap leach structures using SHAKE, DMOD2000 and FLAC;
- 4) Stability of underground openings using UDEC, FLAC, PHASE2 and FLAC3D;
- 5) Creep of salt and potash excavations and subsidence modelling using FLAC;
- 6) Water balance modelling using GOLDSIM;
- 7) Large strain consolidation modelling using CONDES and FS-CONSOL;
- 8) Structural design of steel and concrete structures using M-STRUDL and RAM-Elements;
- 9) Groundwater modelling using MODFLOW and SVFLUX (limited exposure to FEFLOW, FracMan and SEEP/W);
- 10) Thermal modelling using TEMP/W;
- 11) Vadose zone modelling using UNSAT-H, SHAW and VADOSE/W (w/ limited exposure to HYDRUS-1D, SEEP/W, SVFLUX and FEFLOW);
- 12) Add-on software module development in C++ and FORTRAN on a project specific basis for PLAXIS, UNSAT-H and GOLDSIM; FISH programming expertise in FLAC and FLAC3D; and use of mathematical software to implement available analytical solutions (e.g. in MATHEMATICA).



PROJECT EXPERIENCE

PolyMet NorthMet Project
Minnesota

Project manager providing support during the permitting process for the copper-nickel-platinum group elements (PGE) mine site in northeastern Minnesota including the design and performance (stability and hydrological) evaluation for different liner and cover systems considered for the proposed waste rock stockpile construction. Provide operational and closure designs for different stockpiles with the individual footprint areas ranging from 30 to more than 500 acres. Responsibilities included planning and interpreting data from the geotechnical investigations; developing and directing preparation of geotechnical designs and calculations for waste rock stockpiles with different reactivity; preparing design drawings and calculations for seepage collection (overliner and underliner) systems; and, developing construction quantities and construction schedules.

Waste Rock Stockpile Design
Guatemala

Project manager for the Waste Rock Dump (WRD) feasibility design in a highly seismic region with challenging foundation conditions. Responsibilities included development of the geotechnical site investigation and the accompanying laboratory testing program, data interpretation, stability evaluations and assessment of risks and benefits for different WRD configurations. As a part of the project, also provide monitoring program requirements, closure guidelines and operating and construction costs.

Tailings Geotechnical Characterization Program
Mexico

Designed and supervised laboratory program for samples collected during field investigation of the 113 Mm³ tailings facility in Mexico. Interpreted laboratory testing results and field investigation data (borehole and CPT), and developed limits and correlations with engineering parameters (consolidation, permeability, strength) required for numerical modelling. Utilized developed parameters and observed trends to evaluate stability and seepage risks for the TSF dam based on the collected data.

Waste Rock Embankment Design
Argentina

Performed static and pseudo-static (seismic) slope stability design of waste rock stockpiles constructed on mountainous terrain in high Andes. In addition, performed dynamic slope stability analyses using computer codes SHAKE and FLAC.

Dike 5/8 Stability
Israel

Performed dike stability evaluations, seepage calculations, and provided construction recommendations for dikes surrounding brine ponds of Dead Sea Works in Israel.

P-16 Tailings Impoundment Closure
California

Created accretion module using existing soil-atmosphere software UNSAT-H to account for continuous tailings deposition and cracking during facility operations of the tailings facility. Performed parametric study to evaluate different closure cover scenarios. Created numerical model capable of tracking consolidation and unsaturated flow of the deposited tailings.

Large Strain Consolidation Testing Equipment Set-Up for Oil Sand Tailings
Calgary, Canada

Set-up of the large strain consolidation equipment for the measurement of deformation and permeability characteristics of oil sands. Responsible for the project management, equipment design, shop-drawings, procurement, testing, installation and on-site training of the client's personnel. The testing equipment included seepage induced consolidation testing (SICT) capabilities.

- Experience** Tom Radue has over 30 years of experience on a variety of geotechnical and environmental projects, especially as they relate to solid-waste-landfill and surface-impoundment permitting, design, construction, operations, and closure; mine tailings management; subsurface explorations and geotechnical analysis of slopes; and industrial solid waste and mine tailings management alternatives analyses and feasibility studies. His project work has included:
- For a proposed nonferrous mining operation in Minnesota, evaluating alternatives and preparing designs for a hydrometallurgical-residue disposal facility. The residue consists of non-cohesive silt-size material (primarily gypsum) that is planned to be transported in slurry form to the disposal facility. The selected residue facility location utilizes an existing brownfield site (former tailings basin area) in order to reuse a previous industrial area and limit wetland impacts. Locating the residue disposal facility on an existing tailings basin presents a challenge for facility design and construction. By using a preload fill, facility designs accommodate the anticipated large differential settlements and consider construction challenges associated with the facility location above saturated mine tailings. Placement of a temporary cover followed by a final cover addresses the differential settlement estimated for the saturated residue to be deposited in the facility. The projected annual residue disposal rate is 1 million cubic yards per year.
 - Providing design and permitting for a tailings basin expansion using upstream construction techniques to accommodate a tailings disposal rate of 10 million cubic yards per year. The design proposes to return an idled tailings basin to service in acknowledgement of regulatory agency preference for reuse of brownfield sites, thereby limiting future wetland impacts. The design further proposes continuation of the upstream construction method for dam construction; a method successfully utilized at the pre-existing tailings basin. Perimeter dams will be built using imported dam-construction material, compacted to produce structurally sound tailings-basin dams. Basin operations will be integrated with a project water-treatment system as a means to provide auxiliary water elevation control within the basin. The design also includes a perimeter seepage containment system to collect basin seepage for treatment and re-use in plant processes and for augmentation of stream flow.
 - For the Kraemer Mining and Materials quarry in Burnsville, Minnesota, preparing concept and final designs to transition the quarry from tailings discharge into temporary basins with subsequent tailings excavation and transport to a nearby disposal area, to a series of dedicated tailings basins for permanent onsite tailings storage. The completed project eliminated the challenges and costs associated with excavation and transport of saturated tailings that was performed during winter quarry shutdowns, and provided increased operational flexibility of the quarry's tailings basin system. The basins are now constructed and expanded on an as-needed basis by using upstream dam construction that minimizes annual earthwork-construction costs. The basins are sized and constructed with final reclamation in mind, with basin sizing, location, and final elevation selected to form future public access beach and upland areas once quarry operations cease and the quarry recharges with water to create a several-hundred-acre local recreational area.

- For Badger Mining Corporation, providing dam failure emergency response and remediation assistance, followed by ongoing slope stability and seepage analysis and operations recommendations for tailings basin operations for multiple basins at several plant sites. Services subsequently included tailings management alternatives analysis, followed by conceptual and final design of a pressure filter (plate and frame) tailings dewatering system to produce dewatered tailings as partial mitigation for rapid filling of tailings basins having diminished capacity due to rapid mine production-rate increases and a constrained tailings basin footprint area. Work has also entailed conducting periodic dam-safety inspections, coordinating dam break analysis, and preparing facility emergency action plans.
- For Xcel Energy, managing the design and permitting of a vertical expansion of a coal combustion residuals (primarily gypsum) surface impoundment, the design and permitting of a horizontal coal combustion residuals (CCR) surface impoundment expansion, and the design of surface impoundment dewatering systems. This work included developing a long-range plan for CCR management, CCR transport and disposal, and surface impoundment closure. Technical and economic components of alternatives were identified and evaluated. The award-winning design that was implemented included:
 - Vertical expansion of an existing surface impoundment using the upstream dam construction method, concurrent with vertical expansion of the impoundment decant tower. This approach substantially delayed capital expenditures otherwise required for a new surface impoundment.
 - Closure of an existing surface impoundment using dry fly-ash fill above underlying saturated CCRs, concurrent with installation of an impoundment dewatering system. The dewatering system recovered millions of gallons of water for treatment, thereby reducing the potential for water seepage from the impoundment.
 - Long-term planning for horizontal development of a new CCR surface impoundment, allowing Xcel to plan and permit the impoundment well ahead of need.

The overall approach yielded millions of dollars in facility-development cost savings when compared to the plan the client initially envisioned.

- For Minnesota Power, working as an integral member of its team to assist with regulatory negotiations for permitting a new 25-acre CCR surface impoundment, managing overall facility design, and assisting with construction oversight and ongoing operations. This project was unique in that it marked the first successful permitting in the state of a lined surface impoundment comprised of a geomembrane liner and geosynthetic clay liner. Permitting of this design was critical to the successful construction of the impoundment in northern Minnesota in a single construction season. This project also entailed design support for development of a multimillion-dollar pump station to return decanted impoundment water to the plant for reuse, and

subsequent analysis and design of upstream dam construction to increase basin capacity and operating life.

- Also for Minnesota Power, performing alternatives analyses and feasibility studies for final closure and reclamation of multiple CCR surface impoundments, including geotechnical evaluations, impoundment water-treatment evaluations, CCR solidification studies, and final cover alternatives evaluations. Each of these studies are integral to the technical feasibility and economic closure of Minnesota Power's several hundred acres of CCR surface impoundments.
- For Minnesota Power, conducting dam safety reviews on multiple CCR surface impoundments, entailing several miles of dams, including detailed onsite dam-condition review, analysis and review of instrument monitoring data, and reporting on inspection findings and maintenance recommendations. Also assisted with preparation of surface impoundment emergency action plans (EAPs) and response to periodic inquiries from the Environmental Protection Agency and Minnesota Department of Natural Resources regarding dam-safety review.
- Serving as a team member and project manager on projects for Minnkota Power in North Dakota involving an existing CCR-disposal area. The project team reviewed the existing facility design, recommended modifications, and designed intermediate drainage layers to collect leachate, as well as an evaporation pond to dispose of leachate.
- For Minnkota Power Cooperative of North Dakota, developing a long-range CCR surface impoundment management plan consisting of incremental development of surface impoundments to replace excavation and transport of saturated CCR to a remote mine site for disposal. The incremental development plan leverages local coal-mine excavation activities to reduce earthwork costs for the several hundred acre impoundment system, and utilizes downstream dam construction to facilitate construction of the composite liner system (compacted clay overlain by geomembrane) required by federal rules. Work also entails seepage and slope stability analysis, construction plans and specification preparation, construction oversight and documentation, annual dam-safety inspection and reporting, impoundment closure design and construction oversight, and periodic review and comment on the EAP for the interconnected series of surface impoundments.
- For a confidential client, designing and permitting a unique double-composite lined hazardous-waste storage facility. The design was unique in that it included two separate composite-liner systems separated by a full-site leakage-detection-and-collection system. The facility uses a natural clay liner overlain by a geomembrane, a complete leak-detection system, and a second composite liner consisting of geomembrane and geosynthetic clay. The design was complicated by the location of the facility over a formerly uncontrolled waste-disposal facility. However, the new facility's location was beneficial in terms of also providing a cover system over the previously placed waste. Design involved slope stability analysis and a site subgrade-improvement plan using preloading and wick drains.

- For a client in Pamplona, Spain, managing the evaluation of underground mine backfill and aboveground mine tailings storage to optimize overall tailings management for a projected 30-year mine life.
- For Minnesota Power, preparing construction plans and specifications, managing construction oversight, and assisting with permit modification efforts for multiple phases of liner and cover construction for the Taconite Harbor Energy Center coal-ash landfill. Work included preparation of closure plan, post-closure care plan, and contingency action plan and associated cost estimating for use in financial assurance.
- Managing the expansion design and permitting of Xcel Energy's Unit No. 3 CCR landfill at the utility's Sherco plant in Becker, Minnesota. This work included developing a long-range plan and cost evaluation for CCR disposal and designing a composite-clay and geomembrane-lined CCR disposal facility.
- Serving as project manager for the permitting, design of, and/or construction documentation for work on Xcel Energy's Sherco Units 1 and 2 CCR landfill, the Red Wing refuse-derived-fuel ash landfill, Sherco recycle-basin relining, and the Black Dog temporary ash-storage facility.
- Assisting Montana-Dakota Utilities (MDU) with a CCR landfill siting and design alternatives analysis, selection of the preferred alternative, and preparation of facility permit-modification reports and design documents. Work has also included redesign and permitting of an expansion of MDU's existing CCR landfill.
- Assisting multiple industrial clients with regulatory negotiations, solid-waste-management-facility permitting, and ongoing permit compliance.
- Providing extensive services for a sanitary landfill in Burnsville, Minnesota, to help the owner maintain updated permits. Specific accomplishments include:
 - Preparing plans and specifications for a composite liner consisting of a high-density polyethylene geomembrane over clay, a leachate collection system, and double-containment piping.
 - Developing an operations manual that optimizes the life of the landfill, as well as closure and post-closure care plans to minimize future environmental impacts. Also developed final-cover plans for the landfill.
 - Preparing a contingency action plan for the landfill, outlining procedures to follow in case of fire, explosions, erosion, or failure of the leachate collection system.
 - Preparing closure, post-closure care, and contingency-action cost estimates for use in developing the facility's financial assurance plan.
 - Preparing permit application documents, facility designs, and environmental assessment and environmental impact statement documents, all leading to the successful permitting of a 9-million-cubic-yard landfill expansion.
- Serving as design engineer for award-winning development at a sanitary landfill in Winona, Minnesota. The project involved the state's first double-composite liner

system for an existing landfill in karst terrain. The design has two composite-clay and flexible-membrane liners and two leachate collection systems.

- Managing design and construction documentation of a unique geomembrane and geocomposite clay final cover for the Dakhue sanitary landfill under a contract for the Minnesota Pollution Control Agency (MPCA).
- For Minnesota Power, performing site reconnaissance and slope stability analyses for reservoir dams constructed nearly 60 years ago.
- Managing preparation of construction plans and specifications and the construction documentation report for NRG Energy's composite-lined refuse-derived-fuel ash landfill in Becker, Minnesota.
- Modifying operations plans to extend the life of an automobile-shredder-waste landfill. Also designed the final-cover system for the closed landfill. Work included design and implementation of a preload fill to improve foundation conditions along a future roadway alignment.
- Designing and managing design and construction oversight of geomembrane-based secondary containment systems for multimillion-gallon aboveground petroleum storage tank facilities at Flint Hills Resources and Marathon Petroleum refineries in Minnesota.
- For the MPCA, managing design and construction oversight for closure of multiple municipal solid-waste landfills.
- For the MPCA, managing redesign, construction oversight, and operation and maintenance of the Long Prairie groundwater remediation system. The system consists of groundwater recovery wells and a granular activated carbon water-treatment system for removal of dry cleaning solvents from the groundwater.
- Managing design of a landfill liner system using finite element modeling to simulate various liner settlement scenarios. The modeling allowed justification of a design that did not use costly geogrid reinforcing.
- Designing and managing construction observation and materials testing programs on multiple solid-waste-management landfill and surface-impoundment projects.

Prior to joining Barr, Tom worked as a project engineer with a consulting firm in Wisconsin. Highlights of this experience include:

- Preparing plans and specifications for upstream dam construction at a paper mill's secondary wastewater-treatment sludge storage basin using geotextile fabrics for reinforcement, perimeter drainage systems, and unique winter construction techniques to facilitate placement of geotextiles and upstream dikes over saturated, unstable paper-mill sludge.
- Designing groundwater cutoff walls and groundwater gradient-control systems for a paper mill's secondary wastewater-treatment sludge storage impoundments.
- Preparing plans and specifications for several industrial solid-waste landfills in Wisconsin and Michigan. Waste types included paper sludge, CCRs, and lime sludge.

This experience included design, permitting, and construction oversight for clay and synthetic landfill liners, leachate collection systems, groundwater cutoff and gradient control systems, and final-cover systems. Work included compliance with Wisconsin and Michigan solid-waste rules and negotiations with state regulatory agencies.

- Evaluating leakage characteristics of a paper mill's sludge landfill in Michigan using collection lysimeters and flow meters to determine leakage rates, and conductivity probes, suction lysimeters, and discrete samplers to determine time- and depth-dependent chemical characteristics of the leachate.
- Designing foundations, sheet-pile, and rigid retaining structures, as well as geotextile-reinforced dikes, for commercial buildings and industrial projects.
- Characterizing soil strengths and lateral loading conditions for large-diameter vertical shafts providing access to deep tunnels for the Milwaukee Metropolitan Sewer District deep-tunnel project.
- Performing construction observation and materials testing for a variety of infrastructure development projects, including the former Hubert H. Humphrey Metrodome in Minneapolis, Minnesota.

Education	MBA, University of Minnesota, Carlson School of Management, 1999 – Strategy and Operations Emphasis MS, Civil Engineering, University of Wisconsin, 1985 – Geotechnical Engineering Emphasis BS, Civil Engineering, University of Wisconsin, 1982 – Geotechnical and Structural Engineering Emphasis
Training	24-Hour MSHA and 10-Hour OSHA training
Registration	Professional Engineer: Minnesota, Michigan, North Dakota, Tennessee, Utah, Wisconsin
Affiliations	Society for Mining, Metallurgy & Exploration (SME) American Society of Civil Engineers (ASCE)

Experience Since joining Barr in 1997 as a geotechnical engineer, Aaron Grosser has provided services related to mine tailings-basin planning, the design of embankment and earth dams, shallow and deep foundations, earth retention structures, and slope and subgrade stabilization. He is proficient at many in-situ testing methods such as pressuremeter, flat-plate dilatometer, cone penetration, and bore-hole shear testing. He frequently employs design software such as GeoStudio, FLAC, CT-Shoring, All-Pile, L-Pile, Group, SNAILZ, GRLWEAP, the Case Pile Driving Analyzer, Driven, and many U.S. Army Corps of Engineer and FHWA computer programs to solve design problems.

Examples of Aaron's experience include:

- Developing tailings basin geotechnical services and design for PolyMet's proposed mine in Hoyt Lakes, Minnesota. The ongoing project consists of evaluating the existing tailings storage facility, designing new dams for the facility, long-range planning, and developing seepage collection systems and final cover capping systems.
- Managing the geotechnical design and construction of earth dams for a northern Minnesota iron mine's tailings basin. Responsibilities included developing five-year operating plans and updates, surveys (terrestrial and hydrographic), field investigation, dam design, construction, field monitoring of instrumentation, long range planning, and yearly dam-safety inspections.
- Developing tailings basin and proposed plant-site geotechnical services and design for Minnesota Steel Industries' proposed mine and steel plant in Nashwauk, Minnesota. The ongoing project consists of evaluating existing tailings basin dams, designing new dams, long range planning, and operations for the tailings basin.
- Evaluating existing site conditions for the plant, concentrator, and crusher sites as the geotechnical engineer for Minnesota Steel Industries' new ore-processing facility in Nashwauk, Minnesota.
- Assisting with the design, evaluation, and operation of a confidential iron mining client's tailing basin in Minnesota. Services included long-term monitoring as well as dam-safety inspections and engineering.
- Preparing dam inspections and reviews for a confidential mining client's tailing basin in Minnesota. The dams are inspected and instrumentation reviewed and summarized as part of the dam-safety program for the facility.
- Evaluating existing conditions at LTV Steel Mining Company's Hoyt Lakes, Minnesota, tailings basin. Prepared short- and long-range management plans for construction based on the analysis of previous data, current and future tailings output, and observations from monitoring devices. Analyses of the previous data included comparisons between standard split spoon, cone penetrometer, and laboratory testing. Test methods were analyzed to predict the susceptibility to liquefaction under increasing loads or embankment raises. Other options were also provided for tailings storage based on the long-range management plan.
- Assisting with tailings basin management and developing a long-range maintenance plan, including filter-drain design, data reduction and interpretation, and drafting of

plans for short-term construction projects at various tailings basins around the country and South America.

- Developing a cost-effective bathymetry system for mining and water resources applications. The system has been used on many water bodies throughout the Midwest as an alternative to traditional water-depth measurements while providing similar results to expensive, higher-end equipment.
- Developing instrumentation-monitoring services for many sites around the country. Services include inclinometers for slope movement, piezometers, and settlement devices.
- Performing slope stability evaluations, including seismic analyses of a reclaimed mine area in Missouri for which a commercial development was planned.
- Performing cross-section verification and design, geotechnical investigation, and levee design layout, including slurry trench design, for the Creel Levee and Devils Lake (North Dakota) for the Corps of Engineers' St. Paul District.
- Evaluating seepage and sand boils that occur at the toe of Consumers Energy Company's Hardy Dam. This long-term condition was recently reevaluated using conductivity and temperature measurements of the reservoir and seepage water to determine if the aquifer and reservoir were connected.
- Evaluating slope stability and earth-retention and flood wall at Smallwood Dam for Wolverine Power Company during construction of remedial measures. Performed field engineering services during construction phase of work to verify the design intent was followed.
- Evaluating dams for stability for Federal Energy Regulatory Commission (FERC) Part 12 inspections at several hydropower facilities in Michigan.
- Serving as the lead geotechnical engineer on the Fargo-Moorhead area diversion project. Evaluated and provided conceptual design of foundation alternatives for flood risk management structures. Also evaluated settlement and slope stability using Slope/W and Seep/W for diversion channel slopes, levees, and impoundment areas. Performed strength assessment of fissured clays through fully softened laboratory materials triaxial testing. Conducted field investigations to evaluate soil properties and present computer-generated boring logs in gINT for use by others in geotechnical studies.
- Serving as the lead geotechnical engineer on the Mouse River enhanced flood risk management. Performed geotechnical evaluations of seepage, slope stability, bearing capacity, and settlement for levees as well as floodwalls over a wide range of geological foundation conditions and structure heights along nearly 22 miles of levees and 4 miles of floodwalls. Created a computer database of geotechnical conditions along the project alignment and prepared reports summarizing evaluations and selection of soil conditions for use by others in geotechnical studies including a conceptual matrix of under-seepage controls to protect the levee and floodwall system from seepage-induced failures.

- Serving as a geotechnical engineer on the Oxbow-Hickson-Bakke ring levee system project in North Dakota. Evaluated and provided geotechnical engineering designs of levees and other structure foundations. Evaluated seepage and stability of channel slopes, levees, storage ponds, pump stations, and roadways. Also included wick drains and instrumentation to mitigate pump station settlement.
- Stabilizing a failing slope in Crookston, Minnesota, for the Minnesota Department of Transportation. The project involved designing a reinforced slope through the use of drilled concrete shafts and deep relief wells to protect the adjacent highway.
- Stabilizing a slope adjacent to an active railroad line in Duluth, Minnesota. The rail line was stabilized using a system of horizontal drains drilled into the ground at the toe of the slope to provide a pressure relief system. The project consisted of a geotechnical evaluation, design, and long-term monitoring of the rail line.
- Directing field exploration and design for a railroad embankment in northern Minnesota. Design consisted of staged fill placement with geogrid reinforcement and surcharge over deep organic deposits.
- Evaluating the stability of the Ironworld Discovery Center site which has undergone significant movement since construction. The evaluation consisted of a historical review of the property, a review of current conditions, a site investigation consisting of rock coring, geophysics, down-hole video, and monitoring. The evaluation concluded the movements in the structure were due to subsidence of the old, underground mine workings.
- Performing engineering evaluation based on previous exploration information for a large concrete settling basin in Trinidad. Engineering consisted of surcharge and wick-drain design. Deep-foundation design consisted of evaluating many different pile types and configurations for construction.
- Conducting geotechnical investigations, evaluations of foundation and ground improvement alternatives, calculation of settlement and bearing capacity, design and evaluation of foundation stabilization measures for a large lead recycling facility in coastal Florida in a karst region.
- Assisting in design of several large crane-pad unloading facilities in Indiana and Ohio for American Electric Power. The crane pads generally consisted of sheet-pile earth retention structures. One location was designed as an elevated pad with 90- to 150-foot-long pile foundations and columns and required stabilization of a steep slope during construction.
- Developing cost-effective bathymetry system for mining and water resources applications. The system has been used on many water bodies throughout the Midwest as an alternative to traditional water-depth measurements while providing similar results to more expensive, higher-end equipment.
- Designing a large earth-retention structure for the construction of a groundwater remediation project in St. Paul. The project consisted of installing aeration pipe below the groundwater table for sparging of volatile organics.

- Directing the subsurface investigation and design of retaining wall with tie-backs and surface-water-diversion system for the rehabilitation of the Stillwater Prison historical site in Minnesota.
- Directing the subsurface investigation and geotechnical design of a sheet-pile and stone harbor revetment for the Superior and Two Rivers harbor entries in Wisconsin for the U.S. Army Corps of Engineers – Detroit District.
- Designing helical-pier foundations and foundation solidification (permeation grouting) on design-build projects with a local contractor in the Midwest. Work included stabilization of many excavations near adjacent structures using microfine cement in a variety of soil conditions.
- Conducting the site investigation and preparing the geotechnical engineering evaluation report for two large gas-turbine power-generation plants in southern Minnesota.
- Conducting a site investigation for the Minnesota Department of Transportation Foundations Unit for the bridge, embankment, and culvert construction on the Trunk Highway 63 roadway construction project in Rochester, MN. Followed MnDOT investigation requirements for the soil borings and rock coring.
- Conducting a site investigation for the Minnesota Department of Transportation Foundations Unit for the bridge, embankment, and culvert construction on the Trunk Highway 52 and 117th Street bridge construction projects in Inver Grove Heights, MN. Followed MnDOT investigation requirements for the soil borings and rock coring.

Education MS, Civil Engineering, Michigan Technological University, 1996
(emphasis: geotechnical engineering)
BS, Civil Engineering, Michigan Technological University, 1993
(emphasis: geotechnical engineering with structural engineering background)

Registration Professional Engineer: Minnesota, Michigan, North Dakota, Wisconsin; Alberta and Saskatchewan

Affiliations American Society of Civil Engineers
Minnesota Geotechnical Society
Society for Mining, Metallurgy and Exploration, Inc.
National Society of Professional Engineers

Experience

Dr. Iván Contreras has 30 years of experience in geotechnical engineering on a wide variety of projects in the United States, Canada, Central America, and Venezuela. These projects range from the design of dams to the detailed design of oil-storage-tank foundations and slope stability remediation. He has also provided contract management, consulting, inspection, and forensic analysis services, including expert testimony, and has conducted engineering research projects. Examples of Iván's experience include:

Mine Tailings Dams and Mining Industry

- Conducting an ongoing program of tailings management in a basin consisting of 13 miles of dams for an iron mining operation in Minnesota. The program involves design, safety review, construction observation, and long-range planning. The dam raises include upstream, downstream, centerline, and offset upstream construction.
- Preparing the design of the tailings basin management program at Ferrominera Orinoco in Venezuela. The project involved the design of the entire tailings management facilities, including the tailings pipeline from the concentrator to the tailings basin, discharge points, and sequence; three starter dams; water reclaim system; and clean-water return pipeline from the tailings basin to the concentrator.
- Conducting a comprehensive geotechnical investigation to evaluate and monitor the stability of tailings basins for LTV Steel Mining Company. The field investigation included performing in-situ testing, piezometer and inclinometer installation, and sample recovery. Conducted seepage and stability analyses to correlate the instrumentation results with dam stability criteria and predict future dam stability based on instrumented results.
- Conducting an ongoing program for dam design performance and safety, based on the observational method for Ciner (formerly OCI) in Wyoming. An expected increase in tailings production required a comprehensive assessment of a marginally stable dam and design of seepage control and stability enhancement. This included design of a seepage cutoff.
- Conducting investigations and performing designs as a part of the closure plan for four mine sites (National, Bonne Terre, St. Joe, and Big River) in the Old Lead Belt for The Doe Run Company. The investigation included liquefaction assessment and static and seismic slope stability evaluation of mine tailings.

Embankment Dams

- Designing the enhancement of Monument Dam in Paonia, Colorado. The left abutment of the dam was built on an active landslide, and underground coal mining nearby required the dam evaluation and enhancement due to concerns regarding mine-induced seismic activity. Plans, specifications, and construction observation of the dam enhancement were performed, allowing for safe underground coal mining.
- Performing a liquefaction assessment of Caldron Falls Dam near Crivitz, Wisconsin, for Wisconsin Public Service Corporation. Work included a field investigation with CPT/SPT, liquefaction potential evaluation, ground-response analysis, and stability evaluation.

- Evaluating and revising the existing data on Curia Dam in Venezuela. Designed preliminary exploration program consisting of 19 borings and trenches to evaluate rock conditions, alluvial thickness, potential borrow areas, and spillway location. Used this information for site selection and preliminary conceptual design of the dam.
- Performing analysis and laboratory testing on the alluvium at the toe of the Enid Dam in Mississippi. The analysis included an estimate of lateral displacements induced by earthquake loading. Results were used in the dam foundation improvement.
- Working as a quality control engineer for four years on the inspection of the construction of the La Vueltoza and Borde Seco dams, which belong to the Uribante-Caparo Hydroelectric project in western Venezuela and have volumes of 23 million and 8 million cubic meters, respectively.

Slope Design and Landslide Stabilization

- Serving as a senior geotechnical engineer on the Fargo-Moorhead flood control diversion project. Provided advice and supervision for geotechnical exploration and subsequent data interpretation for design of excavation and embankment slopes. Barr's geotechnical team provided slope-stability analysis for feasibility design of diversion channel and spoil embankments. Work included detailed design of diversion channels at multiple bridge crossings and for a proposed ring levee around the city of Oxbow, ND. Developed research program to study strength of Lake Agassiz clays. Comprehensive research program included evaluating impacts of fissures on shear strength, plasticity, and development of progressive failure.
- Serving as a senior geotechnical engineer on the Oslo levee system upgrades and certification project. Provided advice and supervision for geotechnical exploration and subsequent data interpretation for design of flood-risk-reduction levees. Team evaluated unstable slopes along the Red River of the North as part of FEMA's levee-system certification process. Work included seepage and stability analysis to determine appropriate levee setback with various river elevations. Evaluated alternatives to levee setbacks during feasibility including floodwall, rock buttress, deep soil mixing, drilled shafts, and piles.
- Serving as a senior geotechnical engineer on the Alvarado levee system upgrades and certification project. Provided advice and supervision to the geotechnical exploration program and subsequent data interpretation for the design of flood risk reduction levees. The team evaluated unstable slopes along the Snake River as part of FEMA's levee-system certification process and performed seepage and stability analysis to determine the appropriate levee setback under various river elevations.
- Developing a comprehensive geotechnical investigation and monitoring program to evaluate and design stabilization for two ancient landslides triggered at OU-5 in Ellsworth AFB in Rapid City, South Dakota. The associated analysis included FLAC modeling.
- Serving as advisor for a 25-kilometer highway in a mountain zone in Venezuela. Unstable soil and rock conditions existed at numerous locations along the proposed

route. Performed analyses and recommended remedial measures for slope failures. Recommended toe-buttressing slope corrections, and drainage.

- Performing stability analysis of an ancient landslide and recommended remedial measures for slope failure in Las Lomas, San Cristobal. This landslide in stiff clay was reactivated by construction of a road and houses on the sliding mass.

Foundations

- Evaluating geotechnical conditions along a new 115 kV line for the Puerto La Cruz refinery. The investigation program included 450 shallow borings and 250 test pits. Also evaluated foundation conditions, assessed liquefaction, and determined the bearing capacity of grill-type foundation pads for towers.
- Investigating, analyzing, and supervising field investigation and design of pile foundations for a 3 km jetty at Pequiven in Jose Complex. This was followed with evaluation and supervision of pile driving using PDA (Pile Driving Analyzer) at Pequiven jetty. Analyses were conducted to determine the set-up associated with 48-inch-diameter steel piles driven in a marine clay deposit to support the access trestle and loading platforms at Pequiven jetty. Additionally, driving criteria were established to define adequate pile capacity based on number of blows and PDA test results.
- Conducting an offshore subsurface investigation to determine soil conditions for an oil-drilling platform on Lake Maracaibo. The investigation also included seismic risk evaluation and site response analysis at five proposed offshore platform location.
- Conducting a geotechnical characterization along proposed terminal facilities to corroborate a previous subsurface investigation on a VEHOP project. The analysis of subsurface conditions and recommendations for dredging, pile capacity and installation requirements for future terminal.
- Providing instrumentation, testing, analysis, design, and construction consultation for wind-turbine tower foundations. Used highly sophisticated numerical techniques, such as FLAC-3D for the analysis of wind turbine foundations. Also provided assistance as a construction consultant for several wind farm projects in the U.S. Used various foundation designs (mat foundations, rock sockets, and deep foundations) and ground improvement methods (dynamic compaction and engineered fills) to account for various subsurface conditions. These conditions included sedimentary and volcanic rocks, glacial tills, alluvial and lacustrine deposits, and mine spoils.
- Performing a geotechnical investigation for a tank farm, two bridges, and a pipeline between proposed tank farm and loading platforms in Guiria for Amoco-BP-PDVSA.
- Evaluating geotechnical conditions along a new 115-kV line for the Puerto La Cruz refinery. The investigation program included 450 shallow borings and 250 test pits. Also evaluated foundation conditions, assessed liquefaction, and determined the bearing capacity of grill-type foundation pads for towers.
- Conducting an evaluation of foundation conditions, liquefaction assessment, bearing capacity, potential borrow areas, dewatering, and construction recommendations for

liners of wastewater lagoons, underground pump stations, and water storage tanks for seven cities for Bechtel International.

- Developing remedial measures for erosion and sediment control at seven locations along a gas pipeline between Jusepin and Pto. La Cruz. Severe erosion of foundation soils and slopes was causing instability problems for the pipeline.

Ground Improvement

- Designing and monitoring of a seepage cutoff wall at a tailings dam. This included investigation, analysis, design, and construction observation of a seepage cutoff wall made out of self-hardening slurry to control groundwater seepage.
- Designing and monitoring wick drain installation to speed up consolidation of soft clays and muck before dam raises. This included development of plans and specifications for wick drains.
- Designing tank foundation improvements using vibro-flotation for liquefaction mitigation.
- Completing an investigation for a main station in San Diego de Cabuitica for SINCOR. The investigation revealed the presence of a 6-m thick layer of collapsible soil in the main station area. Recommended, designed, and performed dynamic compaction to improve the ground conditions and allow safe construction and operation of the main station.

Expert Testimony

- Serving as an expert witness in a litigation trial in the U.S. Virgin Islands that involved the breach of a tailings dam containing bauxite in a facility owned by Alcoa.
- Serving as a geotechnical expert in mediation between the Minnesota Department of Natural Resources and CNA in a case involving an embankment failure.

Soil Dynamics and Earthquake Engineering

- Completing numerous in-situ testing projects, including electric piezocone, seismic cone, field vane, standard penetration test, Marchetti dilatometer, electrical resistivity, in-situ density with nuclear density gage and sand cone, and field permeability tests. Applied data to parameter definitions, foundation design, liquefaction assessment, and ground improvement design.
- Using vibration control monitoring to control peak particle velocity during pile sheet driving. The project was at facilities near a pumping station in the Amuary Refinery for Lagoven. Built a slurry wall and drove a sheet pile wall to gain additional ground while maintaining the pumping station's operation.
- Developing an in-situ testing program including SPT, CPTU, and shear wave velocity to evaluate liquefaction susceptibility of foundation soils in the Caripito tank farm. Established requirement for ground improvement related to minimum resistance needed to mitigate liquefaction. Specified extent of ground improvement below structures. Recommended ground improvement consisting of stone columns.

- Applying laboratory test results and in-situ shear wave velocity measurements to provide geotechnical information and seismic characterization of foundation soils for one dimensional site response analysis for geotechnical investigation at Guiria.

Dredged Material

- Simulating consolidation process of dredged material at Los Angeles Harbor under three different scenarios. Information was used to estimate time of filling and final elevation of grade for Woodward Clyde.
- Developing a program to model the primary consolidation, desiccation, and secondary compression in confined dredged fill material. The finite differences technique was used to model the consolidation process and the program was verified using field observations.

Tunnels and Underground Structures

- Inspecting, designing, and monitoring the retrofit of drainage tunnels for the city of Minneapolis. This included development of plans and specifications for contact grouting, backfilling, and repair of three tunnels in St. Peter Sandstone.
- Designing and analyzing a retrofit of an old mine section to grow plants for research purposes. This included evaluation of old pillars excavated in shale material.
- Reviewing and approving blasting patterns for tunnel excavation at La Vueltoza and Borde Seco Dams. Evaluated temporary tunnel support and oversaw concrete casting of tunnel liner for five kilometers of tunnel. Tunneling was performed in sandstone and siltstone rock. The tunnels range in diameter from three meters to ten meters.
- Participating in the design of a tunnel under the Illinois River for U.S. Silica. The limestone tunnel was designed for material transportation and traffic from the south to north side of the river in Ottawa, Illinois.
- Performing peak particle velocity interpretation and measurements in rock mass to develop scaling relationships for control of blasting-induced vibration of concrete liner in a tunnel.

Grouting

- Designing and supervising the construction of a grout curtain in a tailings dam to control seepage. This included the use of permeation grouting to plug the fractured rock where most of the seepage was taking place.
- Designing a permeation grouting program in fractured rock to reduce seepage under the main dam at Ciner in Wyoming.
- Supervising the performance of contact grouting at tunnels in La Vueltoza and Borde Seco Dams. Evaluated execution of consolidation and permeation grouting in the injection curtain at Borde Seco and La Vueltoza. These involved three lines of 60 to 100 meter deep rock grouting.

- Designing and monitoring permeation and compaction grouting in alluvial soils at Otter Rapids Dam in Wisconsin. The purpose of the program was to build a grout curtain to reduce seepage under the main pier to mitigate piping potential.

In-Situ Testing

- Evaluating and interpreting CPTU measurements, including dissipation tests for slope stability analyses, at mine tailings sites in the Old Lead Belt in Missouri.
- Performing investigation, analysis, and design for levee alignment at the city of Grand Forks to control future flooding. Used Marchetti dilatometer and piezocone to characterize the underlying Lake Agassiz clays, which were geotechnically unstable.
- Planning and executing a series of plate load tests to evaluate collapse potential of loose, silty sand for SINCOR main station upstream facilities.
- Evaluating and interpreting CPTU measurements, CPTU with pore pressure dissipation monitoring, and seismic cone tests for the Caripito tank farm. Used data for evaluation of soil variability, liquefaction assessment, and coefficient of consolidation for time rate of settlement calculations.

Education PhD, Civil Engineering, University of Illinois at Urbana-Champaign, 1996
MS, Civil Engineering, University of Illinois at Urbana-Champaign, 1992
BS, Civil Engineering, Universidad Central de Venezuela, 1985

Registration Professional Engineer: Illinois, Michigan, Minnesota, Alberta (Canada), Newfoundland and Labrador (Canada), and Venezuela

Publications The Shear Strength of Lake Agassiz Clays and Its Role in Slope Stability with Jed D. Greenwood and Aaron T. Grosser. Proceedings of the 60th Annual Geotechnical Engineering Conference. February 2012.

Practical Aspects of the Fully-Grouted Method for Piezometer Installation with Aaron T. Grosser and Richard H. Ver Strate. Paper presented at the Eighth International Symposium on Field Measurements in Geomechanics. Berlin. 2011.

Techniques for Prevention and Detection of Leakage in Dams and Reservoirs with Samuel H. Hernández. Proceedings of the 30th Annual USSD Conference. Sacramento, California. April 2010.

Evaluation of CPT Response Under Fast Penetration Rate in Silty Soils with Aaron T. Grosser. Proceedings of the 57th Annual Geotechnical Engineering Conference—Minnesota Geotechnical Society. Minneapolis, Minnesota. 2009.

Monitoring and Operations of a Tailings Dam with P. Solseng and T. Johnson, Proc. of Tailings Dams 2002. Association of State Dam Safety Officials. April 2002.

Tailings Basin Dams Tailings Basin Management with P.B. Solseng and T. Johnson, Proc. of Tailings Dams 2000. Association of State Dam Safety Officials. U.S. Committee on Large Dams, March 2000, pp. 129-142.

Scott M. Olson, PhD, PE

Associate Professor, Department of Civil & Environmental Engineering

University of Illinois at Urbana-Champaign

2230d Newmark Civil Engineering Laboratory, 205 North Mathews Avenue, Urbana, IL 61801

Phone: 217-265-7584; Fax: 217-265-8041; email: olsonsm@illinois.edu

Professional History

Dr. Olson is an associate professor of Civil & Environmental Engineering at the University of Illinois, where he has been on the faculty since 2004. Prior to joining the faculty at Illinois, Scott worked for seven years as a project engineer for URS Corporation and Woodward-Clyde Consultants. Dr. Olson has researched the triggering and consequences of liquefaction, and geotechnical earthquake engineering in general, for nearly 20 years, and has been involved in dozens of research and consulting projects involving geotechnical earthquake engineering including seismic hazard assessment; ground motion evaluation; site response; liquefaction analysis; static, seismic, and post-liquefaction stability; and ground modification analyses and design.

Prof. Olson's research involves liquefaction engineering; laboratory (element and centrifuge) testing of sands, tailings, and transitional soils; site response analysis; paleoliquefaction; in situ testing; geohazard analysis; and soil-foundation-structure interaction for jointless bridges. To support this research, he has received nearly \$3 million in grants from the National Science Foundation, U.S. Geological Survey, Illinois Center for Transportation, U.S. Agency for International Development (USAID), and Nuclear Regulatory Commission.

Education

University of Illinois at Urbana-Champaign	Civil/Geotechnical Engineering	Ph.D.	2001
University of Illinois at Urbana-Champaign	Civil/Geotechnical Engineering	M.S.	1995
University of Illinois at Urbana-Champaign	Civil Engineering	B.S.	1993

Publications

Based on Prof. Olson's research, he has published over 100 peer-reviewed journal articles and conference papers, winning the 2002 best paper award (R.M. Quigley Award) from the Canadian Geotechnical Journal. Some of Prof. Olson's publications related to geotechnical earthquake engineering are listed here.

- Dewoolkar, M., Hargy, J., Anderson, I., de Alba, P., and Olson, S.M. (2016) Residual and post-liquefaction strength of a liquefiable sand. *J. of Geotechnical and Geoenvironmental Engineering*, 142(2), 11p.
- Olson, S.M. (2015). Residual strength of liquefied soil. in Beer, M., Kouglioumtzoglou, I.A., Patelli, E., and Au, I.S.-K. (editors). *Encyclopedia of Earthquake Engineering*, Springer-Verlag Berlin Heidelberg Publishing.
- Hashash, Y.M.A., Abrahamson, N.A., Olson, S.M., Hague, S., and Kim, B. (2015). Conditional mean spectra in site-specific hazard evaluation for a major river crossing in the central U.S. *Earthquake Spectra*, 32(1), 47-69.
- Hashash, Y.M.A., Kim, B., Olson, S.M., and Moon, S. (2014). Geotechnical issues and site response in the central U.S. Chapter 6 in Beavers, J. (editor). *Seismic Hazard Design Issues*, ASCE Press, Reston, VA.
- Sadrekarimi, A. and Olson, S.M. (2014). Residual state of sands. *J. of Geotechnical and Geoenvironmental Engineering*, 140(4), 10p.
- Oka, L.G., Delwoolkar, M. and Olson, S.M. (2012). Uncertainties in evaluating liquefaction potential of cohesionless soils in the vicinity of large embankments. *Soil Dynamics and Earthquake Engineering*, 43, 33-44.
- Ledezma, C., Ashford, S., Hutchinson, T., Moss, R., Arduino, P., Kayen, R., and Olson, S. (2012). Effects of liquefaction-induced ground failure on bridges, roads, and railroads. *Special Issue on 2010 Chile Earthquake, Earthquake Spectra*, 28(S1), S119-143.
- Bray, J., Rollins, K., Hutchinson, T., Verdugo, R., Ledezma, C., Assimaki, D., Mylonakis, G., Montalya, G., Arduino, P., Olson, S., Kayen, R., Hashash, Y., and Candia, G. (2012). Effects of ground failure on buildings, ports, and industrial facilities. *Special Issue on 2010 Chile Earthquake, Earthquake Spectra*, 28(S1), S97-S118.
- Olson, S.M., Green, R.A., Lasley, S., Martin, N., Cox, B.R., Rathje, E., Bachhuber, J., and French, J. (2011). Documenting liquefaction and lateral spreading triggered by the 12 January 2010 Haiti earthquake. *Earthquake Spectra, Special Issue*, S93-S116.
- Green, R.A., Olson, S.M., Cox, B.R., Rix, G.J., Rathje, E., Bachhuber, J., French, J., Lasley, S., and Martin, N. (2011). Geotechnical aspects of failures at Port-au-Prince seaport during the 12 January 2010 Haiti earthquake. *Earthquake Spectra, Special Issue*, S43-S65.
- Sadrekarimi, A. and Olson, S.M. (2011). Yield strength ratios, critical strength ratios, and brittleness of sandy

soils from laboratory tests. *Canadian Geotechnical J.*, 48(3), 493-510.

- Olson, S.M. (2009). Strength ratio approach for liquefaction analysis of tailings dams. Keynote lecture, Proc., 57th Annual Geotechnical Engineering Conference, University of Minnesota, February 27, 37-46.
- Olson, S.M. and Johnson, C.I. (2008). Use of liquefied strength ratios for analysis of lateral spreads. *J. of Geotechnical and Geoenvironmental Engineering*, 134(8), 1035-1049.
- Olson, S.M. and Mattson, B.B. (2008). Mode of shear effects on yield and liquefied strength ratios. *Canadian Geotechnical J.*, 45, 574-587.
- Olson, S.M. (2006). Liquefaction analysis of Duncan Dam using strength ratios. *Canadian Geot. J.*, 43, 484-499.
- Olson, S.M. and Stark, T.D. (2003). Use of laboratory data to confirm yield and liquefied strength ratio concepts. *Canadian Geotechnical J.*, 40(6), 1164-1184.
- Olson, S.M. and Stark, T.D. (2003). Yield strength ratio and liquefaction analysis of slopes and embankments. *J. of Geotechnical and Geoenvironmental Engineering*, 129(8), 727-737.
- Olson, S.M. and Stark, T.D. (2002). Liquefied strength ratio from liquefaction case histories. *Canadian Geotechnical J.*, 39, 629-647.
- Olson, S.M., Stark, T.D., Walton, W.H., and Castro, G. (2000). 1907 Static liquefaction flow failure of the north dike of Wachusett Dam. *J. of Geotechnical and Geoenvironmental Engineering*, 126(12), 1184-1193.

Consulting Experience

Dr. Olson maintains close ties with industry to ensure that his research is relevant to practicing engineers and that his students are exposed to challenging, “real world” engineering projects. Some recent consulting experience includes evaluating liquefaction, seepage, and stability for over 20 tailings dams in Brazil; property damage claims related to blasting-induced vibrations in Missouri; evaluating slope stability and liquefaction of a mine tailings facility in northern Minnesota; evaluating ground motions, site response, liquefaction, lateral spreading, seismic stability, and ground improvement for: the new I-70 bridge over the Mississippi River in St. Louis, MO; bridge approach interchanges in Illinois for the new I-70 bridge over the Mississippi River; Proctor & Gamble facilities in St. Louis; and for Metropolitan Sewer District (MSD) facilities in St. Louis; evaluating site response, liquefaction, seismic stability, and ground improvement for the new Fraser River and Pitt River bridges in British Columbia; evaluating liquefaction and aging effects in tailings for a tailings dam facility expansion in Utah and a tar sands tailings facility in British Columbia; and performing geotechnical, foundation, and geotechnical earthquake engineering for a new U.S. courthouse in Missouri. Representative clients include Kiewit Engineering Co., URS Corporation, HNTB Corporation, Teng and Associates, Inc.; ARCADIS, Inc., Shell Oil Company, Barr Engineering, Geoconsultoria, VOGBR, and TSi Engineering, Inc.

Teaching

Prof. Olson teaches undergraduate and graduate courses in geotechnical engineering, including *CEE 380 Introduction to Geotechnical Engineering*, *CEE 484 Applied Soil Mechanics*, *CEE 580 Excavations and Support Systems*, *CEE 586 Rock Mechanics*, and *CEE 590 Geotechnical Field Measurement*. Prof. Olson developed CEE 590 as a new graduate course, and completely revamped CEE 586, as the course had not been offered in over six years. Prof. Olson’s classes are well-received by his students, and he has been listed on the University of Illinois’ *Instructors Ranked as Excellent* in 20 out of 23 semesters to date.

Professional Activities and Awards

In addition to several departmental and college committees, Prof. Olson is engaged in many professional organizations, including the: (a) ASCE Geo-Institute (G-I) Earthquake Engineering and Soil Dynamics Committee; (b) G-I Embankments, Dams, and Slopes Committee, including co-Chairing the 2013 Geo-Congress and running the GeoPrediction student competition since introducing it in 2010; (c) ASCE J. of Geotechnical and Geoenvironmental Engineering editorial board; (d) chairing the Earthquake Engineering Research Institute (EERI) Student Activities Committee (2009-2012), where he also served as liaison for the EERI Student Leadership Council; (e) Secretary of the Transportation Research Board (TRB) AFF50(1) Geoseismic Issues for Bridge Foundations Committee; (f) TRB AFS30 Foundations of Bridges and Other Structures; and (g) the Canadian Geotechnical Society. To recognize his research and teaching, Prof. Olson has received many awards, including the ASCE Huber Research Prize (2012), ASCE Student Chapter Outstanding Instructor Award (2009), National Science Foundation Early Career (CAREER) Award (2009), ASCE Arthur Casagrande Professional Development Award (2004), and Canadian Geotechnical Society R.M. Quigley Award (2002).

Richard R. Davidson, PE, CPEng

Senior Principal and Vice President

Professional History

Years with AECOM (Legacy URS and Woodward-Clyde): 40

Years with other firms: 2

Academic Training

Engineer, Geotechnical Engineering, Stanford University, 1977

MS, Geotechnical Engineering, Stanford University, 1976

BSE, Civil Engineering, Duke University, 1975

Areas of Expertise

Mining

Geotechnical Engineering

Dams

Landslides

Pit Slope Engineering

Registration

Professional Engineer: ID, MO, MS, AR,

WY, UT, SD, AZ, CO, IL

CPEng: Australia

IPENZ: New Zealand

Mr. Davidson serves as a Senior Principal and Vice President in the Denver Metro Water Group for AECOM (formerly URS) which includes a full service mining engineering team. He has been involved in the mining industry over the last 35 years, specializing in design of tailings dams, crushed leach pads, pit slopes, seepage control, mine closure, and other mine facilities such as raw water structures, waste dumps, haul roads, ore loading facilities, and milling-crushing-processing structures. He has utilized innovative centerline and downstream cyclone methods to build some of the largest (2.5 B tons, 290,000 tpd) and highest (210 m) tailings dams in seismically active regions of the world such as Peru, New Zealand, Chile, Mongolia, California, Utah, New Mexico, Arizona, Australia, Colorado and the Philippines. He has also pioneered the use of risk-based approaches to tailings dam design and stabilization and management of pit slopes. He has been involved in dam safety risk assessments for thirty years, participating and leading numerous expert panels all over the world. Mr. Davidson has related expertise with fly ash impoundments as the senior geotechnical / dams subject matter expert in the AECOM coal ash residuals program. He also serves on a number of design review boards for major dams and mining projects.

Project Experience

Principal-in-Charge, Cornerstone (Northeast) Tailings Expansion Project, Rio Tinto Kennecott Copper, UT, 2008 - 2014: Led design team developing Cornerstone tailings expansion project to add 2.2B tons of storage at Kennecott. Work evolved from alternatives study, prefeasibility, feasibility to detailed design of a raise and expansion to cycloned underflow centerline embankment. Work included tailings delivery system modifications with new drop boxes and pipelines, new water reclaim system and barge, pump and valve stations, cyclone station modifications, railroad and power relocations, quarry development, haul roads, surface drainage works and many other ancillary works. A new pyrite refloat plant was considered separately. Re-mining of existing tailings is also being developed with a chain wheel excavator, conveyor system and new flotation plant, and then filtration plant for dry stack placement of tailings in void.

Independent Technical Review Team (ITRT) Oyu Tolgoi, Mongolia, Rio Tinto 2010 - Current: Member of ITRT for this new mine in the Gobi desert. The ITRT is primarily focusing on the geotechnical and mining aspects of the open pit and tailing storage facility.

Principal-in-Charge, Goldcorp, Penasquito and Camino Rojo Mines, Zacatecas Mexico, 2013 – 2015: Leading design work for the Tailings Replacement Project at Penasquito and the new greenfields gold mine TSF at Camino Rojo.

Project Engineer and Principal, Grizzly Gulch Tailings Dam and Open Pit, South Dakota, Homestake Mining (now Barrick), 1986 - 1995: Led design team with the final two raises of the 350-ft high downstream method rockfill Grizzly Gulch tailings dam. Also involved with stabilization of the open pit which experienced significant rock slope stability issues.

Mine Technical Review Team Member, Rio Tinto, Bingham Canyon Pit, Utah, 2013 – Current: Following the massive Manefay failure, the MTRT was convened to review design and operations issues for the Bingham Canyon Pit in Utah. This included the post Manefay recovery effort to put the mine back in operation. This work has included review and guidance to extensive 2D and 3D groundwater, stability and deformation modeling, as well as slope and ground water monitoring, and controlled mining using the observational method.

Independent Consultant North Met Mine EIS, PolyMet, Minnesota 2012-2013: Provided senior consultation and guidance to engineering design team developing the tailings dam reactivation and raise in the Boundary Waters area of Northern Minnesota.

Principal-in-Charge and Engineer of Record, North Tailings Impoundment, Utah, Rio Tinto Kennecott Copper, Utah, 1990-Current: Led project team in design and construction support for the new 2.5 B ton tailings expansion project adjacent to the existing Magna Impoundment. This facility combined with the South Impoundment will be the largest tailings impoundment in the world with a 25 mile perimeter and 230-ft height. The North Expansion is an innovative compacted cycloned underflow centerline embankment that is designed to sustain large earthquake ground motions founded on a soft clay foundation. It was designed to handle up to 220,000 tpd from two cyclone stations. Continuing with periodic review of embankment performance and future projection and construction optimization. Variety of EoR roles as required.

Principal-in-Charge, Golden Cross Mine, Coeur Gold NZ, Ltd, 1995 – 2000, 2001 - 2016: Led team that was involved with Coeur Gold NZ Ltd for many years with consenting, groundwater, and water treatment aspects of this gold mine located on the environmentally sensitive Coramandel Peninsula of New Zealand. However, our profile with the project expanded significantly when a large ancient landslide was activated by construction of the tailings dam. Called into this highly charged emotional situation to develop the cause and the strategy for stabilizing the landslide, upgrading the tailing dam and protecting the downstream people and environment. Through aggressive implementation by the mine of this successful proactive strategy including mining an underground drainage adit, horizontal and vertical well drainage, regrading the slope and strengthening the dams, we were able to completely turn around public sentiment and achieved excellent regulatory support. The mine has now been successfully closed to achieve a highly desirable pastoral setting. Currently serves on the landslide review committee.

Principal-in-Charge Candeleria TSF Seismic Evaluation and 804 m Raise, Freeport McMoRan and Lundin, Copiapo Chile 2013-2014: Provided senior review and guidance to team assessing seismic performance of the 100-m high downstream method rockfill copper tailings dam subjected to extreme earthquakes. Designed the raise to El 804 m which was recently approved for construction.

Principal Engineer, Macraes Mine, New Zealand, Oceana Gold (GRD) 2003-Current, 1996 - 2000: Led team that was tasked with stabilizing a large active landslide beneath the tailings dam and plant site that was activated by mining Round Hill Pit. We developed an innovative 3-D rock mechanics model that simulated the progressive movement of the landslide and pit rock mass with each stage of mining. Mining continued until rock wall movements exceeded a set threshold, then excavation shifted until the rock blocks re-engaged. Then mining could continue. A similar mining strategy was successfully applied to the Golden Point pit. The tailing dam was also upgraded with a filter and dewatering measures over the affected area. Later provided guidance to GRD and EGL on upstream method construction with the dam now reaching over 120 m in height. Since then, provided independent review of the 80m Golden Point and 60m Upper Tipperary Tailings Dams.

Principal-in-Charge, Tailings Stewardship, Hecla, USA and Canada, 2015 – Current. Mr Davidson has conducted tailings stewardship reviews of the Casa Berardi, Lucky Friday and Greens Creek Mines.

Principal-in-Charge, Rio Tinto Jadar TSF Design, Loznica Serbia, 2015 – Current. Leads team developing tailings dam and dry stack facility design for new greenfields Lithium / Borate mine.

Principal-In-Charge, Freeport McMoRan, Climax, Henderson and Urad, Colorado 1995 – 1997, 2012 – Current. Guidance and review of state of the art assessments, operational reviews and upgrades of various legacy molybdenum upstream method tailings dams located at high altitude.

Tailings Stewardship Reviewer, Rio Tinto Rossing, Namibia, 2015 – Current. Mr Davidson serves as the tailings stewardship reviewer for Rossing Uranium Mine near Swakumund.

Technical Principal-in-Charge, Samarco Germano Complex Independent Audit Reviews, Brazil, 2016 – Current. Leads review team reporting to the MPMG after failure of Fundao TSF Dam in November 2015. Role now expanding to support Renova (BHP, Vale, Samarco, MPMG) clean-up and tailings expansion projects.

Principal-in-Charge and Review Board, Sierrita Tailings Impoundment, Arizona, Freeport McMoRan, 2007 - Current: Providing guidance to team who has been assessing existing tailings dam and developing a feasibility design for a new tailings impoundment nearby. The existing impoundment is being designed to potentially reach a height of 1000 ft. Alternatives for the new impoundment include, downstream, centerline and dry stack tailings deposition. Total tailings throughput could reach 300,000 tpd.

Principal-in-Charge, South Tailings Impoundment Upgrade Projects, Utah, Rio Tinto Kennecott Copper, 1997-Current: Led project team in design and monitoring of various upgrade projects for the South Tailings Impoundment at Kennecott Utah Copper. This tailings impoundment has had many challenges over its 100 year life, so achieving long term static and seismic stability is a critical goal. Projects have included active and passive dewatering of the Southeast Corner, buttressing of the Northeast corner, abutment construction of the East and West abutments, and a SEC buttress that maintains reclaim water delivery to the Copperton Mill.

Principal Reviewer, Bagdad Tailings Management, Freeport McMoRan, Arizona, 2005 - Current: Providing senior review to team who is Engineer of Record for Upper Mammoth, Mammoth, and Mulholland tailings dams at Bagdad Mine in Arizona. These dams are some of the highest cycloned centerline method tailings dams (250 m) in the world. A new TSF facility at Sycamore Canyon is also under design.

Principal-in-Charge, Coeur Tailings Risk Review, 2013 - 2016: Led team conducting a high level risk review of three gold and silver tailings dams. The three properties are San Bartolome in Potosi Bolivia, Palmarejo in Mexico and Kensington in Alaska. San Bart includes a filter plant and dry stack tailings deposition. Risk review and guidance continues with follow-up visits.

Principal Reviewer, Various Tailings, Leach and Water Supply Facilities, Freeport McMoRan, 1989 – Current: Provided high level review of a wide range of geotechnical issues on FMI projects at Miami, and Safford in Arizona, Tyrone and Cobre in New Mexico, Temke in Africa, and Cerro Verde and El Abra in Peru. These projects have included tailings dams, decant structures, crushed leach pads and waste stockpiles, water supply dams, pump stations and many other facilities. This program eventually evolved into the FMI Tailings Stewardship Program. Mr Davidson now participates in the TRB reviews as the senior reviewer for the EOR.

Principal-in-Charge, Hot Springs Tailings Dam, UMETCO, Arkansas, 2005: Led team conducting risk assessment for Vanadium tailing dam located at Hot Springs Arkansas. Risk assessment evaluated piping and flood risk and has recommended a series of risk reduction measures to be implemented by the owner Stratcor.

Principal Reviewer, Quebrada Honda Tailings Dam, Southern Peru Copper, Peru, 1994 - 1997: Provided senior review of the 100-m high downstream method tailing dam constructed of cycloned underflow for this large copper mine in Peru. This dam experienced a large M8 subduction zone earthquake several years ago without any damage.

Principal-In-Charge, Freeport McMoRan Morenci, Arizona 1988, 1998, 2014 – Current. Mr Davidson has been involved at Morenci for many years with the tailings facilities, heap leach and West Silver Basin water supply dam. AECOM serves as the Engineer of Record.

Member, Antofagasta Tailings Independent Review Board, Chile, 2016 – Current: Participated in review board for major tailings facilities at Los Pelambres and Centinela Mines, including 100-m high El Mauro TSF and Centinela thickened discharge impoundment.

Consultant, Red Dog Mine, Teck (Cominco), Alaska, 1990-1991, 2013: Provided consultation to Ralph M Parsons and Cominco on the behavior of the steel sheetpile cellular cofferdam cells installed in the Chuckhi Sea and provided emergency guidance on the repair of one cell damaged during a major storm. Subsequently, he facilitated a risk assessment for the tailings dam including instrumentation and construction review.

Engineered Risk Assessments, Cyprus Amax, CO, AZ, 1996: Led multi-disciplinary team that conducted an innovative corporate program of engineered risk assessments for all of the mines owned and operated by Cyprus - Amax. Work considered open pits, tailings dams, mills, concentrators, roasters, heap leach operations, SX-EW plants, waste dumps, and water supply systems prior to the mines becoming part of Freeport McMoran North American operations.

Member Geotechnical Review Board, Rio Tinto Diavik Diamond Mine, NWT Canada, 2016 – Current, Review of A21 dike and FPK tailings impoundment, independent D5 standard reviews.

A summary of other Tailings dam projects includes: Rio Tinto (historic CRA) Bougainville Copper in Papua New Guinea, Wambo Coal in NSW, Gunpowder and Mt Leyshon in Queensland Australia, ASARCO Iowa Gulch in Colorado, Rio Tinto Hamersley Tom Price in Western Australia, Barrick Lake Cowal in NSW, Newcrest Cadia and Ridgeway in New South Wales, and Lepanto TD5A and Tampakan on-land and submarine tailings disposal options in the Philippines.

Mr. Davidson has pioneered the application of engineered risk assessments to mining projects: Cyprus-Amex (FMI) mines in Arizona, Kennecott Magna tailings dam in Utah, Waihi Gold tailings dam and Macraes tailings dam in New Zealand, Cerro Verde in Peru, Henderson and Climax tailings and water dams in Colorado, Molycorp Questa subsidence in New Mexico, Lepanto and Tampakan tailings dams in the Philippines, and Bougainville tailings delta in Papua New Guinea. He has developed a risk based dam safety prioritization system for FEMA to be used by states across the USA for water and tailings dams.

Professional Societies/Affiliates

American Society of Civil Engineers (ASCE)
Institution of Engineers, Australia
Australian Geomechanics Society
International Society of Soil Mechanics and Foundation Engineering
Association of State Dam Safety Officials (ASDSO)
United States Society on Dams (USSD)
Australian National Committee on Large Dams (ANCOLD)
New Zealand Society on Large Dams (NZSOLD)

Awards

Mr Davidson received the Woodward-Clyde Fellowship in Applied Earth Sciences from the American Consulting Engineers Council in 1975 for his graduate study at Stanford University.

He received the 1983 Woodward-Clyde Consultants Innovative Practice Award for his work with pressuremeters in foundation engineering practice.

Mr Davidson won the Hogentogler Award from ASTM in 1994 and a Special Service Award from ASTM for the First International Symposium on Slurry Walls held in Atlantic City in 1991.

He won the South Dakota Transportation Quality Award for Structures Design in 1998 for the Forest City Bridge.

Award-winning projects for which Mr Davidson had major responsibility include ACEC engineering excellence awards for Locks and Dam No. 26 Test Program (1981), Cannon Dam ADAS (1988), Island Copper Seepage Barrier Wall (1992) Forest City Bridge (1997), Horse Thief Reservoir (2009), Dartmouth Dam Piano Key Weir Spillway (2011), and ASCE Top Ten Project for Chicago Lake Shore Drive Reconstruction (1988) and Top Project for Los Vaqueros Dam in 1999. He has been awarded engineering excellence awards from the IEAust in 2001 for the Lake Eppalock Remedial Works and Cross City Tunnel EIS. Cosseys Dam won the IPENZ Silver Project Award in 2006. In 2007 the RLMC barrier wall project in Newcastle Australia won the top national environmental engineering award from IEAust. The Hinze Dam Stage 3 Cutoff Wall won the President's Pyramid Award in 2011. Hinze Dam Stage 3 also won High Commendation in the Engineers Australia Engineering Excellence Awards in 2012. Wolf Creek Dam won DFI Project of the Year in 2013. The Ashton Dam Remediation project won the 2013 Pyramid Award and an Engineering Excellence Award from ACEC.

Mr Davidson was awarded the J James R Croes Medal from ASCE in 2006.

Publications

Dams and Mining

The State of Mining Geotechnics, Keynote Lecture, Tailings and Mine Waste 2017, Banff, November

The Myth of the Perfect Seepage Barrier Wall (With J. France, M. Zoccola, B. Davis) ANCOLD 2016 Keynote Lecture, Adelaide, October

Geotechnical Design of Tailings Dams (With Christina Winckler) Two Day Short Course, June 2016

The Myth of the Perfect Seepage Barrier Wall (With J. France, M. Zoccola, B. Davis) USSD 2016, Denver, April

Misconceptions about Quantitative Risk Assessments of Dams, ASDSO National Conference, New Orleans, September 2015.

Revisiting A Forgotten Dam Building Technology: Concrete Core Walls in Embankment Dams (With K Hansen) ANCOLD, Brisbane, November 2015

Revisiting A Forgotten Dam Building Technology: Concrete Core Walls in Embankment Dams (With K Hansen) USSD Annual Conference, Louisville KY, April 2015

Can the Risk of Coal Ash and Mine Tailings be Quantified? USSD Workshop on Risk Assessment Tools Applied to Coal Tailings Dams and Ash Impoundments, Louisville KY, April 2015

Short Course on Seismic Design of Tailings Dams, SME Annual Convention, Denver, February 2015

USA State of Practice of Seismic Design of Tailings Dams, USSD Workshop on Seismic Design of Tailings Dams, April 2014

CPTu-Based State Characterization of Tailings Liquefaction Susceptibility (With C Winckler, L Yenne and J Pilz) USSD Annual Meeting, April 2014

Pore Pressure Characterization of Impounded Tailings (With C Winckler, L Yenne, and M Gallegos) USSD Annual Meeting, April 2014

Ashton Dam - Meeting The Challenge Of Reconstructing History (With Jennifer Williams, Roger Raeburn and Jason Boomer) NZSOLD / ANCOLD 2013 Annual Conference, November, Rotorua NZ.

Ashton Dam - Meeting The Challenge Of Reconstructing History (With J Williams, R Raeburn and J Boomer) ASDSO 2013 Annual Conference, September, Providence RI.

Risk Based Dam Safety Assessment, Remediation Evaluation and Design for Ashton Dam, Idaho (With Roger Raeburn) USSD 2013, February, Phoenix AZ

The QCC Process in USACE Risk-Informed Decisions (with Nate Snorteland, Doug Boyer and John France) ANCOLD 2012, October 2012, Perth

The Challenges of Building Tailings Dams in Seismic Regions (with Joergen Pilz and Bruce Brown) ANCOLD 2011, October 2011, Melbourne

Hinze Dam Stage 3 Dam Safety Delivered Through Innovation (with Christopher Dann) ASDSO National Conference, Washington DC, September 2011

Earthquake Induced Deformation of Earth Dams, (With Hendra Jitno) Australian Geomechanics, Journal and News of the Australian Geomechanics Society Volume 45 No. 2 July 2010

Managing Dam Safety Incidents, NZSOLD / ANCOLD 2007 Annual Conference, Queenstown New Zealand, November 2007

A Unified Method for Estimating Probabilities of Failure of Embankment Dams by Internal Erosion and Piping (With N. D. Vroman, G. L. Sills, J. Cyganiewicz, R. Fell, M. Foster) NZSOLD / ANCOLD 2007 Annual Conference, Queenstown New Zealand, November 2007

Dam safety, economic regulation and society's need to prioritise health and safety expenditures. (With John Marsden, Leonard McDonald, David Bowles and Rory Nathan) NZSOLD / ANCOLD 2007 Annual Conference, Queenstown New Zealand, November 2007

Identification of Failure Mechanisms Associated with Seepage Barriers in Dams, (With J Rice and J M Duncan) ASCE GeoDenver 2007, Denver Colorado February 2007

Simplified Dam Safety Risk Prioritisation, ANCOLD 2006 Annual Conference, Manly Australia, November 2006

Twenty Five Years of Dam Instrumentation Automation (With James B Hummert, Jr.) ANCOLD 2006 Annual Conference, Manly Australia, November 2006

ASDSO / FEMA Dam Safety Risk Prioritization Tool, USSD Annual Conference, San Antonio, Texas, May 2006

A Study of the Long-Term Performance of Seepage Barriers in Dams, (With J Rice, J M Duncan and M D Sleep) Proc. 26th USSD Conference, San Antonio, Texas, May 2006

Risk is a Four Letter Word, Colorado Water Congress, 48th Annual Convention, Denver Colorado, January 2006

Best Practices for Design of Seepage Elements for Dams, USSD Conference, Durango CO, October 2005

- Risk and Priority Ask Yourself Do You Feel Lucky?* ASDSO National Meeting, Orlando, September 2005
- Cosseys Dam – Upgrade Solutions that Meet Owner, Operator, Environmental and Community Expectations* (with N Jacka & C Dann) ANCOLD / NZSOLD Conference 2004, Melbourne, November
- Risk Categorization for Dams* ASDSO Annual Meeting, Phoenix, September 2004
- Potential Failure Modes A Few Case Histories*, USSD Workshop St Louis, March 2004
- 50 Years of Dam Foundation Improvements Ground Improvement Techniques* (With J K Mitchell) USSD Workshop, St Louis, March 2004
- Seismic Upgrade of Yarrawonga Weir* (with S Fox, B Cooper) 21st ICOLD Congress on Large Dams, Montreal 2003
- Discussion of 1907 Static Liquefaction Flow Failure of North Dike of Wachusett Dam by Olsen, Stark, Walton & Castro* (with Y Moriwaki, P Tan, R Seed) ASCE Journal of Geotechnical and Geoenvironmental Engineering, September 2002
- Strategic Risk Assessment for Thirteen Victorian Dams* (with S McGrath, A Bowden, A Reynolds) ANCOLD 2002 Conference on Dams, Adelaide Australia, October 2002
- Estimation of the Probability of Failure of Embankment Dams by Internal Erosion and Piping Using Event Tree Methods* (with M. Foster, R Fell, C F Wan) Joint NZSOLD / ANCOLD Conference on Dams, Auckland New Zealand, November 2001
- Refurbishment of Diversion Gate No. 2 Roxburgh Dam, NZ.* (with T. Zink, M. Howat, C. Anderson) Joint NZSOLD / ANCOLD Conference on Dams, Auckland New Zealand, November 2001
- The Dam Safety Upgrade at Lake Eppalock.* ANCOLD 2000 Conference on Dams, Cairns Australia, October 2000
- An international perspective – tailings dam design.* Australian Geomechanics. Volume 35 No. 2, June 2000
- Dynamic run-out analysis methodology* (with P Tan, Y Moriwaki, R Seed) Tailings & Mine Waste 2000, Ft Collins, January 2000
- Management of engineering and environmental risk in mining.* Asia Pacific Mine Tailings & Waste Management Summit, May 1998, Singapore.
- Managing environmental and economic risk for engineered systems* (with R. Kulkarni, W. Eaton, V. Martz & J. Heath) Mining Engineering, December 1997.
- A World-Wide Perspective on the Design and Operation of Tailings Disposal.* Tailings Disposal Management Summit, November 1997 in Sydney and November 1998 in Brisbane.
- Geotechnical design of Kennecott Utah Copper Tailings Impoundment expansion* (with P. Ridlen, D. Manka, J. Pilz and R. Dunne) Tailing and Mine Waste '97, January 1997, Balkema.
- Application of Reliability Analysis in the Environmental Impact Report (EIR) and Design of a Major Dam Project* (with J. Barneich, D. Majors, Y. Moriwaki and R. Kulkarni), Uncertainty '96, ASCE, 1996.
- Tailings Impoundment Design – Striving for Balance* (with P. Stauffer and R. Moran), Tailings and Mine Waste '96, Ft Collins, CO, A. A. Balkema, Jan. 1996.
- Numerical Modeling of Earth Structures Some Things to Consider Before Getting Carried Away* (with D. Bentler, D. Berger and P. Ridlen) Transportation Research Record, Jan. 1996.
- Seismic Hazard Evaluation of the Magna Tailings Impoundment* (with I. Wong et al.) 1995 Utah Geological Association Symposium and Field Conference on Environmental and Engineering Geology of the Wasatch Front Region, May 1995.
- Seepage Patterns in Tailings Dams – A GeoEnvironmental Challenge* (with P. Stauffer) Plenary Session Presentation, First International Congress on Environmental Geotechnics, Edmonton Alberta, July 1994.
- General Guidelines and Current U.S. Practice in Automated Performance Monitoring of Dams*, USCOLD, May 1993.
- One-Dimensional Settlement Analysis for Embankments* (with P.A. Stauffer, R. S. Ladd, and D.B. Paul) Stability Performance of Slopes and Embankments, ASCE, Berkeley, CA. June 29 - July 1, 1992.
- General considerations applicable to performance monitoring of dams.* USCOLD Measurements Committee. Sept. 1986.

- Experience** Cristian Diaz has more than 18 years of civil engineering experience. His experience includes the preparation of plans and specifications for industrial waste surface impoundments and landfills, industrial site design, construction inspection, and civil design/project management for renewable-energy development projects. Cristian's work experience at Barr includes:
- Design of coal combustion residual landfill projects, including expansions and modifications to existing facilities. Designs included concept development assistance through final design, including geomembrane and composite lined facilities.
 - Designing soil processing unit basins for Southern Minnesota Beet Sugar Cooperative, including facility sizing and civil design.
 - Designing and drafting for a gypsum residue surface impoundment for a mining project in northern Minnesota. Work included concept development through design for permitting, including grading plans, facility liner systems, and facility closure systems and surface water runoff control concepts.
 - Designing and drafting for a flotation tailings basin project in northern Minnesota. Work included tailings dam layout and development sequencing, facility capacity computations, material take-offs, and permit application assistance.
 - Managing and designing civil aspects and grading for various industrial sand mines in western Wisconsin and Texas. Associated work for some facilities in Texas included designing civil aspects for trans-load facilities.
 - Managing and designing civil aspects and grading for expansion of a biomass energy-generation facility.
 - Designing leakage detection systems for an industrial battery processing facility in Florida.
 - Feasibility evaluations for industrial waste disposal facilities for several projects in northern Minnesota.
 - Assisting in drafting and design of structural repairs for iron-ore processing facilities at Ferrominera de Orinoco in Venezuela.
 - Assisting in the design of surface water controls using channels and dikes for a mining project in northern Minnesota.
 - Preparing desktop studies to gather preliminary information to aid the site selection process for windpower projects and preparing feasibility reports for transportation routing for development of renewable-energy development projects. Work included inspecting and preparing bridge and roadway evaluation reports as part of transportation routing evaluations.
 - Designing road plans and specifications for windpower projects in the United States and Canada.

Prior to joining Barr, Cristian worked in the engineering division for the city of Shakopee, Minnesota. His work included preparing feasibility reports and project manuals for

multiple projects; designing plans and specifications for street reconstruction projects; reviewing development plans and specifications, residential and commercial building permit applications, and grading permit applications; designing detention-pond and grading plans for a soccer complex; designing storm sewers for multiple projects; providing construction observation for projects, including the construction of county roads and reconstruction projects; and responding to public requests and inquiries.

Cristian also served as an engineering technician for the Angus Council Roads Department in Forfar, Scotland, where he aided the engineer with the drafting and design of coast-protection projects and the inspection of bridge-replacement projects, and served as a graduate engineer for firms in Mexico, which included performing the duties of surveyor, construction observer, design engineer, and CAD technician.

- Education** MBA, University of Minnesota, Carlson School of Management, 2012
BS, Civil Engineering, Instituto Tecnológico y de Estudios Superiores de Occidente (Guadalajara, Mexico), 1999
- Registration** Professional Engineer: Minnesota, Wisconsin, and Mexico

Experience Paul Swenson has more than 30 years of experience in civil design and permitting, construction contracting and administration, and hydrologic and hydraulic analysis. His work has included a range of responsibilities from completing small computational tasks to managing large design and construction projects. Highlights of his work at Barr include:

General Civil

- Assisting in developing conceptual designs for tailings basin development for PolyMet's copper-nickel mine in northern Minnesota. The tailings basin will be developed over an existing iron ore tailings basin.
- Providing mine site engineering support for development of new haul roads, access roads, site drainage, and exterior flood exclusion dikes for PolyMet's proposed copper-nickel mine in northern Minnesota.
- Developing a conceptual tailings-disposal plan for a northern Minnesota mining company that included slurry-pipeline design options and construction-cost estimates, as well as estimations of various facilities' tailings-disposal capacities.
- Contributing to development of a conceptual design for the major redesign of a Canadian mining company's tailings-disposal facility and preparing a construction-cost estimate to assist the mining company with planning and budgeting for future operations.
- Assisting in developing a conceptual design and construction cost estimate for modifying tailings management at a large iron mine in Canada. The design would allow the mining company to meet new environmental regulations and provided tailings disposal capacity for 30 years of operation.
- Developing conceptual designs and provided permitting support for access roads and surface operations at a proposed mine in northern Minnesota. Approximately one mile of new access road or road upgraded from trails was developed, including crossing of a creek and other drainageways. The road was designed to keep construction cost low and still provide access for tractor-trailer rigs to a remote site. Site design included roads and operating pads for the mining operations, and lined ponds and waste rock stockpile pads to control water that could potentially leach reactive water.
- Overseeing permitting and design and providing construction and operation support for a new coal mine refuse pile at an underground coal mine in western Colorado. The refuse pile is designed to provide more capacity than the current life of mine plan. The facility was on potentially unstable slopes. Geotechnical studies showed that the proper design and construction would allow the owner to develop the facility without costly subgrade correction. The facility is being contemporaneously closed with a soil cover system similar to a landfill cover design.
- Serving as project manager for preparation of design and construction documents to raise existing earthen flood-control levees to protect residential areas near Devils Lake, North Dakota, for the U.S. Army Corps of Engineers' St. Paul District. Approximately eight miles of levees were included in the raise design, including the levee Barr designed in 1997 and 1998.

- Serving as principal in charge of a detailed site investigation into impacts of coal and ash at a power plant that the owner had planned to repower with gas. Site closure required demonstration that there are no significant human health or environmental impacts from materials that will remain buried at the site.
- Serving as project manager (2002 to 2004) for preparation of design and construction documents to raise existing earthen flood-control levees to protect residential areas near Devils Lake, North Dakota, for the Corps of Engineers' St. Paul District. Approximately 8 miles of levees were included in the raise design.
- Serving as project manager for a design project to provide site improvements at the Xcel Energy High Bridge power plant in St. Paul, Minnesota. The improvements raised site grades to allow construction of a new power plant above flood freeboard requirements for the Mississippi River. Storm drainage and sewer and water service connections for the new building were included in the site improvements design.
- Serving as project manager and engineer for the design of a treated-wastewater-discharge pipeline for a food-processing plant in central Minnesota. The design considered capacities of county ditches in the vicinity of the plant, winter conditions that could cause freezing of the effluent in the ditches, and tie-ins to existing plant pipes. The design was prepared to allow the owner to operate the system with existing pumps and to enhance operations with the installation of new pumps.
- Preparing plans and specifications for a new stormwater-detention pond and levee that will become part of flood-mitigation measures in Roseau, Minnesota. The design took full advantage of the limited site area to reduce design-flood elevations in other parts of town. A major storm-sewer line was redirected through the proposed pond, which is drained by a combination of pumped and gravity functions. The design includes a gatewell that will control discharge from a pump station and under gravity-flow conditions to provide flood protection to the city. The dike design includes riprap on the river side to prevent erosion when the river is in flood stage.
- Serving as project manager and engineer for a site analysis to address surface-water and groundwater problems around an established townhome development in St. Paul, Minnesota. Prepared plans and specifications to reduce problems with wet basements and poor surface drainage. Solutions included regrading the site, adding catch basins, and waterproofing basement walls.
- Overseeing development of an analysis of conditions that may impact selenium levels at an underground coal mine in West Virginia. The work included development of a process-water balance model and methods to reduce potential impacts of selenium on the environment.
- Assisting with the design of drainage and hydrostatic-pressure-relief features for a tunnel under the Illinois River to facilitate operations of a silica sand producer.
- Assisting with the conceptual design of a facility to dispose of scrubber solids for new facilities planned by a northern Minnesota mining company.

- Preparing construction drawings and specifications to repair wastewater pond dikes and close a waste soil disposal area for a beet sugar plant in central Minnesota. The dike design will repair erosion damage that has occurred over 30 years of operation and includes erosion protection with a service life of 30 years.
- Assisting with the detailed design of a pumped outlet for Devils Lake, North Dakota, completed for the U.S. Army Corps of Engineers. The project was designed to control flooding on the lake by pumping water to a nearby river through a large-diameter, 15-mile-long pipeline. The design included deep bury design for the pipe, surge basin, restoration of surface drainage, and control of pressure transients in the pipeline.
- Serving as project manager for work for the U.S. Army Corps of Engineers in 1997 and 1998 that involved emergency design and construction of a levee and pump station to protect the city of Devils Lake, North Dakota, from rising lake levels. The project included approximately 2 miles of new levee designed as a dam to withstand years of anticipated high lake levels. Riprap was designed to protect the levee against wave erosion. A portion of the levee was designed through a golf course to allow play to continue over the levee until rising lake levels flooded the green left on the lake side of the levee. The pump station was designed to stringent USACE standards to help ensure safety for residents and businesses served by the pump station. The pump station was constructed for approximately \$1.3 million and has a capacity of 48,000 gallons per minute.
- Assisting with estimating costs for an extensive pumped water supply system for a power plant in western North Dakota. A conceptual design was prepared for an 80-mile-long pipeline, including a pump station and booster stations along the route.
- Performing hydrologic and hydraulic modeling on large, complicated drainage basins in Bloomington and Edina, Minnesota. Recommended drainage improvements that have been implemented and have lowered flood elevations and reduced potential of flood damage to homes and businesses.
- Assisting The Doe Run Company from 1995 through 2002, acting as project manager on several closed mine tailings sites in southeast Missouri and Montana. The tasks completed on these sites include the following:
 - *Leadwood*: Assisting in preparation of engineering evaluation/cost analysis (EE/CA) conceptual alternatives letter report and field investigation work plan.
 - *Big River*: Preparing final construction drawings in conformance with an EE/CA prepared by another consultant. Design changes in preparing the final design saved Doe Run approximately \$1 million. The construction drawings were reviewed and approved by the U.S. EPA. Assisted Doe Run with construction planning. Construction is now complete.
 - *Bonne Terre*: Preparing an EE/CA report and construction drawings. Project deliverables were reviewed and approved by the U.S. EPA. Construction has been completed on about half of the site and is in progress on the remainder.

- *National*: Preparing an EE/CA report. Project deliverables were reviewed and approved by the U.S. EPA.
- *St. Joe State Park*: Serving as project manager for a site investigation and design of remediation for two areas of unstable tailings within St. Joe State Park. Project deliverables were reviewed and approved by the U.S. EPA. Remedial construction was completed in 2000.
- *Rivermines*: Assisting in preparation of conceptual alternatives letter report, field investigation work plan, and EE/CA report and conducting EE/CA field investigation.
- *Block P*: Assisting in preparing an EE/CA for an abandoned lead mine tailings basin in Montana. Project deliverables were reviewed and approved by the U.S. Forest Service, Montana Department of Environmental Quality, and U.S. EPA.

Landfill Permitting, Design, and Construction Assistance

- Serving as principal in charge for permitting (including hydrogeologic and geotechnical site investigations), design, and construction of an industrial waste landfill in the Bakken oil field in western North Dakota. The work included challenging site conditions, ranging from a drainage draw that bisected the site to the presence of volcanic tuff that was perceived as a higher-permeability material, but which we demonstrated was relatively low in permeability. The landfill was successfully permitted and constructed, with operations starting in the fall of 2014.
- Serving as project manager for assisting an Iowa portland cement manufacturing client since 2000 to permit and construct a landfill. The landfill is designed to meet Iowa landfill rules and serve the plant for over 100 years. Leachate recirculation is being employed to control dust from the waste and minimize the amount of leachate discharged from the site. We have assisted this client with monitoring groundwater and preparing annual water quality reports since 2010.
- Assisting a northern Minnesota mining company since 2000 with permitting and construction of a coal ash landfill whose design includes recirculation of leachate to control dust and minimize discharge of leachate off site. The permit was prepared on a fast-track basis. An option for treating leachate through peat filters and wetland discharge was developed for this landfill. Prepared a permit reissuance application in 2003 that included a revised design with steeper side slopes to increase waste capacity within the same landfill footprint. Assisted with the design and construction oversight of a new lined area and the initial phase of final cover in 2004.
- Providing a variety of consulting services for a northern Minnesota paper mill since 1989. Work has ranged from permitting and planning to landfill and remediation design and assistance with construction, and has included:
 - Preparing construction documents for remediation of areas around the original landfill and assisting with construction oversight. The work included removal of contaminated materials from extremely steep slopes adjacent to an environmentally sensitive river.

- Assisting with permitting a horizontal and vertical expansion for the paper mill landfill. The permit process required four years to complete because of environmental issues associated with the original landfill. The approved permit provides for landfill capacity to serve the mill until approximately 2020.
- Assisting with permit reissuance application. The landfill design for permit reissuance included steeper side slopes to better utilize the landfill's footprint, saving the client waste disposal costs.
- Serving as project manager for preparation of construction documents and construction oversight assistance for phased closure of the original landfill.
- Serving as project manager for preparation of construction documents and construction oversight assistance for site grading, a leachate collection system, and a composite liner for expansion of the landfill from 1993 to present, including lined vertical expansion space.
- Preparing plans and specifications in 1994 for closure of a 30-acre landfill in Albert Lea, Minnesota. Design features included a synthetic cover, areas of steep side slopes to minimize excavation of waste, and deep, vertical, passive gas vents. The gas vents were designed to be convertible to active gas wells in the future if necessary. The project included creating several acres of wetland to be used by the city as credit against future wetland filling.
- Serving as project manager in assisting a client in southwest Missouri with assessing closure options and regulatory compliance for an industrial landfill serving a manufacturing plant. Prepared a permit modification package requesting an additional 500,000 cubic yards of capacity, which was approved by the Missouri Department of Natural Resources. Managed a design/build project that provided the client with an innovative design and construction of a system to collect leachate from existing landfill waste.
- Preparing an ash basin closure study for a confidential Midwestern power industry client and serving as project manager for preparation of a permit application and plans and specifications for new lined ash disposal basins for this client.
- Preparing construction documents for the first two cells for the refuse derived fuel (RDF) ash disposal facility for NSP at Becker, Minnesota.
- Assisting a client in southwest Minnesota by preparing an analysis of options to dispose of lime sludge from its water treatment plant. Recommended that they team with the county to construct a cell dedicated to the client's waste within the county landfill property.
- Reviewing design and construction procedures for a landfill belonging to a confidential client in Michigan. The landfill was experiencing buildup of leachate inside the liner. The review assisted our client in identifying poor design and construction approaches that combined to obstruct drainage.
- Assisting a confidential client with a landfill in Ontario, Canada, to oversee work performed by other consultants in monitoring and analyzing remedial alternatives.

Identified additional alternatives for analysis to help the client optimize risk and cost considerations.

Education BS, Civil Engineering, University of Minnesota, 1982

Registration Professional Engineer: Colorado, Iowa, Michigan, Minnesota, Montana, North Dakota, South Dakota, West Virginia

Stephen J. Day

Corporate Consultant (Geochemistry)



Profession

Professional Geoscientist

Education

M.Sc, Geochemistry, University of British Columbia 1988.

B.Sc., Geology, University of British Columbia 1985.

**Registrations/
Affiliations**

Professional Geoscientist (BC) No. 18,467.

Professional Geologist (Northwest Territories and Nunavut)
No L1283.

Professional Geoscientist (Alberta) No. 145101

Association of Professional Engineers and Geoscientists of
B.C.

Association of Professional Engineers and Geoscientists of
Alberta

Fellow of the Geological Association of Canada.

Fellow, The Association of Applied Geochemists.

Specialisation

Stephen Day is a Corporate Consultant (Geochemistry) at SRK's Vancouver office. He is an experienced specialist in the development of waste management plans to address acid rock drainage and leaching of mine wastes in general. He has particular expertise in the development of prediction methods for mine planning and modeling of leachate chemistry. His project experience includes development of innovative approaches to management of potentially acid generating wastes at new mines, assessment of existing waste disposal facilities at operating and abandoned mines to determine options for reduction or elimination of contaminated drainage, and environmental audits of mines.

Employment

2011 – Present	SRK Consulting (Canada) Inc., Corporate Consultant (Geochemistry)
1998 – 2011	SRK Consulting (Canada) Inc., Principal Geochemist
1992 – 1998	Dames & Moore, Senior Geochemist/Manager, Geosciences
1989 – 1992	Norecol Environmental Consultants Ltd., Geochemist
1987 – 1989	British Columbia Geological Survey, Geochemist

Publications

Fifteen technical papers on metal leaching and acid rock drainage studies, stream sediment sampling, formation of placer deposits, mineral exploration in glacial terrains.

Languages

English

Stephen J. Day

Corporate Consultant (Geochemistry)

Key Experience: New Mine Approvals and Permitting

Aurelian Ecuador & Lundin Gold, Fruta Del Norte Project (2011- current)

- Geochemical characterization
- Waste management planning for underground gold mine

Avanti Mining Inc., Kitsault Project (2009- current)

- Geochemical characterization
- Waste management planning and permitting for proposed open pit molybdenum mine
- Operational support for water management and water quality prediction for open pit molybdenum mine

Baldy Ridge Project, Teck Coal Ltd. (2009-current)

- Geochemical characterization, water chemistry predictions and input to waste management planning for a coal mine

Barrick Gold, Donlin Creek Project (2006-current)

- Geochemical characterization of waste rock and tailings for proposed open pit gold mine

BHP Billiton Diamonds, Ekati Diamond Mine™, Northwest Territories (2001-current)

- Characterization of waste rock and prediction of water quality for the Sable, Pigeon and Beartooth Pipes
- Compilation of Waste Rock Management Plans
- Water quality assessment

Copper Mountain Mine (2009-current)

- Geochemical characterization
- Waste management planning and permitting for reactivation of an open pit copper mine
- Operational support for water management and water quality prediction for open pit copper mine reactivation

Galore Creek Mining Company, Galore Creek Project (2004-current)

- Geochemical characterization
- Prediction of water quality impacts and recommendations for waste handling at a proposed open pit copper-gold mine

Glencore, Sukunka Coal Project (2014-2016)

- Geochemical characterization
- Waste management planning and permitting for a proposed open pit coal mine

Imperial Metals, Red Chris Project (2003-current)

- Geochemical characterization for environmental assessment.
- Prediction of water quality impacts and recommendations for waste handling at a proposed open pit copper-gold mine
- Operational support for water quality management
- Community engagement

Imperial Metals, Ruddock Creek Project (2012-current)

- Geochemical characterization
- Waste management planning for a proposed underground lead and zinc mine

International Tower Hills Mining Ltd., Livengood Project (2010-current)

- Geochemical characterization
- Waste management planning for a proposed open pit gold mine

Stephen J. Day

Corporate Consultant (Geochemistry)

Kinross Gold, Gil Project, Fort Knox Mine (2013-current)

- Geochemical characterization
- Waste management planning and permitting for proposed open pit gold mine

MEMS, Grassy Mountain Project (2014-current)

- Geochemical characterization
- Waste management planning for a proposed open pit coal mine

PolyMet Mining Corp., Northmet Project, Minnesota (1999-2001, 2004-current)

- Development and implementation of geochemical test program, and water quality predictions for proposed open pit PGM, nickel and copper mine at the facilities of an existing iron mine

Pebble Partnership, Pebble Project (2004-Current)

- Geochemical characterization
- Prediction of water quality and recommendations for waste handling at a proposed open pit copper-gold-molybdenum mine

Sumitomo Metal Mining Pogo LLC, Pogo Project, Alaska (1996--current)

- Geochemical characterization
- Prediction of water quality impacts and recommendations for waste handling at a proposed underground gold mine
- Operational support for waste management and water quality prediction

Taseko Mines Ltd, Aley Project (2011- current)

- Geochemical characterization
- Waste management planning and permitting for proposed open pit niobium mine

Teck Resources, Coal Mountain Operations Phase 2 (2012-2016)

- Geochemical characterization
- Waste management planning and permitting for proposed open pit coal mine

Teck Resources, Quintette Coal Project (2011-current)

- Geochemical characterization
- Waste management planning and permitting for reactivation of an open pit coal mine

UCore Rare Metals Inc, Bokan Mountain (2011- current)

- Geochemical characterization
- Waste management planning for a proposed underground rare earth element mine

Yellowhead Mining Inc., Harper Creek Project (2011- 2016)

- Geochemical characterization
- Waste management planning and permitting for a proposed open pit copper-nickel mine

Teck Resources, Mesaba Project (2009-current)

- Geochemical characterization
- Waste management planning and permitting for a proposed open pit copper and nickel mine

Line Creek Phase 2, Teck Coal Ltd. (2009-2012)

- Geochemical characterization, water chemistry predictions and input to waste management planning for a coal mine

Barrick Gold Corporation, Cerro Casale (2008- 2010)

- Geochemical characterization
- Waste management planning for a proposed copper-gold open pit porphyry mine

Stephen J. Day

Corporate Consultant (Geochemistry)

Taseko Mines, Prosperity Project (2006-2010)

- Geochemical assessment of waste rock and tailings for a proposed open pit copper-gold mine

Teck Cominco, Morelos Project (2006-2008)

- Geochemical assessment of waste rock and tailings for a proposed open pit gold mine

Doublestar Resources, Catface Project (2008)

- Geochemical characterization of rock and tailings for a proposed open pit copper mine

AES Wapiti Coal Project, Hillsborough Resources (2006)

- Geochemical characterization of waste rock and coal for proposed drag line coal mine

Horizon Project, Hillsborough Resources (2006)

- Geochemical characterization of waste rock and coal processing products for proposed underground and open pit coal project

Niblack Mining, Niblack Project (2006)

- Review of geochemical aspects for permitting of underground exploration development

Westhawk Development Corp., Coal Creek Project (2006)

- Geochemical characterization of waste rock and proposed small coal mine

Crowflight Minerals, Bucko Mine (2005)

- Geochemical characterization of rock and tailings for proposed underground nickel mine

Doublestar Resources Limited, Sustut Copper Project (2001-2003)

- Assessment of geochemical issues for proposed copper mine
- General permitting assistance under the BC Environmental Assessment Process

Alaska Department of Natural Resources, True North Project (2000-2002)

- Review of expansion proposals for the Fort Knox Mine

Coeur d'Alene Mines, San Bartolome Project, Bolivia (2001-2002)

- Geochemical characterization of waste rock and tailings for a proposed silver mine

Crystal Graphite Corporation, Black Crystal Graphite Project, British Columbia (2001-2002)

- Geochemical characterization of waste rock and tailings for a proposed graphite mine

Barrick Gold Corp, Pascua Project, Chile/Argentina (1999-2001)

- Assessment of waste rock and tailings geochemistry and prediction of drainage quality

Indian and Northern Affairs Canada, Northwest Territories (1999-2001)

- Review of geochemical aspects of Diavik Diamond Mines

Manalta Coal, Telkwa Coal Project, B.C. (1991-2000)

- Development of waste management plan to address acid drainage potential

Sutton Resources, Bulyanhulu Project, Tanzania (1997-1998)

- Waste management planning and prediction of impacts for proposed underground gold mine

Teck Corp, Marte Lobo Project, Chile (1997)

- Assessment of potential impacts to groundwater due to waste rock leaching at proposed open pit gold mine

Stephen J. Day

Corporate Consultant (Geochemistry)

Teck Corp, Petaquilla Project, Panama (1996-1997)

- Prediction of potential impacts due to leaching of waste rock at proposed open pit copper mine

Cominco, Kudz-Ze-Kaya project, YT (1996)

- Retained to address acid generation issues in waste management plan for proposed zinc-copper-lead mine

Manhattan Minerals, Moris Mine, Mexico (1993)

- Developed closure plan for proposed heap leach gold mine.
- Addressed acid generation issues

TVI, Canatuan Project, Philippines (1993)

- Development of waste management plan for proposed gold mine

El Condor, Kemess South Project, B.C. (1992)

- Evaluated natural weathering of rock and soil in support of waste management plan for proposed copper mine

Brewery Creek (1991)

- Soil and vegetation geochemistry study

Snip Mine (1991)

- Developed cyanide degradation model for tailings pond

Berg Project (1990)

- Investigated acid generation in waste rock and proposed waste handling approach for porphyry copper mine

Taiwan Limestone Project (1990)

- Conducted environmental assessment of proposed limestone quarry

Geddes Resources, Windy Craggy Project, B.C. (1989-1991)

- Investigated acid generation in waste rock, tailings, and underground workings
- Developed waste management plan for proposed massive sulphide copper mine

Cinola Project (1989-1990)

- Development of waste rock and tailings management plan for proposed epithermal gold mine

Cheni Gold Mines (1989)

- Developed waste rock handling plan for potentially acid generating rock at gold vein mine

Silver Butte Mine (1989)

- Interpreted acid generation data for waste rock and underground development for proposed massive sulphide base metal mine

Confidential Client

- Due diligence audit for a proposed porphyry copper mine
- Prediction of impacts due to rock and tailings leaching and recommendation of waste management strategies

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Tamara Diedrich, PhD PG

Curriculum Vitae

July 2017

Principal Geochemist
MineraLogic LLC
Duluth, MN

EDUCATION:

B.S. (Geology) University of Minnesota Duluth, 1999
Ph.D. (Geology) Arizona State University, 2007

LICENSURE:

Professional Geologist, Minnesota

APPOINTMENTS:

2016-present	Principal Geochemist, MineraLogic LLC
2011-2016	Geochemist, Barr Engineering
2010-2011	NSF International Research Postdoctoral Fellow, Paul Sabatier University
2007-2009	Research Associate and Group Leader, Natural Resources Research Institute, University of Minnesota Duluth
2000-2006	Research Assistant, Arizona State University

TEACHING POSITIONS:

2008-present	Adjunct Faculty, University of Minnesota Duluth, Department of Earth and Environmental Sciences
2009	Instructor, Mineralogy, University of Minnesota Duluth, Department of Geosciences
2000-2003	Teaching Assistant, Arizona State University, Department of Geosciences

STATEMENT OF QUALIFICATIONS

Tamara Diedrich has over fifteen years of experience working on projects related to mineral reactivity, phase equilibria, mineral and geochemical characterization, water quality, and geochemical modeling. Her career as a consultant has focused on applying concepts from these areas to support clients from the mining industry during the project design phase, environmental review and permitting, and throughout operations.

Dr. Diedrich works independently or within interdisciplinary teams to assess how chemical elements partition between mineral, aqueous, and gaseous phases to impact water quality. To this end, she has provided key technical components for planning waste rock and management strategies for mining clients, estimating impacts of proposed mining projects to water quality, and evaluating the effect of changes to operating conditions on plant process water.

SELECTED PROJECTS

- Ongoing geochemistry support for exploration program, Great Lakes Exploration.
- Characterization of weathering products at a potential future mine site. Characterization methods include synchrotron-based X-ray fluorescence and X-ray adsorption spectroscopy at Stanford Synchrotron Radiation Lightsource.
- Analysis of potential water quality impacts for Environmental Assessment of a proposed pit expansion at a taconite mine, Babbitt, Minnesota.
- Geochemical characterization program of a pre-feasibility study for an advanced exploration-stage uranium project, Saskatchewan, Canada.
- Geochemical support for a copper-nickel project going through environmental review, Hoyt Lakes, Minnesota. Includes geochemical modeling of future pit water quality, evaluation of water quality impacts due to fugitive dust, and identification of suitable geologic materials for construction usage.
- Evaluation of potential impacts to tailings basin water chemistry from a proposed change in operating conditions at a Minnesota taconite facility.
- Multiple screening-level ARD assessments for wind turbine foundation engineering projects.
- Measurement of amorphous silica nanoparticle dissolution rate as a function of particle size.
- Experimental determination of relative biodurability of multiple mineral fiber types.
- Geochemical modeling and experimental program to measure tremolite dissolution rates as a function of solution chemistry and temperature, for implications on particle toxicity and carbon sequestration.
- Establishment of an aerosol sampling and analysis program across Mesabi Iron Range communities and inside of taconite operations.
- Research and development on beneficial use of taconite waste products as a road patch material.

PUBLICATIONS

- Fix, P., Diedrich, T., Kennedy, C., and Day, S. (2015) Characterization of secondary mineral controls on metal mobility from a weathered Cu-Ni-PGE deposit. Peer reviewed manuscript for proceedings of *10th International Conference on Acid Mine Drainage*, April 21, 2014, Santiago, Chile.
- Diedrich, T., Schott, J., and Oelkers, E. (2014). An experimental study of tremolite dissolution rates as a function of pH and temperature: Implications for tremolite toxicity and its use in carbon storage. *Mineralogical Magazine* **78**, 1449-1464.
- Declercq, J., Diedrich, T., Perrot, M., Gislason, S., and Oelkers, E. (2013) Experimental determination of rhyolitic glass dissolution rates at 40–200°C and 2<pH<10.1. *Geochimica et Cosmochimica Acta*, **100**, 251-263.
- Diedrich, T., Dybowska, A., Schott, J., Valsami-Jones, E., and Oelkers, E. (2012) The Dissolution Rates of SiO₂ nanoparticles as a function of particle size. *Environmental Science and Technology* **46**, 4909–4915.
- Leinenweber, Kurt D; Tyburczy, James A; Sharp, Thomas G; Soignard, Emmanuel; Diedrich, Tamara; Petuskey, William B; Wang, Yanbin; Mosenfelder, Jed L (2012). Cell assemblies for reproducible multi-anvil experiments (the COMPRES assemblies). *American Mineralogist* **97**, 353-368
- Diedrich, T., Sharp T., Leinenweber, K., and Holloway, J. (2009) The effect of small amounts of H₂O on olivine to ringwoodite transformation growth rates and implications for subduction of metastable olivine. *Chemical Geology* **262**, 87–99.
- Leinenweber, K., Mosenfelder, J., Diedrich, T., Soignard, E., Sharp, T., Tyburczy, J., and Wang, Y. (2006) High-pressure cells for in situ multi-anvil experiments. *High Pressure Research* **26**, 283–292.
- Michalski, J., Kraft, M., Diedrich, T., Sharp, T., and Christensen, P. (2003) Thermal emission spectroscopy of the silica polymorphs and considerations for remote sensing of Mars. *Geophysical Research Letters* **30**.

PATENT

Hendrickson, Dave, Fosnacht, Donald, Kiesel, Richard, Zanko, Lawrence, and Diedrich, Tamara. 2009. Road and repair materials including magnetite and methods regarding same. U.S. Patent Application Ser. No. 61/001,589, filed on 2 Nov. 2007.

SELECTED PROFESSIONAL PRESENTATIONS

Diedrich, T., Fix, P., and Foster, A. (2016). Characterization of copper in weathered non-ore grade rock from a magmatic Ni-Cu sulphide deposit: Implications for copper mobilization from potential future waste rock. Goldschmidt Conference. Yokohama, Japan.

Diedrich, T. (2014) Predictive modeling of mine-impacted water quality: From baseline geochemical data to ground truthing. Oral presentation at Society for Mining, Metallurgy and Exploration (SME) Upper Peninsula Michigan Section, Marquette, Michigan.

Diedrich, T., Theriault, S. (2013) Evaluation of the potential for taconite wastes to attenuate dissolved metals: Implications for Duluth Complex leachate. Oral presentation at Society for Mining, Metallurgy and Exploration (SME) Minnesota Section, Duluth, Minnesota.

Diedrich, T. (2012) The effect of experimental scale on oxidation rate of sulfide minerals in Duluth Complex rock. Oral presentation at Society for Mining, Metallurgy and Exploration (SME) Minnesota Section, Duluth, Minnesota.

Diedrich, T., Schott, J., Oelkers, E. (2010) Effect of particle size on dissolution rates for nanometer-scale talc particles. Oral presentation at Fall Meeting, American Geophysical Union, San Francisco, CA.

Diedrich, T., Brecke, D., Schreiber, M., Marple, V., Monson Geerts, S., Olson, B., Lundgren, D., (2009) Chemical and physical evolution of aerosols during taconite mining and beneficiation, Mesabi Iron Range, Minnesota. Poster presentation at the annual meeting of American Association for Aerosol Research, Minneapolis, MN.

Diedrich, T., Brecke, D., Schreiber, M., Zanko, L. (2009) Taconite-derived mineral dust in population centers on Mesabi Iron Range; tracking mineral fibers from ore to air. Proceedings and Abstracts - Institute on Lake Superior Geology Meeting 55, 18.

Sharp, T., Diedrich, T., Marton, F., DuFrane, W. (2007) Subduction of hydrated lithosphere: 300 ppm H₂O in subducting olivine would eliminate the metastable olivine wedge. *Geochimica et Cosmochimica Acta* 71, A923-A923.

Appendix 1.11

Additional Details on Land and Mineral Ownership

Table 1
MINE SITE SURFACE PROPERTY INTERESTS
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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 1 NE SE	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 NE SW	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 NW SE	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 NW SW	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 SE SE	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 SE SE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 1 SE SW	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 SE SW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 1 SW SE	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 SW SE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 1 SW SW	105-0070-00010	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX RY R/W
59 13 1 SW SW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 10 NE SE	105-0070-01570	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	PART OF NE1/4 OF SE1/4 LYING NWLY OF A LINE PARALLEL TO & 200 FT NW OF CENTER- LINE OF ERIE RAILROAD
59 13 10 NE SE	105-0070-01575	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE1/4 OF SE1/4 EX PART NWLY OF A LINE PARALLEL TO & 200 FT NW OF CENTERLINE OF ERIE RAILROAD EXCEPT 11.94 ACRES RR R/W
59 13 10 NE SE	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 10 NE SW	105-0070-01450	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	N1/2 EX S1/2 OF SE1/4 OF SE1/4 OF NE1/4, NE1/4 OF SW1/4 EX S1/2 OF SE1/4, W1/2 OF SW1/4 EX PART LYING SELY OF A LINE PARALLEL TO AND DISTANT 450 NWLY OF THE CENTERLINE OF ERIE RAILROAD

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 10 NE SW	105-0070-01532	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	S 1/2 OF SE 1/4 OF NE 1/4 OF SW 1/4
59 13 10 NE SW	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 10 NW SE	105-0070-01580	PolyMet - Ancillary Agreements with Cliffs	B,1	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF SE1/4 EX PART NWLY OF A LINE PARALLEL TO & 450 FT NW OF CENTERLINE OF ERIE RAILROAD EXCEPT 12.05 ACRES RR R/W
59 13 10 NW SE	105-0070-01585	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	PART OF NW1/4 OF SE1/4 LYING NWLY OF A LINE PARALLELS TO & 450 FT NW OF CENTER- LINE OF ERIE RAILROAD
59 13 10 NW SE	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 10 SE NE	105-0070-01450	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	N1/2 EX S1/2 OF SE1/4 OF SE1/4 OF NE1/4, NE1/4 OF SW1/4 EX S1/2 OF SE1/4, W1/2 OF SW1/4 EX PART LYING SELY OF A LINE PARALLEL TO AND DISTANT 450 NWLY OF THE CENTERLINE OF ERIE RAILROAD
59 13 10 SE NE	105-0070-01482	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	S 1/2 OF SE 1/4 OF SE 1/4 OF NE 1/4
59 13 10 SE NE	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 10 SE SE	105-0070-01600	ST OF MN C278 L35		PolyMet	ST OF MN C278 L35	ST OF MN C278 L35	SE1/4 OF SE1/4 10-59-13
59 13 10 SE SW	105-0070-01560	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	PART OF SE1/4 OF SW1/4 LYING NWLY OF A LINE PARALLEL & 450 FT NW OF CENTERLINE OF ERIE RAILROAD
59 13 10 SE SW	105-0070-01565	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SE1/4 OF SW1/4 EX PART LYING NWLY OF A LINE PARALLEL TO & 450 FT NW OF CENTER- LINE OF ERIE RAILROAD EXCEPT 16.99 ACRES RR R/W
59 13 10 SE SW	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 10 SW SE	105-0070-01590	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW 1/4 OF SE 1/4 EXCEPT 1.32 ACRES RR R/W
59 13 10 SW SE	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 10 SW SW	105-0070-01550	PolyMet - Ancillary Agreements with Cliffs	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW1/4 OF SW1/4 LYING SELY OF A LINE PARALLEL TO AND DISTANT 450 FEET NWLY OF THE CENTERLINE OF ERIE RAILROAD EX EXCEPT 9.8 ACRES RR R/W
59 13 10 SW SW	105-0070-01605	PolyMet - Ancillary Agreements with Cliffs	1,2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 10
59 13 11 NE NE	105-0070-01610	PolyMet - Ancillary Agreements with Cliffs	B,1	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE1/4 OF NE1/4 EX PART LYING N OF A LINE PARALLEL TO & 250 FT N OF CENTERLINE OF DUNKA RAILROAD SPUR & EX RY R/W
59 13 11 NE NE	105-0070-01615	USA	USFS LDV Land Exchange #4544	PolyMet	USA	*EXEMPT	PART OF N1/2 OF NE1/4 LYING N OF A LINE PARALLEL TO & 250 FT N OF CENTERLINE OF DUNKA RAILROAD SPUR & EX RY R/W
59 13 11 NE NE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 NE NW	105-0070-01620	PolyMet - Ancillary Agreements with Cliffs	B,1	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NE1/4 EX PART N OF A LINE PARALLEL TO & DISTANT 250 FT N OF CENTER LINE OF DUNKA RAILROAD SPUR EX RY R/W
59 13 11 NE NW	105-0070-01650	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	NE1/4 OF NW1/4 EX PART SELY OF A LINE PARALLEL TO & DISTANT 250 FT NWLY OF CENTERLINE OF DUNKA RAILROAD SPUR
59 13 11 NE NW	105-0070-01655	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF NE1/4 OF NW1/4 LYING SELY OF A LINE PARALLEL TO & DISTANT 250 FT NWLY OF CENTERLINE OF DUNKA RAILROAD SPUR
59 13 11 NE NW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 NE NW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 NE SW	105-0070-01690	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC	POLYMET MINING INC	NE 1/4 OF SW 1/4
59 13 11 NW NE	105-0070-01615	USA	USFS LDV Land Exchange #4544	PolyMet	USA	*EXEMPT	PART OF N1/2 OF NE1/4 LYING N OF A LINE PARALLEL TO & 250 FT N OF CENTERLINE OF DUNKA RAILROAD SPUR & EX RY R/W
59 13 11 NW NE	105-0070-01620	PolyMet - Ancillary Agreements with Cliffs	B,1	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NE1/4 EX PART N OF A LINE PARALLEL TO & DISTANT 250 FT N OF CENTER LINE OF DUNKA RAILROAD SPUR EX RY R/W

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 11 NW NE	105-0070-01620	PolyMet - Ancillary Agreements with Cliffs	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NE1/4 EX PART N OF A LINE PARALLEL TO & DISTANT 250 FT N OF CENTER LINE OF DUNKA RAILROAD SPUR EX RY R/W
59 13 11 NW NE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 NW NE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 NW SW	105-0070-01700	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF SW 1/4 EXCEPT .85 ACRES RR R/W ACRES
59 13 11 NW SW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 SE NW	105-0070-01680	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	PART OF SE1/4 OF NW1/4 NWLY OF A LINE PARALLEL TO & 200 FT NWLY OF CENTERLINE OF ERIE RAILROAD
59 13 11 SE NW	105-0070-01685	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SE1/4 OF NW1/4 EX PART NWLY OF A LINE PARALLEL TO & 200 FT NWLY OF CENTERLINE OF ERIE RAILROAD EXCEPT 11.48 ACRES RR R/W
59 13 11 SE NW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 SW NE	105-0070-01630	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW1/4 OF NE1/4 EXCEPT .41 ACRES RR R/W
59 13 11 SW NE	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 11 SW NW	105-0070-01660	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	W1/2 OF SW1/4 EX PART LYING SELY OF A LINE PARALLE TO AND 200 FT NWLY OF THE CENTERLINE OF THE ERIE RAILROAD
59 13 11 SW NW	105-0070-01670	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW1/4 OF NW1/4 LYING SELY OF A LINE PARALLEL TO AND 200 FEET NWLY OF THE CENTERLINE OF THE ERIE RAILROAD EXCEPT 13.08 ACRES RR R/W
59 13 11 SW NW	105-0070-01765	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY RT OF W ACROSS SEC 11
59 13 12 NE NW	105-0070-01810	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	NE1/4 OF NW1/4 EX PART LYING NWLY OF A LINE PARALLEL TO & DISTANT 150 FT SELY OF CENTERLINE OF DUNKA SPUR RAILROAD & LYING WITHIN 200 FT OF CENTERLINE OF ERIE RAILROAD

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 12 NE NW	105-0070-01815	USA	USFS LDV Land Exchange #4544	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF NE1/4 OF NW1/4 LYING NWLY OF A LINE PARALLEL TO & DISTANT 150 FT SELY OF CENTERLINE OF DUNKA SPUR RAILROAD & LYING WITHIN 200 FT OF CENTERLINE OF ERIE RAILROAD
59 13 12 NW NW	105-0070-01825	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	USA	USA	NW1/4 OF NW1/4 EXCEPT THAT PART THEREOF BOUNDED ON THE NORTH BY A LINE PARALLEL TO AND DISTANT 250 FEET NORTH OF THE CENTERLINE OF THE DUNKA RAILROAD SPUR; AND ON THE SOUTH BY A LINE PARALLEL TO AND DISTANT 200 FEET SOUTH OF THE CENTERLINE OF THE ERIE RA
59 13 12 SE NW	105-0070-01840	USA	USFS LDV Land Exchange #4544	PolyMet	USA	CLIFFS MINING SERVICES CO	PART OF SE1/4 OF NW1/4 LYING NELY OF A LINE PARALLEL TO & DISTANT 200 FT NELY OF CENTERLINE OF ERIE RAILROAD
59 13 12 SE NW	105-0070-01925	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 12
59 13 12 SW NW	105-0070-01830	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW 1/4 OF NW 1/4 EXCEPT RR R/W
59 13 12 SW NW	105-0070-01925	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 12
59 13 15 NE NE	105-0070-02250	BLANDIN PAPER COMPANY		PolyMet	BLANDIN PAPER COMPANY	BLANDIN PAPER COMPANY	NE 1/4 OF NE 1/4
59 13 15 NE NW	105-0070-02290	ALLETE INC		PolyMet	ALLETE INC	ALLETE INC	PART OF NE1/4 OF NW1/4 LYING SLY OF A LINE 62.5 FT NW OF CENTERLINE OF EXISTING POWERLINE & NLY OF A LINE 187.5 FT SE OF SAID LINE
59 13 15 NE NW	105-0070-02295	ALLETE INC		PolyMet	ALLETE INC	MINNESOTA POWER	NE1/4 OF NW1/4 EX PART LYING SLY OF A LINE 62.5 FT NW OF CENTERLINE OF EXISTING POWERLINE AND NLY OF A LINE 187.5 FT SE OF SAID CENTERLINE & EXEMPT 6 ACRES TACONITE
59 13 15 NW NE	105-0070-02260	PolyMet - Contract for Deed		PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF NE 1/4
59 13 15 NW NW	105-0070-02300	PolyMet - Contract for Deed		PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NW1/4 LYING NLY OF A LINE PARALLEL TO AND DISTANT 187.5 FT SELY OF CENTERLINE OF EXISTING POWER LINE EX RY R/W
59 13 15 NW NW	105-0070-02405	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 15

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 9 SE SE	105-0070-01290	USA	USFS LDV Land Exchange #4544	PolyMet	USA	USA	ALL EX SE1/4 OF SE1/4 OF SE1/4 OF SE1/4
59 13 9 SE SE	105-0070-01442	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SE 1/4 OF SE 1/4 OF SE 1/4 OF SE 1/4
Combined ⁶	Multiple	USA	USFS LDV Land Exchange #4544	PolyMet	-	-	-

¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations. Note in some instances, areas have been combined for display purposes on figures in Section 4 of the PTM Application. See footnote 6 for locations that were combined.

² The "Owner / Interest Holder" column corresponds to the property interests displayed on Figures 4-1 through 4-4 of the Permit to Mine Application and is based on the best information available at the time of application development.

³ The "Agreement" column provides documentation of PolyMet agreements related to surface interests. Letter designations reference Contracts for Deed between PolyMet and Cliffs Erie. USFS land exchange areas are identified as "USFS LDV Land Exchange #4544". Numbers designate ancillary agreements with Cliffs Erie or other owners. Only agreements within the Mining Area are listed. Additional details for the agreements listed are as follows:

- A: Contract For Deed, dated November 15, 2005, between PolyMet and Cliffs Erie
- B: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- C: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- 1. Roadway Access License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 2. Trackage Rights and License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 3. Railroad License Agreement Cliffs Erie to PolyMet dated 12/20/2006
- 4. Colby Lake Corridor License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 5. Interpit Pipeline License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 6. Gas Pipeline License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 7. Electric Feeder License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 8. Septic Effluent Pipeline and Drain Field System License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 9. Easement from RGG5 to PolyMet dated 10/5/2007

⁴ The "County Data Owner Name" column shows the owner name listed in the St. Louis County database as of October 2016, except where the dataset showed Lake Superior Realty (LSR) as an owner. With the exception of the four parcels referenced below, pursuant to Certificate of Title No. 312572, Cliffs Erie is the owner of all of the former LSR parcels within the Mining Area listed in this table (labeled in the table as Cliffs Erie LLC* where appropriate). With regard to the following former LSR parcels, Mesabi Nugget is the owner pursuant to the certificates referenced below:

- Parcel 570-0032-00640 – (SE SE 14-59-15) – Certificate of Title No. 325471
- Parcel 570-0032-00630 – (SW SE 14-59-15) – Certificate of Title No. 319795
- Parcel 570-0034-00050 – (NE NW 23-59-15) – Certificate of Title No. 325471
- Parcel 570-0034-00050 – (NW NW 23-59-15) – Certificate of Title No. 325471

⁵ References to State Leases reflect information in St. Louis County records. PolyMet requests from the DNR updated information as to whether the referenced States Leases are currently in effect and if so, the nature of the leases and the identification of the lessees.

⁶ Combined property interests are located in the following locations: 59 13 1 SW NE; 59 13 1 SW NW; 59 13 1 SE NW; 59 13 1 GOVT LOT 4; 59 13 1 GOVT LOT 3; 59 13 1 GOVT LOT 2; 59 13 2 SE SW; 59 13 2 SW SE; 59 13 2 SE SE; 59 13 2 NW SW; 59 13 2 NE SW; 59 13 2 NW SE; 59 13 2 NE SE; 59 13 2 SE NW; 59 13 2 SE NE; 59 13 2 GOVT LOT 3; 59 13 2 GOVT LOT 2; 59 13 2 GOVT LOT 1; 59 13 2 SW SW; 59 13 2 SW NE; 59 13 2 SW NW; 59 13 3 SW SW; 59 13 3 SE SW; 59 13 3 SE SE; 59 13 3 NW SW; 59 13 3 NE SW; 59 13 3 NW SE; 59 13 3 SW NW; 59 13 3 SW NE; 59 13 3 SE NE; 59 13 3 SW SE; 59 13 3 NE SE; 59 13 3 SE NW; 59 13 4 SE SE; 59 13 4 SW SE; 59 13 4 NE SE; 59 13 4 NW SE; 59 13 4 SE SW; 59 13 8 SE NE; 59 13 8 SE SE; 59 13 8 NE SE; 59 13 9 SW SE; 59 13 9 SE SW; 59 13 9 NW SE; 59 13 9 NE SE; 59 13 9 NW SW; 59 13 9 SE NE; 59 13 9 SW NE; 59 13 9 SE NW; 59 13 9 NE NE; 59 13 9 NW NE; 59 13 9 NE NW; 59 13 9 NW NW; 59 13 9 SW NW; 59 13 9 SW SW; 59 13 9 NE SW; 59 13 10 NW SW; 59 13 10 SW NW; 59 13 10 SW NE; 59 13 10 NE NW; 59 13 10 NW NE; 59 13 10 NW NW; 59 13 10 SE NW; 59 13 10 NE NE; 59 13 11 NW NW; 59 13 12 SW NE; 59 13 12 SE NE; 59 13 12 NE NE; 59 13 12 NW NE

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 15 NE NE	142-0080-02310	DUNORD LAND COMPANY		PolyMet	DUNORD LAND COMPANY	CLIFFS ERIE LLC	NE 1/4 OF NE 1/4
59 14 15 NE NW	142-0080-02350	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE1/4 OF NW1/4 EXCEPT THAT PART LYING 200 FT NORTH OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO & PERPENDICULAR TO THE TANGENT TO CURVES THEREIN: COMMENCING AT THE NW CORNER OF SAID SECTION 15; THENCE S5DEG49'40"E BASED ON THE ST LOU
59 14 15 NE NW	142-0080-02355	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	THAT PART OF THE NE1/4 OF NW1/4 LYING NORTH-ERLY OF A LINE LYING 200 FEET NORTH OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO AND PERPENDICULAR TO THE TANGENT TO CURVES THEREIN: COMMENCING AT THE NORTH-WEST CORNER OF SAID SECTION 15
59 14 15 NW NE	142-0080-02320	DUNORD LAND COMPANY		PolyMet	DUNORD LAND COMPANY	CLIFFS ERIE LLC	NW 1/4 OF NE 1/4
59 14 15 NW NW	142-0080-02360	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NW1/4 EXCEPT THAT PART LYING NORTH-ERLY OF A LINE LYING 200 FEET NORTH OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO AND PERPENDICULAR TO THE TANGENT TO CURVES THEREIN: COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 15
59 14 15 NW NW	142-0080-02365	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	THAT PART OF THE NW1/4 OF NW1/4 LYING NORTH-ERLY OF A LINE LYING 200 FEET NORTH OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO AND PERPENDICULAR TO THE TANGENT TO CURVES THEREIN: COMMENCING AT THE NORTH-WEST CORNER OF SAID SECTION 15
59 14 15 NW SW	142-0080-02410	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW 1/4 OF SW 1/4
59 14 15 SE NW	142-0080-02380	STATE OF MN	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NW 1/4 STATE LEASE
59 14 15 SW NE	142-0080-02330	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW 1/4 OF NE 1/4

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 15 SW NW	142-0080-02370	GLACIER PARK CO C/D	1,5	PolyMet	GLACIER PARK CO C/D	CLIFFS ERIE LLC	PART OF SW 1/4 OF NW 1/4 BEG AT SW CORNER THENCE E TO SE CORNER THENCE NLY 200 FT THENCE SWLY TO A POINT ON W LINE OF SAID FORTY THENCE SLY 100 FT TO POINT OF BEG
59 14 15 SW NW	142-0080-02375	STATE OF MN	1,5	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF NW 1/4 EX SLY 4 34/100 AC STATE LEASE
59 14 16 NE NE	142-0080-02480	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE 1/4 OF NE 1/4
59 14 16 NE NW	142-0080-02520	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE 1/4 OF NW 1/4
59 14 16 NE SE	142-0080-02600	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4 STATE LEASE
59 14 16 NE SE	142-0080-02635	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 NE SW	142-0080-02560	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,5	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SW 1/4 STATE LEASE
59 14 16 NE SW	142-0080-02560	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SW 1/4 STATE LEASE
59 14 16 NE SW	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 NW NE	142-0080-02490	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF NE 1/4
59 14 16 NW NW	142-0080-02530	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF NW 1/4
59 14 16 NW SE	142-0080-02610	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4 STATE LEASE
59 14 16 NW SE	142-0080-02635	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 NW SW	142-0080-02570	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF SW 1/4 STATE LEASE

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 16 NW SW	142-0080-02570	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,5	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF SW 1/4 STATE LEASE
59 14 16 NW SW	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SE NE	142-0080-02510	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SE 1/4 OF NE 1/4 EXCEPT 5.79 ACRES RR R/W
59 14 16 SE NE	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SE NW	142-0080-02550	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SE 1/4 OF NW 1/4 EXCEPT N1/2
59 14 16 SE NW	142-0080-02555	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	N1/2 OF SE1/4 OF NW1/4
59 14 16 SE NW	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SE SE	142-0080-02630	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF SE 1/4 STATE LEASE
59 14 16 SE SE	142-0080-02635	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SW NE	142-0080-02500	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SW 1/4 OF NE 1/4 EXCEPT 4.87 ACRES RR R/W
59 14 16 SW NE	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SW NW	142-0080-02540	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW 1/4 OF NW 1/4
59 14 16 SW NW	142-0080-02635	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16
59 14 16 SW SE	142-0080-02620	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF SE 1/4 STATE LEASE
59 14 16 SW SE	142-0080-02635	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SEC 16

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 16 SW SW	142-0080-02580	STATE OF MN	1,5	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF SW 1/4 STATE LEASE
59 14 17 NE NE	142-0080-02640	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE 1/4 OF NE 1/4
59 14 17 NE NW	142-0080-02680	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NE 1/4 OF NW 1/4
59 14 17 NE NW	142-0080-02800	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NE SE	142-0080-02760	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS ERIE LLC*	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4
59 14 17 NE SW	142-0080-02720	PolyMet - Contract for Deed	B,6	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NE1/4 OF SW1/4 EXCEPT 2.90 ACRES RR R/W & EX COMM AT CENTER OF SEC 17 THENCE N89DEG44'40"E ALONG E-W 1/4 LINE 945.91 FT TO PT OF BEG THENCE N89DEG44'40"E CONT ALONG SAID E-W 1/4 LINE 605.57 FT THENCE SWLY ALONG A NON- TANGENTIAL CURVE CONCAVE TO NW HAVIN
59 14 17 NE SW	142-0080-02721	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	PART OF NE1/4 OF SW1/4 COMM AT CENTER OF SEC 17 THENCE N89DEG44'40"E ALONG E-W 1/4 LINE 945.91 FT TO PT OF BEG THENCE N89DEG44'40"E CONT ALONG SAID E-W 1/4 LINE 605.57 FT THENCE SWLY ALONG A NON-TANGENTIAL CURVE CONCAVE TO NW HAVING A RADIUS OF 427.26 FT
59 14 17 NE SW	142-0080-02800	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NE SW	142-0080-02800	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NW NE	142-0080-02650	PolyMet - Contract for Deed	A	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	THAT PART OF NW 1/4 OF NE 1/4 LYING EASTERLY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 17; THENCE N88DEG50'33"E BASED ON THE ST LOUIS COUNTY CENTRAL ZONE COORDINATE SYSTEM FOR A DISTANCE OF 486.89 FEET TO THE

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 17 NW NE	142-0080-02655	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW1/4 OF NE1/4 EXCEPT THAT PART LYING EASTER- LY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 17; THENCE N88DEG50'33"E BASED ON THE ST LOUIS COUNTY COORDINATE SYSTEM FOR A DISTANCE OF 486.89 FEET TO THE POINT OF
59 14 17 NW NE	142-0080-02800	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NW NW	142-0080-02690	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	W 1/2 OF NW 1/4
59 14 17 NW SE	142-0080-02770	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS ERIE LLC*	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4 EX RY RT OF WAY 20/100 ACRES
59 14 17 NW SE	142-0080-02770	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS ERIE LLC*	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4 EX RY RT OF WAY 20/100 ACRES
59 14 17 NW SE	142-0080-02800	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NW SE	142-0080-02800	Canadian National	3	PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 NW SW	142-0080-02730	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF SW 1/4
59 14 17 SE NE	142-0080-02660	PolyMet - Contract for Deed	A	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	S 1/2 OF NE 1/4 EXCEPT THAT PART OF SW1/4 OF NE1/4 LYING WEST OF A LINE 40 FEET WEST OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO, AND THE EXTENSION THEREOF TO THE SOUTH BOUNDARY OF SAID SW1/4 OF NE1/4; COMMENCING AT THE CENTER QUART
59 14 17 SE NW	142-0080-02710	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SE 1/4 OF NW 1/4
59 14 17 SE NW	142-0080-02800	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 SE SE	142-0080-02790	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SE 1/4 OF SE 1/4 SURFACE ONLY

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 17 SE SW	142-0080-02750	PolyMet - Contract for Deed	B,1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SE1/4 OF SW1/4 EX RY RT OF W 2.90 ACRE & EX COMM AT CENTER OF SEC 17 THENCE N89DEG44'40"E ALONG E-W 1/4 LINE 945.91 FT TO PT OF BEG THENCE N89DEG44'40"E CONT ALONG SAID E-W 1/4 LINE 605.57 FT THENCE SWLY ALONG A NON- TANGENTIAL CURVE CONCAVE TO NW HAVING
59 14 17 SE SW	142-0080-02751	PolyMet - Ancillary Agreements with Cliffs	1,5	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	PART OF SE1/4 OF SW1/4 COMM AT CENTER OF SEC 17 THENCE N89DEG44'40"E ALONG E-W 1/4 LINE 945.91 FT TO PT OF BEG THENCE N89DEG44'40"E CONT ALONG SAID E-W 1/4 LINE 605.57 FT THENCE SWLY ALONG A NON-TANGENTIAL CURVE CONCAVE TO NW HAVING A RADIUS OF 427.26 FT
59 14 17 SE SW	142-0080-02800	PolyMet - Ancillary Agreements with Cliffs	1, 5	PolyMet	CLIFFS	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 SE SW	142-0080-02800	Canadian National	1,5	PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 SW NE	142-0080-02657	PolyMet - Contract for Deed	A	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	SW1/4 OF NE1/4 EXCEPT THAT PART LYING EASTER- LY OF A LINE LYING 40 FT WEST OF THE FOLLOW- ING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO, AND THE EXTENSION THEREOF TO THE SOUTH BOUNDARY OF SAID SW1/4 OF NE1/4: COMMENCING AT THE CENTER QUARTER CORNER
59 14 17 SW NE	142-0080-02660	PolyMet - Contract for Deed	A	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	S 1/2 OF NE 1/4 EXCEPT THAT PART OF SW1/4 OF NE1/4 LYING WEST OF A LINE 40 FEET WEST OF THE FOLLOWING DESCRIBED LINE, MEASURED PERPENDICULAR THERETO, AND THE EXTENSION THEREOF TO THE SOUTH BOUNDARY OF SAID SW1/4 OF NE1/4; COMMENCING AT THE CENTER QUART
59 14 17 SW NE	142-0080-02800	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 17 SW NW	142-0080-02690	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	W 1/2 OF NW 1/4
59 14 17 SW SE	142-0080-02780	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	SW 1/4 OF SE 1/4
59 14 17 SW SE	142-0080-02800	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS	UNKNOWN	RY RT OF WAY ACROSS SECTION 17

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 17 SW SW	142-0080-02740	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SW 1/4 OF SW 1/4
59 14 17 SW SW	142-0080-02800	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS	UNKNOWN	RY RT OF WAY ACROSS SECTION 17
59 14 18 GOVT LOT 1	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2
59 14 18 GOVT LOT 2	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2
59 14 18 GOVT LOT 3	142-0080-02900	ELIZABETH P YOUNG REVOCABLE TRUST	1	PolyMet	ELIZABETH P YOUNG REVOCABLE TRUST	MESABI NUGGET DELAWARE LLC	LOT 3
59 14 18 NE NW	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2
59 14 18 NE SE	142-0080-02930	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	NE 1/4 OF SE 1/4
59 14 18 NE SW	142-0080-02890	PolyMet - Contract for Deed	A	PolyMet	TIGHE DEBORAH D ETAL	CLIFFS ERIE LLC	UND 283/288TH INT OF NE1/4 OF SW 1/4 EX 144/288TH INT IN THAT PART LYING SWLY OF THE FOLLOWING DESCRIBED LINE & EX 143/288TH INT IN THAT PART LYING NELY OF THE FOLLOWING DESCRIBED LINE COMM AT SE COR OF E1/2 OF SW1/4 THENCE N04DEG08'11"W 530.08 FT THENCE
59 14 18 NE SW	142-0080-02890	CLIFFS		PolyMet	TIGHE DEBORAH D ETAL	CLIFFS ERIE LLC	UND 283/288TH INT OF NE1/4 OF SW 1/4 EX 144/288TH INT IN THAT PART LYING SWLY OF THE FOLLOWING DESCRIBED LINE & EX 143/288TH INT IN THAT PART LYING NELY OF THE FOLLOWING DESCRIBED LINE COMM AT SE COR OF E1/2 OF SW1/4 THENCE N04DEG08'11"W 530.08 FT THENCE
59 14 18 NE SW	142-0080-02891	PolyMet - Contract for Deed	A	PolyMet	CLIFFS ERIE LLC	POLYMET MINING INC	UND 5/288THS OF NE1/4 OF SW1/4 LYING NORTHER- LY OF THE FOLLOWING DESCRIBED LINE: COMMENC- ING AT THE SE CORNER OF THE NE1/4 OF SW1/4; THENCE N89DEG 59'35"W BASED ON THE ST LOUIS CO CENTRAL ZONE COORDINATE SYSTEM FOR A DIS- TANCE OF 333.97 TO THE PT OF B
59 14 18 NW SE	142-0080-02940	PolyMet - Contract for Deed	A	PolyMet	CARMODY AGNES	POLYMET MINING INC	NW 1/4 OF SE 1/4
59 14 18 SE NE	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 18 SE NW	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2
59 14 18 SE SE	142-0080-02951	MESABI NUGGET DELAWARE LLC	1,5	PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	THAT PART OF S1/2 OF SE1/4 LYING SWLY & SLY OF THE FOLLOWING DESCRIBED LINE COMM AT NE COR OF SE1/4 OF SE1/4 SEC 18 THENCE N89DEG29' 13"W ALONG N LINE OF SE1/4 OF SE1/4 1311.40 FT TO NW COR OF SE1/4 OF SE1/4 THENCE N89DEG 29'13"W ALONG N LINE OF SW1/4 OF
59 14 18 SE SE	142-0080-02960	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC	CLIFFS ERIE LLC	SE1/4 OF SE1/4 EX THAT PART LYING SWLY & SLY OF THE FOLLOWING DESCRIBED LINE COMM AT NE COR OF SE1/4 OF SE1/4 SEC 18 THENCE N89DEG29' 13"W ALONG N LINE OF SE1/4 OF SE1/4 1311.40 FT TO NW COR OF SE1/4 OF SE1/4 THENCE N89DEG 29'13"W ALONG N LINE OF SW1/4 O
59 14 18 SE SW	142-0080-02922	CLIFFS	1	PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	UND 5/288TH IN SE1/4 OF SW1/4 EXCEPT THAT PART LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE SOUTHEAST CORNER OF NE1/4 OF SW1/4 OF SAID SECTION 18; THENCE N89DEG59'35"W BASED ON THE ST LOUIS COUNTY CENTRAL ZONE COORDINATE SYSTEM FOR
59 14 18 SE SW	142-0080-02925	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	UND 5/288TH IN THAT PART OF SE1/4 OF SW1/4 LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE SOUTHEAST CORNER OF THE NE1/4 OF SW1/4 OF SAID SECTION 18; THENCE N89DEG59'35"W BASED ON THE ST LOUIS COUNTY CENTRAL ZONE COORDINATE SYSTEM FOR
59 14 18 SW NE	142-0080-02810	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC*	POLYMET MINING INC	N 1/2
59 14 18 SW SE	142-0080-02950	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC	CLIFFS ERIE LLC	SW1/4 OF SE1/4 EX THAT PART LYING SWLY & SLY OF THE FOLLOWING DESCRIBED LINE COMM AT NE COR OF SE1/4 OF SE1/4 SEC 18 THENCE N89DEG29' 13"W ALONG N LINE OF SE1/4 OF SE1/4 1311.40 FT TO NW COR OF SE1/4 OF SE1/4 THENCE N89DEG 29'13"W ALONG N LINE OF SW1/4 O

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 18 SW SE	142-0080-02951	MESABI NUGGET DELAWARE LLC	1,5	PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	THAT PART OF S1/2 OF SE1/4 LYING SWLY & SLY OF THE FOLLOWING DESCRIBED LINE COMM AT NE COR OF SE1/4 OF SE1/4 SEC 18 THENCE N89DEG29' 13"W ALONG N LINE OF SE1/4 OF SE1/4 1311.40 FT TO NW COR OF SE1/4 OF SE1/4 THENCE N89DEG 29'13"W ALONG N LINE OF SW1/4 OF
59 14 19 NE NE	142-0080-02970	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NE 1/4 OF NE 1/4
59 14 19 NE NW	142-0080-03010	HUGHES G S ETAL		PolyMet	HUGHES G S ETAL	MESABI NUGGET DELAWARE LLC	NE 1/4 OF NW 1/4
59 14 19 NW NE	142-0080-02980	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NW 1/4 OF NE 1/4
59 14 19 SE NE	142-0080-03000	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	SE 1/4 OF NE 1/4
59 14 20 NE NE	142-0080-03130	ROMBERG CAROLYN FAMILY TRUST		PolyMet	ROMBERG CAROLYN FAMILY TRUST	POLYMET MINING INC	NE 1/4 OF NE 1/4
59 14 20 NE NW	142-0080-03170	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	NE 1/4 OF NW 1/4 EX RY R OF W 3 60/100 AC
59 14 20 NE NW	142-0080-03290	Canadian National	4,5	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NE SE	142-0080-03250	PolyMet - Ancillary Agreements with RGGGS	9	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	THAT PART OF NE 1/4 OF SE 1/4 LYING S AND W OF THE D AND I R RY RT OF WAY SURFACE ONL
59 14 20 NE SE	142-0080-03260	RGGGS LAND & MINERALS LTD LP	4	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	THAT PART OF NE 1/4 OF SE 1/4 LYING N AND E OF THE D AND I R RY RT OF WAY SURFACE ONLY EXEMPT 5 ACRES TACONITE
59 14 20 NE SE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NW NE	142-0080-03140	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF NE 1/4
59 14 20 NW NE	142-0080-03290	Canadian National	4,5	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NW NW	142-0080-03180	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	NW 1/4 OF NW 1/4
59 14 20 NW SW	142-0080-03220	MESABI MINING LLC		PolyMet	MESABI MINING LLC	MESABI MINING	NW 1/4 OF SW 1/4

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 20 SE NE	142-0080-03160	RGGS LAND & MINERALS LTD LP		PolyMet	RGGS LAND & MINERALS LTD LP	RGGS LAND & MINERALS LTD LP	SE 1/4 OF NE 1/4
59 14 20 SE SE	142-0080-03285	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	4	PolyMet	STATE OF MINNESOTA	MESABI MINING	SE 1/4 OF SE 1/4 EX RY R OF WAY STATE LEASE
59 14 20 SE SE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 SE SW	142-0080-03240	MESABI MINING LLC	1	PolyMet	MESABI MINING LLC	MESABI MINING	SE1/4 OF SW1/4 EX S 925 FT OF E 1175 FT OF SURFACE
59 14 20 SE SW	142-0080-03246	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	S 925 FT OF E 1175 FT OF SE1/4 OF SW1/4 SURFACE ONLY
59 14 20 SW NW	142-0080-03190	MESABI MINING LLC		PolyMet	MESABI MINING LLC	MESABI MINING	SW 1/4 OF NW 1/4
59 14 20 SW SE	142-0080-03280	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SW 1/4 OF SE 1/4 EX RY R OF W 60/100 AC OF SURFACE VIVIAN RES
59 14 20 SW SE	142-0080-03290	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 SW SW	142-0080-03230	MESABI MINING LLC		PolyMet	MESABI MINING LLC	MESABI MINING	SW 1/4 OF SW 1/4
59 14 21 NE NE	142-0080-03300	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF NE 1/4 STATE LEASE
59 14 21 NE NE	142-0080-03380	CLIFFS		PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY RT OF W ACROSS SECTION 21
59 14 21 NE NW	142-0080-03330	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NE 1/4 OF NW 1/4
59 14 21 NW NE	142-0080-03310	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW 1/4 OF NE 1/4 EX RY RT OF WAY 6 38/100 AC
59 14 21 NW NE	142-0080-03380	CLIFFS		PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY RT OF W ACROSS SECTION 21
59 14 21 NW NW	142-0080-03340	RGGS LAND & MINERALS LTD LP	1,5	PolyMet	RGGS LAND & MINERALS LTD LP	RGGS LAND & MINERALS LTD LP	NW 1/4 OF NW 1/4
59 14 21 SW NW	142-0080-03342	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	S 1/2 OF NW 1/4
59 14 21 SW SW	142-0080-03350	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SW 1/4 OF SW 1/4 EX RY R OF W 10/100 AC

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 21 SW SW	142-0080-03380	Canadian National		PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY RT OF W ACROSS SECTION 21
59 14 22 NE SE	142-0080-03510	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4 STATE LEASE
59 14 22 NE SE	142-0080-03545	CLIFFS		PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS S 1/2 OF SEC 22
59 14 22 NW SE	142-0080-03520	CLIFFS		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4
59 14 22 NW SE	142-0080-03545	CLIFFS		PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS S 1/2 OF SEC 22
59 14 23 NE NE	142-0080-03550	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF NE 1/4 STATE LEASE
59 14 23 NE SW	142-0080-03630	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SW 1/4 STATE LEASE
59 14 23 NW NE	142-0080-03560	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF NE 1/4 STATE LEASE
59 14 23 NW SW	142-0080-03640	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF SW 1/4 STATE LEASE
59 14 23 SE NW	142-0080-03620	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NW 1/4 STATE LEASE
59 14 23 SW NE	142-0080-03570	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF NE 1/4 STATE LEASE
59 14 28 NE NW	142-0080-04390	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NE 1/4 OF NW 1/4 EX RY RT OF WAY SURFACE ONLY
59 14 28 NE NW	142-0080-04430	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY R OF W ACROSS NE1/4 OF NW1/4 AND SE1/4 OF NW 1/4 ALSO NE 1/4 OF SW 1/4
59 14 28 NW NW	142-0080-04400	STATE OF MN		PolyMet	STATE OF MINNESOTA	MESABI MINING	NW 1/4 OF NW 1/4 STATE LEASE
59 14 28 SE NE	142-0080-04380	ST OF MN C278 L35		PolyMet	ST OF MN C278 L35	CLIFFS ERIE LLC	SE 1/4 OF NE 1/4 STATE LEASE
59 14 28 SE NW	142-0080-04420	RGGS LAND & MINERALS LTD LP		PolyMet	RGGS LAND & MINERALS LTD LP	RGGS LAND & MINERALS LTD LP	SE 1/4 OF NW 1/4 EX RY R OF W 5 60/100 AC SURFACE ONLY
59 14 28 SE NW	142-0080-04430	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY R OF W ACROSS NE1/4 OF NW1/4 AND SE1/4 OF NW 1/4 ALSO NE 1/4 OF SW 1/4
59 14 28 SW NE	142-0080-04370	STATE OF MN		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF NE 1/4 STATE LEASE

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 29 NE NW	142-0080-04560	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	NE 1/4 OF NW 1/4 EX RY R OF W 1 50/100 AC
59 14 29 NE NW	142-0080-04680	CLIFFS		PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS W 1/2 OF SECTION 29
59 14 29 NW NE	142-0080-04530	CLIFFS MINING SERVICES CO		PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	UND 35/36 NW 1/4 OF NE 1/4 SURFACE ONLY
59 14 29 NW NE	142-0080-04531	ST OF MN C278 L35		PolyMet	ST OF MN C278 L35	ST OF MN C278 L35	UND 1/36 NW 1/4 OF NE 1/4 SURFACE ONLY
59 15 13 NE NE	570-0032-00340	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC	POLYMET MINING INC	E1/2 & E1/2 OF W1/2 OF NE1/4 OF NE1/4 & E1/2 & E1/2 OF W1/2 OF SE1/4 OF NE1/4
59 15 13 NE SE	570-0032-00450	TIGHE DEBORAH D ETAL		PolyMet	TIGHE DEBORAH D ETAL	MESABI NUGGET DELAWARE LLC	NE 1/4 OF SE 1/4
59 15 13 NE SW	570-0032-00410	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NE 1/4 OF SW 1/4
59 15 13 NW SE	570-0032-00460	TIGHE DEBORAH D ETAL		PolyMet	TIGHE DEBORAH D ETAL	MESABI NUGGET DELAWARE LLC	NW 1/4 OF SE 1/4
59 15 13 NW SW	570-0032-00420	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NW 1/4 OF SW 1/4
59 15 13 SE NE	570-0032-00330	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NE1/4 OF NE1/4 EX E1/2 & EX E1/2 OF W1/2 & NW1/4 OF NE1/4 & SW1/4 OF NE1/4 & SE1/4 OF NE1/4 EX E1/2 & EX E1/2 OF W1/2
59 15 13 SE NE	570-0032-00340	PolyMet - Contract for Deed	B	PolyMet	CLIFFS ERIE LLC	POLYMET MINING INC	E1/2 & E1/2 OF W1/2 OF NE1/4 OF NE1/4 & E1/2 & E1/2 OF W1/2 OF SE1/4 OF NE1/4
59 15 13 SW NE	570-0032-00330	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NE1/4 OF NE1/4 EX E1/2 & EX E1/2 OF W1/2 & NW1/4 OF NE1/4 & SW1/4 OF NE1/4 & SE1/4 OF NE1/4 EX E1/2 & EX E1/2 OF W1/2
59 15 13 SW SW	570-0032-00430	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	SW 1/4 OF SW 1/4
59 15 14 SE SE	570-0032-00640	MESABI NUGGET DELAWARE LLC	1	PolyMet	MESABI NUGGET DELAWARE LLC*	MESABI NUGGET DELAWARE LLC	SE 1/4 OF SE 1/4
59 15 14 SW SE	570-0032-00630	MESABI NUGGET DELAWARE LLC	1	PolyMet	MESABI NUGGET DELAWARE LLC*	MESABI NUGGET DELAWARE LLC	SW 1/4 OF SE 1/4
59 15 22 NE NE	570-0033-01040	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	THAT PART OF NE1/4 OF NE1/4 LYING SOUTHERLY AND EASTERLY OF THE CENTERLINE OF STATE HWY NO. 135 .

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 15 23 NE NW	570-0034-00050	MESABI NUGGET DELAWARE LLC	1	PolyMet	MESABI NUGGET DELAWARE LLC*	MESABI NUGGET DELAWARE LLC	N 1/2 OF NW 1/4
59 15 23 NW NE	570-0034-00020	MESABI NUGGET DELAWARE LLC		PolyMet	MESABI NUGGET DELAWARE LLC	MESABI NUGGET DELAWARE LLC	NW 1/4 OF NE 1/4
59 15 23 NW NW	570-0034-00050	MESABI NUGGET DELAWARE LLC	1	PolyMet	MESABI NUGGET DELAWARE LLC*	MESABI NUGGET DELAWARE LLC	N 1/2 OF NW 1/4
Combined ⁶	Multiple	PolyMet - Contract for Deed	A	PolyMet	-	-	-
Combined ⁷	Multiple	PolyMet - Contract for Deed	C	PolyMet	-	-	-

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
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¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations. Note in some instances, areas have been combined for display purposes on figures in Section 4 of the PTM Application. See footnote 6 for locations that were combined.

² The "Owner / Interest Holder" column corresponds to the property interests displayed on Figures 4-1 through 4-4 of the Permit to Mine Application and is based on the best information available at the time of application development.

³ The "Agreement" column provides documentation of PolyMet agreements related to surface interests. Letter designations reference Contracts for Deed between PolyMet and Cliffs Erie. USFS land exchange areas are identified as "USFS LDV Land Exchange #4544". Numbers designate ancillary agreements with Cliffs Erie or other owners. Only agreements within the Mining Area are listed. Additional details for the agreements listed are as follows:

- A: Contract For Deed, dated November 15, 2005, between PolyMet and Cliffs Erie
- B: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- C: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- 1. Roadway Access License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 2. Trackage Rights and License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 3. Railroad License Agreement Cliffs Erie to PolyMet dated 12/20/2006
- 4. Colby Lake Corridor License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 5. Interpit Pipeline License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 6. Gas Pipeline License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 7. Electric Feeder License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 8. Septic Effluent Pipeline and Drain Field System License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 9. Easement from RGGGS to PolyMet dated 10/5/2007

⁴ The "County Data Owner Name" column shows the owner name listed in the St. Louis County database as of October 2016, except where the dataset showed Lake Superior Realty (LSR) as an owner. With the exception of the four parcels referenced below, pursuant to Certificate of Title No. 312572, Cliffs Erie is the owner of all of the former LSR parcels within the Mining Area listed in this table (labeled in the table as Cliffs Erie LLC* where appropriate). With regard to the following former LSR parcels, Mesabi Nugget is the owner pursuant to the certificates referenced below:

- Parcel 570-0032-00640 – (SE SE 14-59-15) – Certificate of Title No. 325471
- Parcel 570-0032-00630 – (SW SE 14-59-15) – Certificate of Title No. 319795
- Parcel 570-0034-00050 – (NE NW 23-59-15) – Certificate of Title No. 325471
- Parcel 570-0034-00050 – (NW NW 23-59-15) – Certificate of Title No. 325471

⁵ References to State Leases reflect information in St. Louis County records. PolyMet requests from the DNR updated information as to whether the referenced States Leases are currently in effect and if so, the nature of the leases and the identification of the lessees.

⁶ Combined property interests are located in the following locations: 60 14 34 SW SW; 60 14 34 SW SE; 60 14 34 SE SW; 60 14 34 SE SE; 60 14 34 NW SW; 60 14 34 NW SE; 60 14 34 NE SW; 60 14 34 NE SE; 60 14 33 SW SW; 60 14 33 SW SE; 60 14 33 SE SW; 60 14 33 SE SE; 60 14 33 NW SW; 60 14 33 NW SE; 60 14 33 NE SW; 60 14 33 NE SE; 60 14 32 SW SW; 60 14 32 SW SE; 60 14 32 SE SW; 60 14 32 SE SE; 60 14 32 NW SW; 60 14 32 NW SE; 60 14 32 NE SW; 60 14 32 NE SE; 60 14 31 SE SE; 59 14 9 SW SW; 59 14 9 SW SE; 59 14 9 SW NW; 59 14 9 SW NE; 59 14 9 SE SW; 59 14 9 SE SE; 59 14 9 SE NW; 59 14 9 SE NE; 59 14 9 NW SW; 59 14 9 NW SE; 59 14 9 NW NW; 59 14 9 NW NE; 59 14 9 NE SW; 59 14 9 NE SE; 59 14 9 NE NW; 59 14 9 NE NE; 59 14 8 SW SW; 59 14 8 SW SE; 59 14 8 SW NW; 59 14 8 SW NE; 59 14 8 SE SW; 59 14 8 SE SE; 59 14 8 SE NW; 59 14 8 SE NE; 59 14 8 NW SW; 59 14 8 NW SE; 59 14 8 NW NW; 59 14 8 NW NE; 59 14 8 NE SW; 59 14 8 NE SE; 59 14 8 NE NW; 59 14 8 NE NE; 59 14 5 SW SW; 59 14 5 SW SE; 59 14 5 SW NW; 59 14 5 SW NE; 59 14 5 SE SW; 59 14 5 SE SE; 59 14 5 SE NW; 59 14 5 SE NE; 59 14 5 NW SW; 59 14 5 NW SE; 59 14 5 NE SW; 59 14 5 NE SE; 59 14 5 GOVT LOT 4; 59 14 5 GOVT LOT 3; 59 14 5 GOVT LOT 2; 59 14 5 GOVT LOT 1; 59 14 4 SW SW; 59 14 4 SW SE; 59 14 4 SW NW; 59 14 4 SW NE; 59 14 4 SE SW; 59 14 4 SE SE; 59 14 4 SE NW; 59 14 4 SE NE; 59 14 4 NW SW; 59 14 4 NW SE; 59 14 4 NE SW; 59 14 4 NE SE; 59 14 4 GOVT LOT 4; 59 14 4 GOVT LOT 3; 59 14 4 GOVT LOT 2; 59 14 4 GOVT LOT 1; 59 14 3 SW SW; 59 14 3 SW SE; 59 14 3 SW NW; 59 14 3 SW NE; 59 14 3 SE SW; 59 14 3 SE SE; 59 14 3 SE NW; 59 14 3 SE NE; 59 14 3 NW SW; 59 14 3 NW SE; 59 14 3 NE SW; 59 14 3 NE SE; 59 14 3 GOVT LOT 4; 59 14 3 GOVT LOT 3; 59 14 3 GOVT LOT 2; 59 14 3 GOVT LOT 1; 59 14 2 SW SW; 59 14 2 SW NW; 59 14 2 GOVT LOT 4; 59 14 11 SW NW; 59 14 11 NW SW; 59 14 11 NW NW; 59 14 10 SW SW; 59 14 10 SW SE; 59 14 10 SW NW; 59 14 10 SW NE; 59 14 10 SE SW; 59 14 10 SE SE; 59 14 10 SE NW; 59 14 10 SE NE; 59 14 10 NW SW; 59 14 10 NW SE; 59 14 10 NW NW; 59 14 10 NW NE; 59 14 10 NE SW; 59 14 10 NE SE; 59 14 10 NE NW; 59 14 10 NE NE

⁷ Combined property interests are located in the following locations: 60 15 36 SW NE; 60 15 36 SE NE; 60 15 36 NW SE; 60 15 36 NE SE

Table 3
TRANSPORTATION AND UTILITY CORRIDORS SURFACE PROPERTY INTERESTS
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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 16 NE NE	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 NE NW	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 NW NE	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 NW NW	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 NW SW	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 SE NW	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 SW NE	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 16 SW NW	105-0070-02410	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,2	PolyMet	STATE OF MINNESOTA	B P MINERALS AMERICA INC	ALL 16-59-13
59 13 17 NE NE	105-0070-02570	Allete, Inc; Ancillary Agreements with Cliffs	1	PolyMet	ALLETE INC	ALLETE INC	NE 1/4 EXCEPT THAT PART OF SE1/4 OF NE1/4 LYING SOUTHEASTERLY OF A LINE DRAWN PARALLEL WITH AND DISTANT 200 FEET NORTHWESTERLY OF THE CLIFFS ERIE RAILROAD AND E1/2 OF NW1/4
59 13 17 NE NW	105-0070-02570	Allete, Inc; Ancillary Agreements with Cliffs	1	PolyMet	ALLETE INC	ALLETE INC	NE 1/4 EXCEPT THAT PART OF SE1/4 OF NE1/4 LYING SOUTHEASTERLY OF A LINE DRAWN PARALLEL WITH AND DISTANT 200 FEET NORTHWESTERLY OF THE CLIFFS ERIE RAILROAD AND E1/2 OF NW1/4
59 13 17 NE SE	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17

Table 3
TRANSPORTATION AND UTILITY CORRIDORS SURFACE PROPERTY INTERESTS
NorthMet Project
Appendix 1.11

T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 17 NE SW	105-0070-02650	Allete, Inc; Ancillary Agreements with Cliffs		PolyMet	ALLETE INC	ALLETE INC	NE1/4 OF SW1/4 LYING SELY OF A LINE PARALLEL TO AND DISTANT 100 FT NWLY OF CENTERLINE OF DUNKA RD EXCEPT 7.52 ACRES RR R/W
59 13 17 NE SW	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17
59 13 17 NW NE	105-0070-02570	Allete, Inc; Ancillary Agreements with Cliffs	1	PolyMet	ALLETE INC	ALLETE INC	NE 1/4 EXCEPT THAT PART OF SE1/4 OF NE1/4 LYING SOUTHEASTERLY OF A LINE DRAWN PARALLEL WITH AND DISTANT 200 FEET NORTHWESTERLY OF THE CLIFFS ERIE RAILROAD AND E1/2 OF NW1/4
59 13 17 NW SE	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17
59 13 17 NW SW	105-0070-02620	USA; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	USA	*EXEMPT	W1/2 OF NW1/4 & N1/2 OF SW1/4 EX PART LYING SELY OF A LINE PARALLEL TO & DISTANT 100 FT NWLY OF THE CENTERLINE OF DUNKA RD
59 13 17 NW SW	105-0070-02660	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW1/4 OF SW1/4 LYING SELY OF A LINE PARALLEL TO AND DISTANT 100 FT NWLY OF THE CENTERLINE OF DUNKA RD EX RY R/W
59 13 17 NW SW	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17
59 13 17 SE NW	105-0070-02570	Allete, Inc; Ancillary Agreements with Cliffs	1	PolyMet	ALLETE INC	ALLETE INC	NE 1/4 EXCEPT THAT PART OF SE1/4 OF NE1/4 LYING SOUTHEASTERLY OF A LINE DRAWN PARALLEL WITH AND DISTANT 200 FEET NORTHWESTERLY OF THE CLIFFS ERIE RAILROAD AND E1/2 OF NW1/4
59 13 17 SE SW	105-0070-02685	PolyMet - Ancillary Agreements with Cliffs		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF SE1/4 OF SW1/4 LYING NLY OF A LINE PARALLEL TO & DISTANT 200 FT SELY OF CENTERLINE OF ERIE RAILROAD RR R/W
59 13 17 SE SW	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17
59 13 17 SW NW	105-0070-02620	USA; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	USA	*EXEMPT	W1/2 OF NW1/4 & N1/2 OF SW1/4 EX PART LYING SELY OF A LINE PARALLEL TO & DISTANT 100 FT NWLY OF THE CENTERLINE OF DUNKA RD
59 13 17 SW SW	105-0070-02675	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF SW1/4 OF SW1/4 LYING NLY OF A LINE PARALLEL TO & DISTANT 200 FT SELY OF CENTERLINE OF THE ERIE RAILROAD RR R/W
59 13 17 SW SW	105-0070-02725	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	ERIE MINING CO	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 17

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 13 18 GOVT LOT 3	105-0070-02820	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	LOT 3
59 13 18 GOVT LOT 4	105-0070-02835	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	USA	USA	LOT 4 EX PART BEG AT SW COR THENCE 772 FT N 0 DEG 24 MIN W THENCE 1240 FT N 82 DEG 27 MIN E TO E LINE THENCE 923 FT S 0 DEG 3 MIN W TO SE COR THENCE 1223 FT S 89 DEG 50 MIN W TO PT OF BEG
59 13 18 GOVT LOT 4	105-0070-02885	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 18
59 13 18 NE SE	105-0070-02850	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	USA	CLIFFS MINING SERVICES CO	NE1/4 OF SE1/4 EX SLY 120 FT
59 13 18 NE SE	105-0070-02855	PolyMet - Ancillary Agreements with Cliffs		PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SLY 120 FT OF NE1/4 OF SE1/4 RR R/W
59 13 18 NE SE	105-0070-02885	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 18
59 13 18 NE SW	105-0070-02730	USA; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	USA	USA	NE1/4, E1/2 OF W1/22 EX PART LYING NLY OF A LINE PARALLEL TO AND 200 FT SELY OF THE CENTERLINE OF THE ERIE RAILROAD, NW1/4 OF SE1/4
59 13 18 NW SE	105-0070-02730	USA; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	USA	USA	NE1/4, E1/2 OF W1/22 EX PART LYING NLY OF A LINE PARALLEL TO AND 200 FT SELY OF THE CENTERLINE OF THE ERIE RAILROAD, NW1/4 OF SE1/4
59 13 18 SE SE	105-0070-02885	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 18
59 13 18 SE SE	105-0070-02886	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF SE1/4 OF SE1/4 LYING NLY OF A LINE PARALLEL TO & 200 FT SELY OF CENTER LINE OF ERIE RAILROAD RR R/W
59 13 18 SE SW	105-0070-02730	USA; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	USA	USA	NE1/4, E1/2 OF W1/22 EX PART LYING NLY OF A LINE PARALLEL TO AND 200 FT SELY OF THE CENTERLINE OF THE ERIE RAILROAD, NW1/4 OF SE1/4
59 13 18 SE SW	105-0070-02885	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 18
59 13 18 SW SE	105-0070-02875	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF SW1/4 OF SE1/4 LYING NLY OF A LINE PARALLEL TO & 200 FT SELY OF CENTER LINE OF ERIE RAILROAD
59 13 18 SW SE	105-0070-02885	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS SECTION 18
59 14 13 NE SE	142-0080-02110	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 13 NE SW	142-0080-02070	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NE 1/4 OF SW 1/4 SURFACE ONLY
59 14 13 NW SE	142-0080-02120	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4
59 14 13 NW SW	142-0080-02080	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	NW 1/4 OF SW 1/4 SURFACE ONLY
59 14 13 SE SE	142-0080-02140	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SE 1/4 OF SE 1/4 EXCEPT 12.58 ACRES RR R/W
59 14 13 SE SE	142-0080-02145	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS S 1/2 OF SEC 13
59 14 13 SW SE	142-0080-02145	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS S 1/2 OF SEC 13
59 14 14 NE NW	142-0080-02190	DuNord Land Co; Ancillary Agreements with Cliffs	1	PolyMet	DUNORD LAND COMPANY	CLIFFS ERIE LLC	NE 1/4 OF NW 1/4
59 14 14 NE SE	142-0080-02270	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4 STATE LEASE
59 14 14 NE SW	142-0080-02230	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS MINING SERVICES CO	NE 1/4 OF SW 1/4 STATE LEASE
59 14 14 NW NW	142-0080-02200	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	NW 1/4 OF NW 1/4
59 14 14 NW SE	142-0080-02280	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,3	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NW 1/4 OF SE 1/4 STATE LEASE
59 14 14 NW SW	142-0080-02240	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS MINING SERVICES CO	NW 1/4 OF SW 1/4 STATE LEASE
59 14 14 SE NE	142-0080-02180	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NE 1/4 EX RY R OF W 3 08/100 AC STATE LEASE
59 14 14 SE NE	142-0080-02185	STATE OF MN; PolyMet Ancillary Agreements with Cliffs		PolyMet	UNKNOWN	UNKNOWN	RY R/W ACROSS NE 1/4

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 14 SE NW	142-0080-02220	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NW 1/4 STATE LEASE
59 14 14 SE SE	142-0080-02300	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,3	PolyMet	STATE OF MINNESOTA	UNITED TACONITE LLC	SE 1/4 OF SE 1/4
59 14 14 SW NE	142-0080-02170	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF NE 1/4 STATE LEASE
59 14 14 SW NE	142-0080-02185	STATE OF MN; PolyMet Ancillary Agreements with Cliffs		PolyMet	UNKNOWN	UNKNOWN	RY R/W ACROSS NE 1/4
59 14 14 SW NW	142-0080-02210	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF NW 1/4 STATE LEASE
59 14 14 SW SE	142-0080-02290	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	3	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SW 1/4 OF SE 1/4 STATE LEASE
59 14 15 NE NE	142-0080-02310	DuNord Land Co; Ancillary Agreements with Cliffs		PolyMet	DUNORD LAND COMPANY	CLIFFS ERIE LLC	NE 1/4 OF NE 1/4
59 14 15 NE SE	142-0080-02440	STATE OF MN; PolyMet Ancillary Agreements with Cliffs		PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF SE 1/4 STATE LEASE
59 14 15 NW NE	142-0080-02320	DuNord Land Co; Ancillary Agreements with Cliffs		PolyMet	DUNORD LAND COMPANY	CLIFFS ERIE LLC	NW 1/4 OF NE 1/4
59 14 15 SE NE	142-0080-02340	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	1,3	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NE 1/4 STATE LEASE
59 14 15 SW NE	142-0080-02330	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	POLYMET MINING INC	SW 1/4 OF NE 1/4
59 14 23 NE NE	142-0080-03550	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	2	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	NE 1/4 OF NE 1/4 STATE LEASE
59 14 23 SE NE	142-0080-03580	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	3	PolyMet	STATE OF MINNESOTA	CLIFFS ERIE LLC	SE 1/4 OF NE 1/4 STATE LEASE

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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 24 NE NW	142-0080-03785	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS N 1/2 SEC 24
59 14 24 NW NE	142-0080-03785	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS N 1/2 SEC 24
59 14 24 NW NW	142-0080-03785	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	UNKNOWN	CLIFFS ERIE LLC	RY R/W ACROSS N 1/2 SEC 24
59 14 24 SW NW	142-0080-03770	PolyMet - Ancillary Agreements with Cliffs	2	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	SW 1/4 OF NW 1/4 SURFACE ONLY

¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations. Note in some instances, areas have been combined for display purposes on figures in Section 4 of the PTM Application. See footnote 6 for locations that were combined.

² The "Owner / Interest Holder" column corresponds to the property interests displayed on Figures 4-1 through 4-4 of the Permit to Mine Application and is based on the best information available at the time of application development.

³ The "Agreement" column provides documentation of PolyMet agreements related to surface interests. Letter designations reference Contracts for Deed between PolyMet and Cliffs Erie. USFS land exchange areas are identified as "USFS LDV Land Exchange #4544". Numbers designate ancillary agreements with Cliffs Erie or other owners. Only agreements within the Mining Area are listed. Additional details for the agreements listed are as follows:

- A: Contract For Deed, dated November 15, 2005, between PolyMet and Cliffs Erie
- B: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- C: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- 1. Roadway Access License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 2. Trackage Rights and License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 3. Railroad License Agreement Cliffs Erie to PolyMet dated 12/20/2006
- 4. Colby Lake Corridor License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 5. Interpit Pipeline License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 6. Gas Pipeline License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 7. Electric Feeder License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 8. Septic Effluent Pipeline and Drain Field System License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 9. Easement from RGGG to PolyMet dated 10/5/2007

⁴ The "County Data Owner Name" column shows the owner name listed in the St. Louis County database as of October 2016, except where the dataset showed Lake Superior Realty (LSR) as an owner. With the exception of the four parcels referenced below, pursuant to Certificate of Title No. 312572, Cliffs Erie is the owner of all of the former LSR parcels within the Mining Area listed in this table (labeled in the table as Cliffs Erie LLC* where appropriate). With regard to the following former LSR parcels, Mesabi Nugget is the owner pursuant to the certificates referenced below:

- Parcel 570-0032-00640 – (SE SE 14-59-15) – Certificate of Title No. 325471
- Parcel 570-0032-00630 – (SW SE 14-59-15) – Certificate of Title No. 319795
- Parcel 570-0034-00050 – (NE NW 23-59-15) – Certificate of Title No. 325471
- Parcel 570-0034-00050 – (NW NW 23-59-15) – Certificate of Title No. 325471

⁵ References to State Leases reflect information in St. Louis County records. PolyMet requests from the DNR updated information as to whether the referenced States Leases are currently in effect and if so, the nature of the leases and the identification of the lessees.

Table 4
COLBY LAKE PIPELINE CORRIDOR SURFACE PROPERTY INTERESTS
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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
58 14 5 GOVT LOT 3	142-0070-00710	PolyMet - Ancillary Agreements with Cliffs	1	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	LOT 3
58 14 5 GOVT LOT 5	142-0070-00775	PolyMet - Contract for Deed	B	PolyMet	ALLETE INC	ALLETE INC	THAT PART OF GOV'T LOT 5 LYING SOUTHWESTERLY OF THE SOUTH LINE OF THE D M & IR RAILWAY
58 14 5 NW SW	142-0070-00760	PolyMet - Contract for Deed	B	PolyMet	CLIFFS MINING SERVICES CO	CLIFFS ERIE LLC	PART OF NW1/4 OF SW1/4 LYING NLY OF A LINE DRAWN PARALLEL WITH & 150 FT NLY OF THE FOLLOWING LINE BEG AT MINNESOTA STATE PLANE NORTH ZONE COORDINATES NORTHING 706873.42 FT EASTING 2858629.34 FT THENCE N48DEG45'36"W 1968.50 FT TO MN STATE PLANE NORTH ZONE
58 14 5 NW SW	142-0070-00830	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R/W ACROSS SEC 5
58 14 5 SE NW	142-0070-00740	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SE 1/4 OF NW 1/4
58 14 5 SW NW	142-0070-00730	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SW 1/4 OF NW 1/4
58 14 6 GOVT LOT 10	142-0070-01000	PolyMet - Contract for Deed	B	PolyMet	ALLETE INC	ALLETE INC	LOT 10
58 14 6 NE SE	142-0070-00960	PolyMet - Contract for Deed	B	PolyMet	ALLETE INC	ALLETE INC	NE 1/4 OF SE 1/4 EXCEPT .26 ACRES RR R/W
59 14 20 NE NW	142-0080-03290	Canadian National		PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NE SE	142-0080-03250	PolyMet - Ancillary Agreements with RGGGS	9	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	THAT PART OF NE 1/4 OF SE 1/4 LYING S AND W OF THE D AND I R RY RT OF WAY SURFACE ONL
59 14 20 NE SE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NW NE	142-0080-03290	Canadian National	4,5	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 NW SE	142-0080-03270	PolyMet - Ancillary Agreements with RGGGS	9	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	NW 1/4 OF SE 1/4 EX RY R OF W 1 04/100 AC SURFACE ONLY
59 14 20 NW SE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 SE NW	142-0080-03200	PolyMet - Ancillary Agreements with RGGGS	1	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	SE 1/4 OF NW 1/4 EX RY R OF W 04/100 AC SURFACE ONLY

Table 4
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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 20 SE NW	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 SE SE	142-0080-03285	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	4	PolyMet	STATE OF MINNESOTA	MESABI MINING	SE 1/4 OF SE 1/4 EX RY R OF WAY STATE LEASE
59 14 20 SE SE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 20 SW NE	142-0080-03150	PolyMet - Ancillary Agreements with RGGGS	9	PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	SW 1/4 OF NE 1/4 EX RY R OF W 5 60/100 AC SURFACE ONLY
59 14 20 SW NE	142-0080-03290	Canadian National	4	PolyMet	UNKNOWN	UNKNOWN	RY R OF WAY ACROSS SECTION 20
59 14 29 NE NE	142-0080-04520	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	UND 7/18 NE 1/4 OF NE 1/4 SURFACE ONLY
59 14 29 NE NE	142-0080-04523	STATE OF MN; PolyMet Ancillary Agreements with Cliffs	4	PolyMet	ST OF MN C278 L35	MESABI MINING	UND 11/18 NE1/4 OF NE1/4 SURFACE AND MINERALS STATE MINERAL LEASE TO ERIE MINING CO BOX 847 HOYT LAKES MN 9-6-47 TO THE YEAR 2022
59 14 29 NE SE	142-0080-04640	PolyMet - Ancillary Agreements with RGGGS		PolyMet	RGGGS LAND & MINERALS LTD LP	RGGGS LAND & MINERALS LTD LP	UND 1/8 NE1/4 OF SE1/4 SURFACE ONLY
59 14 29 NE SE	142-0080-04641	ST OF MN C278 L35		PolyMet	ST OF MN C278 L35	ST OF MN C278 L35	UND 7/8 NE1/4 OF SE1/4 STATE LEASE
59 14 29 SE NE	142-0080-04558	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SE 1/4 OF NE 1/4
59 14 29 SE SE	142-0080-04670	PolyMet - Ancillary Agreements with RGGGS		PolyMet	ERIE MINING CO ETAL	RGGGS LAND & MINERALS LTD LP	UND 1/8 SE1/4 OF SE1/4
59 14 29 SE SE	142-0080-04671	ST OF MN C278 L35		PolyMet	ST OF MN C278 L35	ST OF MN C278 L35	UND 7/8 SE1/4 OF SE1/4 STATE LEASE
59 14 32 NE NE	142-0080-05020	STATE OF MN; PolyMet Ancillary Agreements with Cliffs		PolyMet	ST OF MN C278 L35	ST OF MN C278 L35	NE 1/4 OF NE 1/4 STATE LEASE #T-5077-N
59 14 32 NW SE	142-0080-05150	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	NW 1/4 OF SE 1/4
59 14 32 SE NE	142-0080-05050	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SE 1/4 OF NE 1/4
59 14 32 SE SW	142-0080-05130	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SE 1/4 OF SW 1/4

Table 4
COLBY LAKE PIPELINE CORRIDOR SURFACE PROPERTY INTERESTS
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T R S QQ ¹	Parcel Number	Owner / Interest Holder ²	Agreement ³	Future Owner / Interest Holder	County Data Owner Name ⁴	County Data Taxpayer Name	Legal Description ⁵
59 14 32 SW NE	142-0080-05040	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SW 1/4 OF NE 1/4
59 14 32 SW SE	142-0080-05160	PolyMet - Ancillary Agreements with Cliffs	4	PolyMet	CLIFFS MINING SERVICES CO	MESABI MINING	SW 1/4 OF SE 1/4

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² The "Owner / Interest Holder" column corresponds to the property interests displayed on Figures 4-1 through 4-4 of the Permit to Mine Application and is based on the best information available at the time of application development.

³ The "Agreement" column provides documentation of PolyMet agreements related to surface interests. Letter designations reference Contracts for Deed between PolyMet and Cliffs Erie. USFS land exchange areas are identified as "USFS LDV Land Exchange #4544". Numbers designate ancillary agreements with Cliffs Erie or other owners. Only agreements within the Mining Area are listed. Additional details for the agreements listed are as follows:

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- B: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
- C: Contract For Deed, dated December 20, 2006, between PolyMet and Cliffs Erie
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- 2. Trackage Rights and License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 3. Railroad License Agreement Cliffs Erie to PolyMet dated 12/20/2006
- 4. Colby Lake Corridor License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 5. Interpit Pipeline License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 6. Gas Pipeline License Agreement (Cliffs Erie to PolyMet) dated 11/15/2005
- 7. Electric Feeder License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 8. Septic Effluent Pipeline and Drain Field System License Agreement (Cliffs Erie to PolyMet) dated 12/20/2006
- 9. Easement from RGGGS to PolyMet dated 10/5/2007

⁴ The "County Data Owner Name" column shows the owner name listed in the St. Louis County database as of October 2016, except where the dataset showed Lake Superior Realty (LSR) as an owner. With the exception of the four parcels referenced below, pursuant to Certificate of Title No. 312572, Cliffs Erie is the owner of all of the former LSR parcels within the Mining Area listed in this table (labeled in the table as Cliffs Erie LLC* where appropriate). With regard to the following former LSR parcels, Mesabi Nugget is the owner pursuant to the certificates referenced below:

- Parcel 570-0032-00640 – (SE SE 14-59-15) – Certificate of Title No. 325471
- Parcel 570-0032-00630 – (SW SE 14-59-15) – Certificate of Title No. 319795
- Parcel 570-0034-00050 – (NE NW 23-59-15) – Certificate of Title No. 325471
- Parcel 570-0034-00050 – (NW NW 23-59-15) – Certificate of Title No. 325471

⁵ References to State Leases reflect information in St. Louis County records. PolyMet requests from the DNR updated information as to whether the referenced States Leases are currently in effect and if so, the nature of the leases and the identification of the lessees.

Table 5
MINE SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 11.1

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 13 01 GOVT LOT 2	RGGS	
59 13 01 GOVT LOT 3	RGGS	
59 13 01 GOVT LOT 4	RGGS	
59 13 01 NE SE	RGGS	
59 13 01 NE SW	RGGS	
59 13 01 NW SE	RGGS	
59 13 01 NW SW	RGGS	
59 13 01 SE NW	RGGS	
59 13 01 SE SE	USA	
59 13 01 SE SW	RGGS	
59 13 01 SW NE	RGGS	
59 13 01 SW NW	RGGS	
59 13 01 SW SE	RGGS	
59 13 01 SW SW	RGGS	
59 13 02 GOVT LOT 1	RGGS	
59 13 02 GOVT LOT 2	RGGS	
59 13 02 GOVT LOT 3	RGGS	
59 13 02 NE SE	RGGS	
59 13 02 NE SW	RGGS	
59 13 02 NW SE	RGGS	
59 13 02 NW SW	RGGS	
59 13 02 SE NE	RGGS	
59 13 02 SE NW	RGGS	
59 13 02 SE SE	RGGS	
59 13 02 SE SW	RGGS	
59 13 02 SW NE	RGGS	
59 13 02 SW NW	RGGS	
59 13 02 SW SE	RGGS	
59 13 02 SW SW	RGGS	
59 13 03 NE SE	RGGS	
59 13 03 NE SW	RGGS	
59 13 03 NW SE	RGGS	

Table 5
MINE SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 11.1

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 13 03 NW SW	RGGS	
59 13 03 SE NE	RGGS	
59 13 03 SE NW	RGGS	
59 13 03 SE SE	RGGS	
59 13 03 SE SW	RGGS	
59 13 03 SW NE	RGGS	
59 13 03 SW NW	RGGS	
59 13 03 SW SE	RGGS	
59 13 03 SW SW	RGGS	
59 13 04 NE SE	RGGS	
59 13 04 NW SE	RGGS	
59 13 04 SE SE	RGGS	
59 13 04 SE SW	RGGS	
59 13 04 SW SE	RGGS	
59 13 08 NE SE	RGGS	
59 13 08 SE NE	RGGS	
59 13 08 SE SE	RGGS	
59 13 09 NE NE	RGGS	
59 13 09 NE NW	RGGS	
59 13 09 NE SE	RGGS	
59 13 09 NE SW	RGGS	
59 13 09 NW NE	RGGS	
59 13 09 NW NW	RGGS	
59 13 09 NW SE	RGGS	
59 13 09 NW SW	RGGS	
59 13 09 SE NE	RGGS	
59 13 09 SE NW	RGGS	
59 13 09 SE SE	RGGS	
59 13 09 SE SW	RGGS	
59 13 09 SW NE	RGGS	
59 13 09 SW NW	RGGS	
59 13 09 SW SE	Longyear/Longyear Mesaba	

Table 5
MINE SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 11.1

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 13 09 SW SW	RGGS	
59 13 10 NE NE	RGGS	
59 13 10 NE NW	RGGS	
59 13 10 NE SE	RGGS	
59 13 10 NE SW	RGGS	
59 13 10 NW NE	RGGS	
59 13 10 NW NW	RGGS	
59 13 10 NW SE	RGGS	
59 13 10 NW SW	Longyear/Longyear Mesaba	
59 13 10 SE NE	RGGS	
59 13 10 SE NW	RGGS	
59 13 10 SE SE	State of Minnesota (by forfeiture)	
59 13 10 SE SW	RGGS	
59 13 10 SW NE	RGGS	
59 13 10 SW NW	RGGS	
59 13 10 SW SE	State of Minnesota	
59 13 10 SW SW	Longyear/Longyear Mesaba	
59 13 11 NE NE	RGGS	
59 13 11 NE NW	RGGS	
59 13 11 NE SW	RGGS	
59 13 11 NW NE	RGGS	
59 13 11 NW NW	RGGS	
59 13 11 NW SW	RGGS	
59 13 11 SE NW	RGGS	
59 13 11 SW NE	RGGS	
59 13 11 SW NW	RGGS	
59 13 12 NE NE	RGGS	
59 13 12 NE NW	RGGS	
59 13 12 NW NE	USA	
59 13 12 NW NW	RGGS	
59 13 12 SE NE	RGGS	
59 13 12 SE NW	RGGS	

Table 5
MINE SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 11.1

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 13 12 SW NE	RGGS	
59 13 12 SW NW	RGGS	
59 13 15 NE NE	State of Minnesota	
59 13 15 NE NW	RGGS	
59 13 15 NW NE	State of Minnesota	
59 13 15 NW NW	James Marra (deceased) - State claims ownership	

¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations.

² Certain parcels may have fractionalized ownership. In such instances, Figures 4-5 through 4-8 in the Permit to Mine Application show the majority owner when the majority owner is known. Otherwise these areas are identified as fractionalized ownership. Fractionalized owners, when known, are shown in the "Additional Ownership" column.

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 02 GOVT LOT 4	Cliffs Erie	
59 14 02 SW NW	State of Minnesota	
59 14 02 SW SW	Glacier Park	
59 14 03 GOVT LOT 1 (NE NE)	Supec Investment Co	
59 14 03 GOVT LOT 2	Cliffs Erie	
59 14 03 GOVT LOT 3	Fractionalized Owners	Marcia A Stephens undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 03 GOVT LOT 4 (NW NW)	Fractionalized Owners	
59 14 03 NE SE	Stephens Family	
59 14 03 NE SW	Stephens Family	
59 14 03 NW SE	Stephens Family	
59 14 03 NW SW	Stephens Family	
59 14 03 SE NE	State of Minnesota	
59 14 03 SE NW	State of Minnesota	
59 14 03 SE SE	Stephens Family	
59 14 03 SE SW	Stephens Family	
59 14 03 SW NE	State of Minnesota	
59 14 03 SW NW	State of Minnesota	
59 14 03 SW SE	Stephens Family	
59 14 03 SW SW	Stephens Family	
59 14 04 GOVT LOT 1	RGGS	
59 14 04 GOVT LOT 2	Stephens Family	
59 14 04 GOVT LOT 3	Stephens Family	
59 14 04 GOVT LOT 4	Stephens Family	
59 14 04 NE SE	State of Minnesota	
59 14 04 NE SW	Florence Lieberman	

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 04 NW SE	State of Minnesota	
59 14 04 NW SW	State of Minnesota	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 04 SE NE	Stephens Family	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 04 SE NW	Stephens Family	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 04 SE SE	Stephens Family	
59 14 04 SE SW	State of Minnesota	
59 14 04 SW NE	State of Minnesota	
59 14 04 SW NW	State of Minnesota	
59 14 04 SW SE	State of Minnesota	
59 14 04 SW SW	State of Minnesota	

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 05 GOVT LOT 1	Stephens Family	
59 14 05 GOVT LOT 2	State of Minnesota	
59 14 05 GOVT LOT 3	State of Minnesota	Cliffs Erie LLC undivided 1/72 Cliffs Erie LLC undivided 1/288 Mesabi Nugget Delaware LLC undivided 1/2 Cliffs Erie LLC undivided 23/48 Heather Calderon, et al. undivided 1/288 Cliffs Erie LLC undivided 1/48 Shawn P. Sewell undivided 1/8 of undivided 1/144 Sheila A. Sewell undivided 1/8 of undivided 1/144 Jane Sewell Carnes undivided 1/8 of undivided 1/144 Andrew J. Sewell undivided 1/8 of undivided 1/144 Kathleen M. Sewell undivided 1/8 of undivided 1/144 Joanne Sewell Santa Cruz undivided 1/8 of undivided 1/144 Tess Sewell undivided 1/8 of undivided 1/144 Alexandra Sewell undivided 1/24 of undivided 1/144 Danielle Sewell undivided 1/24 of undivided 1/144 Calista Sewell undivided 1/24 of undivided 1/144 Range Mining Properties LLC undivided 1/6 Douglas Heirs Land Company LLC undivided 1/4 Linda Bell Pollard undivided 2/96 Frederick Robinson Parker undivided 1/144 Elizabeth P. Young Trust undivided 1/144 Elizabeth P. Young, et al. undivided 1/144 Robert A. Young undivided 1/432 Robert P. Hiatt undivided 1/648 John Hiatt undivided 1/648 Thomas Hiatt undivided 1/648 Shawn P. Sewell undivided 1/8 of undivided 1/144 Sheila A. Sewell undivided 1/8 of undivided 1/144 Jane Sewell Carnes undivided 1/8 of undivided 1/144

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
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T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 05 GOVT LOT 4	Stephens Family	Andrew J. Sewell undivided 1/8 of undivided 1/144 Kathleen M. Sewell undivided 1/8 of undivided 1/144 Joanne Sewell Santa Cruz undivided 1/8 of undivided 1/144 Tess Sewell undivided 1/8 of undivided 1/144 Alexandra Sewell undivided 1/24 of undivided 1/144 Danielle Sewell undivided 1/24 of undivided 1/144 Calista Sewell undivided 1/24 of undivided 1/144 Range Mining Properties LLC undivided 1/6 Douglas Heirs Land Company LLC undivided 1/4 Linda Bell Pollard undivided 2/96 Frederick Robinson Parker undivided 1/144 Elizabeth P. Young Trust undivided 1/144 Elizabeth P. Young, et al. undivided 1/144 Robert A. Young undivided 1/432 Robert P. Hiatt undivided 1/648 John Hiatt undivided 1/648 Thomas Hiatt undivided 1/648 Shawn P. Sewell undivided 1/8 of undivided 1/144 Sheila A. Sewell undivided 1/8 of undivided 1/144 Jane Sewell Carnes undivided 1/8 of undivided 1/144 Andrew J. Sewell undivided 1/8 of undivided 1/144 Kathleen M. Sewell undivided 1/8 of undivided 1/144 Joanne Sewell Santa Cruz undivided 1/8 of undivided 1/144 Tess Sewell undivided 1/8 of undivided 1/144 Alexandra Sewell undivided 1/24 of undivided 1/144 Danielle Sewell undivided 1/24 of undivided 1/144 Calista Sewell undivided 1/24 of undivided 1/144

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 05 NE SE	State of Minnesota	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A. Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 05 NE SW	State of Minnesota	
59 14 05 NW SE	RGGS	
59 14 05 NW SW	State of Minnesota	State of Minnesota undivided 14/15 Cliffs Erie LLC undivided 1/15
59 14 05 SE NE	State of Minnesota	
59 14 05 SE NW	State of Minnesota	State of MN undivided 14/15 Cliffs Erie undivided 1/15
59 14 05 SE SE	State of Minnesota	
59 14 05 SE SW	State of Minnesota	
59 14 05 SW NE	State of Minnesota	
59 14 05 SW NW	State of Minnesota	
59 14 05 SW SE	State of Minnesota	
59 14 05 SW SW	Stephens Family	
59 14 08 NE NE	State of Minnesota	
59 14 08 NE NW	Stephens Family	
59 14 08 NE SE	Stephens Family	
59 14 08 NE SW	Cliffs Erie	
59 14 08 NW NE	State of Minnesota	
59 14 08 NW NW	Stephens Family	
59 14 08 NW SE	Stephens Family	
59 14 08 NW SW	Fiduciary Trust Co (Tupancy)	
59 14 08 SE NE	State of Minnesota	
59 14 08 SE NW	Stephens Family	

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
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T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 08 SE SE	Stephens Family	
59 14 08 SE SW	Cliffs Erie	
59 14 08 SW NE	State of Minnesota	
59 14 08 SW NW	Stephens Family	
59 14 08 SW SE	Stephens Family	
59 14 08 SW SW	RGGS	
59 14 09 NE NE	State of Minnesota	
59 14 09 NE NW	State of Minnesota	
59 14 09 NE SE	Cliffs Erie	
59 14 09 NE SW	Stephens Family	
59 14 09 NW NE	State of Minnesota	
59 14 09 NW NW	State of Minnesota	
59 14 09 NW SE	Cliffs Erie	
59 14 09 NW SW	Stephens Family	
59 14 09 SE NE	Stephens Family	
59 14 09 SE NW	Stephens Family	
59 14 09 SE SE	Cliffs Erie	
59 14 09 SE SW	Stephens Family	
59 14 09 SW NE	State of Minnesota	
59 14 09 SW NW	Stephens Family	
59 14 09 SW SE	Cliffs Erie	
59 14 09 SW SW	Stephens Family	
59 14 10 NE NE	Glacier Park	
59 14 10 NE NW	State of Minnesota	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
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T R S QQ¹	Majority Owner²	Additional Ownership
59 14 10 NE SE	Fiduciary Trust Co (Tupancy)	
59 14 10 NE SW	Stephens Family	
59 14 10 NW NE	State of Minnesota	
59 14 10 NW NW	State of Minnesota	
59 14 10 NW SE	State of Minnesota	
59 14 10 NW SW	Cliffs Erie	
59 14 10 SE NE	Stephens Family	
59 14 10 SE NW	Stephens Family	
59 14 10 SE SE	State of Minnesota (by forfeiture)	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 10 SE SW	State of Minnesota	
59 14 10 SW NE	Cliffs Erie	
59 14 10 SW NW	Stephens Family	
59 14 10 SW SE	State of Minnesota	
59 14 10 SW SW	State of Minnesota	
59 14 11 NW NW	Glacier Park Iron Ore Properties LLC	
59 14 11 NW SW	Susan and Thomas Haney (State may claim)	
59 14 11 SW NW	Fiduciary Trust Co (Tupancy)	
59 14 15 NE NE	DuNord Land Company	
59 14 15 NE NW	State of Minnesota	
59 14 15 NE SW	State of Minnesota	

Table 6
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T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 15 NW NE	DuNord	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
59 14 15 NW NW	State of Minnesota	
59 14 15 NW SW	State of Minnesota	
59 14 15 SE NW	State of Minnesota	
59 14 15 SW NE	State of Minnesota	
59 14 15 SW NW	Cliffs Erie LLC	
59 14 16 NE NE	State of Minnesota	
59 14 16 NE NW	State of Minnesota	
59 14 16 NE SE	State of Minnesota	
59 14 16 NE SW	State of Minnesota	
59 14 16 NW NE	State of Minnesota	
59 14 16 NW NW	State of Minnesota	
59 14 16 NW SE	State of Minnesota	
59 14 16 NW SW	State of Minnesota	
59 14 16 SE NE	State of Minnesota	
59 14 16 SE NW	State of Minnesota	
59 14 16 SE SE	State of Minnesota	
59 14 16 SW NE	State of Minnesota	
59 14 16 SW NW	State of Minnesota	
59 14 16 SW SE	State of Minnesota	
59 14 16 SW SW	State of Minnesota	
59 14 17 NE NE	Stephens Family	
59 14 17 NE NW	Stephens Family	
59 14 17 NE SE	Glacier Park	

Table 6
PLANT SITE MINERAL OWNERSHIP
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T R S QQ¹	Majority Owner²	Additional Ownership
59 14 17 NE SW	Glacier Park	
59 14 17 NW NE	Stephens Family	
59 14 17 NW NW	RGGS	
59 14 17 NW SE	Glacier Park	
59 14 17 NW SW	Fiduciary Trust Co (Tupancy)	
59 14 17 SE NE	Stephens Family	
59 14 17 SE NW	Stephens Family	
59 14 17 SE SE	Glacier Park	
59 14 17 SE SW	Glacier Park	
59 14 17 SW NE	Stephens Family	
59 14 17 SW NW	RGGS Land & Minerals Ltd LP	
59 14 17 SW SE	Glacier Park	
59 14 17 SW SW	Stephens Family	
59 14 18 GOVT LOT 1	RGGS Land & Minerals Ltd LP	
59 14 18 GOVT LOT 2	State of Minnesota	
59 14 18 GOVT LOT 3 (NW SW)	Mesabi Nugget Delaware LLC	
59 14 18 NE NW	RGGS Land & Minerals Ltd LP	
59 14 18 NE SE	RGGS	
59 14 18 NE SW	Fractionalized Owners	
59 14 18 NW SE	RGGS	
59 14 18 SE NE	RGGS Land & Minerals Ltd LP	
59 14 18 SE NW	RGGS Land & Minerals Ltd LP	
59 14 18 SE SE	RGGS	
59 14 18 SE SW	Fractionalized Owners	
59 14 18 SW NE	RGGS Land & Minerals Ltd LP	
59 14 18 SW SE	RGGS	
59 14 19 NE NE	Cliffs Erie LLC	
59 14 19 NE NW	Fiduciary Trust Co (Tupancy)	
59 14 19 NW NE	Cliffs Erie LLC	
59 14 19 SE NE	Cliffs Erie LLC	
59 14 20 NE NE	Carolyn Romberg Trust	

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 20 NE NW	Glacier Park	State of Minnesota (by forfeiture) undivided 1/8 George Rupley undivided 1/2 (State may claim as no statement of severed minerals filed) Ernie Potts undivided 3/8 (State may claim as no statement of severed minerals filed)
59 14 20 NE SE	RGGS	
59 14 20 NW NE	Cliffs Erie	State of Minnesota 1/24 Supec Investment Co 23/24 (no statement of severed minerals filed, State of Minnesota may claim)
59 14 20 NW NW	Burlington Northern Railroad Co	
59 14 20 NW SW	Mesabi Mining LLC	
59 14 20 SE NE	RGGS Land & Minerals Ltd LP	
59 14 20 SE SE	State of Minnesota	
59 14 20 SE SW	Mesabi Mining LLC, RGGS Land & Minerals Ltd LP	
59 14 20 SW NW	Mesabi Mining LLC	
59 14 20 SW SE	Glacier Park Iron Ore Properties LLC	
59 14 20 SW SW	Mesabi Mining LLC	
59 14 21 NE NE	State of Minnesota	
59 14 21 NE NW	Glacier Park Iron Ore Properties LLC	
59 14 21 NW NE	Glacier Park Iron Ore Properties LLC	
59 14 21 NW NW	RGGS Land & Minerals Ltd LP	
59 14 21 SW NW	RGGS Land & Minerals Ltd LP	
59 14 21 SW SW	Glacier Park Iron Ore Properties LLC	
59 14 22 NE SE	State of Minnesota	
59 14 22 NE SW	State of Minnesota	
59 14 22 NW SE	Fiduciary Trust Co (Tupancy)	
59 14 23 NE NE	State of Minnesota	
59 14 23 NE SW	State of Minnesota	
59 14 23 NW NE	State of Minnesota	
59 14 23 NW SW	State of Minnesota	
59 14 23 SE NW	State of Minnesota	

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
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T R S QQ¹	Majority Owner²	Additional Ownership
59 14 23 SW NE	State of Minnesota	
59 14 28 NE NW	Fiduciary Trust Co (Tupancy)	
59 14 28 NW NW	State of Minnesota	
59 14 28 SE NE	State of Minnesota	
59 14 28 SE NW	RGGS	
59 14 28 SW NE	State of Minnesota	
59 14 29 NE NW	Cliffs Erie LLC	
59 14 29 NW NE	State of Minnesota	
59 15 13 NE NE	State of Minnesota (by forfeiture)	
59 15 13 NE SE	Mesabi Nugget Delaware LLC	
59 15 13 NE SW	Fiduciary Trust Co (Tupancy)	
59 15 13 NW SE	Mesabi Nugget Delaware LLC	
59 15 13 NW SW	Fiduciary Trust Co (Tupancy)	
59 15 13 SE NE	State of Minnesota (by forfeiture)	
59 15 13 SW NE	State of Minnesota (by forfeiture)	
59 15 13 SW SW	Fiduciary Trust Co (Tupancy)	
59 15 14 SE SE	State of Minnesota	
59 15 14 SW SE	RGGS Land & Minerals Ltd LP	
59 15 22 NE NE	State of Minnesota (by forfeiture)	
59 15 23 NE NW	RGGS Land & Minerals Ltd LP	
59 15 23 NW NE	Fiduciary Trust Co (Tupancy)	
59 15 23 NW NW	State of Minnesota (by forfeiture)	
60 14 32 NE SE	RGGS	
60 14 32 NE SW	RGGS	
60 14 32 NW SE	RGGS	
60 14 31 SE SE	State of Minnesota	
60 14 32 SE SE	Cliffs Erie	
60 14 32 SE SW	RGGS	
60 14 32 SW SE	RGGS	
60 14 32 SW SW	RGGS	

Table 6
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T R S QQ ¹	Majority Owner ²	Additional Ownership
60 14 33 NE SE	RGGS	Cliffs Erie LLC undivided 1/2 of undivided 23/43 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
60 14 33 NE SW	RGGS	
60 14 33 NW SE	RGGS	
60 14 33 NW SW	RGGS	

Table 6
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T R S QQ ¹	Majority Owner ²	Additional Ownership
60 14 33 SE SE	RGGGS	State of Minnesota undivided 1244/3456 Alexandra Scott Rupert undivided 63/3456 Royal D Alworth Trust undivided 96/3456 Alworth Memorial Fund undivided 576/3456 C Russell McLean Jr undivided 256/100,000 Gertrude Robinson undivided 192/3456 Washburn Trust undivided 120/3456 Dorothy M Williams undivided 8/3456 Caroline L Martineau, et al undivided 63/3456 Richard Williams, et al undivided 8/3456 William C Ulland undivided 4/162 Caroline L Martineau, et al undivided 63/3456 Cliffs Erie LLC undivided 1/864 Cliffs Erie LLC undivided 1/432 Cliffs Erie LLC undivided 1/864 RGGGS Land & Minerals Ltd undivided 96/3456 Pioneer Founders LLC undivided 30/216 William C Ulland undivided 1/2 of undivided 5/162 William C Ulland undivided 1/2 of undivided 5/162 Alexandra Korupp undivided 1/2 of undivided 63/3456 John Korupp undivided 1/2 of undivided 63/3456 Cliffs Erie LLC undivided 272/3456 in minerals, except an undivided 96/3456 interest in all iron ore and other ores and mineral deposits lying and being below an elevation of 1202 above mean sea level.

Table 6
PLANT SITE MINERAL OWNERSHIP
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Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
60 14 33 SE SW	Cliffs Erie	Cliffs Erie LLC undivided 1/2 of undivided 23/243 Marcia A Stephens undivided 1/2 of undivided 23/243 John Stephens Trust undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline Stephens Sperry undivided 23/243 Jacqueline Stephens Sperry undivided 23/243 (some of the above may have fractional interests that have forfeited)
60 14 33 SW SE	Cliffs Erie	
60 14 33 SW SW	Cliffs Erie	
60 14 34 NE SE	RGGGS Land & Minerals Ltd LP	
60 14 34 NE SW	RGGGS	Erie Mining Co. undivided 1/2 of undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 58/81 Jacqueline S. Sperry undivided 23/243 Jacqueline S. Sperry undivided 23/243 Fiduciary Trust Co (Tupancy) undivided 19/81 Fiduciary Trust Co (Tupancy) undivided 20/81 Marcia A. Stephens undivided 23/486
60 14 34 NW SE	RGGGS	
60 14 34 NW SW	RGGGS	
60 14 34 SE SE	State of Minnesota	Erie Mining Co. undivided 1/2 of undivided 23/243 Stephens Properties Trust undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 (forfeiture shows of record) Fiduciary Trust Co (Tupancy) undivided 19/81 (forfeiture shows of record) Stephens Properties Trust undivided 58/81 Jacqueline Sperry undivided 23/243 Jacqueline Sperry undivided 23/243 (forfeiture shows of record)

Table 6
PLANT SITE MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
60 14 34 SE SW	RGGS	Erie Mining Co. undivided 1/2 of undivided 23/243 Stephens Properties Trust undivided 20/81 Fiduciary Trust Co (Tupancy) undivided 19/81 (forfeiture shows of record) Fiduciary Trust Co (Tupancy) undivided 19/81 (forfeiture shows of record) Stephens Properties Trust undivided 58/81 Jacqueline Sperry undivided 23/243 Jacqueline Sperry undivided 23/243 (forfeiture shows of record)
60 14 34 SW SE	RGGS	
60 14 34 SW SW	RGGS	
60 15 36 NE SE	State of Minnesota	
60 15 36 NW SE	State of Minnesota	
60 15 36 SE NE	State of Minnesota	
60 15 36 SW NE	State of Minnesota	

¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations.

² Certain parcels may have fractionalized ownership. In such instances, Figures 4-5 through 4-8 in the Permit to Mine Application show the majority owner when the majority owner is known. Otherwise these areas are identified as fractionalized ownership. Fractionalized owners, when known, are shown in the "Additional Ownership" column.

Table 7
TRANSPORTATION AND UTILITY CORRIDORS MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ¹	Majority Owner²	Additional Ownership
59 13 16 NE NE	State of Minnesota	
59 13 16 NE NW	State of Minnesota	
59 13 16 NW NE	State of Minnesota	
59 13 16 NW NW	State of Minnesota	
59 13 16 NW SW	State of Minnesota	
59 13 16 SE NW	State of Minnesota	
59 13 16 SW NE	State of Minnesota	
59 13 16 SW NW	State of Minnesota	
59 13 17 NE NE	RGGS	
59 13 17 NE NW	RGGS	
59 13 17 NE SE	RGGS	
59 13 17 NE SW	Longyear/Longyear Mesaba	
59 13 17 NW NE	RGGS	
59 13 17 NW SE	RGGS	
59 13 17 NW SW	Longyear/Longyear Mesaba	
59 13 17 SE NW	Longyear/Longyear Mesaba	
59 13 17 SE SW	Longyear/Longyear Mesaba	
59 13 17 SW NW	Longyear/Longyear Mesaba	
59 13 17 SW SW	Longyear/Longyear Mesaba	
59 13 18 GOVT LOT 3	RGGS	
59 13 18 GOVT LOT 4	Longyear/Longyear Mesaba	
59 13 18 NE SE	Longyear/Longyear Mesaba	
59 13 18 NE SW	RGGS	
59 13 18 NW SE	Longyear/Longyear Mesaba	
59 13 18 SE SE	Longyear/Longyear Mesaba	
59 13 18 SE SW	Longyear/Longyear Mesaba	
59 13 18 SW SE	Longyear/Longyear Mesaba	
59 14 13 NE SE	RGGS	
59 14 13 NE SW	James Prest	
59 14 13 NW SE	State of Minnesota	
59 14 13 NW SW	James Prest	
59 14 13 SE SE	RGGS	

Table 7
TRANSPORTATION AND UTILITY CORRIDORS MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 13 SW SE	RGGS	
59 14 14 NE NW	DuNord Land Company	
59 14 14 NE SE	State of Minnesota	
59 14 14 NE SW	State of Minnesota	
59 14 14 NW NW	State of Minnesota	State of Minnesota undivided one-half (1/2) State of Minnesota undivided one-half (1/2)
59 14 14 NW SE	State of Minnesota	
59 14 14 NW SW	State of Minnesota	
59 14 14 SE NE	State of Minnesota	
59 14 14 SE NW	State of Minnesota	
59 14 14 SE SE	State of Minnesota	
59 14 14 SW NE	State of Minnesota	
59 14 14 SW NW	State of Minnesota	
59 14 14 SW SE	State of Minnesota	
59 14 15 NE NE	DuNord Land Company	
59 14 15 NE SE	State of Minnesota	
59 14 15 NW NE	DuNord	
59 14 15 SE NE	State of Minnesota	
59 14 15 SE NW	State of Minnesota	
59 14 15 SW NE	State of Minnesota	
59 14 23 NE NE	State of Minnesota	
59 14 23 SE NE	State of Minnesota	
59 14 24 NE NW	RGGS - Encampment	
59 14 24 NW NE	RGGS - Encampment	
59 14 24 NW NW	RGGS - Encampment	
59 14 24 SW NW	RGGS	

¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations.

² Certain parcels may have fractionalized ownership. In such instances, Figures 4-5 through 4-8 in the Permit to Mine Application show the majority owner when the majority owner is known. Otherwise these areas are identified as fractionalized ownership. Fractionalized owners, when known, are shown in the "Additional Ownership" column.

Table 8
COLBY LAKE PIPELINE CORRIDOR MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ¹	Majority Owner²	Additional Ownership
58 14 05 GOVT LOT 3	State of Minnesota	
58 14 05 GOVT LOT 5	Fractionalized Owners	
58 14 05 NW SW	Stephens Family	
58 14 05 SE NW	Stephens Family	
58 14 05 SW NW	Stephens Family	
58 14 06 GOVT LOT 10	Fractionalized Owners	
58 14 06 NE SE	State of Minnesota	
59 14 20 NE NW	Glacier Park	
59 14 20 NE SE	RGGS	
59 14 20 NW NE	Cliffs Erie	
59 14 20 NW SE	RGGS	
59 14 20 SE NW	RGGS	
59 14 20 SE SE	State of Minnesota	
59 14 20 SW NE	RGGS	

Table 8
COLBY LAKE PIPELINE CORRIDOR MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 29 NE NE	Fractionalized Owners	State of Minnesota undivided 219/432 Alexandra S. Rupert undivided 45/1728 Royal D. Alworth Trust undivided 12/432 Alworth Memorial Fund undivided 72/432 C. Russell McLean Jr. undivided 231/75,000 Washburn Trust of 1980 undivided 18/432 except undivided 231/75,000 Dorothy M. Williams undivided 1/360 Caroline L. Martineau, et al. undivided 45/1728 Richard and Beverly Williams undivided 1/360 Caroline L. Martineau, et al. undivided 45/1728 Cliffs Erie LLC undivided 1/720 Cliffs Erie LLC undivided 1/360 Cliffs Erie LLC undivided 1/360 Cliffs Erie LLC undivided 1/720 RGGGS Land & Minerals Ltd LP undivided 180/1728 Alexandra Korupp undivided 1/2 of undivided 45/1728 John Korupp undivided 1/2 of undivided 45/1728 Pioneer Founders LLC undivided 30/216

Table 8
COLBY LAKE PIPELINE CORRIDOR MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
59 14 29 NE SE	Daniel Scott Cash and State of Minnesota	State of Minnesota undivided 11/18 except undivided 17/48 Alexandra S. Rupert undivided 1/192 Royal D. Alworth Trust undivided 2/72 Alworth Memorial Fund undivided 1/6 C. Russell McLean Jr. undivided 308/100,000 Washburn Trust of 1980 undivided 3/72 except undivided 308/100,000 Dorothy M. Williams undivided 1/360 Johnson Minerals Inc. undivided 1/6 JER Minerals Inc. undivided 1/6 Caroline L. Martineau, et al. undivided 1/192 Richard and Beverly Williams undivided 1/360 Caroline L. Martineau, et al. undivided 1/192 Cliffs Erie LLC undivided 1/720 Cliffs Erie LLC undivided 1/360 Cliffs Erie LLC undivided 1/720 Mesabi Mining LLC undivided 1/360 Alexandra Korupp undivided 1/2 of undivided 1/192 John Korupp undivided 1/2 of undivided 1/192 Pioneer Founders LLC undivided 30/216
59 14 29 SE NE	Fractionalized Owners	
59 14 29 SE SE	Daniel Scott Cash and State of Minnesota	
59 14 32 NE NE	State of Minnesota	
59 14 32 NW SE	DuNord	
59 14 32 SE NE	RGGS	
59 14 32 SE SW	DuNord	
59 14 32 SW NE	Stephens Family	
59 14 32 SW SE	DuNord	

Table 8
COLBY LAKE PIPELINE CORRIDOR MINERAL OWNERSHIP
NorthMet Project
Appendix 1.11

T R S QQ ¹	Majority Owner ²	Additional Ownership
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¹ "T" is Township, "S" is Section, "R" is Range, and "QQ" is Quarter-Quarter. These are Public Land Survey System (PLSS) designations.

² Certain parcels may have fractionalized ownership. In such instances, Figures 4-5 through 4-8 in the Permit to Mine Application show the majority owner when the majority owner is known. Otherwise these areas are identified as fractionalized ownership. Fractionalized owners, when known, are shown in the "Additional Ownership" column.

Appendix 1.12

Well Logs

513433

County St. Louis
 Quad Allen
 Quad ID 318D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 02/17/1994
 Update Date 11/28/2016
 Received Date

Well Name MW-20	Township 59	Range 14	Dir Section W 15	Subsection BCCAAA	Well Depth 22 ft.	Depth Completed 20.5 ft.	Date Well Completed 10/24/1992		
Elevation 1667.7	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid			
Address					Use monitor well	Status Active			
Contact P.O. BOX 847 HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/> From To				
Well HOYT LAKES MN 55750					Casing Type Single casing Joint				
Stratigraphy Information					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below				
Geological Material	From	To (ft.)	Color	Hardness	Casing Diameter	Weight	Hole Diameter		
FINE SAND & MINE	0	9	BROWN		2 in. To	10.5 ft. lbs./ft.	10 in. To 22 ft.		
F-C SAND MED. DENSE	9	11	BROWN						
SANDY SILT MED.	11	14	BROWN						
SILTY SAND MED.	14	22	RED/BRN						
					Open Hole	From	ft.	To	ft.
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON		
					Diameter	Slot/Gauze	Length	Set	
					2 in.	10	10 ft.	10.5 ft. 20.5 ft.	
					Static Water Level				
					12.2 ft.	land surface	Measure	10/24/1992	
					Pumping Level (below land surface)				
					Wellhead Completion				
					Pitless adapter manufacturer		Model		
					<input checked="" type="checkbox"/> Casing Protection	<input type="checkbox"/> 12 in. above grade			
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)				
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified				
					Material	Amount	From	To	
					neat cement	4 Sacks	ft. 7.5	ft.	
					Nearest Known Source of Contamination				
					feet	Direction	Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No				
					Pump <input type="checkbox"/> Not Installed	Date Installed			
					Manufacturer's name				
					Model Number	HP	Volt		
					Length of drop pipe	ft	Capacity	g.p. Typ	
					Abandoned				
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No				
					Variance				
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No				
					Miscellaneous				
					First Bedrock	Aquifer	Quat. Water		
					Last Strat sand+silt	Depth to Bedrock	ft		
					Located by Minnesota Geological Survey				
					Locate Method Digitization (Screen) - Map (1:12,000)				
					System UTM - NAD83, Zone 15, Meters	X 566527	Y 5272112		
					Unique Number Verification	Site Plan	Input Date	03/07/2016	
					Angled Drill Hole				
					Well Contractor				
					Sts Consultants Ltd.	M0022	ZEHNDER, D.		
					Licensee Business	Lic. or Reg. No.	Name of Driller		
Remarks									
Minnesota Well Index Report					513433				
					Printed on 04/28/2017 HE-01205-15				

513435County St. Louis
Quad Allen
Quad ID 318DMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date 02/17/1994
Update Date 11/28/2016
Received Date

Well Name MW-5B	Township 59	Range 14	Dir Section W 15	Subsection BBABCD	Well Depth 11 ft.	Depth Completed 9.4 ft.	Date Well Completed 10/26/1992
Elevation 1683.0	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact P.O. BOX 847 HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/> From To		
Well HOYT LAKES MN 55750					Casing Type Single casing Joint		
Stratigraphy Information					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
F-C SAND DENSE		0	11	BROWN		2 in. To 4.4 ft. lbs./ft.	10 in. To 11 ft.
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type slotted pipe Make JOHNSON		
					Diameter Slot/Gauze Length Set		
					2 in. 10 5 ft. 4.4 ft. 9.4 ft.		
					Static Water Level		
					6 ft. land surface Measure 10/26/1992		
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Aquifer Quat. Water		
					Last Strat sand-brown Depth to Bedrock ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters X 566567 Y 5272228		
					Unique Number Verification Site Plan Input Date 03/07/2016		
					Angled Drill Hole		
					Well Contractor		
					Sts Consultants Ltd. M0022 ZEHNDER, D.		
					Licensee Business Lic. or Reg. No. Name of Driller		

513436

County St. Louis
 Quad Allen
 Quad ID 318D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 02/17/1994
 Update Date 11/28/2016
 Received Date 12/23/1992

Well Name MW-4B	Township 59	Range 14	Dir Section W 15	Subsection BBACBA	
Elevation 1677.6	Elev. Method	LiDAR 1m DEM (MNDNR)			
Address					
Contact P.O. BOX 847 HOYT LAKES MN 55750					
Well HOYT LAKES MN 55750					
Stratigraphy Information					
Geological Material	From	To (ft.)	Color	Hardness	
SAND, COBBLES &	0	5	BROWN		
F-C SAND MED. DENSE	5	9	GRY/BRN		
FINE SAND MED.	9	12	GRY/BRN		
Well Depth 12 ft. Depth Completed 7.6 ft. Date Well Completed 10/26/1992					
Drill Method Auger (non-specified) Drill Fluid					
Use monitor well Status Sealed					
Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/> From To					
Casing Type Single casing Joint					
Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below					
Casing Diameter 2 in. Weight 2.6 lbs./ft. Hole Diameter 10 in. To 12 ft.					
Open Hole From ft. To ft.					
Screen? <input checked="" type="checkbox"/> Type slotted pipe Make JOHNSON					
Diameter Slot/Gauze Length Set					
2 in. 10 5 ft. 2.6 ft. 7.6 ft.					
Static Water Level					
3.5 ft. land surface Measure 10/26/1992					
Pumping Level (below land surface)					
Wellhead Completion					
Pitless adapter manufacturer Model					
<input checked="" type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade					
<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)					
Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified					
Material Amount From To					
neat cement 3 Sacks ft. 2 ft.					
Nearest Known Source of Contamination					
feet Direction Type					
Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Pump <input checked="" type="checkbox"/> Not Installed Date Installed					
Manufacturer's name					
Model Number HP Volt					
Length of drop pipe ft Capacity g.p. Typ					
Abandoned					
Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Variance					
Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Miscellaneous					
First Bedrock Aquifer Quat. Water					
Last Strat sand Depth to Bedrock ft					
Located by Minnesota Geological Survey					
Locate Method Digitization (Screen) - Map (1:12,000)					
System UTM - NAD83, Zone 15, Meters X 566572 Y 5272198					
Unique Number Verification Site Plan Input Date 03/07/2016					
Angled Drill Hole					
Well Contractor					
Sts Consultants Ltd. M0022 ZEHNDER, D.					
Licensee Business Lic. or Reg. No. Name of Driller					

Remarks
 MW-4B, STS #94000E
 SEALED 07-01-2007 BY 2148. PREVIOUS USE: MW.

551772

County St. Louis
 Quad
 Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 04/02/2013
 Received Date 11/23/1994

Well Name MW-2	Township 59	Range 14	Dir Section W 8	Subsection DBC	Well Depth 104 ft.	Depth Completed 104 ft.	Date Well Completed 10/26/1994	
Elevation	Elev. Method				Drill Method Driven	Drill Fluid Water		
Address					Use monitor well	Status Active		
Contact P.O. BOX 847 HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/> From To			
Well 666 HY N MN					Casing Type Single casing Joint Threaded			
Stratigraphy Information					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below			
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter		
TACONITE TAILINGS		0	104	GRAY		4 in. To 82.6 ft. 10.5 lbs./ft.	4 in. To 104 ft.	
					Open Hole From ft. To ft.			
					Screen? <input checked="" type="checkbox"/> Type Make COOK			
Diameter		Slot/Gauze	Length	Set				
3 in.		12	21.6 ft.	82.6 ft. 104 ft.				
Static Water Level					Measure 10/26/1994			
75.6 ft. land surface								
Pumping Level (below land surface)								
Wellhead Completion								
Pitless adapter manufacturer					Model			
<input type="checkbox"/> Casing Protection					<input checked="" type="checkbox"/> 12 in. above grade			
<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)								
Grouting Information					Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified			
Material		Amount		From	To			
bentonite		3 Sacks			ft. 80	ft.		
Nearest Known Source of Contamination								
feet		Direction		Type				
Well disinfected upon completion?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Pump <input checked="" type="checkbox"/> Not Installed					Date Installed			
Manufacturer's name								
Model Number			HP	Volt				
Length of drop pipe		ft	Capacity	g.p.	Typ			
Abandoned								
Does property have any not in use and not sealed well(s)?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Variance								
Was a variance granted from the MDH for this well?					<input type="checkbox"/> Yes <input type="checkbox"/> No			
Miscellaneous								
First Bedrock				Aquifer				
Last Strat				Depth to Bedrock				
ft								
Located by								
Locate Method								
System		UTM - NAD83, Zone 15, Meters		X	Y			
Unique Number Verification					Input Date			
Angled Drill Hole								
Well Contractor								
Petersen Well Co.			69183	PETERSEN, D.				
Licensee Business			Lic. or Reg. No.	Name of Driller				

584559

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 06/13/1997
 Update Date 01/12/2016
 Received Date

Well Name LTV STEEL	Township 59	Range 14	Dir Section W 18	Subsection CDAABD	Well Depth 406 ft.	Depth Completed 406 ft.	Date Well Completed 09/17/1996
Elevation 1669	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Air Rotary	Drill Fluid Water	
Address C/W 666 CR HOYT LAKES MN 55750					Use public supply/non-community	Status Sealed	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/>	From To	
					Casing Type Single casing	Joint	
					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
Geological Material					Casing Diameter	Weight	Hole Diameter
From To (ft.) Color Hardness					6 in. To 19 ft. 19.4 lbs./ft.	6 in. To 406 ft.	
SAND/BOULDERS 0 19 BROWN							
TACONITE (ORE) 19 25 GRAY SOFT							
TACONITE (ORE) VERY 25 27 BROWN SOFT							
TOCONITE (ORE) 27 31 BROWN SOFT							
TACONITE 31 65 GRAY SOFT							
TACOINTE 65 406 GRAY HARD							
					Open Hole From 19 ft. To 406 ft.		
					Screen? <input type="checkbox"/>	Type Make	
					Static Water Level 18.7 ft. land surface Measure 09/10/1996		
					Pumping Level (below land surface) 340 ft. 24 hrs. Pumping at 7.5 g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Material Amount From To bentonite 2 Sacks 0 ft. 19 ft.		
					Nearest Known Source of Contamination 50 feet North Direction Septic tank/drain field Type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed Date Installed 09/10/1996 Manufacturer's name GRUNDFOS Model Number 1653024 HP 3 Volt 460 Length of drop pipe 340 ft Capacity 12 g.p. Typ Submersible		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Biwabik Iron-Formation Aquifer Biwabik Iron- Last Strat Biwabik Iron-Formation Depth to Bedrock 19 ft Located by Minnesota Geological Survey Locate Method Digitization (Screen) - Map (1:24,000) System UTM - NAD83, Zone 15, Meters X 562306 Y 5271195 Unique Number Verification Information from Input Date 09/24/2003		
Remarks CASING BOTH THREADED AND WELDED. AREA 1 SHOP. WELL SEALED 12-02-1997 BY 69183 ORIGINAL USE PS - PUBLIC SUPPLY/NON-COMMUNITY					Angled Drill Hole		
					Well Contractor Petersen Well Co. 69183 CARLSON, M. Licensee Business Lic. or Reg. No. Name of Driller		
Minnesota Well Index Report					584559		Printed on 04/28/2017 HE-01205-15

County St. Louis
 Quad
 Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 03/18/2014
 Received Date

597383

Well Name MW-1	Township 59	Range 14	Dir Section W 8	Subsection DBB	Well Depth 126 ft.	Depth Completed 113 ft.	Date Well Completed 07/07/1998
Elevation	Elev. Method				Drill Method Auger (non-specified)	Drill Fluid Qwik gel	
Address C/W HOYT LAKES MN 55750					Use monitor well	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Geological Material From To (ft.) Color Hardness FINE TO COARSE 0 126 GRAY					Casing Type Single casing	Joint Threaded	
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
					Casing Diameter 4 in. To 93 ft.	Weight lbs./ft.	Hole Diameter 8 in. To 125 ft.
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type stainless	Make JOHNSON
					Diameter Slot/Gauze Length Set 4 in. 12 20 ft. 93 ft. 113 ft.		
					Static Water Level 89.3 ft. land surface	Measure	Date 07/07/1998
					Pumping Level (below land surface) ft. hrs. Pumping at g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model <input checked="" type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Material Amount From To neat cement ft. 88 ft.		
					Nearest Known Source of Contamination feet Direction Type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name Model Number HP Volt Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Miscellaneous First Bedrock Aquifer Last Strat Depth to Bedrock ft Located by Locate Method System UTM - NAD83, Zone 15, Meters X Y Unique Number Verification Input Date		
Remarks					Angled Drill Hole		
					Well Contractor American Eng Testing M0063 ANDERSON,L. Licensee Business Lic. or Reg. No. Name of Driller		

597384

County St. Louis

Quad

Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date

Update Date 01/11/2013

Received Date

Well Name MW-3	Township 59	Range 14	Dir Section W 8	Subsection DBB	Well Depth 125 ft.	Depth Completed 124 ft.	Date Well Completed 07/09/1998	
Elevation C/W					Elev. Method HOYT LAKES MN 55750		Drill Method Non-specified Rotary	Drill Fluid Qwik gel
Address C/W HOYT LAKES MN 55750					Use abandoned		Status Sealed	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Geological Material From To (ft.) Color Hardness					From To			
F-C TAILINGS 0 125 GRAY					Casing Type Single casing <input type="checkbox"/> Joint Threaded <input type="checkbox"/>			
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below			
					Casing Diameter 4 in. To 104 ft.		Weight lbs./ft.	Hole Diameter 8 in. To 125 ft.
					Open Hole From ft. To ft.			
					Screen? <input checked="" type="checkbox"/> Type stainless Make JOHNSON			
					Diameter Slot/Gauze Length Set			
					4 in. 12 20 ft. 104 ft. 124 ft.			
					Static Water Level 90.9 ft. land surface Measure 07/09/1998			
					Pumping Level (below land surface) ft. hrs. Pumping at g.p.m.			
					Wellhead Completion Pitless adapter manufacturer Model			
					<input checked="" type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade			
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified			
					Material Amount From To			
					neat cement ft. 92 ft.			
					Nearest Known Source of Contamination feet Direction Type			
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed			
					Manufacturer's name			
					Model Number HP		Volt	
					Length of drop pipe ft Capacity		g.p. Typ	
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Miscellaneous First Bedrock Aquifer			
					Last Strat Depth to Bedrock		ft	
					Located by			
					Locate Method			
					System UTM - NAD83, Zone 15, Meters X		Y	
					Unique Number Verification		Input Date	
					Angled Drill Hole			
					Well Contractor American Eng Testing M0063 ANDERSON,L. Licensee Business Lic. or Reg. No. Name of Driller			

625042

County St. Louis
 Quad Embarrass
 Quad ID 318B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 10/31/2001
 Update Date 07/20/2015
 Received Date

Well Name MW-1	Township 60	Range 14	Dir Section W 32	Subsection CDADDC	Well Depth 15 ft.	Depth Completed 14.5 ft.	Date Well Completed 04/10/2001							
Elevation 1482	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Auger (non-specified)	Drill Fluid								
Address					Use monitor well	Status Active								
Contact P.O. BOX 847 HOYT LAKES MN 55750-0847					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To									
Stratigraphy Information					Casing Type Single casing Joint									
					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below									
Geological Material	From	To (ft.)	Color	Hardness	Casing Diameter	Weight	Hole Diameter							
LOOSE TAILINGS	0	6	GRAY		2 in. To	4.5 ft. lbs./ft.	10 in. To 14.5 ft.							
F-M SAND MED DENSE	6	7	BROWN											
COBBLES DENSE	7	12	BROWN											
SAND & GRAVEL 3"	12	14	BROWN											
					Open Hole	From	ft.	To	ft.					
					Screen? <input checked="" type="checkbox"/>	Type	slotted pipe		Make	US FILTER				
					Diameter	Slot/Gauze	Length	Set						
					2 in.	10	10 ft.	4.5 ft.	14.5 ft.					
					Static Water Level									
					4.8 ft.	land surface		Measure	04/10/2001					
					Pumping Level (below land surface)									
					Wellhead Completion									
					Pitless adapter manufacturer			Model						
					<input checked="" type="checkbox"/>	Casing Protection		<input checked="" type="checkbox"/>	12 in. above grade					
					<input type="checkbox"/>	At-grade (Environmental Wells and Borings ONLY)								
					Grouting Information									
					Well Grouted?		<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Not Specified		
					Material	Amount	From	To						
					neat cement	2 Sacks	0	ft. 4.5	ft.					
					Nearest Known Source of Contamination									
					feet	Direction			Type					
					Well disinfected upon completion?		<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No				
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed									
					Manufacturer's name									
					Model Number		HP	Volt						
					Length of drop pipe		ft	Capacity	g.p.	Typ				
					Abandoned									
					Does property have any not in use and not sealed well(s)?						<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
					Variance									
					Was a variance granted from the MDH for this well?						<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
					Miscellaneous									
					First Bedrock		Aquifer	Quat. Water						
					Last Strat	sand+silt-brown	Depth to Bedrock		ft					
					Located by Minnesota Geological Survey									
					Locate Method Digitization (Screen) - Map (1:24,000)									
					System		UTM - NAD83, Zone 15, Meters	X	563881	Y	5275677			
					Unique Number Verification		Info/GPS from data	Input Date	03/14/2013					
					Angled Drill Hole									
					Well Contractor									
					STS Consultants, Ltd.		M0150	ZEHNDA, D.						
					Licensee Business		Lic. or Reg. No.	Name of Driller						
Remarks					Minnesota Well Index Report			625042		Printed on 04/28/2017				
STS PROJECT #D10301. N47 37.88' W92 8.98'. DOUBLE SEALED PRO TOP. OWNER MAILING ADDRESS: CO. RD. 666 P.O. BOX 847. HOYST LAKES, MN 55750-0847.										HE-01205-15				

625043

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 10/31/2001
 Update Date 01/09/2017
 Received Date

Well Name MW-2	Township 59	Range 14	Dir Section W 5	Subsection BCDDCC	Well Depth 17 ft.	Depth Completed 14.5 ft.	Date Well Completed 04/10/2001
Elevation 1507	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact P.O. BOX 847 HOYT LAKES MN 557500847					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/>	Above/Below	
MEDIUM DENSE TO 0 14 GRY/BRN					Casing Diameter 2 in. To 4.5 ft.	Weight lbs./ft.	Hole Diameter 10 in. To 17 ft.
PEATY SOIL 14 17 BROWN SOFT					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type slotted pipe	Make US FILTER
					Diameter 2 in.	Slot/Gauze 10	Length 10 ft.
						Set 4.5 ft.	14.5 ft.
					Static Water Level 4.2 ft. land surface Measure 04/10/2001		
					Pumping Level (below land surface)		
					Wellhead Completion Pitless adapter manufacturer DOUBLE SEAL Model		
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material neat cement	Amount 2 Sacks	From 0 ft. To 4.5 ft.
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe ft	Capacity	g.p. Typ
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Aquifer Quat. Water		
					Last Strat Recent deposit-brown	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 563454	Y 5274726
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor STS Consultants, Ltd. M0150 ZEHNDER, D. Licensee Business Lic. or Reg. No. Name of Driller		
Remarks STS D-10301. N47? 36.62' W92 9.26'. DOUBLED SEALED PROTOP.					625043		Printed on 04/28/2017 HE-01205-15
Minnesota Well Index Report							

665923County St. Louis
Quad Aurora
Quad ID 318CMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date 11/21/2001
Update Date 01/12/2016
Received Date

Well Name LTV STEEL	Township 59	Range 14	Dir Section W 20	Subsection BAAABB	Well Depth 165 ft.	Depth Completed 165 ft.	Date Well Completed 08/23/2001
Elevation 1509	Elev. Method Calc from DEM (USGS 7.5 min or equiv.)				Drill Method Air Rotary	Drill Fluid Water	
Address Well 666 CH HOYT LAKES MN 55750					Use domestic	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Geological Material	From	To (ft.)	Color	Hardness	Casing Type Single casing	Joint	
GRAVEL/SAND	0	43	GRAY		Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
LEDGE ROCK	43	165	GREEN	SOFT	Casing Diameter	Weight	Hole Diameter
					6 in. To 43 ft. 20 lbs./ft.	6 in. To 165 ft.	
					Open Hole From 43 ft. To 165 ft.		
					Screen? <input type="checkbox"/>	Type	Make
					Static Water Level		
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer	MONITOR	Model SNAPPY
					<input type="checkbox"/> Casing Protection	<input type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material	Amount	From To
					driven casing seal		ft. ft.
					Nearest Known Source of Contamination		
					53 feet	East Direction	Septic tank/drain field Type
					Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed	Date Installed	08/24/2001
					Manufacturer's name	AERMOTOR	
					Model Number	20-100	HP 1 Volt 230
					Length of drop pipe	120 ft	Capacity 20 g.p. Typ Submersible
					Abandoned		
					Does property have any not in use and not sealed well(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Variance		
					Was a variance granted from the MDH for this well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Miscellaneous		
					First Bedrock	Precambrian rocks undiff.	Aquifer Precambrian
					Last Strat	Precambrian rocks undiff.	Depth to Bedrock 43 ft
					Located by Minnesota Department of Health		
					Locate Method	Digitization (Screen) - Map (1:24,000)	
					System	UTM - NAD83, Zone 15, Meters	X 563898 Y 5270781
					Unique Number Verification	Tag on well	Input Date 10/29/2001
					Angled Drill Hole		
					Well Contractor		
					Kolstad-olson	69554	MAJESKI, T.
					Licensee Business	Lic. or Reg. No.	Name of Driller

717972

County St. Louis

Quad

Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date

Update Date 06/04/2012

Received Date 09/08/2005

Well Name NORTH MET	Township 59	Range 13	Dir Section W 2	Subsection BDC	Well Depth 200 ft.	Depth Completed 200 ft.	Date Well Completed 02/07/2005
Elevation	Elev. Method				Drill Method Non-specified Rotary	Drill Fluid Water	
Address					Use industrial	Status Active	
Contact 666 CH HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Welded		
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below		
GRAVEL & BOULDERS 1 14 BROWN HARD					Casing Diameter Weight Hole Diameter		
ROCK 14 200 BLACK HARD					6 in. To 20 ft. 19 lbs./ft. 10 in. To 20 ft. 6 in. To 200 ft.		
Open Hole From 20 ft. To 200 ft.					Screen? <input type="checkbox"/> Type Make		
Static Water Level					12 ft. land surface Measure 02/07/2005		
Pumping Level (below land surface)					17 ft. 2 hrs. Pumping at 35 g.p.m.		
Wellhead Completion					Pitless adapter manufacturer Model		
<input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified					Material Amount From To		
neat cement 5 Sacks 2 ft. 20 ft.							
Nearest Known Source of Contamination					feet Direction Type		
Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Pump <input type="checkbox"/> Not Installed Date Installed 02/07/2005					Manufacturer's name GRUNDFOS		
Model Number 40 P HP 1.5 Volt 220					Length of drop pipe 72 ft Capacity 40 g.p. Typ Submersible		
Abandoned					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Variance					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Miscellaneous					First Bedrock Aquifer		
Last Strat Depth to Bedrock ft					Located by		
Locate Method					System UTM - NAD83, Zone 15, Meters X Y		
Unique Number Verification					Input Date		
Angled Drill Hole							
Well Contractor					Denney's Drilling 69454 KOEPP, D.		
Licensee Business					Lic. or Reg. No. Name of Driller		
Remarks				717972		Printed on 04/28/2017 HE-01205-15	
Minnesota Well Index Report							

722058

County St. Louis

Quad

Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date

Update Date 03/12/2015

Received Date 04/01/2005

Well Name SUPERIOR	Township 59	Range 13	Dir Section W 3	Subsection ACA	Well Depth 17 ft.	Depth Completed 12 ft.	Date Well Completed 03/13/2005
Elevation	Elev. Method				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILTY CLAY 0 10 BROWN SOFT					Casing Diameter 2 in. To 7 ft. lbs./ft.	Hole Diameter 6 in. To 17 ft.	
SAND 10 12 TAN MEDIUM							
GRANITE 12 17 BLACK HARD							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter Slot/Gauze Length Set		
					2 in. 10 5 ft. 7 ft. 12 ft.		
					Static Water Level 6 ft. land surface Measure 03/13/2005		
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input checked="" type="checkbox"/> Casing Protection	<input type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material Amount From To		
					neat cement 1 Sacks 12 ft. ft.		
					neat cement 3 Sacks ft. 4 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Aquifer	
					Last Strat	Depth to Bedrock ft	
					Located by		
					Locate Method		
					System UTM - NAD83, Zone 15, Meters X Y		
					Unique Number Verification	Input Date	
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 49653 SEE REMARKS		
					Licensee Business Lic. or Reg. No. Name of Driller		
Remarks DRILLERS: BILL ZAMOW & JASON STEWARD.							
Minnesota Well Index Report					722058		
					Printed on 05/25/2017 HE-01205-15		

722060

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 04/20/2005
 Update Date 12/14/2015
 Received Date 04/01/2005

Well Name SUPERIOR	Township 59	Range 13	Dir Section W 2	Subsection DBDCDB	Well Depth 7 ft.	Depth Completed 7 ft.	Date Well Completed 03/15/2005
Elevation 1600	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Vibrocure/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILTY CLAY-TO 6.5 0 7 BROWN MEDIUM					Casing Diameter 2 in. To 6 ft.	Weight 3.65 lbs./ft.	Hole Diameter 6 in. To 7 ft.
SAND-FROM 6.5 7 7 TAN SOFT					Open Hole From ft. To ft.		
					Screen? Diameter 2 in.	<input checked="" type="checkbox"/> Slot/Gauze 10	Type plastic Length 1 ft.
						Make JOHNSON	Set 6 ft. 7 ft.
					Static Water Level 0.4 ft. land surface Measure 03/15/2005		
					Pumping Level (below land surface)		
					Wellhead Completion Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material neat cement	Amount 2 Sacks	From To ft. 4 ft.
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Last Strat sand-brown Located by Minnesota Geological Survey		
					Aquifer Quat. Water Depth to Bedrock ft		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 578597 Y 5274514		
					Unique Number Verification Site Plan Input Date 04/01/2013		
					Angled Drill Hole		
					Well Contractor Boart Longyear 49653 SEE REMARKS		
					Licensee Business Lic. or Reg. No. Name of Driller		

736114

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 08/07/2006
 Update Date 12/30/2015
 Received Date 02/03/2006

Well Name P1	Township 59	Range 13	Dir Section W 3	Subsection DBDBC	Well Depth 610 ft.	Depth Completed 610 ft.	Date Well Completed 12/17/2005
Elevation 1615	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Non-specified Rotary	Drill Fluid	
Address					Use monitor well	Status Active	
Well HOYT LAKES MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Welded	
Geological Material	From	To (ft.)	Color	Hardness	Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
OVERBURDEN	0	7	BROWN	SOFT	Casing Diameter 6 in. To 27 ft. 19 lbs./ft.	Hole Diameter 12 in. To 27 ft. 6 in. To 610 ft.	
ROCKY CLAY	7	11	BROWN	SFT-HRD			
BEDROCK -	11	27	VARIED	HARD			
BEDROCK	27	440	BLACK	HARD			
BEDROCK	440	610	WHT/BLK	HARD			
					Open Hole From 27 ft. To 610 ft.		
					Screen? <input type="checkbox"/>	Type	Make
					Static Water Level 8 ft. land surface	Measure	12/17/2005
					Pumping Level (below land surface) 500 ft. 36 hrs. Pumping at 1.2 g.p.m.		
					Wellhead Completion Pitless adapter manufacturer	Model	
					<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Material neat cement	Well Grouted? Amount 19 Sacks	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified From 27 ft. To 27 ft.
					Nearest Known Source of Contamination feet	Direction	Type
					Well disinfected upon completion?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft	Capacity g.p. Typ
					Abandoned Does property have any not in use and not sealed well(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Variance Was a variance granted from the MDH for this well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Miscellaneous First Bedrock Duluth Complex	Aquifer Precambrian	
					Last Strat Precambrian rocks undiff.	Depth to Bedrock 11 ft	
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters	X 577006	Y 5274599
					Unique Number Verification	Info/GPS from data	Input Date 01/30/2009
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear	49653	SEE REMARKS
					Licensee Business	Lic. or Reg. No.	Name of Driller

736115

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 12/10/2015
 Received Date 02/03/2006

Well Name P2	Township 59	Range 13	Dir Section W 2	Subsection BDACDD	Well Depth 610 ft.	Depth Completed 610 ft.	Date Well Completed 12/13/2005	
Elevation 1607	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Non-specified Rotary	Drill Fluid		
Address					Use monitor well	Status Active		
Well HOYT LAKES MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To	
Stratigraphy Information					Casing Type Single casing	Joint Welded		
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below		
Geological Material					Casing Diameter	Weight	Hole Diameter	
CLAY/ROCK					6 in. To	27 ft. 19 lbs./ft.	12 in. To 27 ft.	
BEDROCK							6 in. To 610 ft.	
BEDROCK								
BEDROCK								
					Open Hole From 27 ft. To 610 ft.			
					Screen? <input type="checkbox"/>	Type	Make	
					Static Water Level			
					11 ft. land surface	Measure	12/13/2005	
					Pumping Level (below land surface)			
					500 ft. 36 hrs. Pumping at	28	g.p.m.	
					Wellhead Completion			
					Pitless adapter manufacturer	Model		
					<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
					Grouting Information			
					Well Grouted?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Specified
					Material	Amount	From	To
					neat cement	23 Sacks	ft. 27	ft.
					Nearest Known Source of Contamination			
					feet	Direction	Type	
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed			
					Manufacturer's name			
					Model Number HP Volt			
					Length of drop pipe ft Capacity g.p. Typ			
					Abandoned			
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Variance			
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Miscellaneous			
					First Bedrock	Duluth Complex	Aquifer	Precambrian
					Last Strat	Precambrian rocks undiff.	Depth to Bedrock	12 ft
					Located by Minnesota Geological Survey			
					Locate Method Digitization (Screen) - Map (1:24,000)			
					System	UTM - NAD83, Zone 15, Meters	X 578290	Y 5275071
					Unique Number Verification	Info/GPS from data	Input Date	01/30/2009
					Angled Drill Hole			
					Well Contractor			
					Boart Longyear	49653	SEE REMARKS	
					Lic. or Reg. No.	Name of Driller		
Remarks								
DRILLERS: MARK GREEN & CHRIS FUHS.								
Minnesota Well Index Report					736115			
					Printed on 04/28/2017 HE-01205-15			

736116County St. Louis
Quad Babbitt
Quad ID 317BMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date
Update Date 05/09/2013
Received Date 02/03/2006

Well Name P3	Township 59	Range 13	Dir Section W 2	Subsection ABDDCB	Well Depth 610 ft.	Depth Completed 610 ft.	Date Well Completed 12/10/2005
Elevation 1618	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Non-specified Rotary	Drill Fluid	
Address Well HOYT LAKES MN 55705					Use monitor well	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
					Casing Type Single casing	Joint Welded	
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
Geological Material					Casing Diameter	Weight	Hole Diameter
From To (ft.) Color Hardness					6 in. To 27 ft. 19 lbs./ft.	12 in. To 27 ft.	
SAND 0 3 BROWN SOFT						6 in. To 610 ft.	
ROCK 3 5 RED HARD							
SAND/GRAVEL 5 10 BROWN SOFT							
SAND 10 17 BROWN MEDIUM							
BEDROCK 17 27 BLACK HARD							
BEDROCK 27 49 LIGHT HARD							
BEDROCK 49 130 BLACK MEDIUM							
BEDROCK 130 610 BLACK HARD							
					Open Hole From 27 ft. To 610 ft.		
					Screen? <input type="checkbox"/>	Type	Make
					Static Water Level 10 ft. land surface Measure 12/10/2005		
					Pumping Level (below land surface) 700 ft. 96 hrs. Pumping at 41 g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Material Amount From To neat cement 23 Sacks ft. 27 ft.		
					Nearest Known Source of Contamination feet Direction Type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name Model Number HP Volt Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Virginia Formation Aquifer Virginia Last Strat Virginia Formation Depth to Bedrock 17 ft Located by Minnesota Geological Survey Locate Method Digitization (Screen) - Map (1:24,000) System UTM - NAD83, Zone 15, Meters X 578734 Y 5275297 Unique Number Verification Info/GPS from data Input Date 01/30/2009		
Remarks					Angled Drill Hole		
					Well Contractor Boart Longyear 49653 FUHS, C. Licensee Business Lic. or Reg. No. Name of Driller		
Minnesota Well Index Report					736116		Printed on 04/28/2017 HE-01205-15

736117County St. Louis
Quad Babbitt
Quad ID 317BMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date
Update Date 12/09/2015
Received Date 02/03/2006

Well Name P4	Township 59	Range 13	Dir Section W 2	Subsection AADDDB	Well Depth 485 ft.	Depth Completed 485 ft.	Date Well Completed 12/18/2005
Elevation 1607	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Non-specified Rotary	Drill Fluid	
Address Well HOYT LAKES MN 55705					Use monitor well	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
					Casing Type Single casing	Joint Welded	
					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
Geological Material					Casing Diameter	Weight	Hole Diameter
From To (ft.) Color Hardness					6 in. To 46 ft. 19 lbs./ft.	12 in. To 46 ft.	
SAND 0 5 RED/BLK SOFT					6 in. To 485 ft.		
ROCK BOULDERS 5 7 BLK/GRY HARD							
BOULDER BEDROCK 7 16 GRAY HARD							
BOULDER BEDROCK 16 19 RED/GRY HARD							
BOULDER BEDROCK 19 25 GRAY HARD							
BOULDER BEDROCK 25 26 RED/GRY M.HARD							
BEDROCK 26 462 GRAY HARD							
GRAPHITE 462 485 BLACK SOFT							
					Open Hole From 46 ft. To 485 ft.		
					Screen? <input type="checkbox"/>	Type	Make
					Static Water Level 9 ft. land surface Measure 12/18/2005		
					Pumping Level (below land surface) 400 ft. 36 hrs. Pumping at 40 g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Material Amount From To neat cement 21 Sacks ft. 46 ft.		
					Nearest Known Source of Contamination feet Direction Type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name Model Number HP Volt Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Partridge River intrusion Aquifer Precambrian Last Strat Virginia Formation Depth to Bedrock 26 ft Located by Minnesota Geological Survey Locate Method Digitization (Screen) - Map (1:24,000) System UTM - NAD83, Zone 15, Meters X 579130 Y 5275345 Unique Number Verification Info/GPS from data Input Date 01/30/2009		
Remarks DRILLERS: MARK GREEN & CHRIS FUHS.					Angled Drill Hole		
					Well Contractor Boart Longyear 49653 SEE REMARKS Licensee Business Lic. or Reg. No. Name of Driller		

736118

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB4	Township 59	Range 13	Dir Section W 2	Subsection AACBCA	Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 11/19/2005
Elevation 1612	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Multiple methods used	Drill Fluid	
Address					Use environ. bore hole	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Contact P O BOX 475 HOYT LAKES MN 55705					Casing Type Single casing Joint Welded		
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
TOP SOIL		0	2	BLACK	SOFT	4 in. To 7 ft. 11 lbs./ft. 4 in. To 100 ft.	
CLAY & SAND		2	6	BROWN	MEDIUM		
ROCK		6	100	GRAY	HARD		
					Open Hole From 7 ft. To 100 ft.		
					Screen? <input type="checkbox"/> Type Make		
					Static Water Level		
12 ft.		land surface		Measure		11/19/2005	
					Pumping Level (below land surface)		
100 ft.		0.5 hrs.		Pumping at		1 g.p.m.	
					Wellhead Completion		
Pitless adapter manufacturer					Model		
<input type="checkbox"/> Casing Protection					<input checked="" type="checkbox"/> 12 in. above grade		
<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)							
Grouting Information					Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
feet		Direction				Type	
Well disinfected upon completion?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Pump <input checked="" type="checkbox"/> Not Installed					Date Installed		
Manufacturer's name							
Model Number		HP		Volt			
Length of drop pipe		ft Capacity		g.p. Typ			
Abandoned					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Variance					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Miscellaneous							
First Bedrock		Precambrian rocks undiff.		Aquifer		Precambrian	
Last Strat		Precambrian rocks undiff.		Depth to Bedrock		6 ft	
Located by					Minnesota Geological Survey		
Locate Method					Digitization (Screen) - Map (1:24,000)		
System		UTM - NAD83, Zone 15, Meters		X 578890		Y 5275402	
Unique Number Verification		Info/GPS from data		Input Date		03/18/2013	
Angled Drill Hole							
Well Contractor							
Boart Longyear		49653		FUHS, C.			
Licensee Business		Lic. or Reg. No.		Name of Driller			

736119

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB5	Township 59	Range 13	Dir Section W 1	Subsection BBBCBA	Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 11/20/2005
Elevation 1617	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Multiple methods used	Drill Fluid	
Address					Use environ. bore hole	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Contact P O BOX 475 HOYT LAKES MN 55705					Casing Type Single casing	Joint Welded	
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
TOP SOIL		0	1	BLACK	SOFT	4 in. To 18 ft. 11 lbs./ft. 4 in. To 100 ft.	
CLAY & SAND		1	7	BROWN	MEDIUM		
ROCK		7	100	GRAY	HARD		
					Open Hole From 18 ft. To 100 ft.		
					Screen? <input type="checkbox"/>	Type Make	
					Static Water Level		
					13 ft. land surface	Measure	11/20/2005
					Pumping Level (below land surface)		
					100 ft. 0.5 hrs. Pumping at	1.5 g.p.m.	
					Wellhead Completion		
					Pitless adapter manufacturer		Model
					<input type="checkbox"/> Casing Protection		<input checked="" type="checkbox"/> 12 in. above grade
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft Capacity	g.p. Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Precambrian rocks undiff.	Aquifer Precambrian
					Last Strat	Precambrian rocks undiff.	Depth to Bedrock 7 ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System	UTM - NAD83, Zone 15, Meters	X 579290 Y 5275538
					Unique Number Verification	Info/GPS from data	Input Date 03/18/2013
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear	49653	FUHS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks							
Minnesota Well Index Report					736119		
					Printed on 04/28/2017 HE-01205-15		

736120

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB2	Township 59	Range 13	Dir Section W 2	Subsection BDDBBB	Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 12/02/2005
Elevation 1607 Elev. Method 7.5 minute topographic map (+/- 5 feet)					Drill Method Multiple methods used	Drill Fluid	
Address					Use environ. bore hole	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From 0 ft.	To
Contact HOYT LAKES MN 55705					Casing Type Single casing	Joint Welded	
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
Geological Material	From	To (ft.)	Color	Hardness	Casing Diameter	Weight	Hole Diameter
ROCK & SAND	0	6	BROWN	HARD	4 in. To 18 ft.	11 lbs./ft.	4 in. To 100 ft.
ROCK	6	100	GRAY	HARD			
					Open Hole From 18 ft. To 100 ft.		
					Screen? <input type="checkbox"/>	Type	Make
					Static Water Level		
					11 ft. land surface	Measure	12/02/2005
					Pumping Level (below land surface)		
					100 ft.	0.5 hrs.	Pumping at 1 g.p.m.
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft Capacity	g.p. Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Precambrian rocks undiff.	Aquifer Precambrian
					Last Strat	Precambrian rocks undiff.	Depth to Bedrock 6 ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System	UTM - NAD83, Zone 15, Meters	X 578218 Y 5275041
					Unique Number Verification	Info/GPS from data	Input Date 03/18/2013
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear	49653	FUHS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller

Remarks

736121

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB1	Township 59	Range 13	Dir Section W 3	Subsection DBCADC	Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 12/05/2005
Elevation 1617 Elev. Method 7.5 minute topographic map (+/- 5 feet)					Drill Method Multiple methods used Drill Fluid		
Address					Use environ. bore hole Status Active		
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Contact P O BOX 475 HOYT LAKES MN 55705					Casing Type Single casing Joint Welded		
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
ROCK & SAND		0	8	BROWN	HARD	4 in. To 21 ft. 11 lbs./ft. 4 in. To 100 ft.	
ROCK		8	100	GRAY	HARD		
Open Hole					Screen? <input type="checkbox"/> Type Make		
From 21 ft. To 100 ft.							
Static Water Level							
10 ft. land surface					Measure 12/05/2005		
Pumping Level (below land surface)							
100 ft. 0.5 hrs. Pumping at					1 g.p.m.		
Wellhead Completion							
Pitless adapter manufacturer					Model		
<input type="checkbox"/> Casing Protection					<input checked="" type="checkbox"/> 12 in. above grade		
<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)							
Grouting Information					Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
Material		Amount		From	To		
concrete		12 Sacks		ft. 21	ft.		
Nearest Known Source of Contamination							
feet		Direction				Type	
Well disinfected upon completion?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Pump <input checked="" type="checkbox"/> Not Installed Date Installed							
Manufacturer's name							
Model Number		HP		Volt			
Length of drop pipe		ft Capacity		g.p. Typ			
Abandoned							
Does property have any not in use and not sealed well(s)?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Variance							
Was a variance granted from the MDH for this well?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Miscellaneous							
First Bedrock		Precambrian rocks undiff.		Aquifer Precambrian			
Last Strat		Precambrian rocks undiff.		Depth to Bedrock 8		ft	
Located by Minnesota Geological Survey							
Locate Method Digitization (Screen) - Map (1:24,000)							
System		UTM - NAD83, Zone 15, Meters		X 576936		Y 5274550	
Unique Number Verification		Info/GPS from data		Input Date		03/18/2013	
Angled Drill Hole							
Well Contractor							
Boart Longyear		49653		FUHS, C.			
Licensee Business		Lic. or Reg. No.		Name of Driller			

Remarks
 USE: ENVIRON. BORE HOLE (OB)

736122

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 05/04/2006
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB3A	Township 59	Range 13	Dir Section W 2	Subsection ABDCDD	Well Depth 50 ft.	Depth Completed 50 ft.	Date Well Completed 12/06/2005
Elevation 1617	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Multiple methods used	Drill Fluid	
Address					Use environ. bore hole	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From 0 ft. To		
Contact P O BOX 475 HOYT LAKES MN 55705					Casing Type Single casing Joint Welded		
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
ROCK & SAND		0	7	BROWN	MED-HRD	4 in. To 17 ft. 11 lbs./ft. 4 in. To 50 ft.	
ROCK		7	50	GRAY	HARD		
					Open Hole From 17 ft. To 50 ft.		
					Screen? <input type="checkbox"/> Type Make		
					Static Water Level		
					9 ft. land surface Measure 12/06/2005		
					Pumping Level (below land surface)		
					50 ft. 0.5 hrs. Pumping at 0.5 g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Precambrian rocks undiff. Aquifer Precambrian		
					Last Strat Precambrian rocks undiff. Depth to Bedrock 7 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 578715 Y 5275263		
					Unique Number Verification Info/GPS from data Input Date 03/18/2013		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 49653 FUHS, C.		
					Licensee Business Lic. or Reg. No. Name of Driller		

Remarks

736123

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 05/04/2006
 Update Date 05/02/2013
 Received Date 02/09/2006

Well Name OB3	Township 59	Range 13	Dir Section W 2	Subsection ABDCDD	Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 12/01/2005
Elevation 1616	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Multiple methods used	Drill Fluid	
Address					Use environ. bore hole	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Contact P O BOX 475 HOYT LAKES MN 55705					Casing Type Single casing Joint Welded		
Well Geology Information HOYT LAKES MN 55705					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
ROCK & SAND		0	7	BROWN	HARD	4 in. To 21 ft. 11 lbs./ft. 4 in. To 100 ft.	
ROCK		7	100	GRAY	HARD		
					Open Hole From 21 ft. To 100 ft.		
					Screen? <input type="checkbox"/> Type Make		
					Static Water Level		
					9 ft. land surface Measure 12/01/2005		
					Pumping Level (below land surface)		
					100 ft. 0.5 hrs. Pumping at 1 g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Precambrian rocks undiff. Aquifer Precambrian		
					Last Strat Precambrian rocks undiff. Depth to Bedrock 7 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 578708 Y 5275276		
					Unique Number Verification Info/GPS from data Input Date 03/18/2013		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 49653 FUHS, C.		
					Licensee Business Lic. or Reg. No. Name of Driller		

Remarks

767603

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/08/2013
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-1	Township 59	Range 14	Dir Section W 8	Subsection DCBCAA	Well Depth 13 ft.	Depth Completed 12.5 ft.	Date Well Completed 04/21/2009
Elevation 1564.2	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILT 0 6 GRAY SOFT					Casing Diameter Weight Hole Diameter		
SILTY SAND LOOSE 6 13 BLACK					2 in. To 7.5 ft. lbs./ft. 8 in. To 12.5 ft.		
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	
					Diameter 2 in.	Slot/Gauze 10	Length 5 ft.
					Set	Make JOHNSON	Set
					Static Water Level	3.4 ft. land surface Measure 04/21/2009	
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					bentonite 0.25 Sacks 3 ft. 5 ft.		
					concrete 3 Sacks ft. 3 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Aquifer Quat. Water		
					Last Strat sand+silt-black Depth to Bedrock ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters X 564039 Y 5272626		
					Unique Number Verification Site Plan Input Date 03/07/2016		
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp. 1323 POWERS, C.		
					Licensee Business Lic. or Reg. No. Name of Driller		

Remarks
 MW-1 SHALLOW.
 CASING PROTECTION: 6" LOCKING STEEL.

767604

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-1 DEEP	Township 59	Range 14	Dir Section W 8	Subsection DCBDBB	Well Depth 24 ft.	Depth Completed 22.2 ft.	Date Well Completed 04/22/2009
Elevation 1567.3	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status	
Contact 6500 666 CR HOYT LAKES MN 55750 C/W MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILT 0 6 GRAY SOFT					Casing Diameter 2 in. To	Weight 17.2 ft. lbs./ft.	Hole Diameter 8 in. To 24 ft.
SILTY SAND LOOSE 6 18 BLACK							
COARSE SAND LOOSE 18 24 BROWN							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze Length 10 ft.	Set 17.2 ft. 22.2 ft.
					Static Water Level 3.3 ft. land surface	Measure	04/21/2009
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material	Amount	From To
					bentonite	33 Sacks	4 ft. 14 ft.
					concrete	4 Sacks	ft. 4 ft.
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/>	Not Installed	Date Installed
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft Capacity	g.p. Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Aquifer	Quat. Water
					Last Strat sand-brown	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 564051	Y 5272629
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp.	1323	POWERS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller

767606

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-2 DEEP	Township 59	Range 14	Dir Section W 8	Subsection DBCDC	Well Depth 37 ft.	Depth Completed 37 ft.	Date Well Completed 04/22/2009
Elevation 1562.4	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILT 0 24 BRN/GRY SOFT					Casing Diameter 2 in. To	Weight 31.8 ft. lbs./ft.	Hole Diameter 8 in. To 37 ft.
SILTY SAND 24 37 BROWN MEDIUM					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze 10	Length 5 ft.
						Set 31.8 ft.	36.8 ft.
					Static Water Level 1.9 ft. land surface Measure 04/22/2009		
					Pumping Level (below land surface)		
					Wellhead Completion Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material	Amount	From To
					bentonite	1 Sacks	4 ft. 30 ft.
					concrete	4 Sacks	ft. 4 ft.
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft Capacity	g.p. Typ
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Aquifer	Quat. Water
					Last Strat sand+silt-brown	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 564046	Y 5272742
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp.	1323	POWERS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks MW-2 DEEP. CASING PROTECTION: 6" LOCKING STEEL.							
Minnesota Well Index Report					767606		
					Printed on 04/28/2017 HE-01205-15		

767607

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-3	Township 59	Range 14	Dir Section W 8	Subsection DBCCAD	Well Depth 22 ft.	Depth Completed 22 ft.	Date Well Completed 04/22/2009	
Elevation 1562.2	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid		
Address					Use monitor well	Status Active		
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To	
Stratigraphy Information					Casing Type Single casing	Joint Threaded		
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below		
SILTY SAND LOOSE 0 10 DK. GRY					Casing Diameter 2 in. To 17 ft.	Weight lbs./ft.	Hole Diameter 8 in. To 22 ft.	
SANDY SILT 10 22 DK. GRY SOFT					Open Hole From ft. To ft.			
					Screen? Diameter 2 in.	<input checked="" type="checkbox"/> Slot/Gauze 10	Type plastic 5 ft.	Make JOHNSON Set 17 ft. 22 ft.
					Static Water Level 2.2 ft. land surface Measure 04/22/2009			
					Pumping Level (below land surface)			
					Wellhead Completion Pitless adapter manufacturer Model			
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade			
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified			
					Material bentonite	Amount 0.5 Sacks	From 4 ft.	To 16 ft.
					concrete	4 Sacks	ft. 4 ft.	
					Nearest Known Source of Contamination feet Direction Type			
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed			
					Manufacturer's name			
					Model Number	HP	Volt	
					Length of drop pipe	ft Capacity	g.p. Typ	
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Miscellaneous			
					First Bedrock	Aquifer	Quat. Water	
					Last Strat sand+silt-gray	Depth to Bedrock	ft	
					Located by Minnesota Geological Survey			
					Locate Method Digitization (Screen) - Map (1:12,000)			
					System UTM - NAD83, Zone 15, Meters	X 564026	Y 5272800	
					Unique Number Verification	Site Plan	Input Date 03/07/2016	
					Angled Drill Hole			
					Well Contractor			
					Braun Intertec Corp.	1323	POWERS, C.	
					Licensee Business	Lic. or Reg. No.	Name of Driller	
Remarks MW-3 SHALLOW. CASING PROTECTION: 6" LOCKING STEEL.					767607			
Minnesota Well Index Report					Printed on 04/28/2017 HE-01205-15			

767608

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-3 DEEP	Township 59	Range 14	Dir Section W 8	Subsection DBCCAD	Well Depth 44 ft.	Depth Completed 44 ft.	Date Well Completed 04/23/2009
Elevation 1562.3	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILTY SAND LOOSE 0 10 DK. GRY					Casing Diameter 2 in. To	Weight 38.8 ft. lbs./ft.	Hole Diameter 8 in. To 44 ft.
SANDY SILT 10 38 DK. GRY SOFT							
SILTY CLAY STIFF 38 43 GRY/BRN							
SILTY SAND 43 44 BROWN MEDIUM							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze 10	Length 5 ft.
						Set 38.8 ft.	43.8 ft.
					Static Water Level		
					1.5 ft.	land surface	Measure 04/23/2009
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified
					Material	Amount	From To
					bentonite	1.25 Sacks	4 ft. 37 ft.
					concrete	4 Sacks	ft. 4 ft.
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Pump <input checked="" type="checkbox"/>	Not Installed	Date Installed
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft	Capacity g.p. Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Variance		
					Was a variance granted from the MDH for this well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Miscellaneous		
					First Bedrock	Aquifer	Quat. Water
					Last Strat sand+silt-brown	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 564022	Y 5272804
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp.	1323	POWERS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks							
MW-3 DEEP/ CASING PROTECTION: 6" LOCKING STEEL.							
Minnesota Well Index Report					767608		
					Printed on 04/28/2017 HE-01205-15		

767609

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/08/2013
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-4	Township 59	Range 14	Dir Section W 8	Subsection DBCCCB	Well Depth 16 ft.	Depth Completed 16 ft.	Date Well Completed 04/23/2009
Elevation 1562.3	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILT 0 16 GRAY SOFT					Casing Diameter 2 in. To	Weight 10.4 ft. lbs./ft.	Hole Diameter 8 in. To 16 ft.
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze 10	Length 5 ft.
						Set 10.4 ft.	15.4 ft.
					Static Water Level 2 ft.	land surface	Measure 04/23/2009
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material	Amount	From To
					bentonite	0.12 Sacks	4 ft. 4.5 ft.
					concrete	4 Sacks	ft. 4 ft.
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft	Capacity g.p. Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Variance		
					Was a variance granted from the MDH for this well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Miscellaneous		
					First Bedrock	Aquifer	Quat. Water
					Last Strat silt-gray	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 563956	Y 5272785
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp.	1323	POWERS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks MW-4 SHALLOW. CASING PROTECTION: 6" LOCKING STEEL.					767609		
Minnesota Well Index Report					Printed on 04/28/2017 HE-01205-15		

767610

County St. Louis
 Quad Aurora
 Quad ID 318C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date
 Update Date 11/28/2016
 Received Date 01/08/2010

Well Name MW-4 DEEP	Township 59	Range 14	Dir Section W 8	Subsection DBCCCB	Well Depth 31 ft.	Depth Completed 31 ft.	Date Well Completed 04/23/2009
Elevation 1562.3	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Auger (non-specified)	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 6500 666 CR HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From	To
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SILT 0 23 GRAY SOFT					Casing Diameter 2 in. To	Weight 25.5 ft. lbs./ft.	Hole Diameter 8 in. To 31 ft.
SILTY SAND 23 31 BROWN MEDIUM					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze 10	Length 5 ft.
						Set 25.5 ft.	30.5 ft.
					Static Water Level 1.5 ft. land surface Measure 04/23/2009		
					Pumping Level (below land surface)		
					Wellhead Completion Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material	Amount	From To
					bentonite	1 Sacks	4 ft. 24 ft.
					concrete	4 Sacks	ft. 4 ft.
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe	ft Capacity	g.p. Typ
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	Aquifer	Quat. Water
					Last Strat sand+silt-brown	Depth to Bedrock	ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000)		
					System UTM - NAD83, Zone 15, Meters	X 563957	Y 5272784
					Unique Number Verification	Site Plan	Input Date 03/07/2016
					Angled Drill Hole		
					Well Contractor		
					Braun Intertec Corp.	1323	POWERS, C.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks MW-4 DEEP. CASING PROTECTION: 6" LOCKING STEEL.							
Minnesota Well Index Report					767610		
					Printed on 04/28/2017 HE-01205-15		

767968

County St. Louis
 Quad Embarrass
 Quad ID 318B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/13/2013
 Update Date 11/28/2016
 Received Date 05/26/2009

Well Name GW-012	Township 60	Range 14	Dir Section W 33	Subsection CACDA	Well Depth 16 ft.	Depth Completed 16 ft.	Date Well Completed 05/06/2009
Elevation 1510.0	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Contact P.O. BOX 475 HOYT LAKES MN 55750					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Well HOYT LAKES MN 55750					Casing Type Single casing Joint Threaded		
Stratigraphy Information					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
Geological Material		From	To (ft.)	Color	Hardness	Casing Diameter Weight Hole Diameter	
SAND		0	16	BROWN	MEDIUM	2 in. To 6 ft. lbs./ft.	6 in. To 16 ft.
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
Diameter		Slot/Gauze	Length	Set			
2 in.		10	10 ft.	6 ft.	16 ft.		
Static Water Level					6 ft. land surface Measure 05/06/2009		
Pumping Level (below land surface)							
Wellhead Completion					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
Grouting Information					Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
Material		Amount	From	To			
neat cement		1 Sacks	ft.	4 ft.			
Nearest Known Source of Contamination					feet Direction Type		
Well disinfected upon completion?					<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Pump <input checked="" type="checkbox"/> Not Installed Date Installed					Manufacturer's name		
Model Number		HP	Volt				
Length of drop pipe		ft	Capacity	g.p.	Typ		
Abandoned					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Variance					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Miscellaneous					First Bedrock Aquifer Quat. Water		
Last Strat		sand-brown	Depth to Bedrock		ft		
Located by Minnesota Geological Survey					Locate Method Digitization (Screen) - Map (1:12,000)		
System		UTM - NAD83, Zone 15, Meters	X 565175	Y 5275933			
Unique Number Verification		Site Plan	Input Date	03/07/2016			
Angled Drill Hole							
Well Contractor					Boart Longyear 2022 SCHWEISTHAL,D		
Licensee Business		Lic. or Reg. No.	Name of Driller				

Remarks
 CASING PROTECTION: 6" PROTOP.

786386County St. Louis
Quad Aurora
Quad ID 318CMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date 02/02/2012
Update Date 08/10/2015
Received Date 12/23/2011

Well Name POLYMET	Township 59	Range 14	Dir Section W 9	Subsection CCCDCC	Well Depth 71 ft.	Depth Completed 71 ft.	Date Well Completed 11/29/2011
Elevation 1776.3	Elev. Method LiDAR 1m DEM (MNDNR)				Drill Method Multiple methods used	Drill Fluid Water	
Address Well 6500 666 CR HOYT LAKES MN 55750					Use industrial	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Geological Material From To (ft.) Color Hardness					Casing Type Single casing Joint Threaded		
FINE TACONITE 0 31 BLACK SOFT					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
FINE SILTY SAND 31 68 GRAY SOFT					Casing Diameter Weight Hole Diameter		
BROKEN LEDGE ROCK 68 71 RED/BLK					4 in. To 31 ft. 10.4 lbs./ft. 6 in. To 71.3 ft.		
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type stainless Make JOHNSON 304		
					Diameter Slot/Gauze Length Set		
					4 in. 10 40 ft. 31 ft. 71 ft.		
					Static Water Level		
					26.3 ft. land surface Measure 11/29/2011		
					Pumping Level (below land surface)		
					64.6 ft. 2 hrs. Pumping at 10.5 g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer MONITOR Model BULLDOG		
					<input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					bentonite 3 Sacks ft. 31 ft.		
					Nearest Known Source of Contamination		
					100 feet <u>Southeas</u> Direction <u>Other</u> Type		
					Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed Date Installed 11/29/2011		
					Manufacturer's name STA-RITE		
					Model Number 10P4D-2 HP 0.75 Volt 460		
					Length of drop pipe 56 ft Capacity 10 g.p. Typ Submersible		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Giants Range Granite Aquifer multiple		
					Last Strat Giants Range Granite Depth to Bedrock 68 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 564880 Y 5272337		
					Unique Number Verification Address verification Input Date 07/23/2015		
					Angled Drill Hole		
					Well Contractor		
					Petersen Well Drilling, Inc. 2139 PETERSEN, D.		
					Licensee Business Lic. or Reg. No. Name of Driller		
Remarks GRAVEL PACKED FROM 71-3 TO TOP OF SCREEN W/45/55/SILICA SAND. DRILLING METHOD: DRIVEN AND NON-SPECIFIED ROTARY. NEAREST CONTAMINATION: TYPE= TAILINGS POND.							
Minnesota Well Index Report					786386		
					Printed on 04/28/2017 HE-01205-15		

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 03/20/2012

Update Date 03/02/2016

Received Date 02/24/2012

County St. Louis
Quad Babbitt SW
Quad ID 317C

786708

Well Name MW-5/RS-33	Township 59	Range 13	Dir Section W 10	Subsection DAAADA	Well Depth 22 ft.	Depth Completed 22 ft.	Date Well Completed 10/28/2011
Elevation 1584.8	Elev. Method Surveyed				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Well N/A RURAL ACRES MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Threaded		
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
ORGANIC TOPSOIL 0 0 BLACK					Casing Diameter 2 in. To 4 ft. Weight lbs./ft. Hole Diameter 6 in. To 22 ft.		
SILTY SAND, GRAVEL 0 4 DK. BRN							
SILTY SAND 4 18 GRY/BRN							
SANDY SILT 18 22 DK. GRY							
MAFIC BEDROCK 22 22							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
					Diameter 2 in. Slot/Gauze 10 Length 10 ft. Set 4 ft. 14 ft.		
					Static Water Level 4.5 ft. land surface Measure 10/28/2011		
					Pumping Level (below land surface) ft. hrs. Pumping at g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					concrete 1 Sacks ft. 2.5 ft.		
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Partridge River intrusion Aquifer Quat. Water		
					Last Strat Partridge River intrusion Depth to Bedrock 21.7 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 577505 Y 5273223		
					Unique Number Verification Info/GPS from data Input Date 03/02/2016		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 2022 BIERMAIER, M.		
					Licensee Business Lic. or Reg. No. Name of Driller		

Remarks
 103349
 MW-5/RS 33

786712

County St. Louis
 Quad Allen
 Quad ID 318D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/02/2016
 Received Date 02/24/2012

Well Name MW-8S/RS-31	Township 59	Range 13	Dir Section W 9	Subsection CCDCBC	Well Depth 33 ft.	Depth Completed 32 ft.	Date Well Completed 11/01/2011																																													
Elevation 1609.3	Elev. Method Surveyed				Drill Method Vibracore/rotasonic	Drill Fluid																																														
Address Well 6500 666 CR HOYT LAKES MN 55750					Use monitor well	Status Active																																														
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To																																														
<table border="1"> <thead> <tr> <th>Geological Material</th> <th>From</th> <th>To (ft.)</th> <th>Color</th> <th>Hardness</th> </tr> </thead> <tbody> <tr> <td>SILTY SAND</td> <td>0</td> <td>3</td> <td>YEL/BRN</td> <td></td> </tr> <tr> <td>SANDY SILT, OXIDIZED</td> <td>3</td> <td>8</td> <td>YEL/BRN</td> <td></td> </tr> <tr> <td>SAND W/SILT &</td> <td>8</td> <td>21</td> <td>DK. BRN</td> <td></td> </tr> <tr> <td>SILT, F SAND</td> <td>21</td> <td>25</td> <td>YEL/BRN</td> <td></td> </tr> <tr> <td>SAND W/SILT &</td> <td>25</td> <td>28</td> <td>YEL/BRN</td> <td></td> </tr> <tr> <td>SAND W/SILT &</td> <td>28</td> <td>30</td> <td>BLU/GRY</td> <td></td> </tr> <tr> <td>SILTY GRAVEL</td> <td>30</td> <td>32</td> <td>BLU/GRY</td> <td></td> </tr> <tr> <td>MAFIC BEDROCK</td> <td>32</td> <td>33</td> <td></td> <td></td> </tr> </tbody> </table>					Geological Material	From	To (ft.)	Color	Hardness	SILTY SAND	0	3	YEL/BRN		SANDY SILT, OXIDIZED	3	8	YEL/BRN		SAND W/SILT &	8	21	DK. BRN		SILT, F SAND	21	25	YEL/BRN		SAND W/SILT &	25	28	YEL/BRN		SAND W/SILT &	28	30	BLU/GRY		SILTY GRAVEL	30	32	BLU/GRY		MAFIC BEDROCK	32	33			Casing Type Single casing	Joint Threaded	
Geological Material	From	To (ft.)	Color	Hardness																																																
SILTY SAND	0	3	YEL/BRN																																																	
SANDY SILT, OXIDIZED	3	8	YEL/BRN																																																	
SAND W/SILT &	8	21	DK. BRN																																																	
SILT, F SAND	21	25	YEL/BRN																																																	
SAND W/SILT &	25	28	YEL/BRN																																																	
SAND W/SILT &	28	30	BLU/GRY																																																	
SILTY GRAVEL	30	32	BLU/GRY																																																	
MAFIC BEDROCK	32	33																																																		
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below																																														
					Casing Diameter 2 in. To 5 ft.	Weight lbs./ft.	Hole Diameter 6 in. To 32 ft.																																													
					Open Hole From ft. To ft.																																															
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON																																													
					Diameter 2 in.	Slot/Gauze 10	Length 10 ft.																																													
						Set 5 ft.	ft. 15 ft.																																													
					Static Water Level 5 ft.	land surface	Measure 11/01/2011																																													
					Pumping Level (below land surface) ft.	hrs.	Pumping at g.p.m.																																													
					Wellhead Completion																																															
					Pitless adapter manufacturer		Model																																													
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade																																														
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)																																															
					Grouting Information																																															
					Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified																																															
					Material neat cement	Amount 2 Sacks	From ft. 4																																													
					To ft.																																															
					Nearest Known Source of Contamination																																															
					feet	Direction	Type																																													
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																															
					Pump <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Date Installed																																															
					Manufacturer's name																																															
					Model Number	HP	Volt																																													
					Length of drop pipe ft	Capacity g.p.	Typ																																													
					Abandoned																																															
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																															
					Variance																																															
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																															
					Miscellaneous																																															
					First Bedrock Partridge River intrusion	Aquifer	Quat. Water																																													
					Last Strat Partridge River intrusion	Depth to Bedrock 32	ft																																													
					Located by Minnesota Geological Survey																																															
					Locate Method Digitization (Screen) - Map (1:24,000)																																															
					System UTM - NAD83, Zone 15, Meters	X 574655	Y 5272483																																													
					Unique Number Verification Info/GPS from data	Input Date 03/02/2016																																														
					Angled Drill Hole																																															
					Well Contractor																																															
					Boart Longyear	2022	BIERMAIER, M.																																													
					Licensee Business	Lic. or Reg. No.	Name of Driller																																													

786713

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/02/2016
 Received Date 02/24/2012

Well Name MW-2/RS-32	Township 59	Range 13	Dir Section W 10	Subsection CCAADB	Well Depth 16 ft.	Depth Completed 16 ft.	Date Well Completed 10/26/2011
Elevation 1582.7	Elev. Method Surveyed				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Well N/A RURAL ACRES MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Threaded		
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
SANDY SILT 0 1 DK. BRN					Casing Diameter Weight Hole Diameter		
SILTY SAND, GRAVEL 1 7 BROWN					2 in. To 5 ft. lbs./ft. 6 in. To 16 ft.		
SILTY SAND 7 16 GRN/GRY							
MAFIC ROCK 16 16							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
					Diameter Slot/Gauze Length Set		
					2 in. 10 10 ft. 5 ft. 15 ft.		
					Static Water Level		
					4 ft. land surface Measure 10/26/2011		
					Pumping Level (below land surface)		
					ft. hrs. Pumping at g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					concrete 1 Sacks ft. 3.5 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Partridge River intrusion Aquifer Quat. Water		
					Last Strat Partridge River intrusion Depth to Bedrock 15.7 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 576323 Y 5272799		
					Unique Number Verification Info/GPS from data Input Date 03/02/2016		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 2022 BIERMAIER, M.		
					Licensee Business Lic. or Reg. No. Name of Driller		
Minnesota Well Index Report				786713		Printed on 04/28/2017	
						HE-01205-15	

Remarks
 103349
 MW-2/RX 32

Well Contractor
 Boart Longyear 2022 BIERMAIER, M.
 Licensee Business Lic. or Reg. No. Name of Driller

786714

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/02/2016
 Received Date 02/24/2012

Well Name MW-1/RS-37	Township 59	Range 13	Dir Section W 2	Subsection DABCBC	Well Depth 11 ft.	Depth Completed 11 ft.	Date Well Completed 10/25/2011
Elevation 1594	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well		Status Active
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Threaded		
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
Geological Material					Casing Diameter		Hole Diameter
SANDY CLAY, VF					2 in. To 5 ft. lbs./ft.		6 in. To 10.5 ft.
SANDY SILT							
SANDY GRAVEL							
MAFIC ROCK							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
					Diameter Slot/Gauze Length Set		
					2 in. 10 5 ft. 5 ft. 10 ft.		
					Static Water Level		
					3 ft. land surface Measure 10/25/2011		
					Pumping Level (below land surface)		
					ft. hrs. Pumping at g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					neat cement 1 Sacks ft. 3.5 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Partridge River intrusion Aquifer Quat. Water		
					Last Strat Partridge River intrusion Depth to Bedrock 10.5 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 578784 Y 5274724		
					Unique Number Verification Info/GPS from data Input Date 04/01/2013		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 2022 BIERMAIER, M.		
					Licensee Business Lic. or Reg. No. Name of Driller		

786715

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/30/2016
 Received Date 02/24/2012

Well Name MW-9/RS38	Township 59	Range 13	Dir Section W 1	Subsection BCBBDA	Well Depth 14 ft.	Depth Completed 14 ft.	Date Well Completed 12/14/2011
Elevation 1596	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Vibrocure/rotasonic	Drill Fluid	
Address Well SEE REMARKS MN					Use monitor well	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Geological Material From To (ft.) Color Hardness					Casing Type Single casing	Joint Threaded	
SILTY ORGANIC RICH 0 1					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Above/Below	
SANDY CLAY 1 1 YEL/BRN					Casing Diameter 2 in. To 4 ft.	Weight lbs./ft.	Hole Diameter 6 in. To 14 ft.
SILTY SAND, F-M 1 2 YEL/BRN					Open Hole From ft. To ft.		
SILTY SAND 2 10 DK. BRN					Screen? Diameter 2 in.	<input checked="" type="checkbox"/> Slot/Gauze 10	Type plastic Length 10 ft.
GRAVEL W/SILT & 10 12 DK. GRY					Make JOHNSON Set 4 ft. 14 ft.		
MAFIC ROCK 12 14 GRAY HARD					Static Water Level 7 ft. land surface Measure 12/14/2011		
Pumping Level (below land surface)							
Wellhead Completion Pitless adapter manufacturer Model							
<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade							
<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)							
Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified							
Material Amount From To							
neat cement 1 Sacks ft. 2 ft.							
Nearest Known Source of Contamination feet Direction Type							
Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Pump <input checked="" type="checkbox"/> Not Installed Date Installed							
Manufacturer's name							
Model Number HP Volt							
Length of drop pipe ft Capacity g.p. Typ							
Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Miscellaneous							
First Bedrock Partridge River intrusion Aquifer multiple							
Last Strat Saganaga Tonalite Depth to Bedrock 12 ft							
Located by Minnesota Geological Survey							
Locate Method Digitization (Screen) - Map (1:24,000)							
System UTM - NAD83, Zone 15, Meters X 579294 Y 5275211							
Unique Number Verification Info/GPS from data Input Date 04/01/2013							
Angled Drill Hole							
Well Contractor							
Barr Engineering Co. BARR DUSCHER, D.							
Licensee Business Lic. or Reg. No. Name of Driller							

Remarks
 ADDRESS: RURAL ACRES/BABBIT TOWNSHIP.
 THERE IS SOME INDICATION THAT THIS DULUTH COMPLEX BEDROCK ID'D NORTH OF THE MAPPED CONTACT IS ACCURATE. HOWEVER, BARR ENGINEERING ADVISED NOT TO MOVE THE CONTACT NORTHWARD BASED ON THE ORIGINAL LOGGING GEOLOGISTS' LIMITED EXPERIENCE WITH THESE ROCKS.
 DRILLED BY BOART LONGYEAR & LOGGED BY BARR ENGINEERING.

786717

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 01/13/2017
 Received Date 02/24/2012

Well Name MW-3/RS-48 **Township** 59 **Range** 13 **Dir Section** W 12 **Subsection** BADCDC
Elevation 1559.3 **Elev. Method** Surveyed

Address
 Contact 318 FORESTRY RD AURORA MN 55705

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	0	BLACK	
SANDY SILT	0	1	BROWN	
SILTY SAND, TRACE F	1	4	BROWN	
SANDY SILT	4	10	GRY/BRN	
SILTY SAND	10	11	GRY/BRN	
MAFIC BEDROCK	11	11		

Well Depth 11 ft. **Depth Completed** 11 ft. **Date Well Completed** 10/27/2011
Drill Method Vibracore/rotasonic **Drill Fluid**

Use monitor well **Status** Active
Well Hydrofractured? Yes No **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? Yes No **Above/Below**

Casing Diameter 2 in. **Weight** 6 lbs./ft. **Hole Diameter** 6 in. To 11 ft.

Open Hole From ft. To ft.
Screen? **Type** plastic **Make** JOHNSON
 Diameter 2 in. Slot/Gauze 10 Length 5 ft. Set 6 ft. 11 ft.

Static Water Level
 4 ft. land surface Measure 10/27/2011

Pumping Level (below land surface)

Wellhead Completion
 Pitless adapter manufacturer Model
 Casing Protection 12 in. above grade
 At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? Yes No Not Specified
 Material Amount From To
 neat cement 1 Sacks ft. 3.5 ft.

Nearest Known Source of Contamination
 feet Direction Type
 Well disinfected upon completion? Yes No

Pump Not Installed Date Installed
 Manufacturer's name
 Model Number HP Volt
 Length of drop pipe ft Capacity g.p. Typ

Abandoned
 Does property have any not in use and not sealed well(s)? Yes No

Variance
 Was a variance granted from the MDH for this well? Yes No

Miscellaneous
 First Bedrock Partridge River intrusion Aquifer Quat. Water
 Last Strat Partridge River intrusion Depth to Bedrock 10 ft
 Located by Minnesota Geological Survey
 Locate Method Digitization (Screen) - Map (1:24,000)
 System UTM - NAD83, Zone 15, Meters X 579699 Y 5273721
 Unique Number Verification Info/GPS from data Input Date 04/01/2013

Angled Drill Hole

Well Contractor
 Boart Longyear 2022 BIERMAIER, M.
 Licensee Business Lic. or Reg. No. Name of Driller

Remarks
 103349.
 MW-3/RS 48.

786718

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/02/2016
 Received Date 02/24/2012

Well Name MW-4/RS-49	Township 59	Range 13	Dir Section W 12	Subsection ACADAC	Well Depth 9.5 ft.	Depth Completed 9.5 ft.	Date Well Completed 10/27/2011
Elevation 1556.2	Elev. Method Surveyed				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Contact 318 FORESTRY RD AURORA MN 55705					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Threaded		
					Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Above/Below		
Geological Material					Casing Diameter Weight Hole Diameter		
ORGANIC TOPSOIL					2 in. To 5 ft. lbs./ft. 6 in. To 9.5 ft.		
SILTY SAND							
SANDY SILT W/LITTLE							
SANDY SILT							
SILTY SAND							
MAFIC BEDROCK							
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
					Diameter Slot/Gauze Length Set		
					2 in. 10 5 ft. 4.5 ft. 9.5 ft.		
					Static Water Level		
					3.5 ft. land surface Measure 10/27/2011		
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					neat cement 1 Sacks ft. 2.5 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Partridge River intrusion Aquifer Quat. Water		
					Last Strat Partridge River intrusion Depth to Bedrock 7.5 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 580180 Y 5273586		
					Unique Number Verification Info/GPS from data Input Date 04/01/2013		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 2022 BIERMAIER, M.		
					Licensee Business Lic. or Reg. No. Name of Driller		
Remarks							
103349.							
MW-4/RS 49.							
Minnesota Well Index Report					786718		
					Printed on 04/28/2017		
					HE-01205-15		

786719

County St. Louis
 Quad Babbitt SW
 Quad ID 317C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/02/2016
 Received Date 02/24/2012

Well Name	Township	Range	Dir Section	Subsection	Well Depth	Depth Completed	Date Well Completed	
MW-17	59	13	W 1	DACCCD	17 ft.	17 ft.	02/18/2012	
Elevation	1584	Elev. Method	7.5 minute topographic map (+/- 5 feet)					
Address					Use	Status		
Well RURAL ACRES MN					monitor well	Active		
Stratigraphy Information					Well Hydrofractured?	Yes	No	
Geological Material					From	To (ft.)	Color	Hardness
PEAT					0	2	BLACK	SOFT
ORGANIC SILT					2	7	DK. BRN	SOFT
SILTY SAND					7	15	DK. GRY	SOFT
MAFIC ROCK					15	17	GRAY	HARD
					Drill Method	Drill Fluid		
					Vibracore/rotasonic			
					Casing Type	Joint		
					Single casing	Threaded		
					Drive Shoe?	Yes	No	
					Yes <input type="checkbox"/>	No <input type="checkbox"/>	Above/Below	
					Casing Diameter	Weight	Hole Diameter	
					2 in. To 5 ft.	lbs./ft.	6 in. To 17 ft.	
					Open Hole	From	To	
					ft.	ft.		
					Screen?	Type	Make	
					<input checked="" type="checkbox"/>	plastic	JOHNSON	
					Diameter	Slot/Gauze	Length	
					2 in.	10	10 ft.	
							Set	
							5 ft. 15 ft.	
					Static Water Level			
					2 ft.	land surface	Measure 02/18/2012	
					Pumping Level (below land surface)			
					Wellhead Completion			
					Pitless adapter manufacturer Model			
					<input checked="" type="checkbox"/>	Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/>	At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted?	Yes	
						<input checked="" type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
					Material	Amount	From	
					neat cement	1 Sacks	To 3 ft.	
					Nearest Known Source of Contamination			
					feet	Direction	Type	
					Well disinfected upon completion?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
					Yes	No		
					Pump	<input checked="" type="checkbox"/>	Date Installed	
					<input type="checkbox"/>	Not Installed		
					Manufacturer's name			
					Model Number HP Volt			
					Length of drop pipe ft Capacity g.p. Typ			
					Abandoned			
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Variance			
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Miscellaneous			
					First Bedrock	Partridge River intrusion	Aquifer	
							Quat. Water	
					Last Strat	Partridge River intrusion	Depth to Bedrock	
							15 ft	
					Located by Minnesota Geological Survey			
					Locate Method Digitization (Screen) - Map (1:24,000)			
					System	UTM - NAD83, Zone 15, Meters	X 580327 Y 5274506	
					Unique Number Verification	Info/GPS from data	Input Date	
							04/01/2013	
					Angled Drill Hole			
					Well Contractor			
					Boart Longyear	2022	DUSHER, D.	
					Licenses Business	Lic. or Reg. No.	Name of Driller	

Remarks

786720

County St. Louis
 Quad Babbitt
 Quad ID 317B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Entry Date 03/20/2012
 Update Date 03/30/2016
 Received Date 02/24/2012

Well Name MW-13/RS 52	Township 59	Range 13	Dir Section W 1	Subsection ABBBBD	Well Depth 33 ft.	Depth Completed 15 ft.	Date Well Completed 02/15/2012
Elevation 1586	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Well RURAL ACRES MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Stratigraphy Information					Casing Type Single casing	Joint Threaded	
Geological Material	From	To (ft.)	Color	Hardness	Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/>	Above/Below	
SILTY PEAT	0	7	BLACK		Casing Diameter 2 in. To 5 ft.	Weight lbs./ft.	Hole Diameter 6 in. To 15 ft.
CLAYEY PEAT	7	9	GRAY				
SILTY SAND, LITTLE	9	19	GRAY				
SANDY SILT	19	20	BRN/YEL				
SILTY SAND	20	24	GRY/BRN				
SAND W/SILT &	24	30	DK. GRY				
MAFIC ROCK	30	33					
					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/>	Type plastic	Make JOHNSON
					Diameter 2 in.	Slot/Gauze 10	Length 10 ft.
					Set 5 ft.	ft. 15	ft. ft.
					Static Water Level 5 ft.	land surface	Measure 02/15/2012
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input checked="" type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified	
					Material neat cement	Amount 1 Sacks	From To ft. 3 ft.
					Nearest Known Source of Contamination		
					feet	Direction	Type
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name		
					Model Number	HP	Volt
					Length of drop pipe ft	Capacity g.p.	Typ
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Last Strat	Partridge River intrusion	Aquifer Quat. Water Depth to Bedrock 30 ft
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters	X 580109	Y 5275612
					Unique Number Verification	Info/GPS from data	Input Date 04/01/2013
					Angled Drill Hole		
					Well Contractor		
					Barr Engineering Co.	BARR	DUSHER, D.
					Licensee Business	Lic. or Reg. No.	Name of Driller
Remarks							
THERE IS SOME INDICATION THAT THIS DULUTH COMPLEX BEDROCK IS NORTH OF THE MAPPED CONTACT IS ACCURATE. HOWEVER, BARR ENGINEERING ADVISED NOT TO MOVE THE CONTACT NORTHWARD BASED ON THE ORIGINAL LOGGING GEOLOGISTS' LIMITED EXPERIENCE WITH THESE ROCKS. DRILLED BY BOART LONGYEAR & LOGGED BY BARR ENGINEERING.							
Minnesota Well Index Report					786720		
					Printed on 04/28/2017 HE-01205-15		

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 03/20/2012

Update Date 03/02/2016

Received Date 02/24/2012

County St. Louis
 Quad Allen
 Quad ID 318D

786729

Well Name MW-18/RS-44	Township 59	Range 13	Dir Section W 9	Subsection CACADA	Well Depth 23 ft.	Depth Completed 23 ft.	Date Well Completed 02/19/2012
Elevation 1627	Elev. Method Surveyed				Drill Method Vibracore/rotasonic	Drill Fluid	
Address					Use monitor well	Status Active	
Well N/A RURAL ACRES MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> From To		
Stratigraphy Information					Casing Type Single casing Joint Threaded		
Geological Material From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below		
SILTY SAND, TRACE 0 3 YEL/BRN					Casing Diameter Weight Hole Diameter		
SAND W/SILT; TRACE 3 4 BROWN					0 in. To ft. lbs./ft. 0 in. To ft.		
SANDY SILT, VF-F 4 5 BROWN HARD					2 in. To 5 ft. lbs./ft.		
SILTY SAND 5 8 BROWN							
SANDY SILT 8 21 DK. GRY							
MAFIC BEDROCK 21 23					Open Hole From ft. To ft.		
					Screen? <input checked="" type="checkbox"/> Type plastic Make JOHNSON		
					Diameter Slot/Gauze Length Set		
					2 in. 10 10 ft. 5 ft. 15 ft.		
					Static Water Level		
					3 ft. land surface Measure 02/19/2012		
					Pumping Level (below land surface)		
					ft. hrs. Pumping at g.p.m.		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input checked="" type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					concrete 1 Sacks ft. 3 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Partridge River intrusion Aquifer Quat. Water		
					Last Strat Partridge River intrusion Depth to Bedrock 21 ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:24,000)		
					System UTM - NAD83, Zone 15, Meters X 574994 Y 5272958		
					Unique Number Verification Info/GPS from data Input Date 03/02/2016		
					Angled Drill Hole		
					Well Contractor		
					Boart Longyear 2022 DUSHER, D.		
					Licensee Business Lic. or Reg. No. Name of Driller		

Remarks
 103349
 MW-18/RS 44